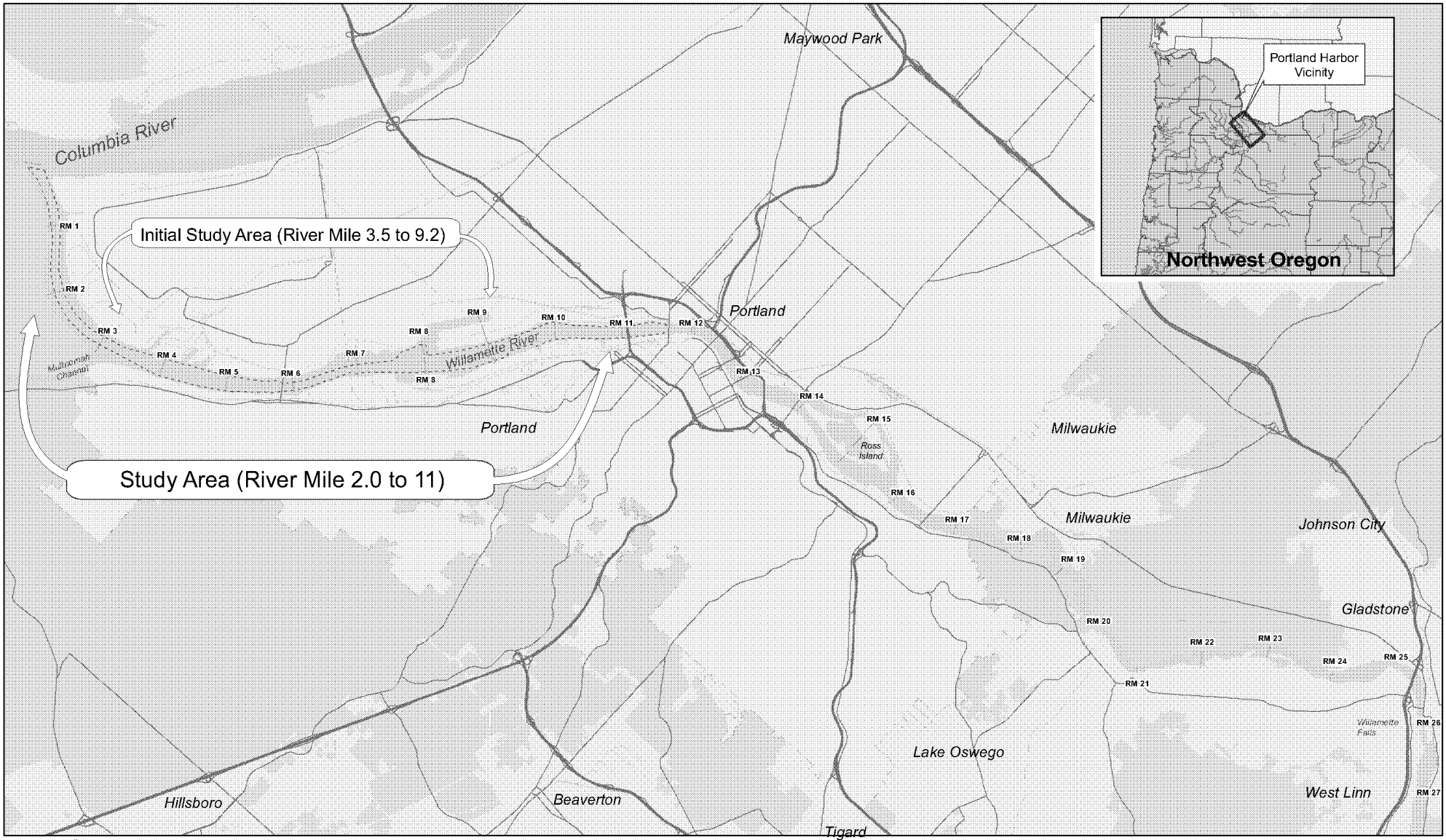



Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Site_Vicinity_Map.mxd) 2/2/2007 – 1:41:31 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

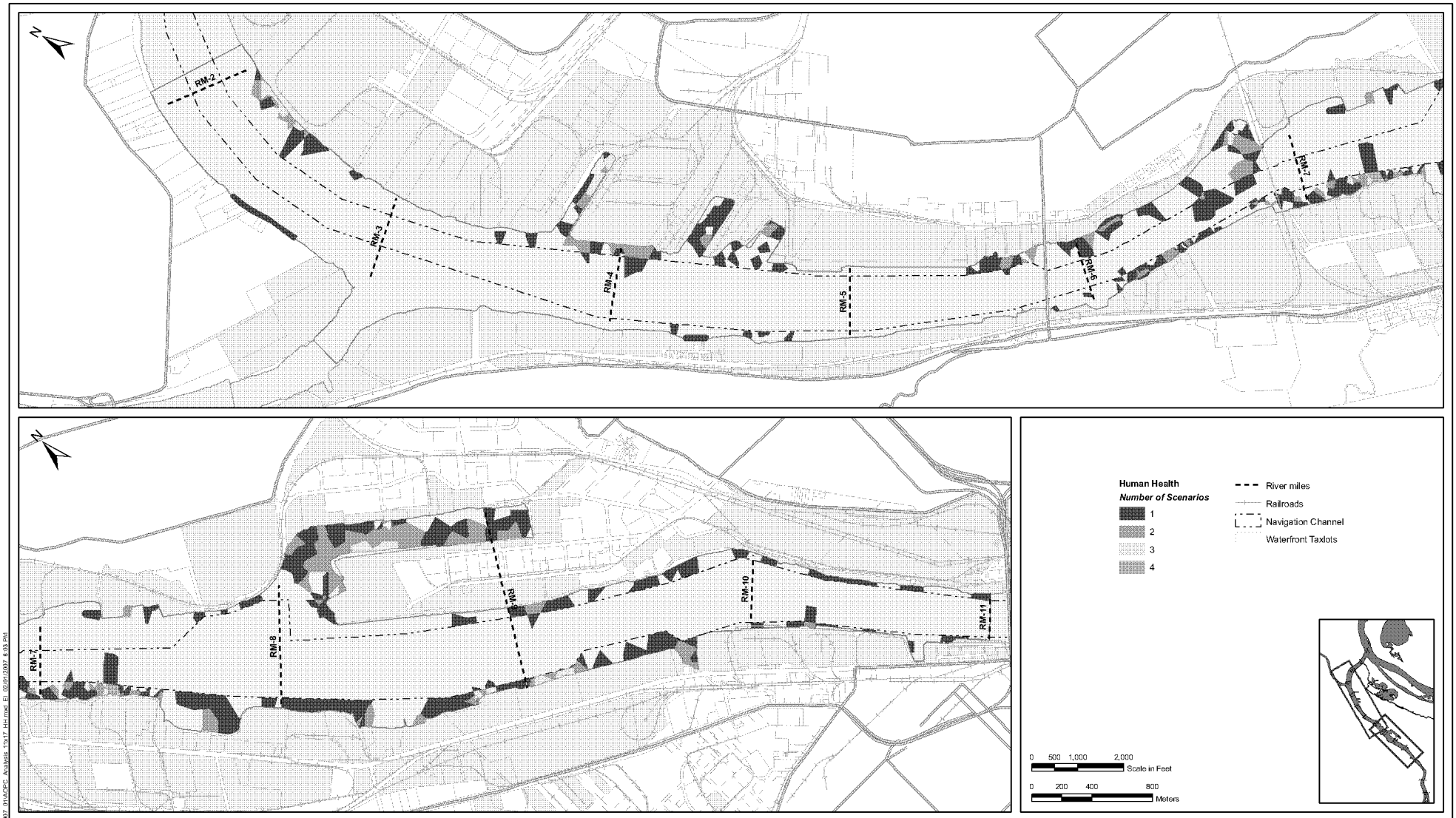
0 1 2 3 Miles

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evens and Associates, Inc.

Freeways
Major Streets
Railroads
Navigation Channel
Unincorporated area
Portland
Cities

**Map 1-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Site and Vicinity Map**

BZTO104(e)032465



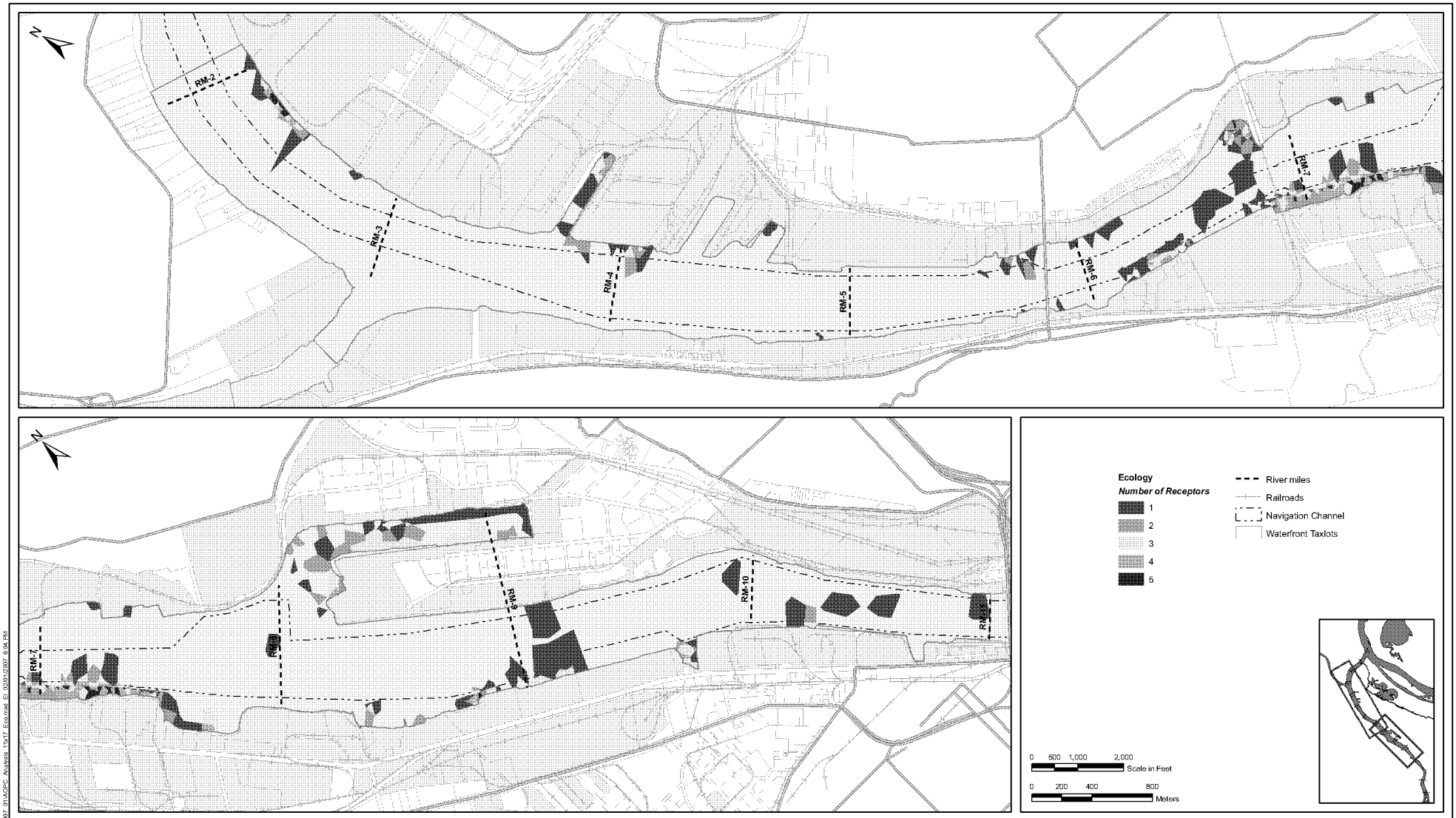

ANCHOR ENVIRONMENTAL, L.L.C.

LWG LOWER WILLAMETTE GROUP

**Map 10.4-1**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Initial Areas of Potential Concern
Human Health Exposure Scenarios
River Mile 02 to 11

J:\Jobs\010142-01 LWG\Maps\2007 01\ADPC Analysis 11x17 HH.mxd EI 02/01/2007 8:03 PM

BZTO104(e)032466



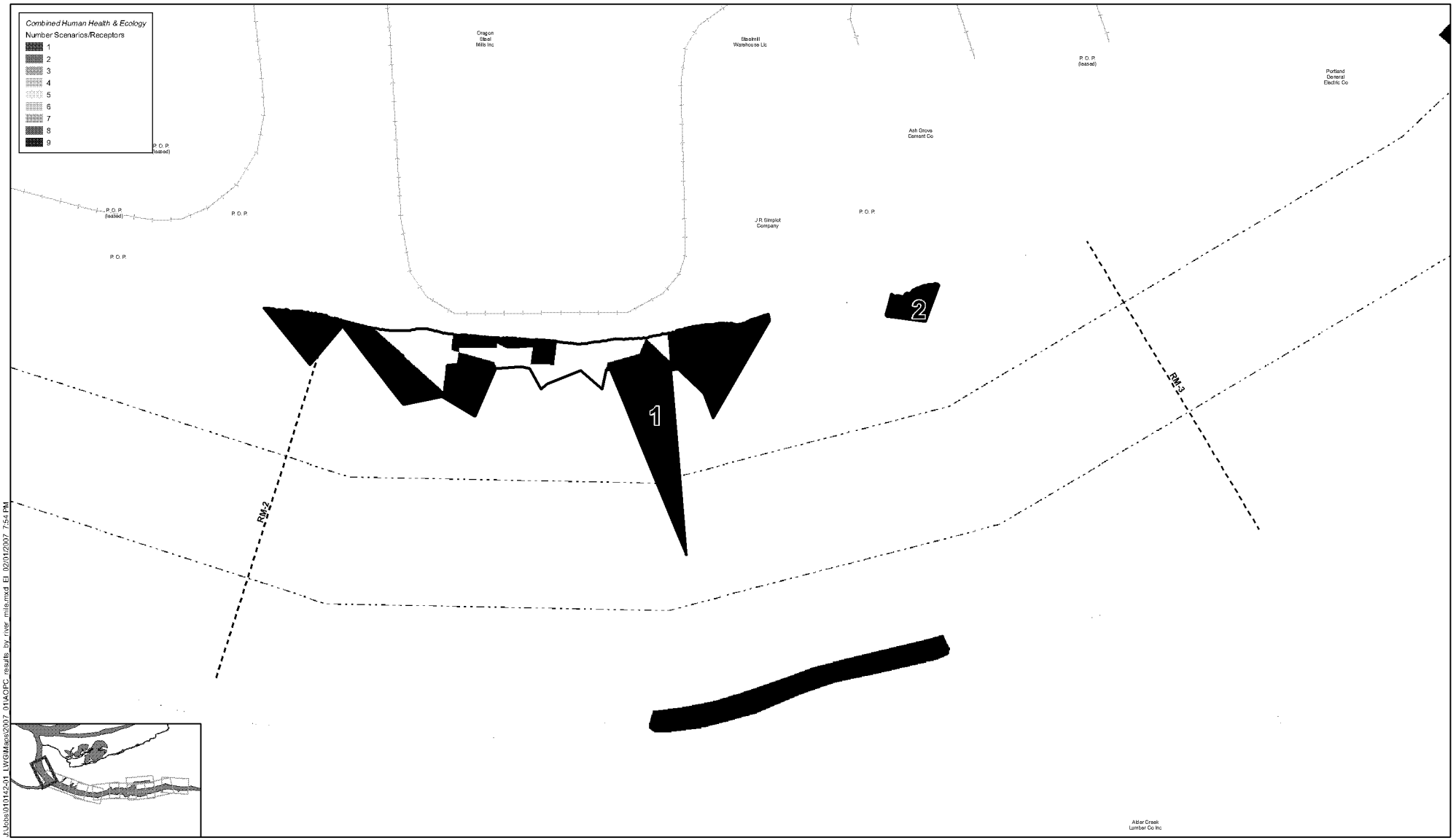

J:\Jobs\010142-01 LWG\Maps\2007 01\ADPC Analysis 11x17 Eco.mxd EI 02/01/2007 8:04 PM

ANCHOR ENVIRONMENTAL, L.L.C.

LWG LOWER WILLAMETTE GROUP

**Map 10.4-2**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Initial Areas of Potential Concern
Ecological Receptors
River Mile 02 to 11

BZTO104(e)032467




J:\Jobs\010142-01 LWG\Maps\2007_01\AOPC_results_by_river_mile.mxd EI 02/01/2007 7:54 PM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

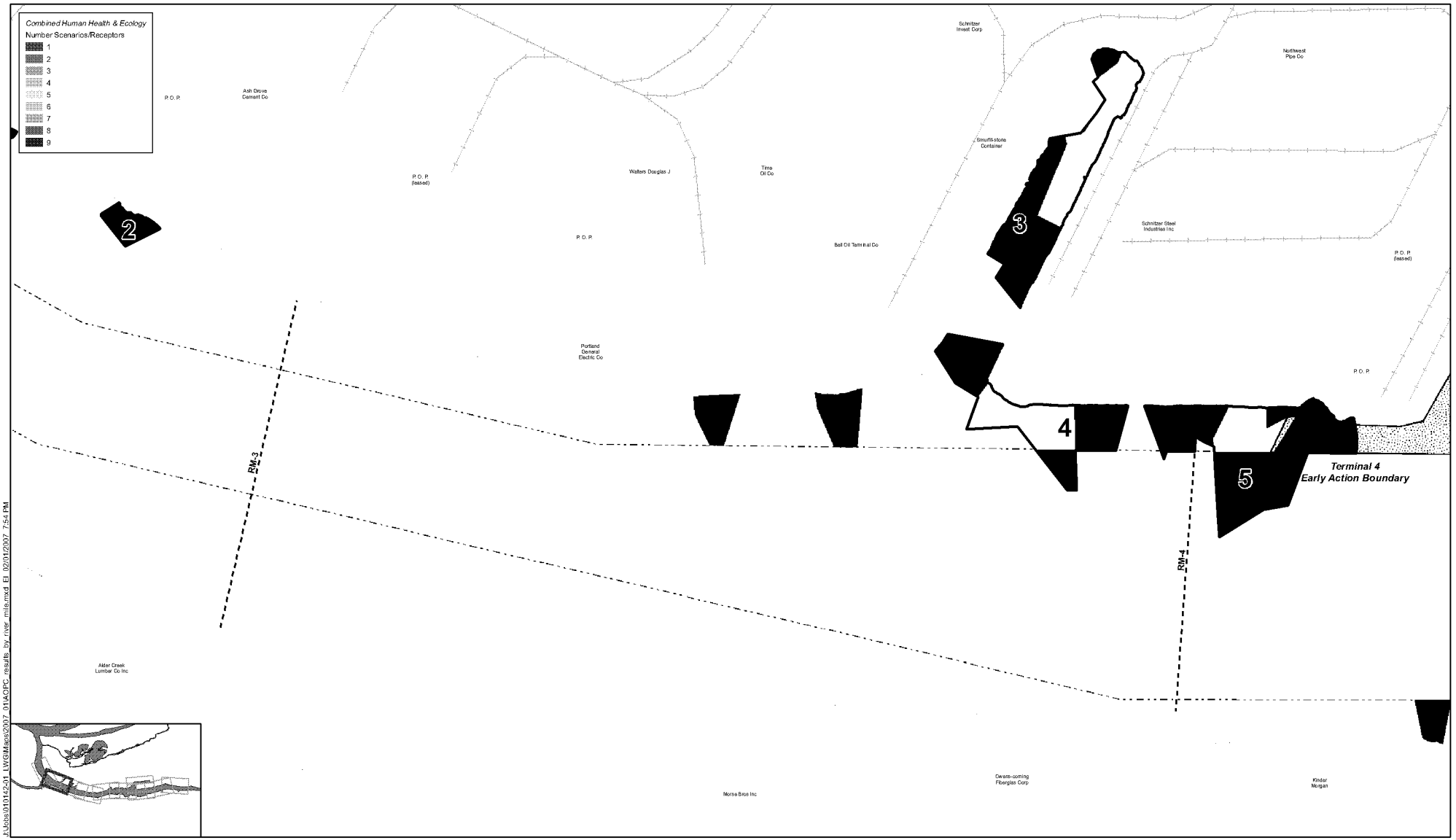
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-1a**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Delineation of Combined Initial Areas of Potential Concern
With All Combined Information Shown
River Mile 02 to 03

BZTO104(e)032468




J:\Jobs\010142-01 LWGMaps\2007_01\AOPC_results_by_river_mile.mxd EI 02/01/2007 7:54 PM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

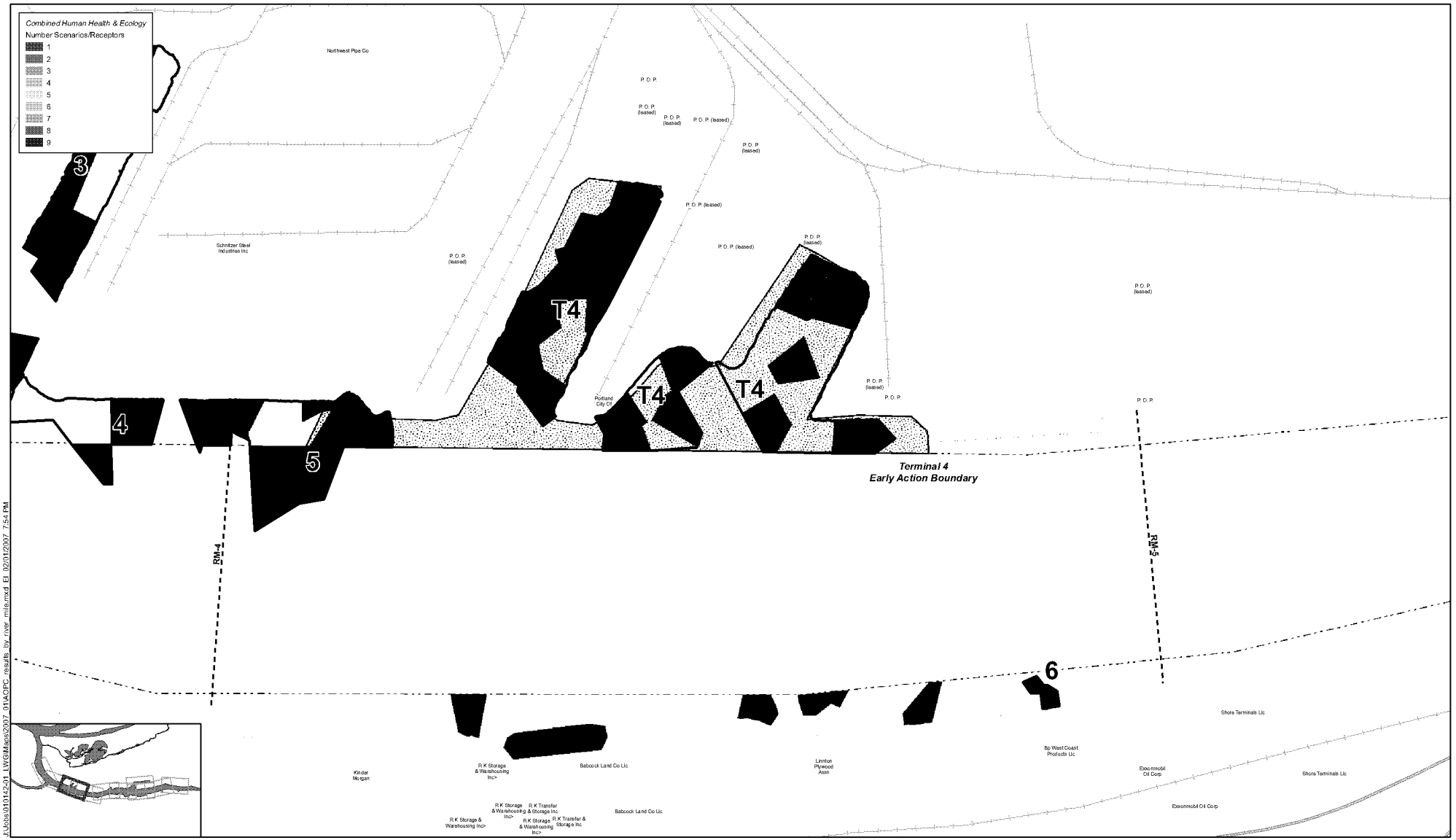
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-1b**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Delineation of Combined Initial Areas of Potential Concern
With All Combined Information Shown
River Mile 03 to 04

BZTO104(e)032469




J:\Jobs\010142-01 LWG\GIS\Maps\2007_01\AOPC_results_by_river_mile.mxd EI 02/01/2007 7:54 PM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

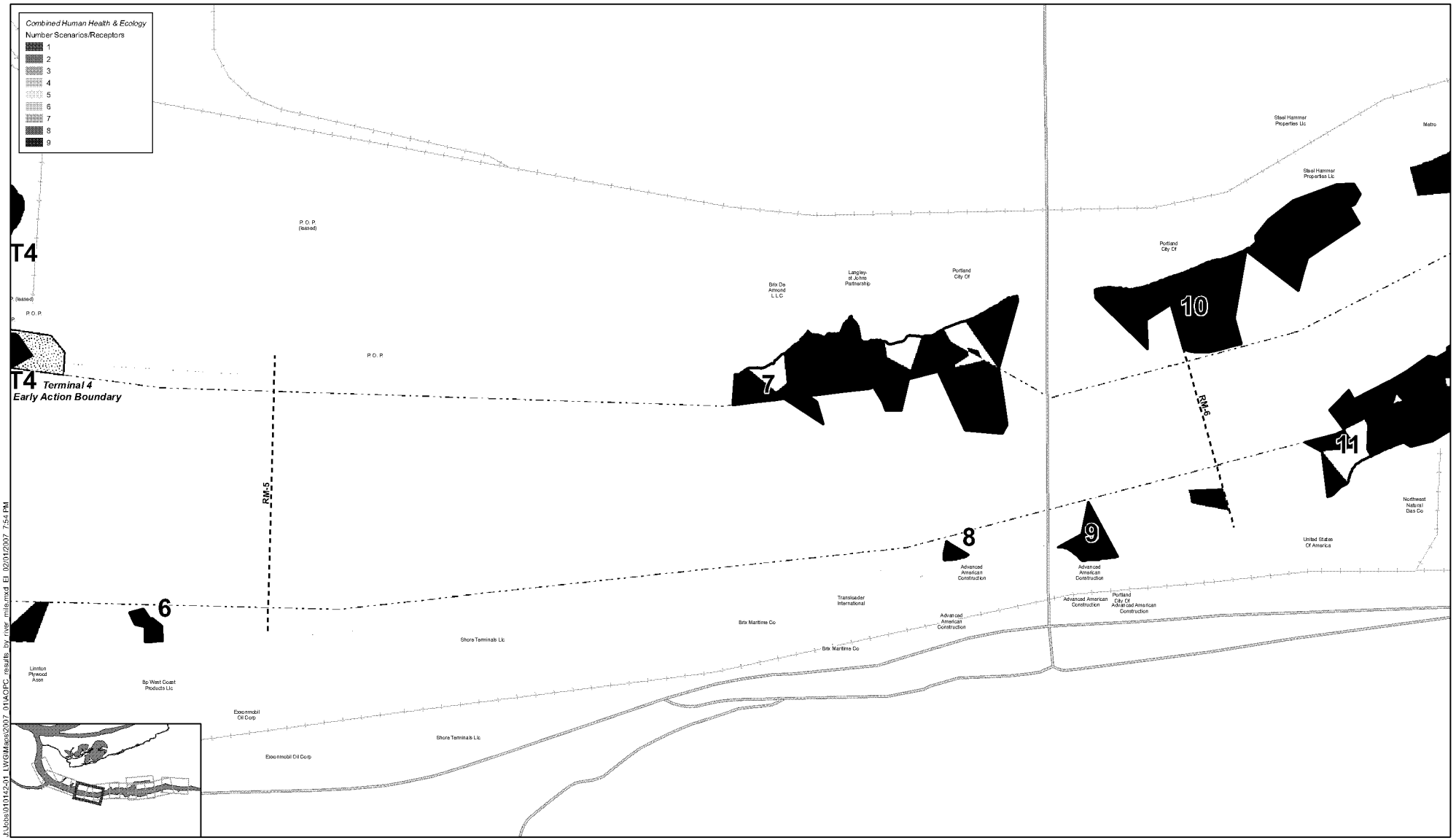
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-1c**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Delineation of Combined Initial Areas of Potential Concern
With All Combined Information Shown
River Mile 04 to 05

BZTO104(e)032470




J:\Jobs\010142-01 LWG\GIS\Maps\2007_01\AOPC_results_by_river_mile.mxd EI 02/01/2007 7:54 PM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

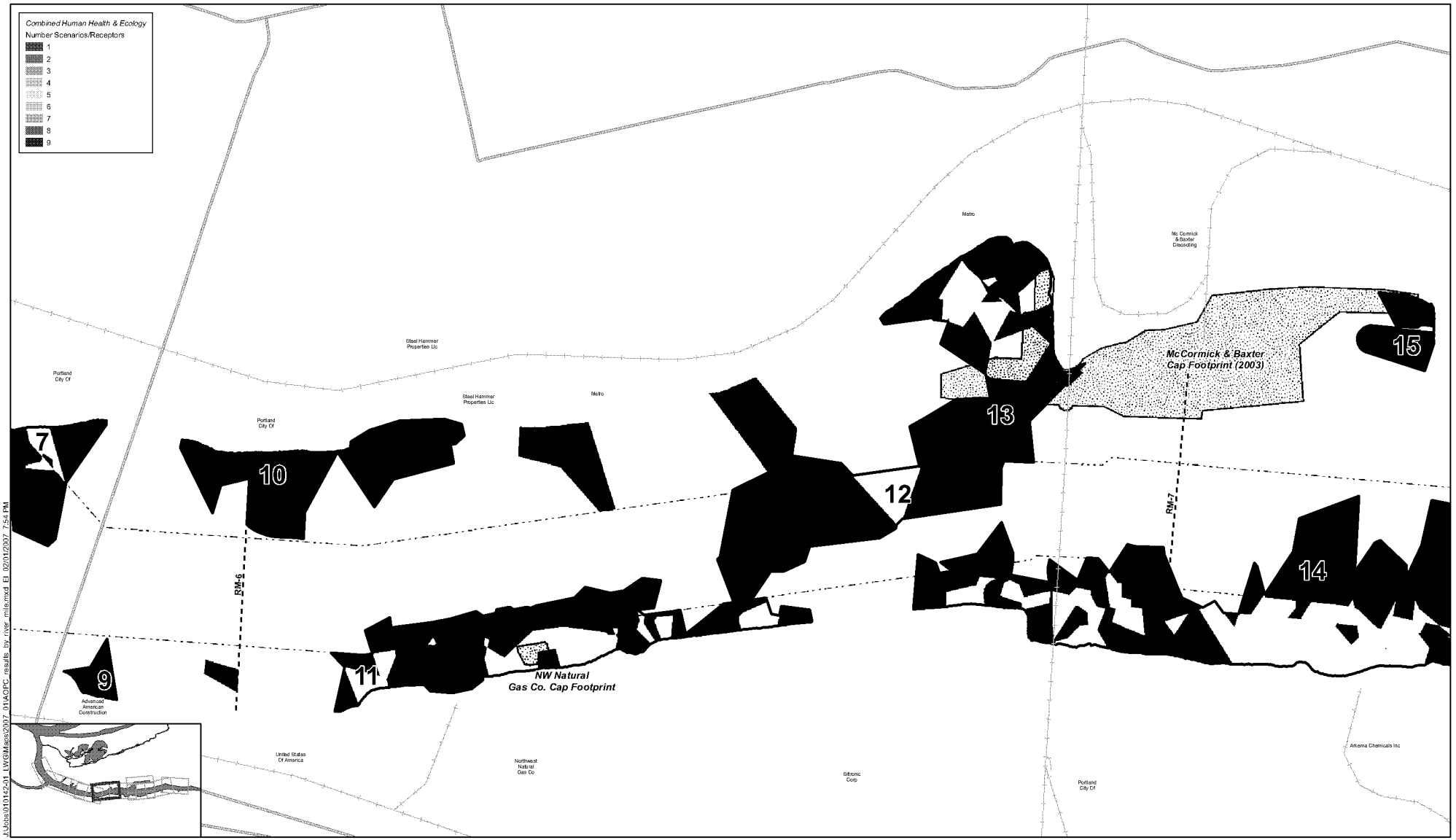
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-1d**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Delineation of Combined Initial Areas of Potential Concern
With All Combined Information Shown
River Mile 05 to 06

BZTO104(e)032471




ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-1e**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Delineation of Combined Initial Areas of Potential Concern
With All Combined Information Shown
River Mile 06 to 07

BZTO104(e)032472

J:\Jobs\010142-01 LWG\GIS\Maps\2007_01\AOPC_results_by_river_mile.mxd EI 02/01/2007 7:54 PM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

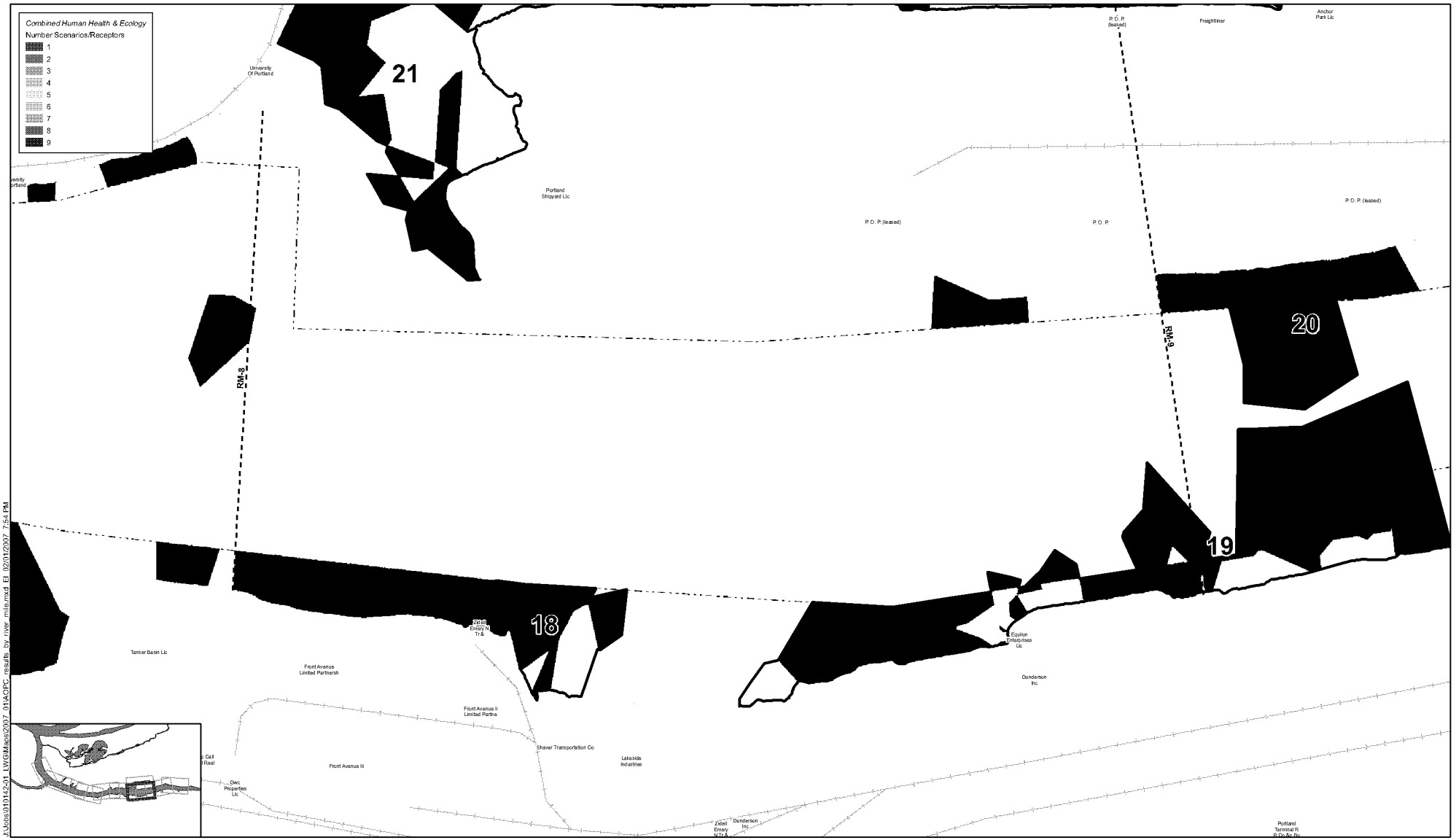
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-1f**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Delineation of Combined Initial Areas of Potential Concern
With All Combined Information Shown
River Mile 07 to 08

BZTO104(e)032473




J:\Jobs\010142-01 LWG\GIS\Maps\2007_01\AOPC results by river mile.mxd EI 02/01/2007 7:54 PM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

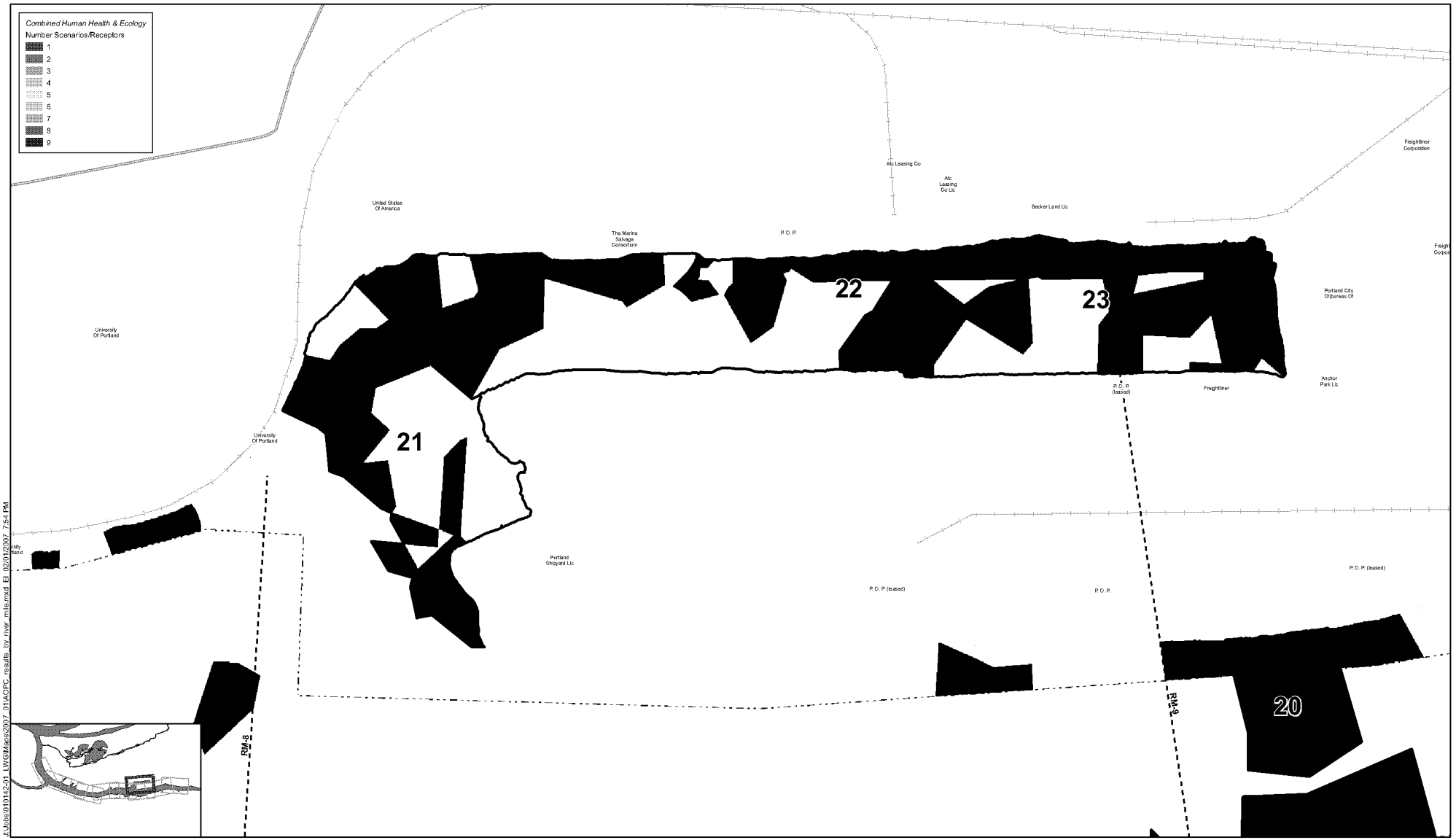
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-1g**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Delineation of Combined Initial Areas of Potential Concern
With All Combined Information Shown
River Mile 08 to 09

BZTO104(e)032474




J:\Jobs\010142-01 LWG\Maps\2007_01\AOPC_results_by_river_mile.mxd EI 02/01/2007 7:54 PM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

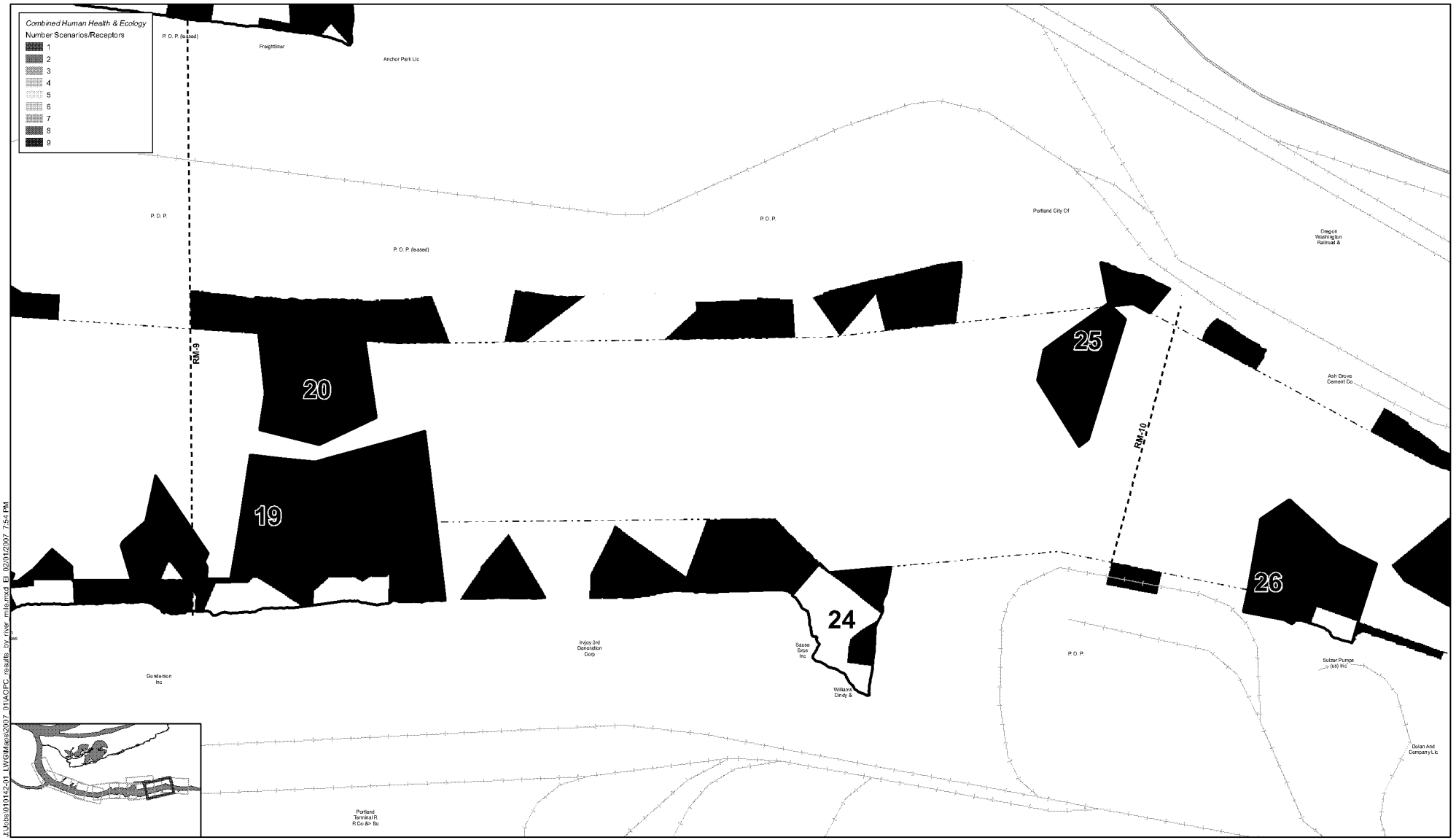
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-1h**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Delineation of Combined Initial Areas of Potential Concern
With All Combined Information Shown
River Mile 08 to 09 - Swan Is

BZTO104(e)032475




J:\Jobs\010142-01 LWG\Maps\2007_01\AOPC_results_by_river_mile.mxd EI 02/01/2007 7:54 PM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-1i**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Delineation of Combined Initial Areas of Potential Concern
With All Combined Information Shown
River Mile 09 to 10

BZTO104(e)032476

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

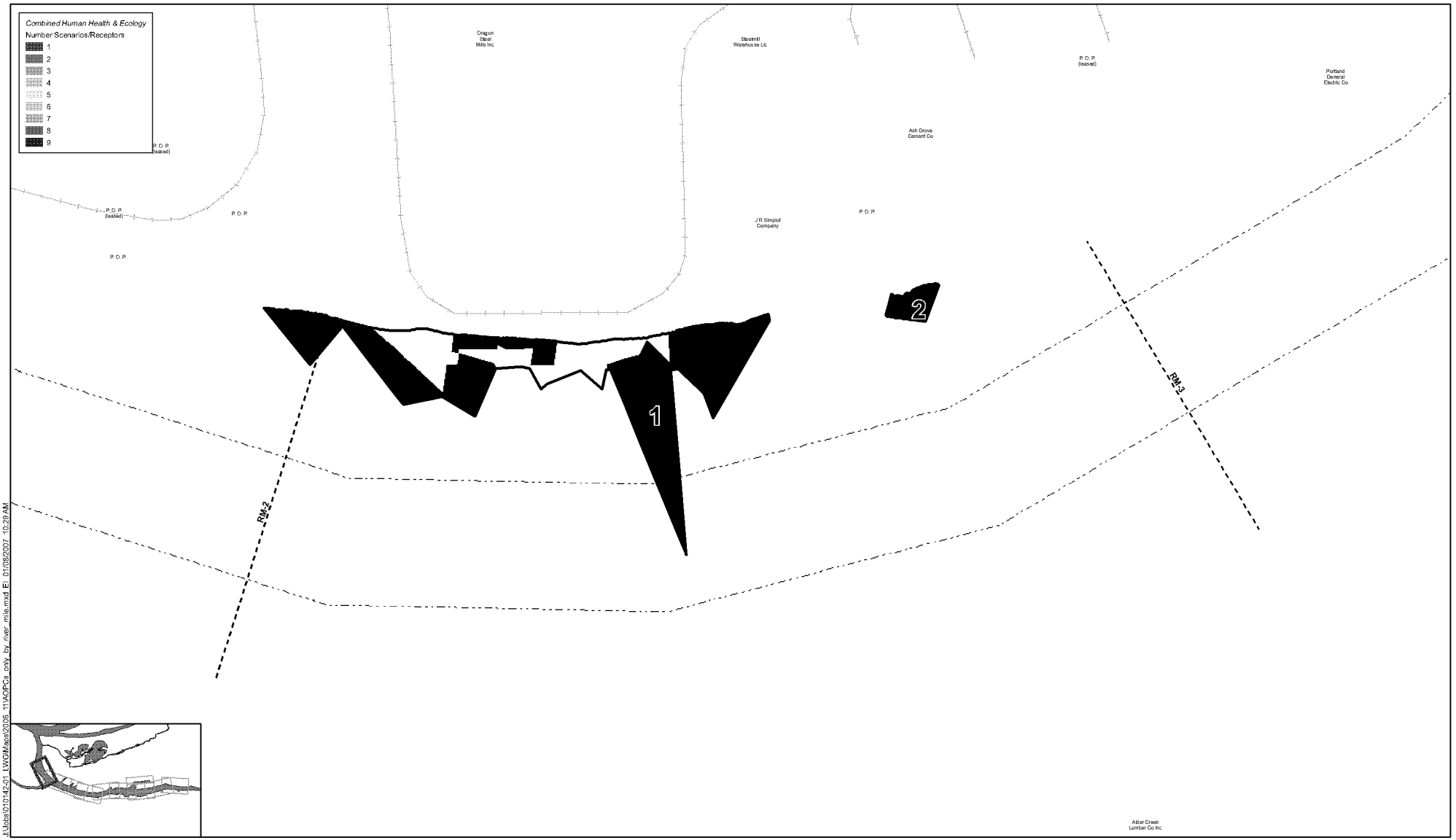
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-1j**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Delineation of Combined Initial Areas of Potential Concern
With All Combined Information Shown
River Mile 10 to 11

BZTO104(e)032477




J:\Jobs\010142-01 LWG\Mxds\2006_11\AOPCs_only_by_river_mile.mxd El 01/08/2007 10:29 AM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

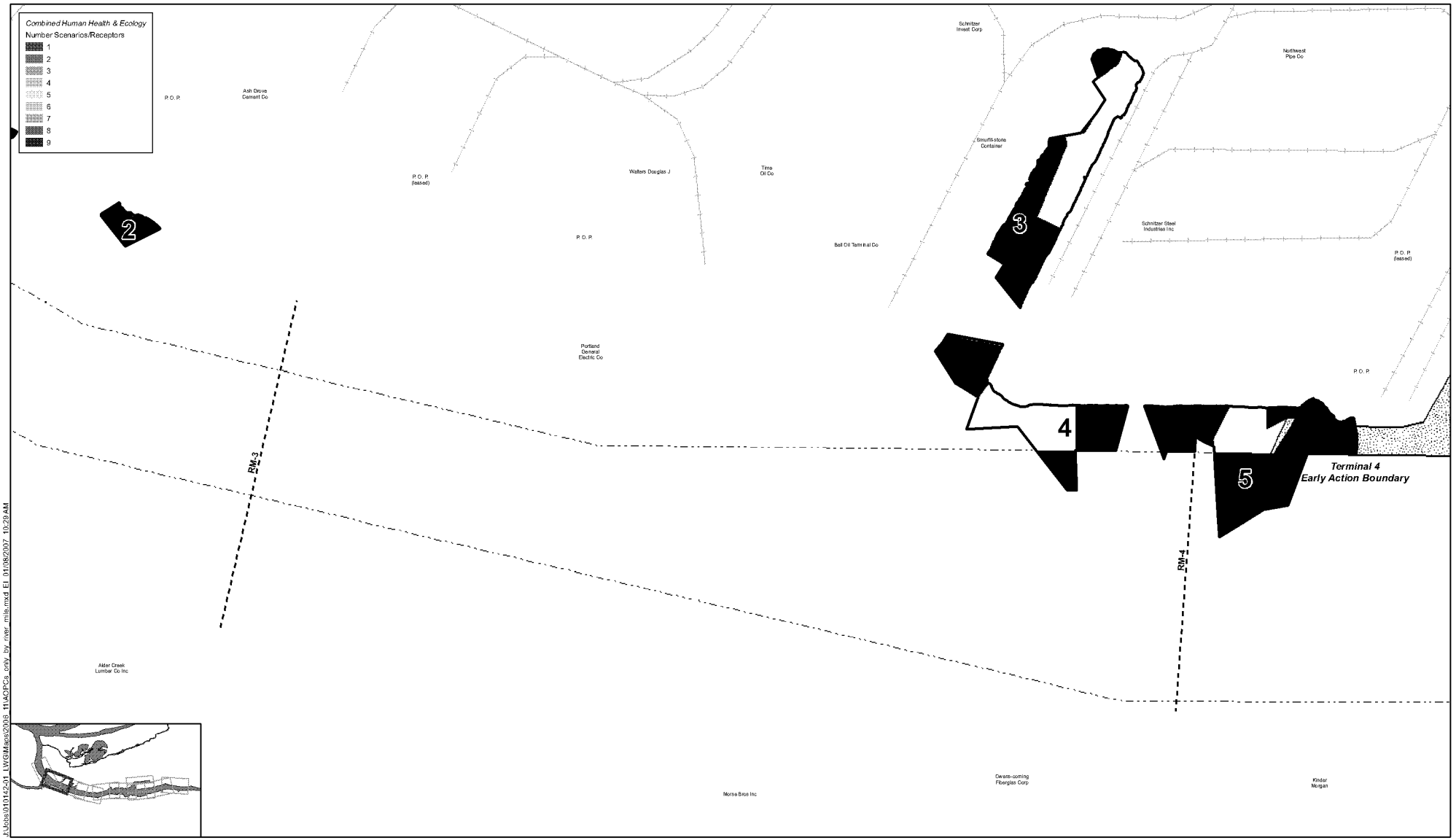
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-2a**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
River Mile 02 to 03

BZTO104(e)032478




J:\Jobs\010142-01 LWGMaps\2006 111AOPCs_only_by_river_mile.mxd EI 01/08/2007 10:29 AM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

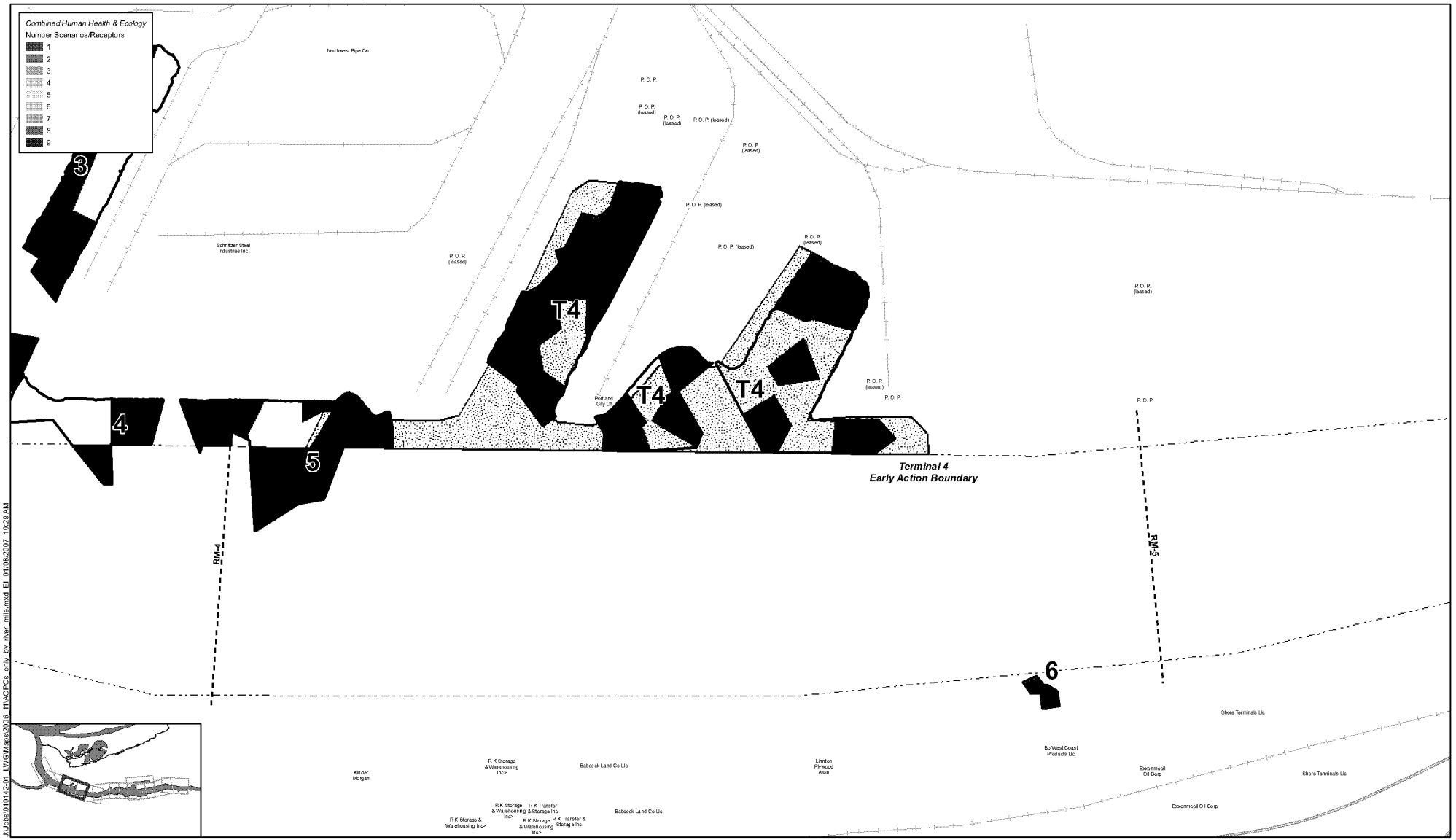
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-2b**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
River Mile 03 to 04

BZTO104(e)032479




J:\Jobs\010142-01 LWG\GIS\Maps\2006_11\AOPCs_only_by_river_mile.mxd EI 01/08/2007 10:29 AM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

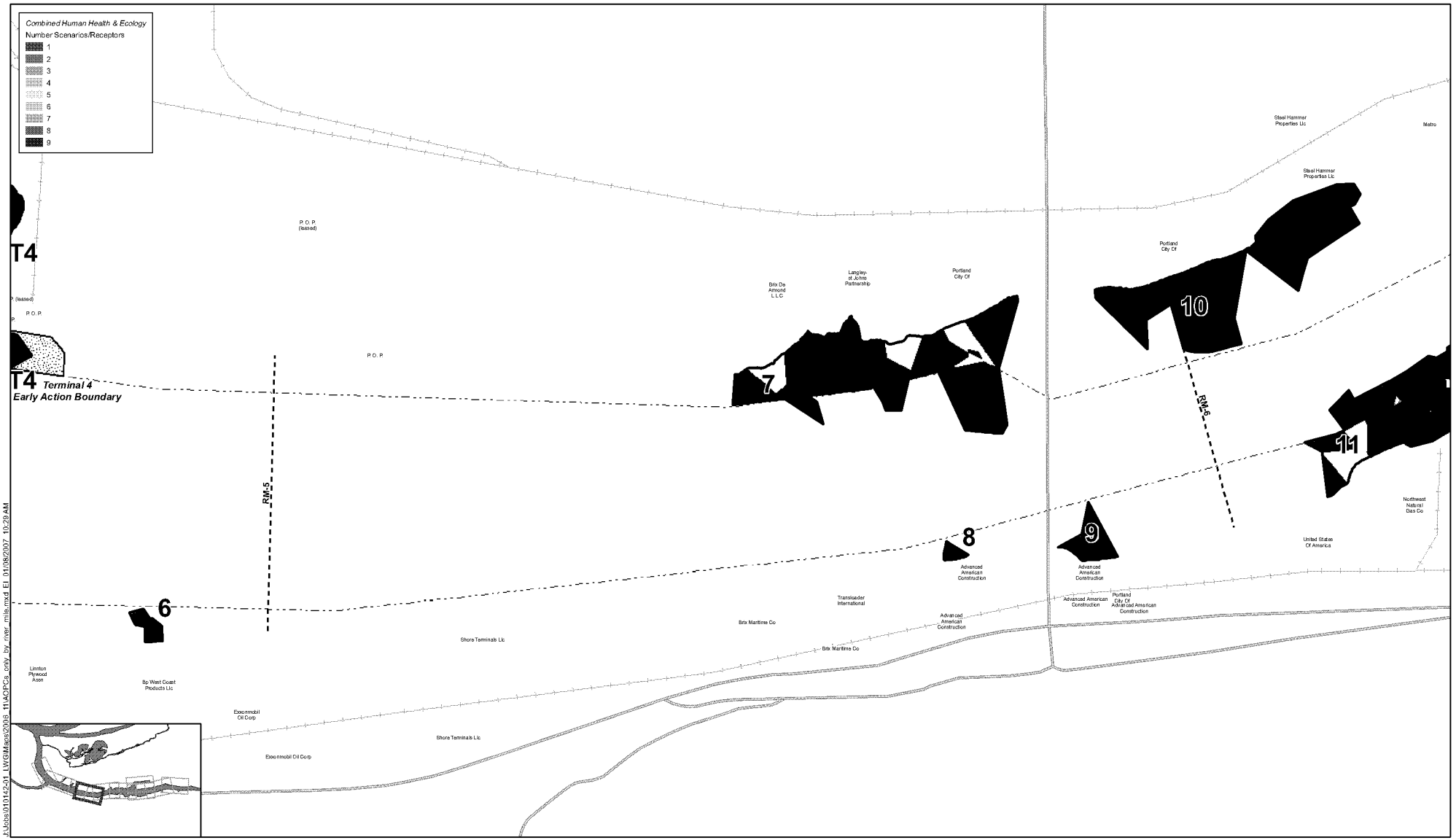
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-2c**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
River Mile 04 to 05

BZTO104(e)032480




J:\Jobs\010142-01 LWG\GIS\Maps\2006_11\AOPCs_only_by_river_mile.mxd EI 01/08/2007 10:29 AM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-2d**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
River Mile 05 to 06

BZTO104(e)032481

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

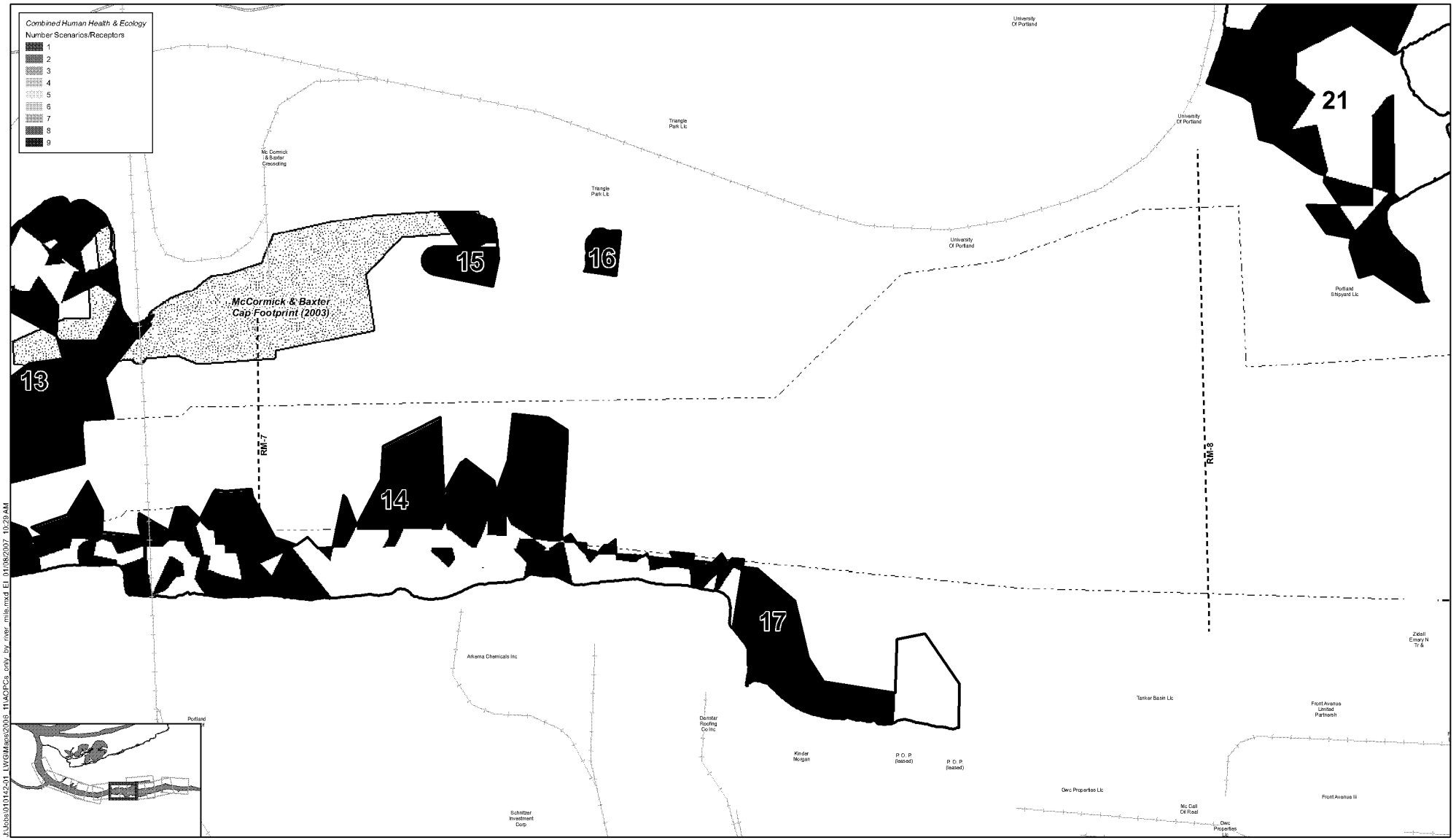
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-2e**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
River Mile 06 to 07

BZTO104(e)032482




J:\Jobs\010142-01 LWG\Maps\2006 11\AOPCs_only_by_river_mile.mxd EI 01/08/2007 10:29 AM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

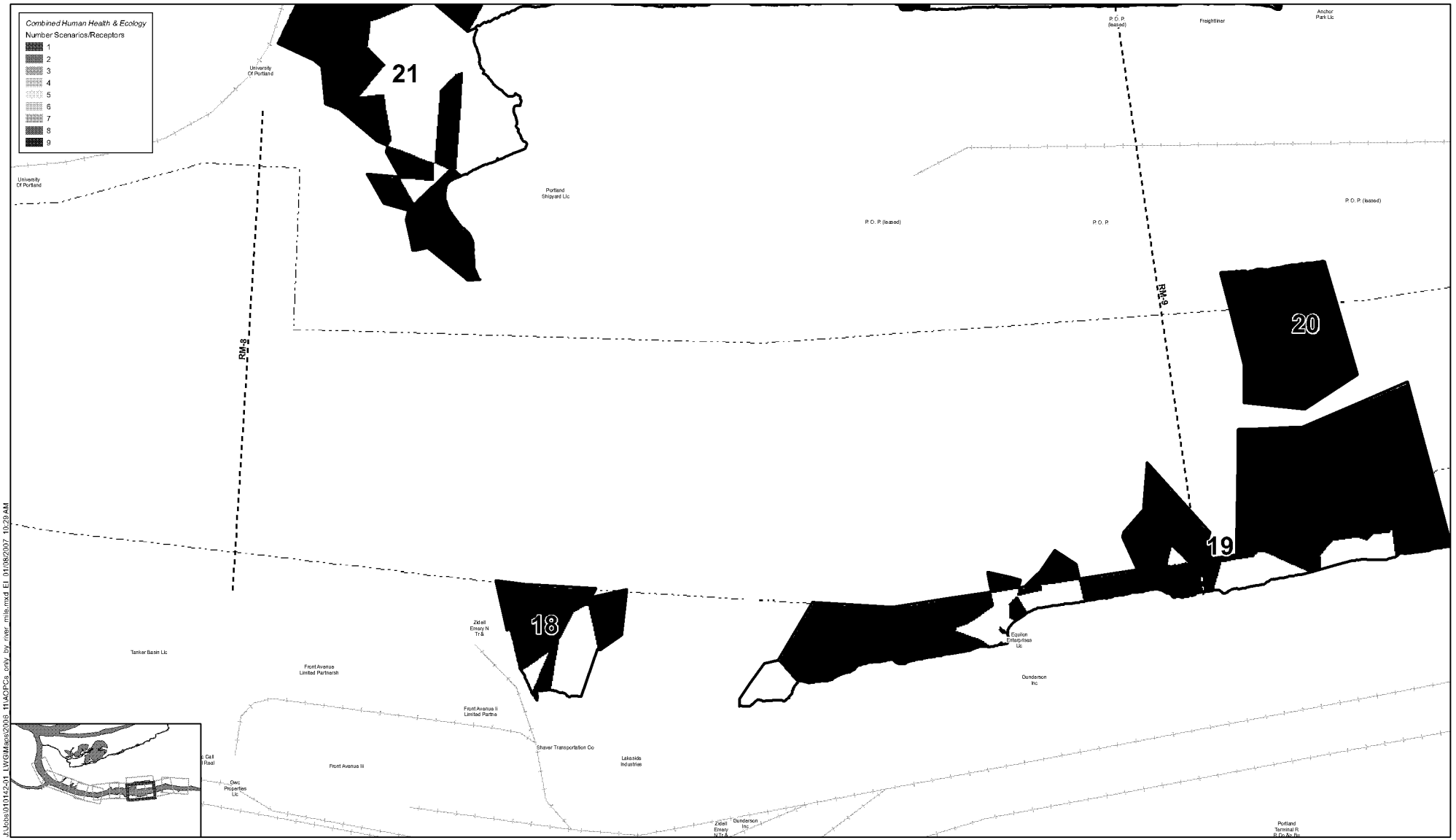
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-2f**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
River Mile 07 to 08

BZTO104(e)032483




ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

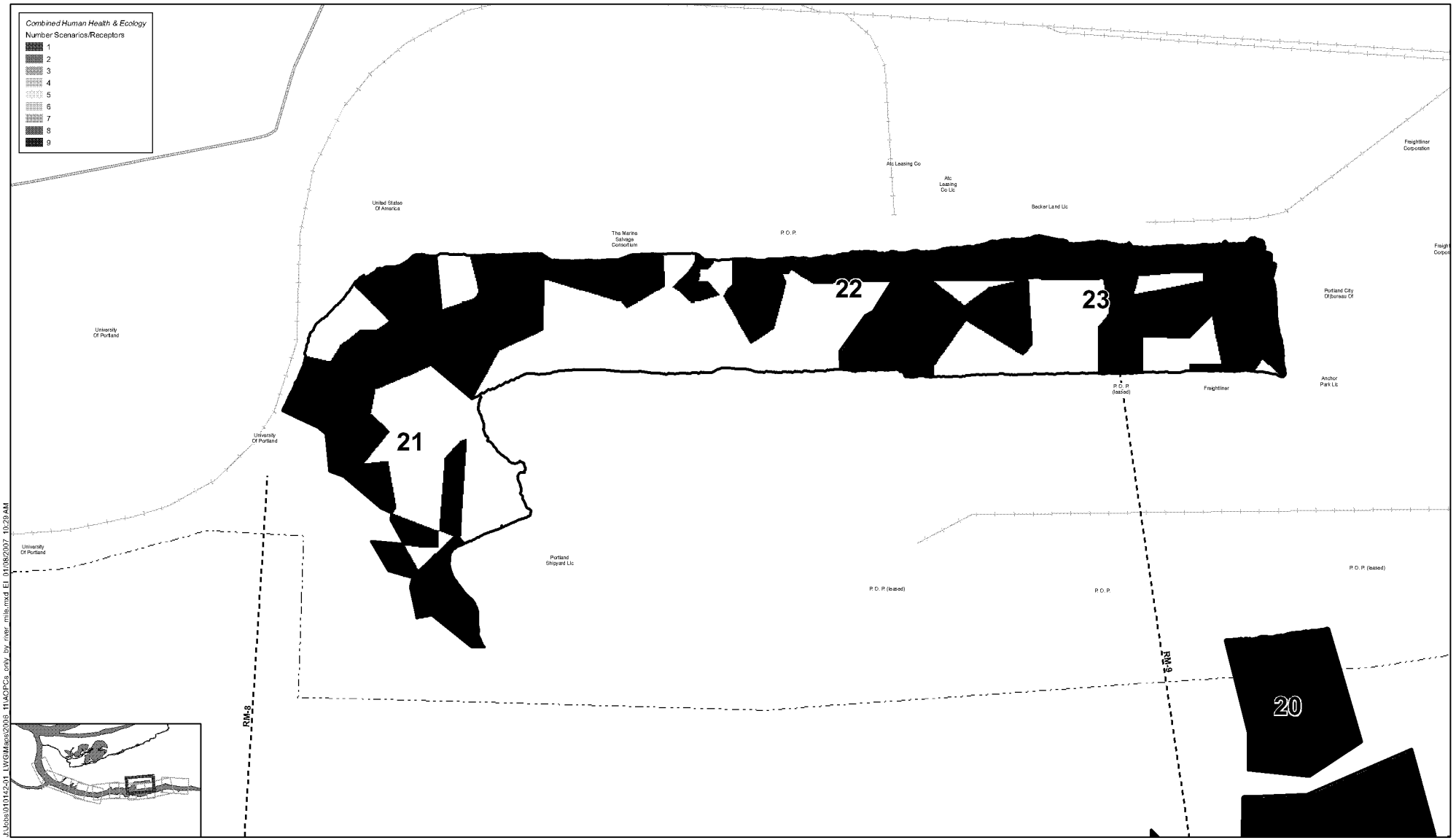
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-2g**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
River Mile 08 to 09

BZTO104(e)032484




J:\Jobs\010142-01 LWG\Maps\2006 I1\AOPCs_only_by_river_mile.mxd EI 01/08/2007 10:29 AM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

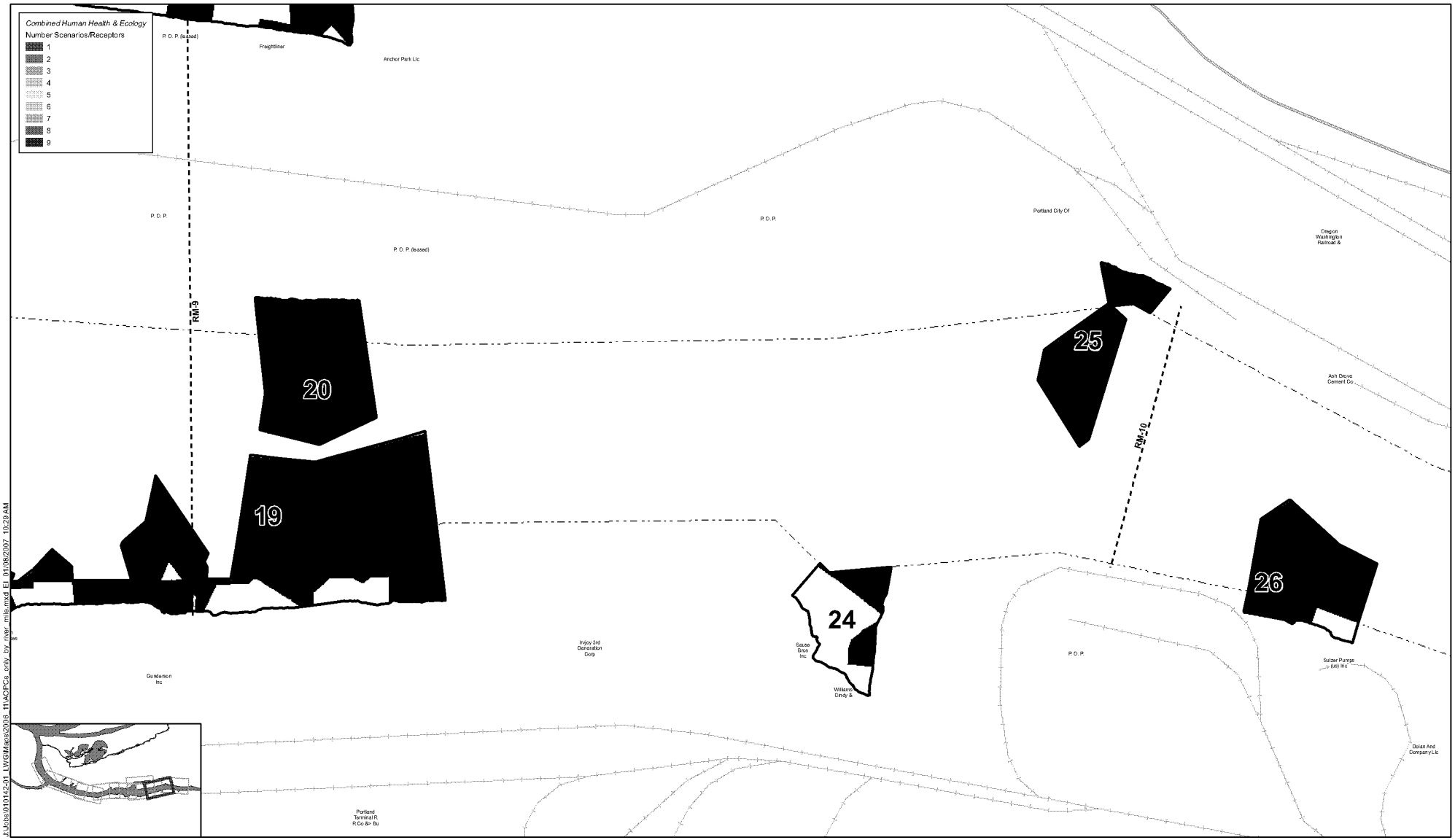
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-2h**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
River Mile 08 to 09 - Swan Is

BZTO104(e)032485




J:\Jobs\010142-01 LWG\Maps\2006 111AOPCs_only_by_river_mile.mxd EI 01/08/2007 10:29 AM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

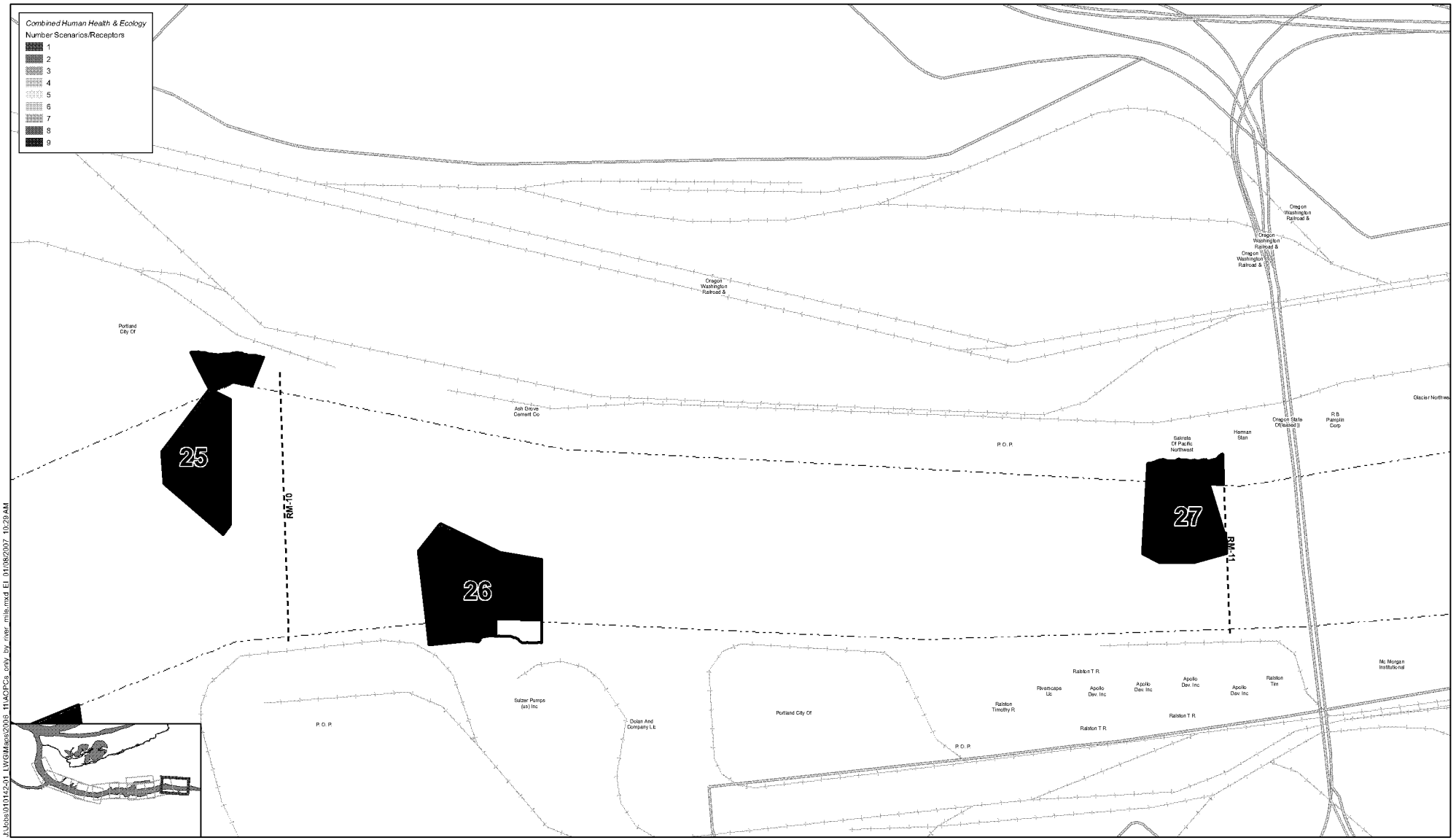
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-2i**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
River Mile 09 to 10

BZTO104(e)032486




J:\Jobs\010142-01 LWG\GIS\Maps\2006_11\AOPCs_only_by_river_mile.mxd El 01/08/2007 10:29 AM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

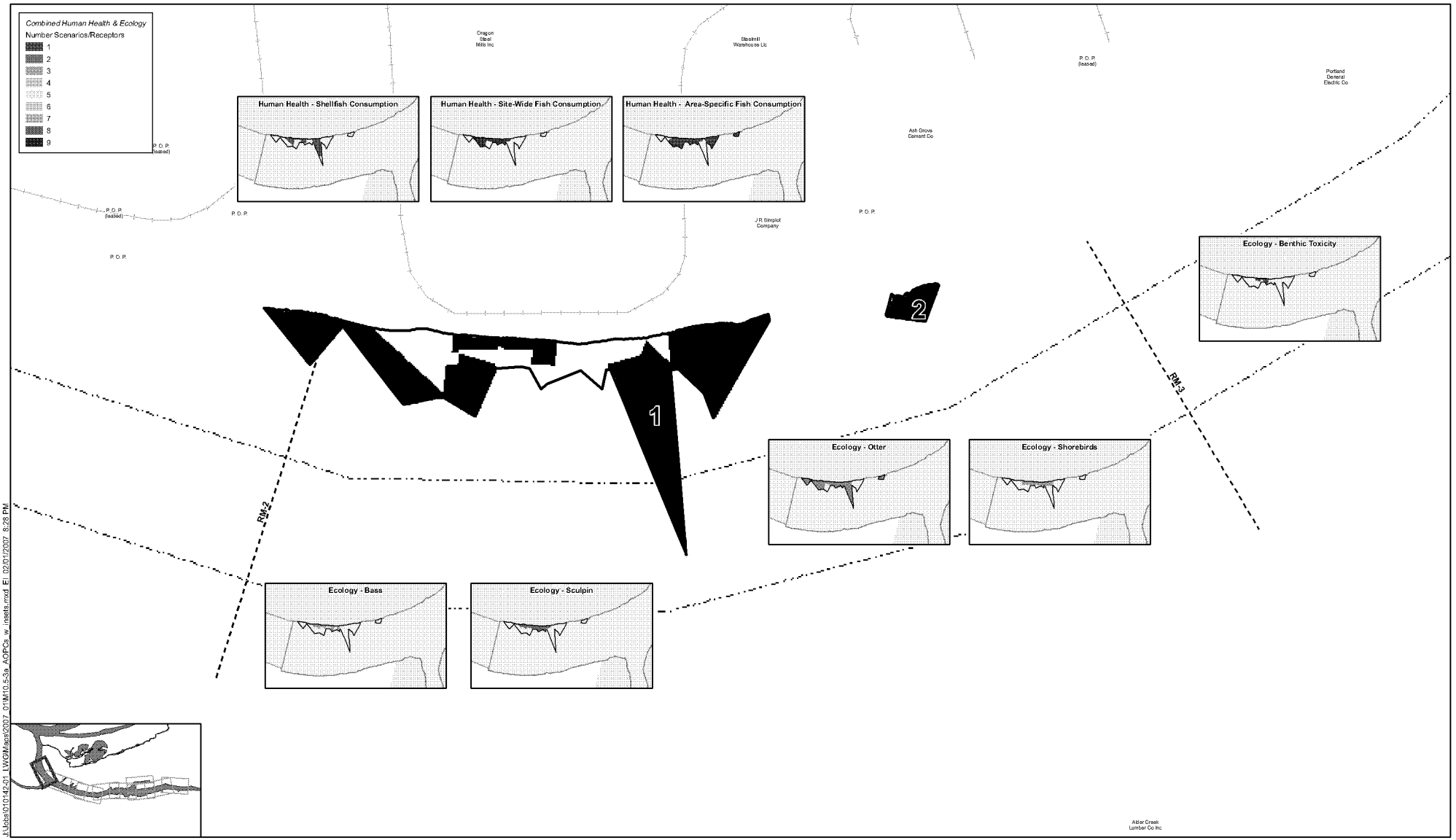
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-2j**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
River Mile 10 to 11

BZTO104(e)032487




ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

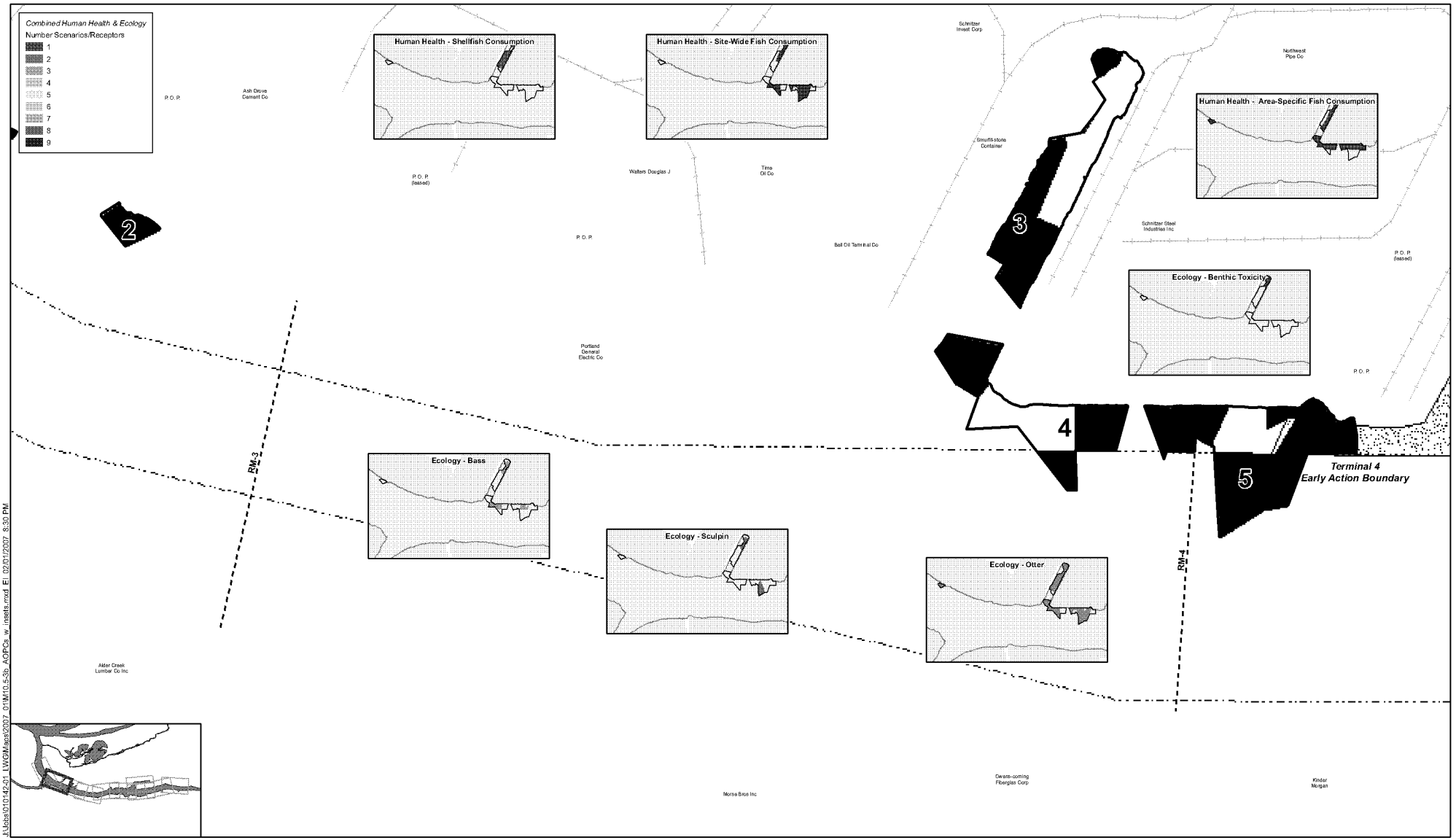
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- Beach Exposure
- Direct Exposure to In-Water Sediments
- Shellfish Consumption
- Site-Wide Fish Consumption
- Area-Specific Fish Consumption
- Bass Exposure
- Sculpin Exposure
- Otter Exposure
- Shorebird Exposure
- Benthic Toxicity
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-3a**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
With Individual Component Layers Shown
River Mile 02 to 03

BZTO104(e)032488




J:\Jobs\010142-01 LWG\Mxds\2007_01\M10.5-3b_AOPCs_w_insets.mxd EI 02/01/2007 8:30 PM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

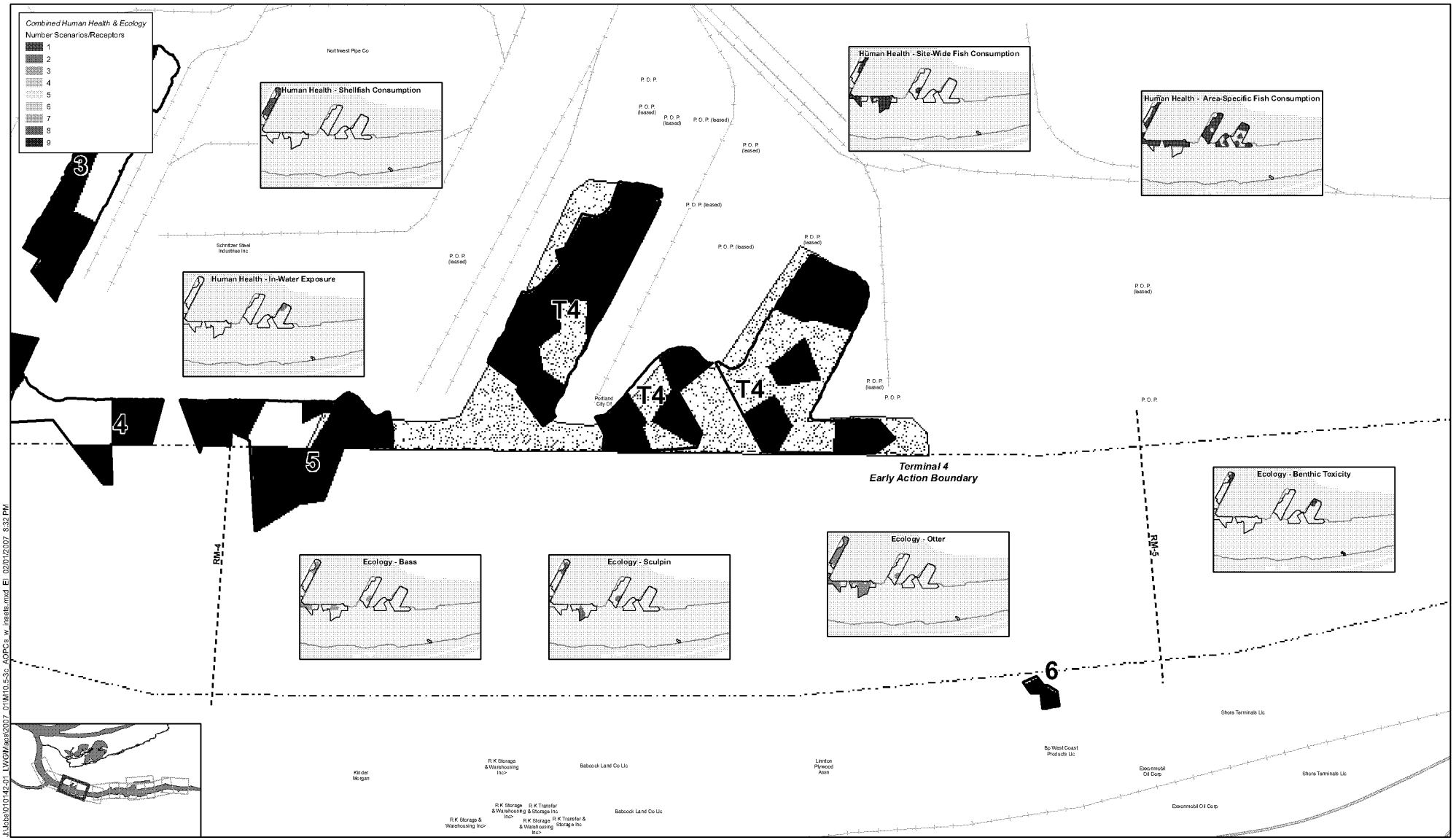
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- Beach Exposure
- Direct Exposure to In-Water Sediments
- Shellfish Consumption
- Site-Wide Fish Consumption
- Area-Specific Fish Consumption
- Bass Exposure
- Sculpin Exposure
- Otter Exposure
- Shorebird Exposure
- Benthic Toxicity
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-3b**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
With Individual Component Layers Shown
River Mile 03 to 04

BZTO104(e)032489




J:\Jobs\010142-01 LWG\Maps\2007_01\M10.5-3c_AOPCs_w_insets.mxd EI 02/01/2007 8:32 PM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

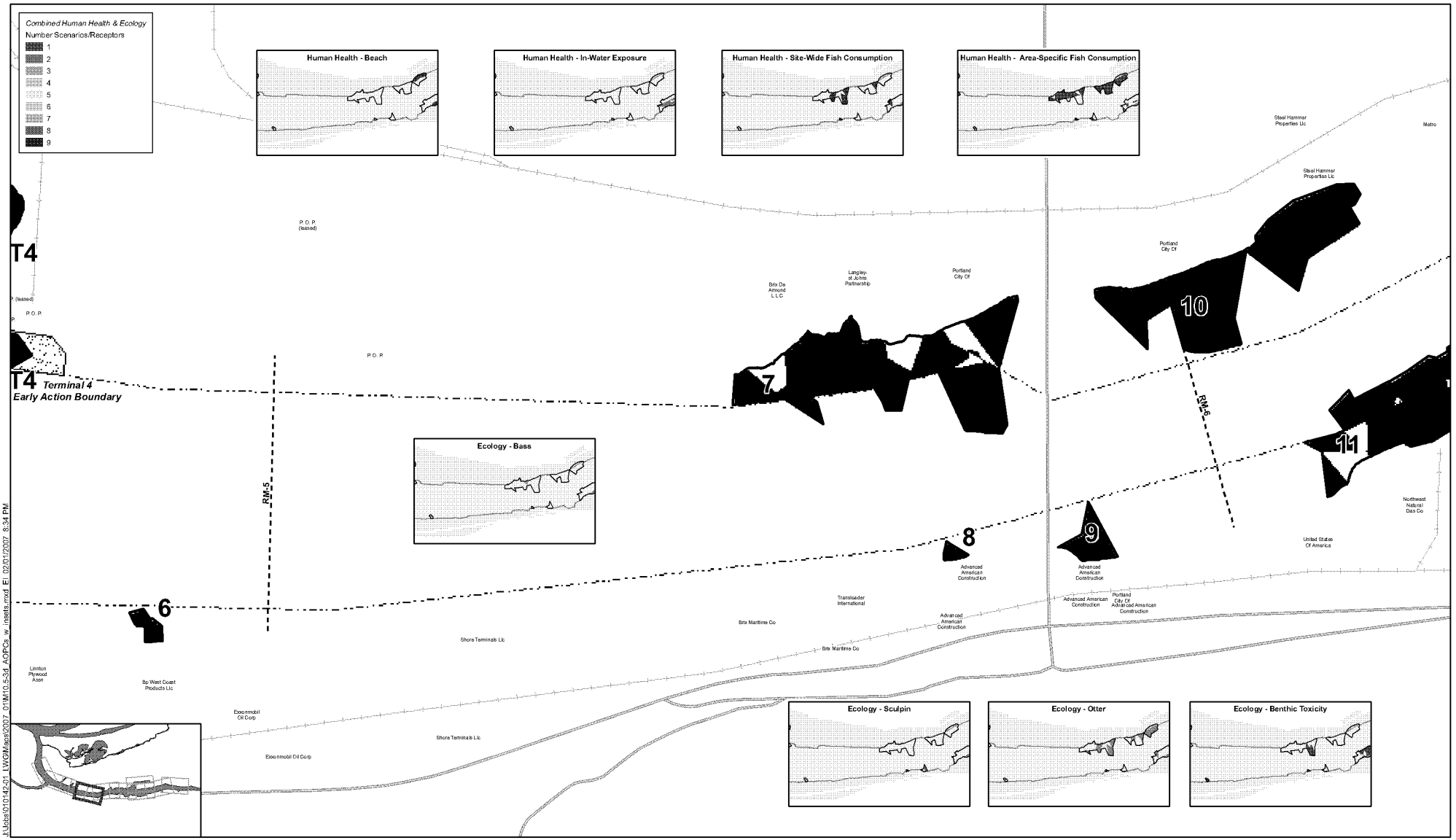
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- Beach Exposure
- Direct Exposure to In-Water Sediments
- Shellfish Consumption
- Site-Wide Fish Consumption
- Area-Specific Fish Consumption
- Bass Exposure
- Sculpin Exposure
- Otter Exposure
- Shorebird Exposure
- Benthic Toxicity
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-3c**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
With Individual Component Layers Shown
River Mile 04 to 05

BZTO104(e)032490




J:\Jobs\010142-01 LWG\Maps\2007_01\M10.5-3d_AOPCs_w_insets.mxd EI 02/01/2007 8:34 PM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

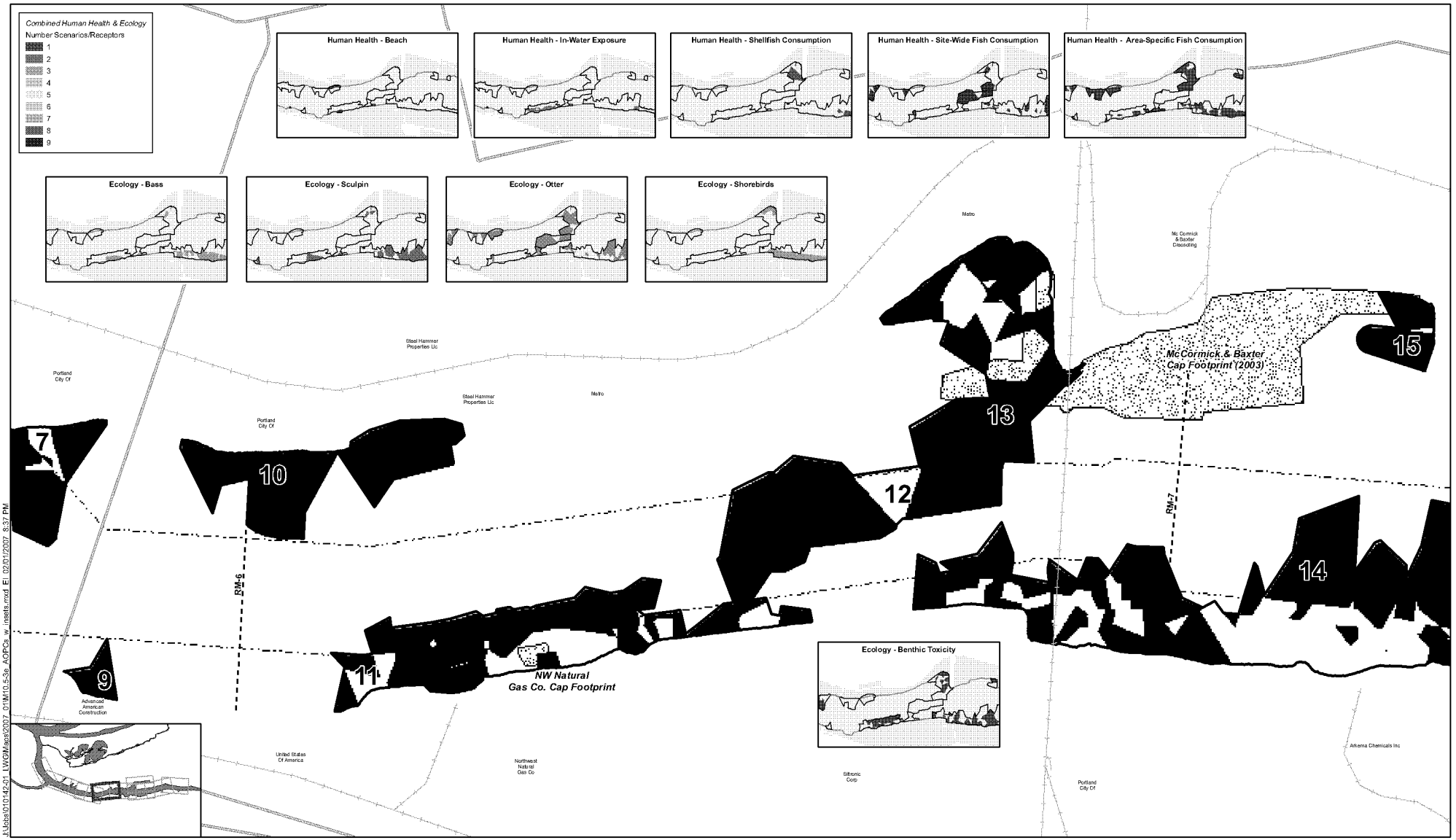
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- Beach Exposure
- Direct Exposure to In-Water Sediments
- Shellfish Consumption
- Site-Wide Fish Consumption
- Area-Specific Fish Consumption
- Bass Exposure
- Sculpin Exposure
- Otter Exposure
- Shorebird Exposure
- Benthic Toxicity
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-3d**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
With Individual Component Layers Shown
River Mile 05 to 06

BZTO104(e)032491




ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

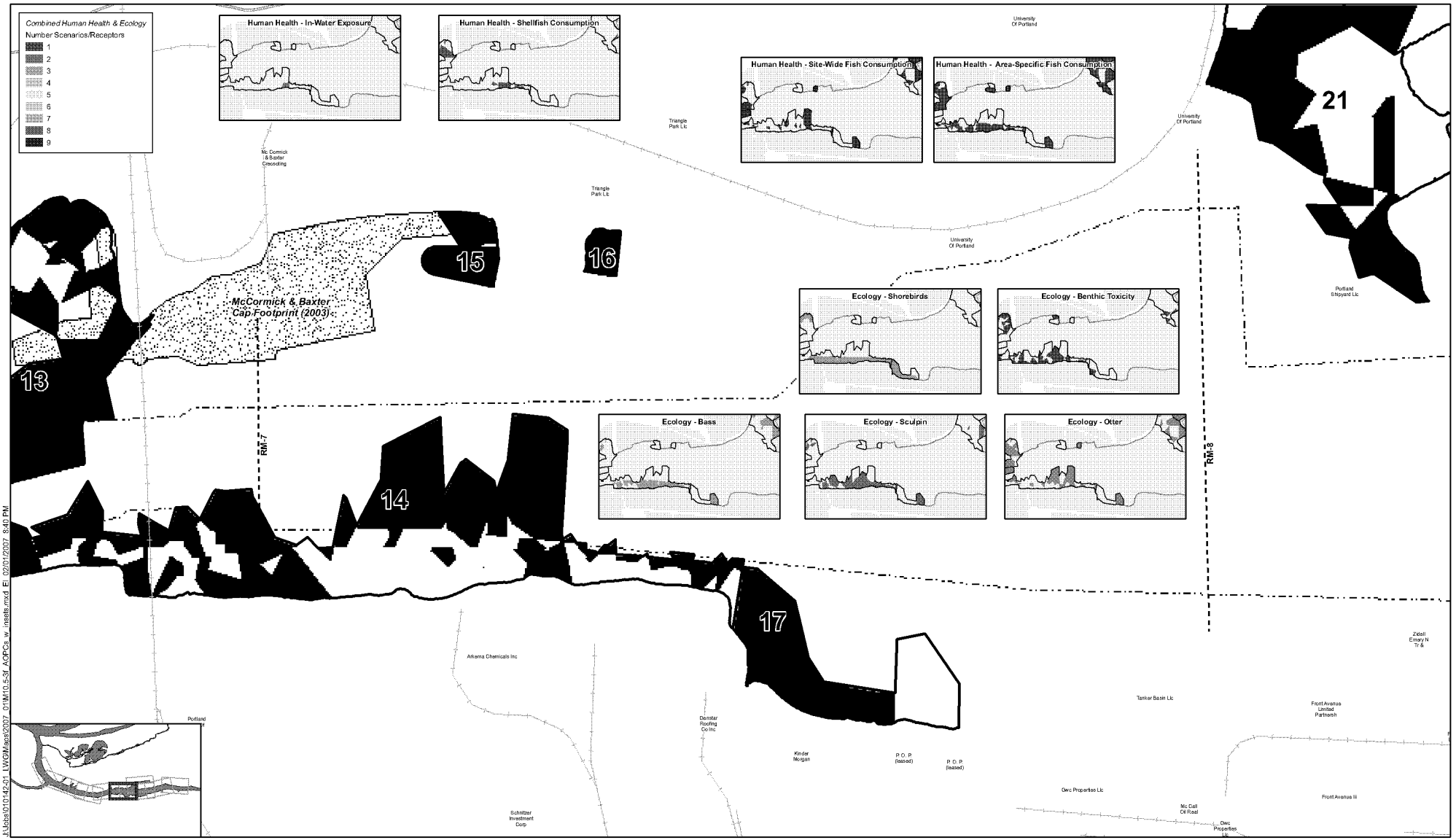
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- Beach Exposure
- Direct Exposure to In-Water Sediments
- Shellfish Consumption
- Site-Wide Fish Consumption
- Area-Specific Fish Consumption
- Bass Exposure
- Sculpin Exposure
- Otter Exposure
- Shorebird Exposure
- Benthic Toxicity
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-3e**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
With Individual Component Layers Shown
River Mile 06 to 07

BZTO104(e)032492




ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

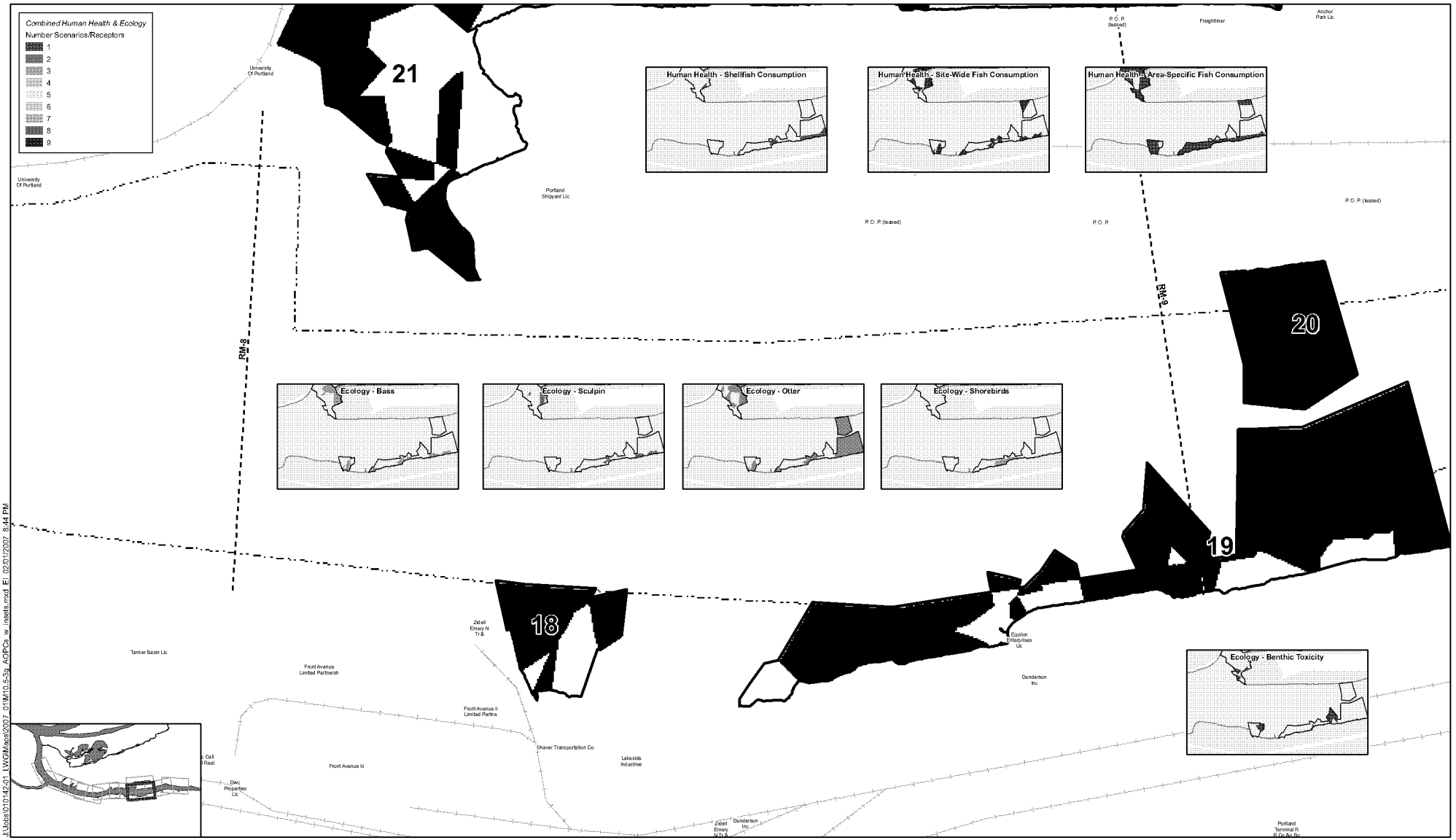
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- Beach Exposure
- Direct Exposure to In-Water Sediments
- Shellfish Consumption
- Site-Wide Fish Consumption
- Area-Specific Fish Consumption
- Bass Exposure
- Sculpin Exposure
- Otter Exposure
- Shorebird Exposure
- Benthic Toxicity
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-3f**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
With Individual Component Layers Shown
River Mile 07 to 08

BZTO104(e)032493




J:\Jobs\010142-01 LWG\Maps\2007_01\M10.5-3g_AOPCs_w_insets.mxd EI 02/01/2007 8:44 PM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

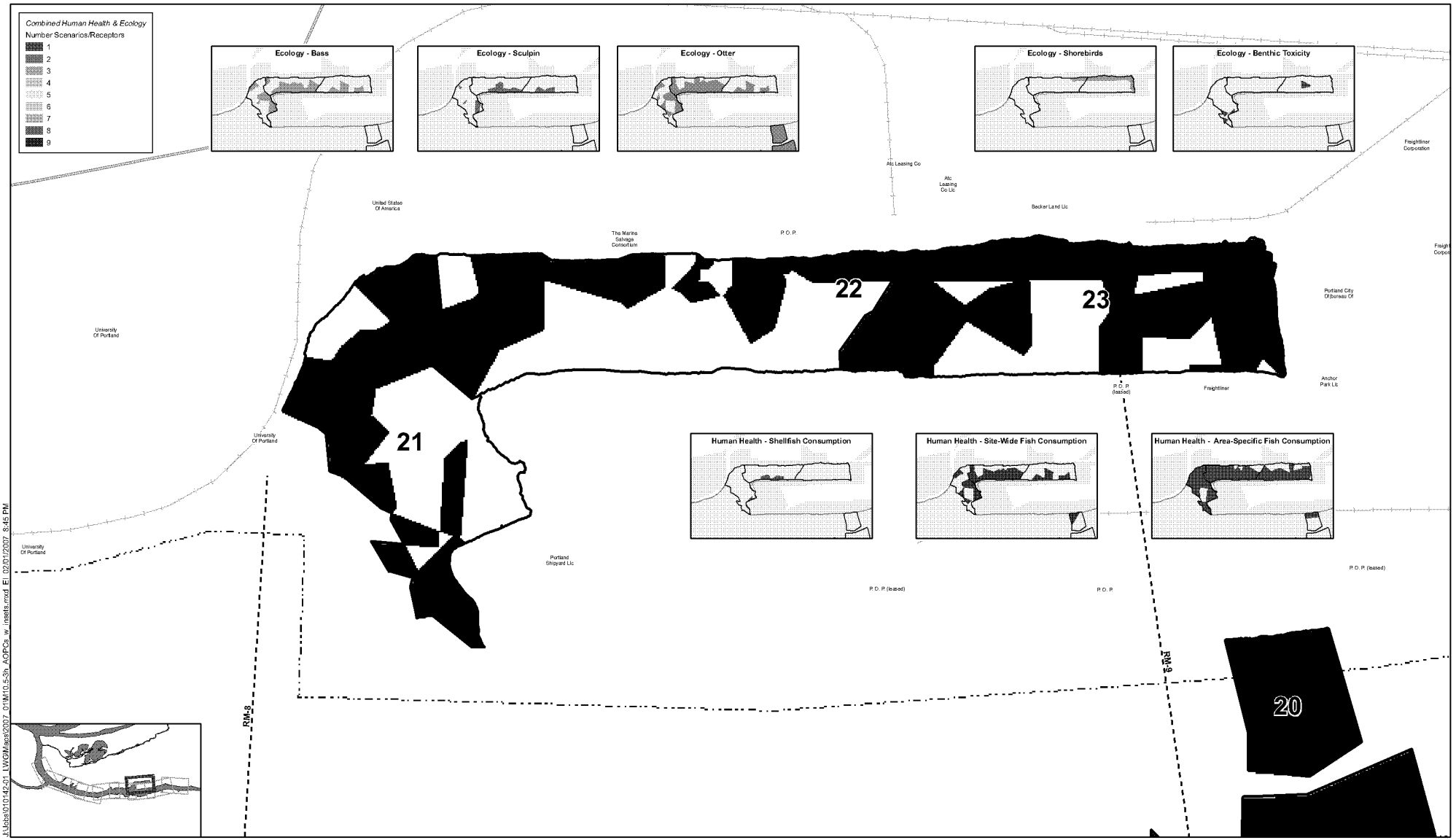
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- Beach Exposure
- Direct Exposure to In-Water Sediments
- Shellfish Consumption
- Site-Wide Fish Consumption
- Area-Specific Fish Consumption
- Bass Exposure
- Sculpin Exposure
- Otter Exposure
- Shorebird Exposure
- Benthic Toxicity
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-3g**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Combined Initial Areas of Potential Concern**
**With Individual Component Layers Shown**
**River Mile 08 to 09**

BZTO104(e)032494




J:\Jobs\010142-01 LWG\Mxd\2007_01\M10.5-3h AOPCs_w_insets.mxd EI 02/01/2007 8:45 PM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

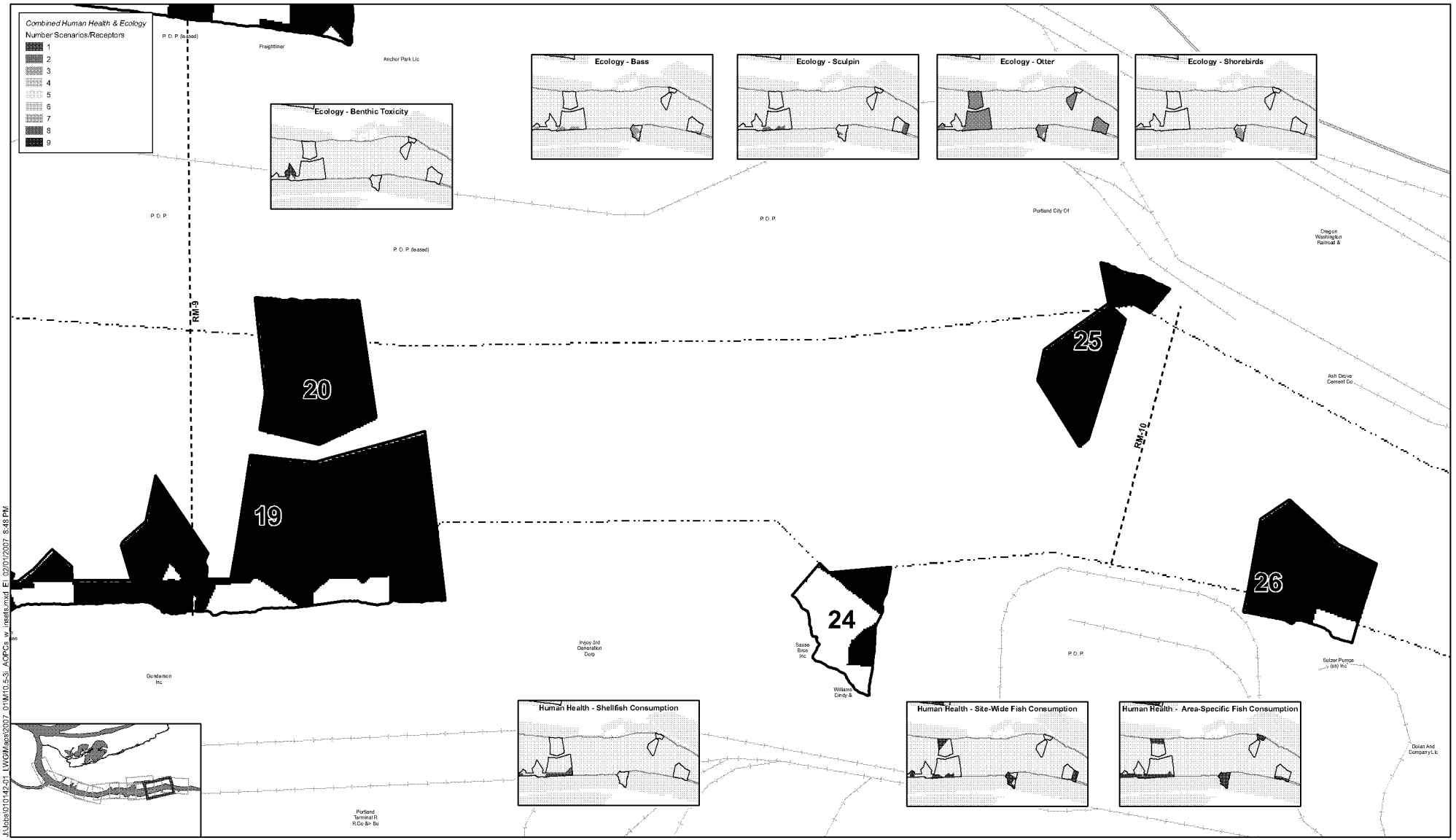
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- Beach Exposure
- Direct Exposure to In-Water Sediments
- Shellfish Consumption
- Site-Wide Fish Consumption
- Area-Specific Fish Consumption
- Bass Exposure
- Sculpin Exposure
- Otter Exposure
- Shorebird Exposure
- Benthic Toxicity
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-3h**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
With Individual Component Layers Shown
River Mile 08 to 09 - Swan Is.

BZTO104(e)032495




ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

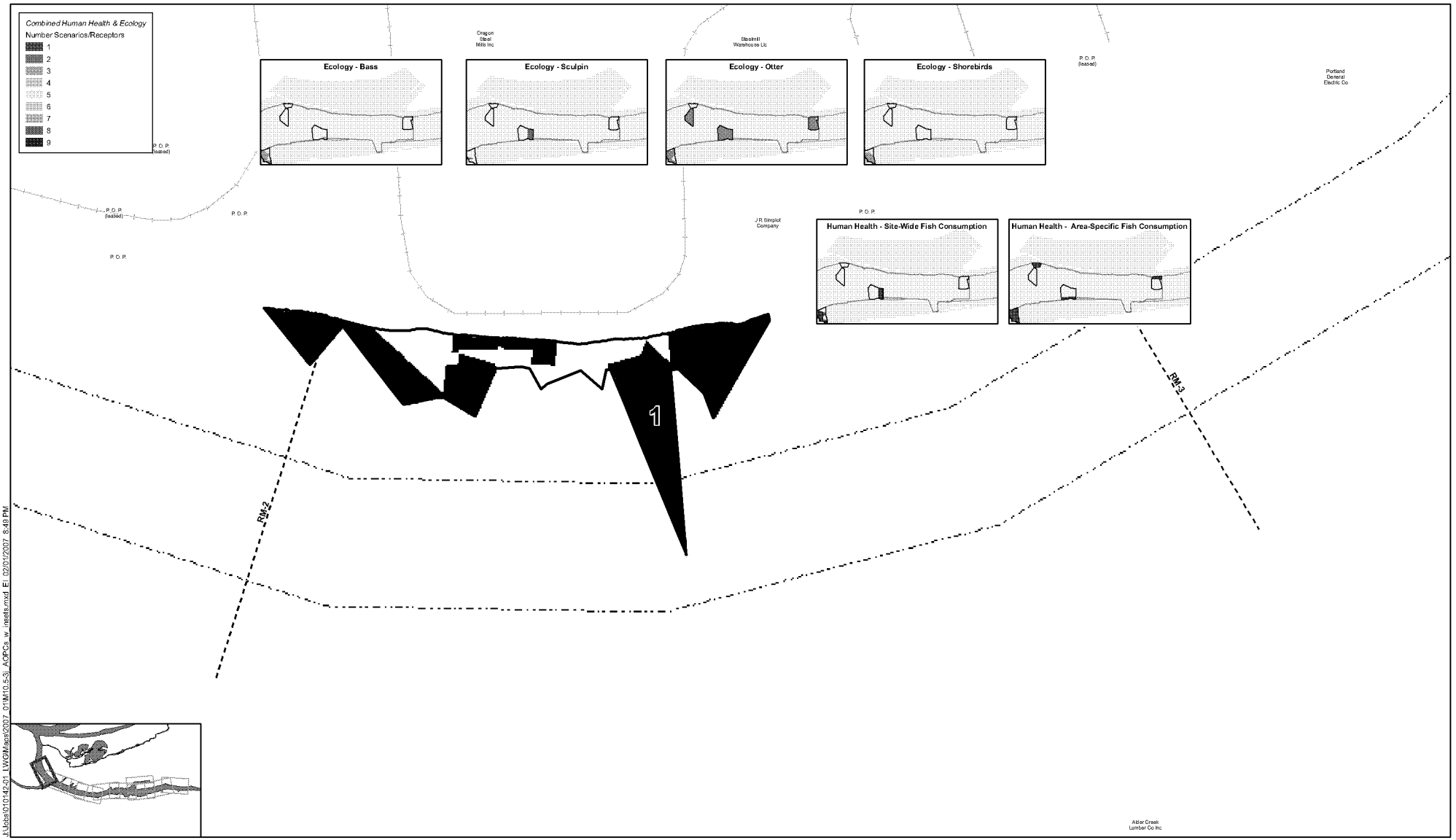
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- Beach Exposure
- Direct Exposure to In-Water Sediments
- Shellfish Consumption
- Site-Wide Fish Consumption
- Area-Specific Fish Consumption
- Bass Exposure
- Sculpin Exposure
- Otter Exposure
- Shorebird Exposure
- Benthic Toxicity
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-3i**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
With Individual Component Layers Shown
River Mile 09 to 10

BZTO104(e)032496




J:\Jobs\010142-01 LWG\Mxd\2007_01\M10.5-3j_AOPCs_w_insets.mxd EI 02/01/2007 8:48 PM

ANCHOR ENVIRONMENTAL L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

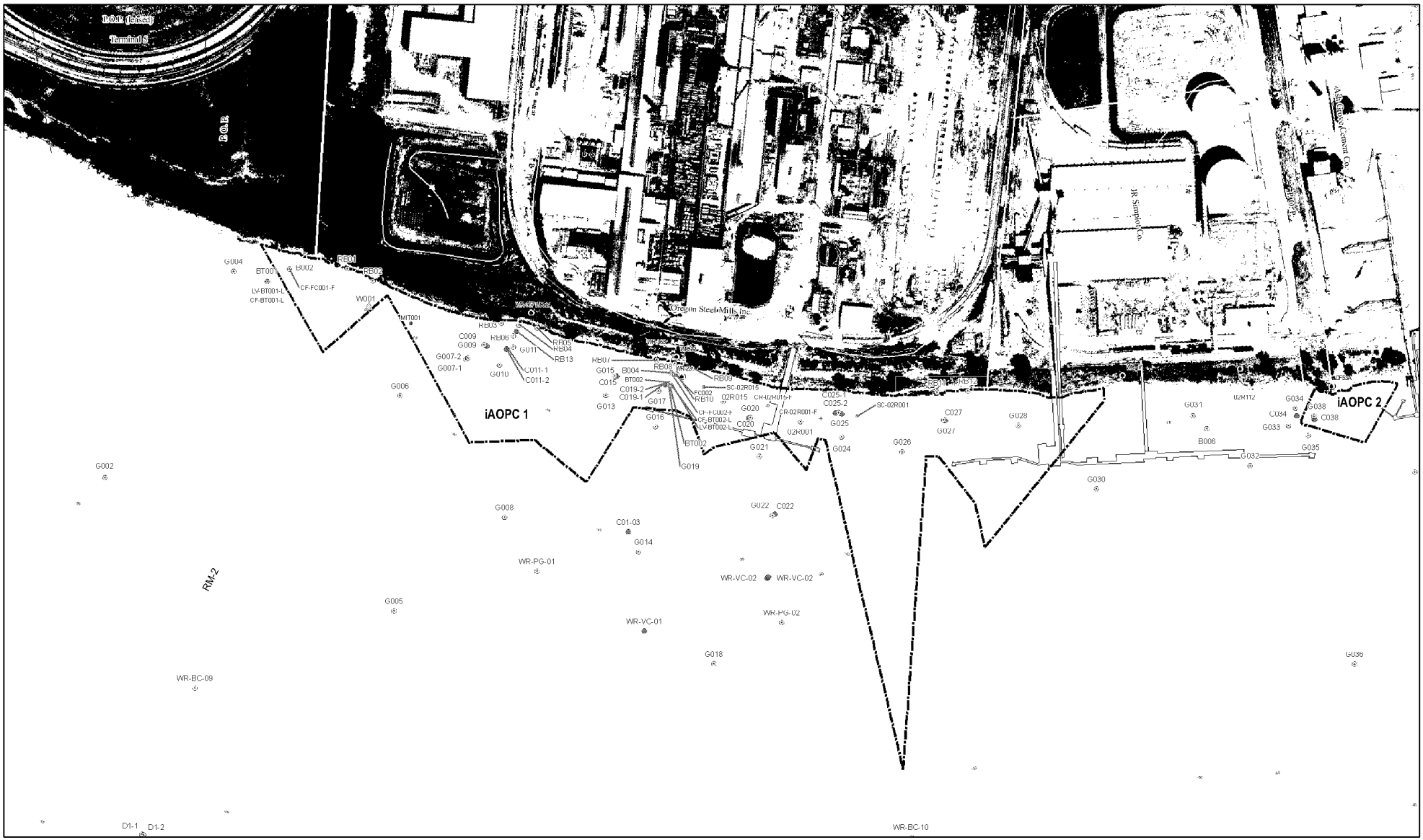
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- Beach Exposure
- Direct Exposure to In-Water Sediments
- Shellfish Consumption
- Site-Wide Fish Consumption
- Area-Specific Fish Consumption
- Bass Exposure
- Sculpin Exposure
- Otter Exposure
- Shorebird Exposure
- Benthic Toxicity
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 10.5-3j**
Portland Harbor RI/FS
Comprehensive Round 2 Report
Combined Initial Areas of Potential Concern
With Individual Component Layers Shown
River Mile 10 to 11

BZTO104(e)032497




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

FEATURE SOURCES
Transportation, Property boundaries: Metro RLIS.

Channel & River miles: US Army Corps of Engineers.

Bathymetric Information: David Evans and Associates, Inc.

RLIS Aerial Images: February 2005 'leaf off' flight (6" pixel).

iAOPCs
River Mile
Navigation Channel
River 13ft NAVD88

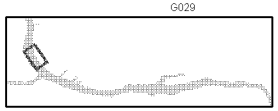
Docks and Structures
Capping
Dredging (Post 1997)

**Bathymetric Change**
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening

Clam, CF
Mudworm, LV
Crayfish, CR
Sculpin, SC
Multiplate Invertebrates, MI

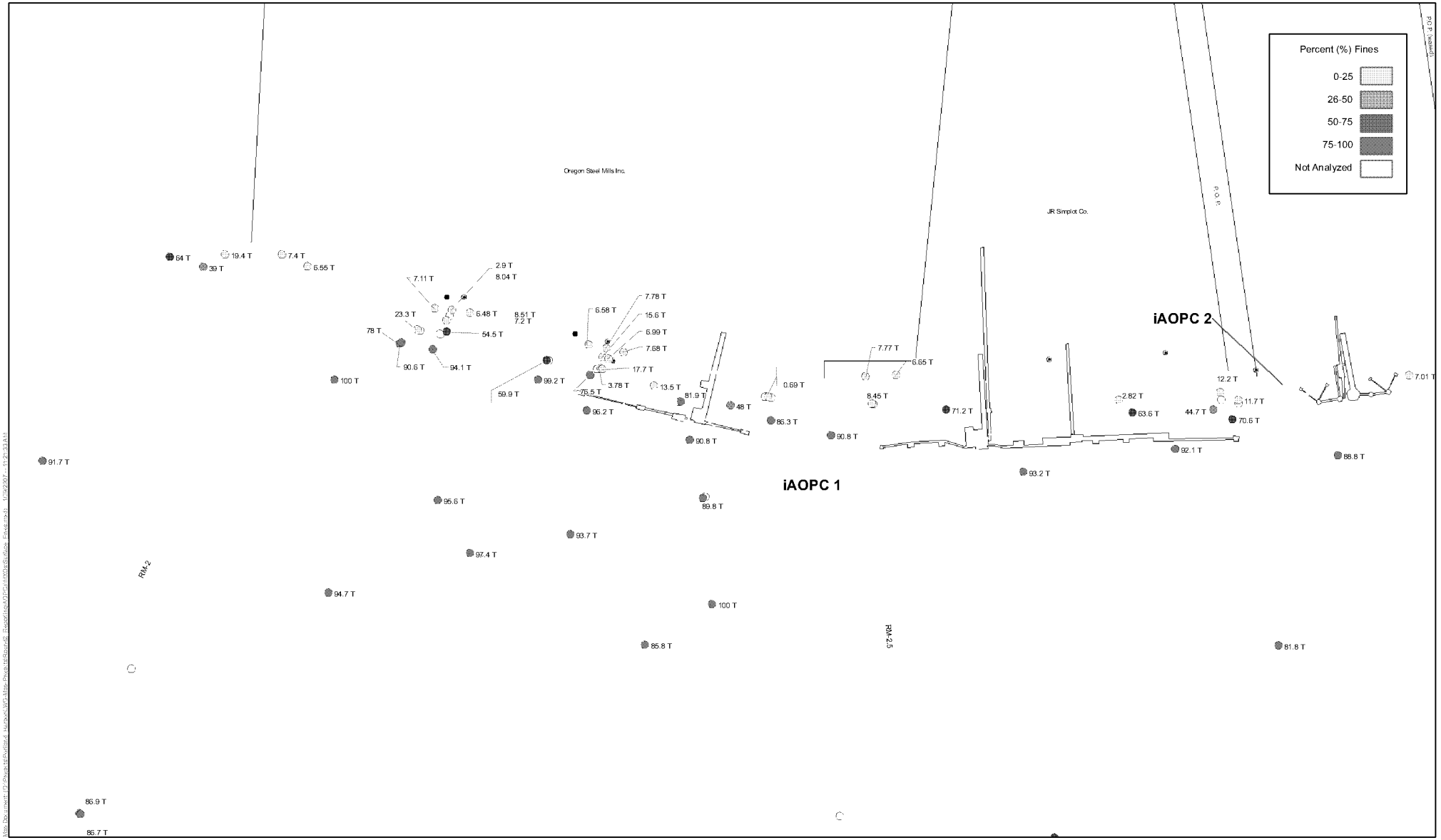
Surface Water
Surface Sediment
Subsurface Sediment
TZW Sample Location (+38cm BML)

Active Outfalls
Unknown Outfalls
Abandoned Outfalls



**Map 11.3.1-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**iAOPC Site Overview**
**iAOPC 1,2**

BZTO104(e)032498




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

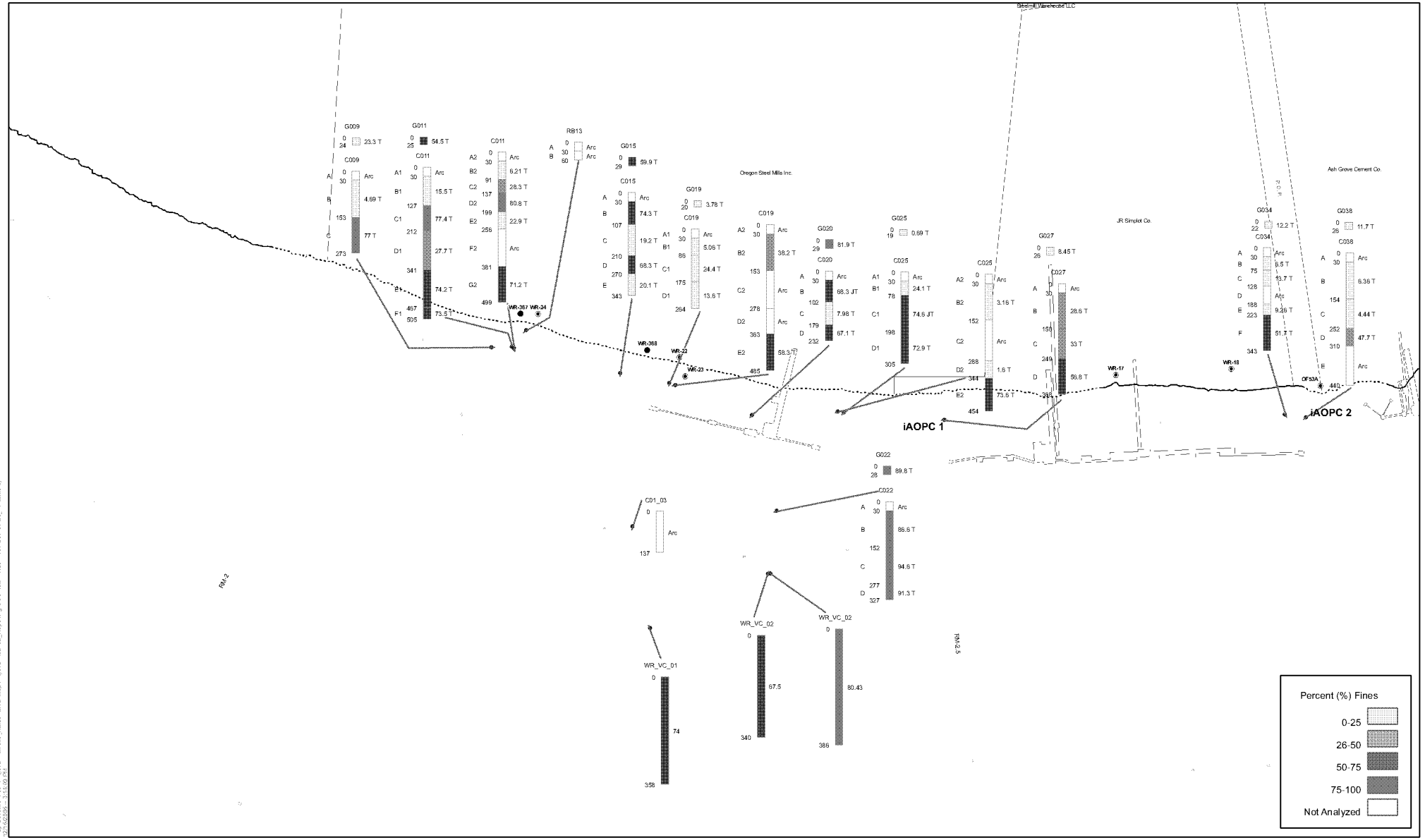
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.1-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Texture**
**Percent (%) Fines**
**iAOPC 1,2**

BZTO104(e)032499




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

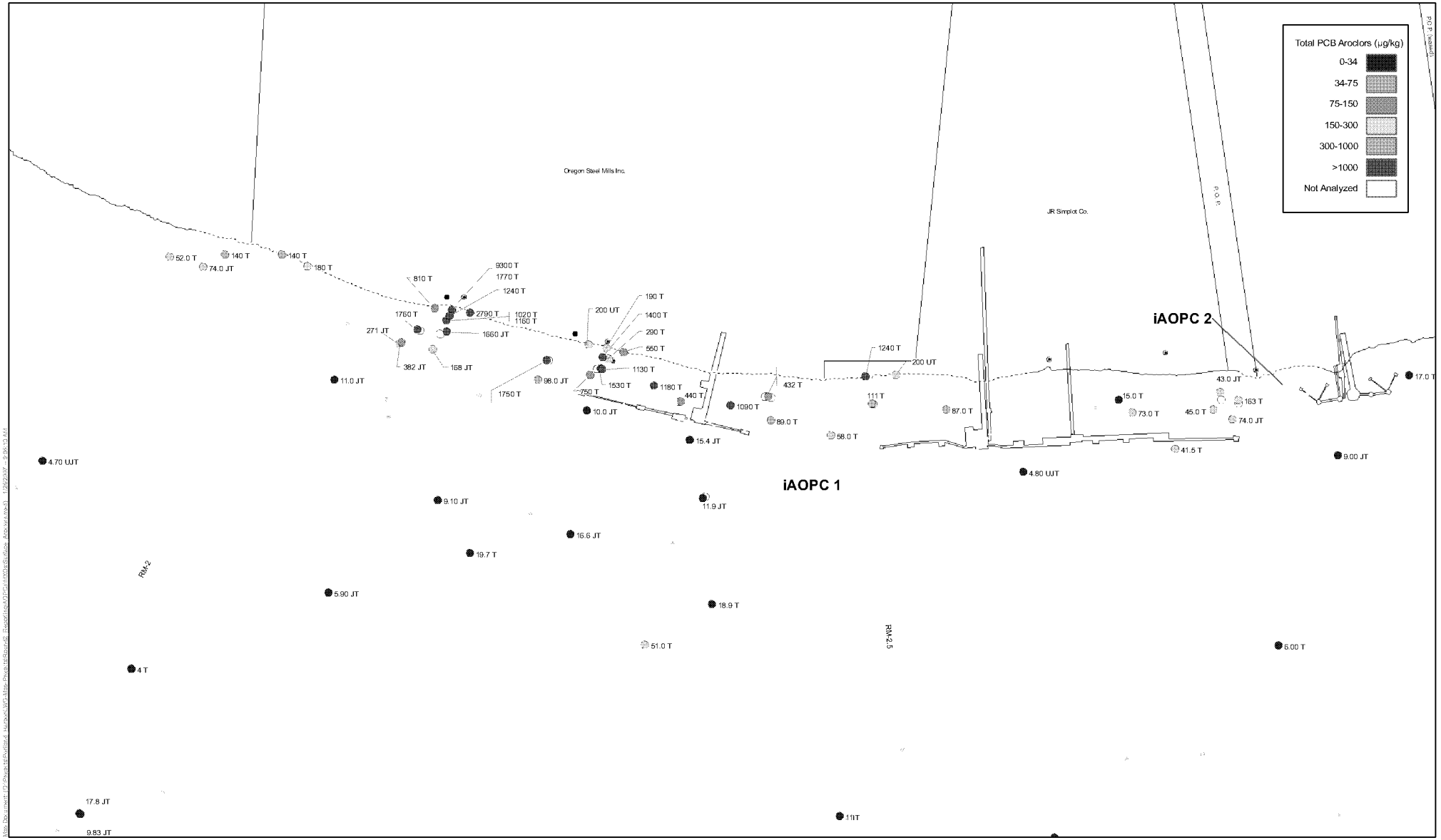
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.1- 2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 1, 2**

BZTO104(e)032500




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

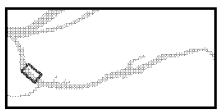
0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evens and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

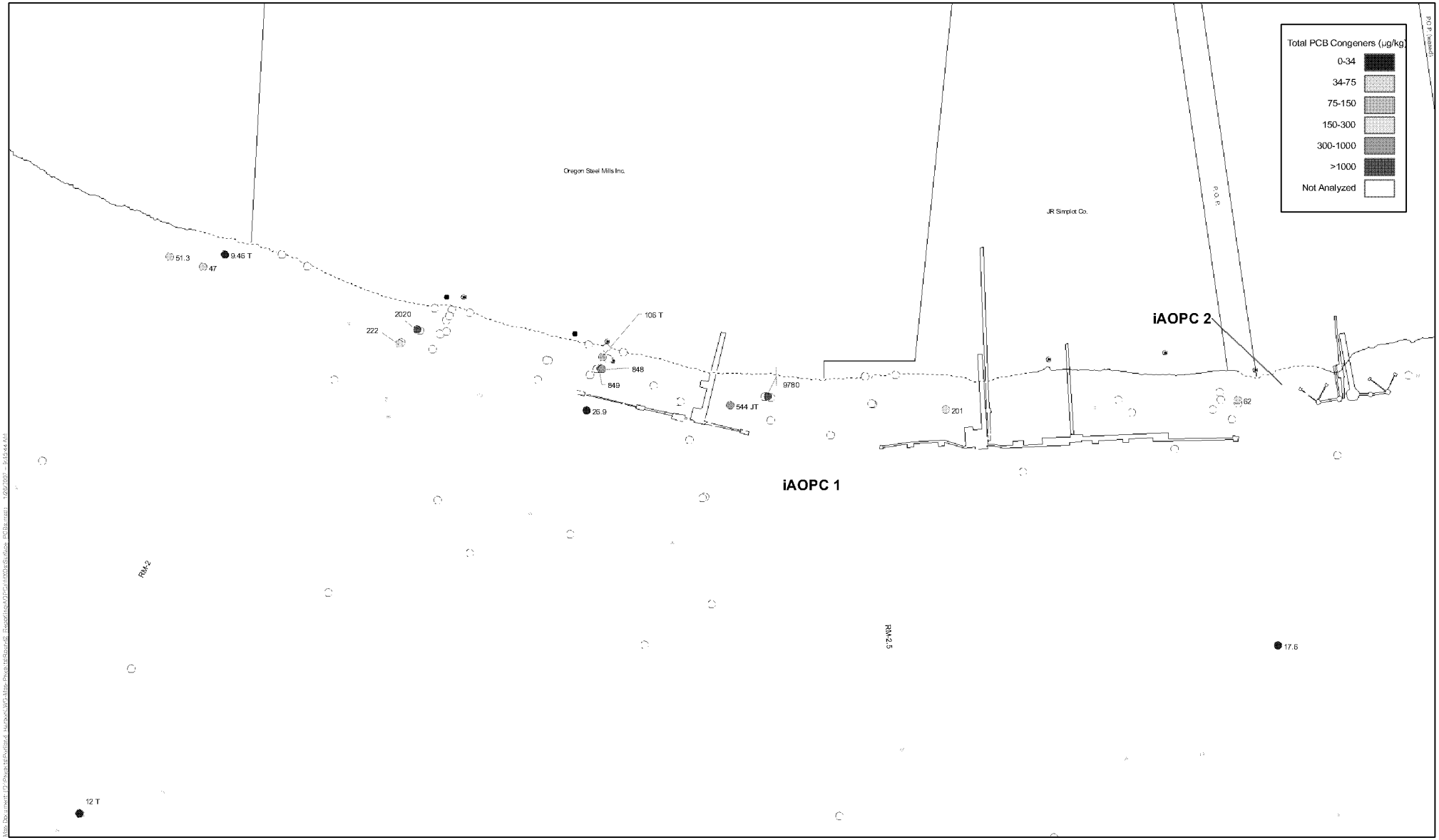
**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped



**Map 11.3.1-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 1,2**

BZTO104(e)032501




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

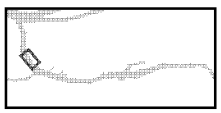
0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

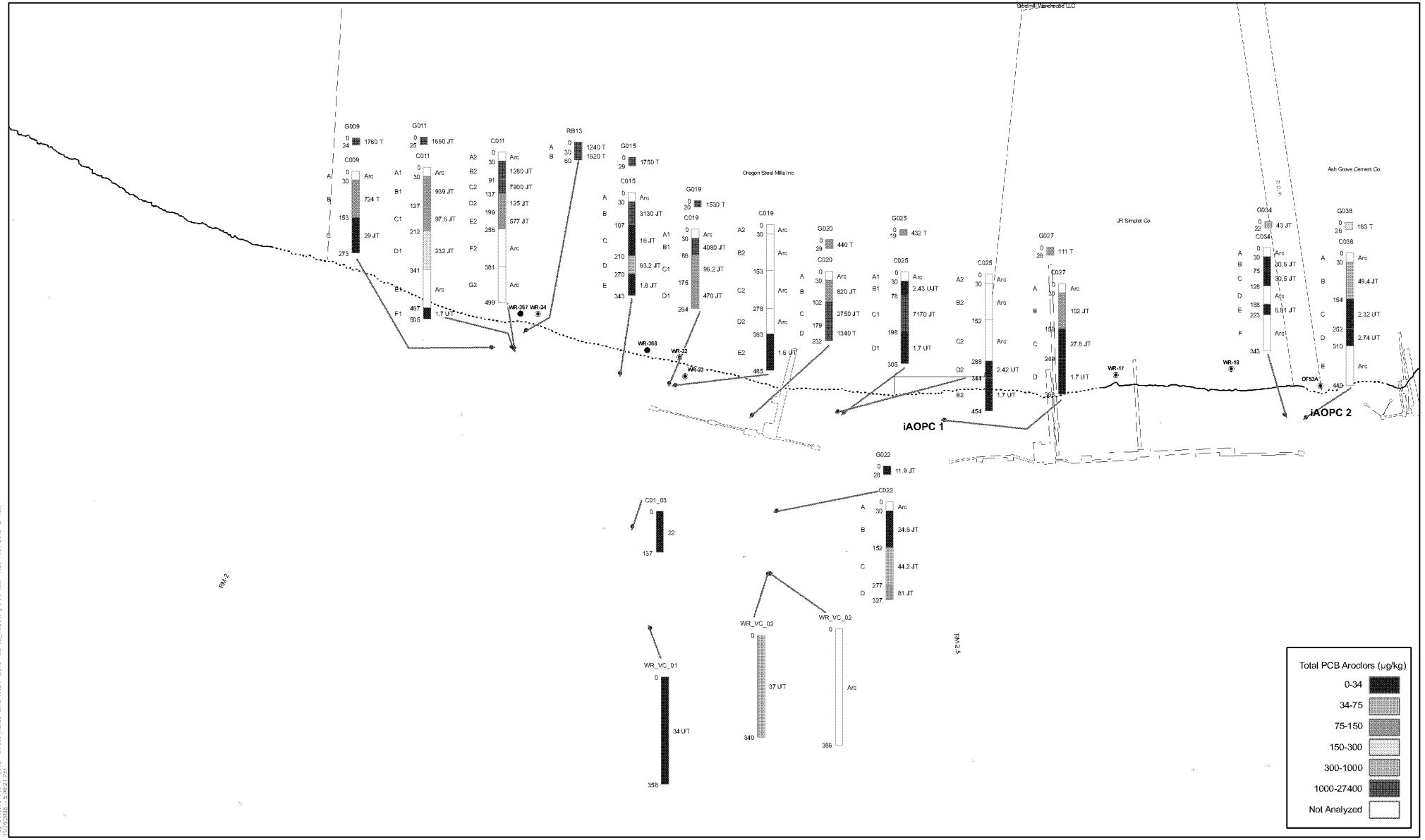
**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped



**Map 11.3.1-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 1,2**

BZTO104(e)032502




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

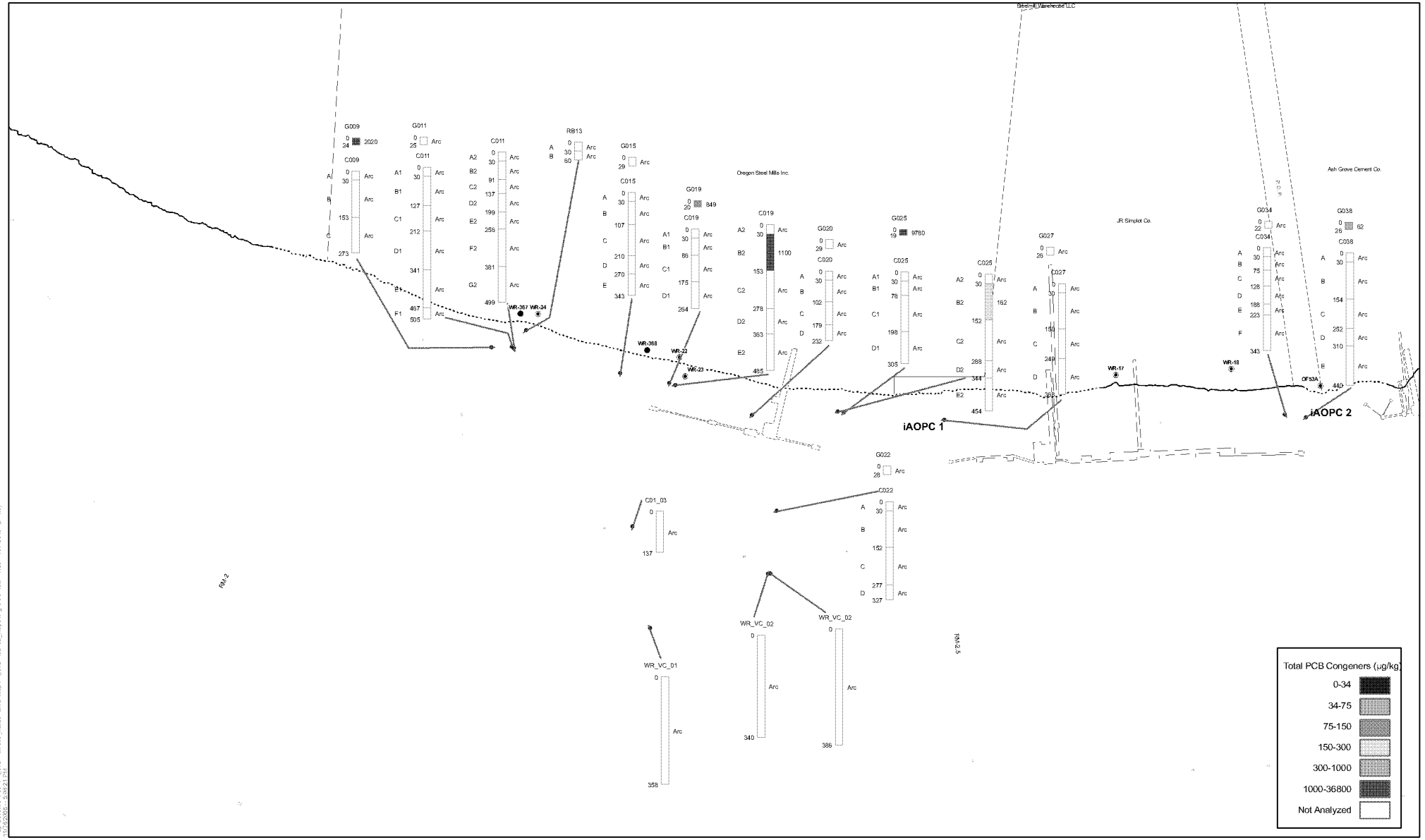
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -.22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.1-5**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 1, 2**

BZTO104(e)032503




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

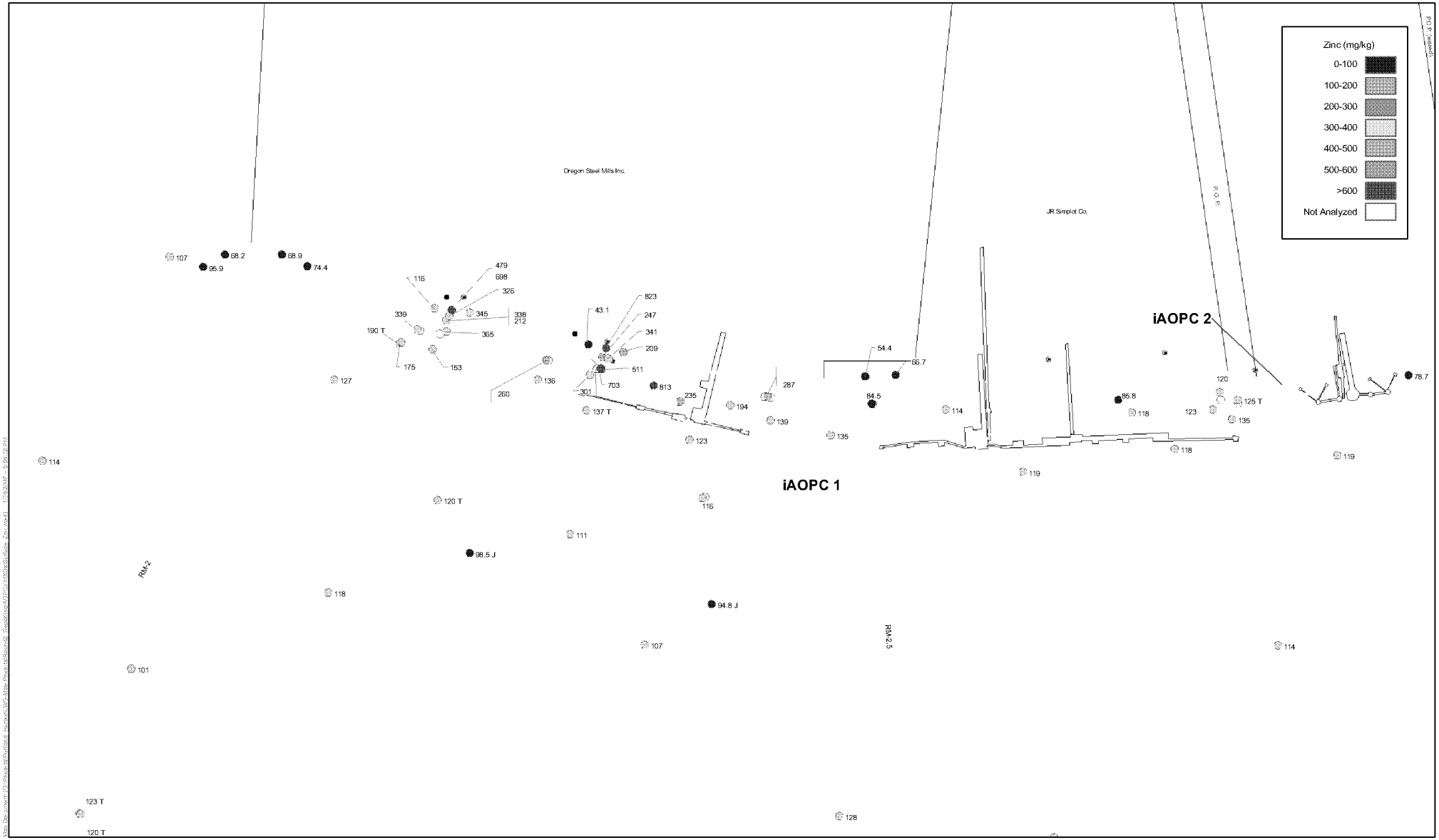
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.1-6**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 1, 2**

BZTO104(e)032504



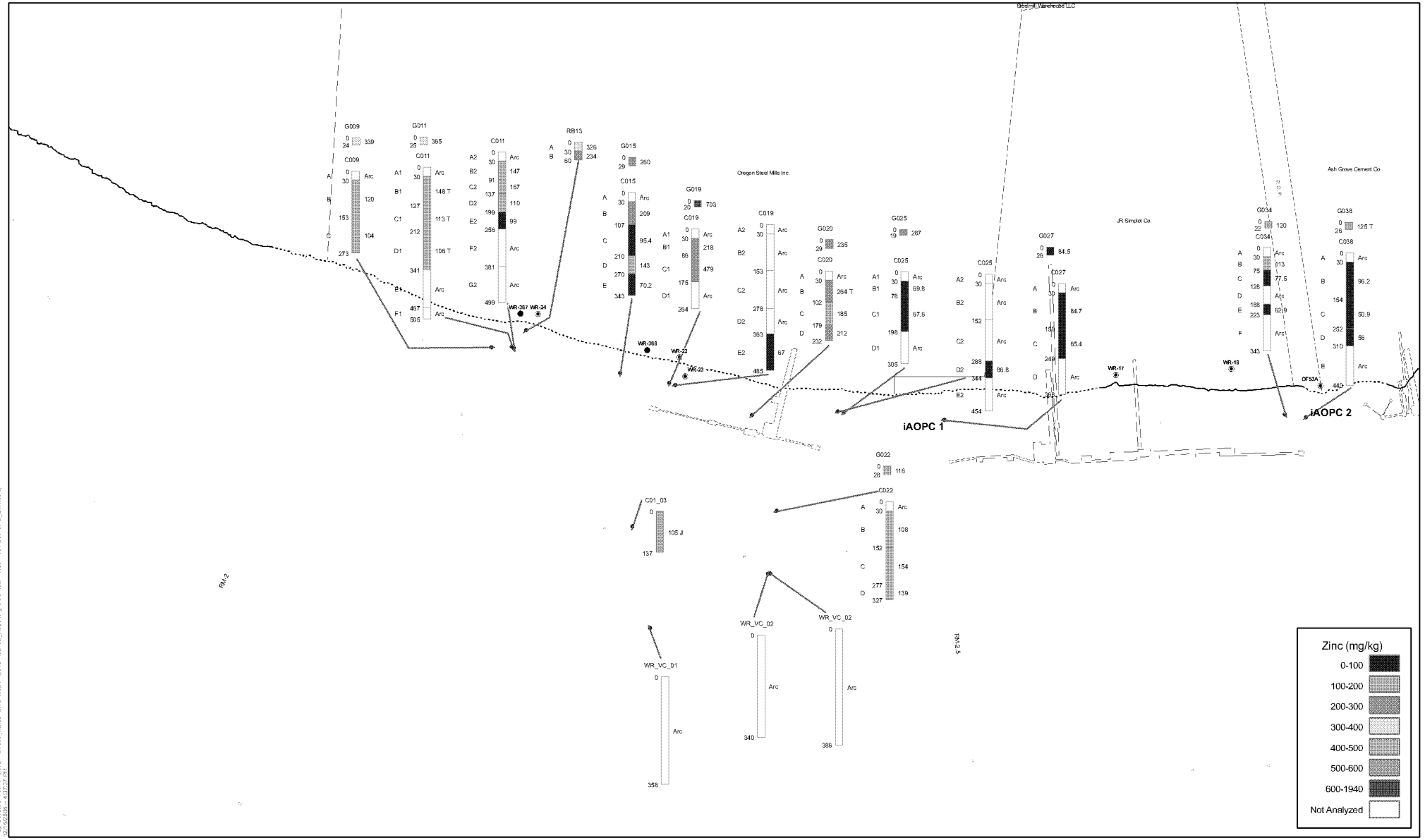

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

**Map 11.3.1-7**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Zinc (mg/kg)**
**iAOPC 1,2**

BZTO104(e)032505




integral consulting inc.

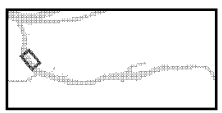
LWG Lower Willamette Group

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

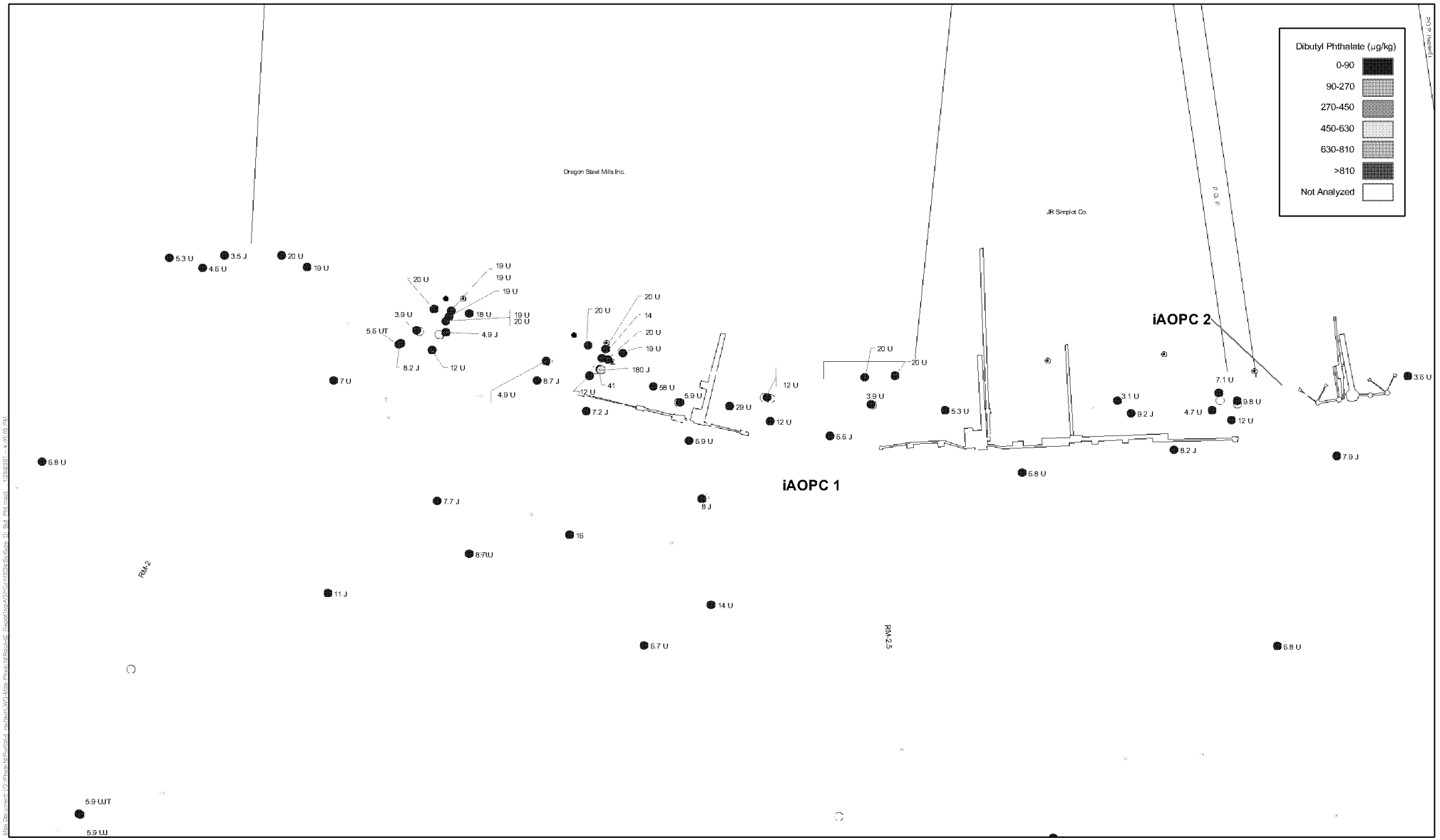
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)



**Map 11.3.1-8**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Zinc (mg/kg)**
**iAOPC 1, 2**

BZTO104(e)032506




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

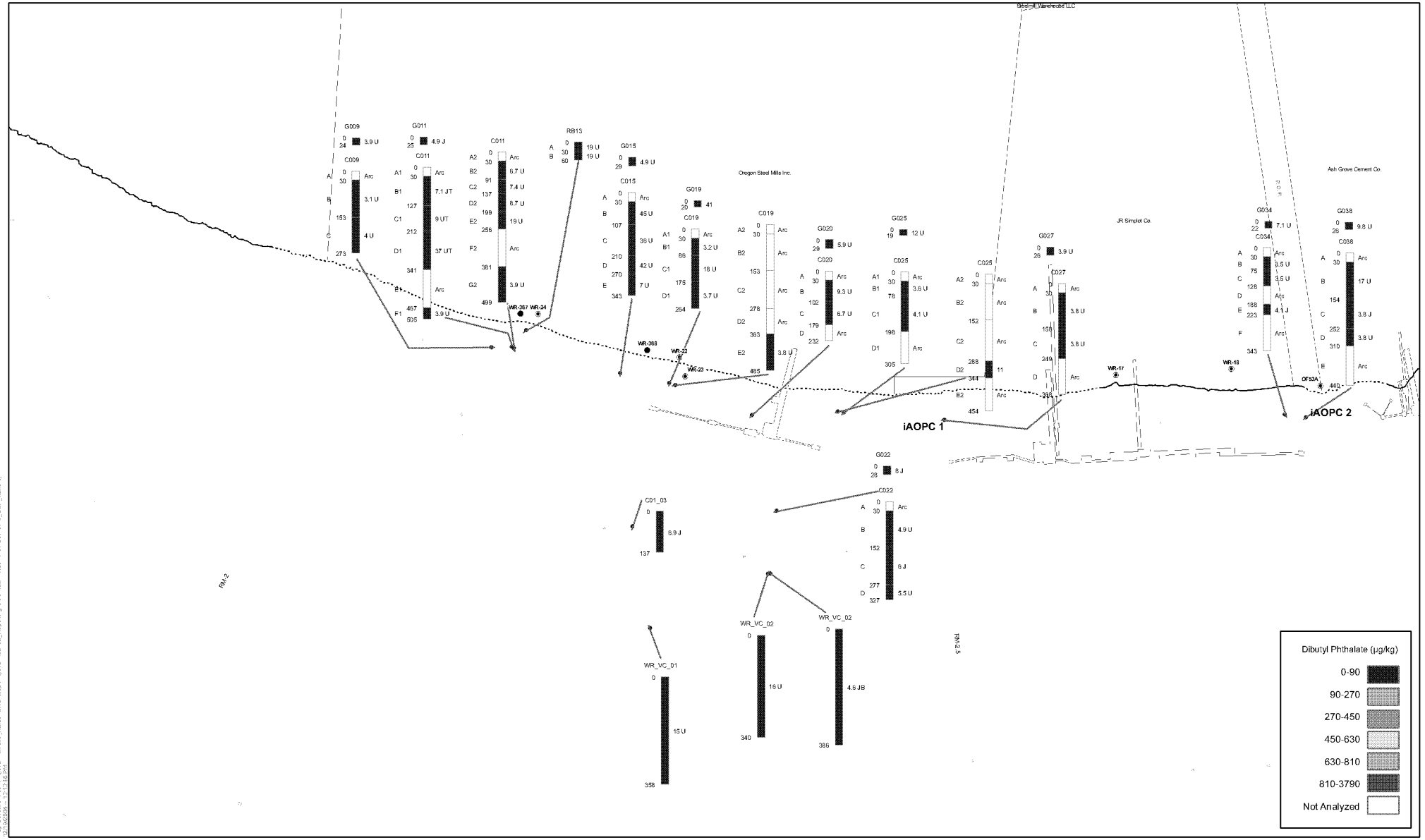
Active Outfalls
Unknown Outfalls
Abandoned Outfalls
River 13ft NAVD88
Docks and Structures
Navigation Channel

Bathymetric Change
-2.2 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening
5 foot Contours (NAVD88)

AOPC Boundary
Capping footprint
Dredging (Post 1997)
Dredged or Capped

**Map 11.3.1-9**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Dibutyl Phthalate (µg/kg)**
**iAOPC 1,2**

BZTO104(e)032507




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.1- 10**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Dibutyl Phthalate (µg/kg)**
**iAOPC 1, 2**

BZTO104(e)032508

integral consulting inc.

0 100 200 300 Feet

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES
Transportation, Property boundaries: Metro RLIS.

Channel & River miles: US Army Corps of Engineers.

Bathymetric Information: David Evans and Associates, Inc.

RLIS Aerial Images: February 2005 'leaf off' flight (6" pixel).

IAOPCs
River Mile
Navigation Channel
River 13ft NAVD88

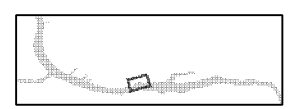
Docks and Structures
Capping
Dredging (Post 1997)

**Bathymetric Change**
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening

Clam, CF
Mudworm, LV
Crayfish, CR
Sculpin, SC
Multiplate Invertebrates, MI

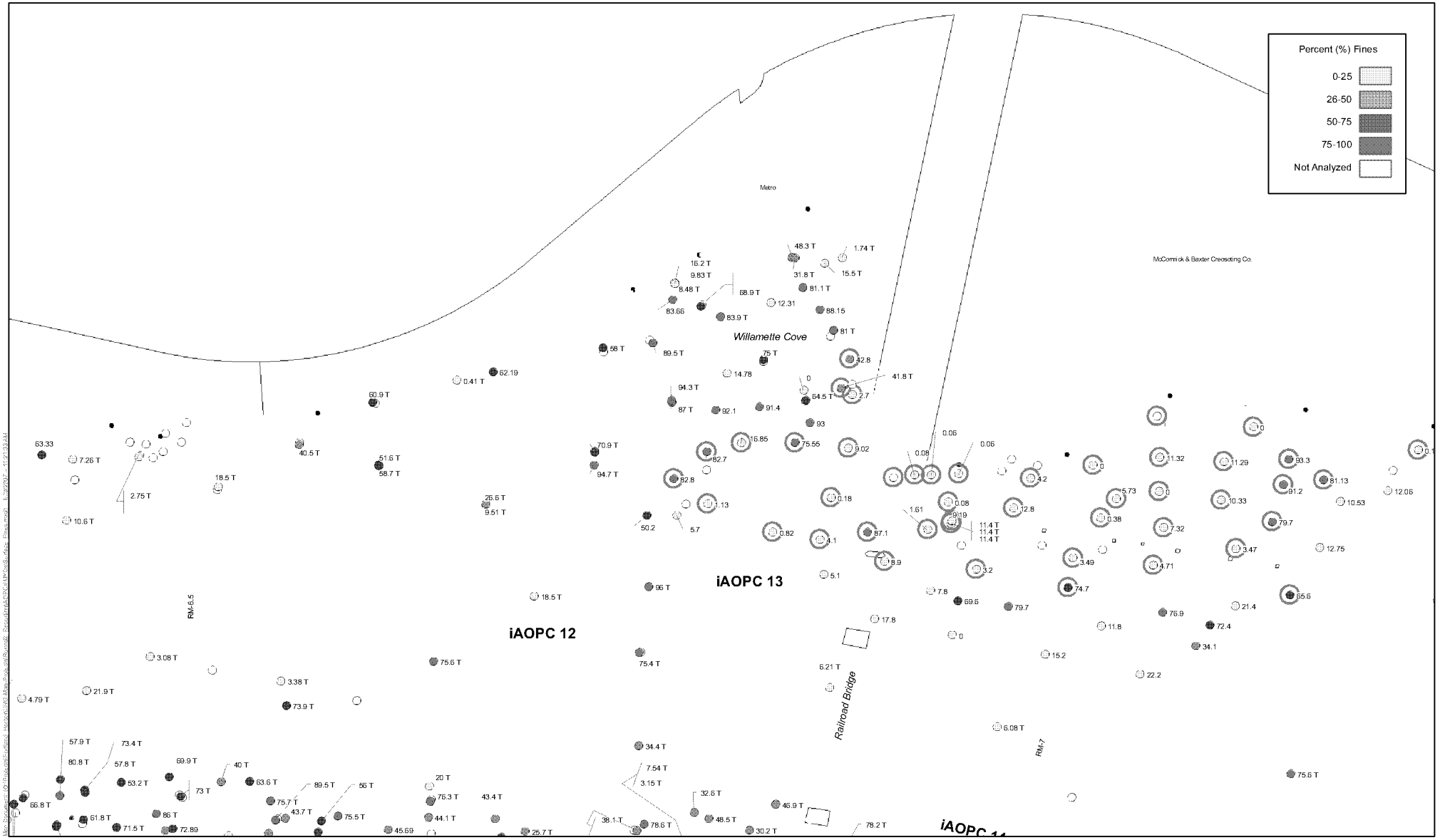
Surface Water
Surface Sediment
Subsurface Sediment
TZW Sample Location (<38cm BML)

Active Outfalls
Unknown Outfalls
Abandoned Outfalls



**Map 11.3.10-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**iAOPC Site Overview**
**iAOPC 12, 13**

BZTO104(e)032509




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

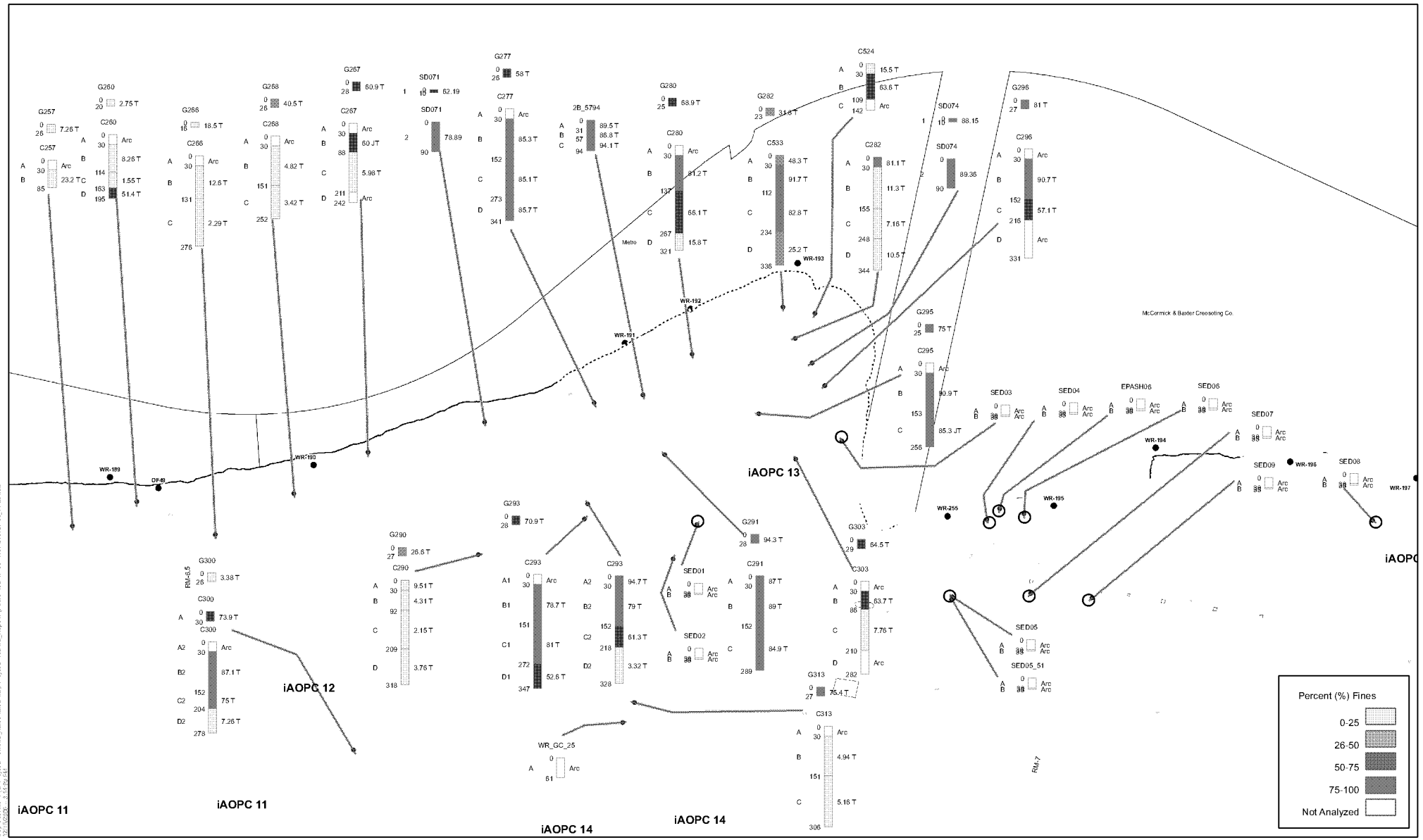
Active Outfalls
Unknown Outfalls
Abandoned Outfalls
Navigation Channel
River_13ft_NAVD88

**Bathymetric Change**
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening
5 foot Contours (NAVD88)

iAOPC Boundary
capping
Dredging (Post 1997)
Dredged or Capped

**Map 11.3.10-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Texture**
**Percent (%) Fines**
**iAOPC 12, 13**

BZTO104(e)032510




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

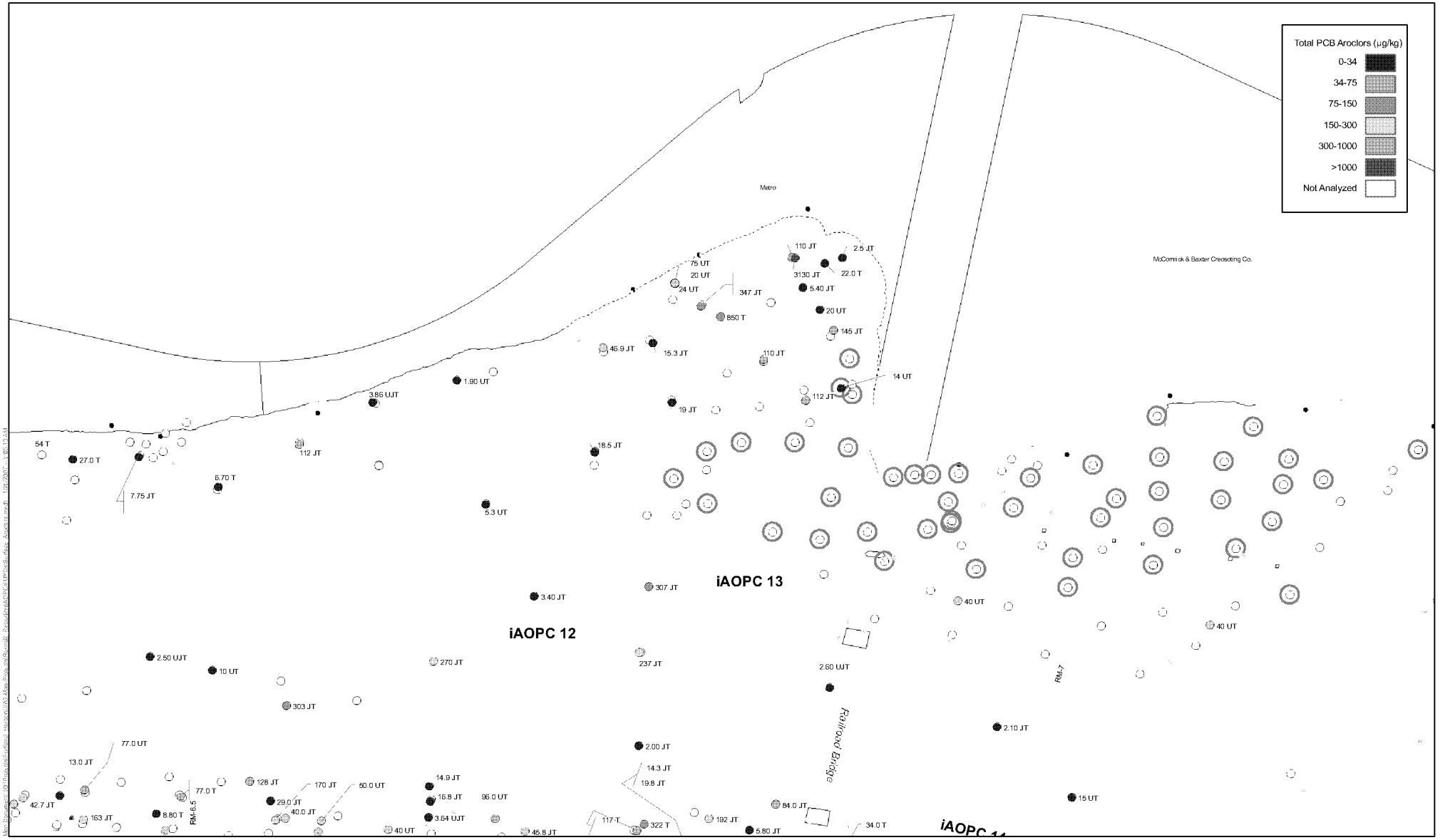
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.10- 2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 13**

BZTO104(e)032511




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evens and Associates, Inc.

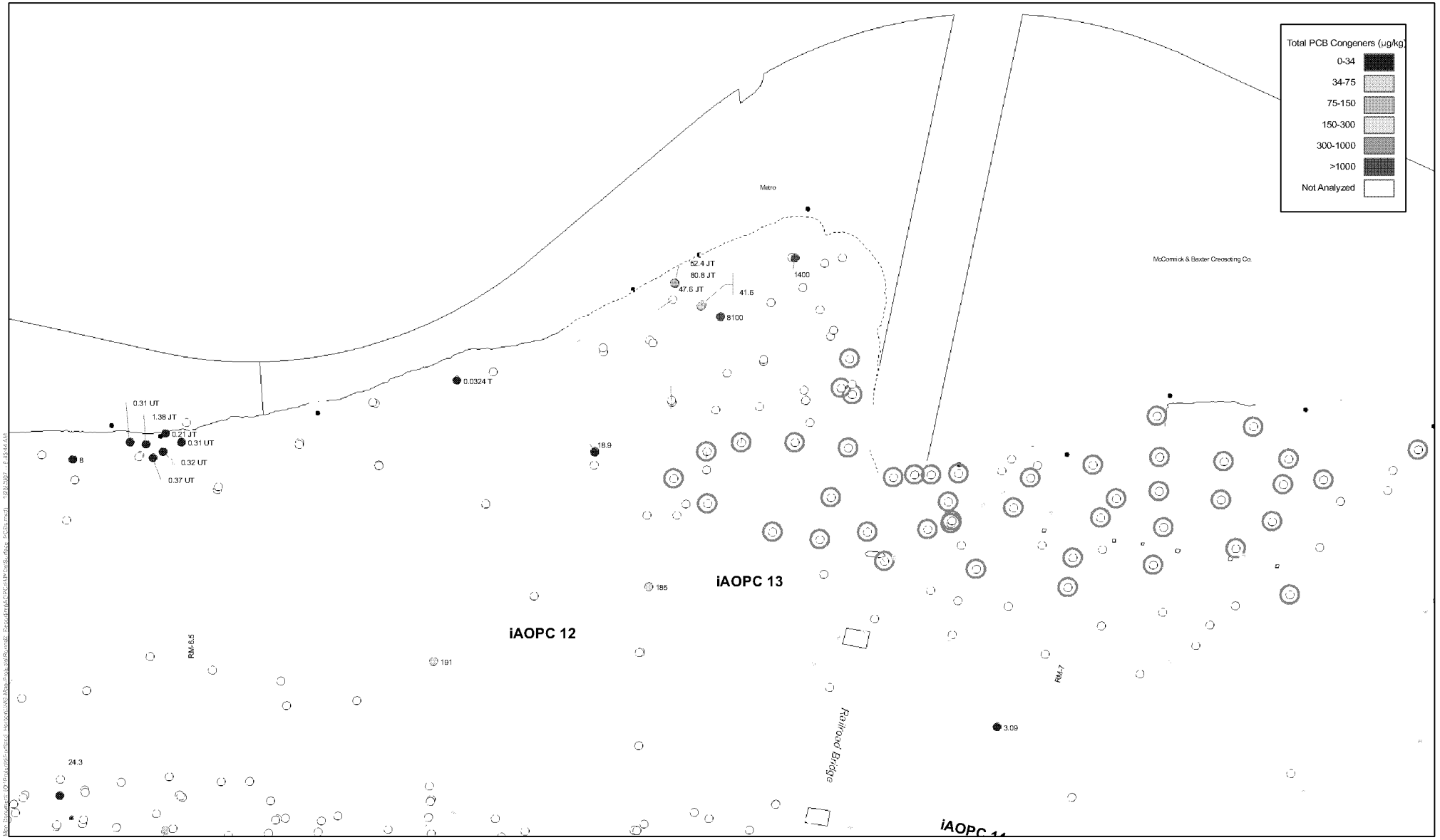
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.10-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 12, 13**

BZTO104(e)032512




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

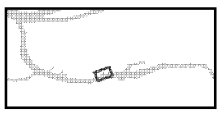
0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

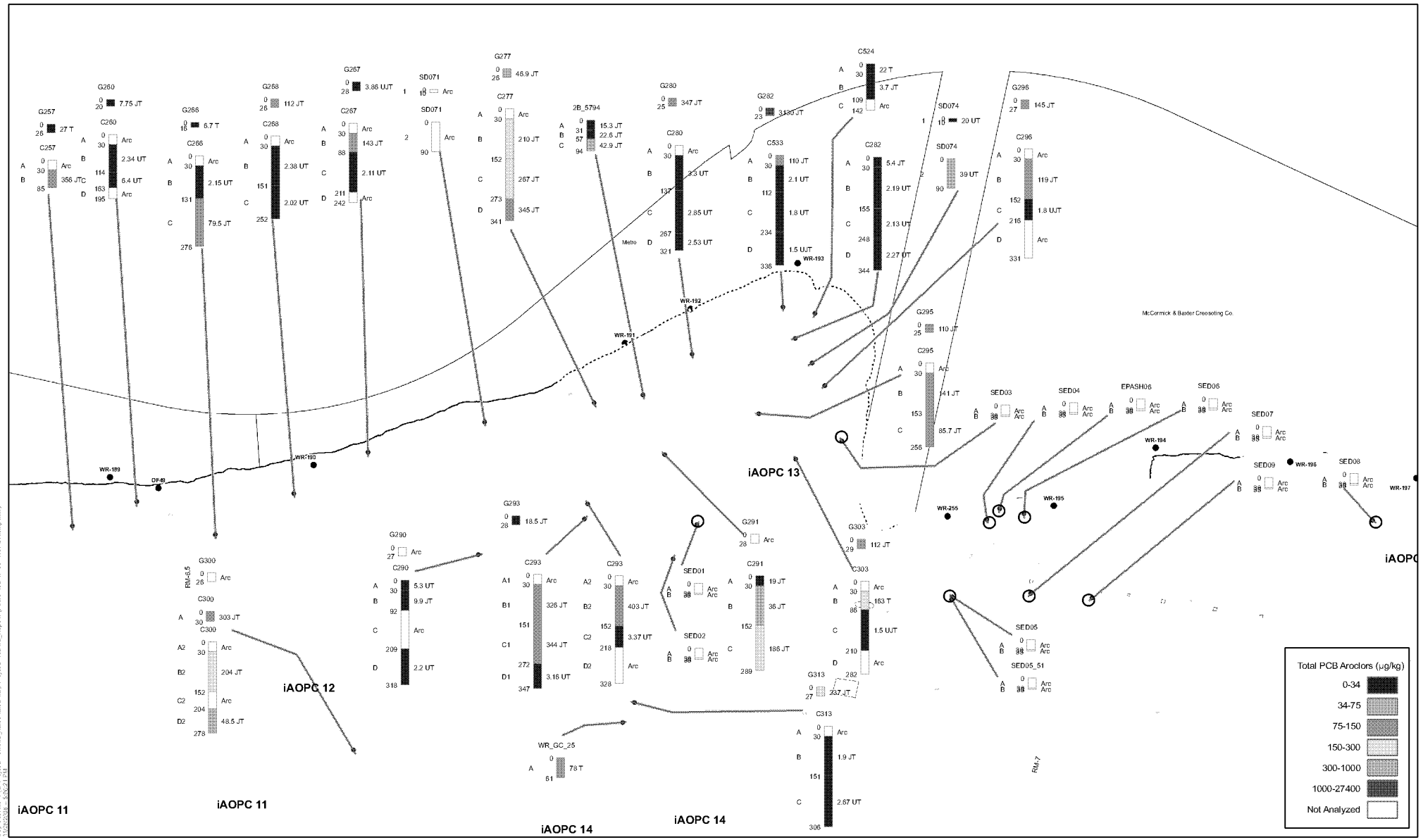
**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped



**Map 11.3.10-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 12, 13**

BZTO104(e)032513




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

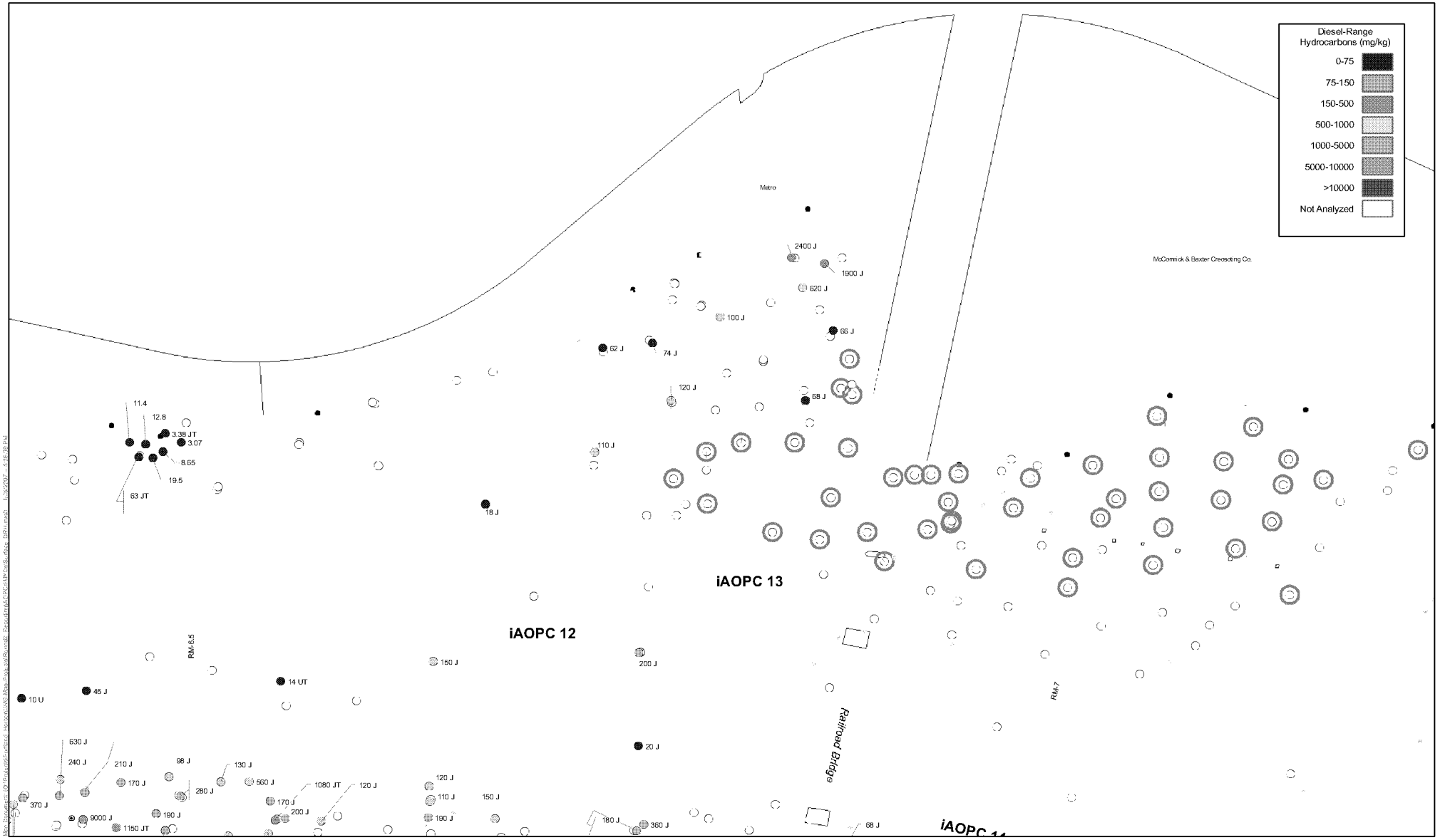
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- AOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.10-5**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 13**

BZTO104(e)032514




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

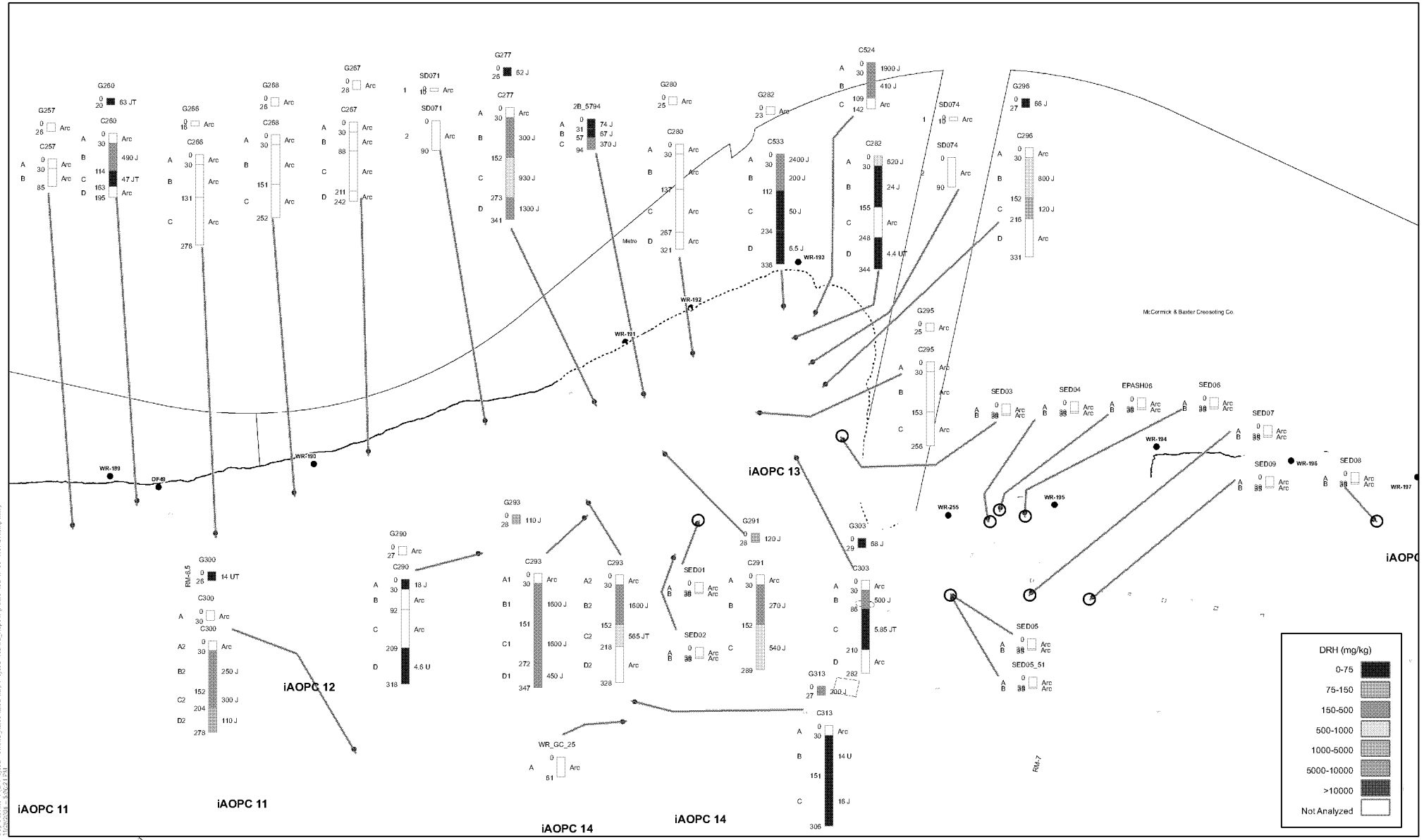
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.10-6**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Diesel-Range Hydrocarbons (mg/kg)**
**iAOPC 12, 13**

BZTO104(e)032515




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

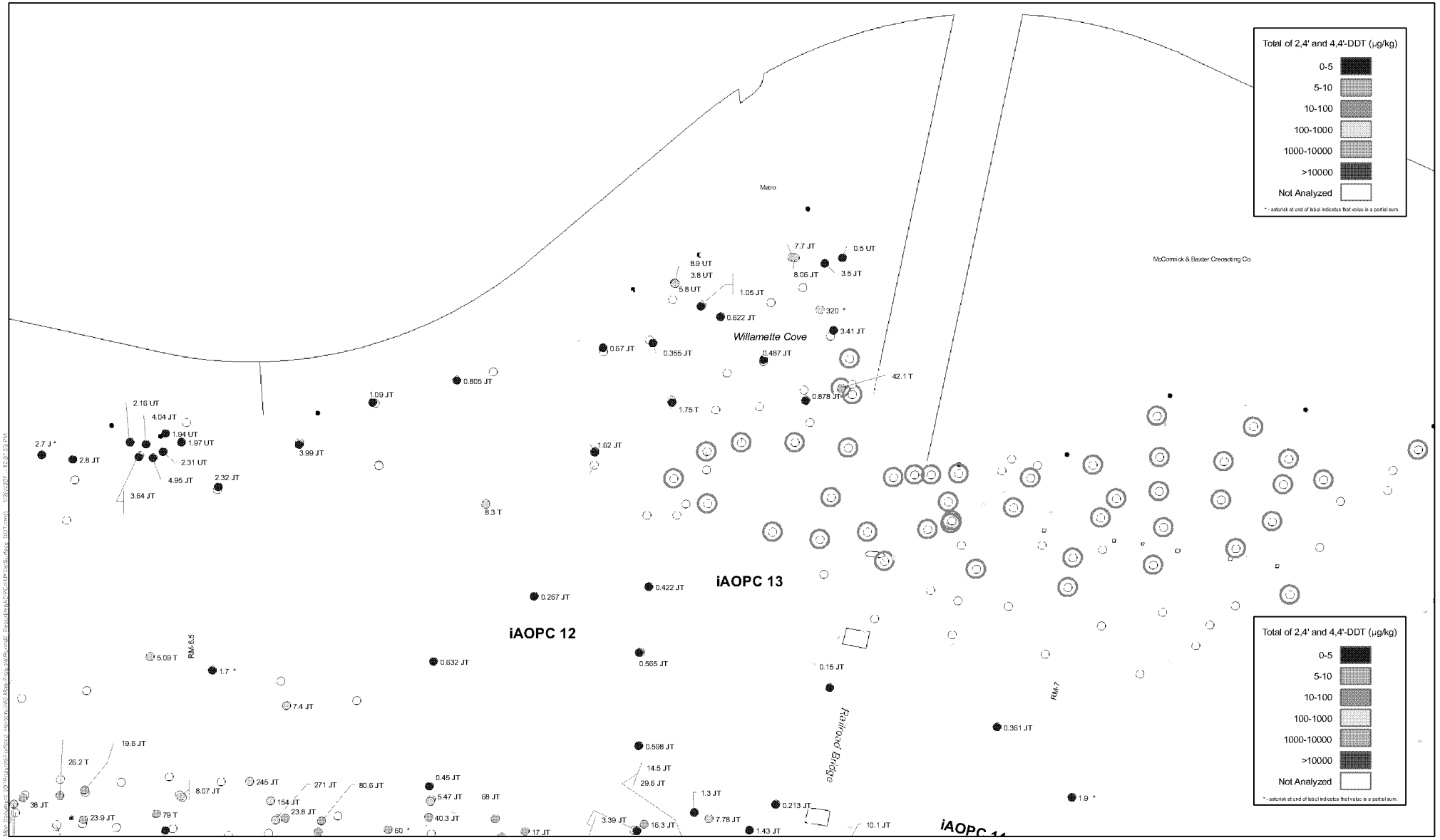
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.10-7**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Diesel-Range Hydrocarbon (mg/kg)**
**iAOPC 13**

BZTO104(e)032516




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

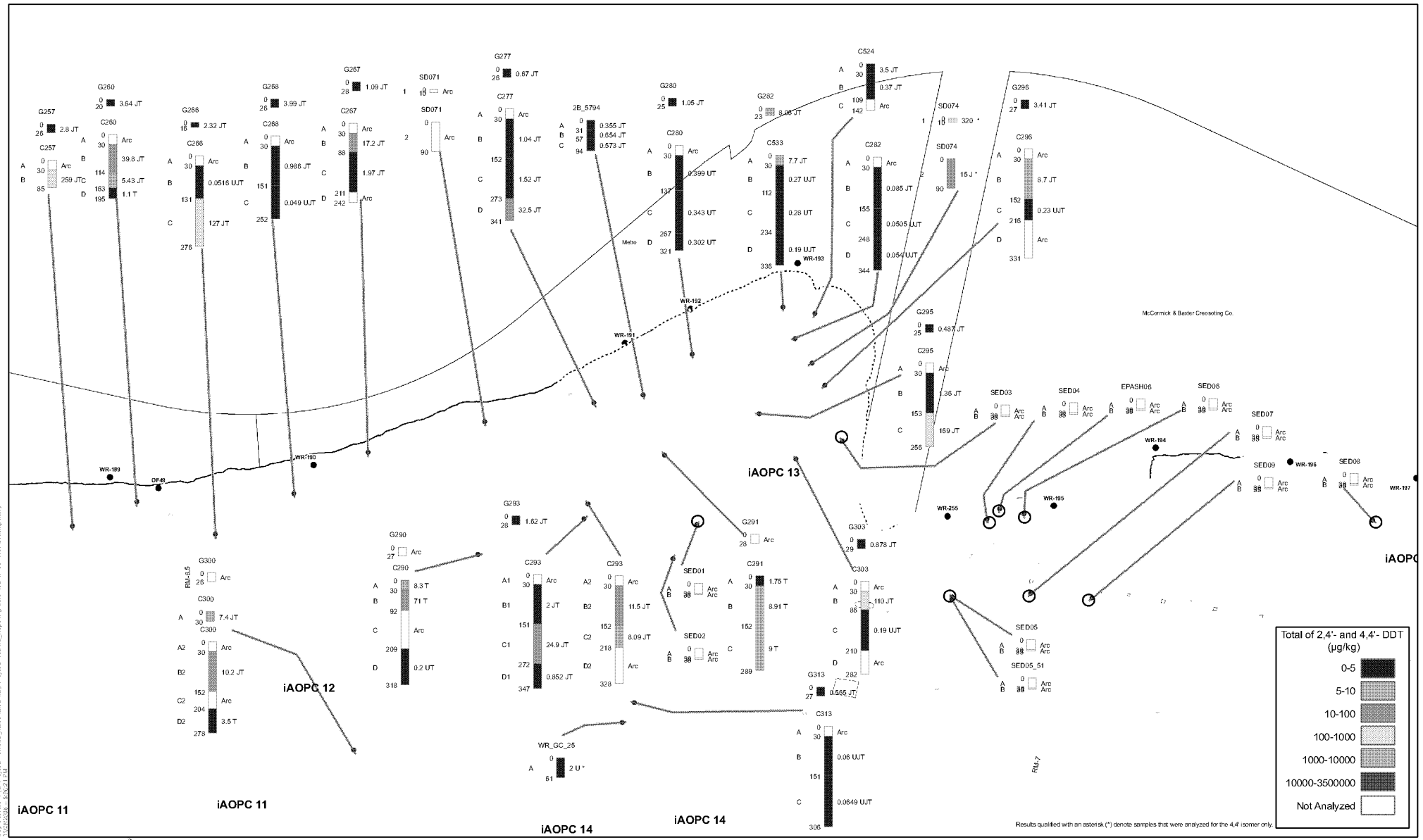
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

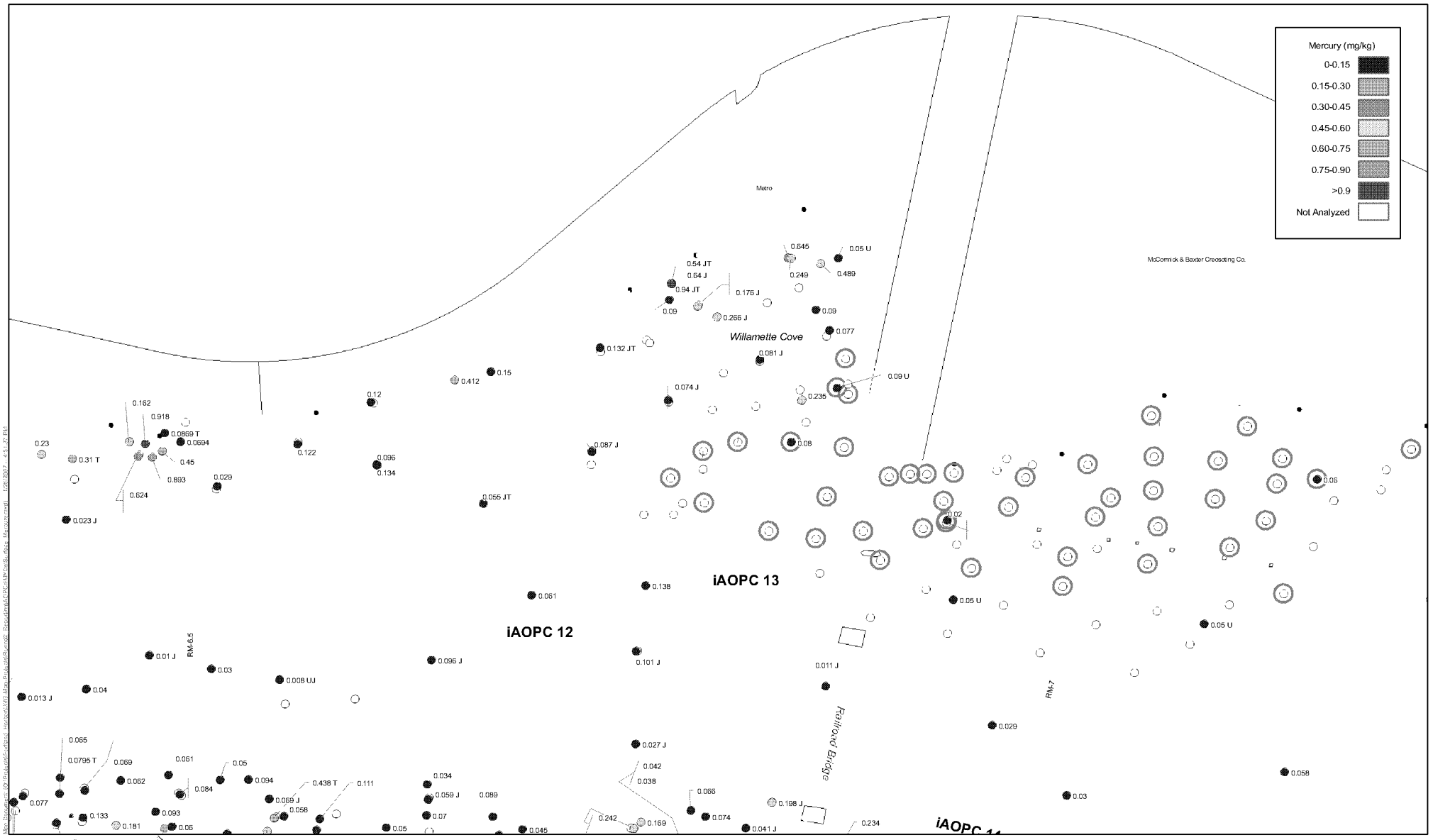
**Map 11.3.10-8**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total of 2,4' and 4,4'-DDT (µg/kg)**
**iAOPC 12, 13**

BZTO104(e)032517



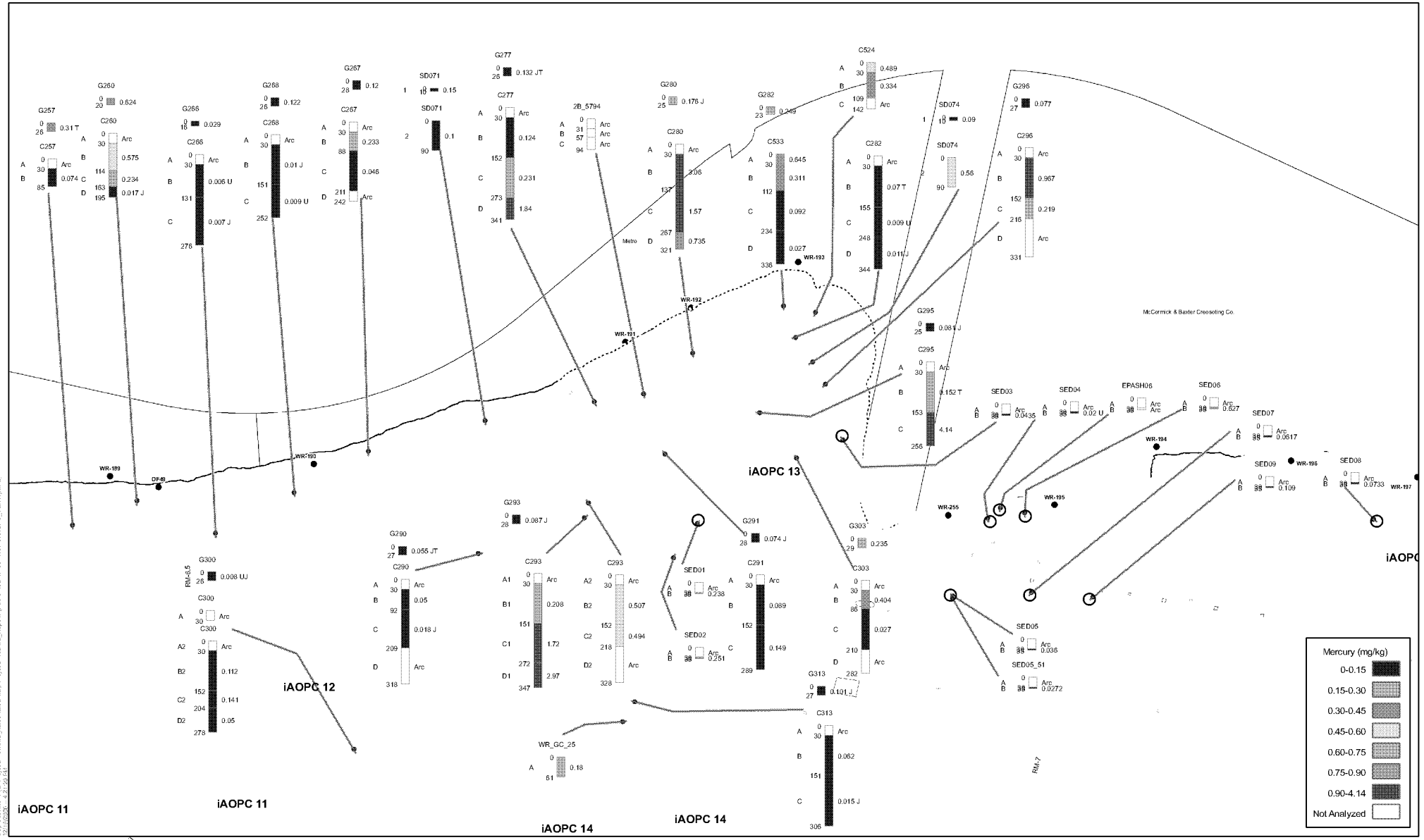

**Map 11.3.10-9**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total of 2,4'- and 4,4'- DDT (µg/kg)**
**iAOPC 13**

BZTO104(e)032518




**Map 11.3.10-10**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Mercury (mg/kg)**
**iAOPC 12, 13**

BZTO104(e)032519




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

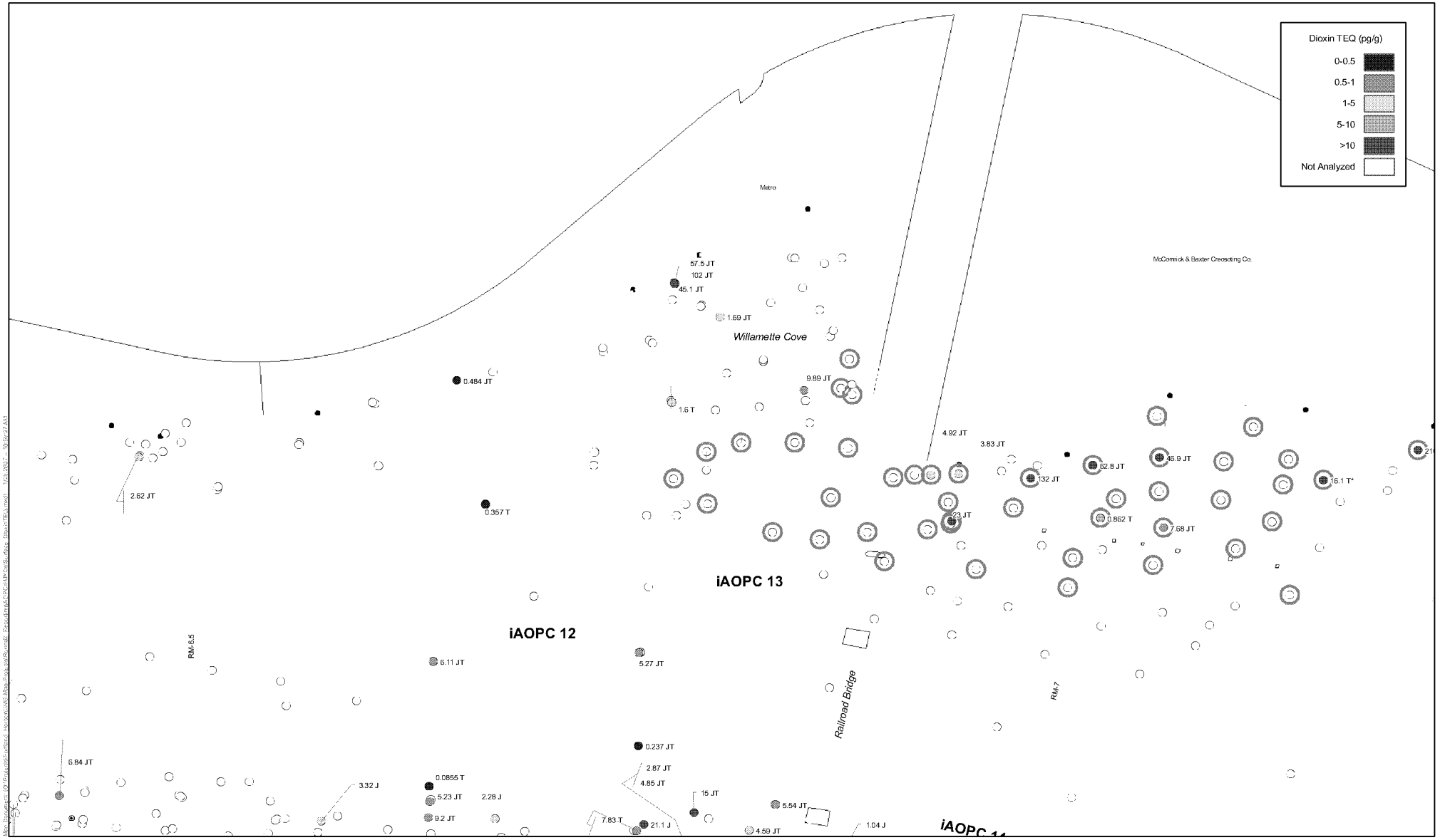
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

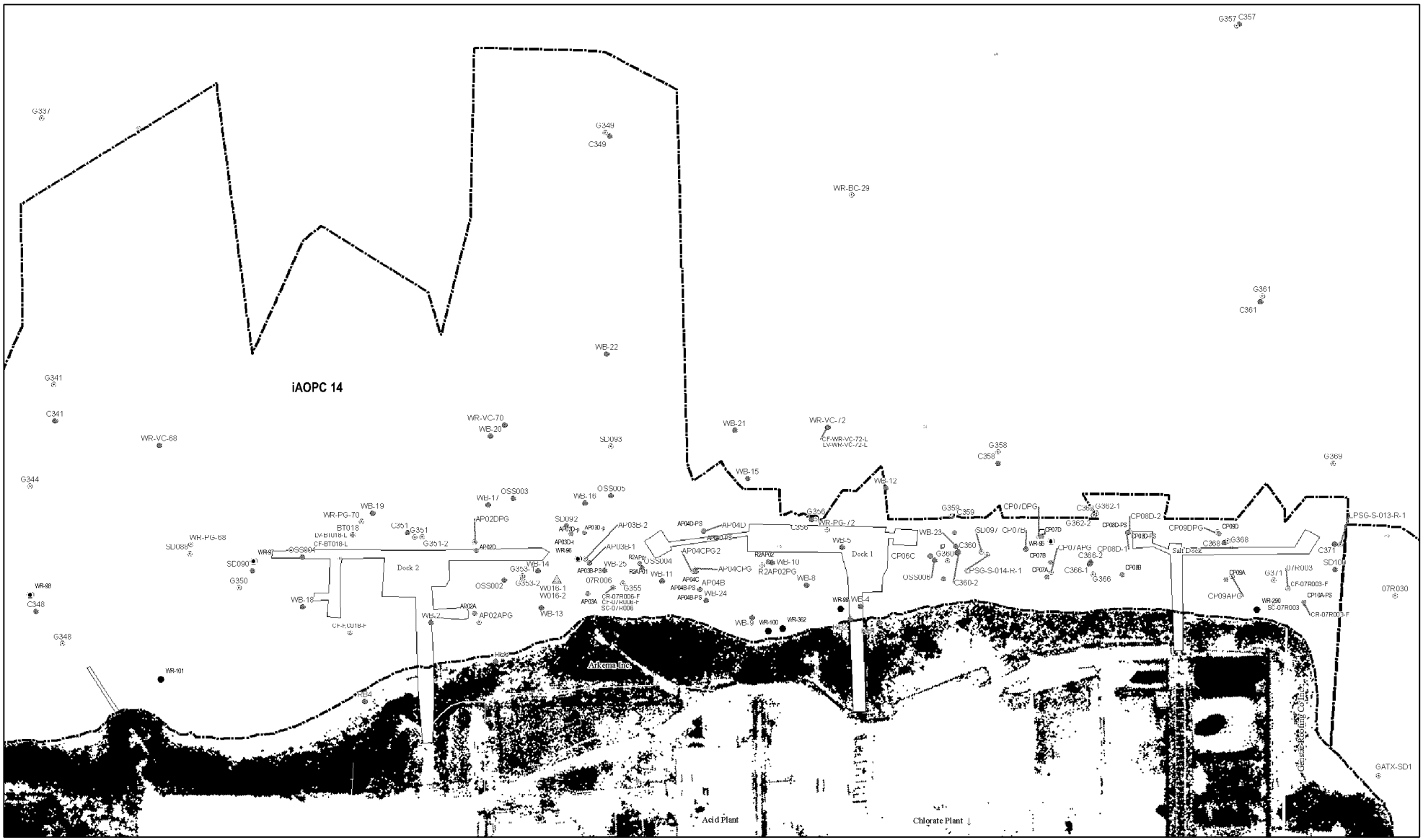
**Map 11.3.10 - 11**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Mercury (mg/kg)**
**iAOPC 13**

BZTO104(e)032520




**Map 11.3.10-12**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Dioxin 2,3,7,8-TCDD Toxic Equivalence (pg/g)**
**iAOPC 12, 13**

BZTO104(e)032521




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES
Transportation, Property boundaries: Metro RLIS.

Channel & River miles: US Army Corps of Engineers.

Bathymetric Information: David Evans and Associates, Inc.

RLIS Aerial Images: February 2005 'leaf off' flight (6" pixel).

iAOPCs
River Mile
Navigation Channel
River 13ft NAVD88

Docks and Structures
Capping
Dredging (Post 1997)

**Bathymetric Change**
-22 - -0.49 Shualing
-0.5 - 0.5
0.51 - 37 Deepening

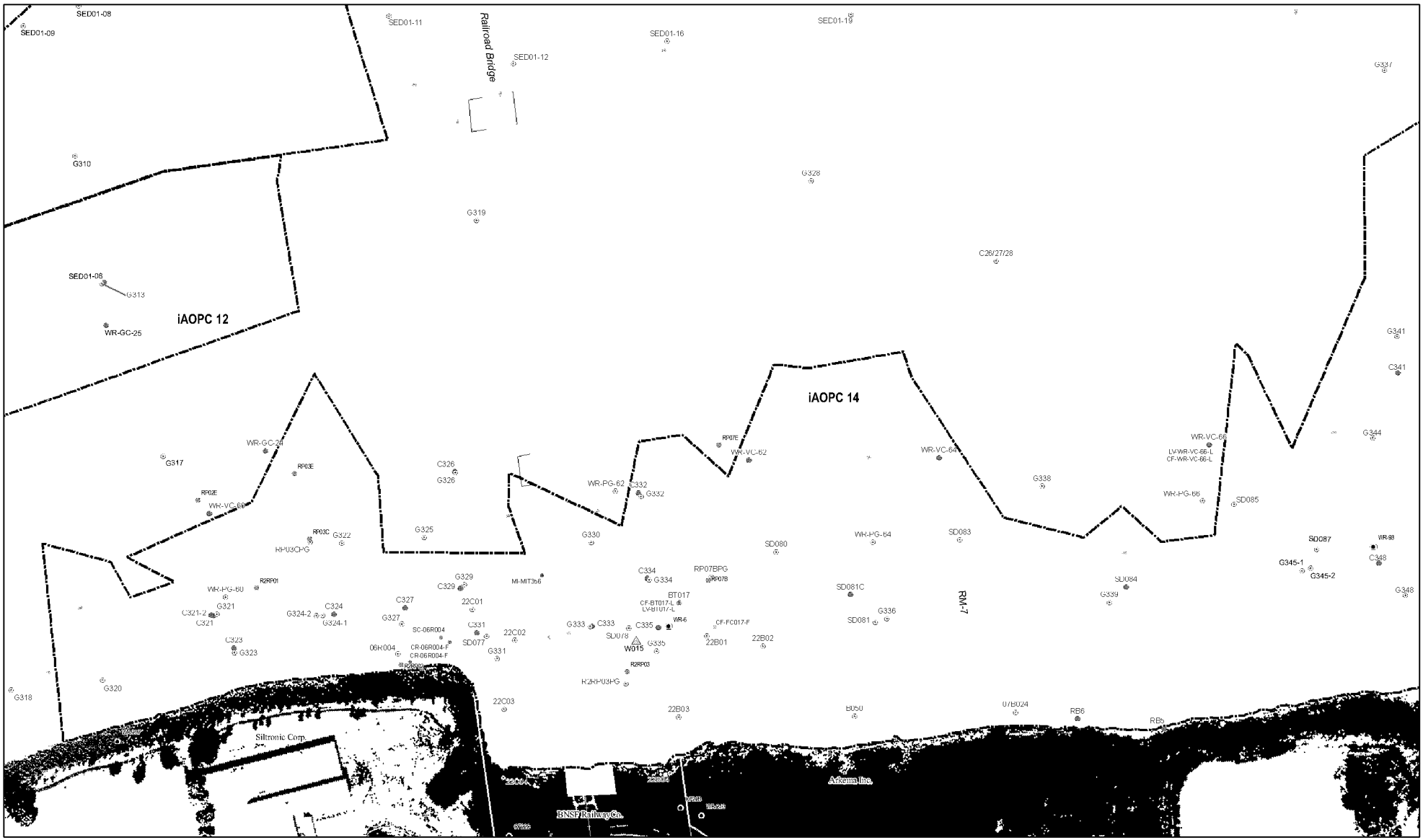
Clam, CF
Mudworm, LV
Crayfish, CR
Sculpin, SC
Multiplate Invertebrates, MI

Surface Water
Surface Sediment
Subsurface Sediment
TZW Sample Location (+38cm BML)

Active Outfalls
Unknown Outfalls
Abandoned Outfalls

**Map 11.3.11-1a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**iAOPC Site Overview**
**iAOPC 14**

BZTO104(e)032522




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES
Transportation, Property boundaries: Metro RLIS.

Channel & River miles: US Army Corps of Engineers.

Bathymetric Information: David Evans and Associates, Inc.

RLIS Aerial Images: February 2005 'leaf off' flight (6" pixel).

iAOPCs
River Mile
Navigation Channel
River 13ft NAVD88

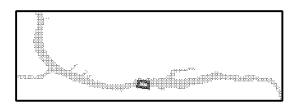
Docks and Structures
Capping
Dredging (Post 1997)

**Bathymetric Change**
-22 - -0.49 Shualling
-0.5 - 0.5
0.51 - 37 Deepening

Clam, CF
Mudworm, LV
Crayfish, CR
Sculpin, SC
Multiplate Invertebrates, MI

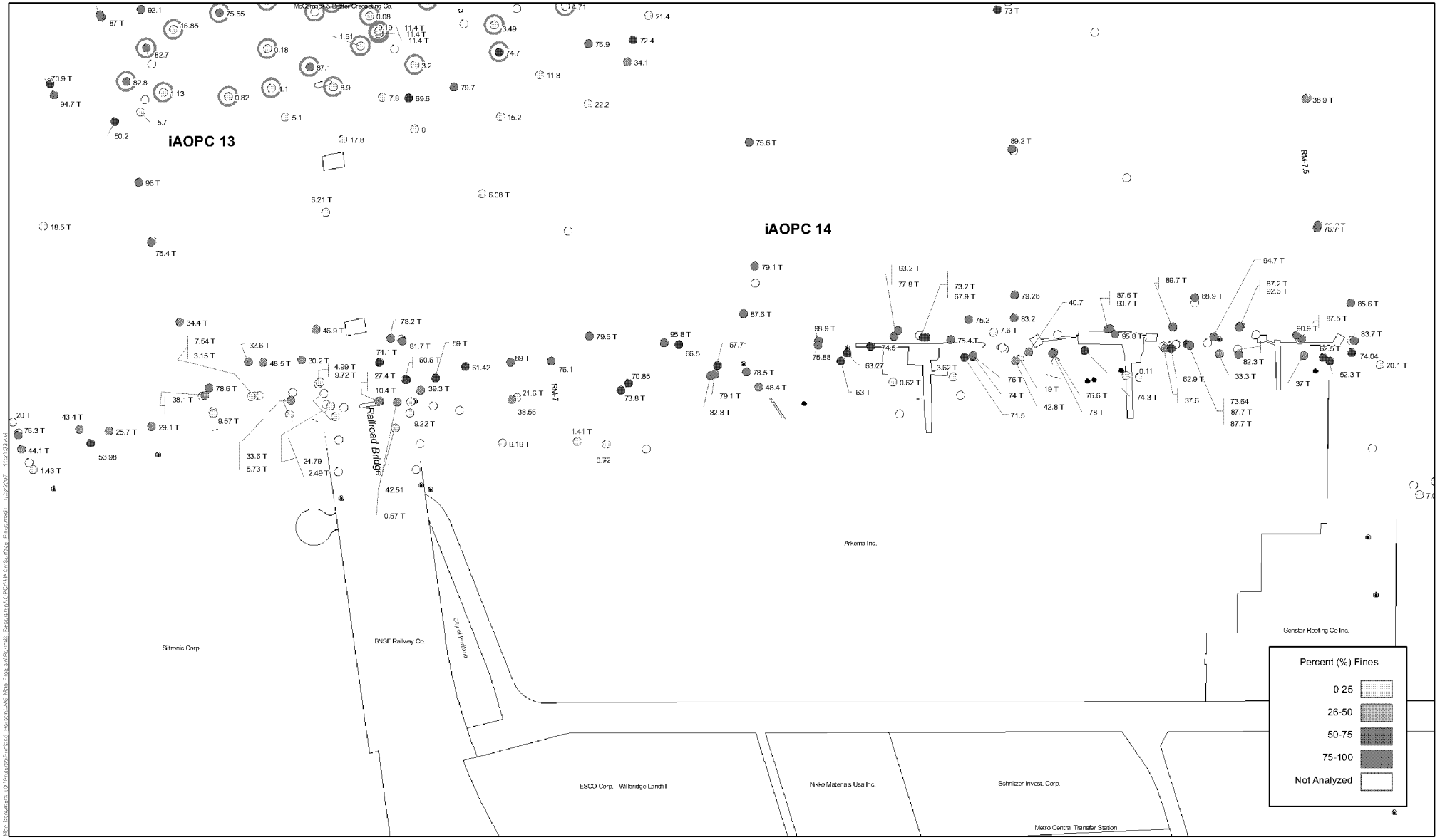
Surface Water
Surface Sediment
Subsurface Sediment
TZW Sample Location (<38cm BML)

Active Outfalls
Unknown Outfalls
Abandoned Outfalls



**Map 11.3.11-1b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**iAOPC Site Overview**
**iAOPC 14**

BZTO104(e)032523




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

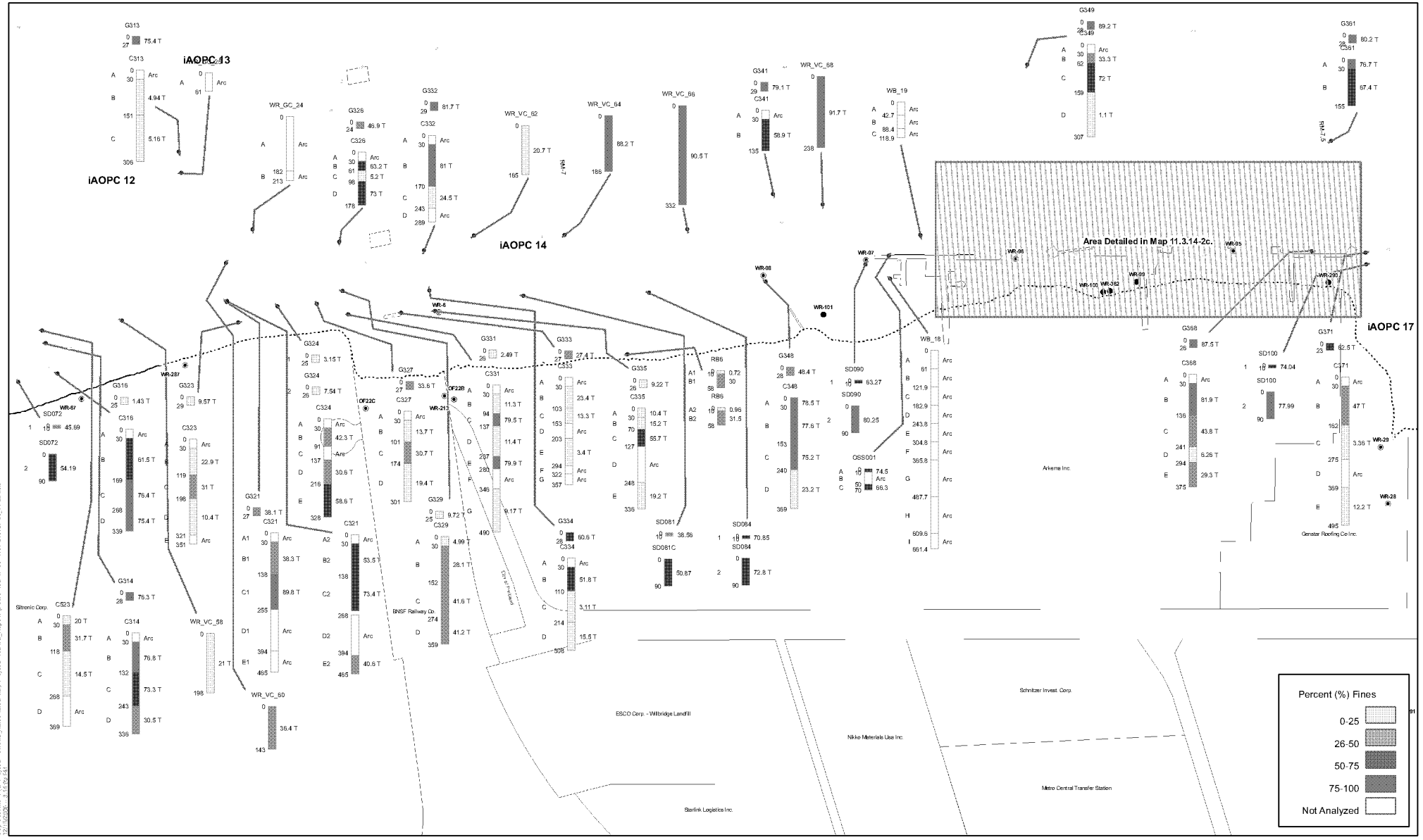
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.11-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Texture**
**Percent (%) Fines**
**iAOPC 14**

BZTO104(e)032524




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

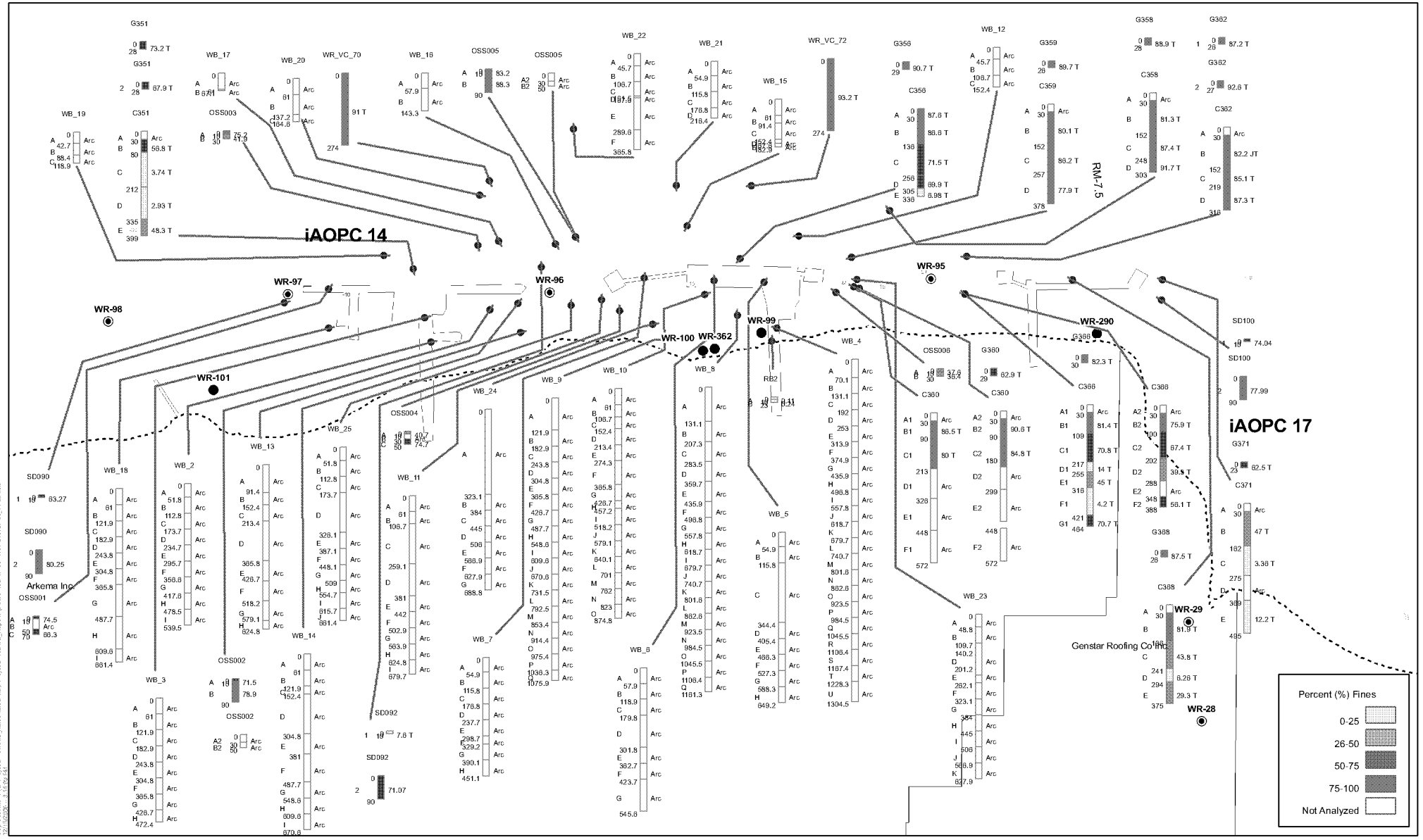
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.11- 2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 14**

BZTO104(e)032525




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

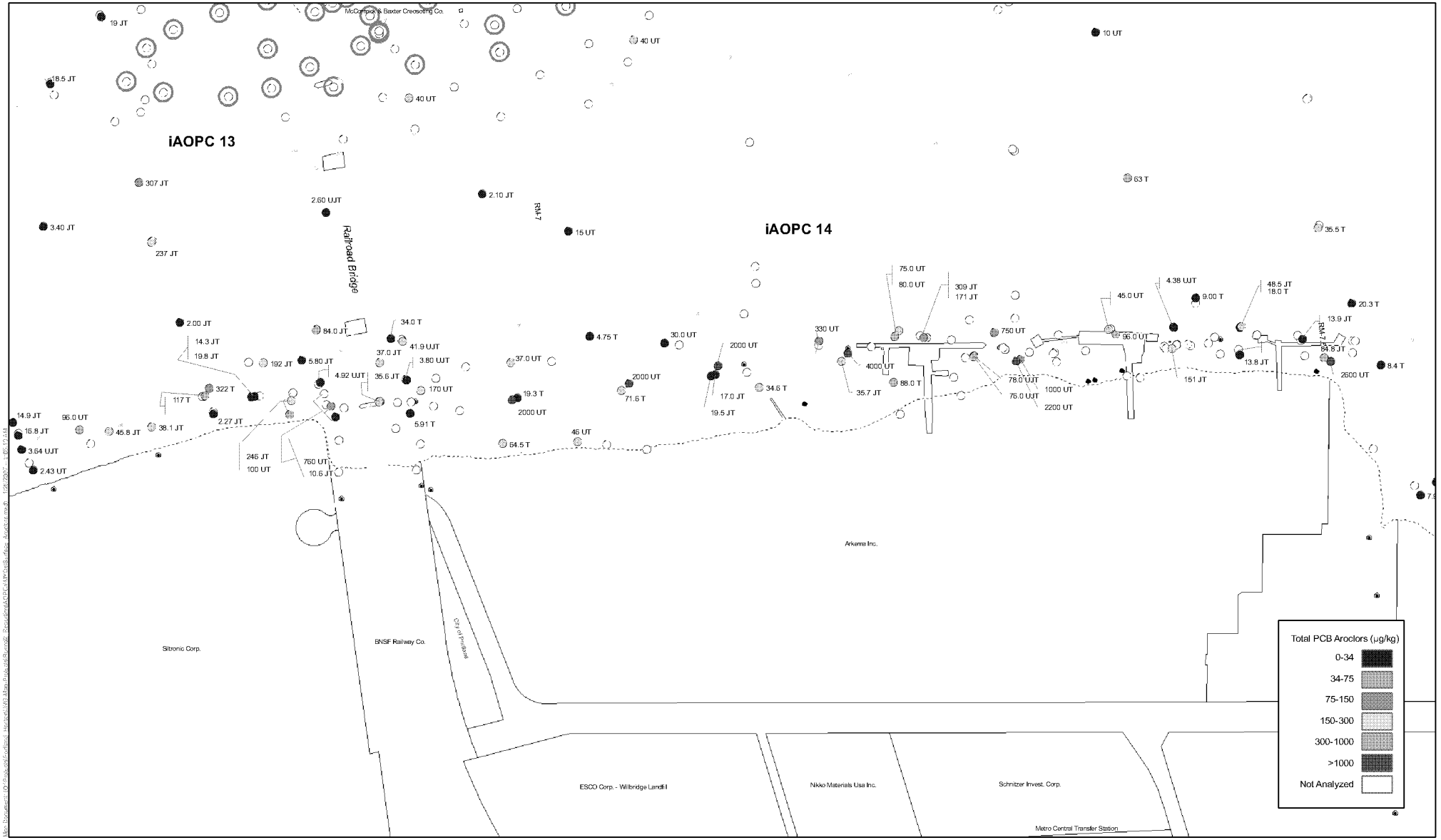
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.11 - 2c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 14**

BZTO104(e)032526




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evens and Associates, Inc.

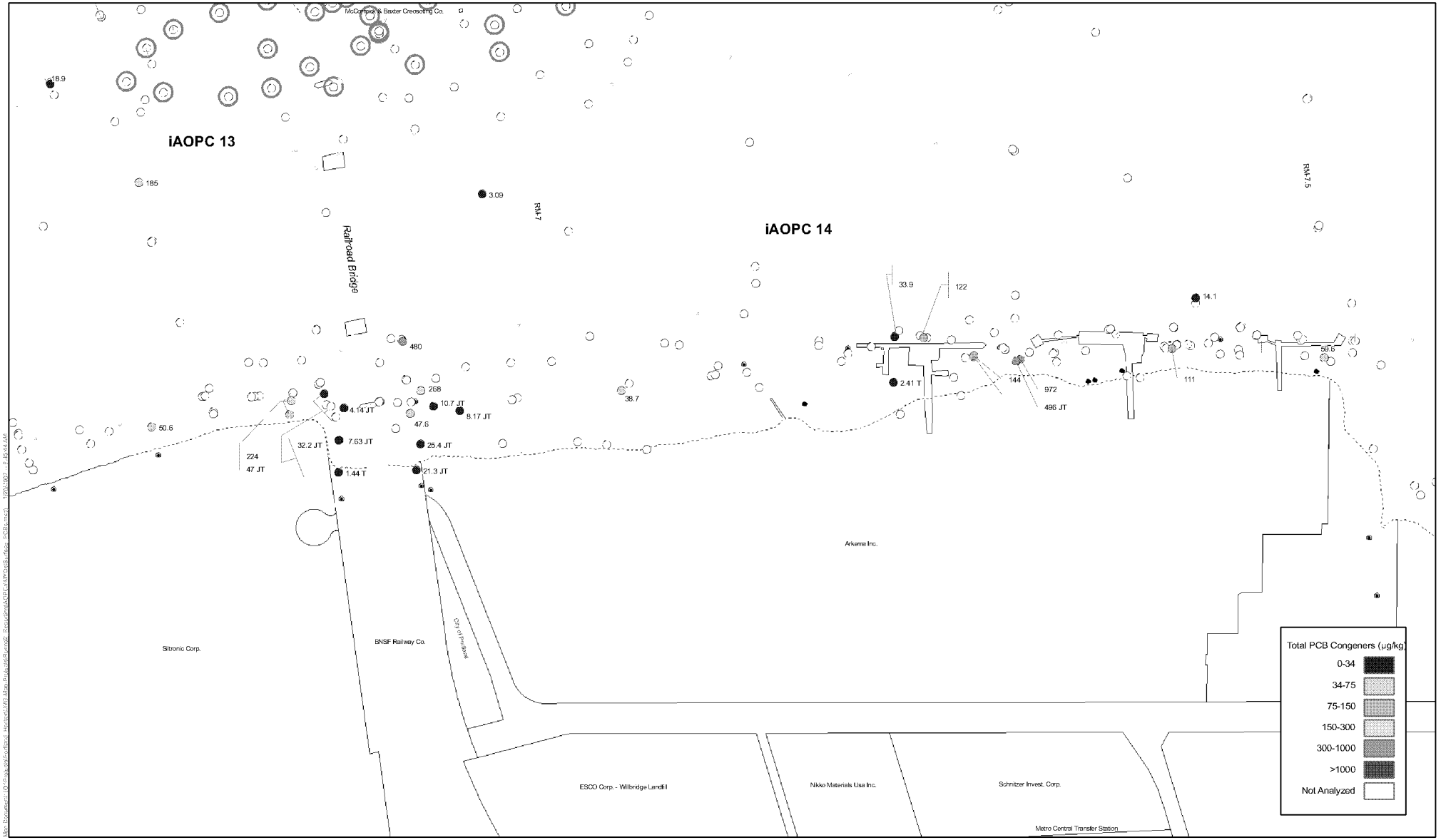
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.11-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 14**

BZTO104(e)032527




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

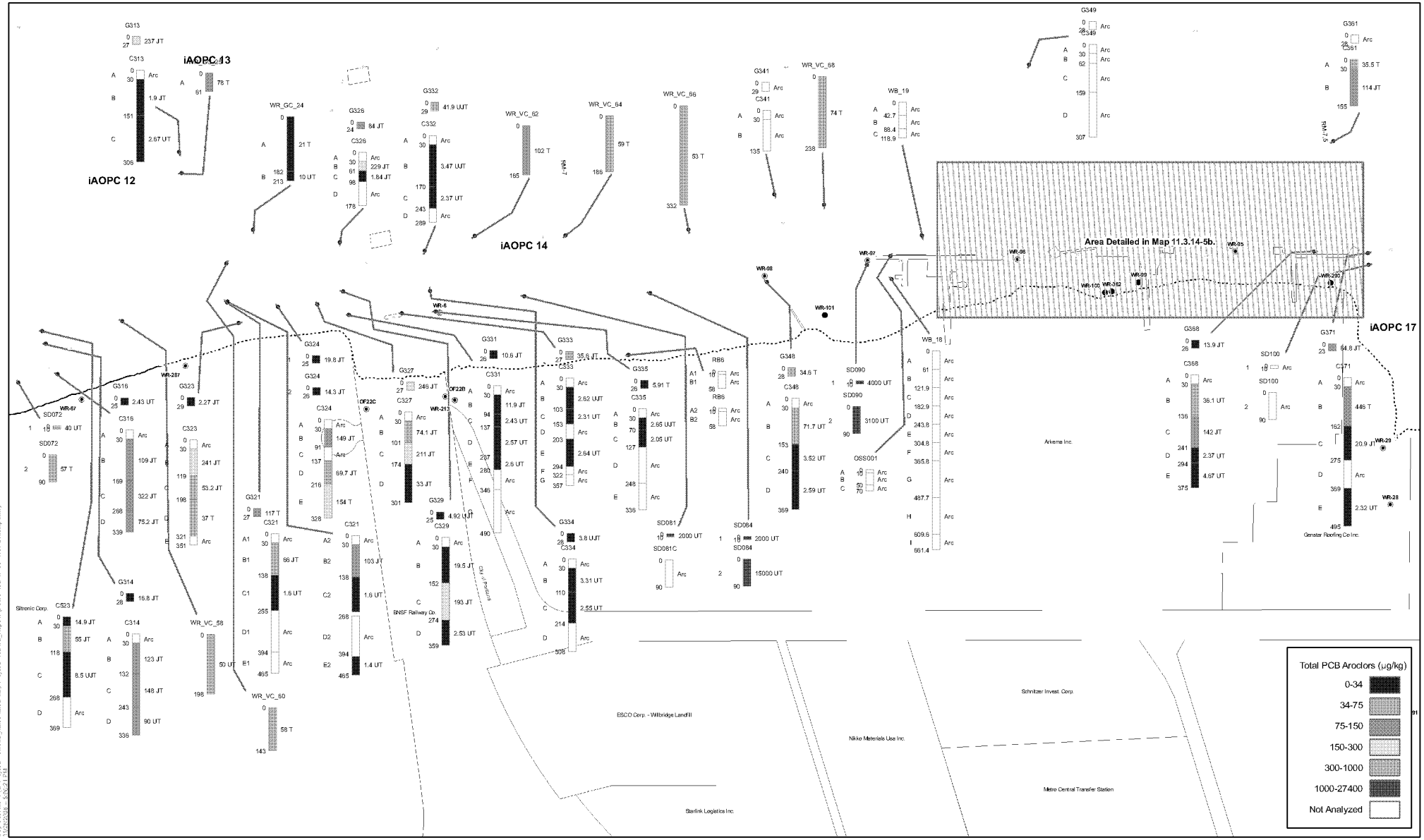
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

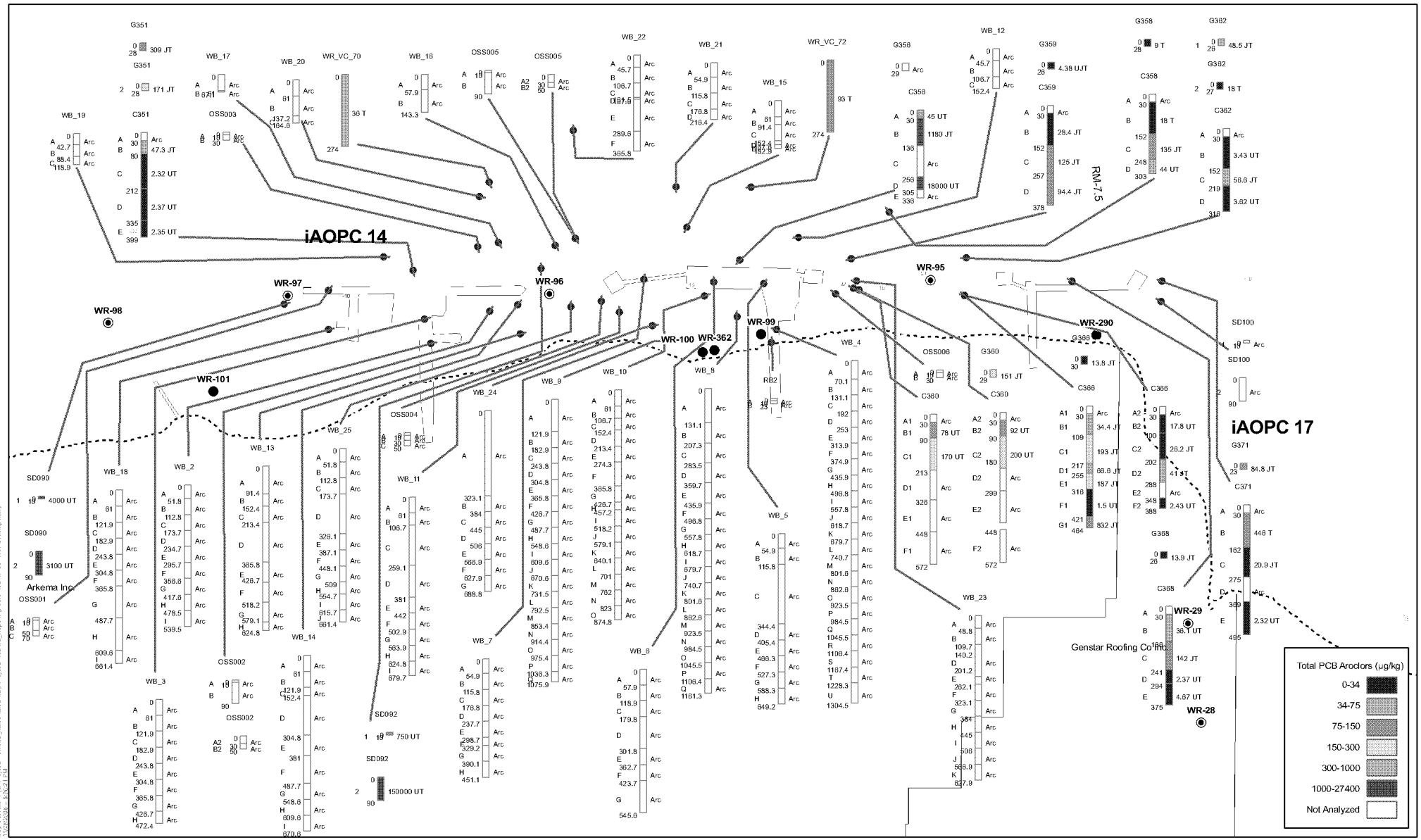
**Map 11.3.11-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 14**

BZTO104(e)032528




**Map 11.3.11 - 5a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 14**

BZTO104(e)032529




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

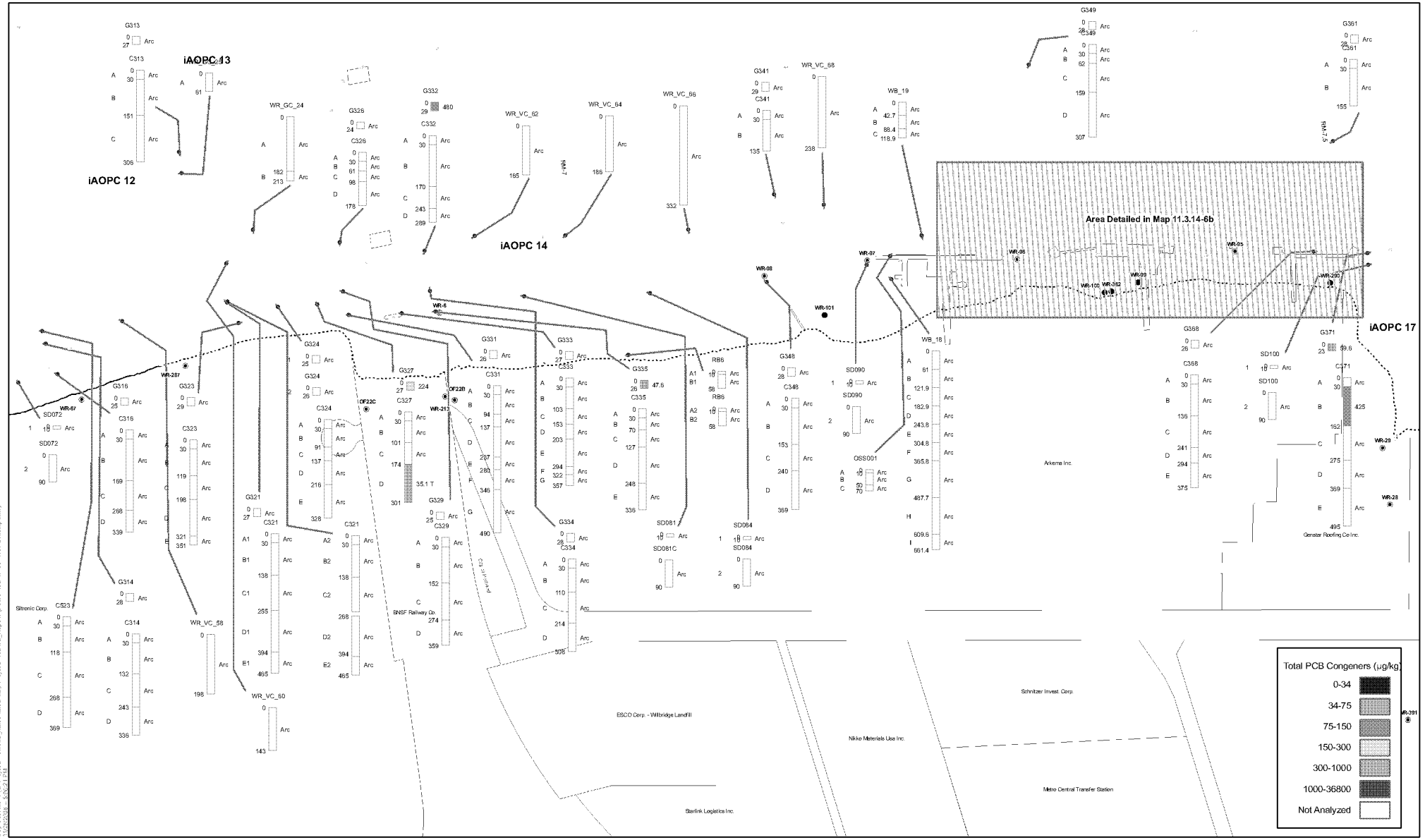
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.11- 5b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 14**

BZTO104(e)032530




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

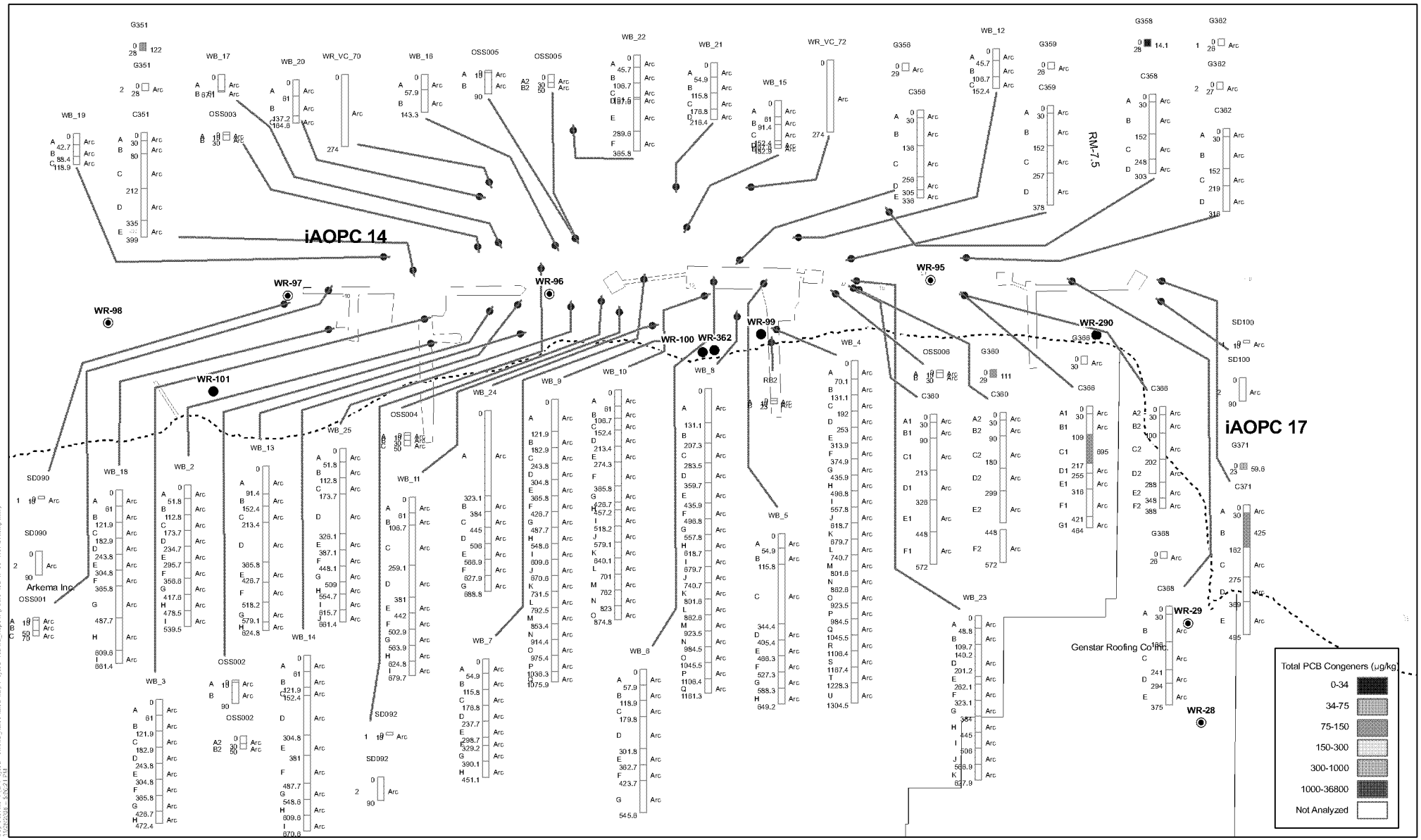
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.11 - 6a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 14**

BZTO104(e)032531




FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

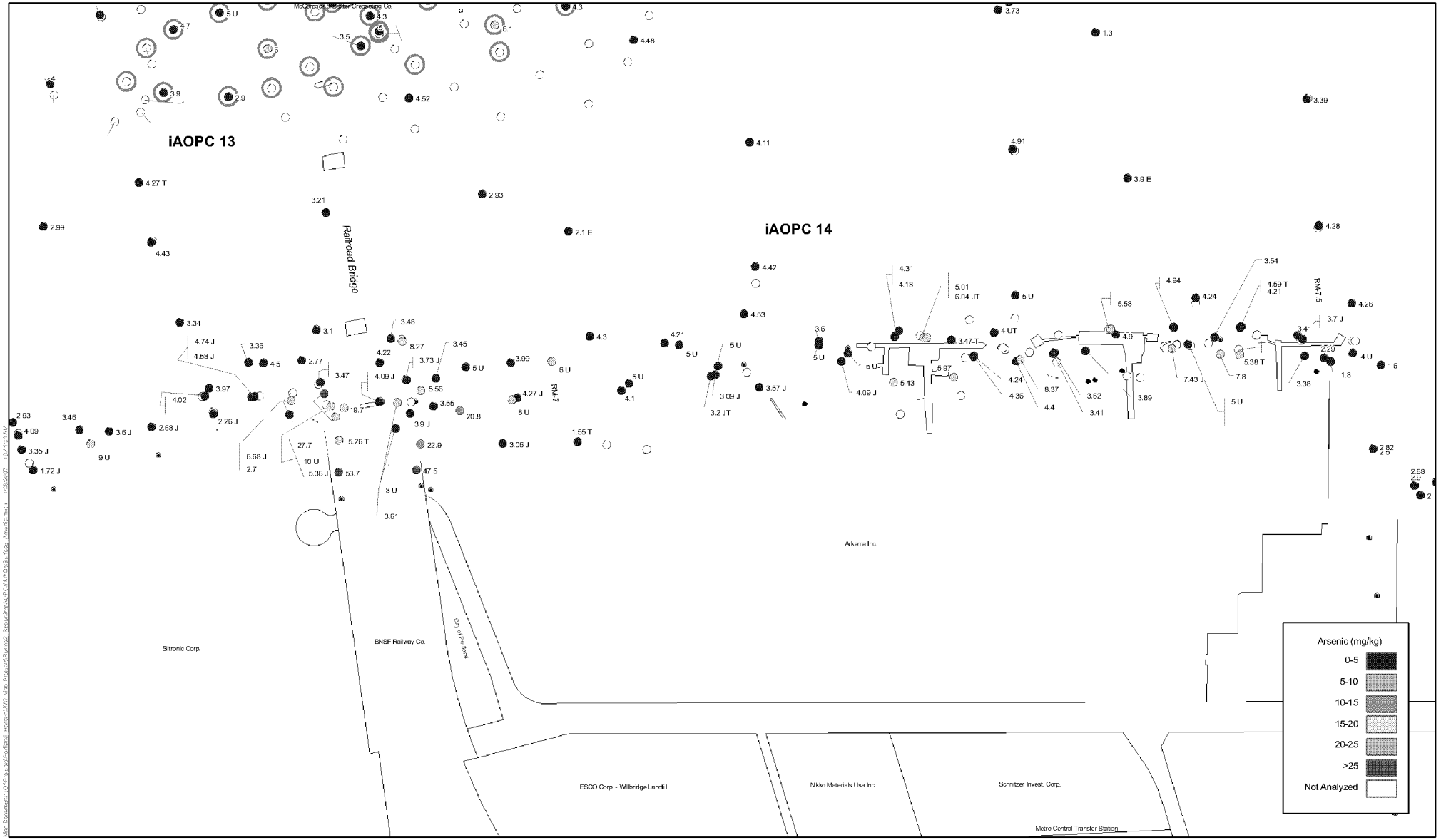
**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

integral consulting inc.
LWG Lower Willamette Group

0 100 200 300 Feet

**Map 11.3.11- 6b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 14**

BZTO104(e)032532




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

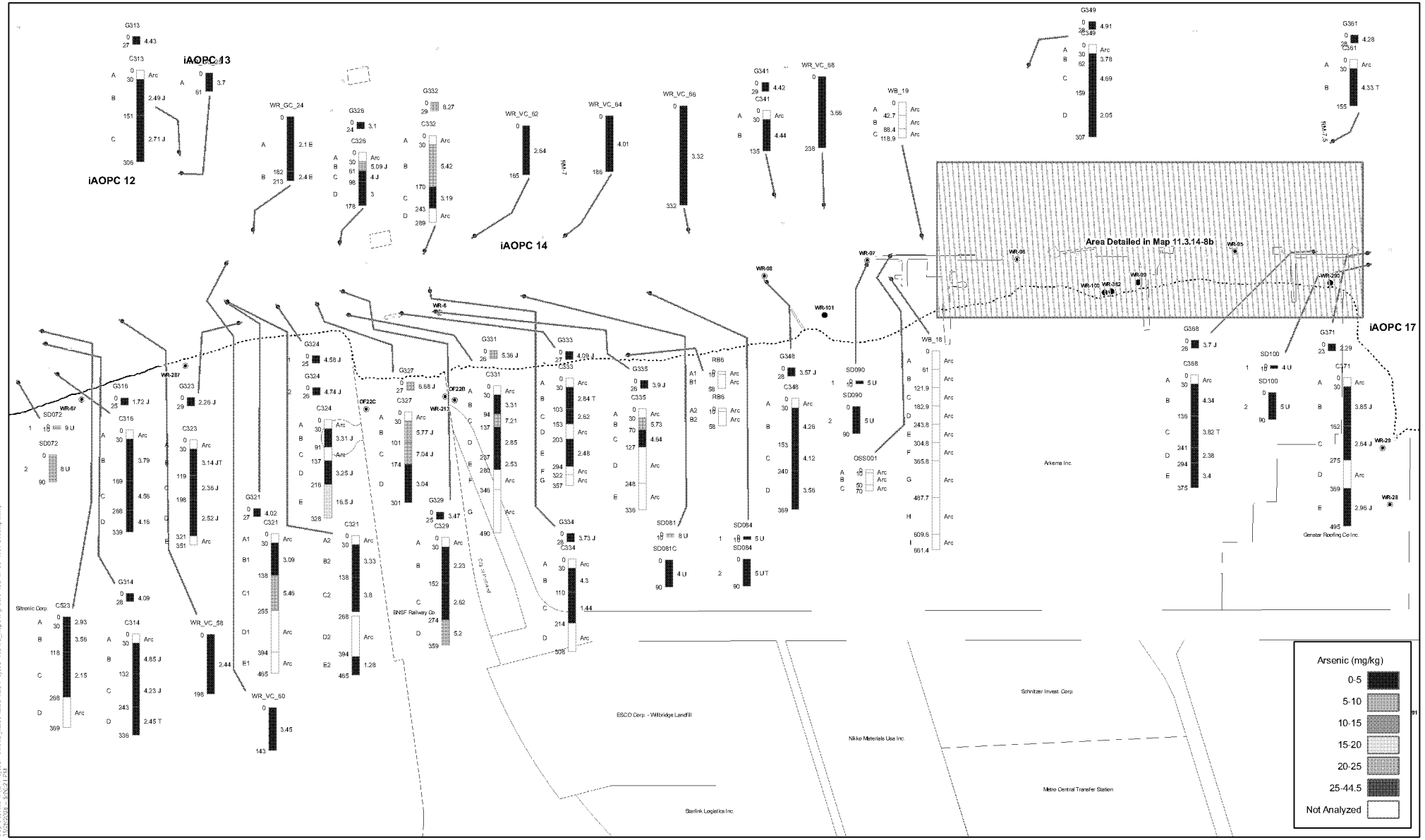
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.11-7**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Arsenic (mg/kg)**
**iAOPC 14**

BZTO104(e)032533




FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

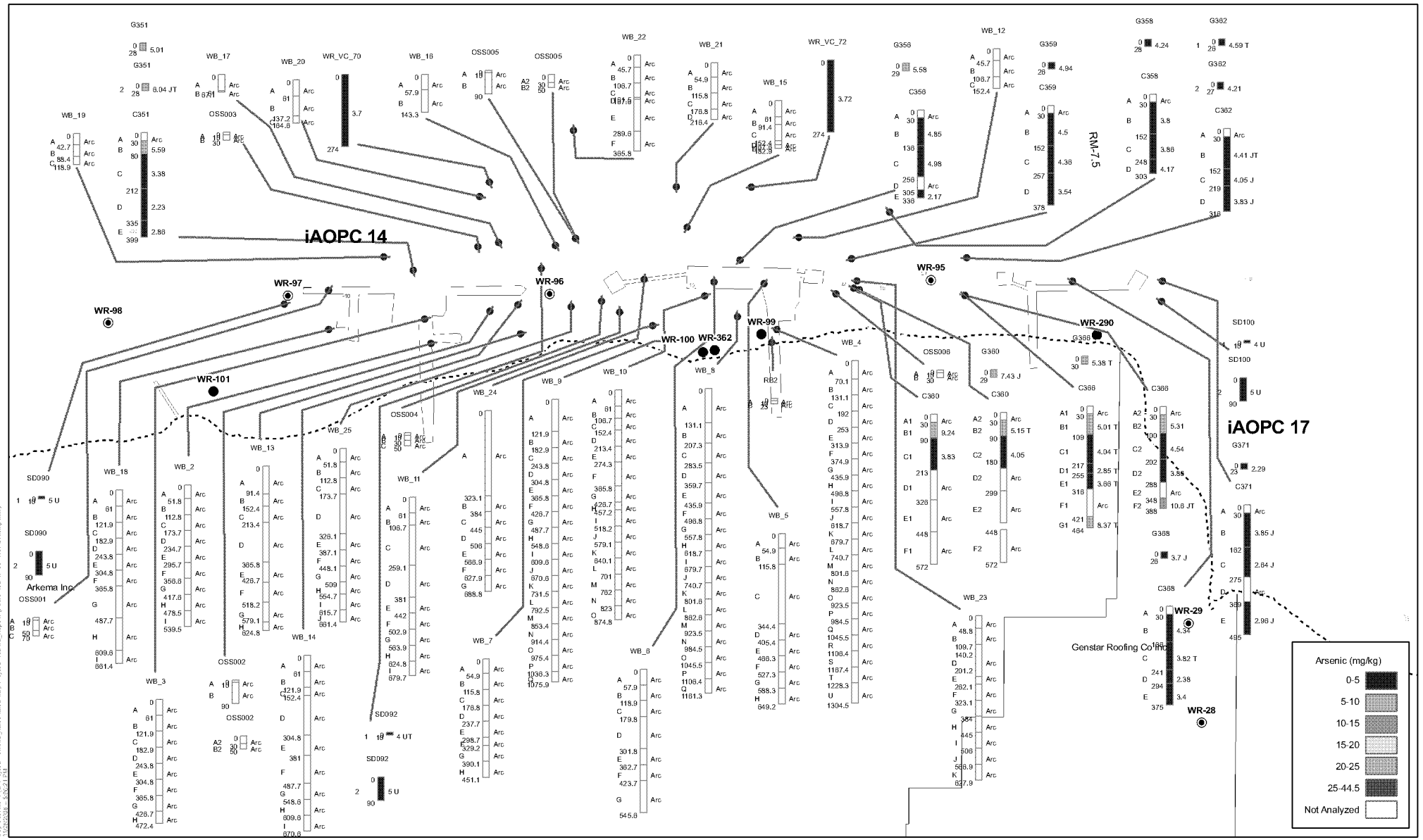
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.11 - 8a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Arsenic (mg/kg)**
**iAOPC 14**

BZTO104(e)032534




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 100 200 300 Feet

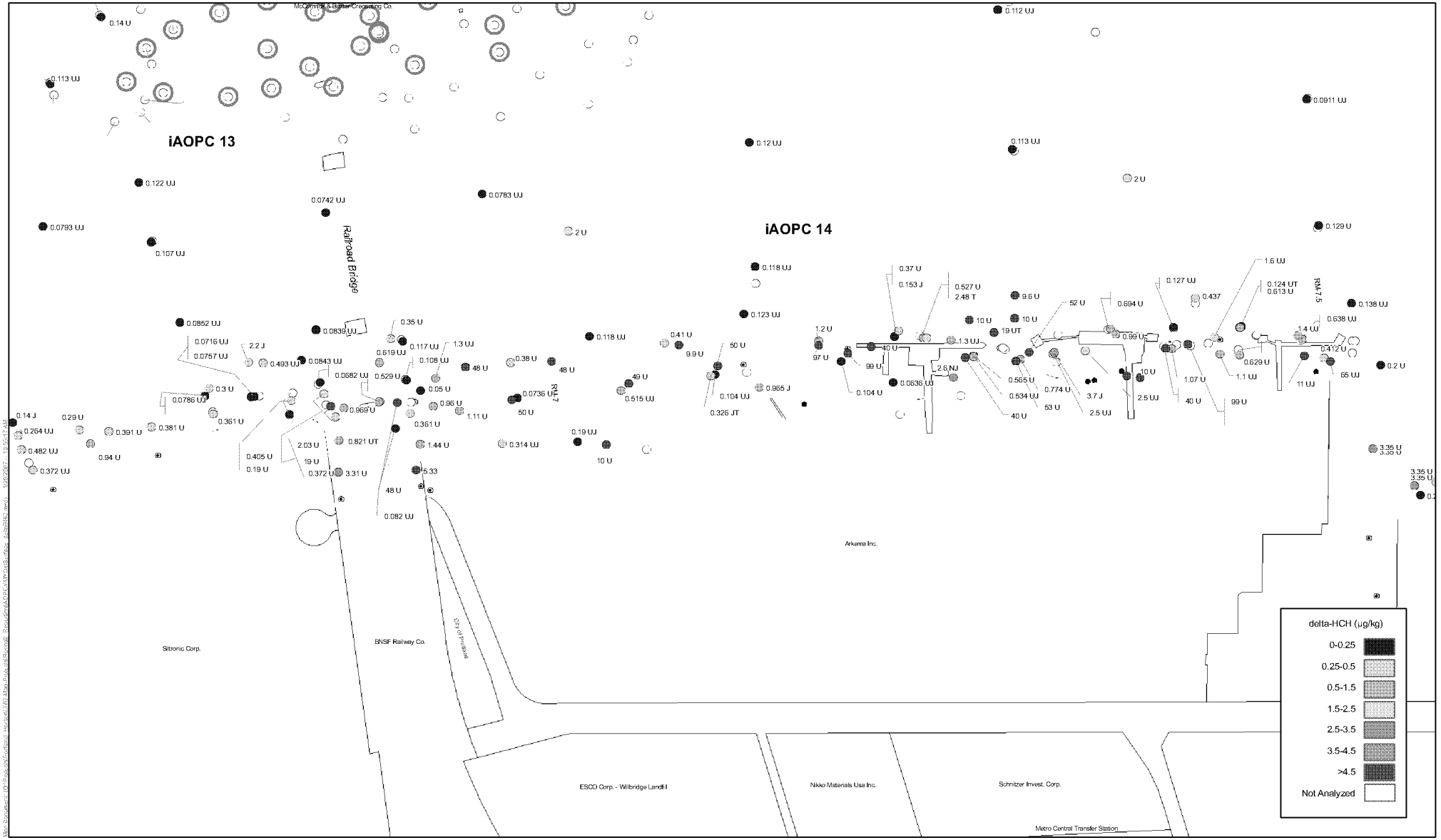
Active Outfalls
Unknown Outfalls
Abandoned Outfalls
Docks and Structures
River Miles
5 foot Contours (NAVD88)

**Bathymetric Change**
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening
Navigation Channel

iAOPC Boundary
Capping Footprint
Dredging (Post 1997)

**Map 11.3.11- 8b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Arsenic (mg/kg)**
**iAOPC 14**

BZTO104(e)032535




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

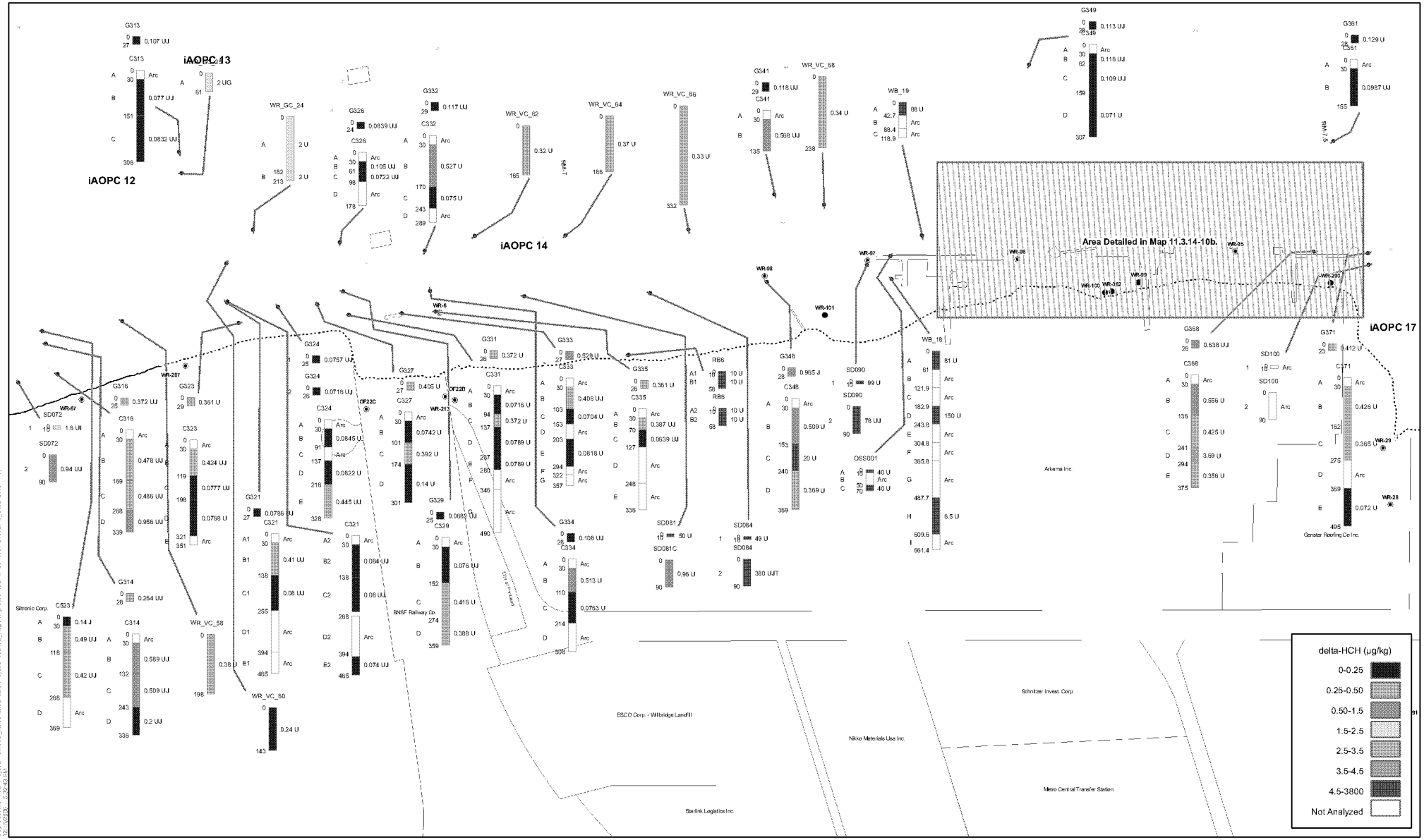
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.11-9**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**delta-Hexachlorocyclohexane (µg/kg)**
**iAOPC 14**

BZTO104(e)032536




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

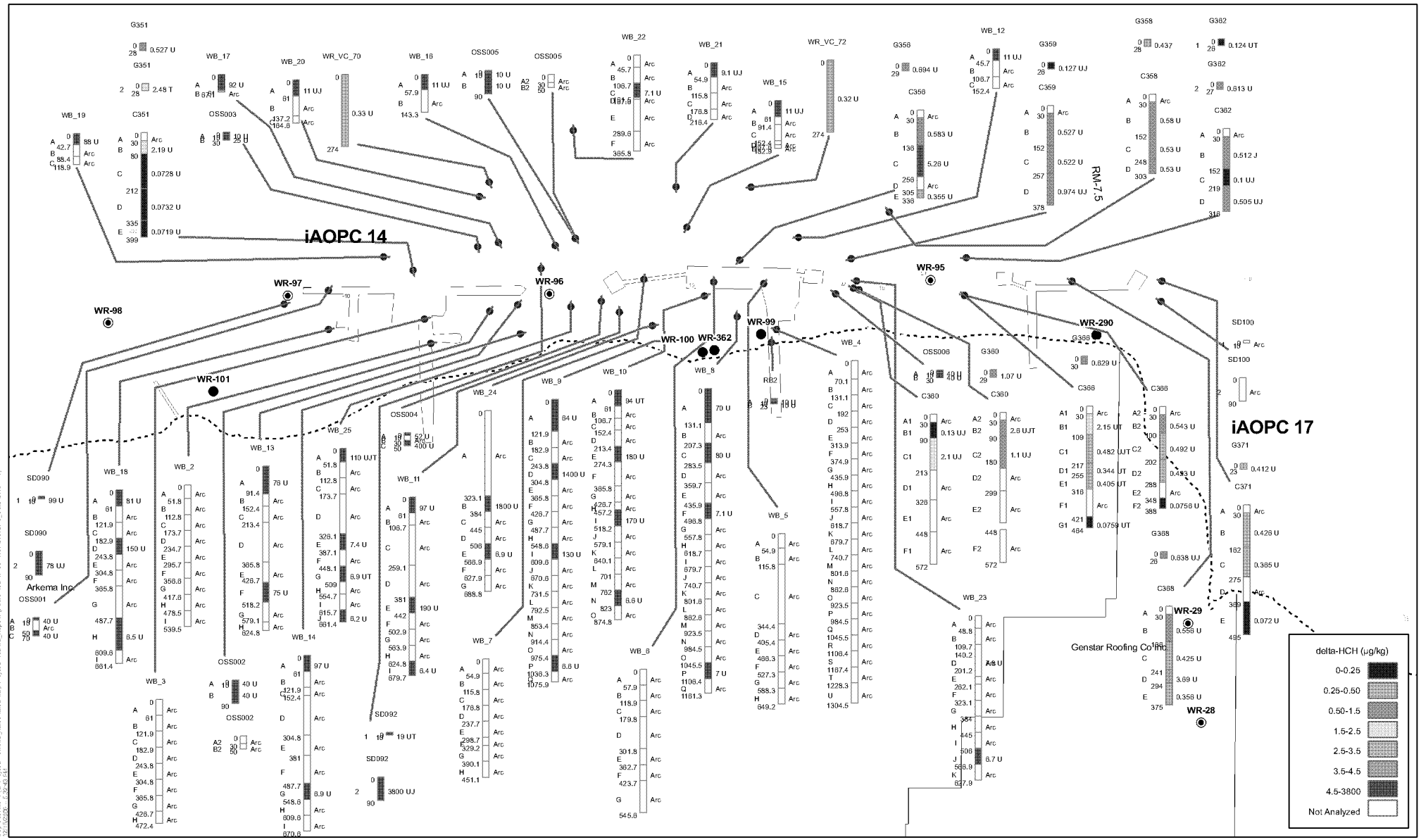
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.11-10a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentration in Subsurface Sediment**
**delta-Hexachlorocyclohexane (µg/kg)**
**iAOPC 14**

BZTO104(e)032537

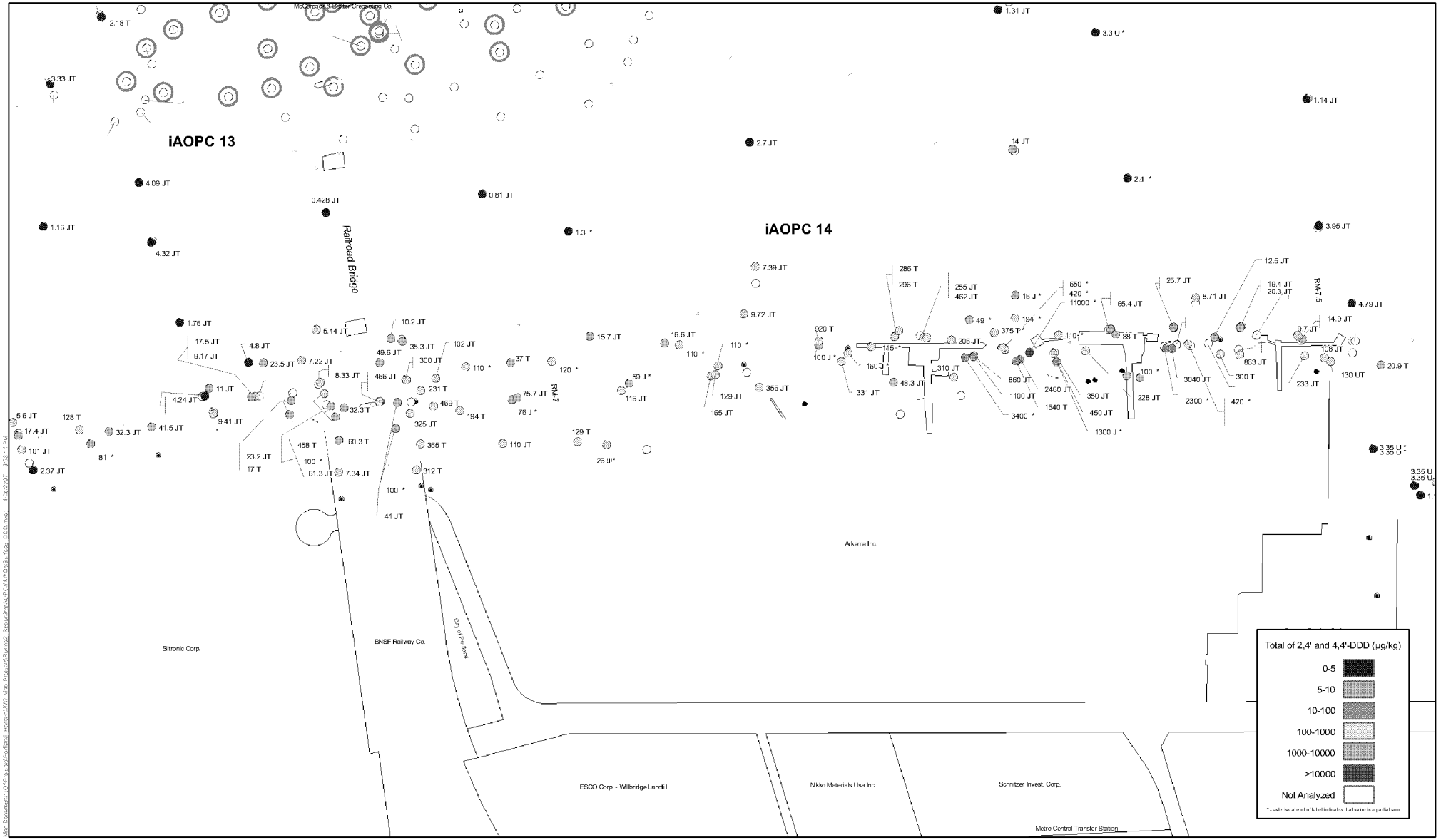



integral consulting inc.

LWG Lower Willamette Group

**Map 11.3.11-10b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentration in Subsurface Sediment**
**delta-Hexachlorocyclohexane (µg/kg)**
**iAOPC 14**

BZTO104(e)032538




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

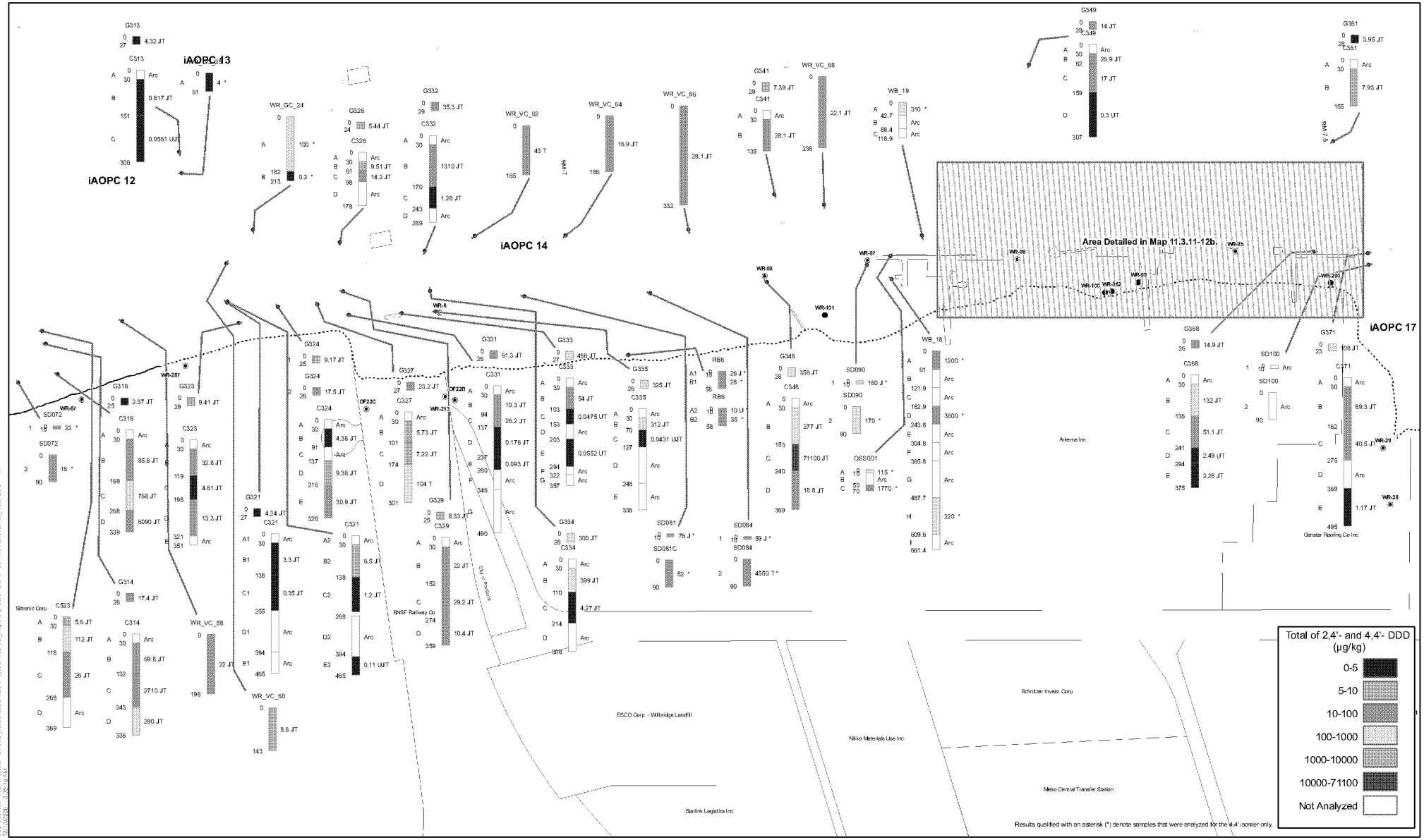
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- AOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.11-11**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total of 2,4' and 4,4'-DDD (µg/kg)**
**iAOPC 14**

BZTO104(e)032539




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

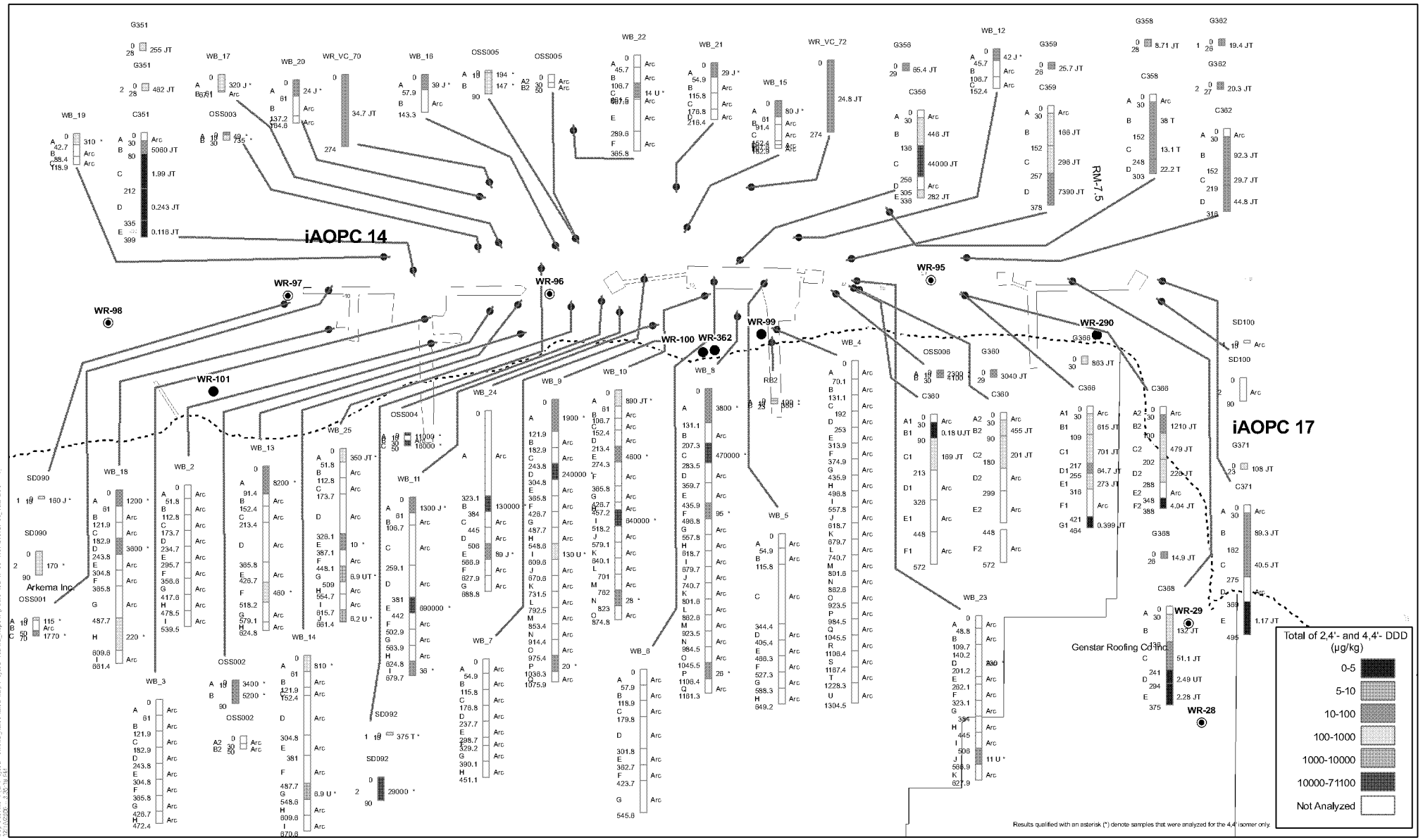
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

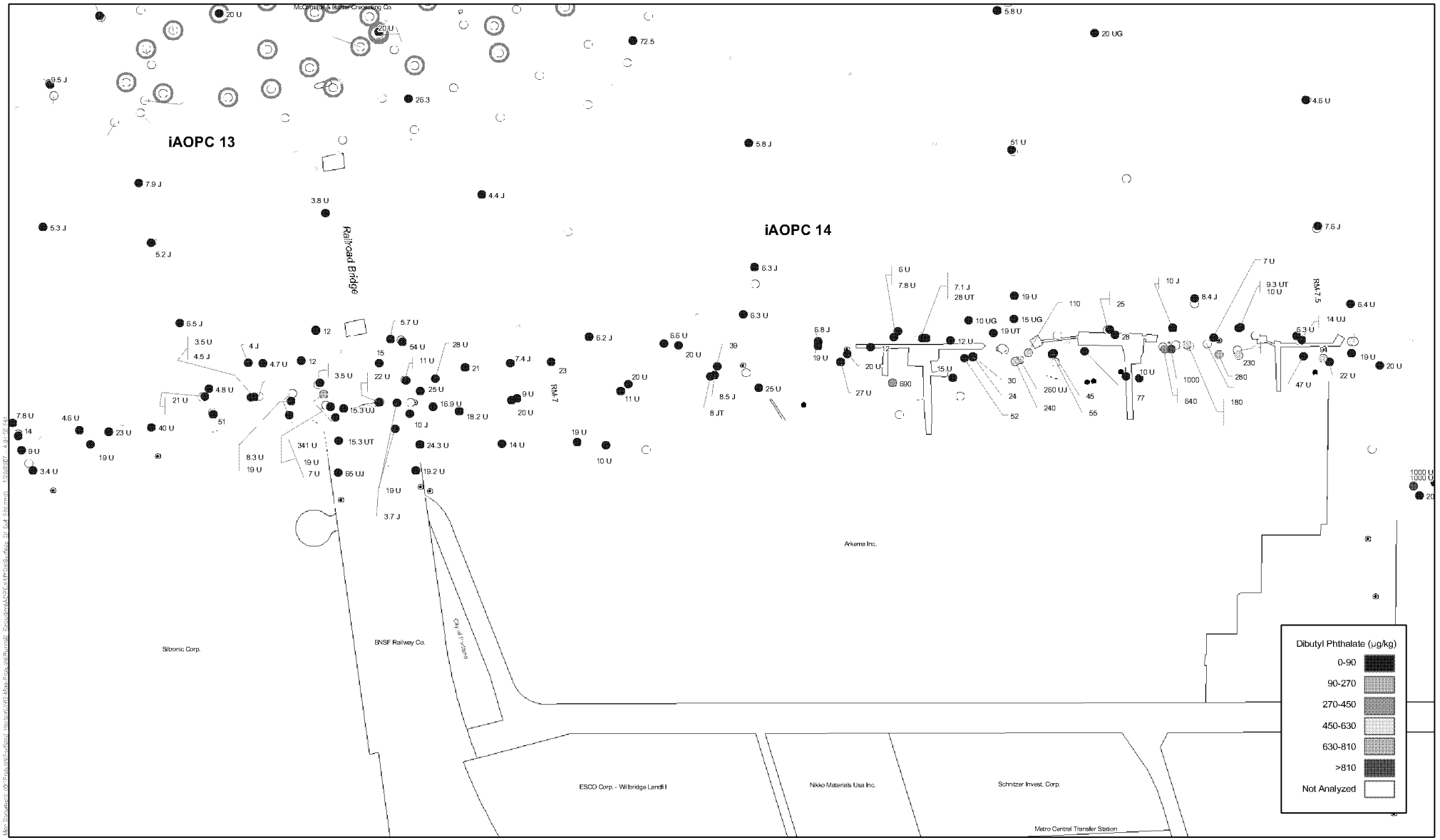
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.11-12a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total of 2,4'- and 4,4'- DDD (µg/kg)**
**iAOPC 14**

BZTO104(e)032540

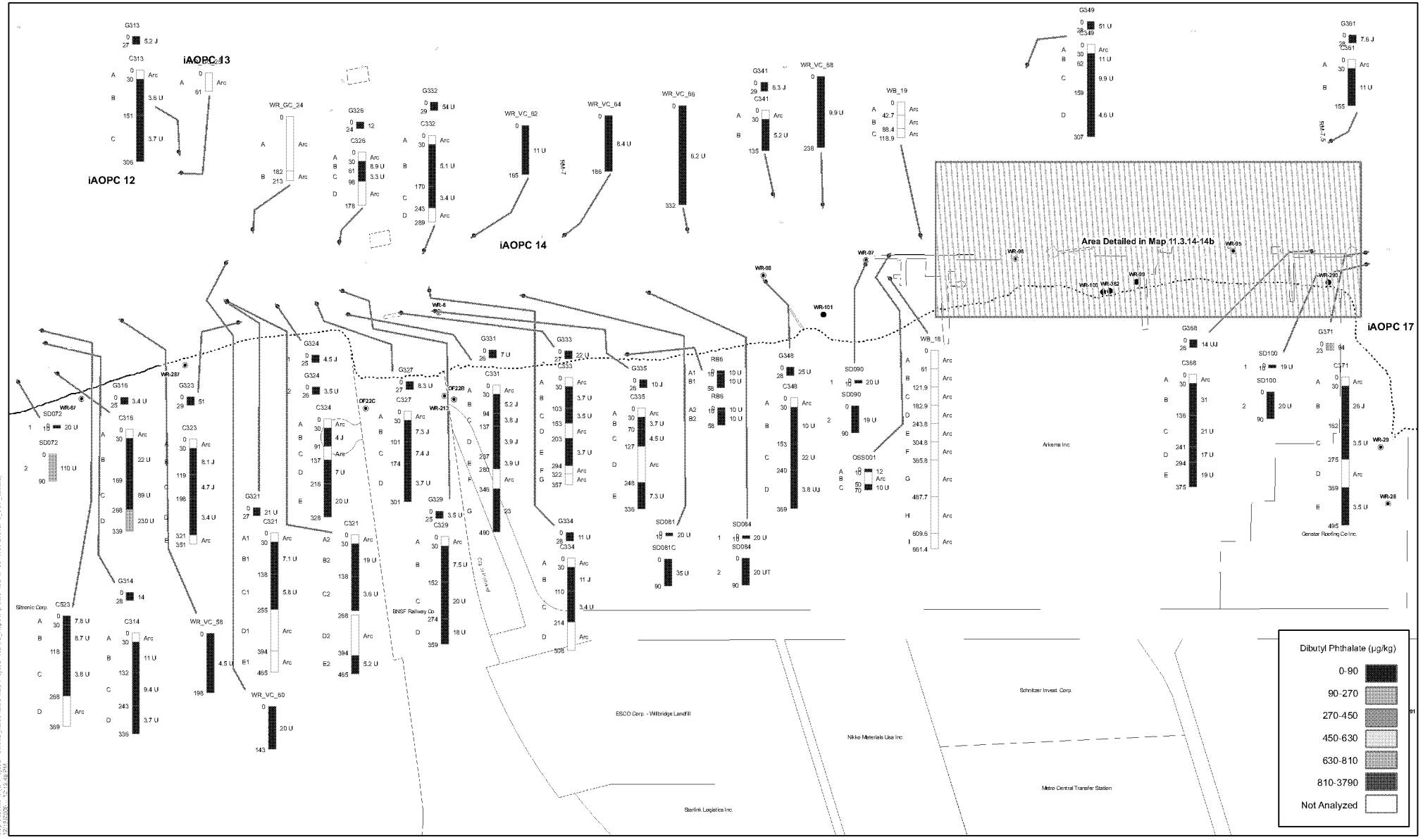



BZTO104(e)032541




**Map 11.3.11-13**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Dibutyl Phthalate (µg/kg)**
**iAOPC 14**

BZTO104(e)032542




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

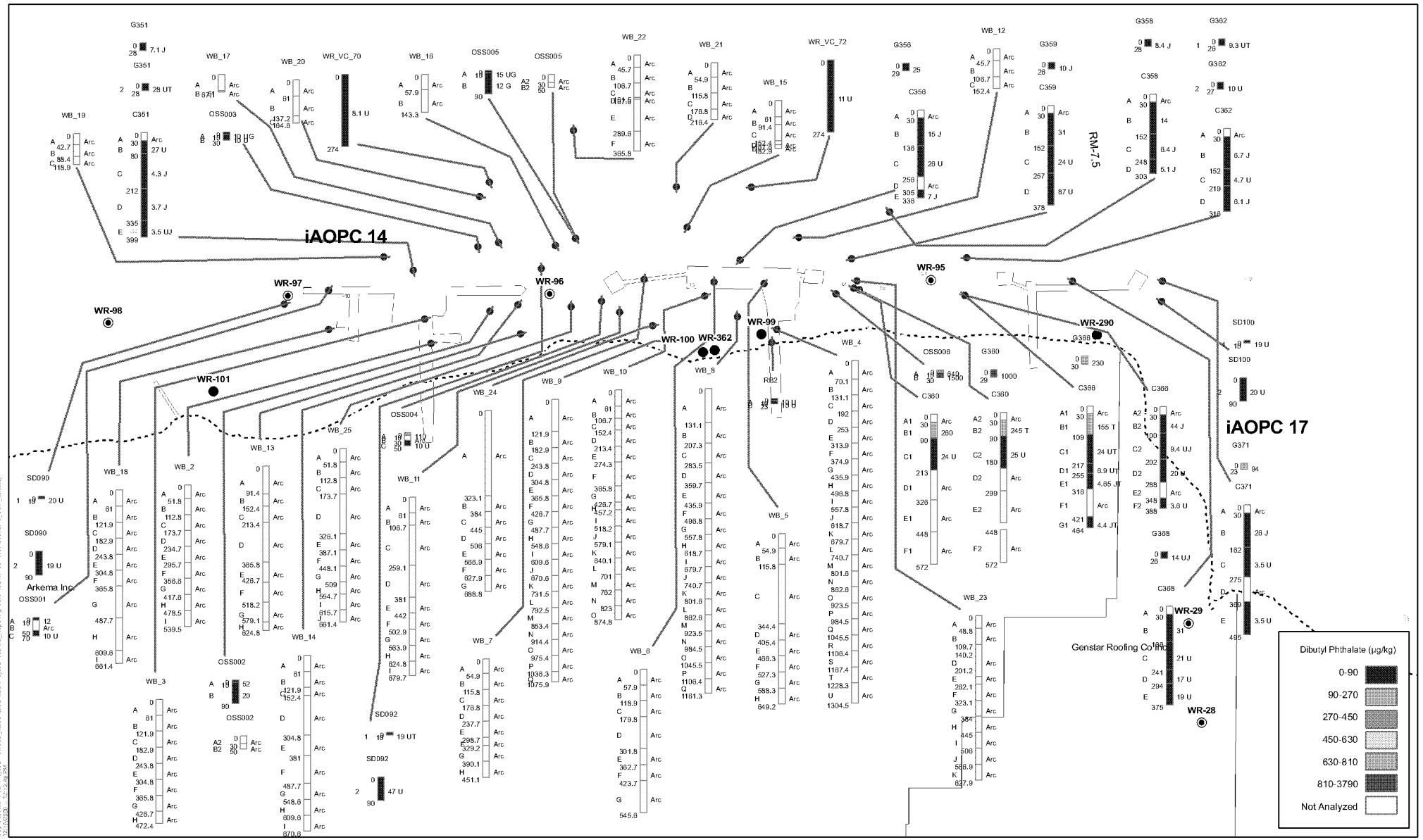
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.11-14a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Dibutyl Phthalate (µg/kg)**
**iAOPC 14**

BZTO104(e)032543




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 100 200 300 Feet

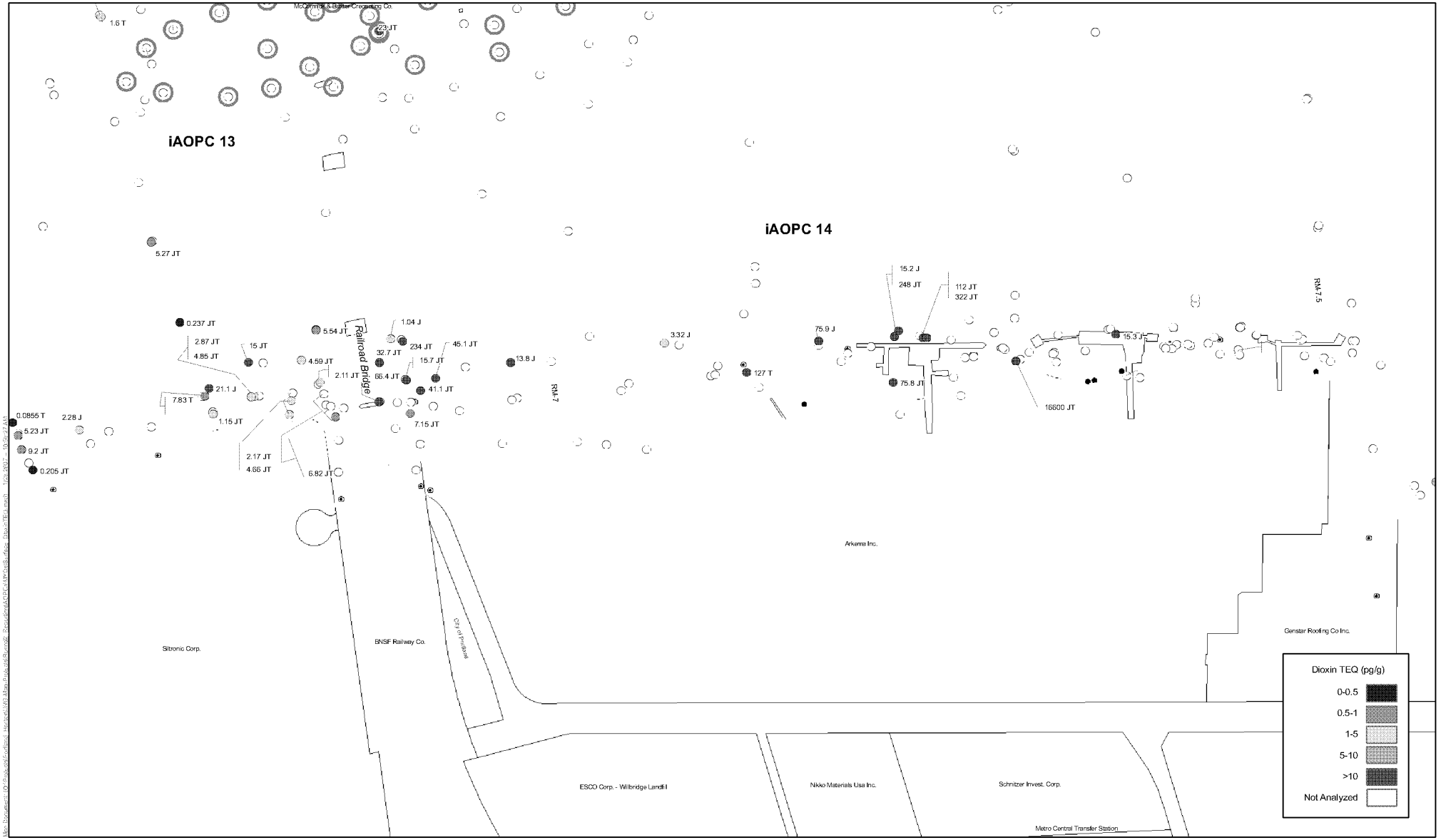
Active Outfalls
Unknown Outfalls
Abandoned Outfalls
Docks and Structures
River Miles
5 foot Contours (NAVD88)

Bathymetric Change
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening
Navigation Channel

AOPC Boundary
Capping Footprint
Dredging (Post 1997)

**Map 11.3.11-14b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Dibutyl Phthalate (µg/kg)**
**iAOPC 14**

BZTO104(e)032544




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evens and Associates, Inc.

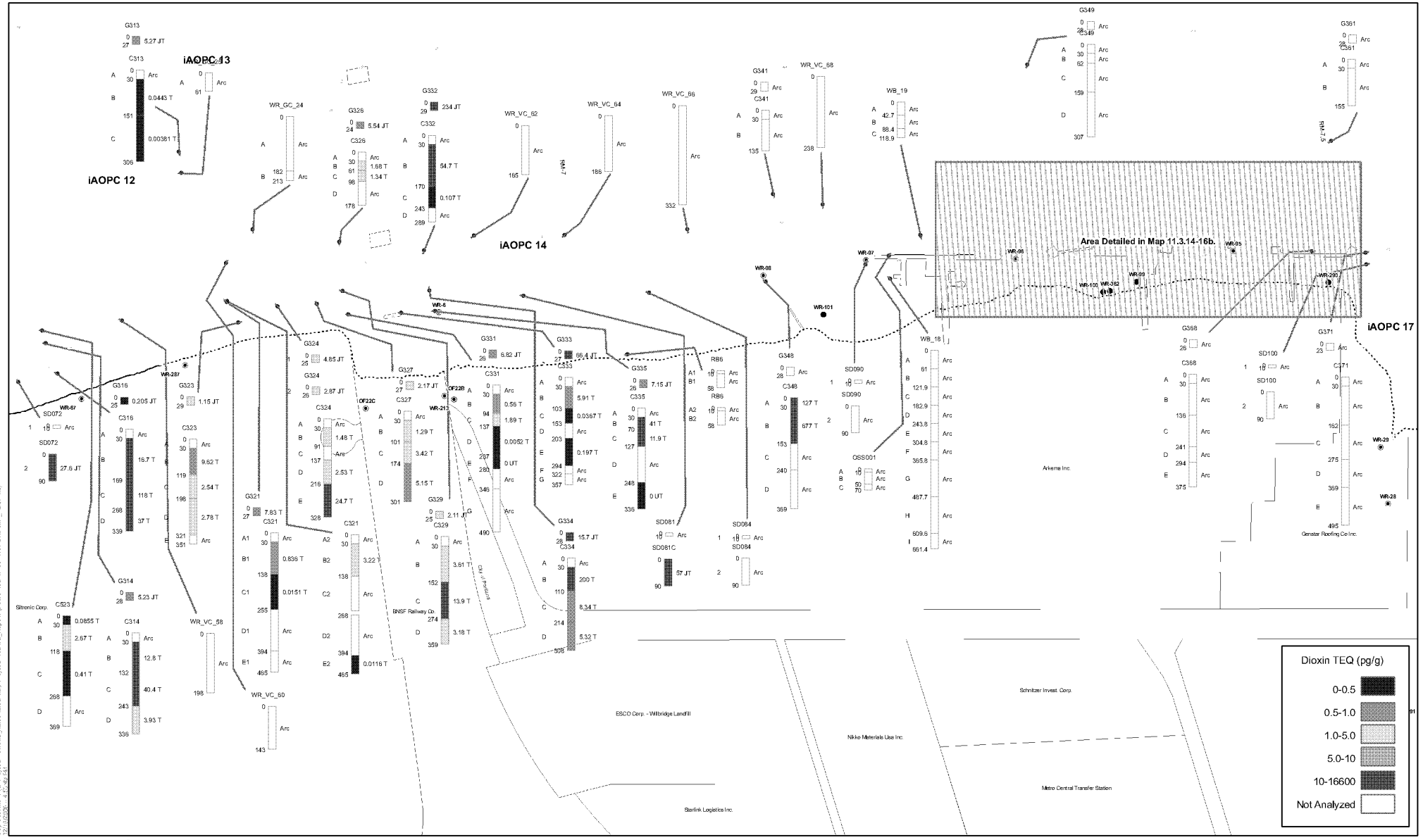
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.11-15**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Dioxin 2,3,7,8-TCDD Toxic Equivalence (pg/g)**
**iAOPC 14**

BZTO104(e)032545




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

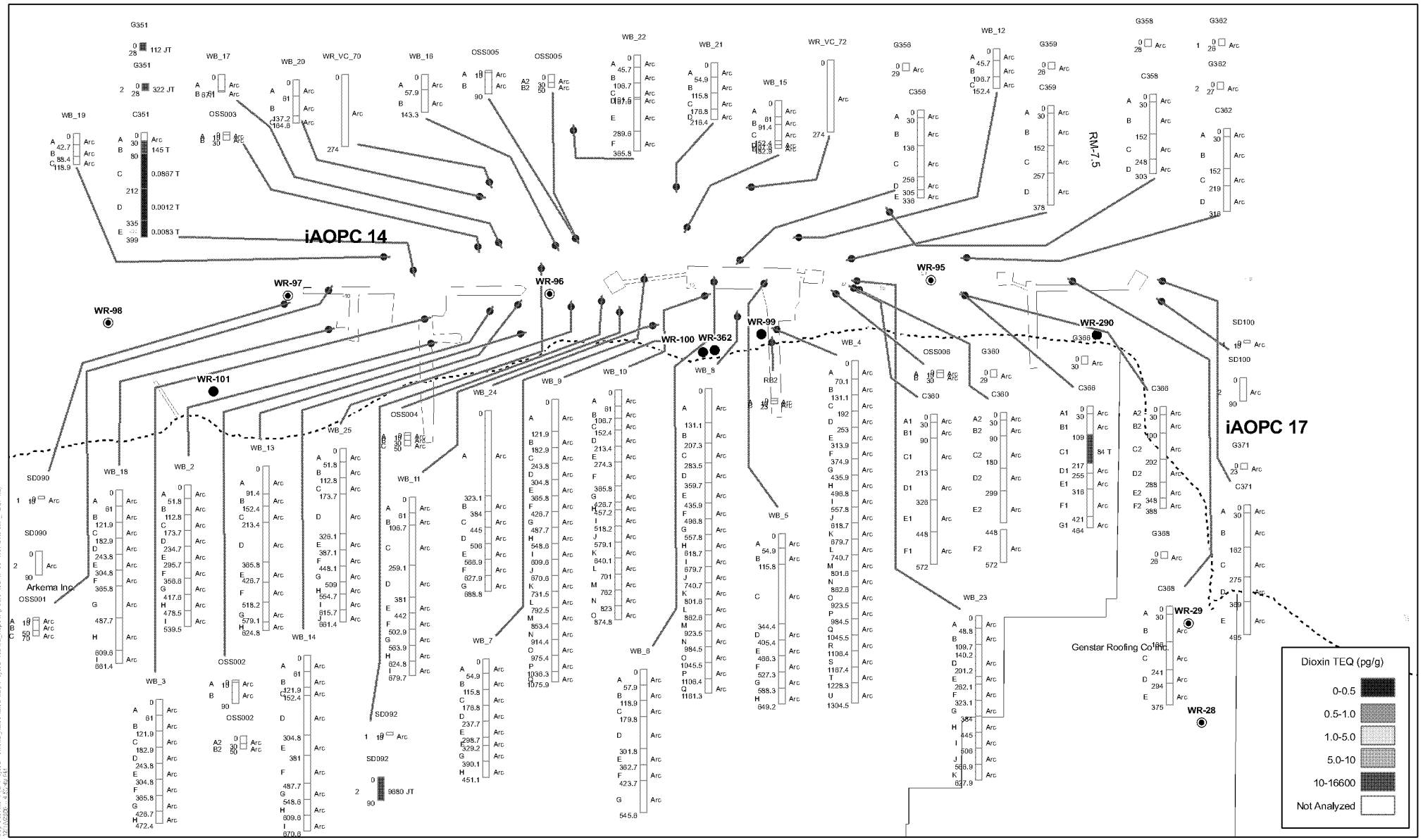
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.11-16a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Dioxin 2,3,7,8-TCDD Toxic Equivalence (pg/g)**
**iAOPC 14**

BZTO104(e)032546




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

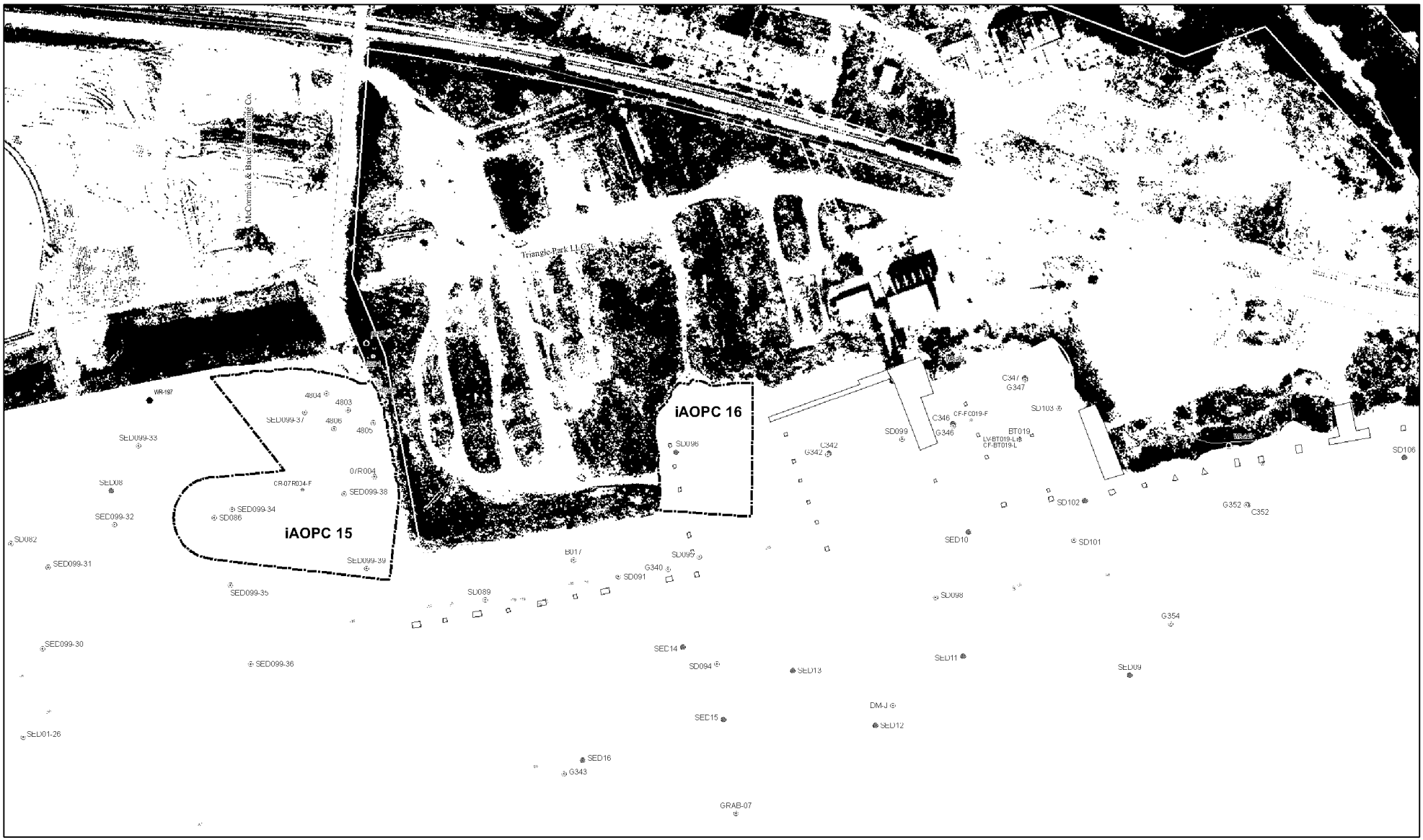
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.11-16b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Dioxin 2,3,7,8-TCDD Toxic Equivalence (pg/g)**
**iAOPC 14**

BZTO104(e)032547




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES
Transportation, Property boundaries: Metro RLIS.

Channel & River miles: US Army Corps of Engineers.

Bathymetric Information: David Evans and Associates, Inc.

RLIS Aerial Images: February 2005 'leaf off' flight (6" pixel).

iAOPCs
River Mile
Navigation Channel
River 13ft NAVD88

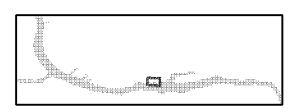
Docks and Structures
Capping
Dredging (Post 1997)

**Bathymetric Change**
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening

Clam, CF
Mudworm, LV
Crayfish, CR
Sculpin, SC
Multiplate Invertebrates, MI

Surface Water
Surface Sediment
Subsurface Sediment
TZW Sample Location (<38cm BML)

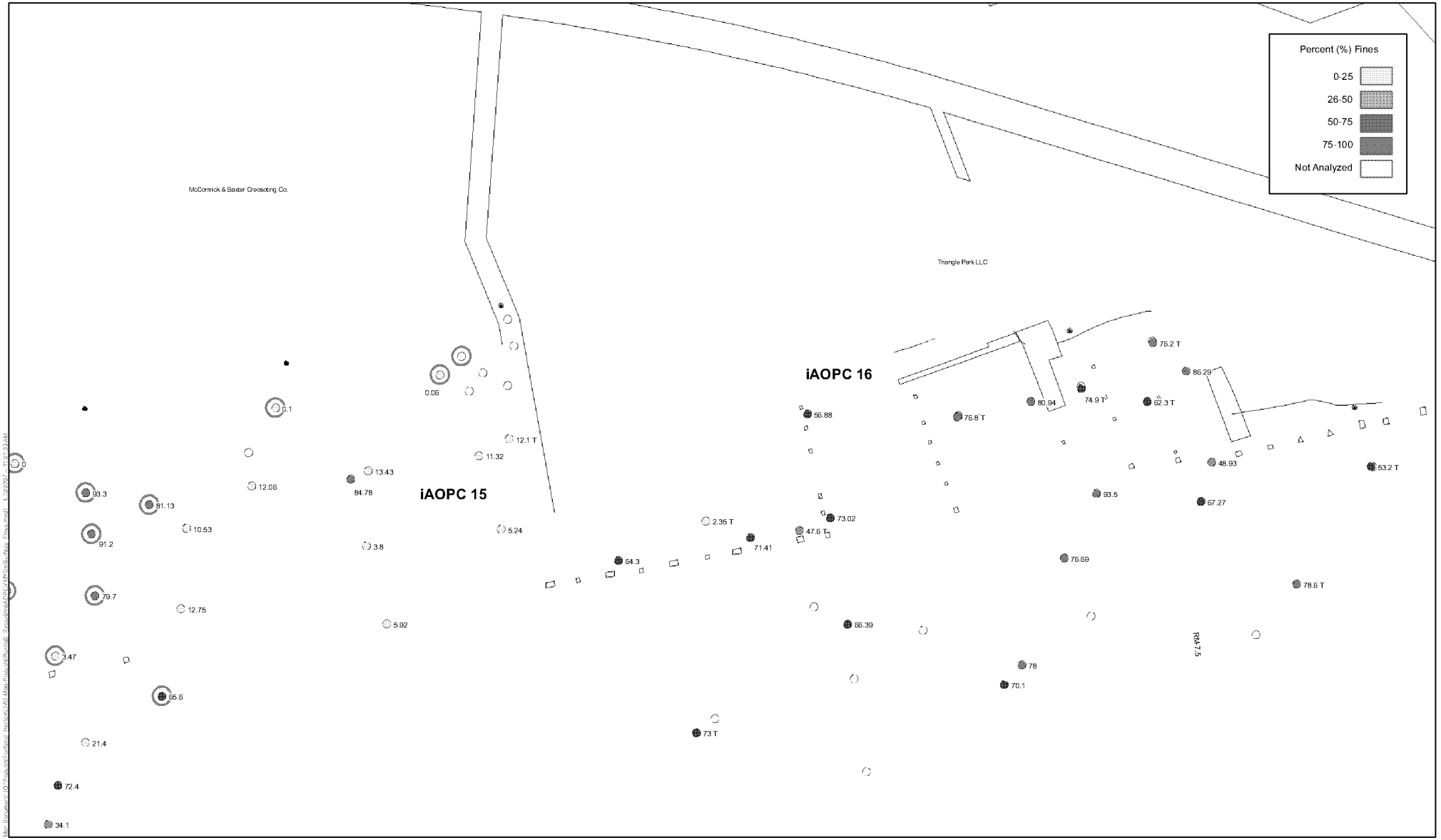
Active Outfalls
Unknown Outfalls
Abandoned Outfalls



**Map 11.3.12-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**iAOPC Site Overview**
**iAOPC 15,16**

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\iAOPCs\SiteOverviews\01292007.mxd)
2/6/2007 -- 8:13:12 AM

BZTO104(e)032548




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 100 200 300 Feet

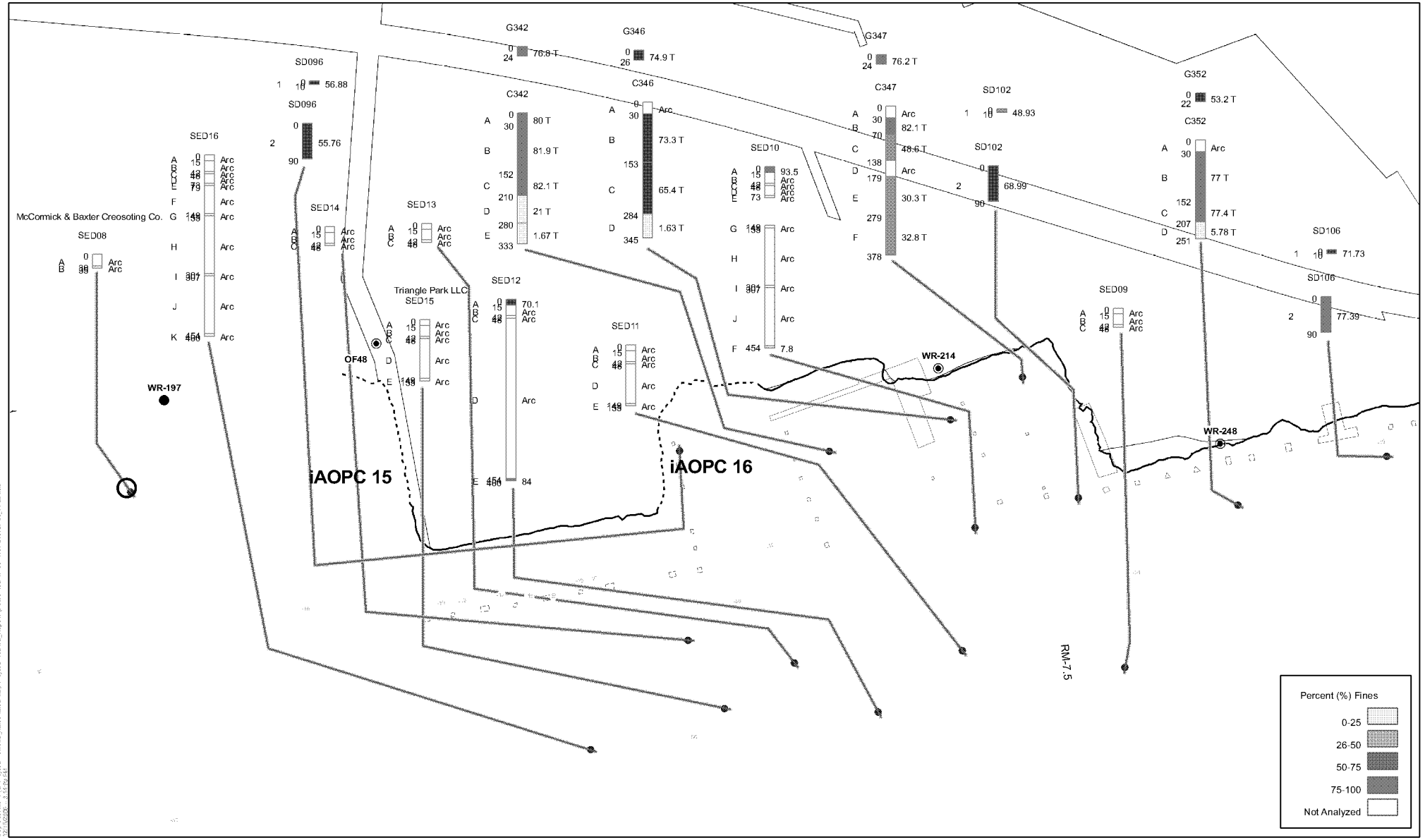
Active Outfalls
Unknown Outfalls
Abandoned Outfalls
Navigation Channel
River_13ft_NAVD88

**Bathymetric Change**
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening
5 foot Contours (NAVD88)

iAOPC Boundary
capping
Dredging (Post 1997)
Dredged or Capped

**Map 11.3.12-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Texture**
**Percent (%) Fines**
**iAOPC 15,16**

BZTO104(e)032549




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

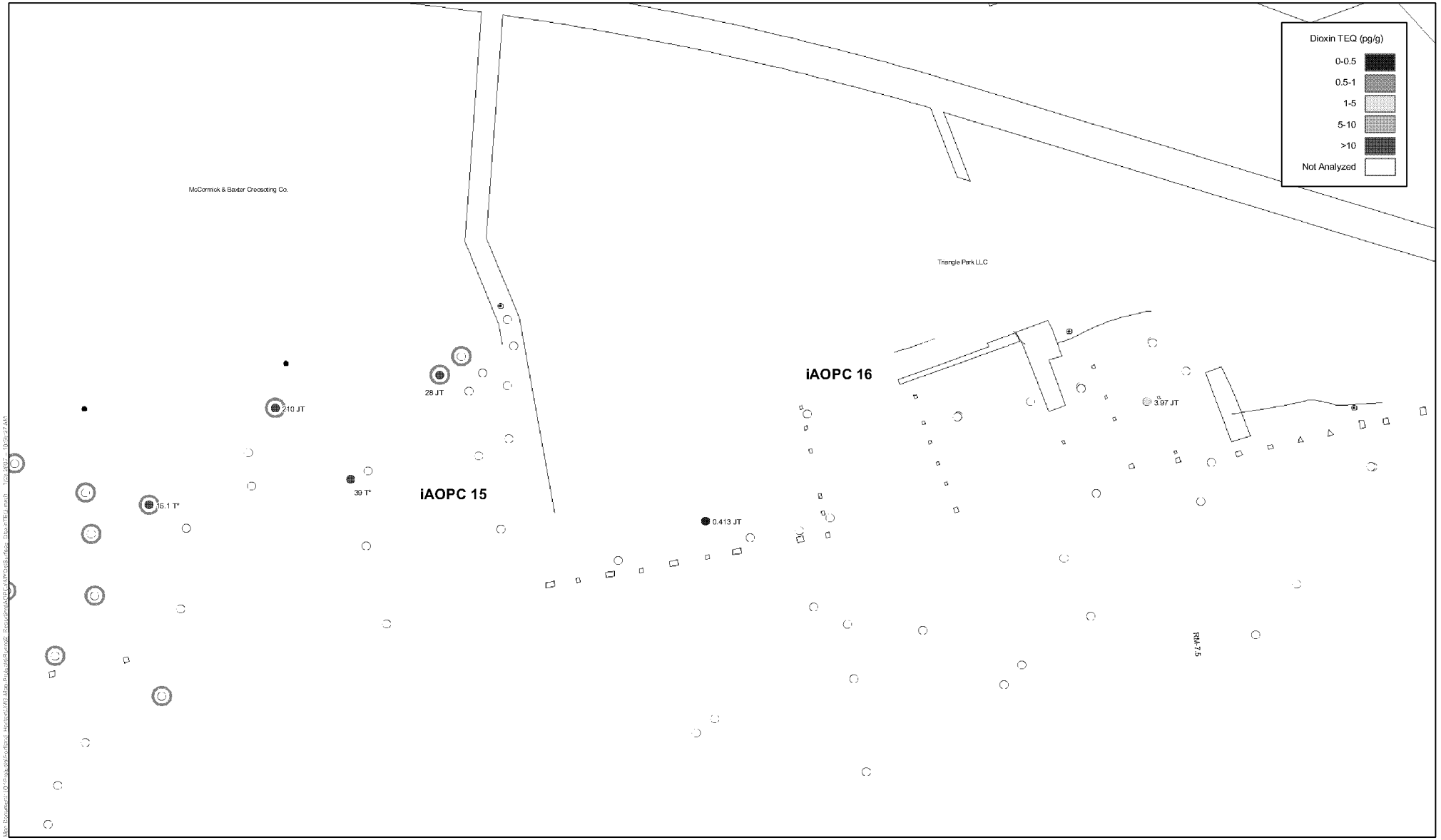
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.12- 2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 15, 16**

BZTO104(e)032550




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evens and Associates, Inc.

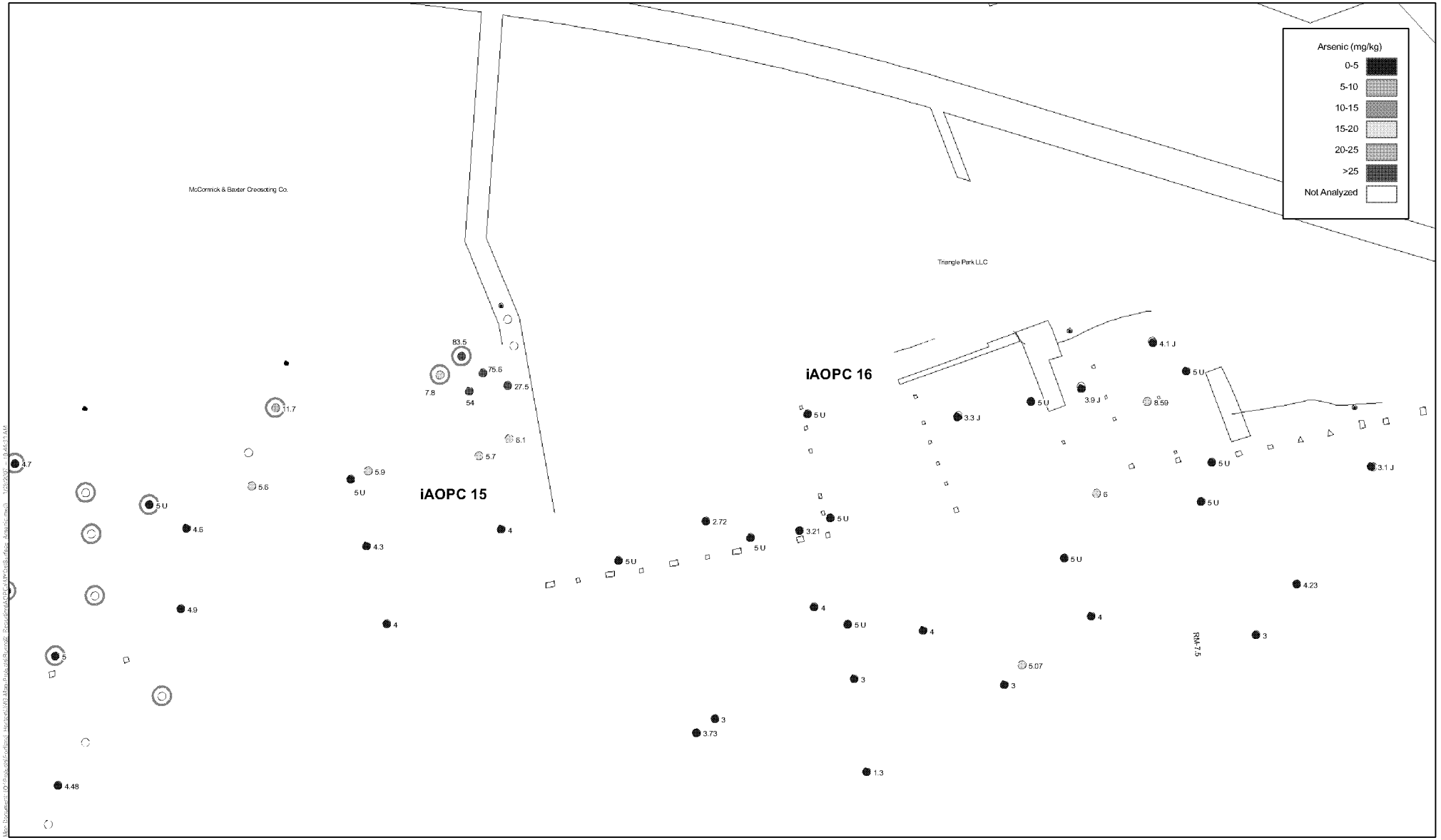
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.12-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Dioxin 2,3,7,8-TCDD Toxic Equivalence (pg/g)**
**iAOPC 15,16**

BZTO104(e)032551




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

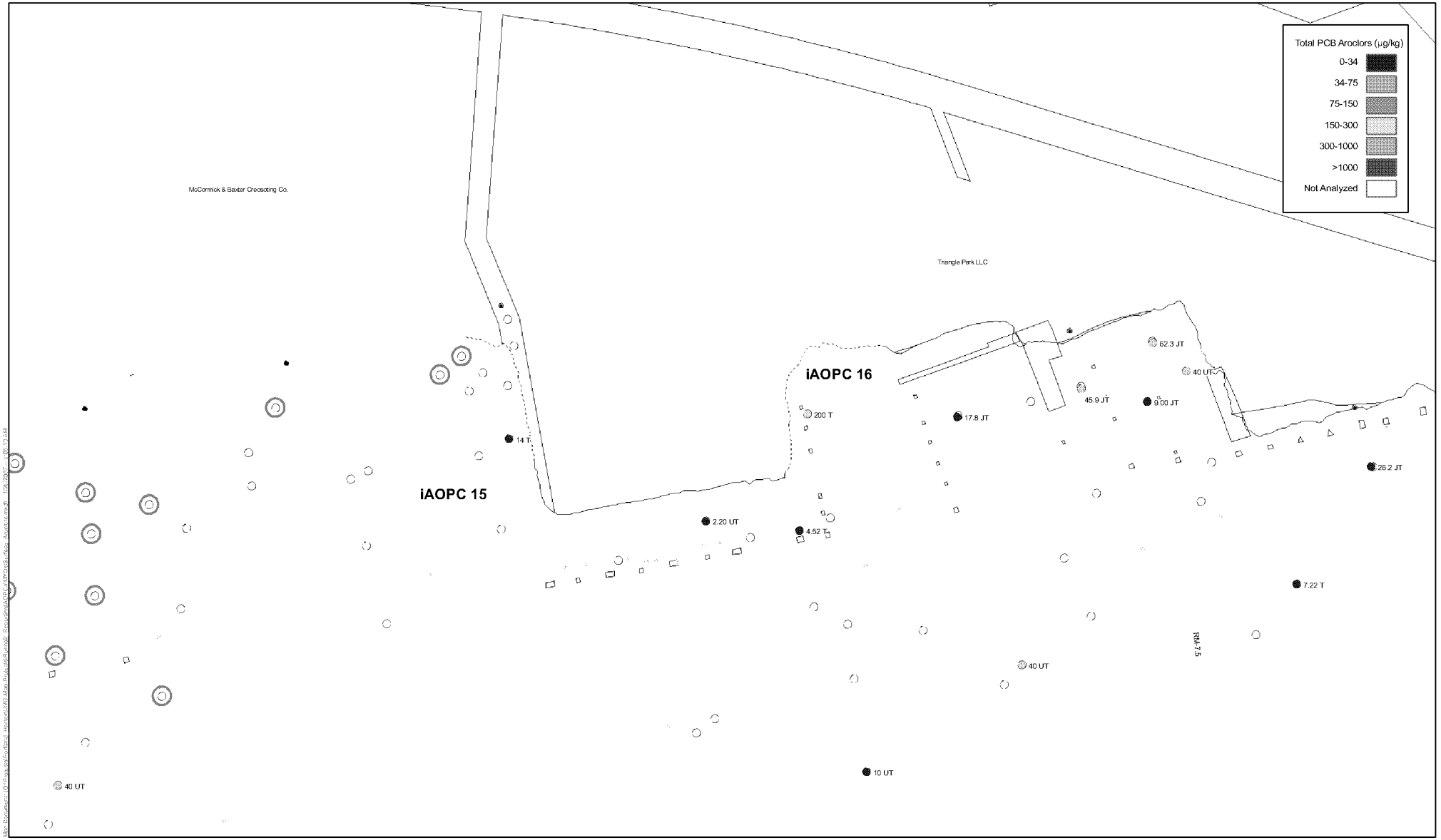
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.12-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Arsenic (mg/kg)**
**iAOPC 15,16**

BZTO104(e)032552




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

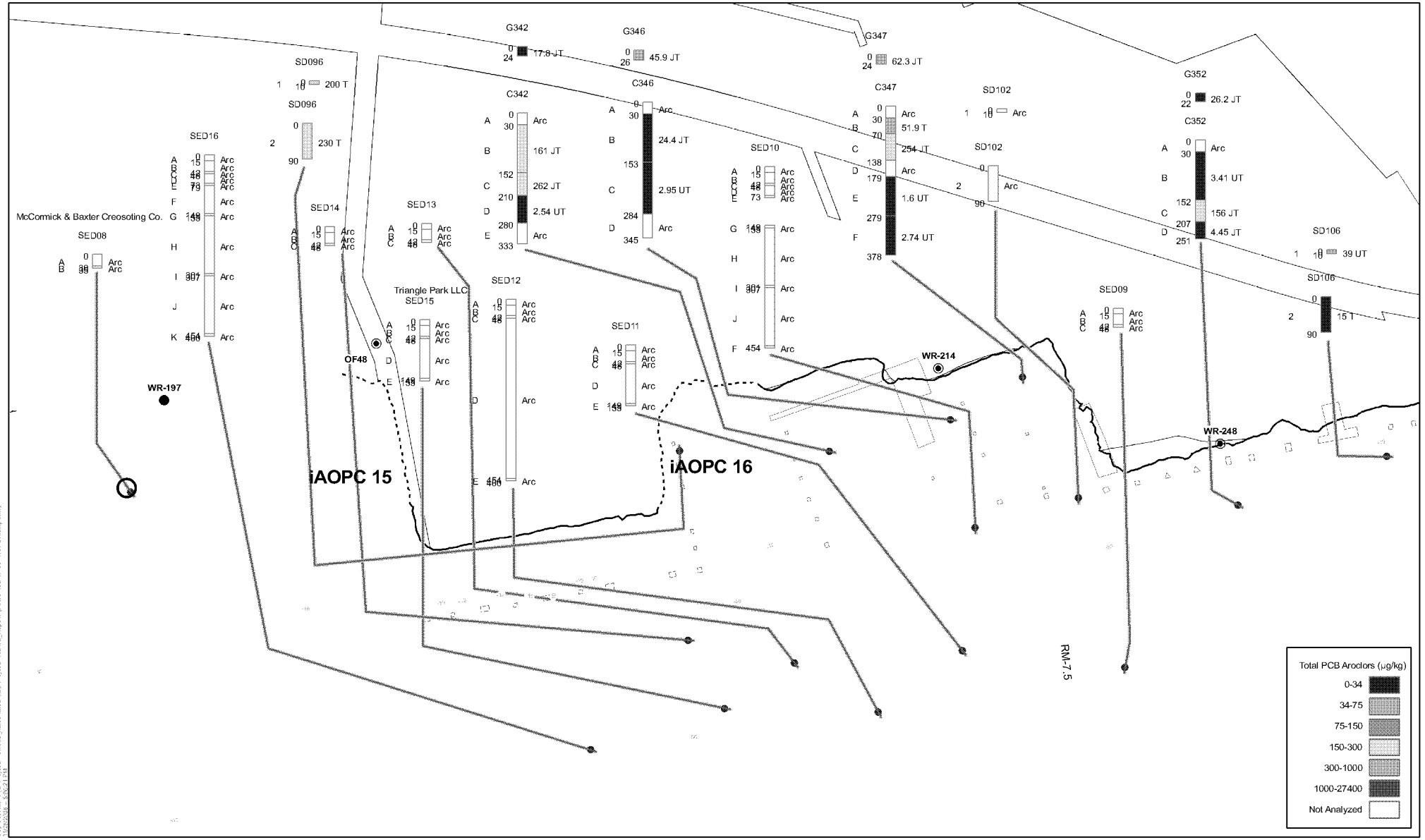
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.12-5**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 15,16**

BZTO104(e)032553




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

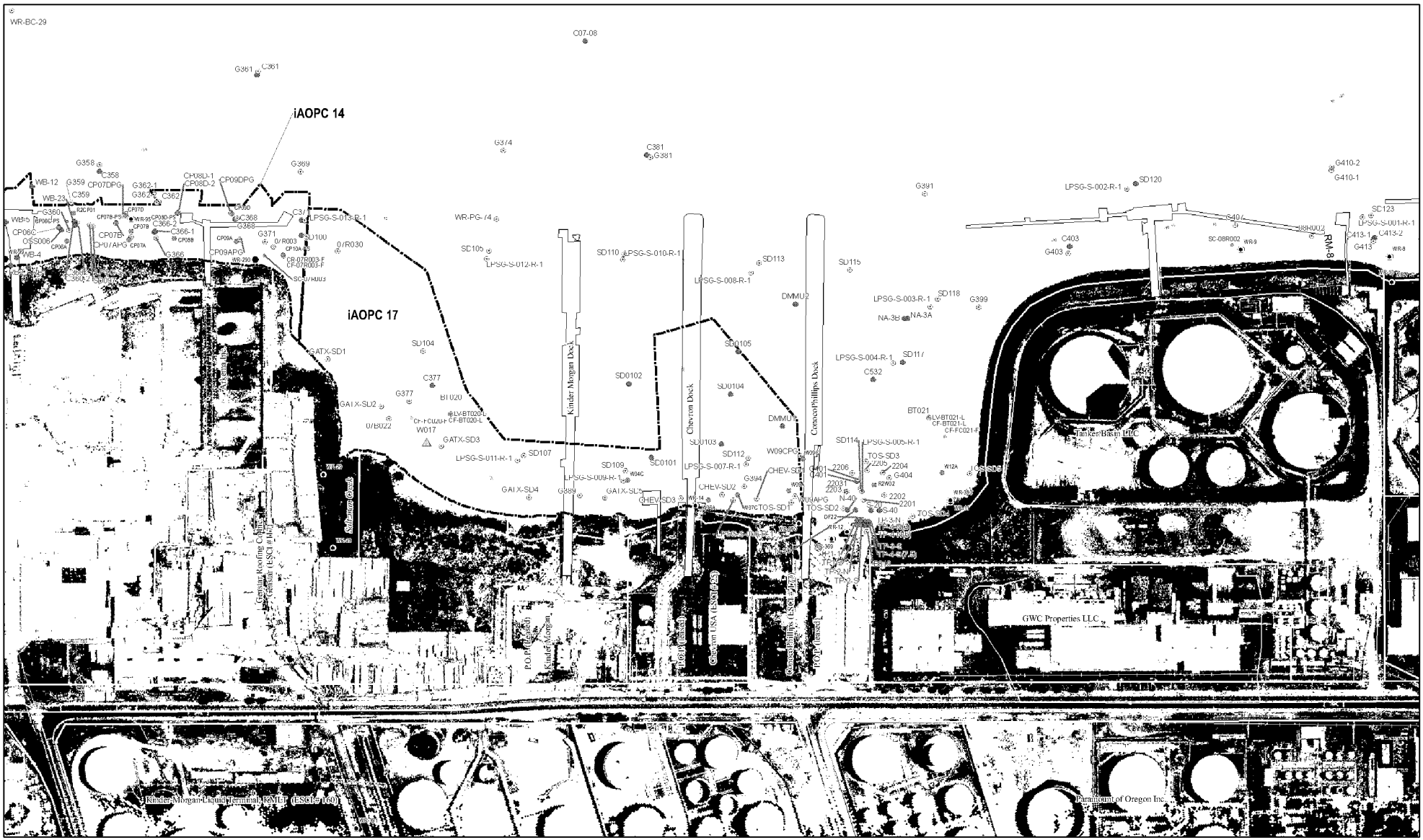
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.12-6**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 15, 16**

BZTO104(e)032554




integral consulting inc.

0 100 200 300 Feet

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES
Transportation, Property boundaries: Metro RLIS.

Channel & River miles: US Army Corps of Engineers.

Bathymetric Information: David Evans and Associates, Inc.

RLIS Aerial Images: February 2005 'leaf off' flight (6" pixel).

iAOPCs
River Mile
Navigation Channel
River 13ft NAVD88

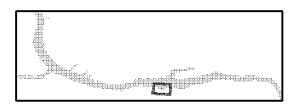
Docks and Structures
Capping
Dredging (Post 1997)

**Bathymetric Change**
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening

Clam, CF
Mudworm, LV
Crayfish, CR
Sculpin, SC
Multiplate Invertebrates, MI

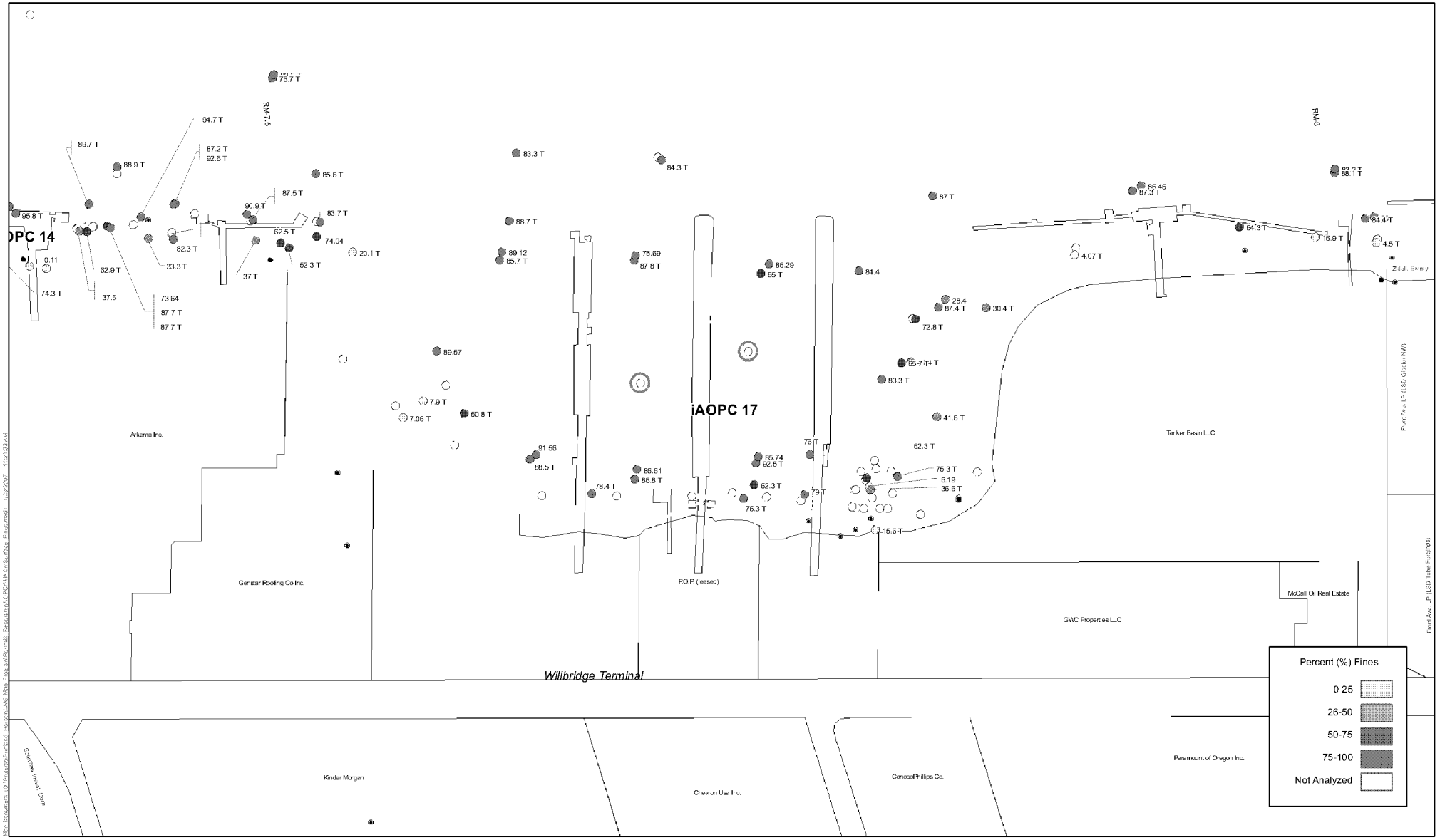
Surface Water
Surface Sediment
Subsurface Sediment
TZW Sample Location (<38cm BML)

Active Outfalls
Unknown Outfalls
Abandoned Outfalls



**Map 11.3.13-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**iAOPC Site Overview**
**iAOPC 17**

BZTO104(e)032555




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

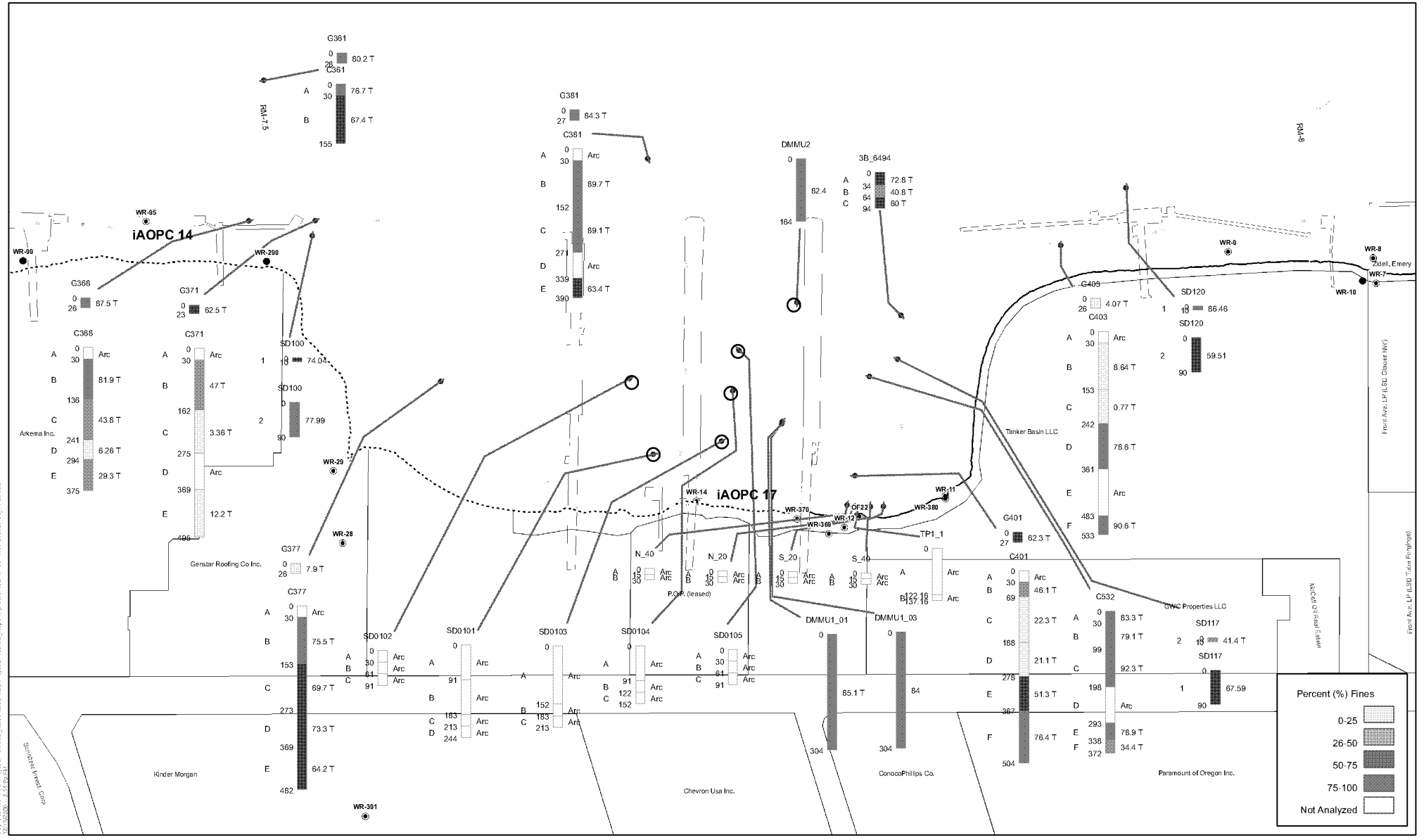
Active Outfalls
Unknown Outfalls
Abandoned Outfalls
Navigation Channel
River_13ft_NAVD88

**Bathymetric Change**
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening
5 foot Contours (NAVD88)

iAOPC Boundary
capping
Dredging (Post 1997)
Dredged or Capped

**Map 11.3.13-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Texture**
**Percent (%) Fines**
**iAOPC 17**

BZTO104(e)032556




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

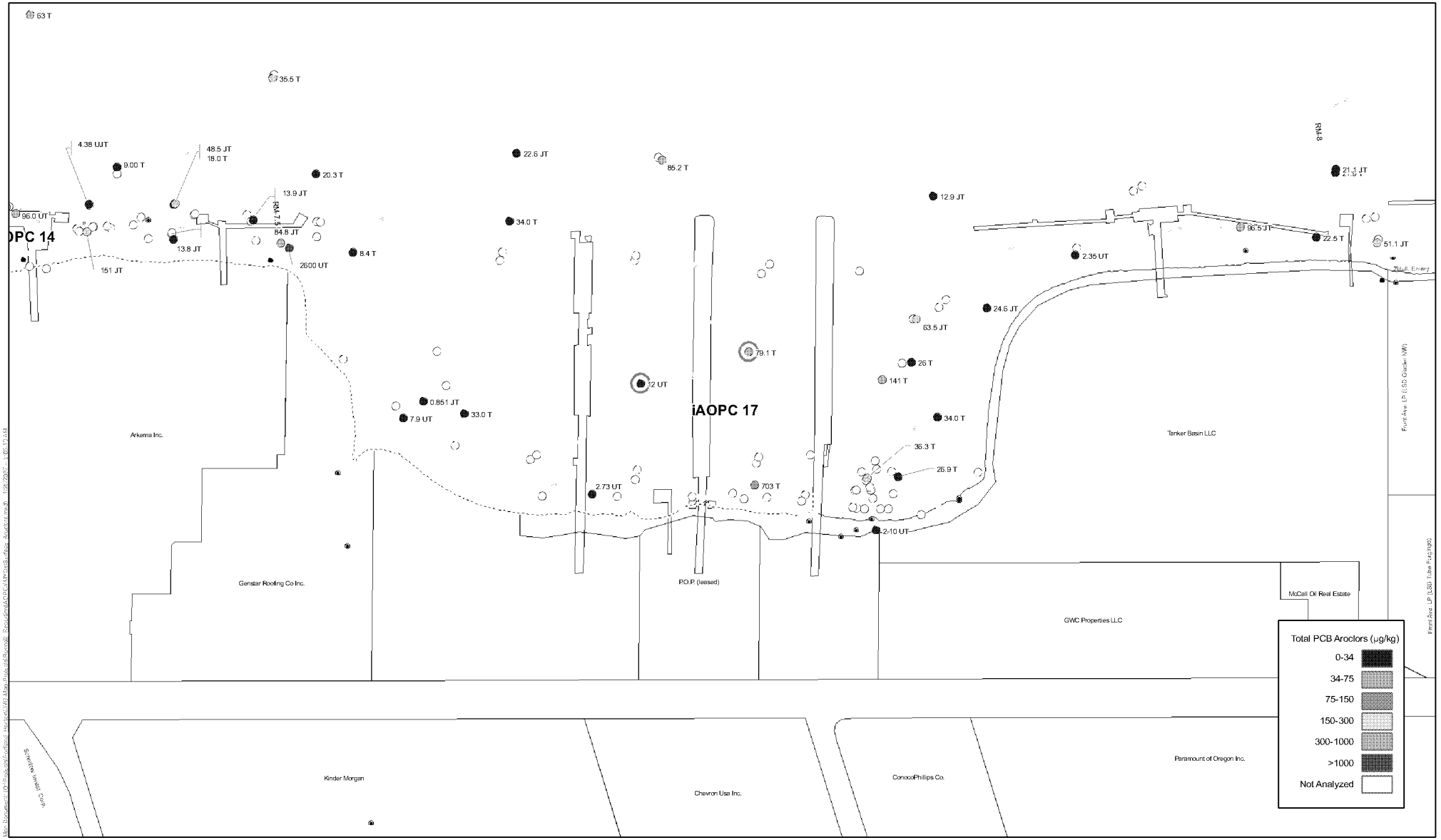
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.13- 2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 17**

BZTO104(e)032557




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

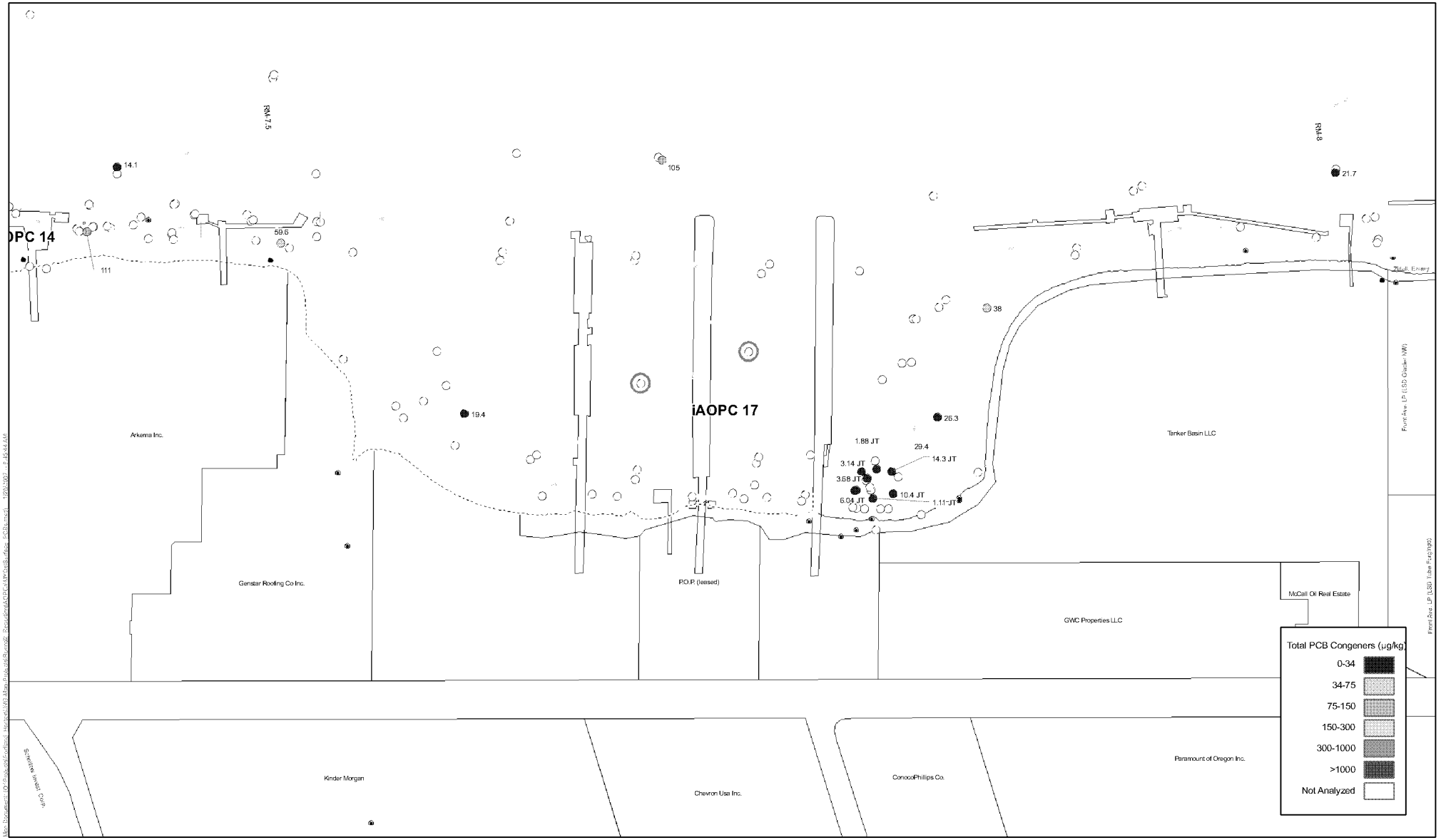
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.13-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 17**

BZTO104(e)032558




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

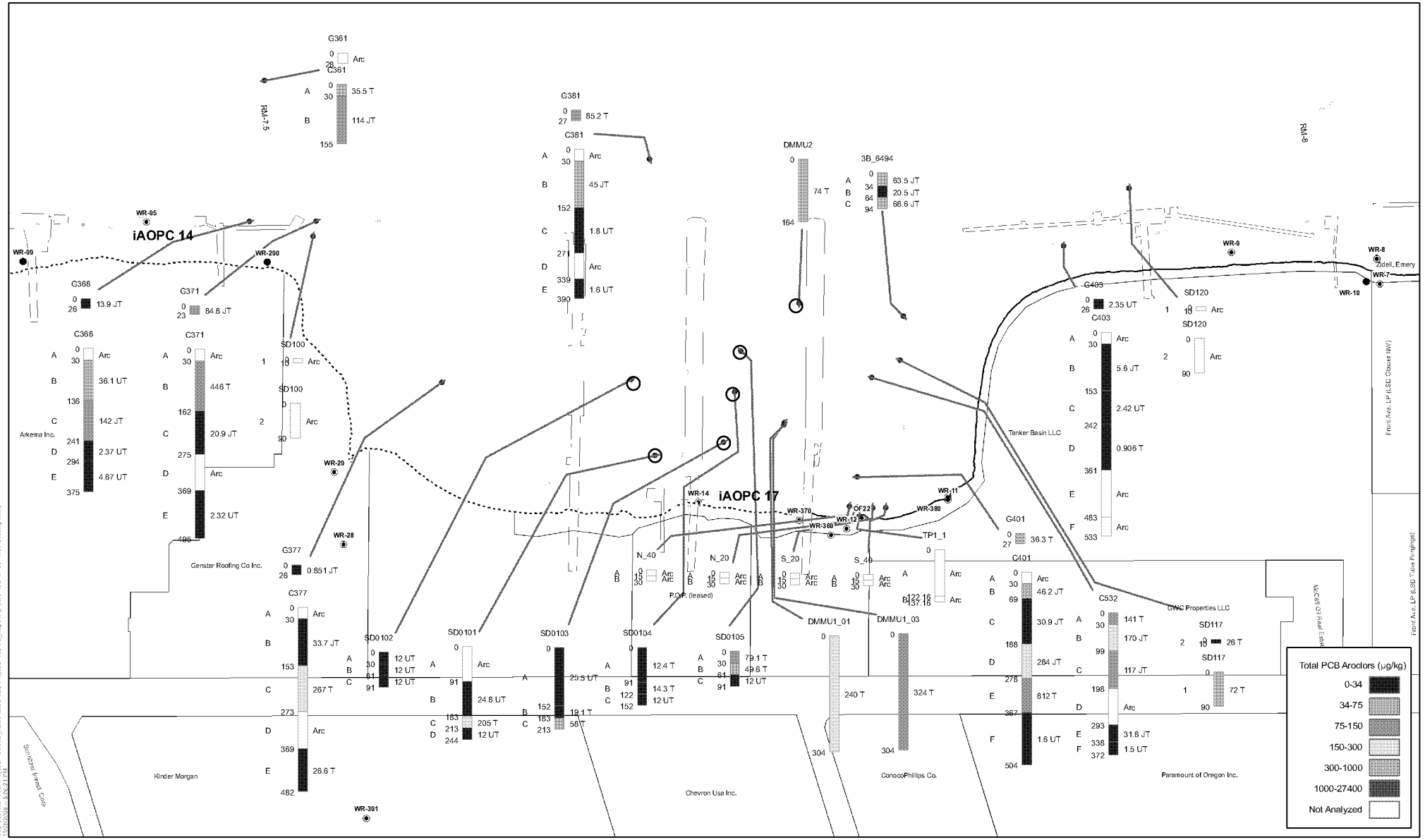
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.13-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 17**

BZTO104(e)032559




FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Active Outfalls
Unknown Outfalls
Abandoned Outfalls
Docks and Structures
River Miles
5 foot Contours (NAVD88)

**Bathymetric Change**
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening
Navigation Channel

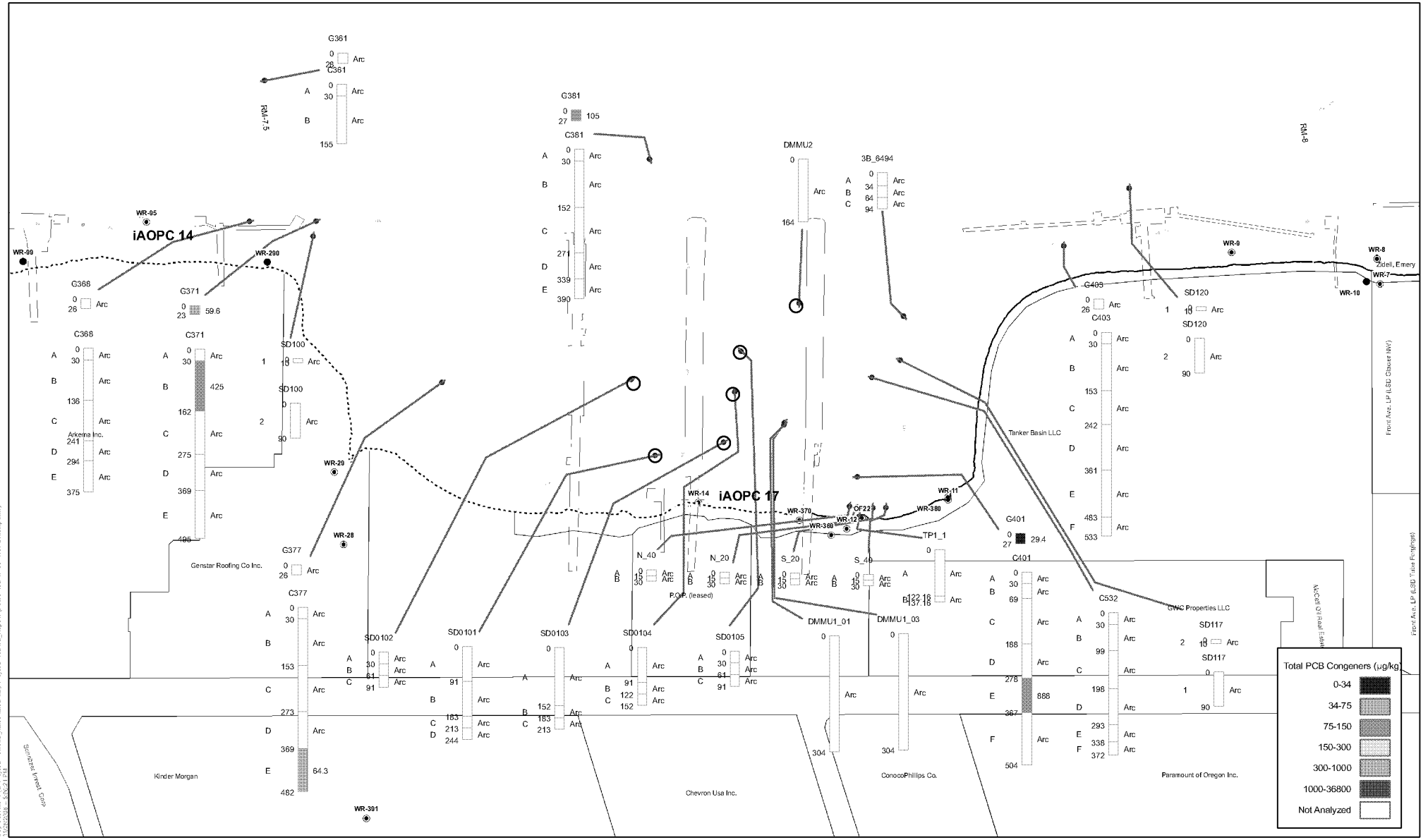
iAOPC Boundary
Capping Footprint
Dredging (Post 1997)
Dredged and/or Capped

0 100 200 300 Feet

integral consulting inc.
LWG Lower Willamette Group

**Map 11.3.13 -5**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 17**

BZTO104(e)032560




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

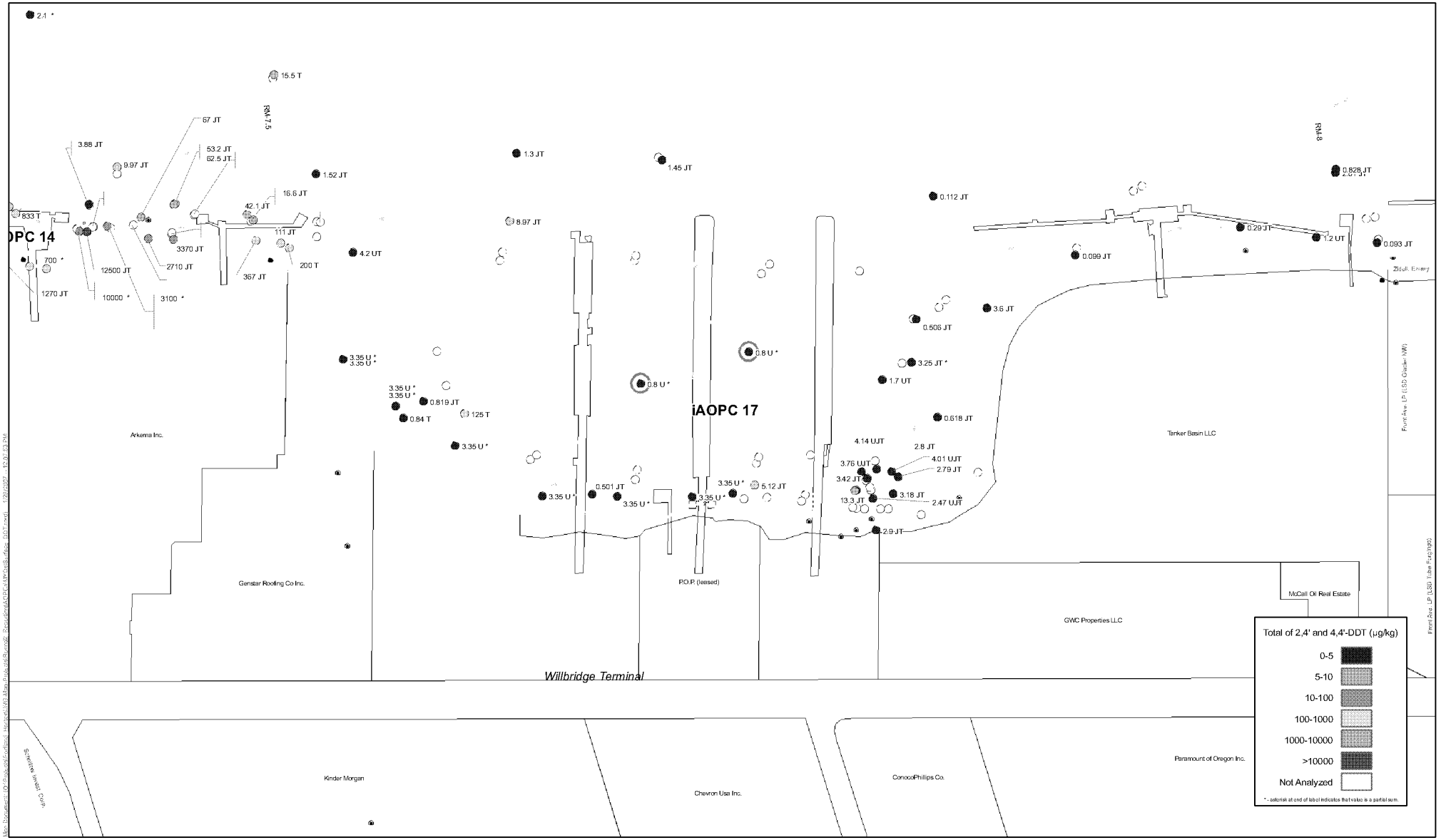
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.13-6**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 17**

BZTO104(e)032561




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

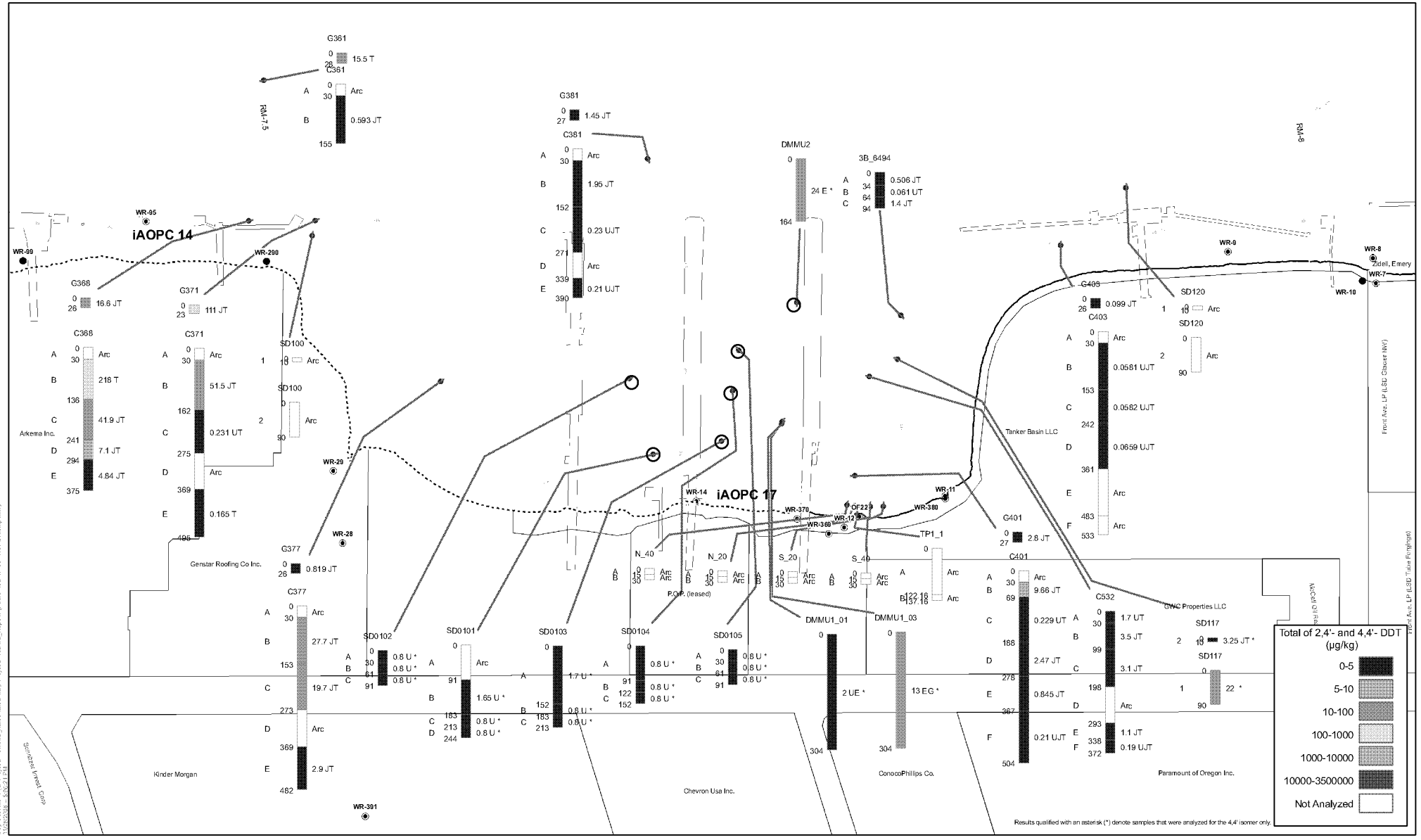
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

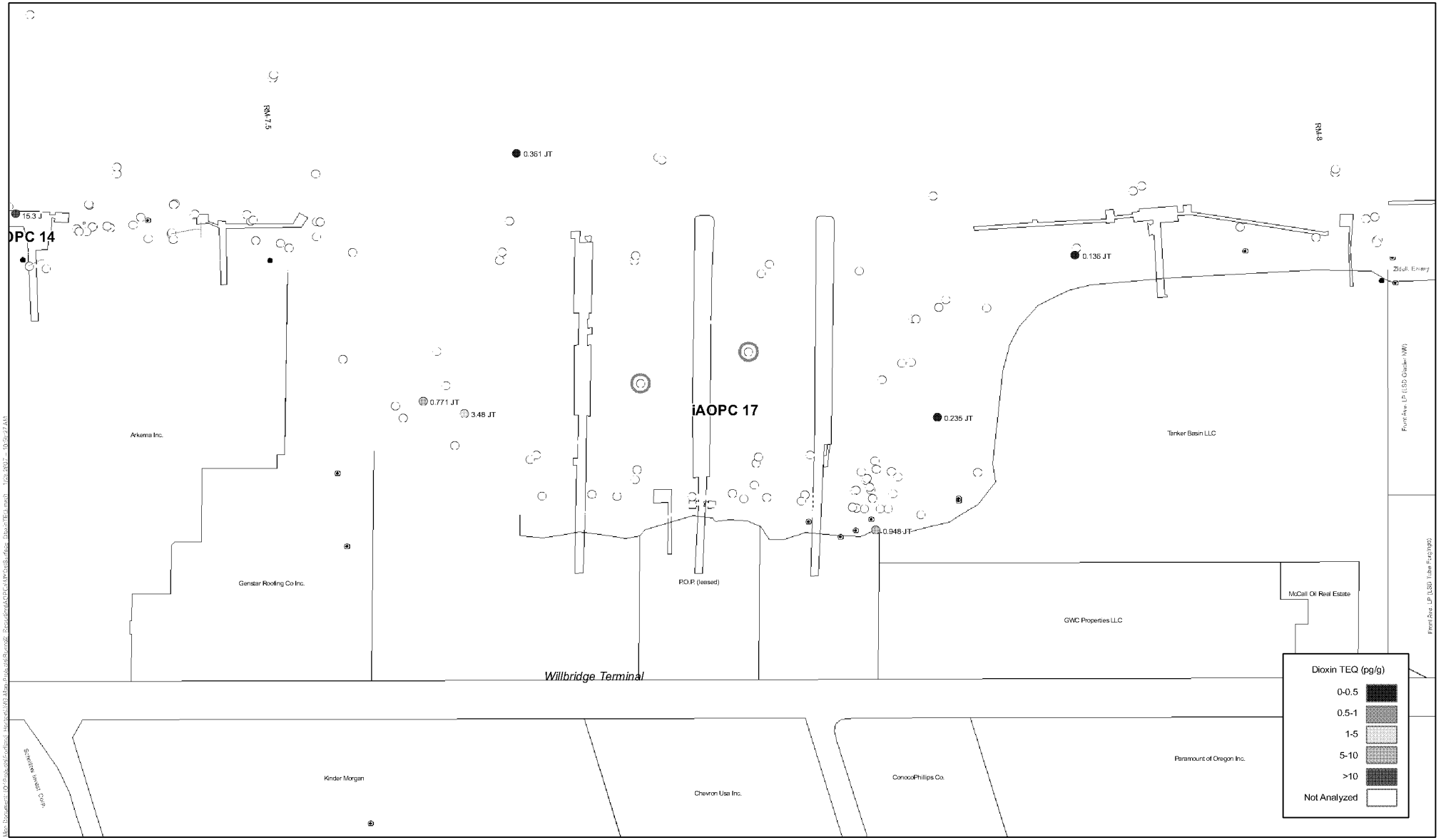
**Map 11.3.13-7**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total of 2,4' and 4,4'-DDT (µg/kg)**
**iAOPC 17**

BZTO104(e)032562




**Map 11.3.13-8**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total of 2,4'- and 4,4'- DDT (µg/kg)**
**iAOPC 17**

BZTO104(e)032563




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evens and Associates, Inc.

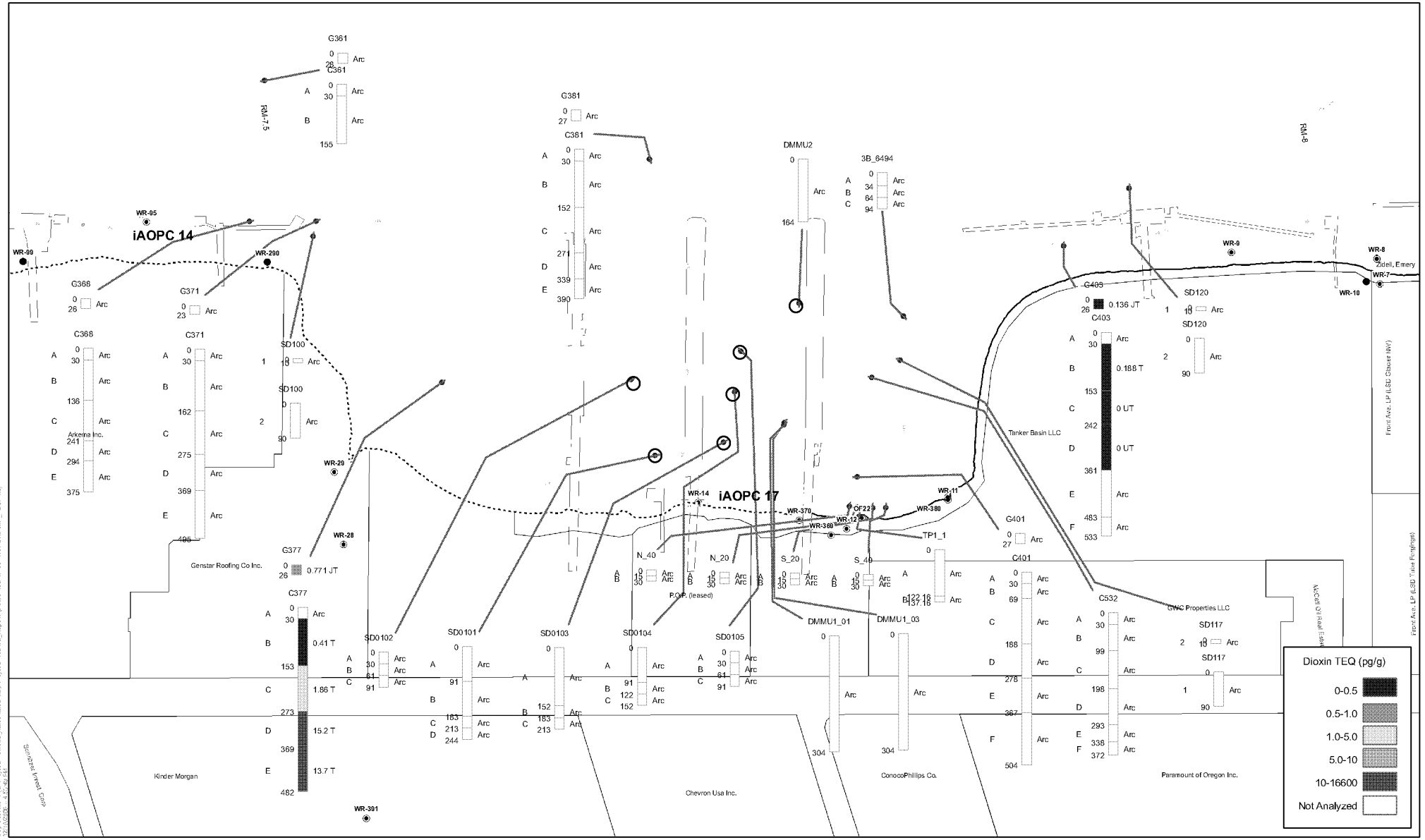
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.13-9**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Dioxin 2,3,7,8-TCDD Toxic Equivalence (pg/g)**
**iAOPC 17**

BZTO104(e)032564




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

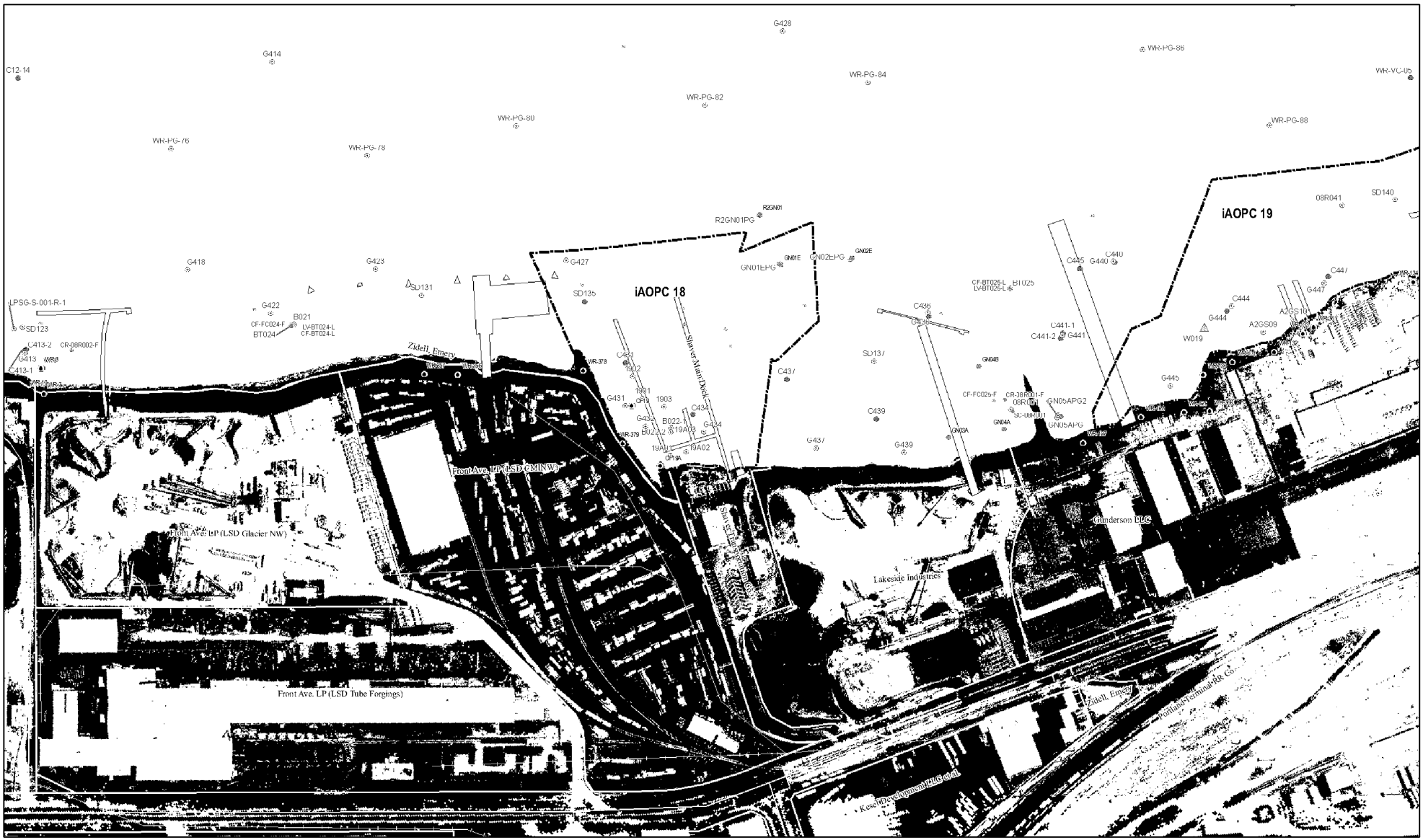
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.13 - 10**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Dioxin 2,3,7,8-TCDD Toxic Equivalence (pg/g)**
**iAOPC 17**

BZTO104(e)032565




Map Document: (P:\Projects\Portland_Harbor\WQ\Map-Projects\Round2_Reporting\iAOPCs\SiteOverviews\12282007.mxd)
2/6/2008 - 8:13:12 AM

integral consulting inc.

0 100 200 300 Feet

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES
Transportation, Property boundaries: Metro RLIS.

Channel & River miles: US Army Corps of Engineers.

Bathymetric Information: David Evans and Associates, Inc.

RLIS Aerial Images: February 2005 'leaf off' flight (6" pixel).

iAOPCs
River Mile
Navigation Channel
River 13ft NAVD88

Docks and Structures
Capping
Dredging (Post 1997)

**Bathymetric Change**
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening

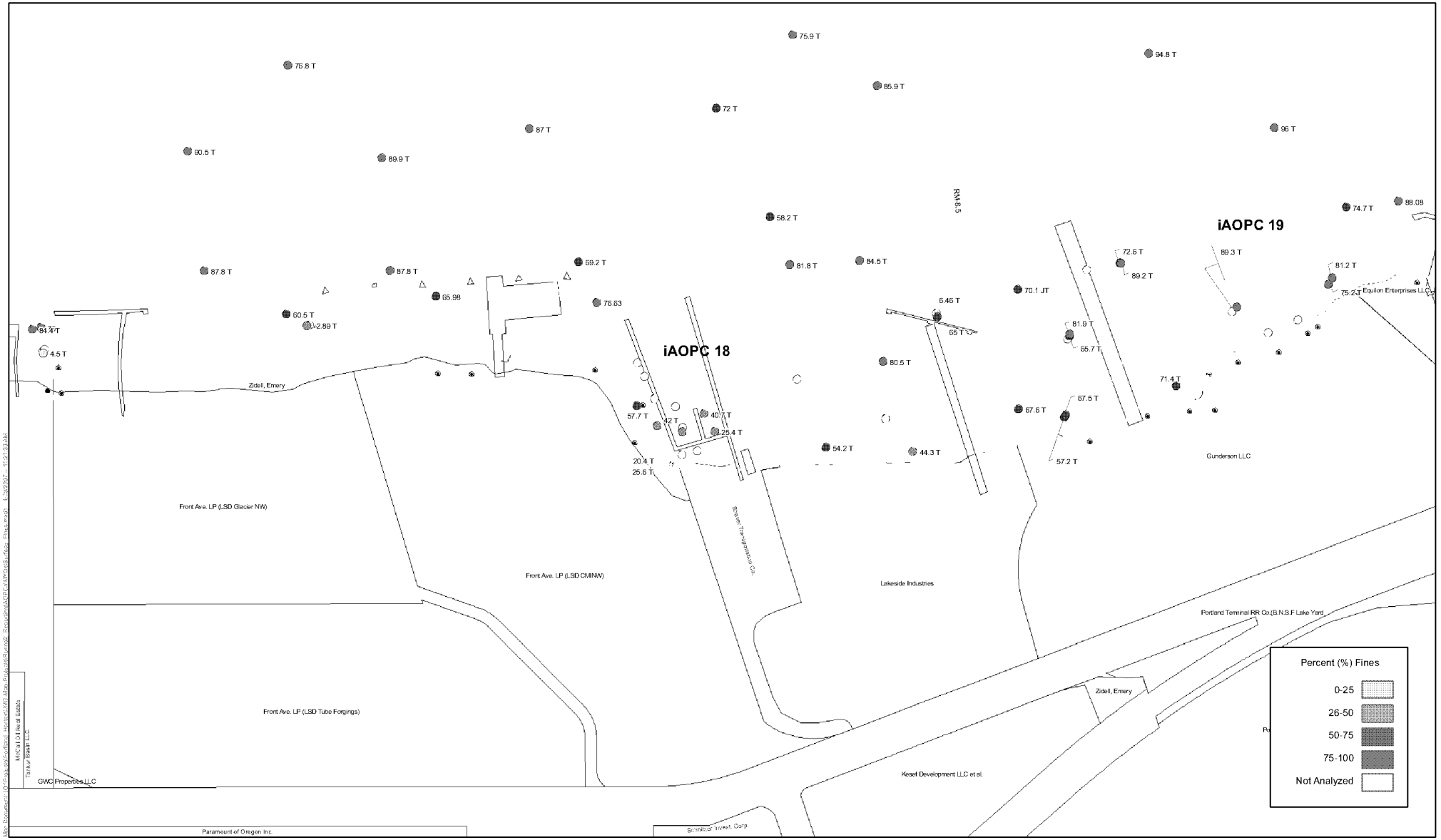
Clam, CF
Mudworm, LV
Crayfish, CR
Sculpin, SC
Multiplate Invertebrates, MI

Surface Water
Surface Sediment
Subsurface Sediment
TZW Sample Location (<38cm BML)

Active Outfalls
Unknown Outfalls
Abandoned Outfalls

**Map 11.3.14-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**iAOPC Site Overview**
**iAOPC 18**

BZTO104(e)032566




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

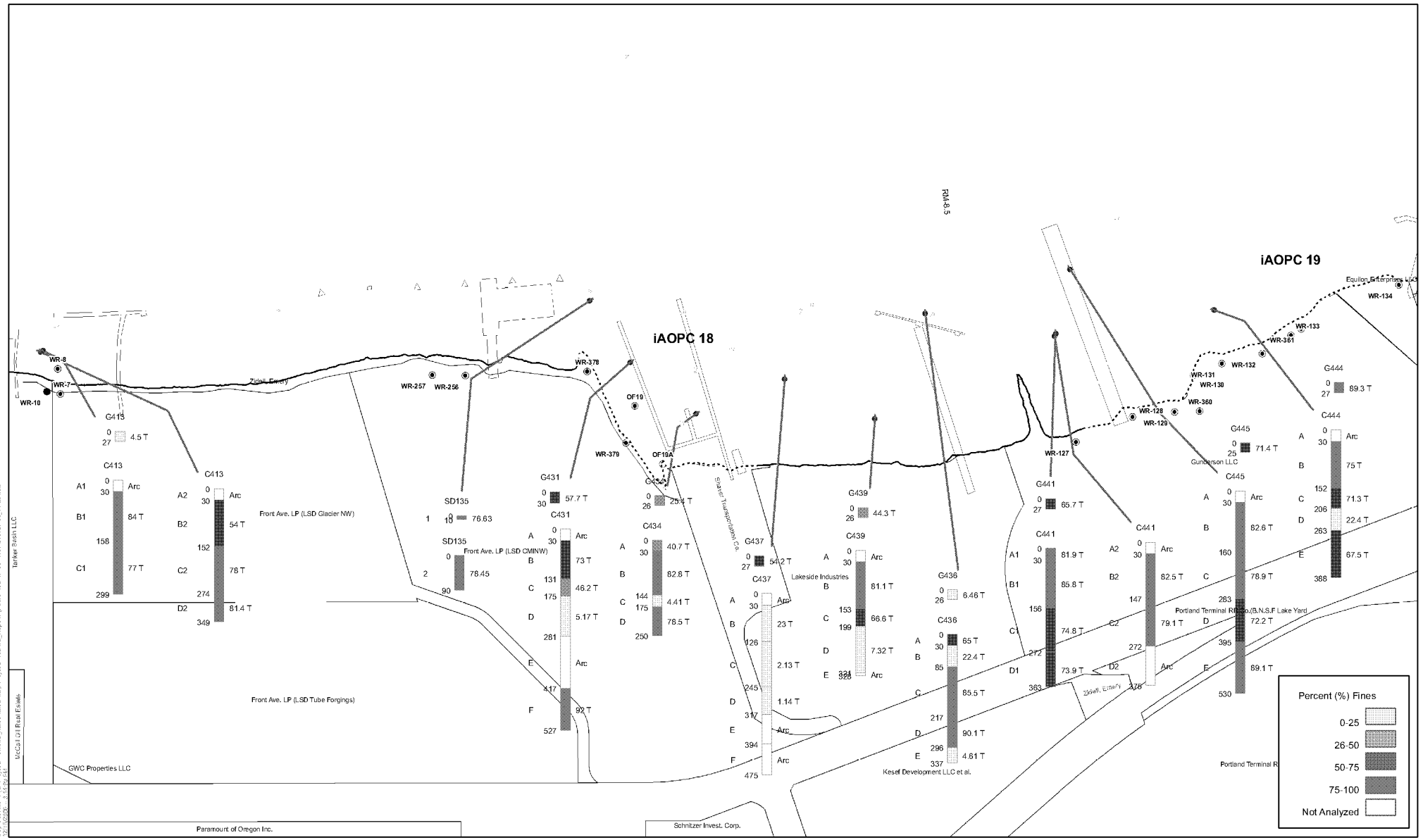
Active Outfalls
Unknown Outfalls
Abandoned Outfalls
Navigation Channel
River_13ft_NAVD88

**Bathymetric Change**
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening
5 foot Contours (NAVD88)

iAOPC Boundary
capping
Dredging (Post 1997)
Dredged or Capped

**Map 11.3.14-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Texture**
**Percent (%) Fines**
**iAOPC 18**

BZTO104(e)032567




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.,
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

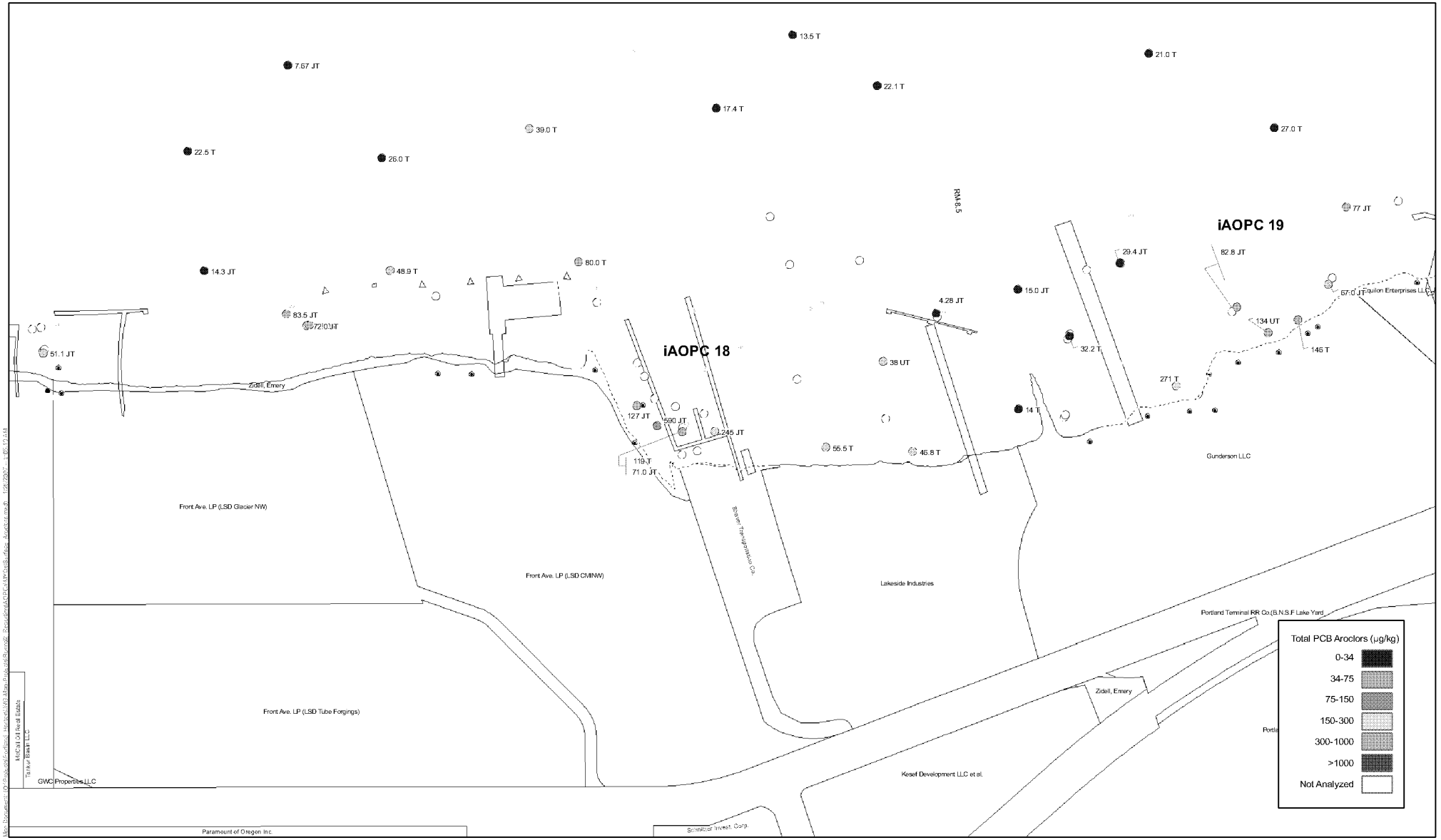
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

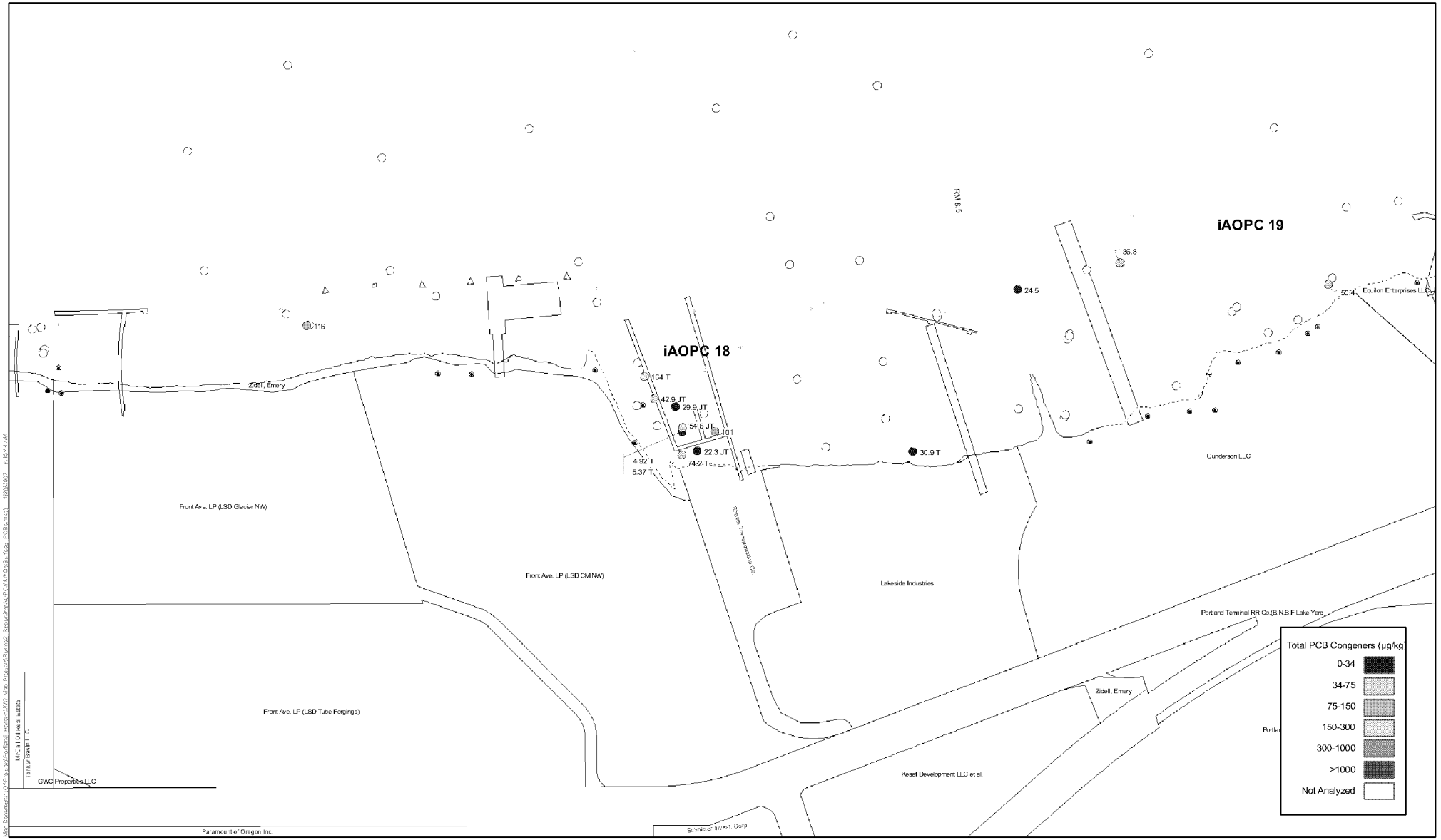
**Map 11.3.14- 2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 18**

BZTO104(e)032568




**Map 11.3.14-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 18**

BZTO104(e)032569




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

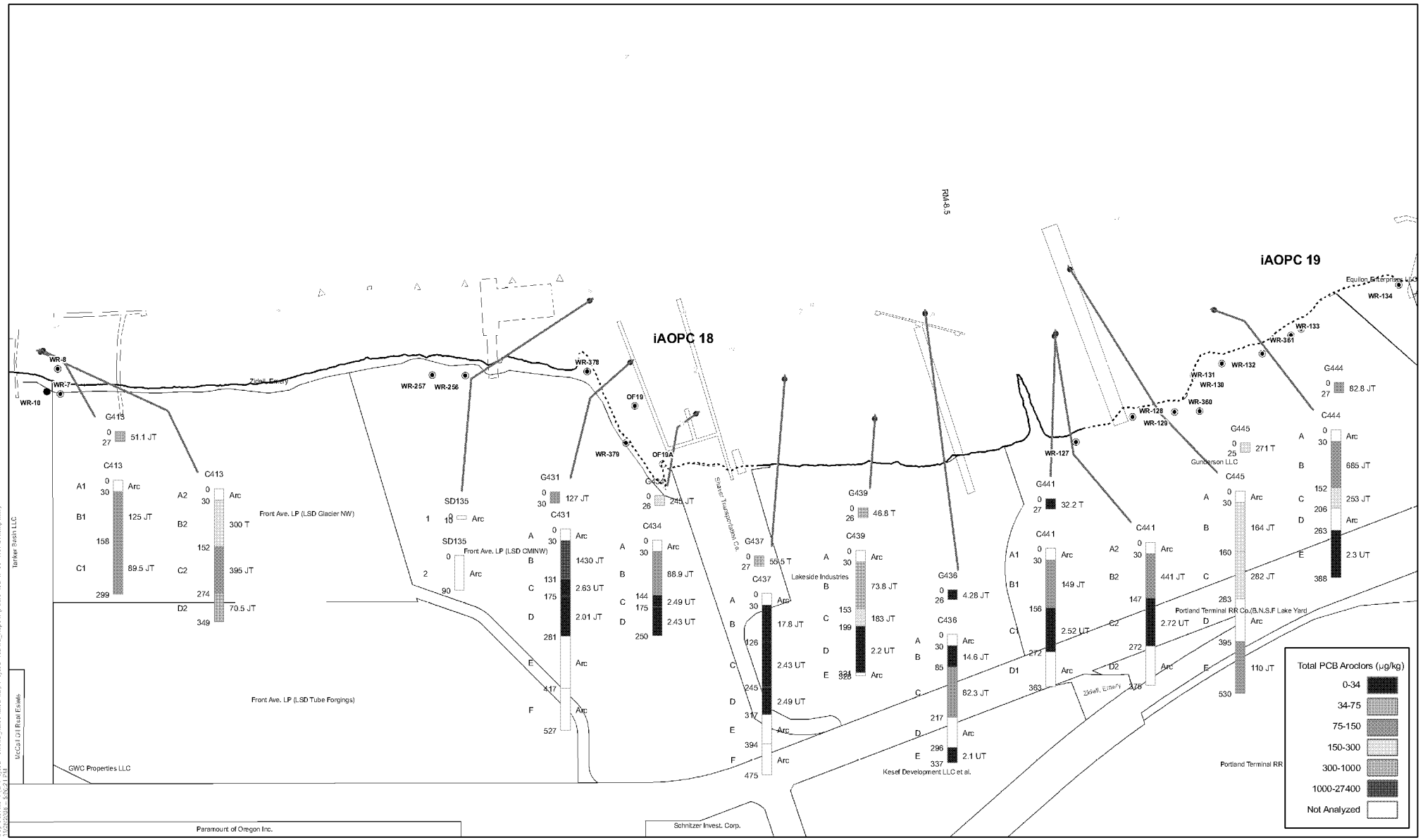
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.14-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 18**

BZTO104(e)032570




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

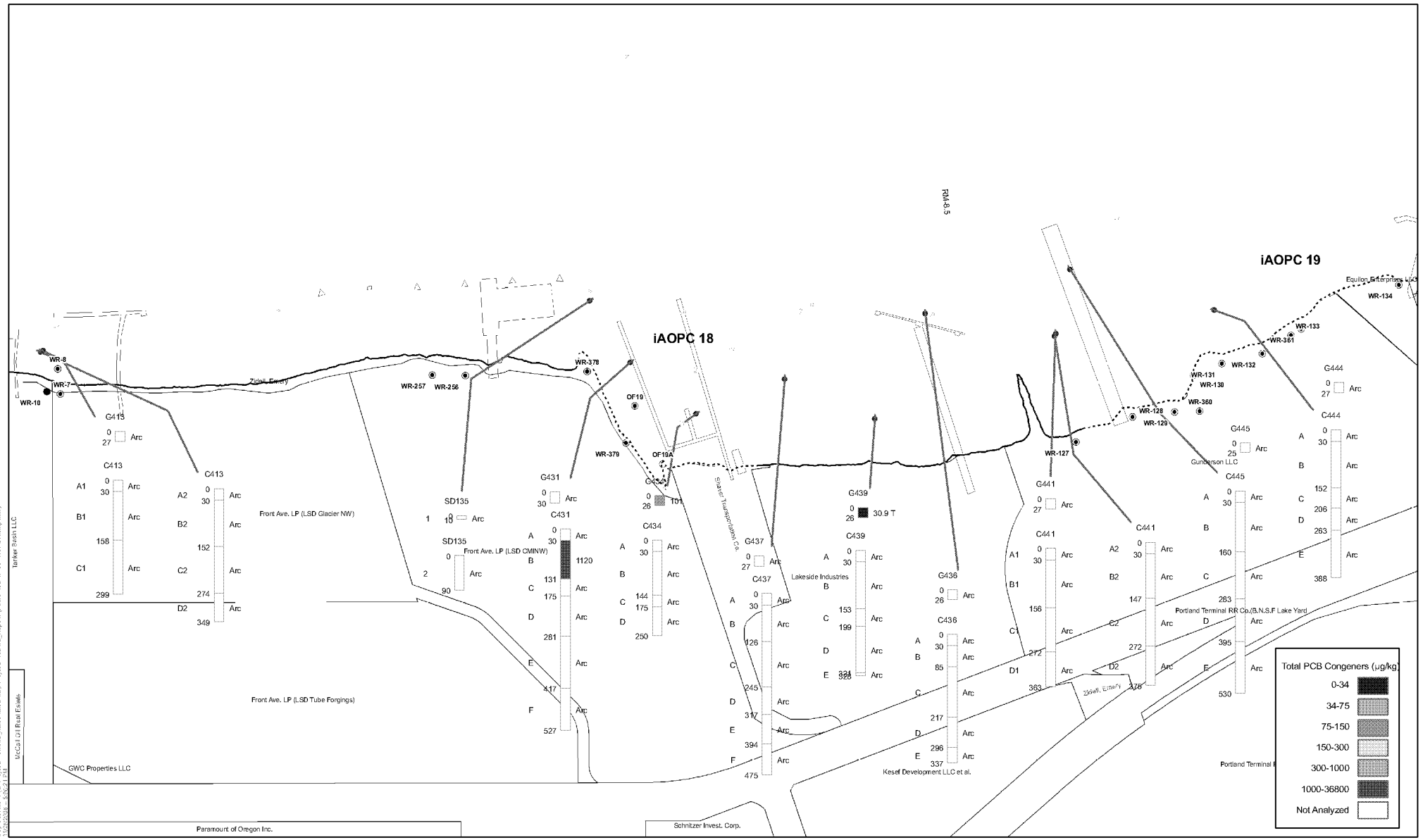
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.14-5**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 18**

BZTO104(e)032571




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

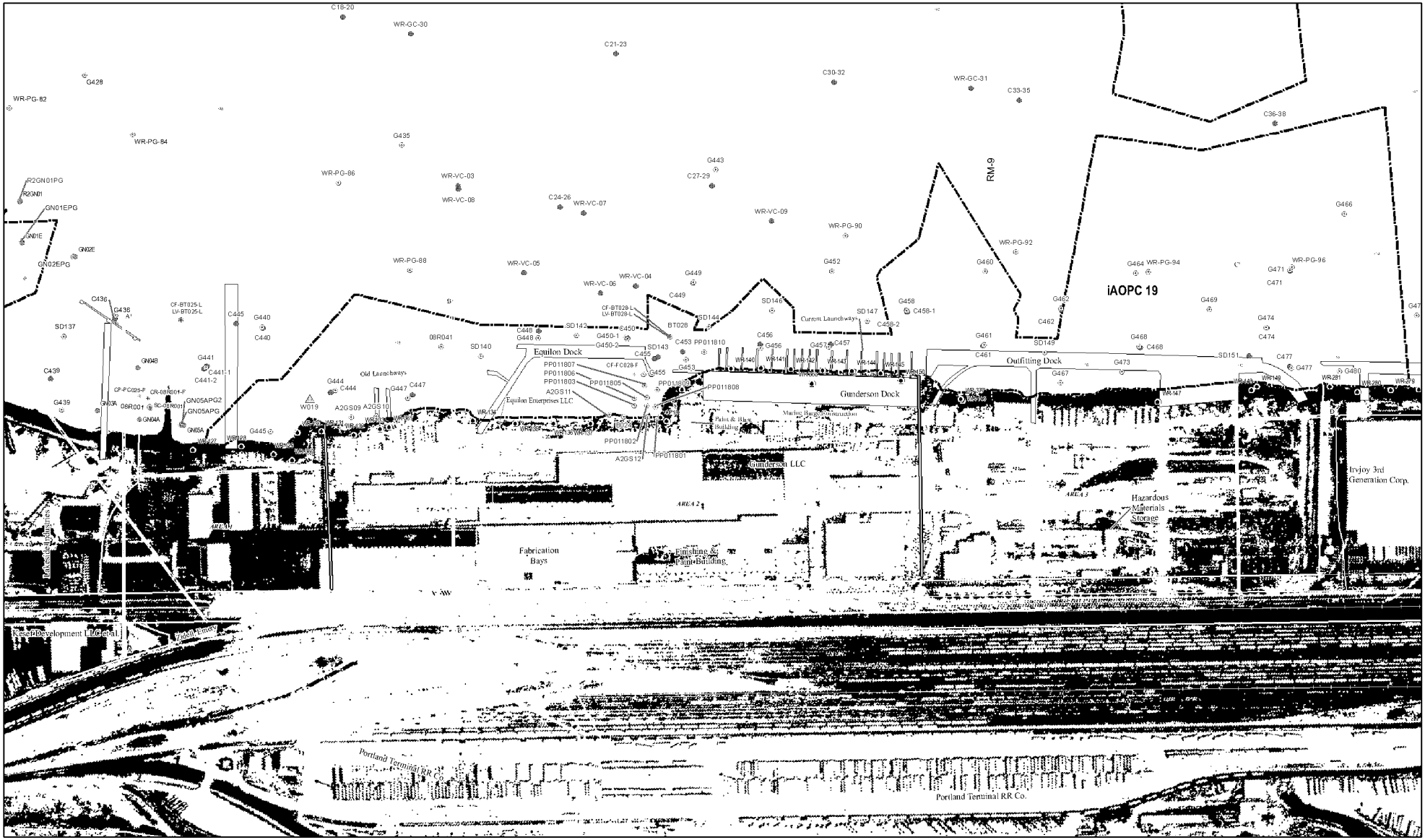
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.14-6**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 18**

BZTO104(e)032572




Map Document: (P:\Projects\Portland_Harbor\WS-Map-Projects\Round2_Reporting\iAOPCs\SiteOverviews\12282007.mxd) 2/6/2008 - 8:13:12 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES
Transportation, Property boundaries: Metro RLIS.

Channel & River miles: US Army Corps of Engineers.

Bathymetric Information: David Evans and Associates, Inc.

RLIS Aerial Images: February 2005 'leaf off' flight (6" pixel).

iAOPCs
River Mile
Navigation Channel
River 13ft NAVD88

Docks and Structures
Capping
Dredging (Post 1997)
Cross section
Area boundary

**Bathymetric Change**
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening

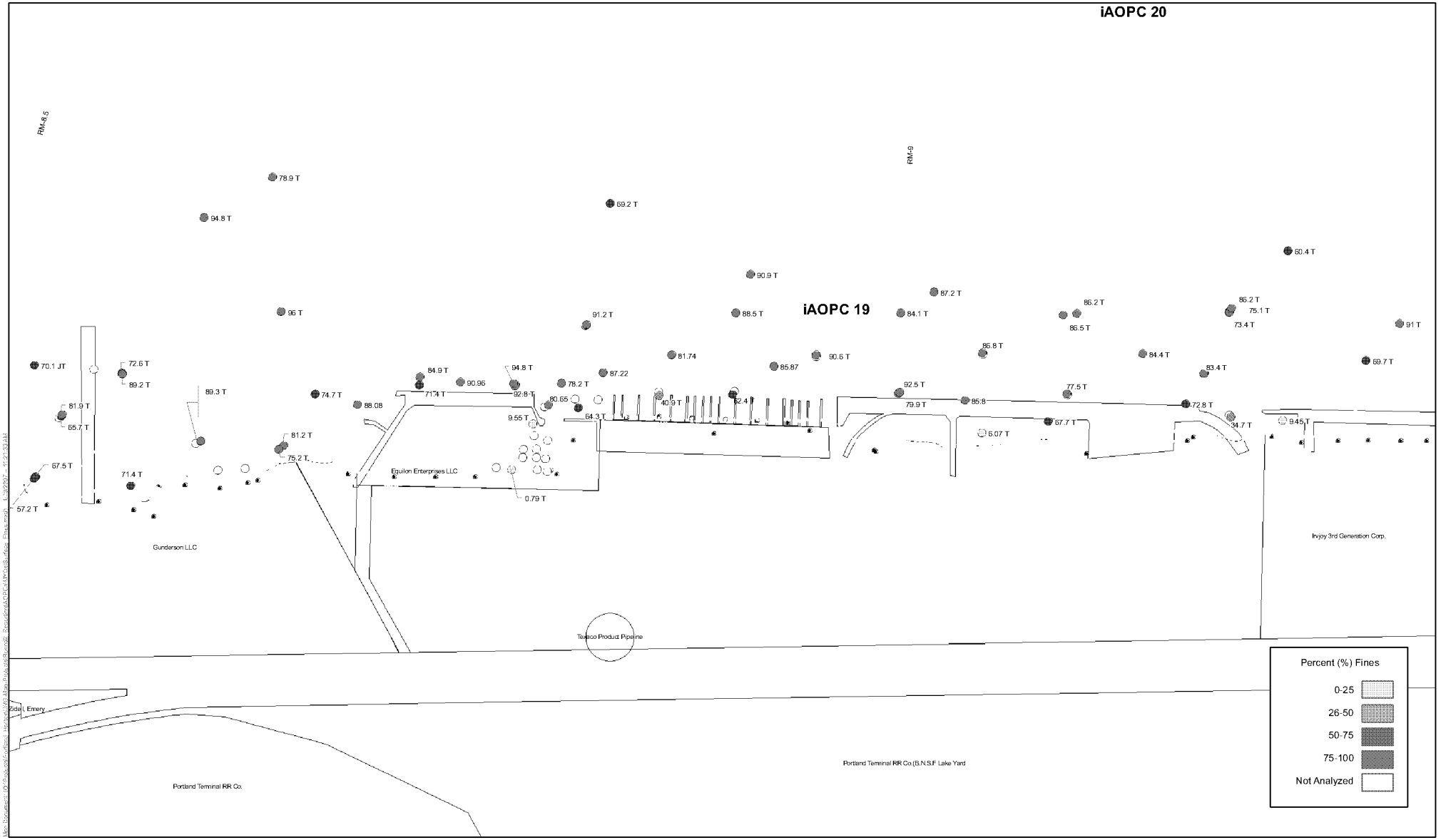
Clam, CF
Mudworm, LV
Crayfish, CR
Sculpin, SC
Multiplate Invertebrates, MI

Surface Water
Surface Sediment
Subsurface Sediment
TZW Sample Location (+38cm BML)

Active Outfalls
Unknown Outfalls
Abandoned Outfalls

**Map 11.3.15-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**iAOPC Site Overview**
**iAOPC 19**

BZTO104(e)032573




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

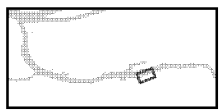
0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Active Outfalls
Unknown Outfalls
Abandoned Outfalls
Navigation Channel
River_13ft_NAVD88

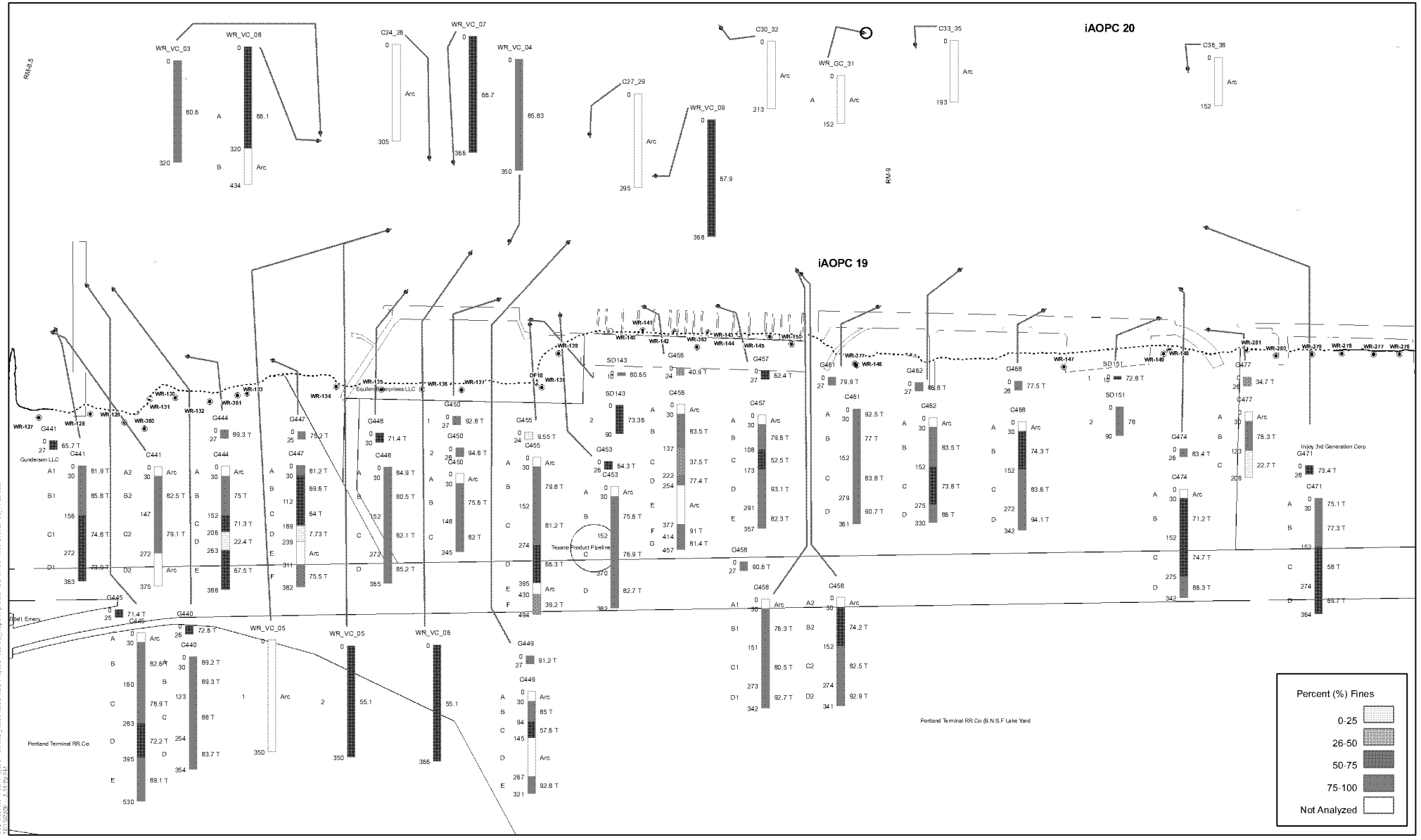
**Bathymetric Change**
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening
5 foot Contours (NAVD88)

iAOPC Boundary
capping
Dredging (Post 1997)
Dredged or Capped



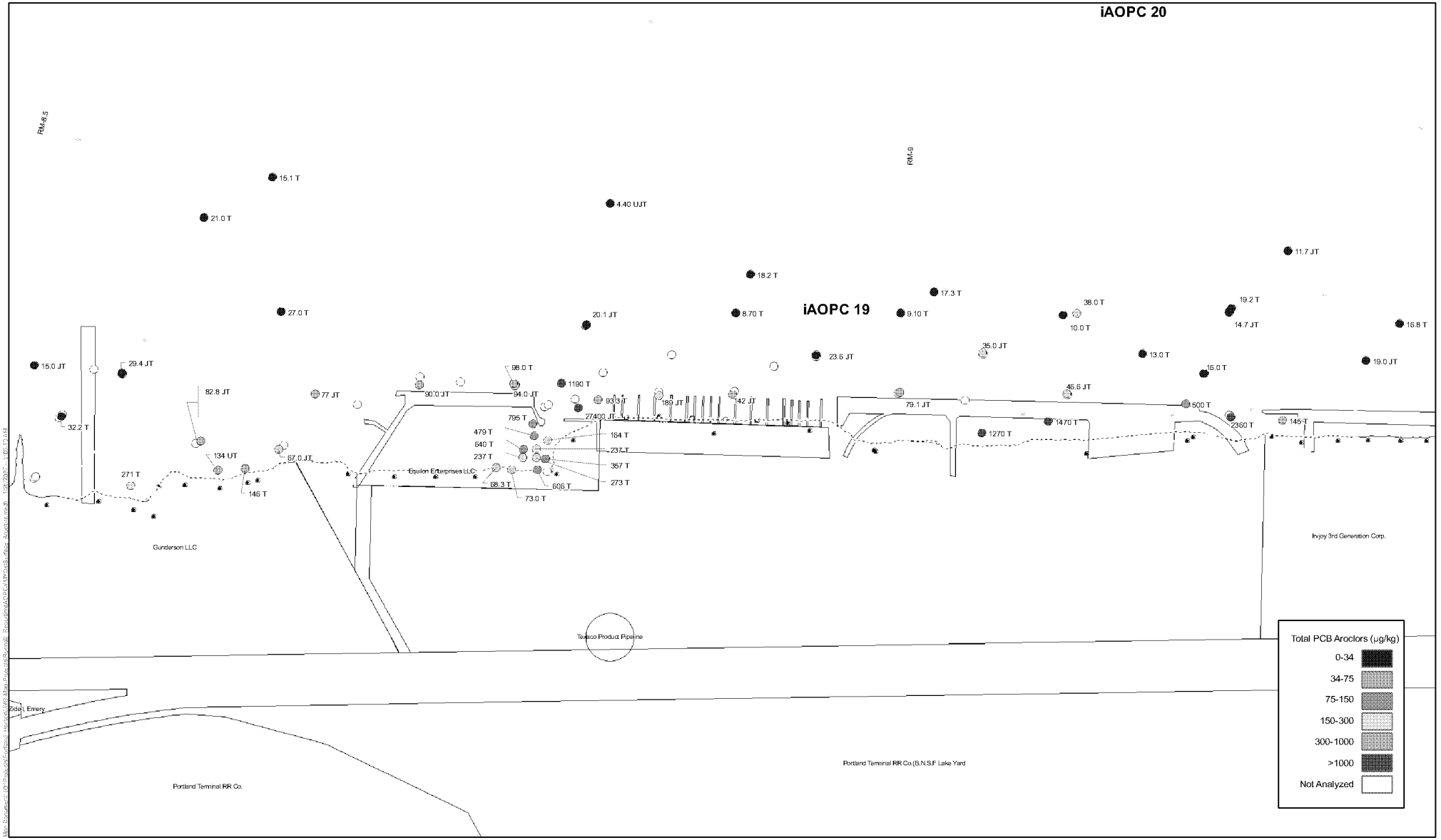
**Map 11.3.15-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Texture**
**Percent (%) Fines**
**iAOPC 19**

BZTO104(e)032574




**Map 11.3.15- 2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 19**

BZTO104(e)032575




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evens and Associates, Inc.

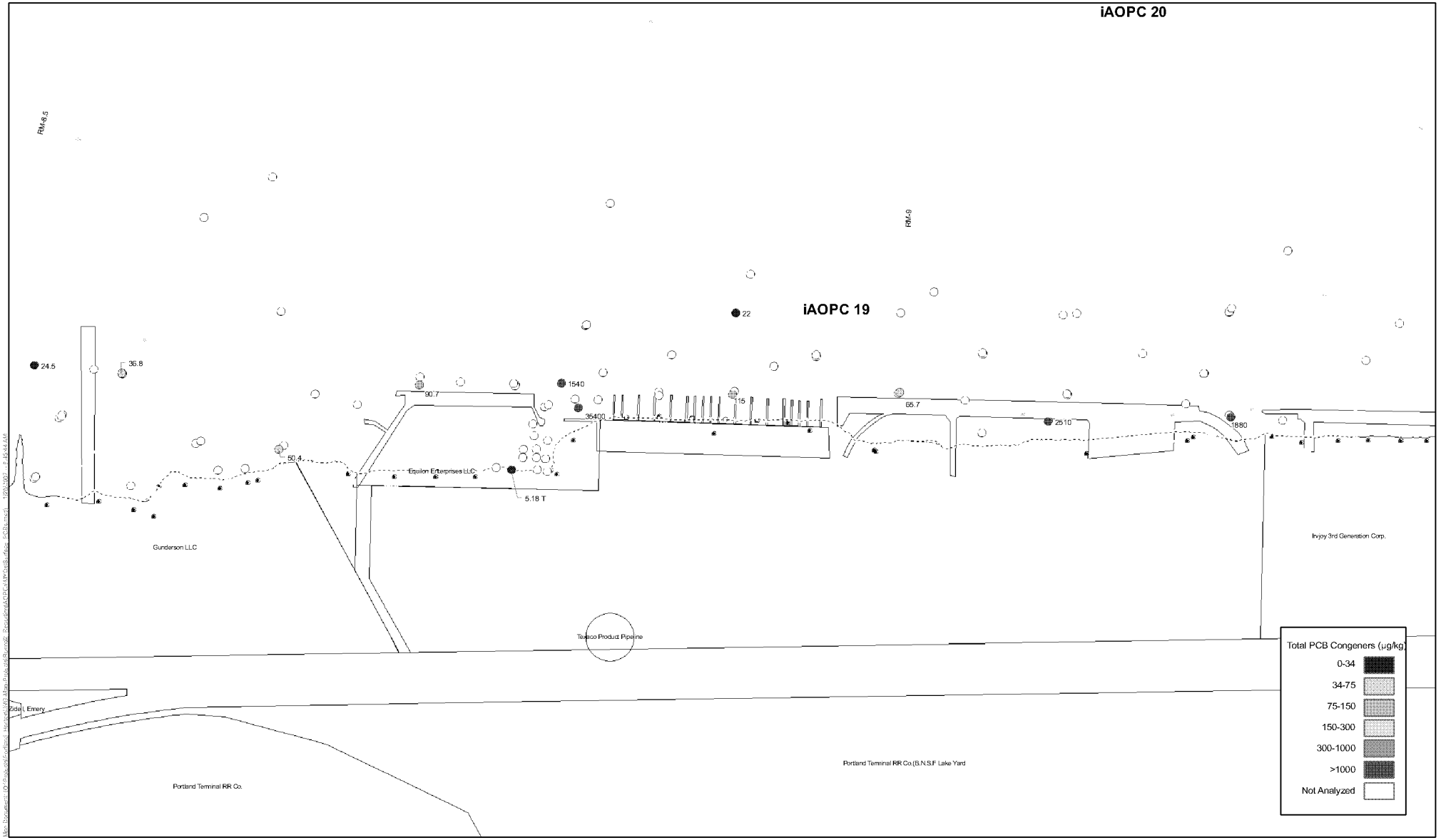
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.15-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 19**

BZTO104(e)032576




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

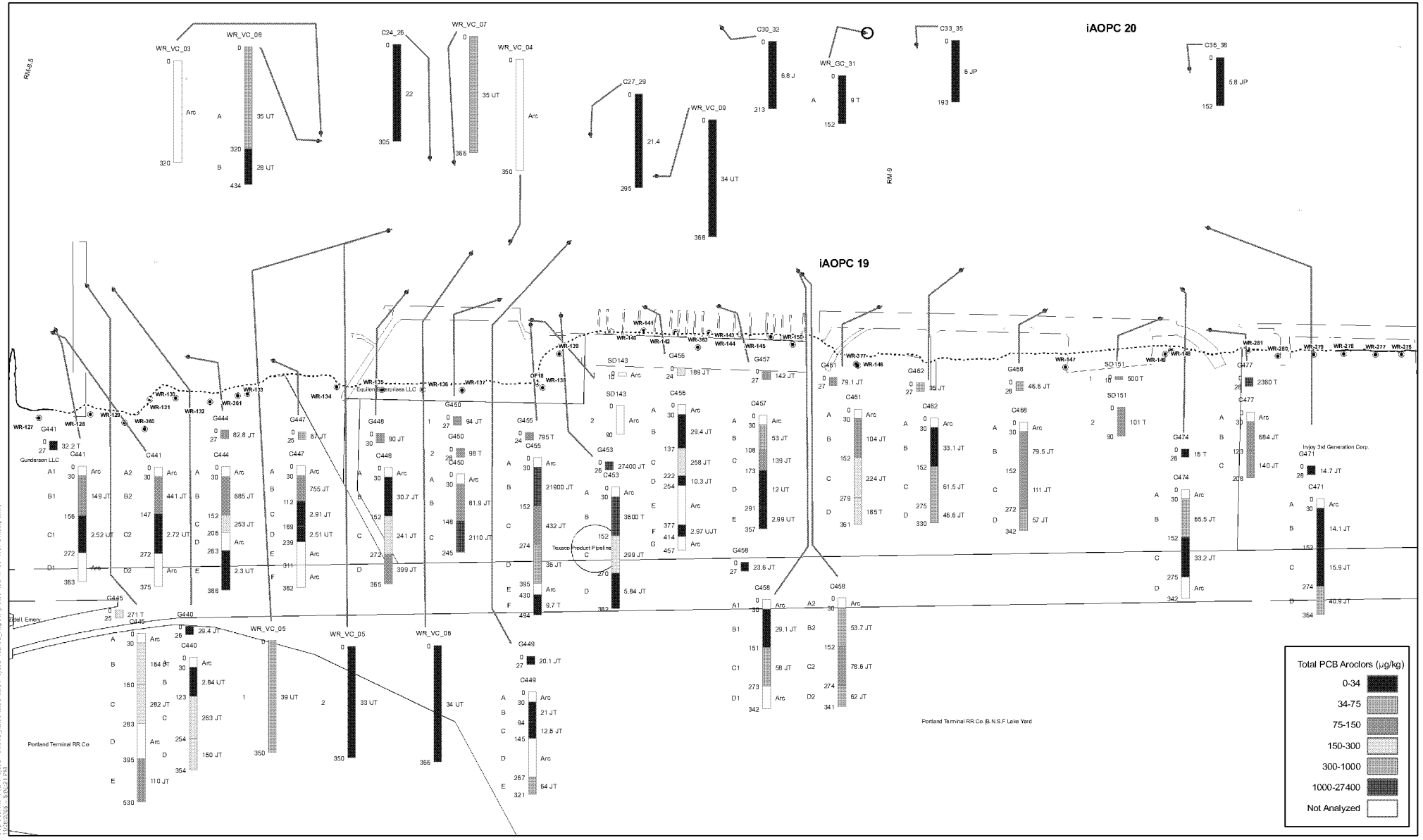
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.15-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 19**

BZTO104(e)032577




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

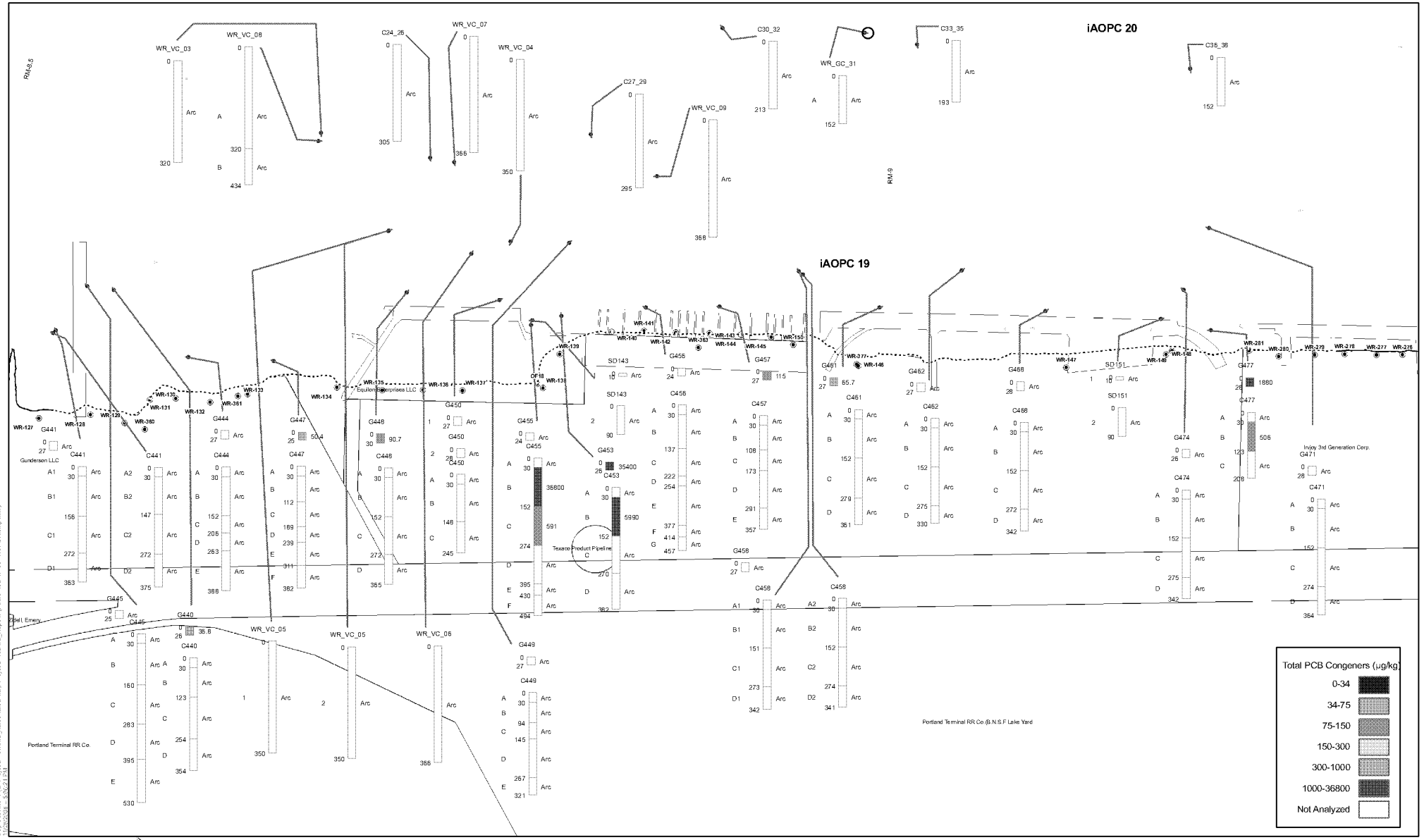
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.15-5**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 19**

BZTO104(e)032578




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

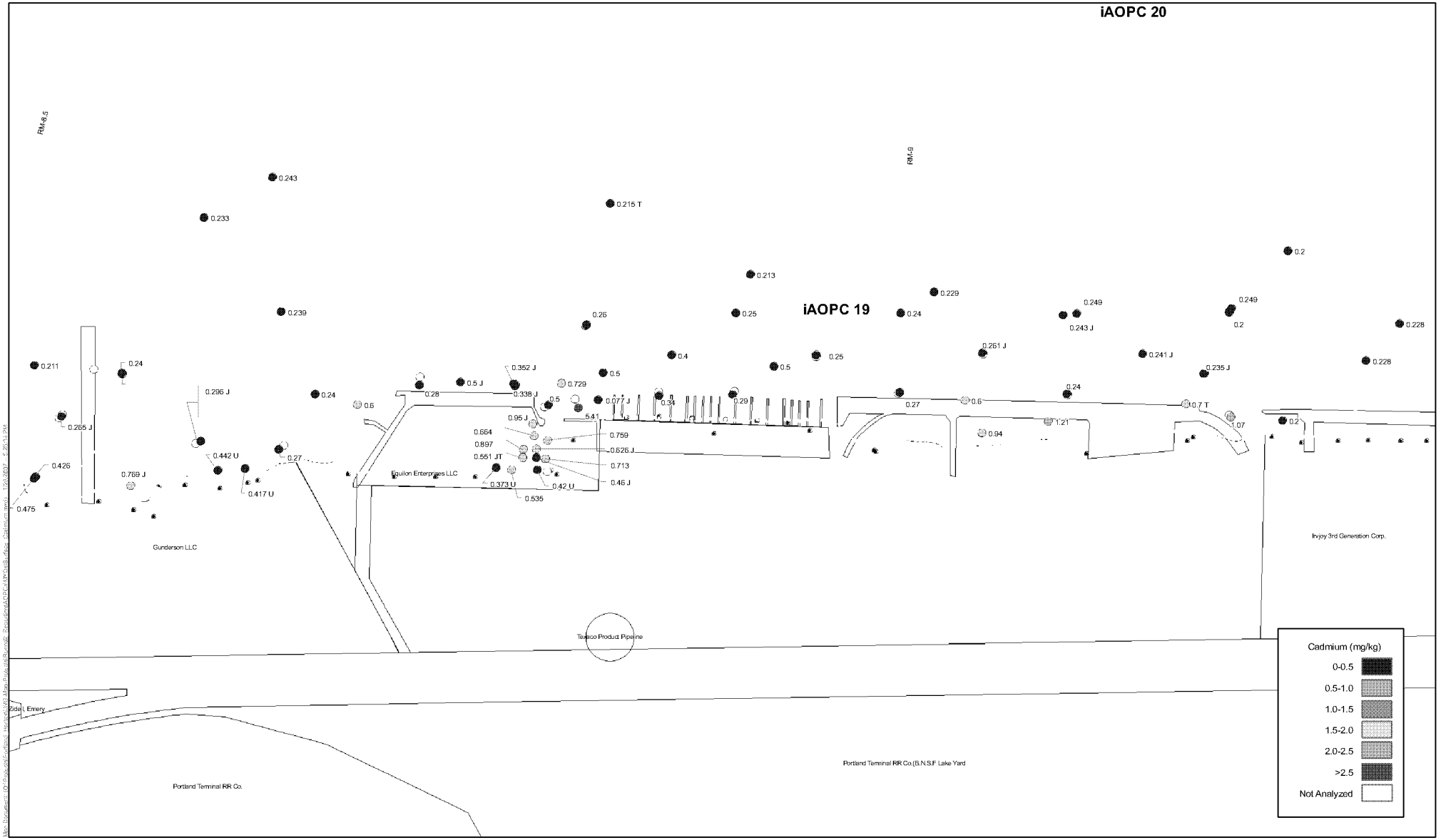
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.15-6**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 19**

BZTO104(e)032579




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

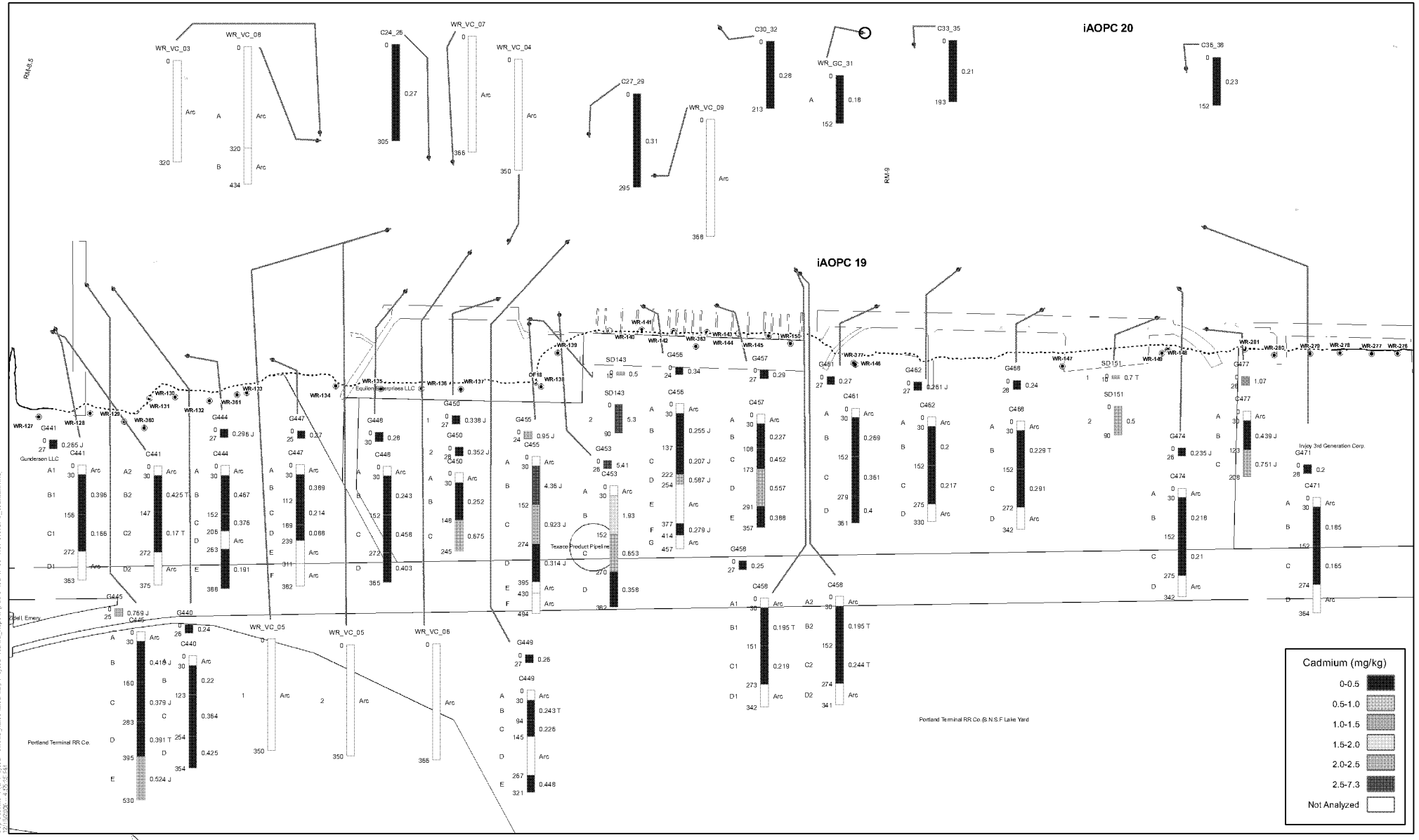
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- AOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

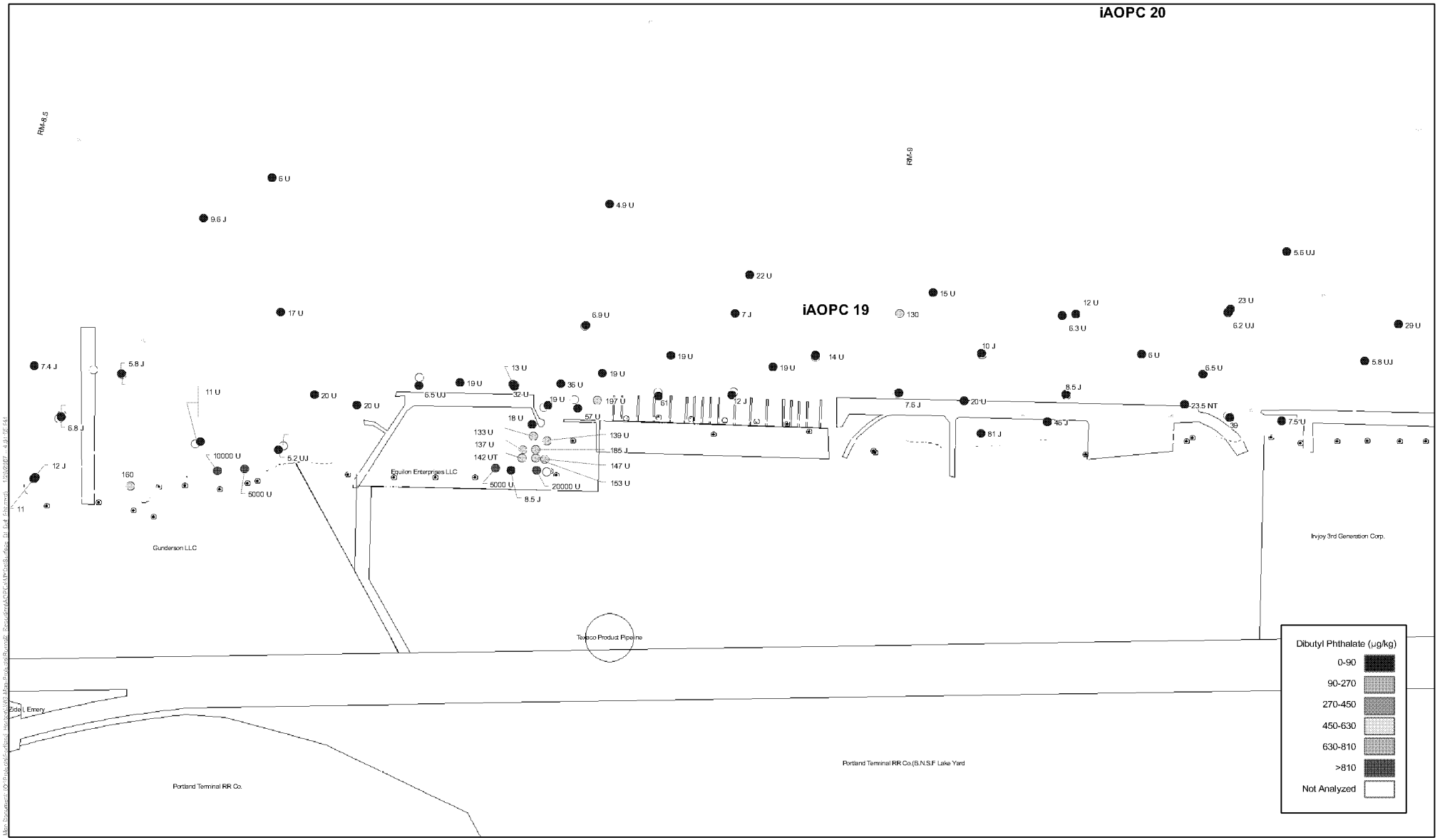
**Map 11.3.15-7**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Cadmium (mg/kg)**
**iAOPC 19**

BZTO104(e)032580




**Map 11.3.15-8**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentration in Subsurface Sediment**
**Cadmium (mg/kg)**
**iAOPC 19**

BZTO104(e)032581




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

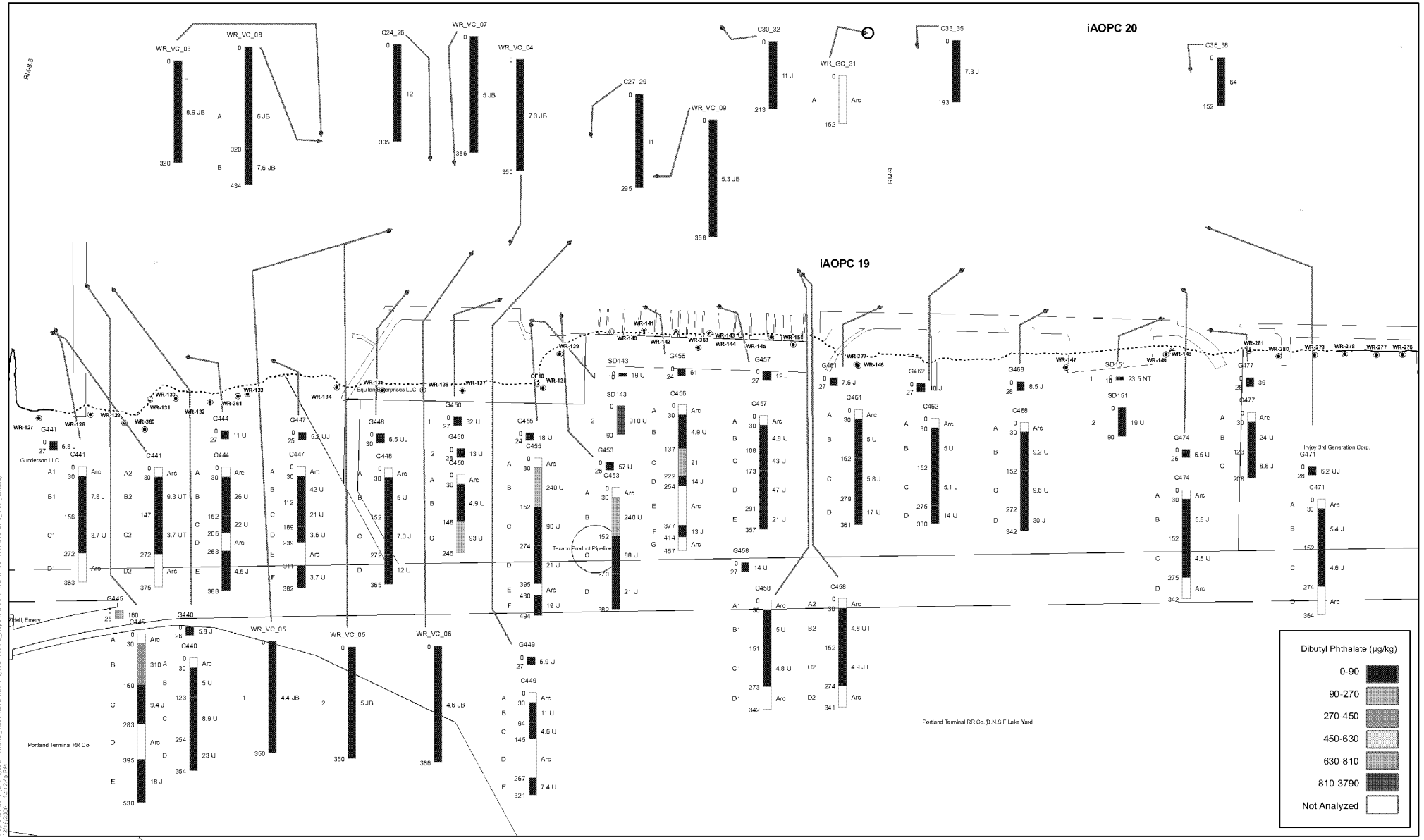
Active Outfalls
Unknown Outfalls
Abandoned Outfalls
River 13ft NAVD88
Docks and Structures
Navigation Channel

Bathymetric Change
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening
5 foot Contours (NAVD88)

AOPC Boundary
Capping footprint
Dredging (Post 1997)
Dredged or Capped

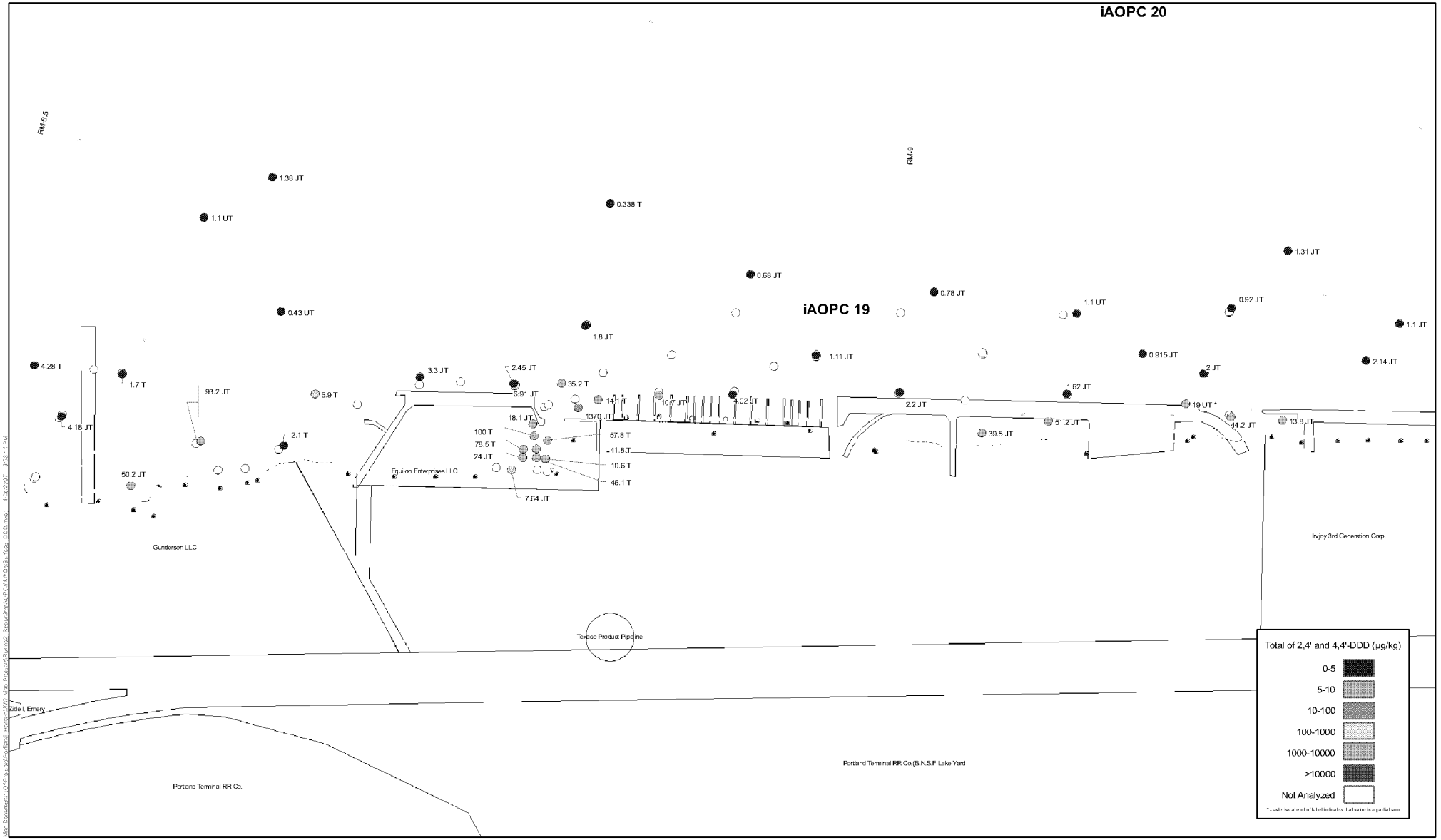
**Map 11.3.15-9**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Dibutyl Phthalate (µg/kg)**
**iAOPC 19**

BZTO104(e)032582




**Map 11.3.15 - 10**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Dibutyl Phthalate (µg/kg)**
**iAOPC 19**

BZTO104(e)032583




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

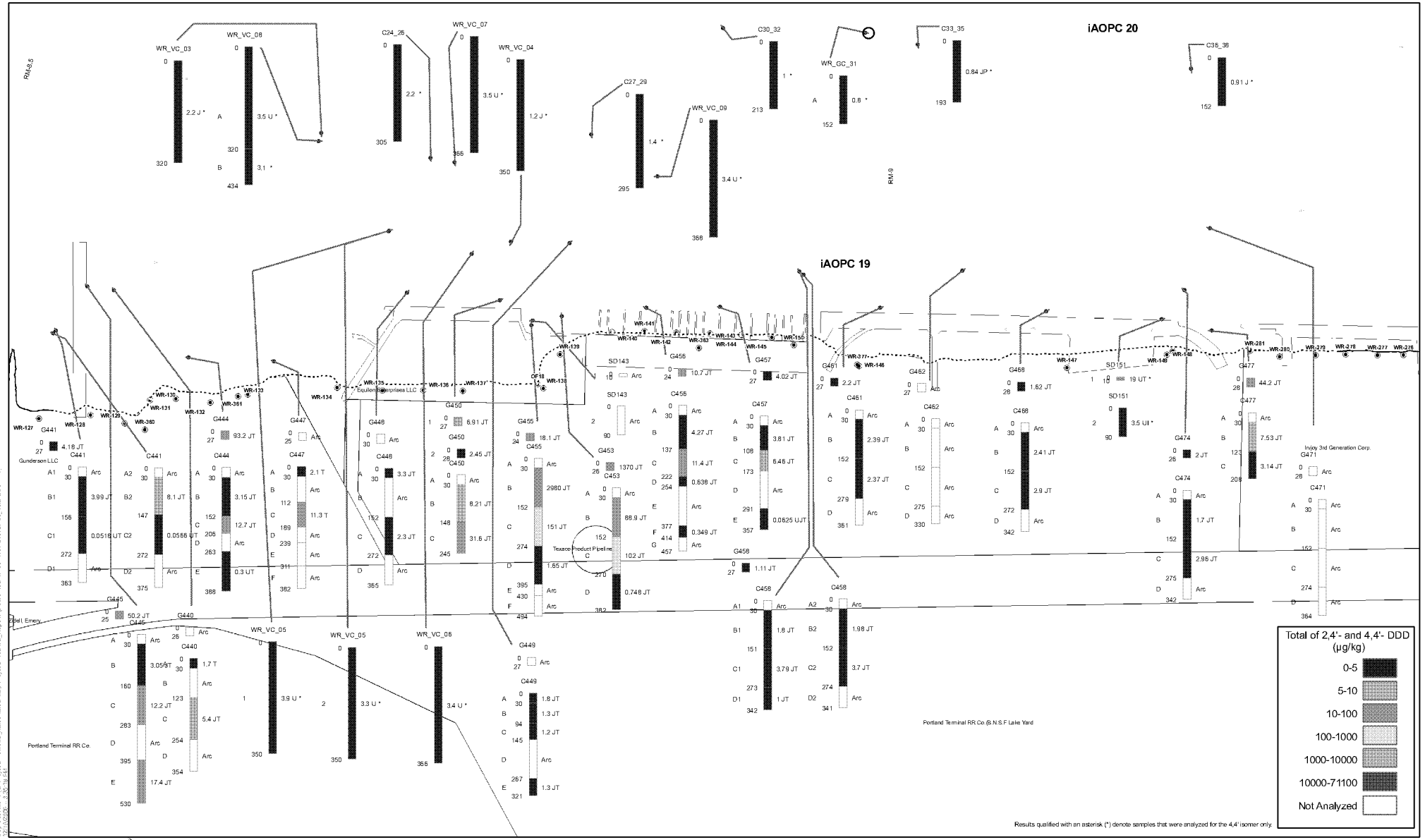
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- AOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.15-11**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total of 2,4' and 4,4'-DDD (µg/kg)**
**iAOPC 19**

BZTO104(e)032584




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

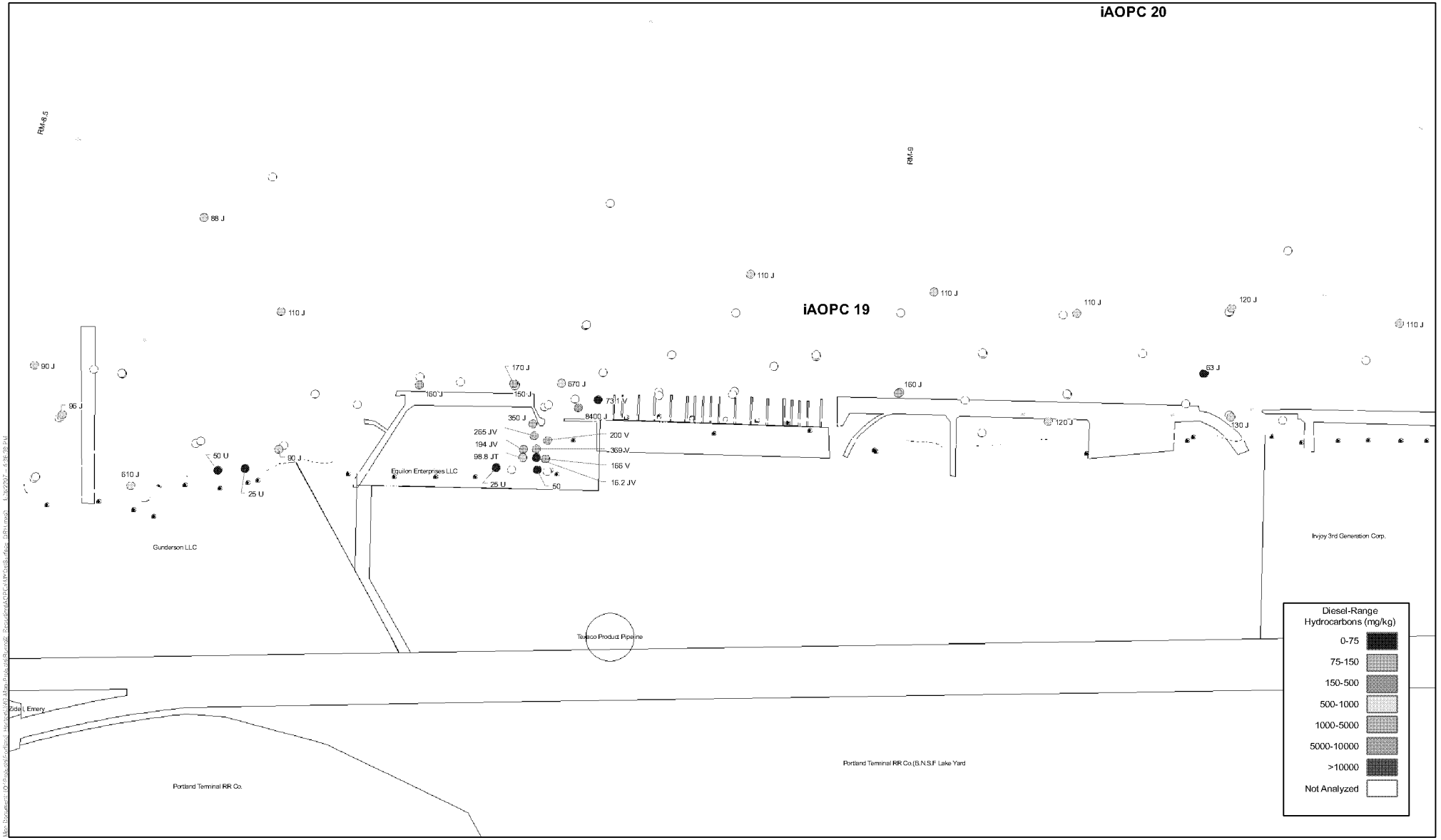
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.15 - 12**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total of 2,4'- and 4,4'- DDD (µg/kg)**
**iAOPC 19**

BZTO104(e)032585




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

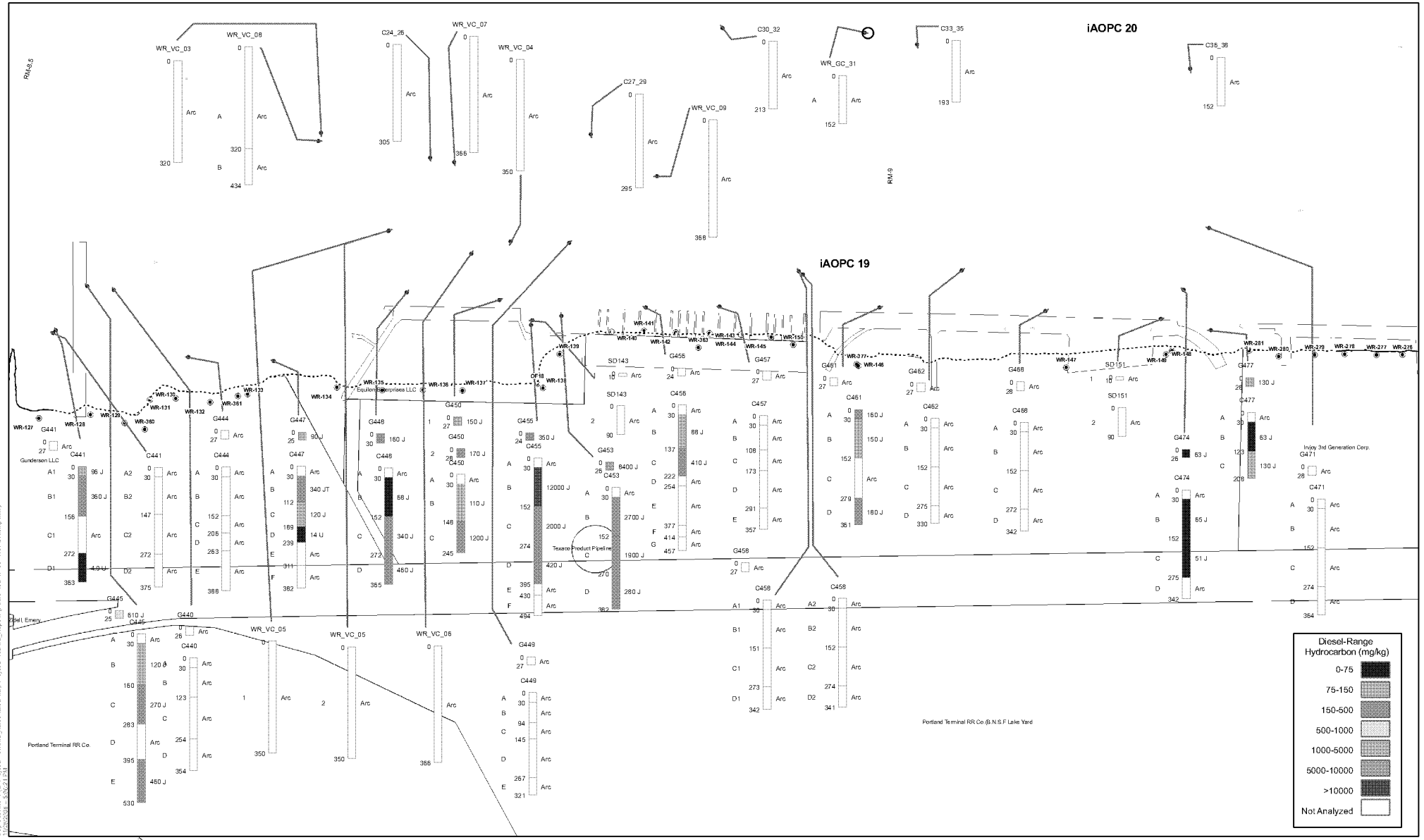
**Bathymetric Change**

- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.15-13**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Diesel-Range Hydrocarbons (mg/kg)**
**iAOPC 19**

BZTO104(e)032586




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

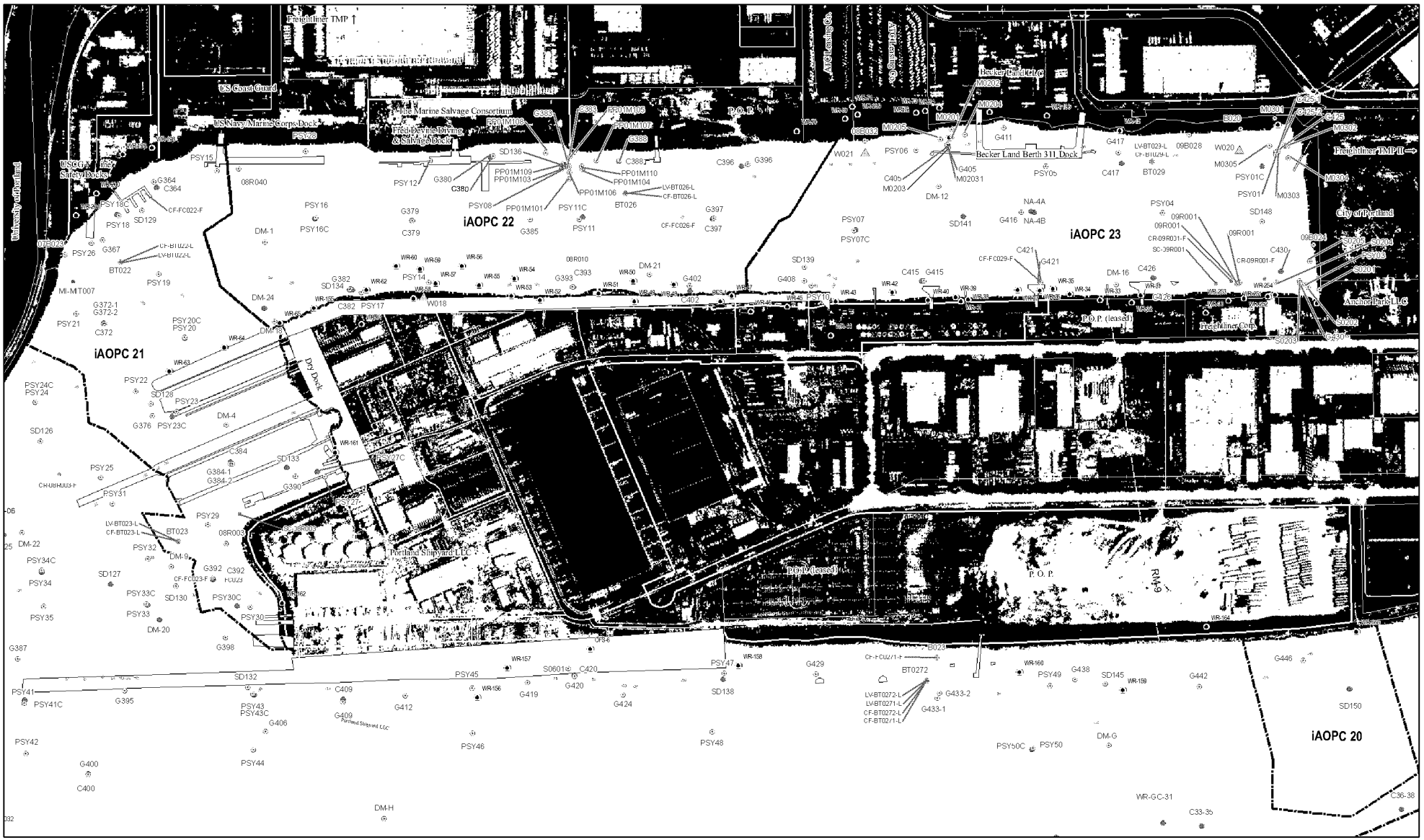
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

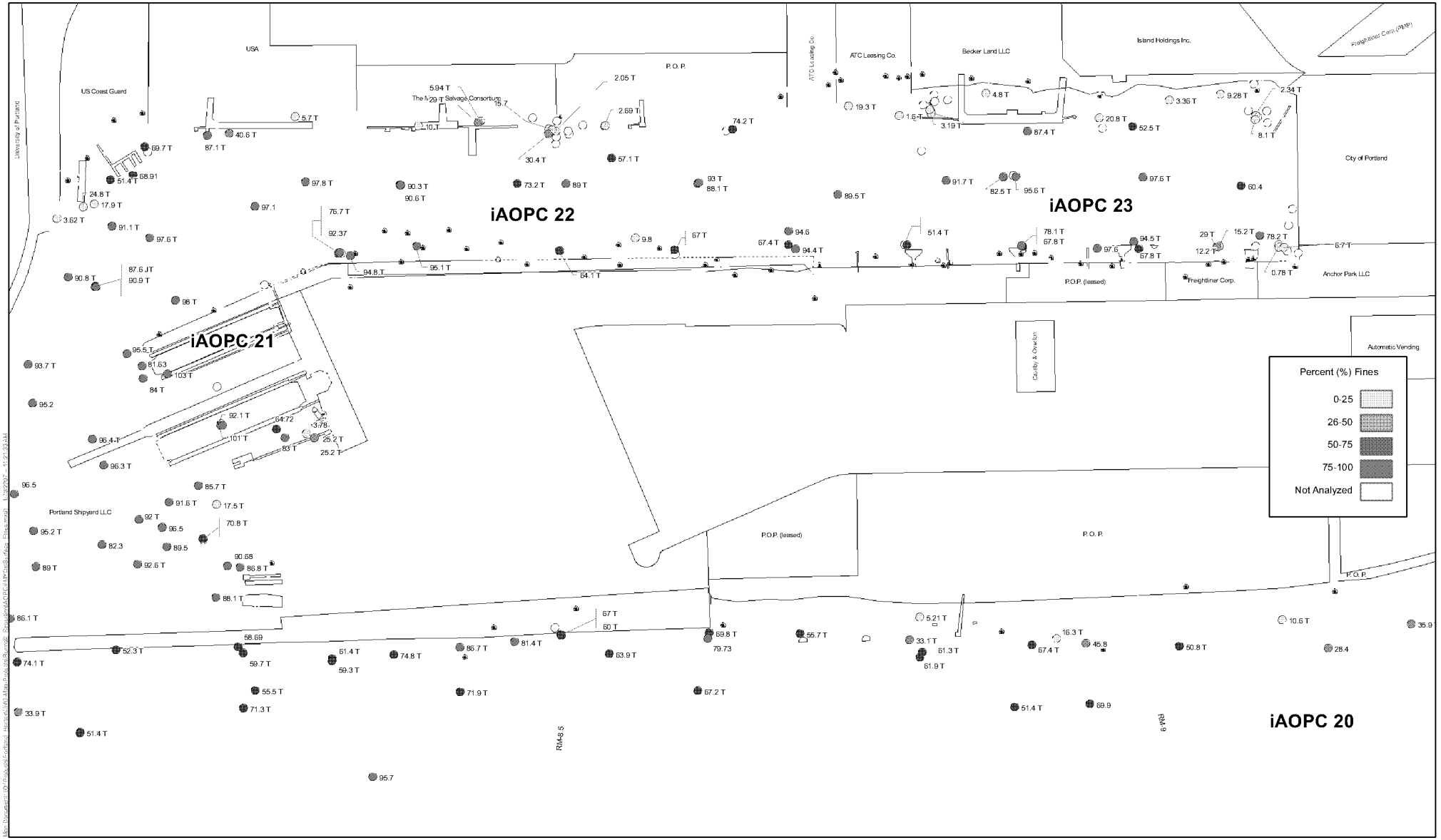
**Map 11.3.15 - 14**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Diesel-Range Hydrocarbon (mg/kg)**
**iAOPC 19**

BZTO104(e)032587




**Map 11.3.16-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**iAOPC Site Overview**
**iAOPC 20, 21, 22, 23**

BZTO104(e)032588




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

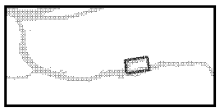
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**

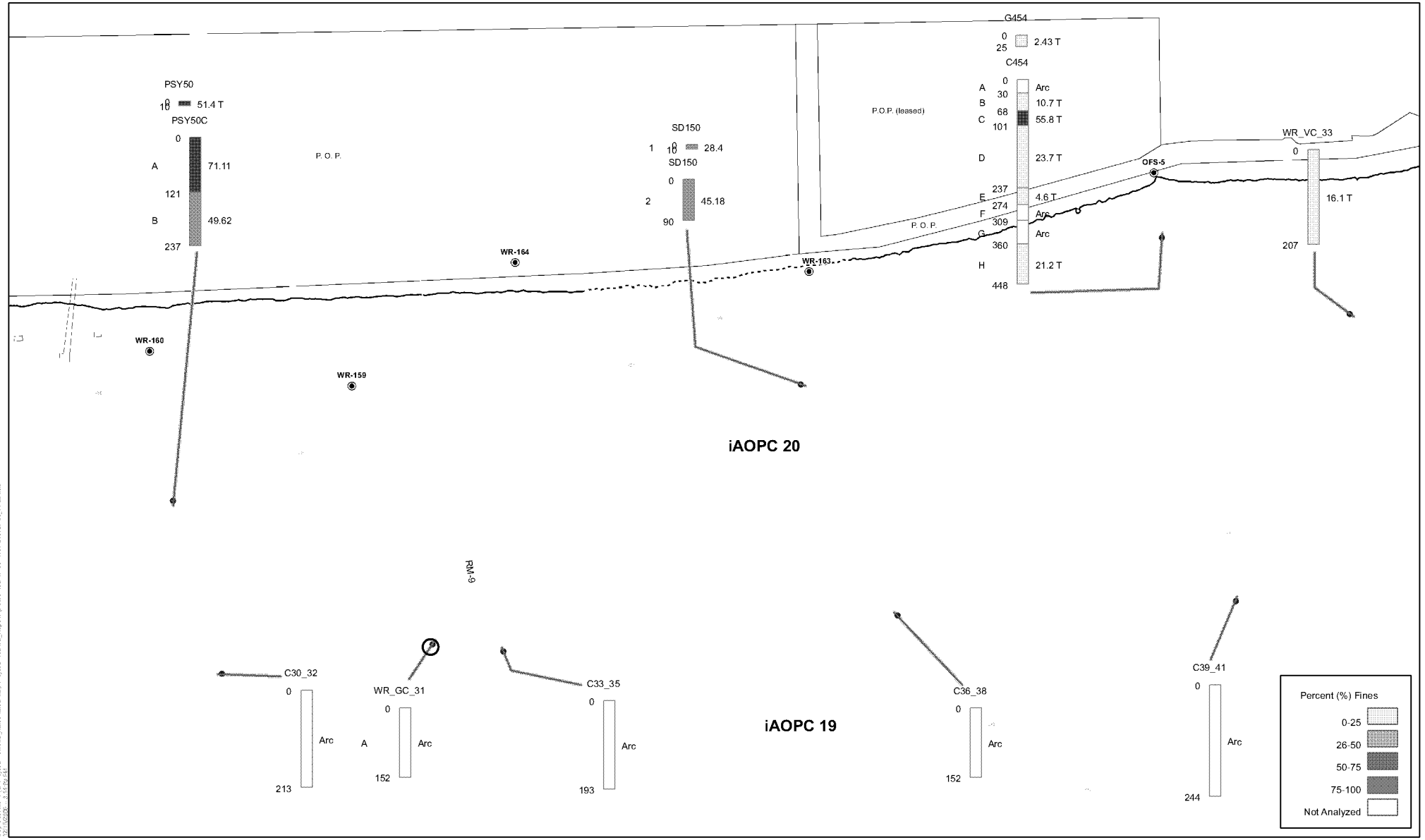
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped



**Map 11.3.16-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Texture**
**Percent (%) Fines**
**iAOPC 20,21,22,23**

BZTO104(e)032589




integral consulting inc.

LWG Lower Willamette Group

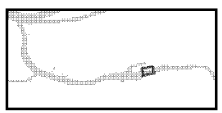
0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.,
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

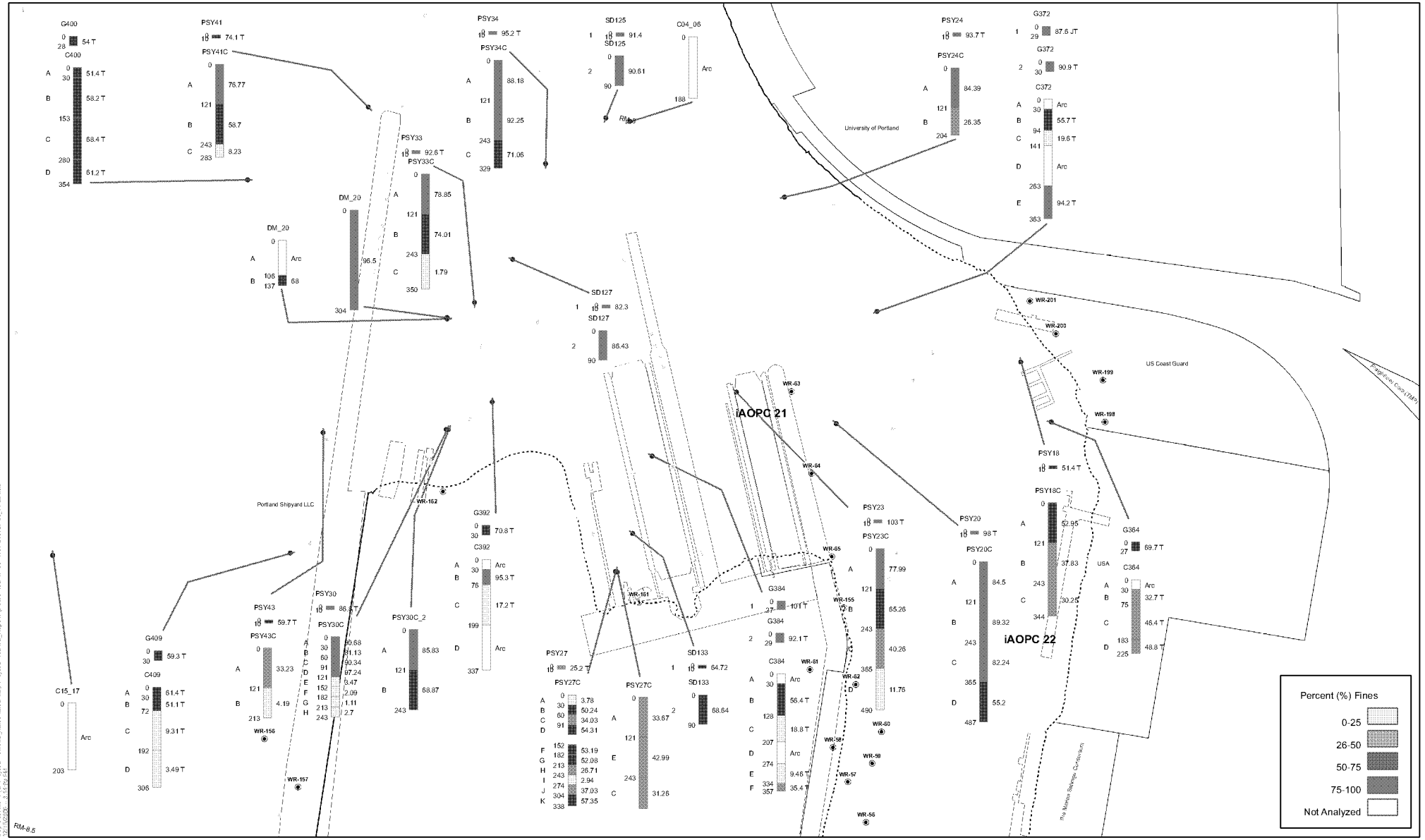
**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped



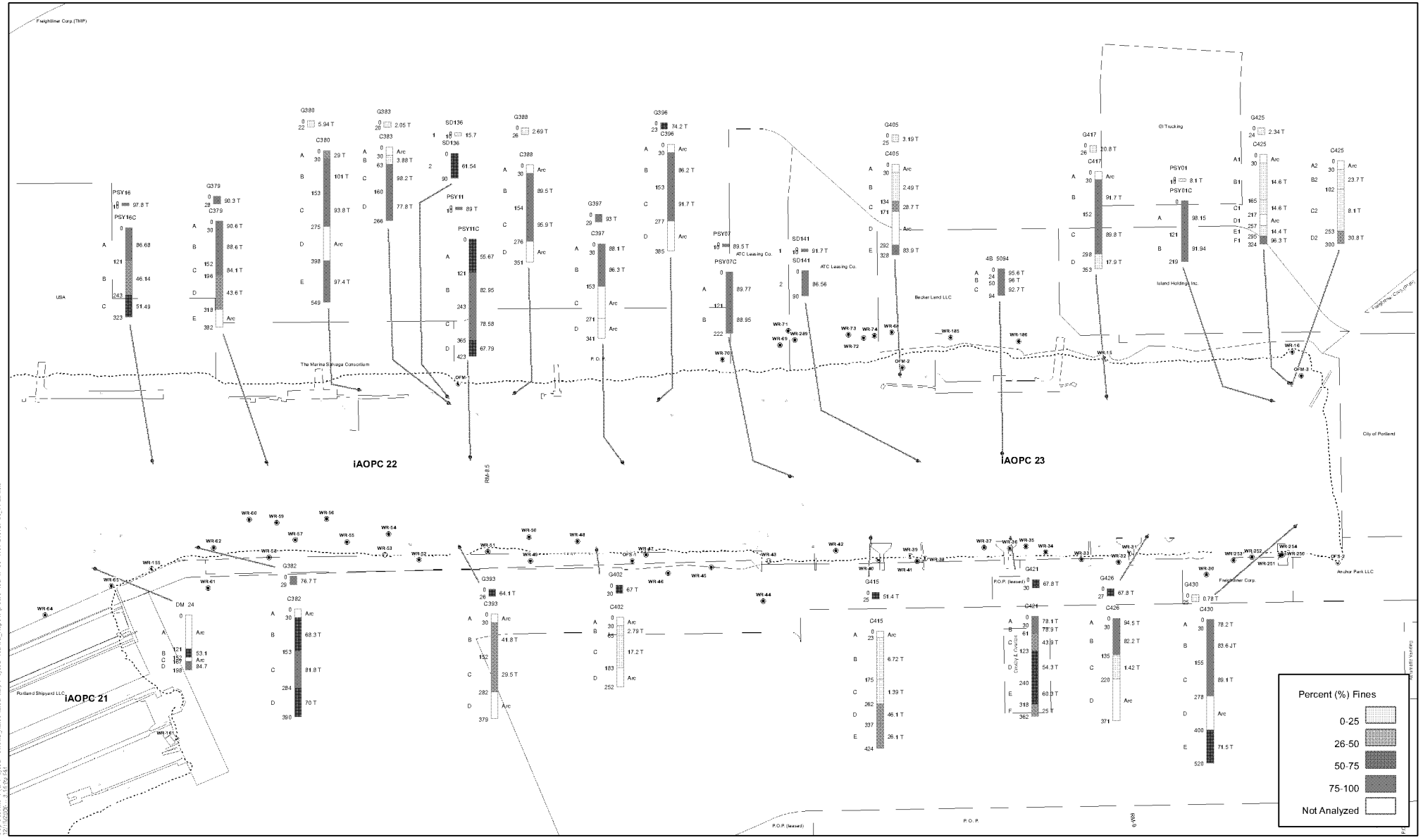
**Map 11.3.16- 2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 20**

BZTO104(e)032590




**Map 11.3.16 - 2c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 21**

BZTO104(e)032591




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.,
Channel & River miles: US Army Corps of Engineers.,
Bathymetric Information: David Evans and Associates, Inc.

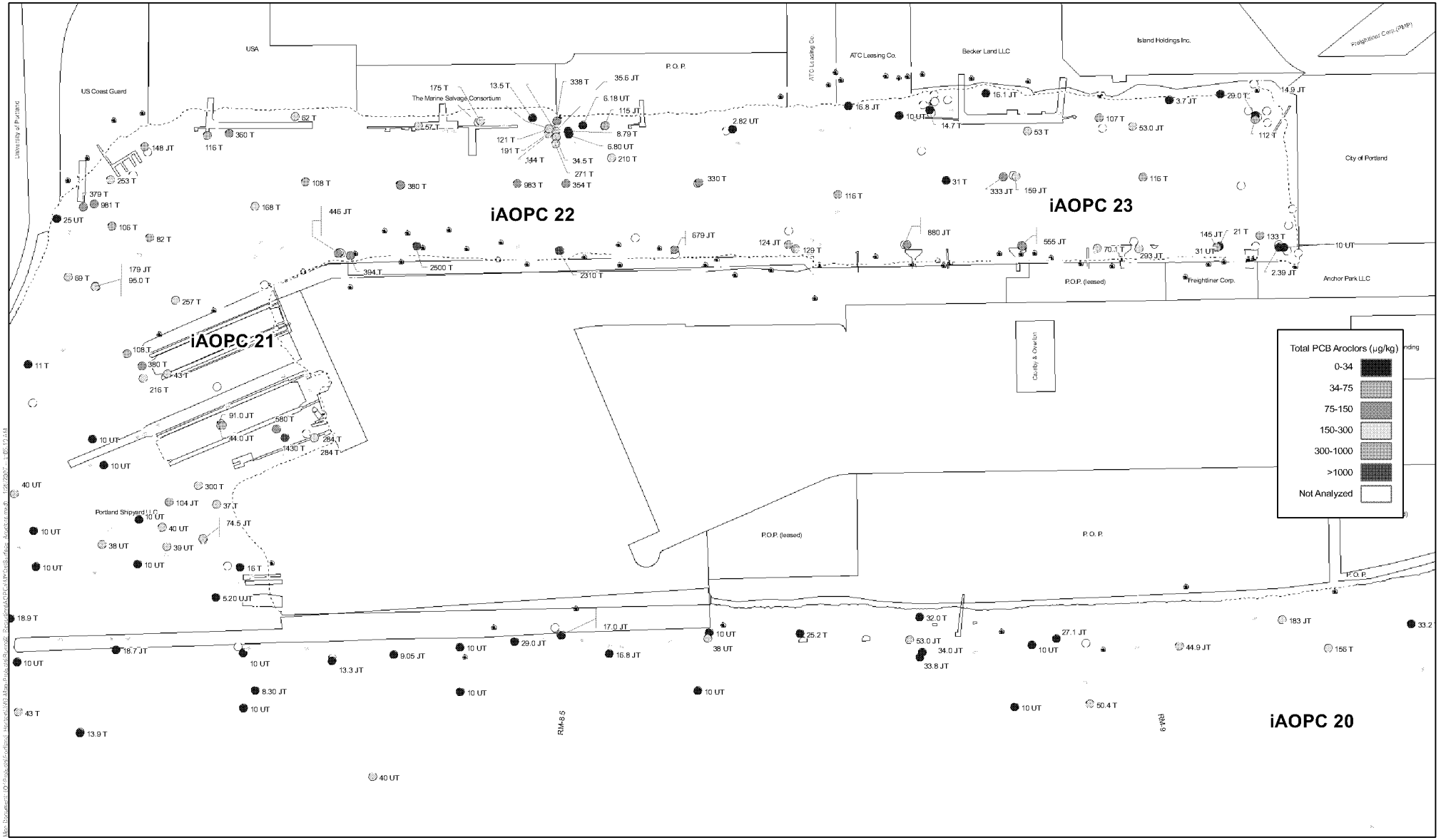
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.16- 2d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 22, 23**

BZTO104(e)032592




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evens and Associates, Inc.

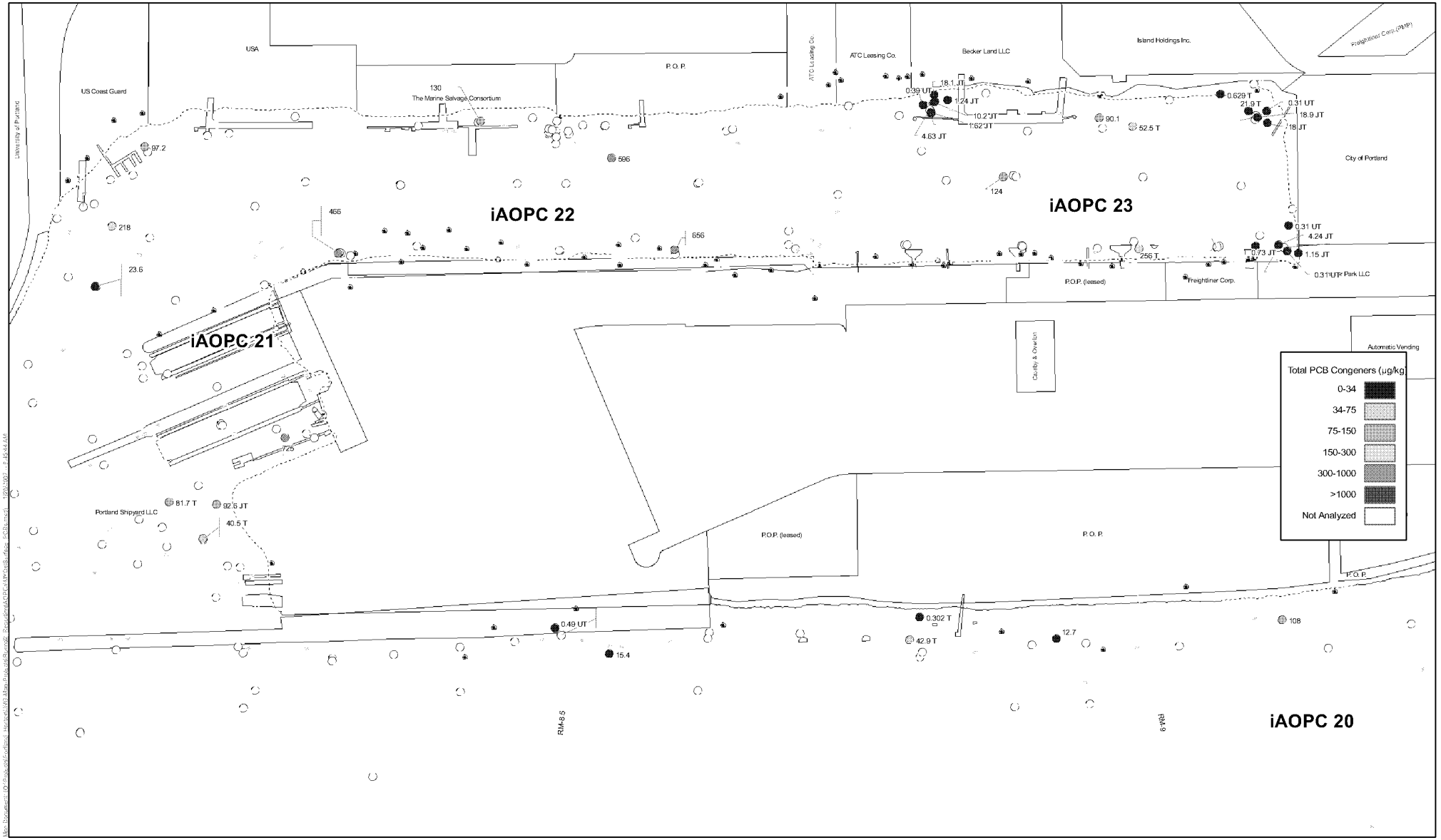
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.16-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 20,21,22,23**

BZTO104(e)032593




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

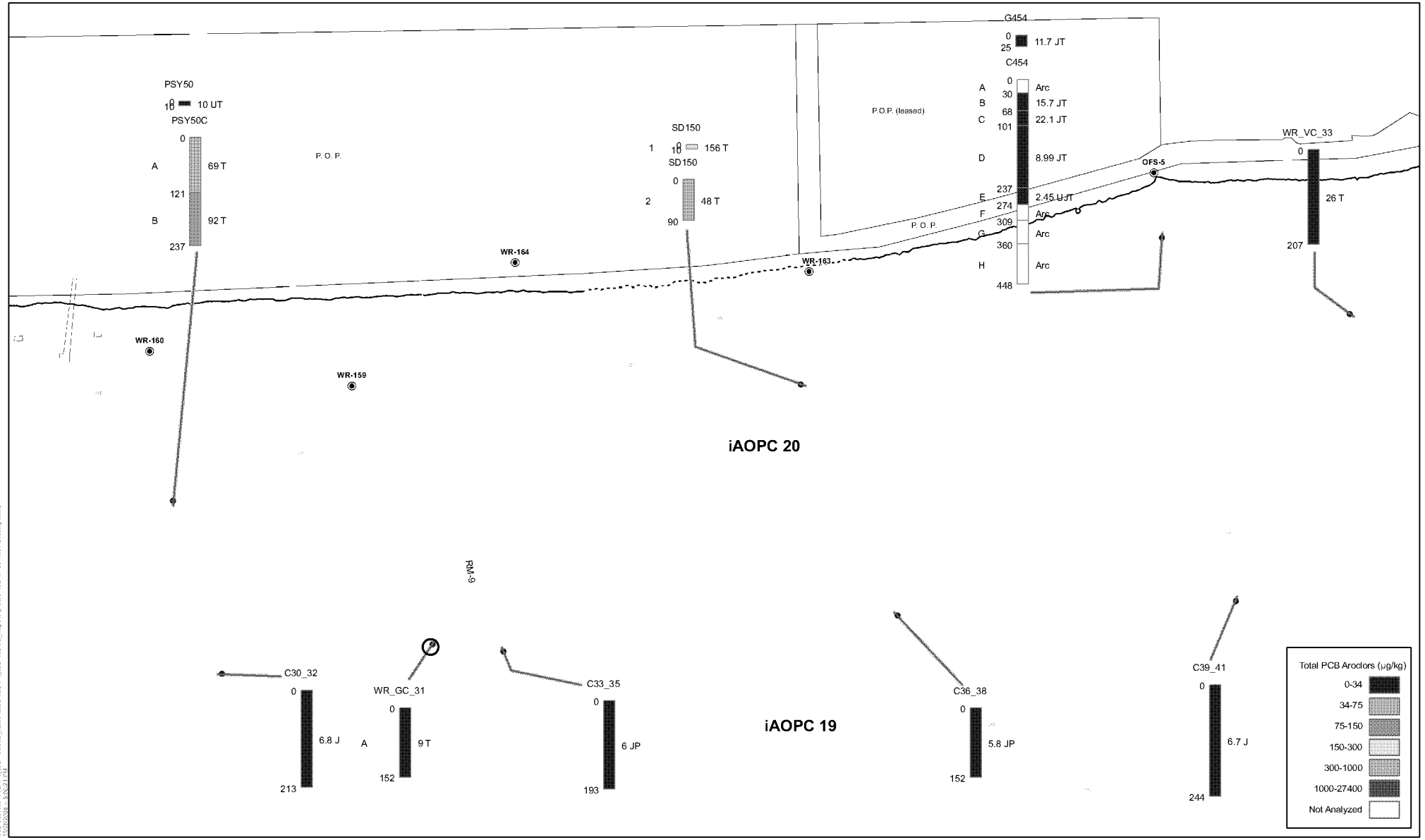
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.16-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 20,21,22,23**

BZTO104(e)032594




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

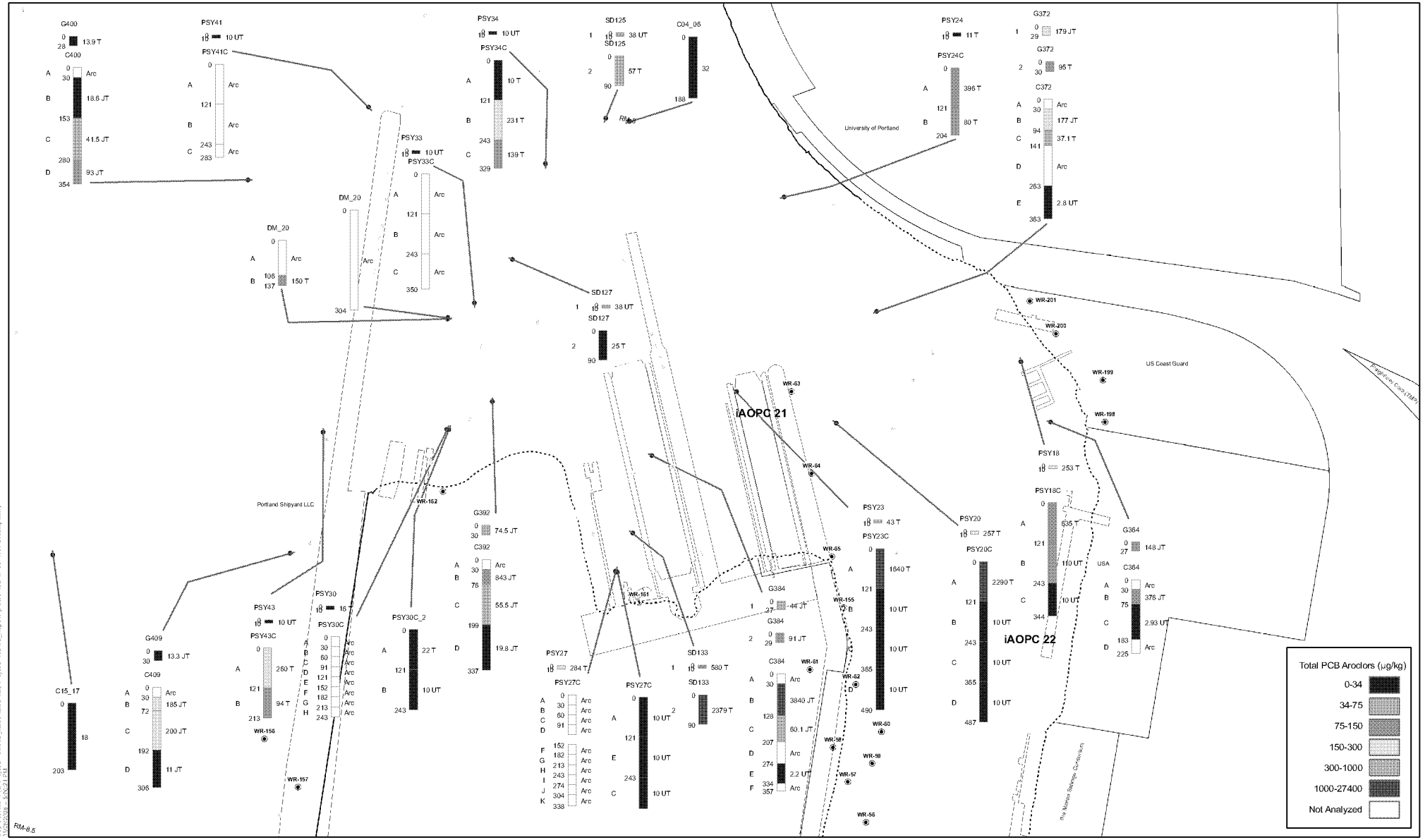
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

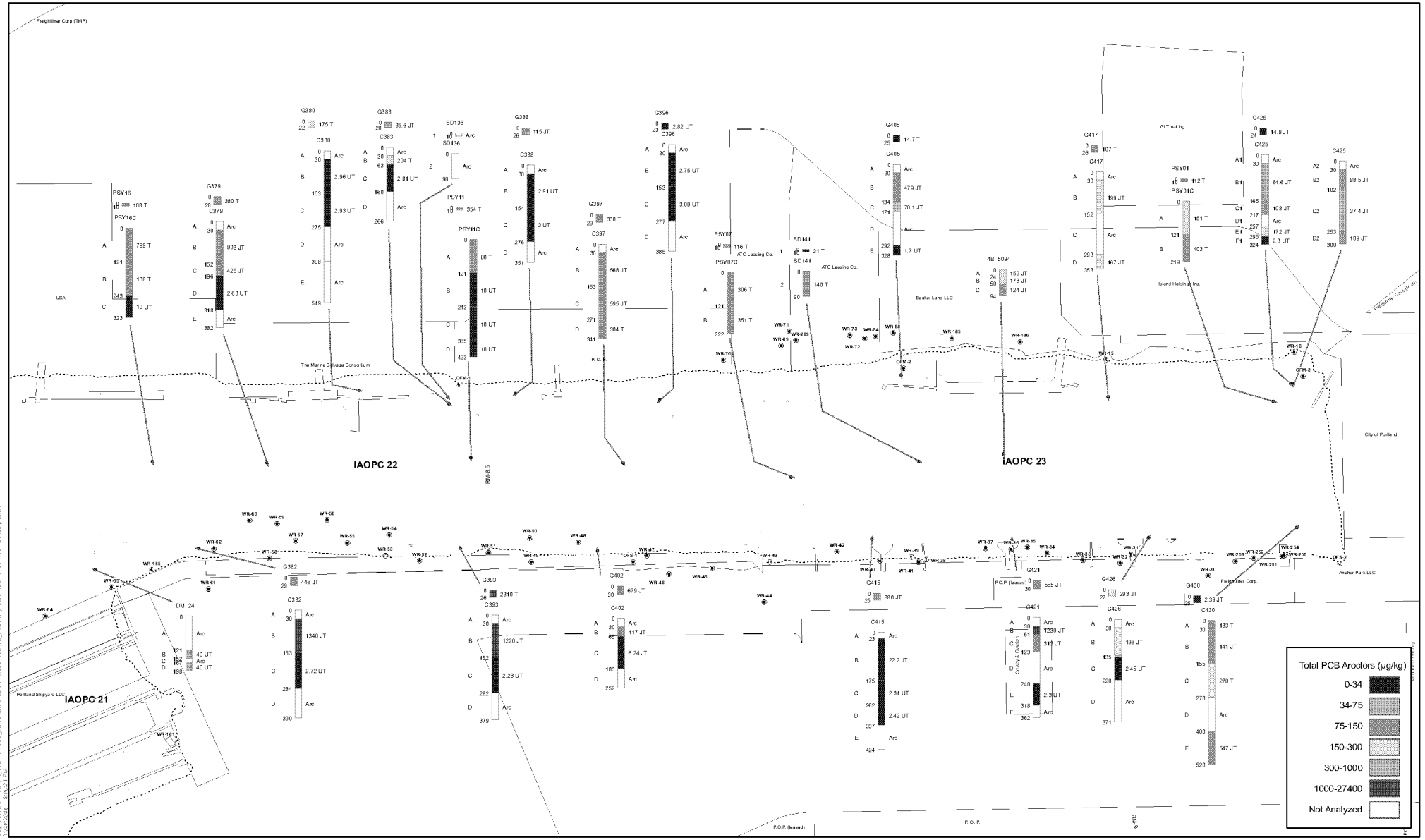
**Map 11.3.16 - 5a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 20**

BZTO104(e)032595




**Map 11.3.16- 5b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 21**

BZTO104(e)032596




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

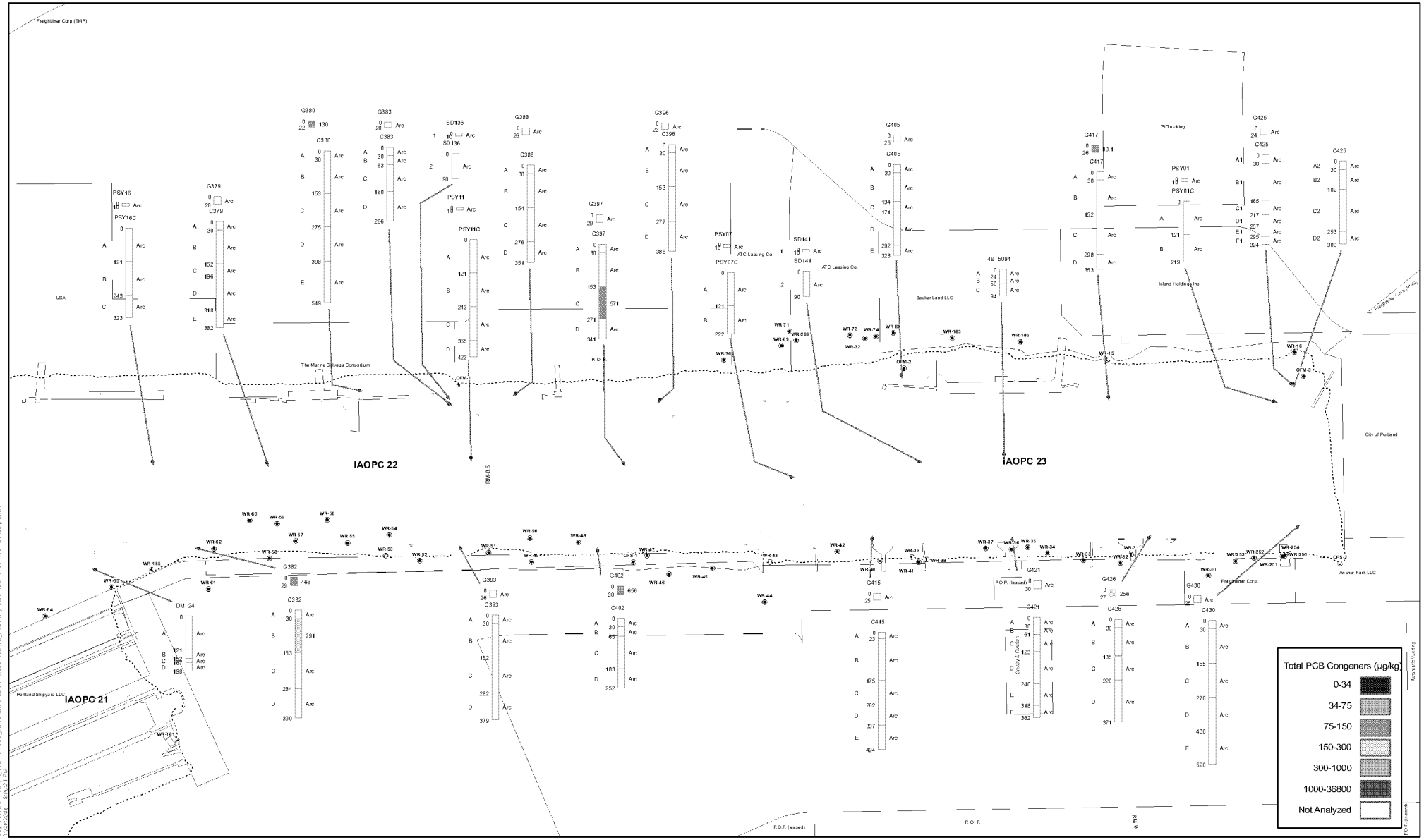
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.16 - 5c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 22, 23**

BZTO104(e)032597




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

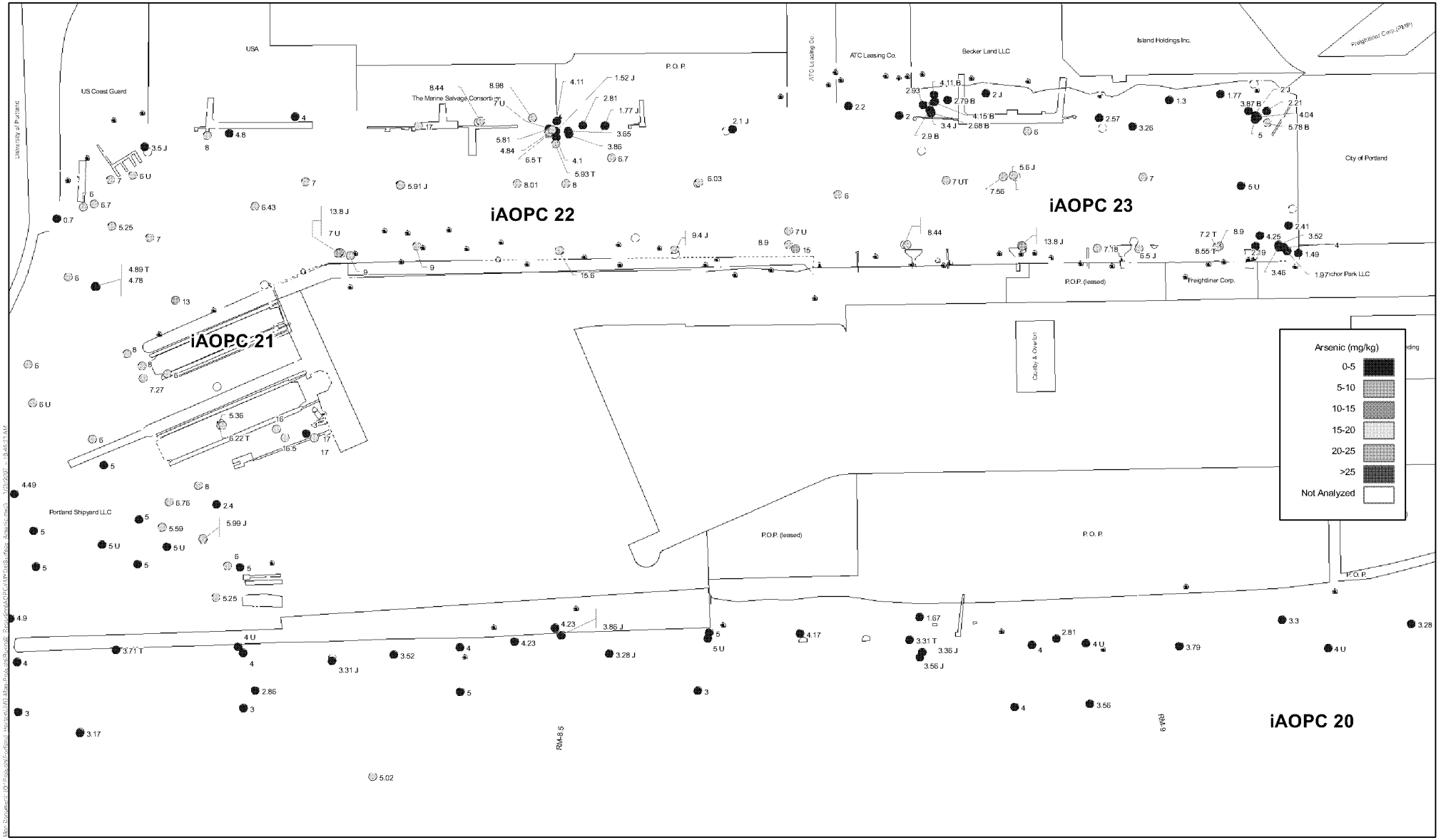
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.16-6**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 22, 23**

BZTO104(e)032598




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

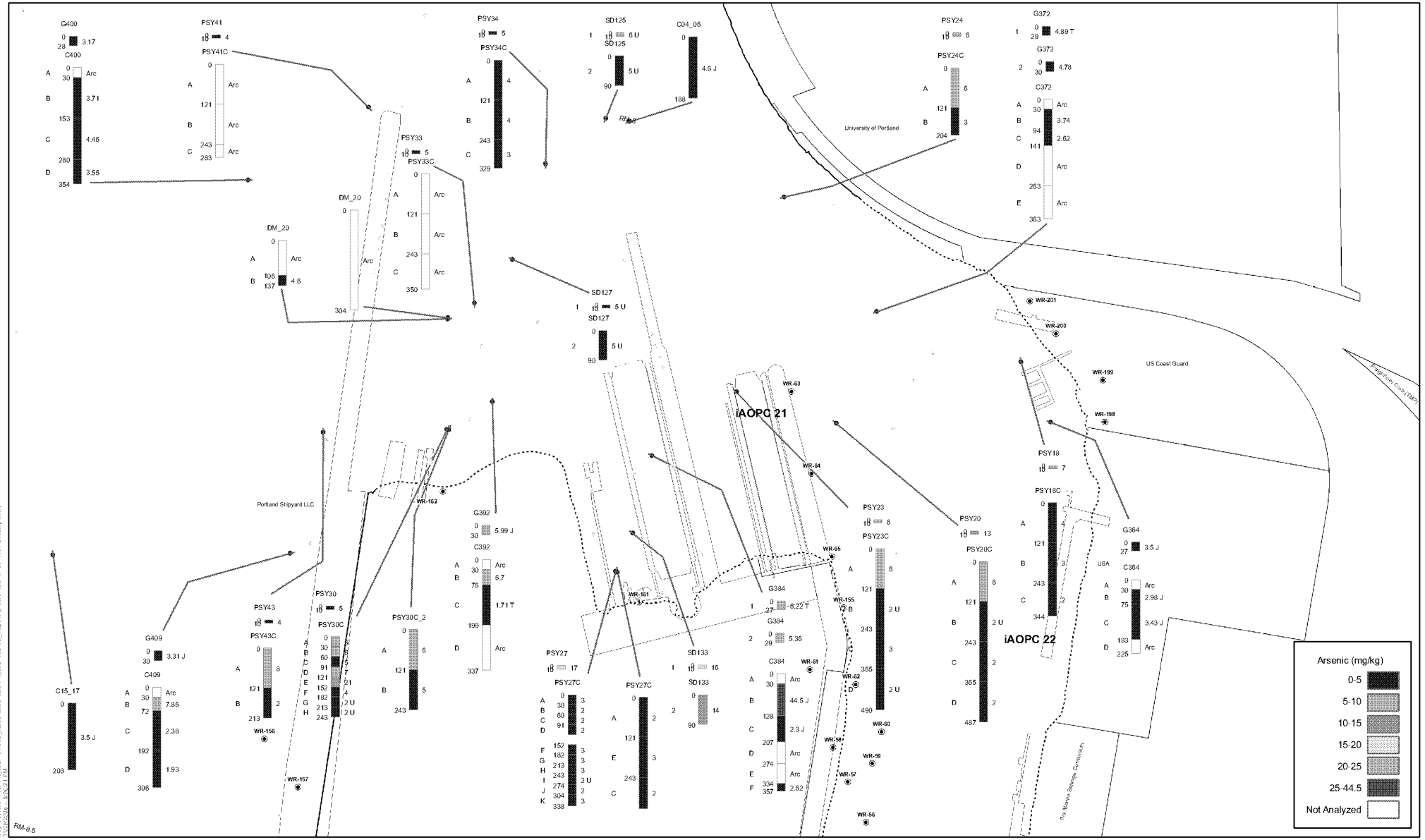
**Bathymetric Change**

- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

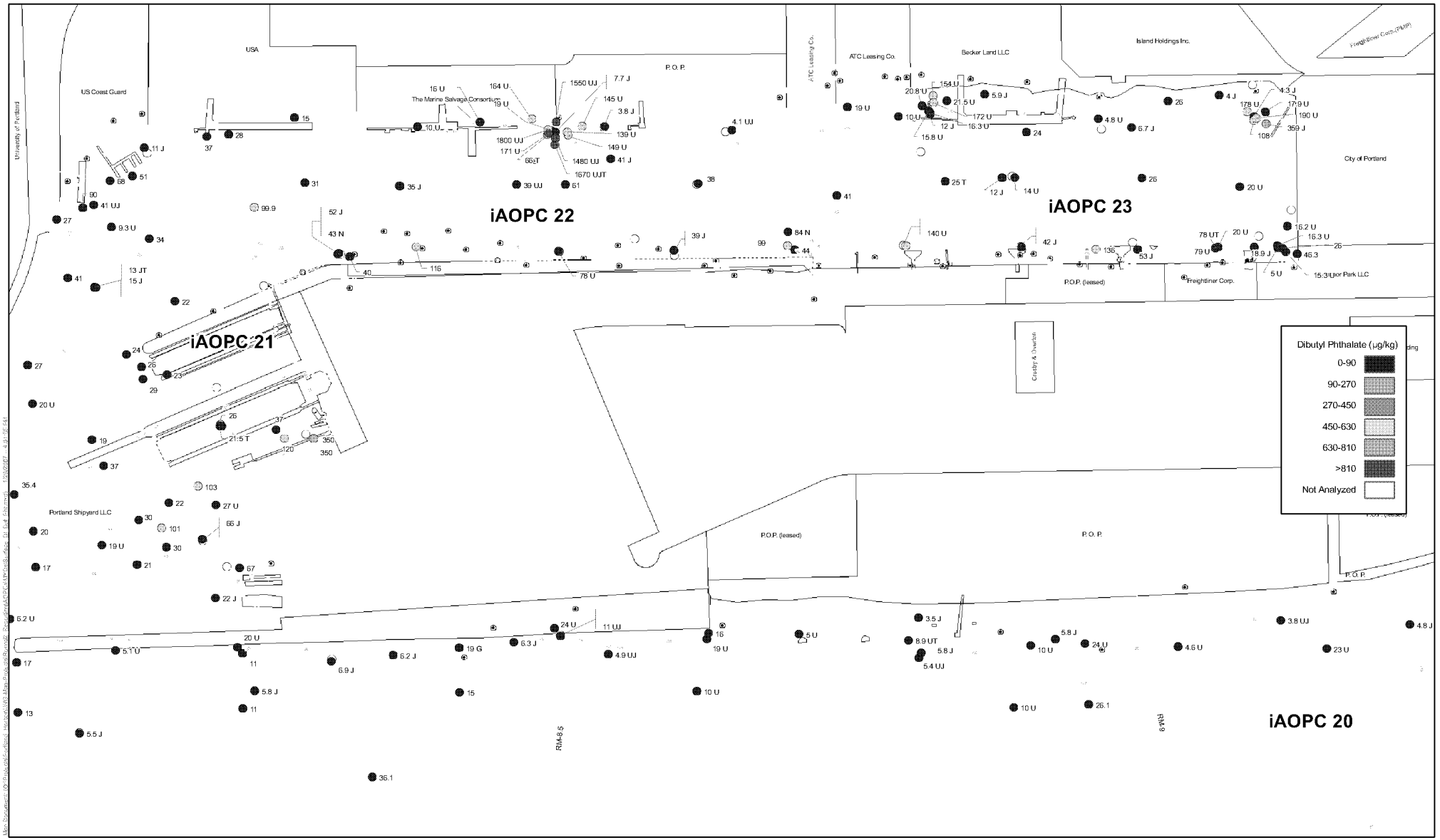
**Map 11.3.16-7**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Arsenic (mg/kg)**
**iAOPC 20,21,22,23**

BZTO104(e)032599




**Map 11.3.16-8**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Arsenic (mg/kg)**
**iAOPC 21**

BZTO104(e)032600




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

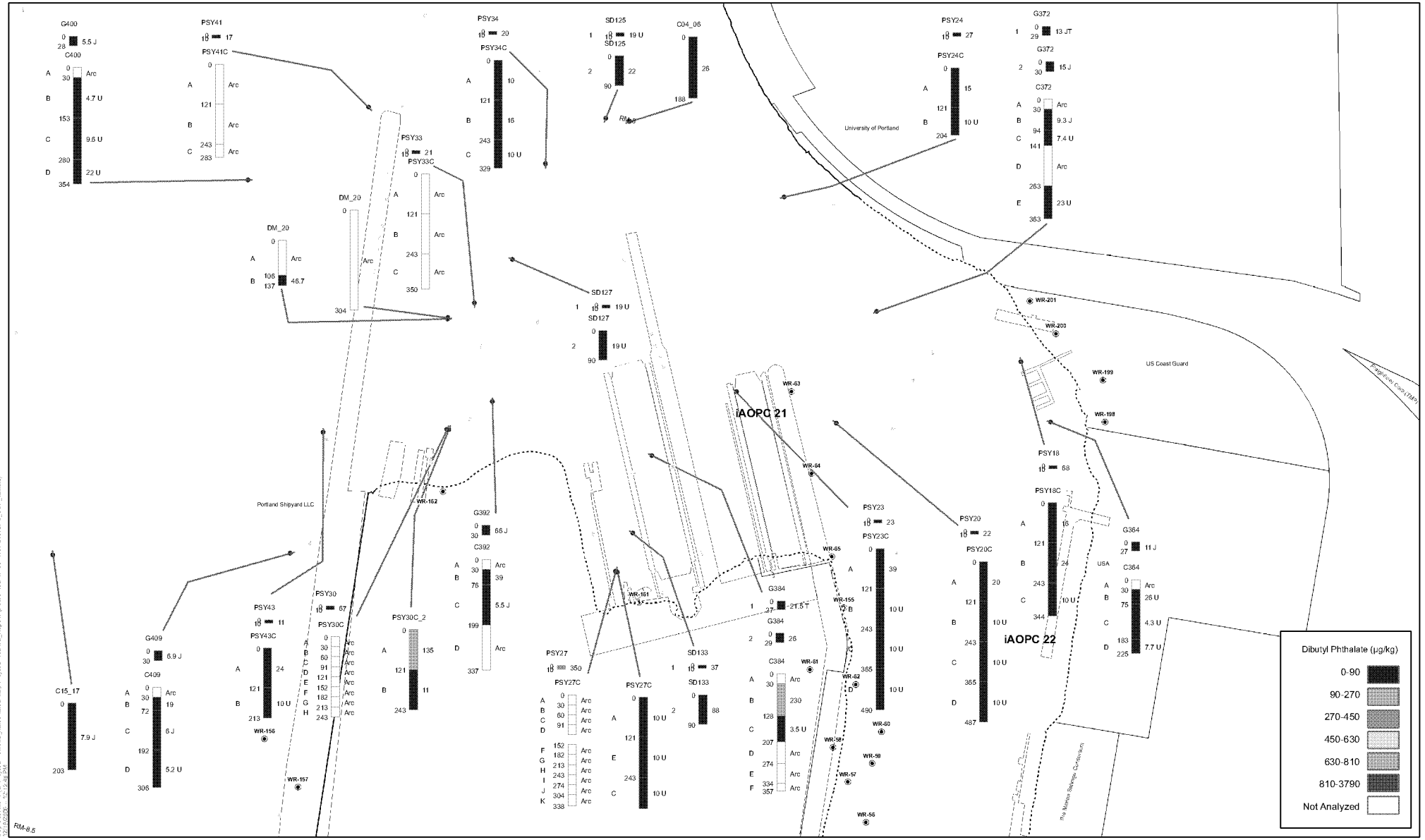
Active Outfalls
Unknown Outfalls
Abandoned Outfalls
River 13ft NAVD88
Docks and Structures
Navigation Channel

Bathymetric Change
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening
5 foot Contours (NAVD88)

AOPC Boundary
Capping footprint
Dredging (Post 1997)
Dredged or Capped

**Map 11.3.16-9**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Dibutyl Phthalate (µg/kg)**
**iAOPC 20,21,22,23**

BZTO104(e)032601




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

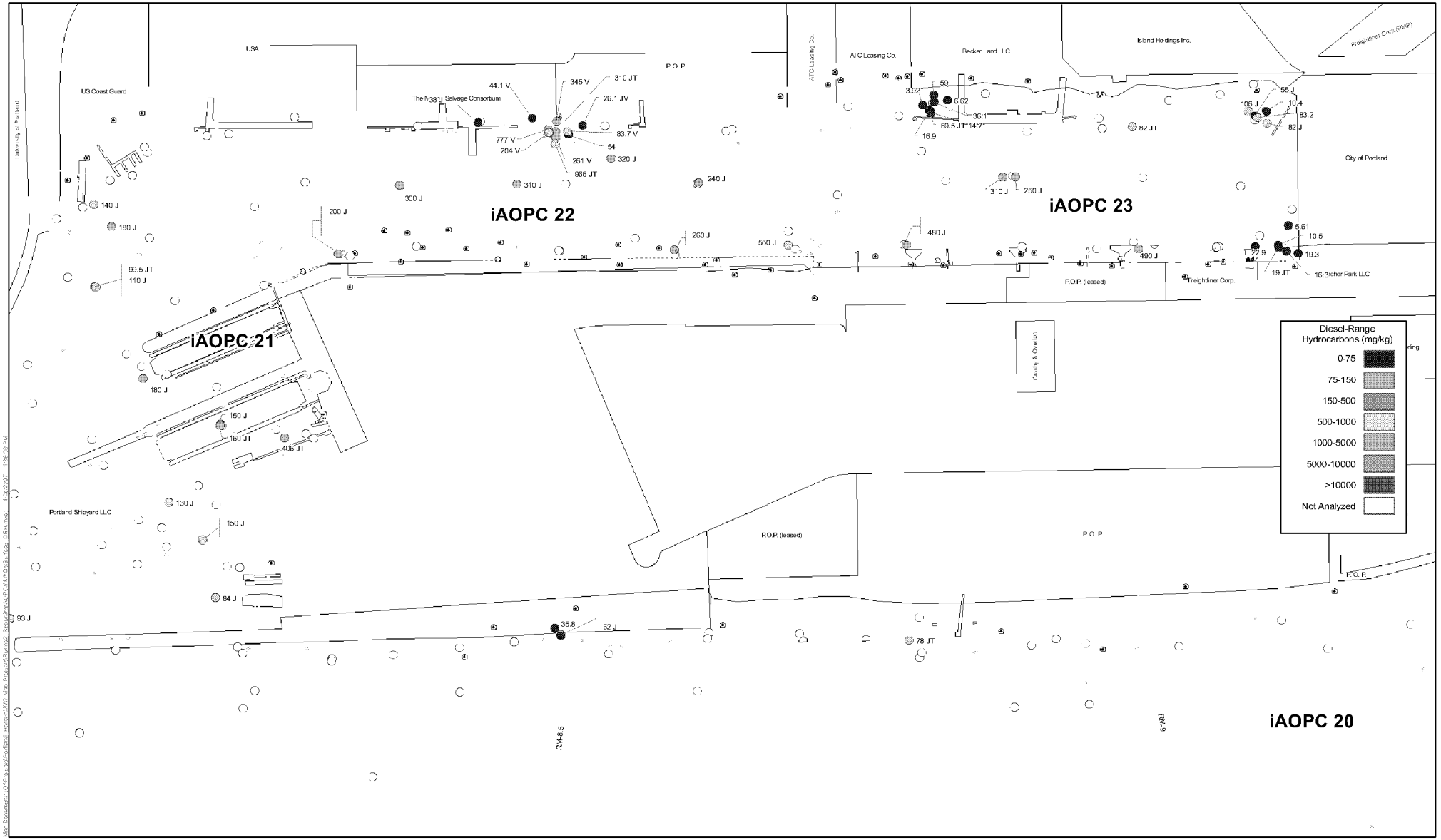
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.16 - 10**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Dibutyl Phthalate (µg/kg)**
**iAOPC 21**

BZTO104(e)032602




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

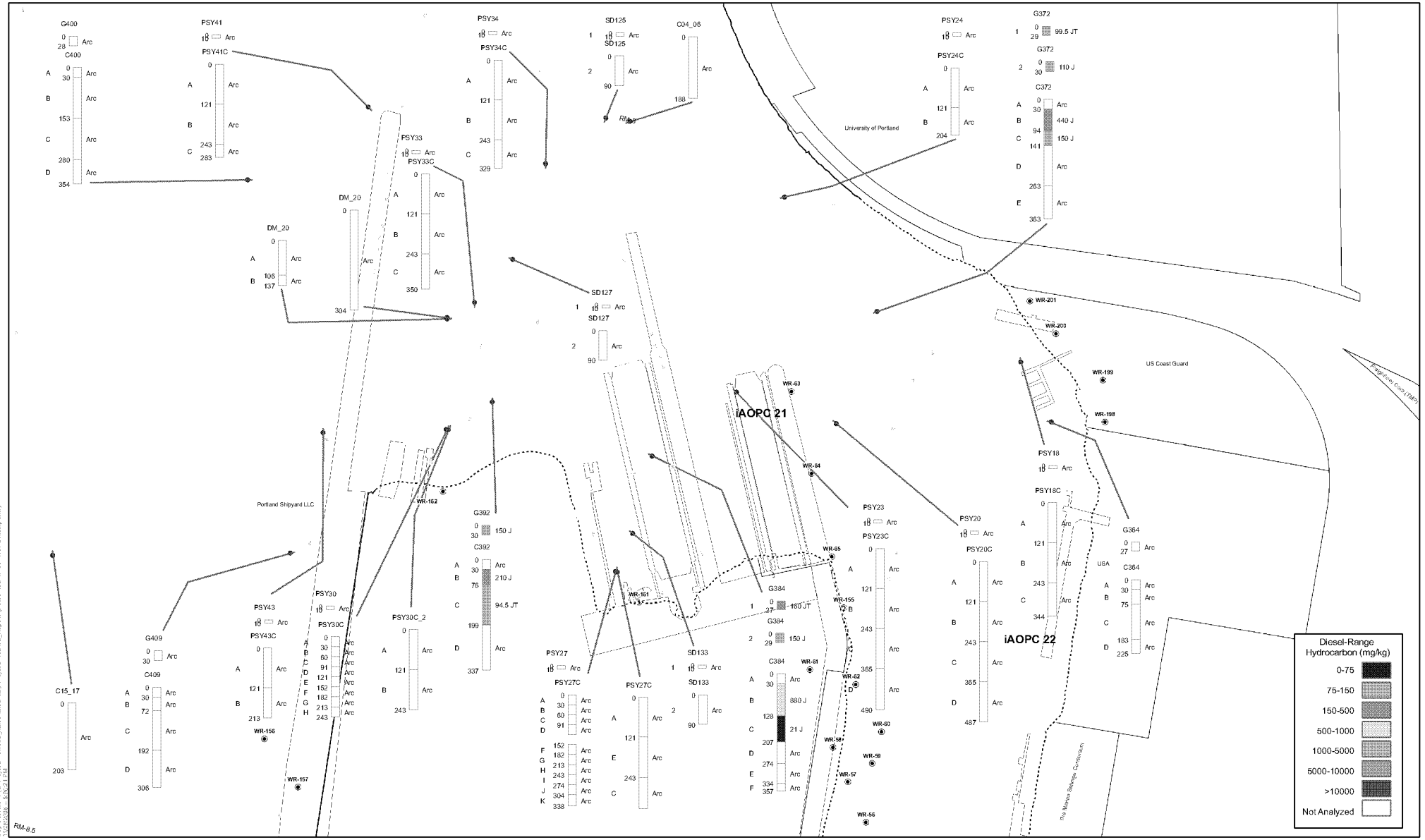
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.16-11**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Diesel-Range Hydrocarbons (mg/kg)**
**iAOPC 20,21,22,23**

BZTO104(e)032603




0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.16 - 12**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Diesel-Range Hydrocarbon (mg/kg)**
**iAOPC 21**

BZTO104(e)032604

integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

FEATURE SOURCES
Transportation, Property boundaries: Metro RLIS.

Channel & River miles: US Army Corps of Engineers.

Bathymetric Information: David Evans and Associates, Inc.

RLIS Aerial Images: February 2005 'leaf off' flight (6" pixel).

iAOPCs
River Mile
Navigation Channel
River 13ft NAVD88

Docks and Structures
Capping
Dredging (Post 1997)

**Bathymetric Change**
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening

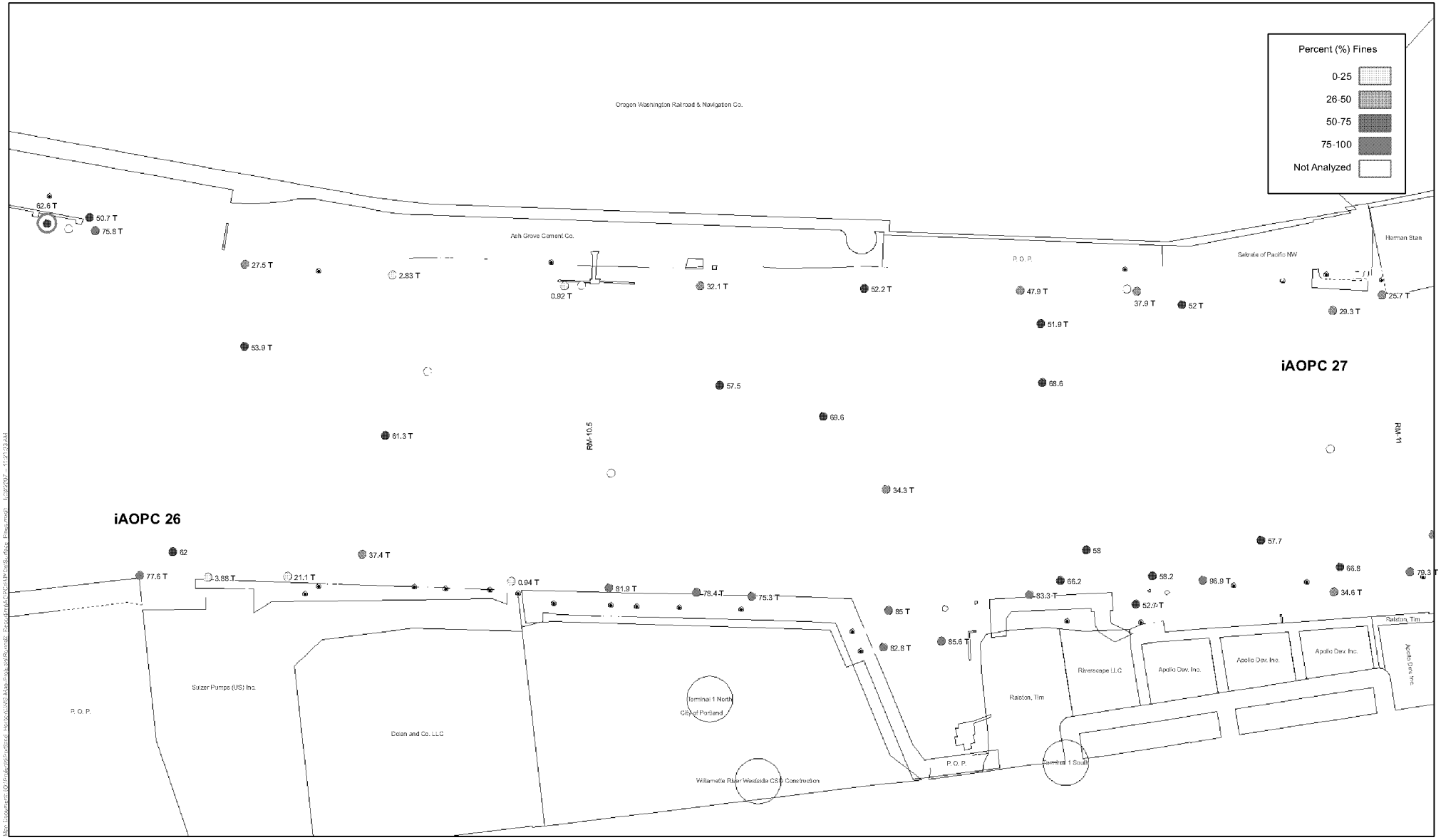
Clam, CF
Mudworm, LV
Crayfish, CR
Sculpin, SC
Multiplate Invertebrates, MI

Surface Water
Surface Sediment
Subsurface Sediment
TZW Sample Location (+38cm BML)

Active Outfalls
Unknown Outfalls
Abandoned Outfalls

**Map 11.3.19-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**iAOPC Site Overview**
**iAOPC 26,27**

BZTO104(e)032605




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers .
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Navigation Channel
- River_13ft_NAVD88

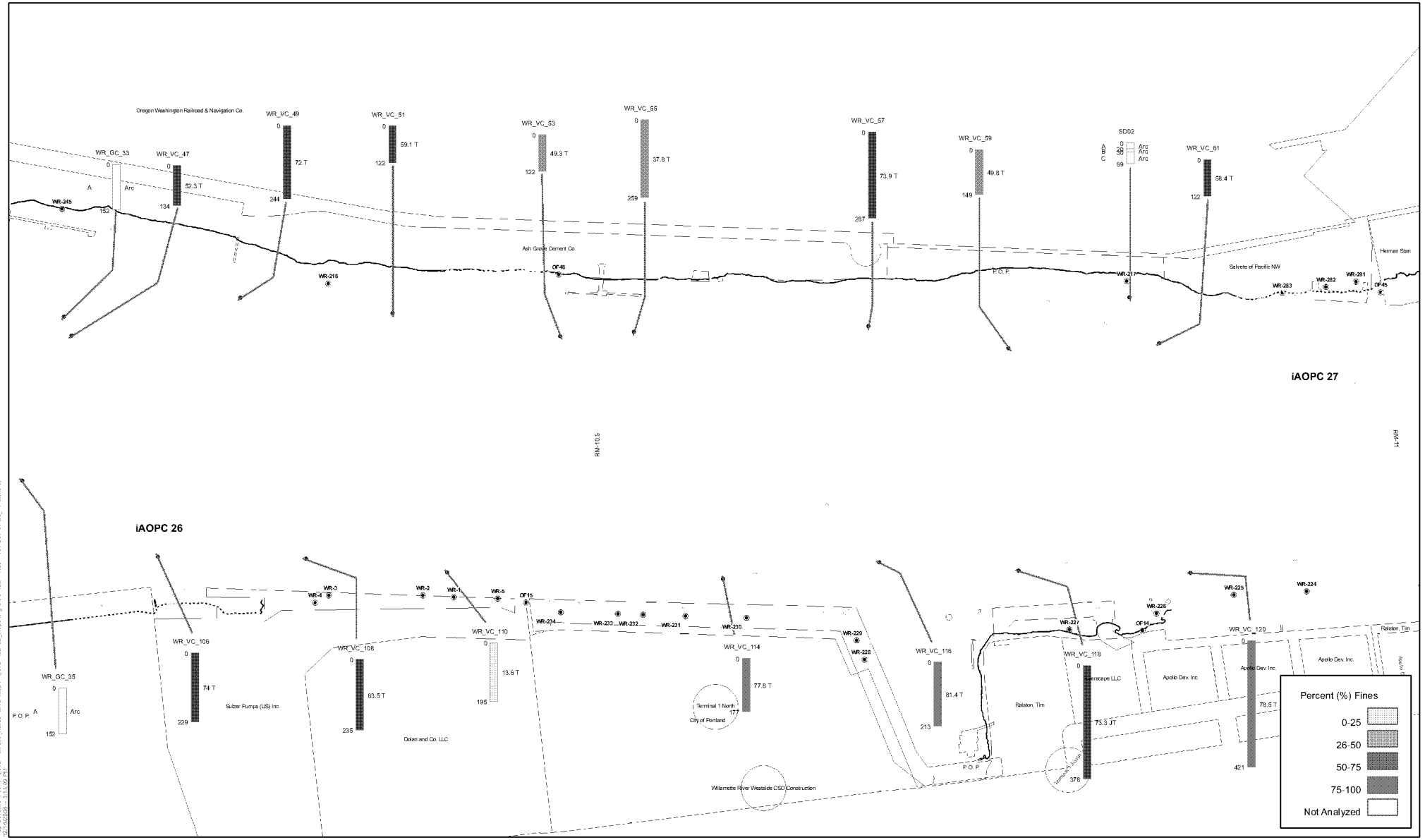
**Bathymetric Change**

- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.19-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Texture**
**Percent (%) Fines**
**iAOPC 26,27**

BZTO104(e)032606




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

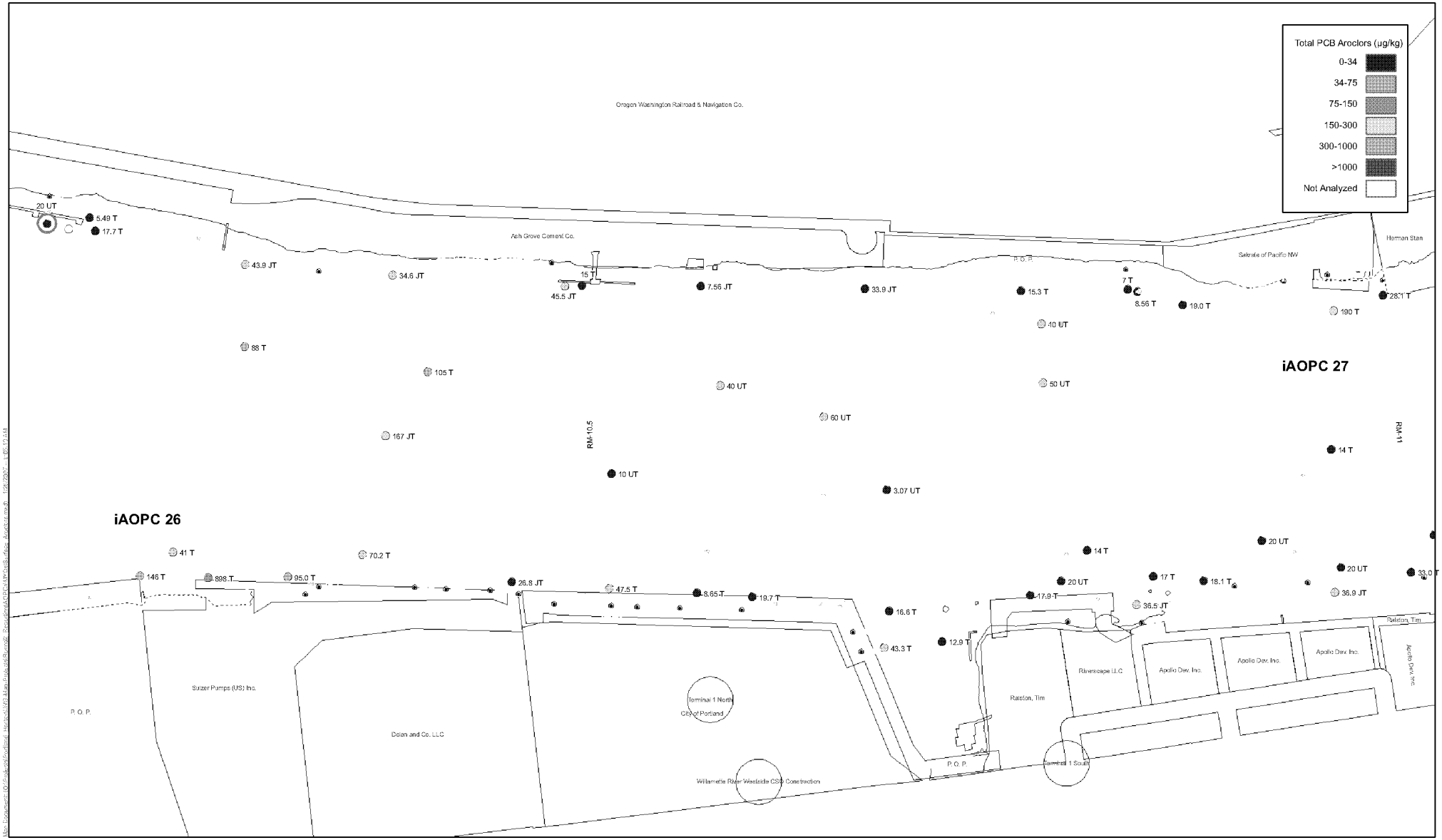
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.,
Channel & River miles: US Army Corps of Engineers.,
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.19- 2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 26, 27**

BZTO104(e)032607




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

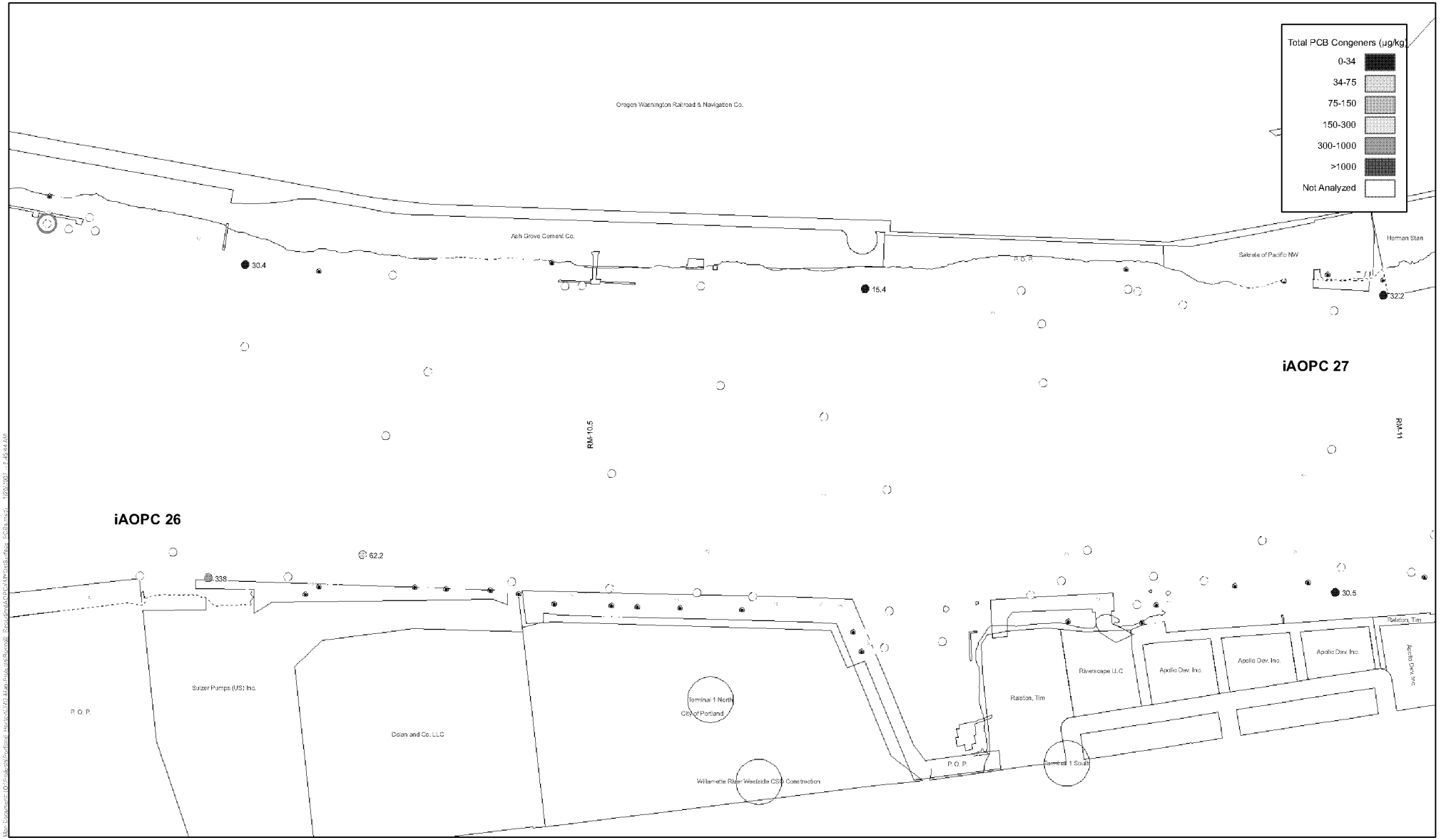
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.19-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 26,27**

BZTO104(e)032608




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

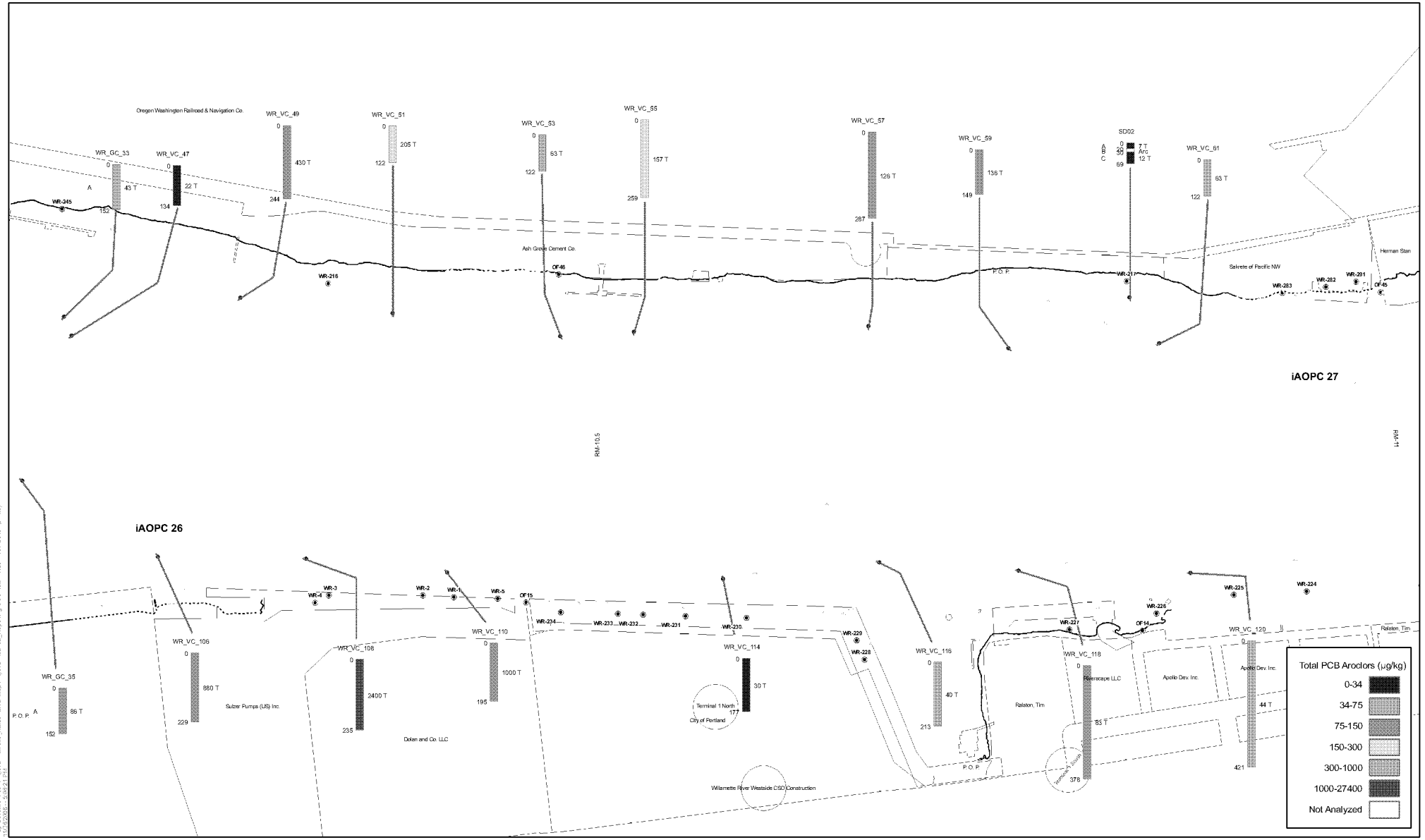
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.19-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 26,27**

BZTO104(e)032609




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

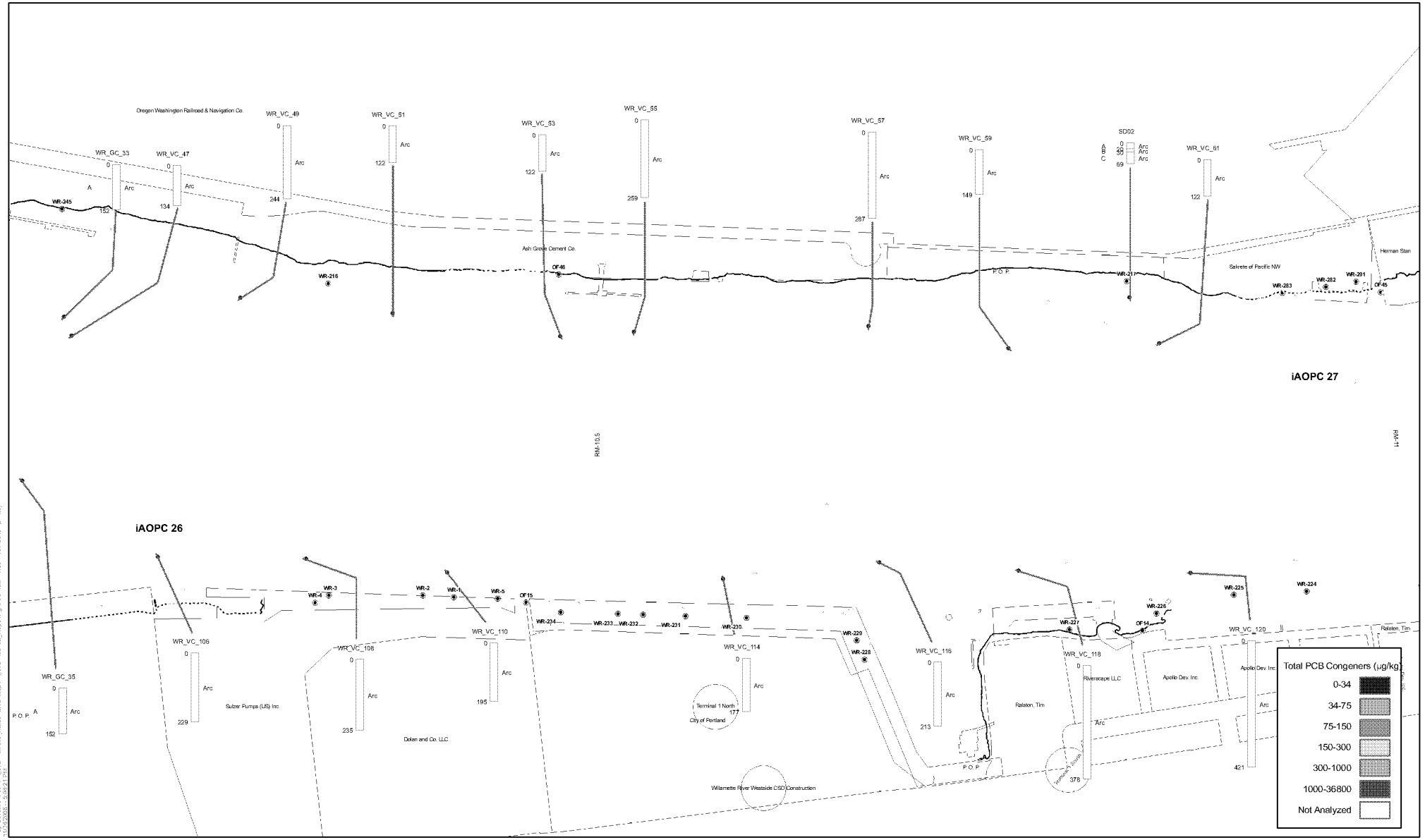
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.,
Channel & River miles: US Army Corps of Engineers.,
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- IAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.19-5**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 26, 27**

BZTO104(e)032610




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.,
Channel & River miles: US Army Corps of Engineers.,
Bathymetric Information: David Evans and Associates, Inc.

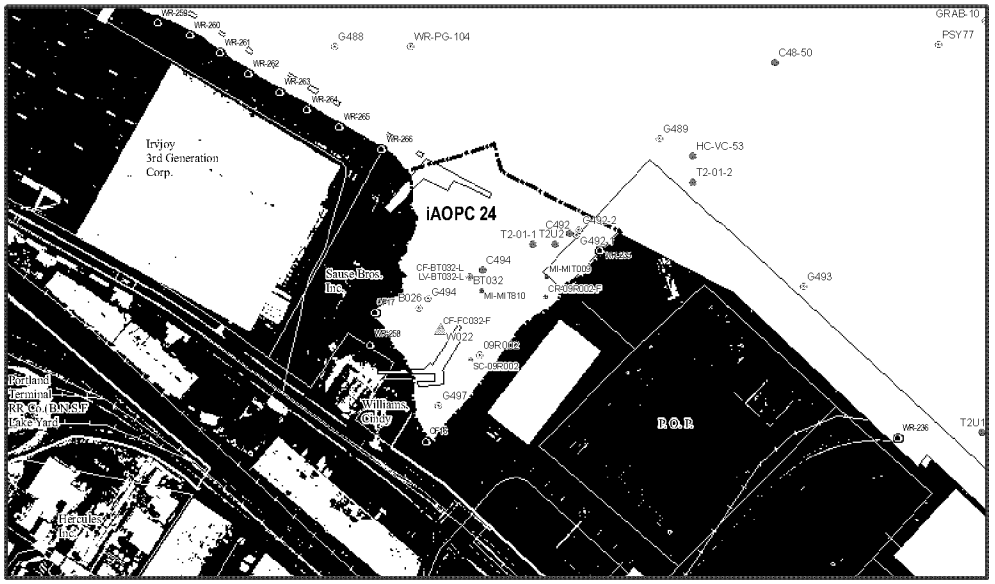
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

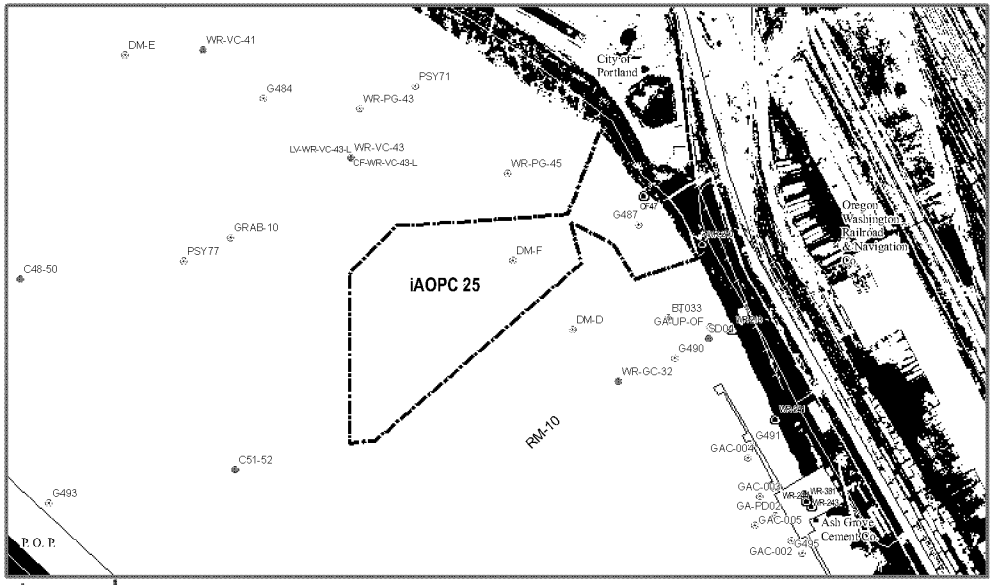
**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

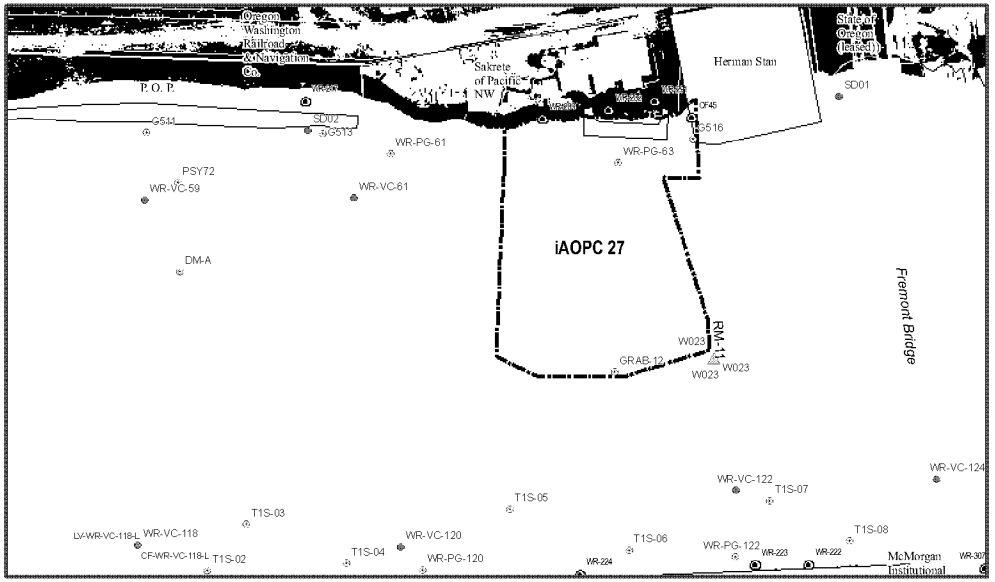
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.19-6**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 26, 27**

BZTO104(e)032611




integral consulting inc

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES
Transportation, Property boundaries: Metro RLIS.

Channel & River miles: US Army Corps of Engineers.

Bathymetric Information: David Evans and Associates, Inc.

RLIS Aerial Images: February 2005 'leaf off' flight (6" pixel).

Active Outfalls
Unknown Outfalls
Abandoned Outfalls
Docks and Structures
River Mile
Navigation Channel
iAOPCs

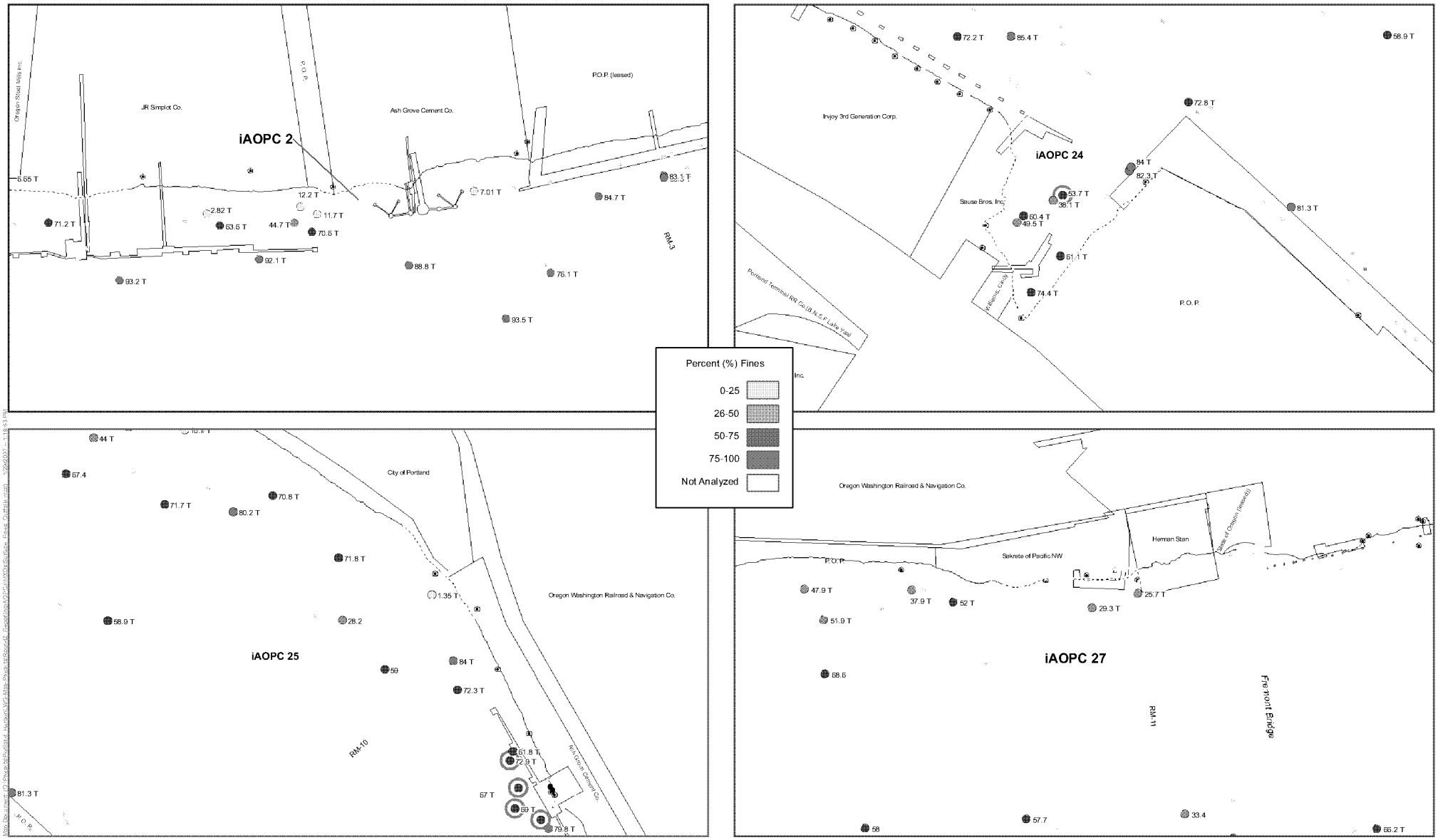
Capping
Dredging (Post 1997)
River 13ft NAVD88
Bathymetric Change
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening

Clam, CF
Mudworm, LV
Crayfish, CR
Sculpin, SC
Multiplate Invertebrates, MI

Surface Water
Surface Sediment
Subsurface Sediment
TZW Sample Location (<38cm BML)

**Map 11.3.2-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**iAOPC Site Overview**
**iAOPC 2, 24, 25, 27**

BZTO104(e)032612




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

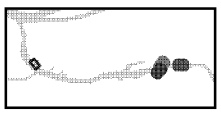
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.,
Channel & River miles: US Army Corps of Engineers.,
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**

- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

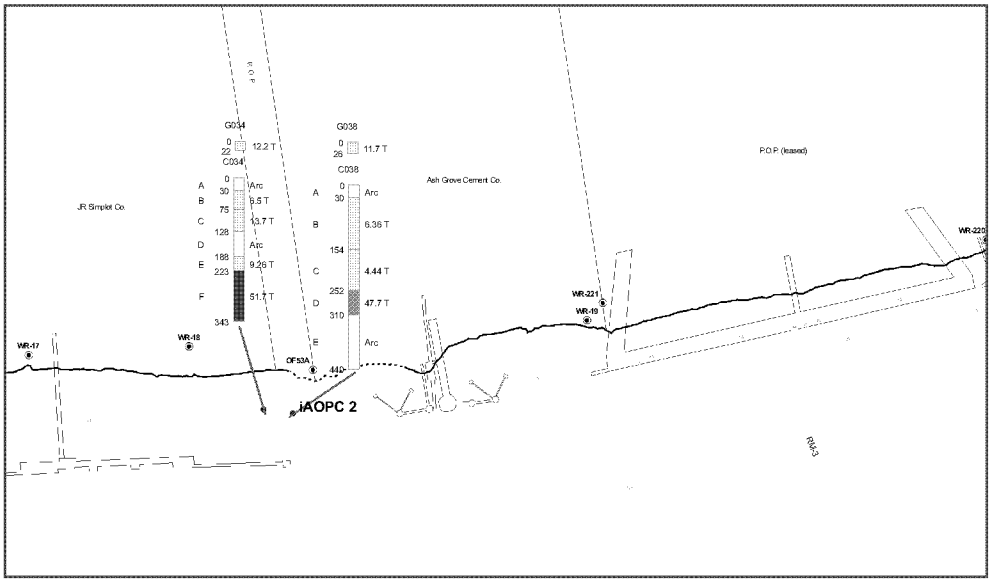
- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

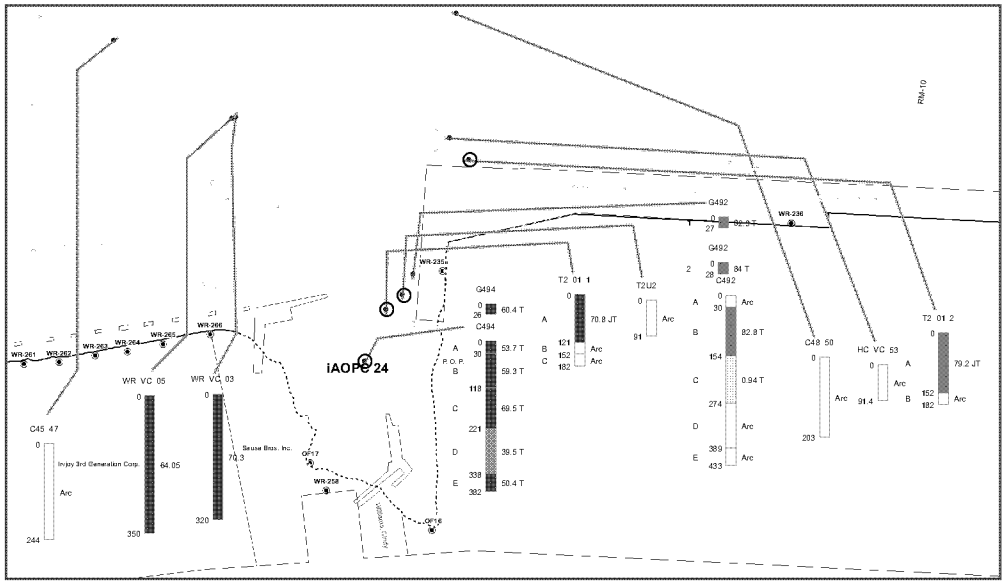


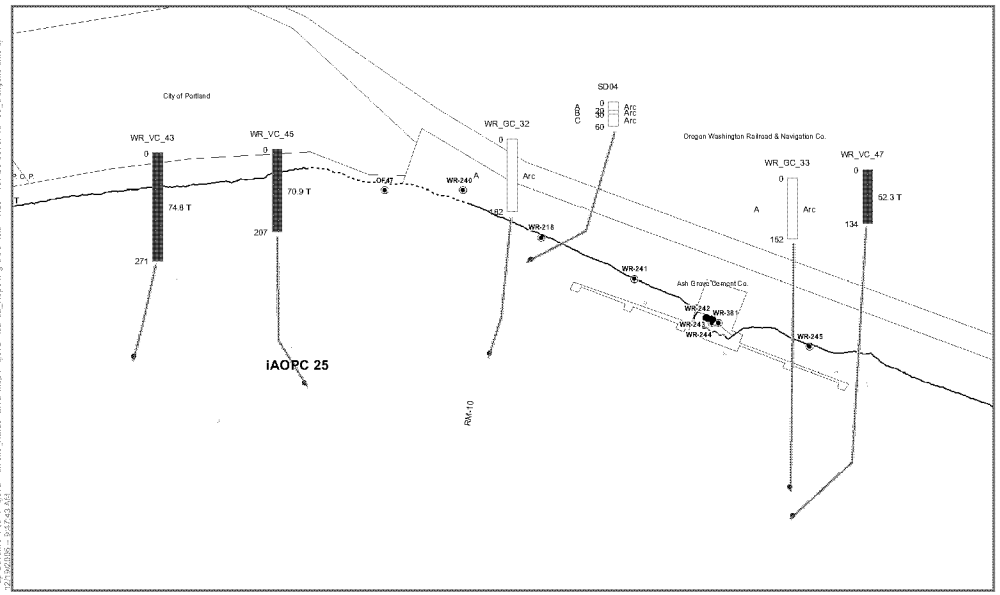
**Map 11.3.2-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Texture**
**Percent (%) Fines**

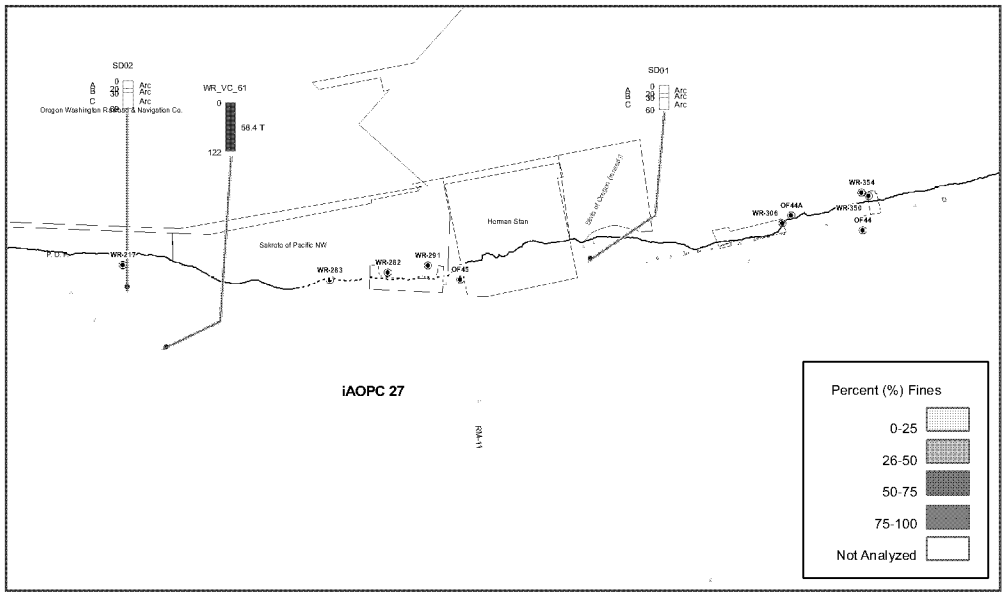
**iAOPC 2, 24, 25, 27**

BZTO104(e)032613




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

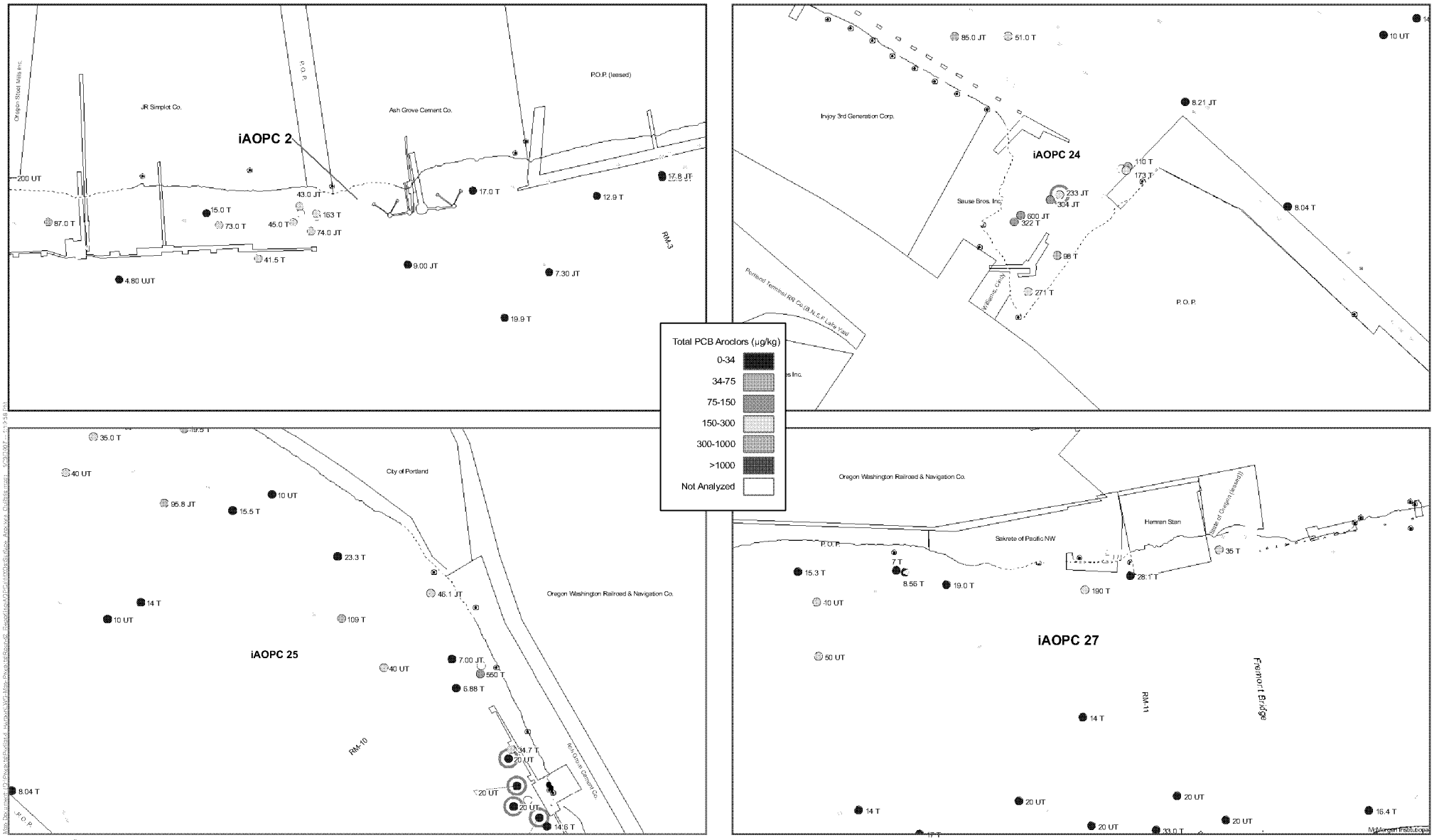
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -.22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.2- 2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 2, 24, 25, 27**

BZTO104(e)032614




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

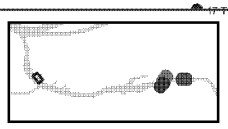
0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.,
Channel & River miles: US Army Corps of Engineers.,
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

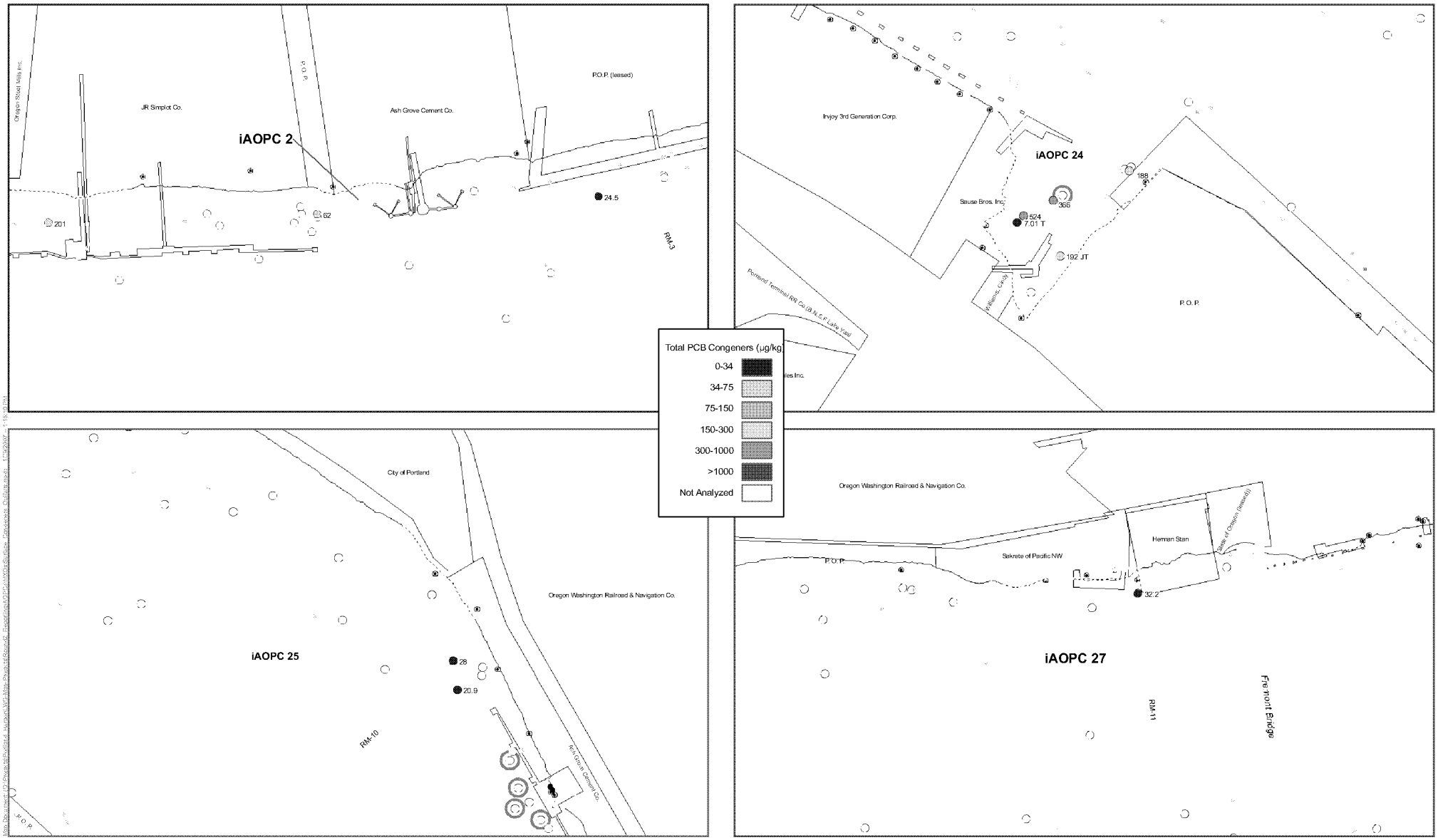
**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped



**Map 11.3.2-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 2, 24, 25, 27**

BZTO104(e)032615




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

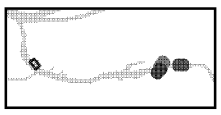
0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

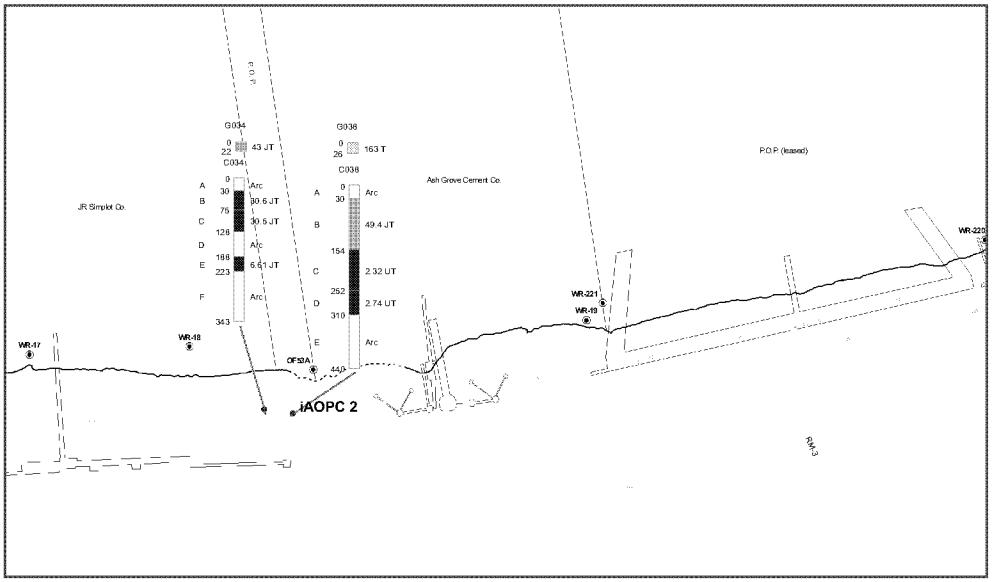
- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

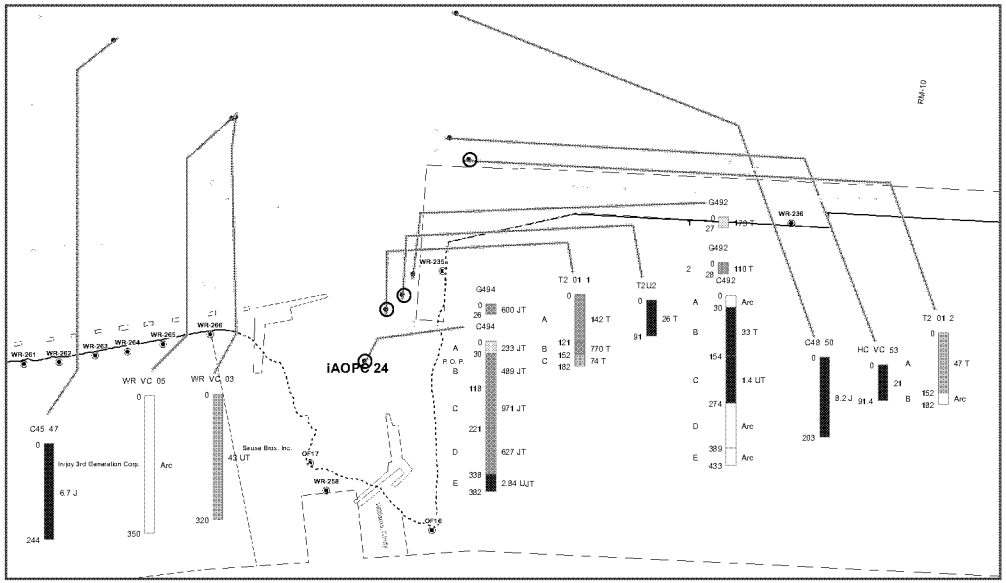


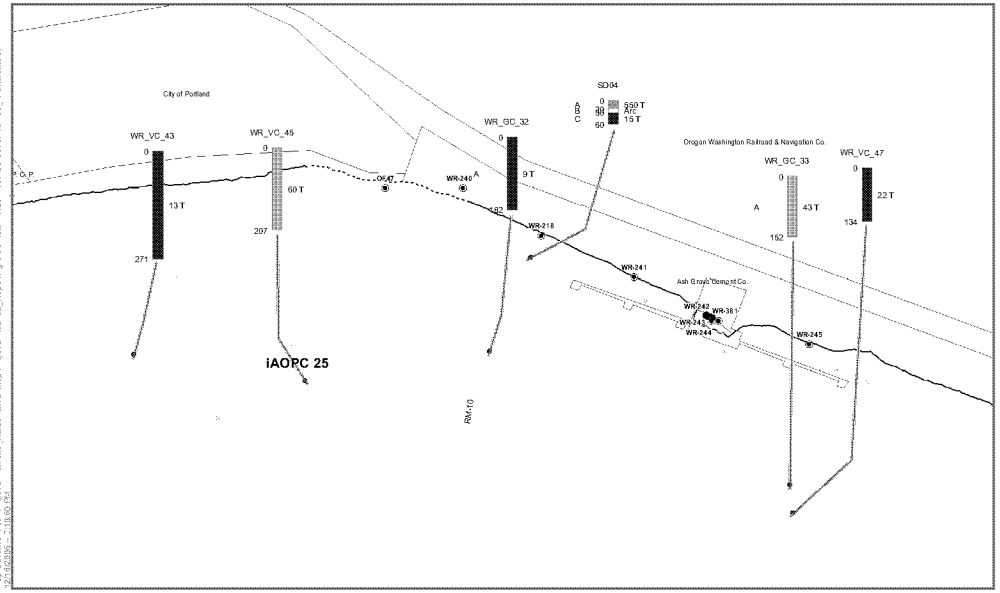
**Map 11.3.2-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Congeners (µg/kg)**

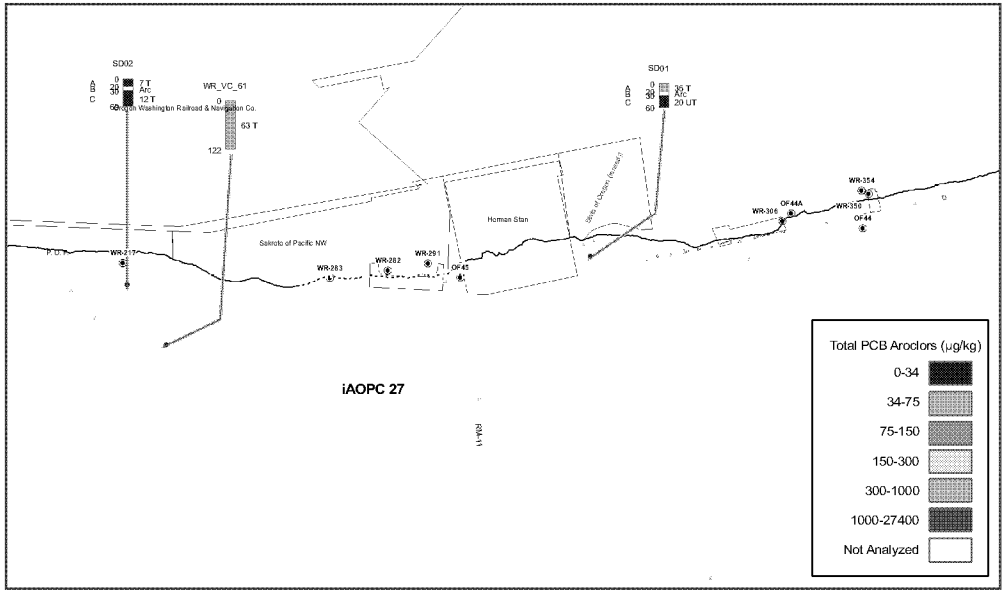
**iAOPC 2, 24, 25, 27**

BZTO104(e)032616




integral consulting inc.

LWG Lower Willamette Group

N

0 100 200 300 Feet

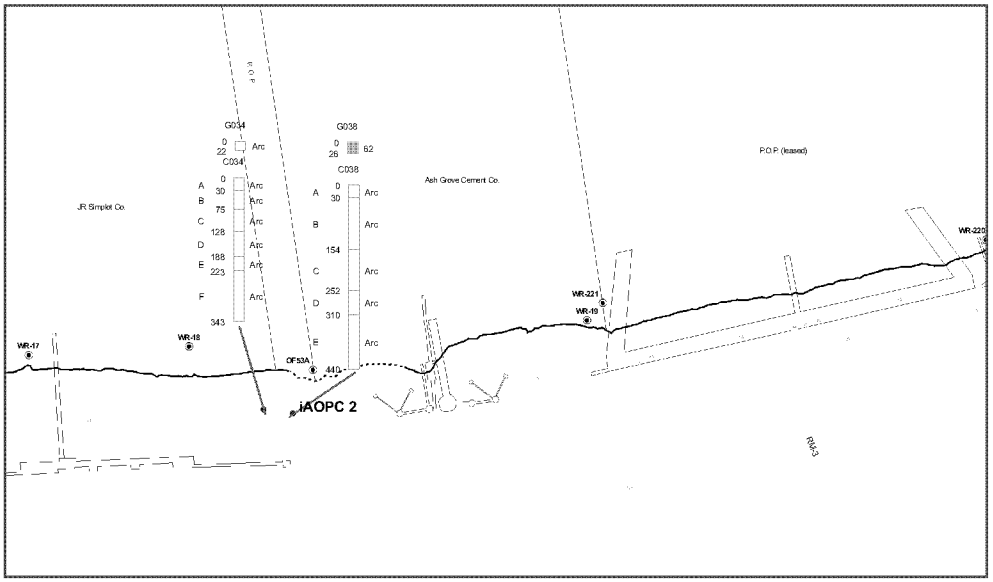
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

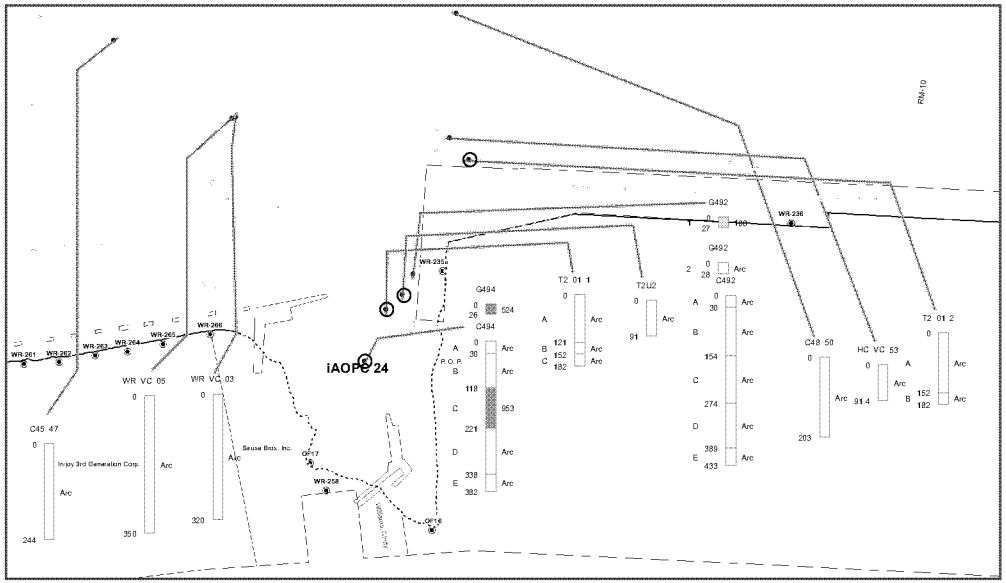
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

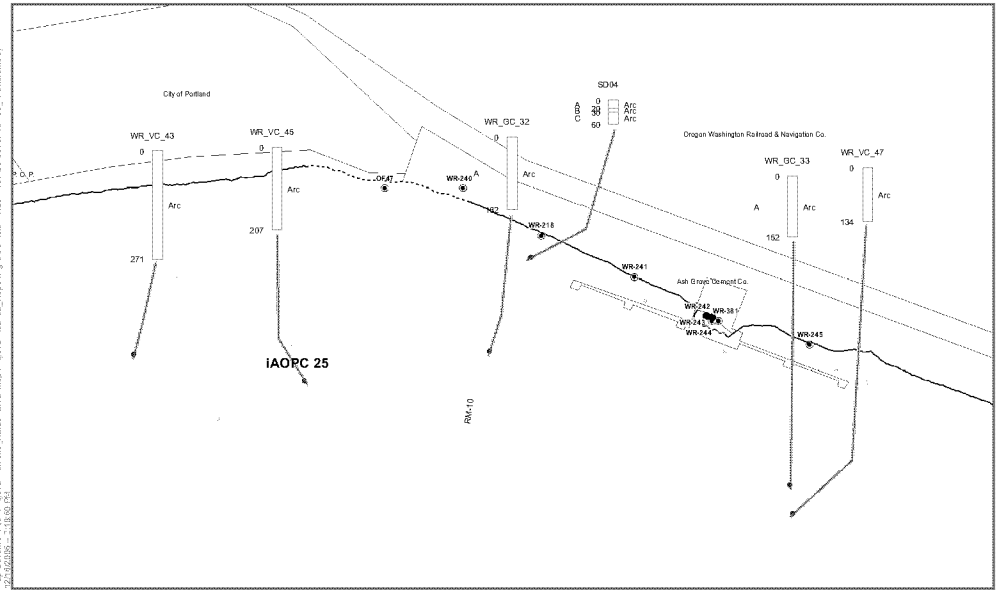
**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

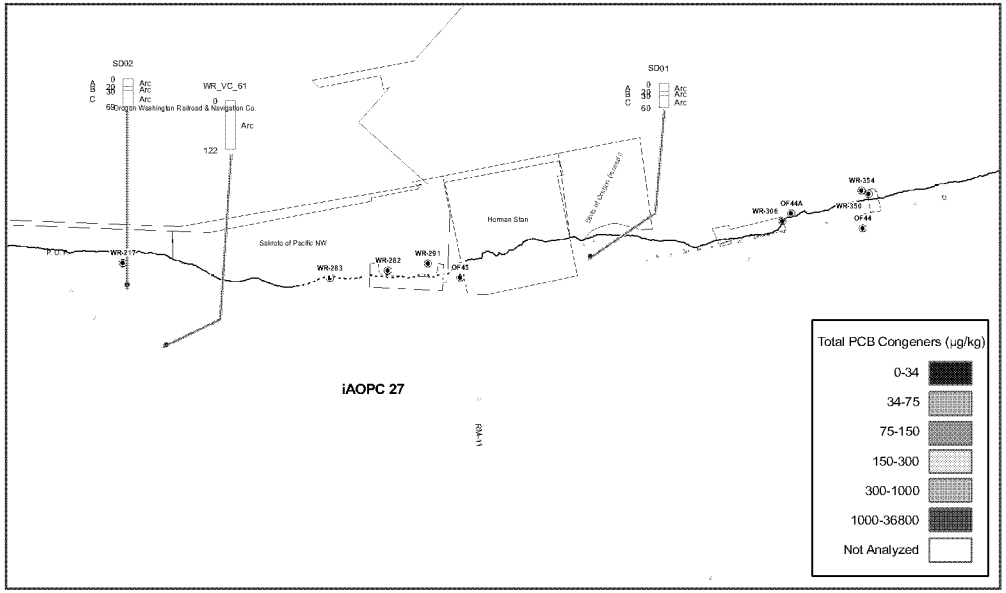
**Map 11.3.2-5**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 2, 24, 25, 27**

BZTO104(e)032617




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

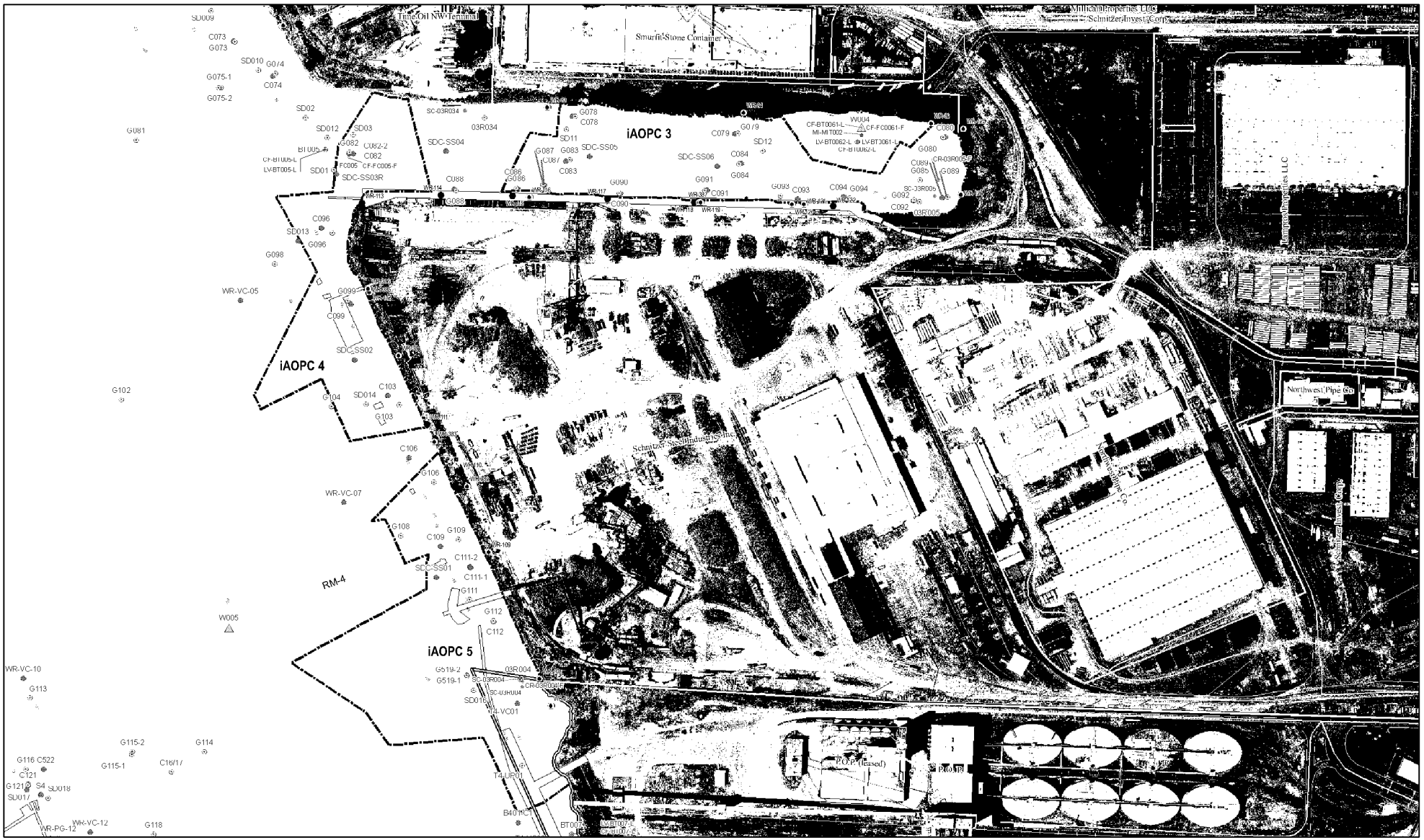
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

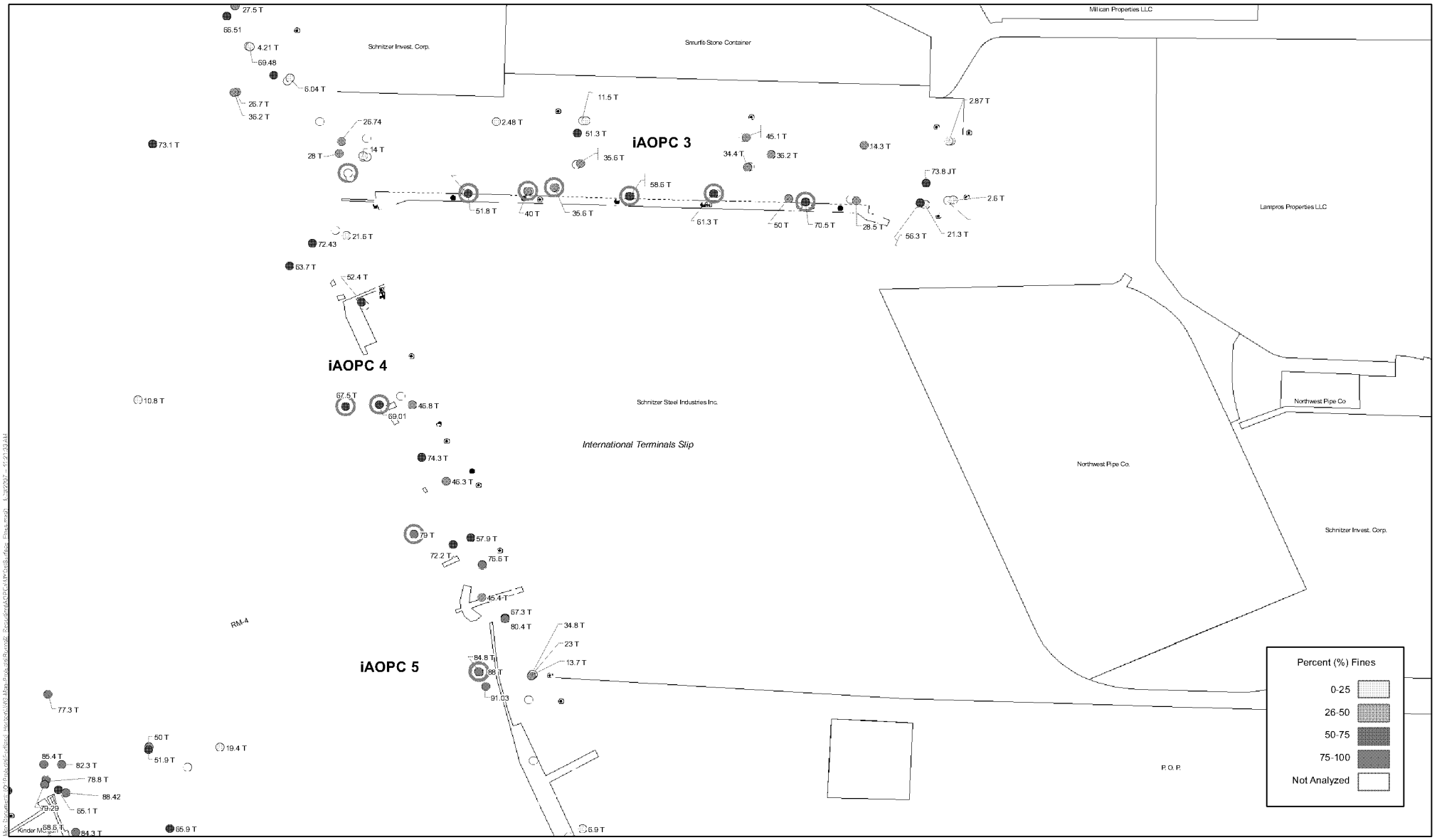
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -.22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.2-6**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 2, 24, 25, 27**

BZTO104(e)032618


iAOPC 3
iAOPC 4
iAOPC 5
Triple Oil NW Terminal
Smurfit-Stone Container
Northwest Pipe Co
Schnitzer Steel Industries Inc
RM-4
T4-UP01
T2-VC01
B40-VC01
WR-VC-05
WR-VC-07
WR-VC-10
WR-VC-12
WR-PG-12
SDC-SS01
SDC-SS02
SDC-SS03R
SDC-SS04
SDC-SS05
SDC-SS06
03R034
03R004
03R005
03R006
SC-03R034
SC-03R004
SC-03R005
CR-03R004
CR-03R006
SC-03R006
WU04
W005
WR-109
WR-110
WR-111
WR-112
WR-113
WR-114
WR-115
WR-116
WR-117
WR-118
WR-119
WR-120
WR-121
WR-122
WR-123
WR-124
WR-125
WR-126
WR-127
WR-128
WR-129
WR-130
WR-131
WR-132
WR-133
WR-134
WR-135
WR-136
WR-137
WR-138
WR-139
WR-140
WR-141
WR-142
WR-143
WR-144
WR-145
WR-146
WR-147
WR-148




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

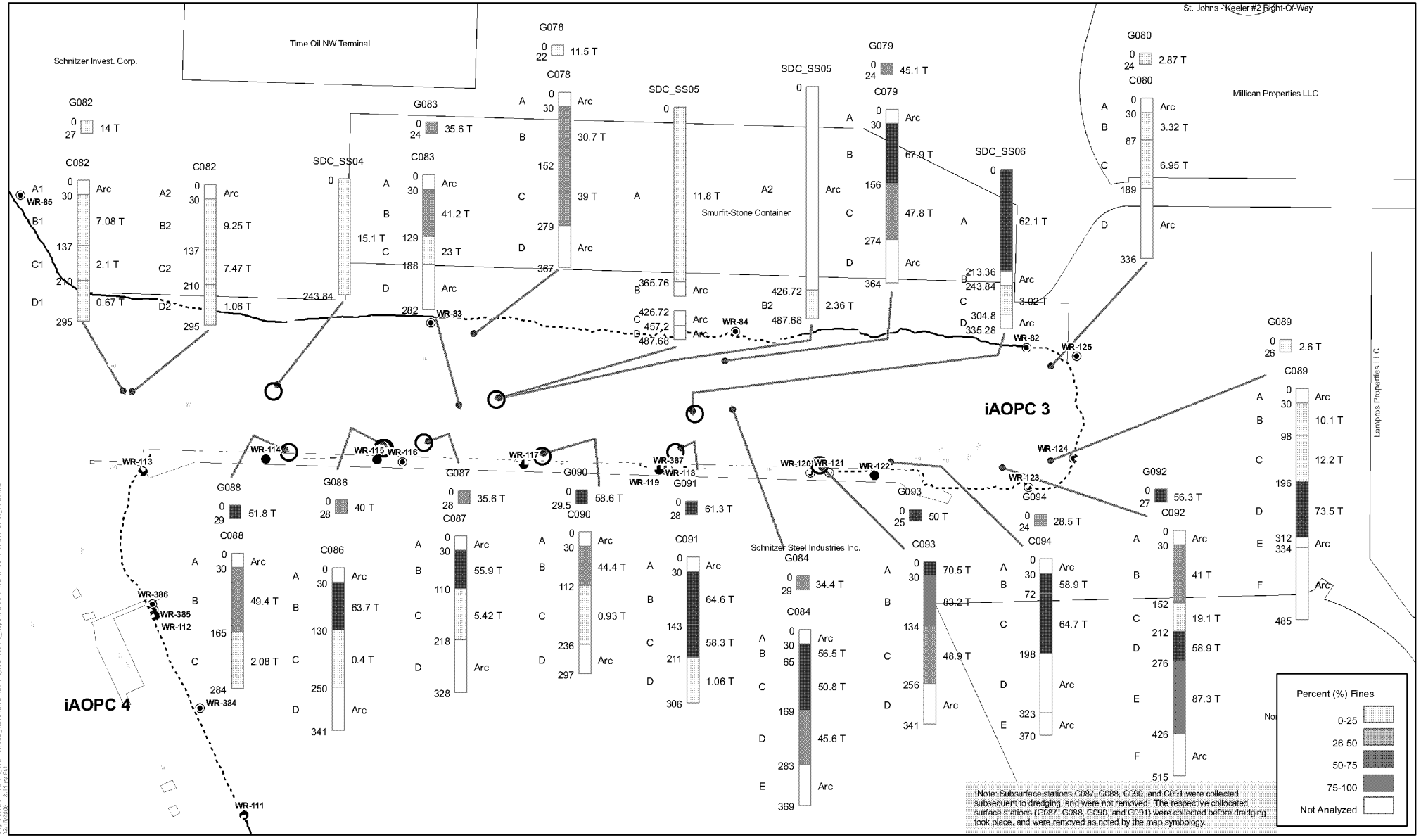
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

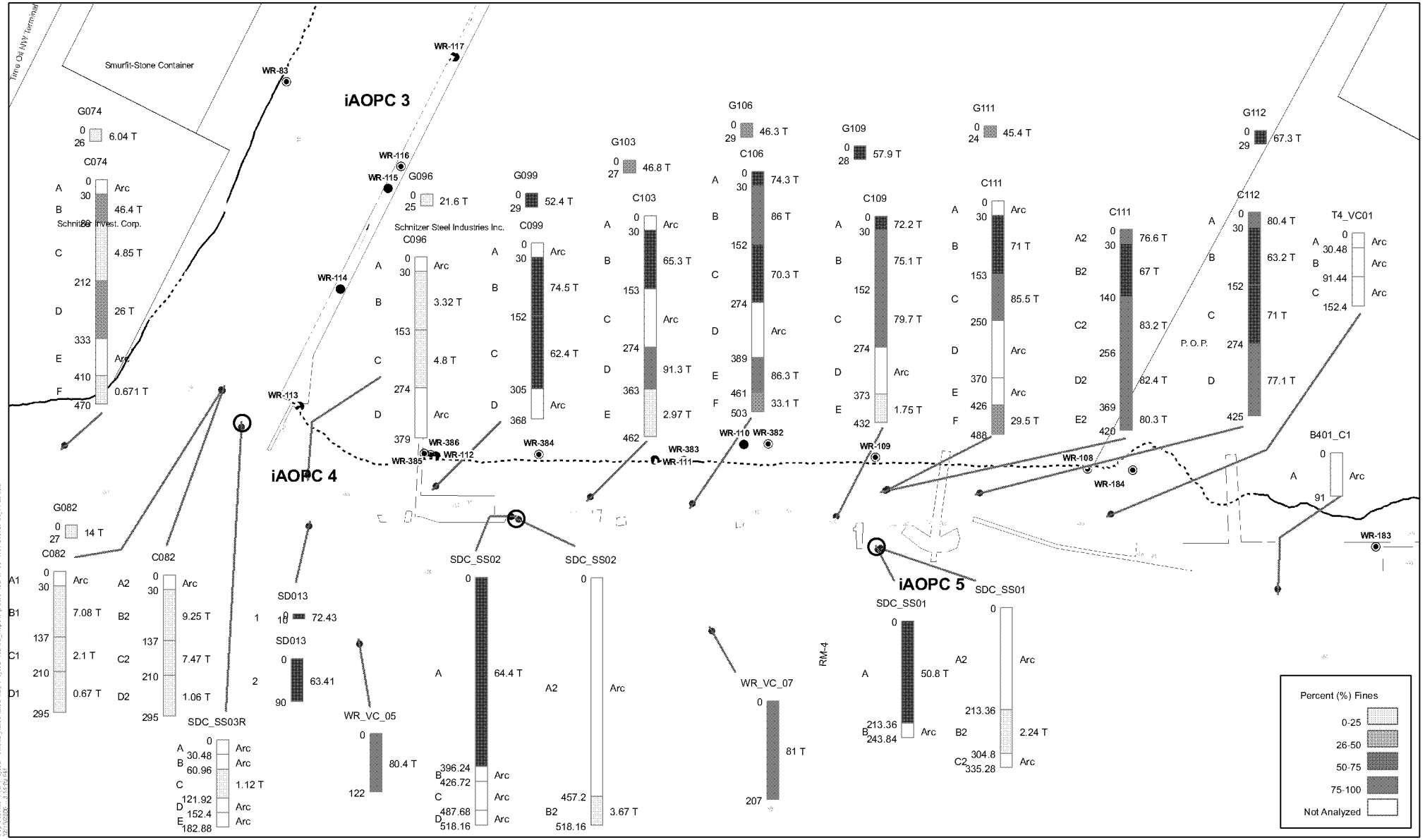
**Map 11.3.3-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Texture**
**Percent (%) Fines**
**iAOPC 3,4,5**

BZTO104(e)032620




**Map 11.3.3- 2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 3**

BZTO104(e)032621




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

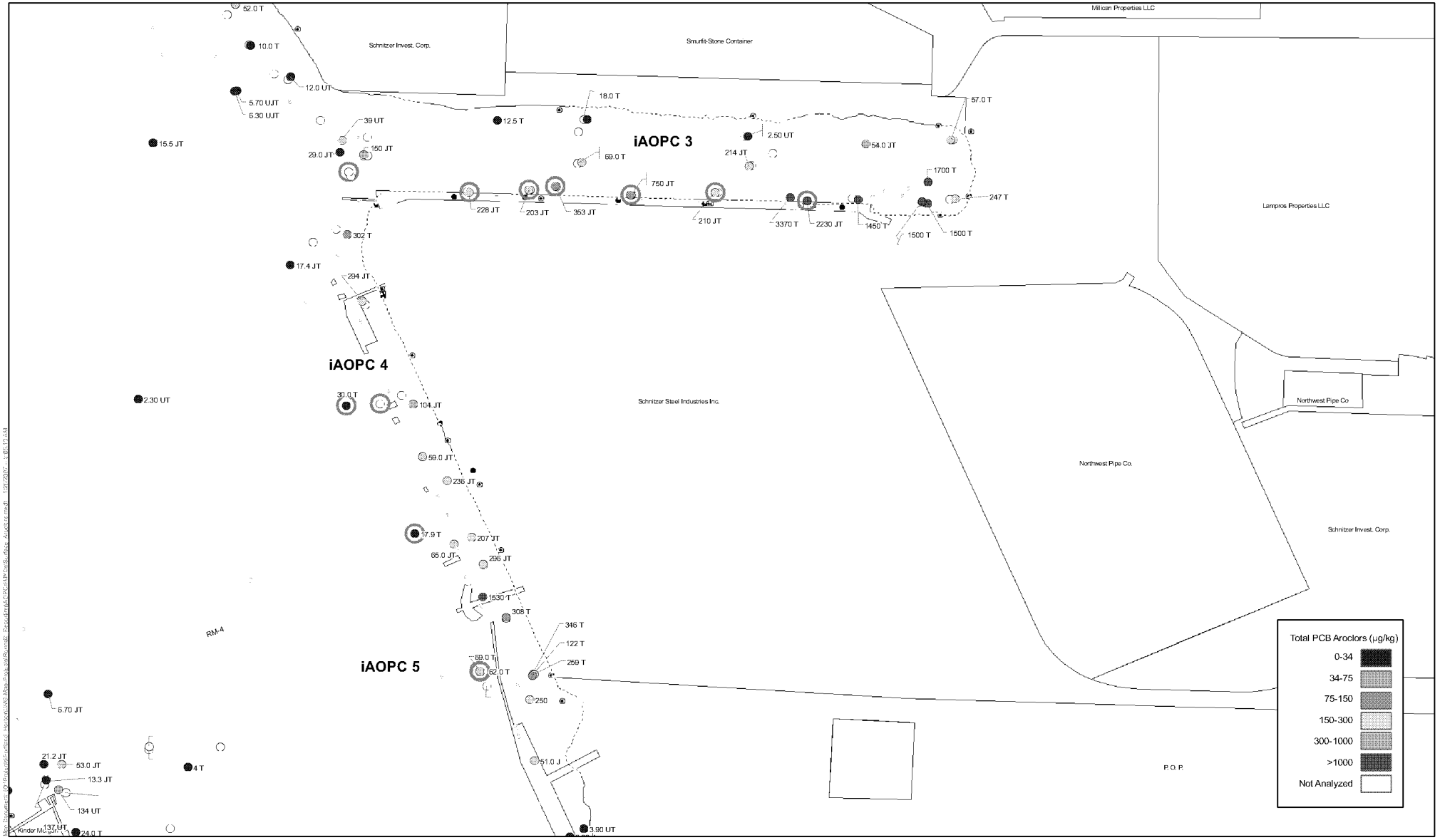
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.3- 2c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 4, 5**

BZTO104(e)032622




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evens and Associates, Inc.

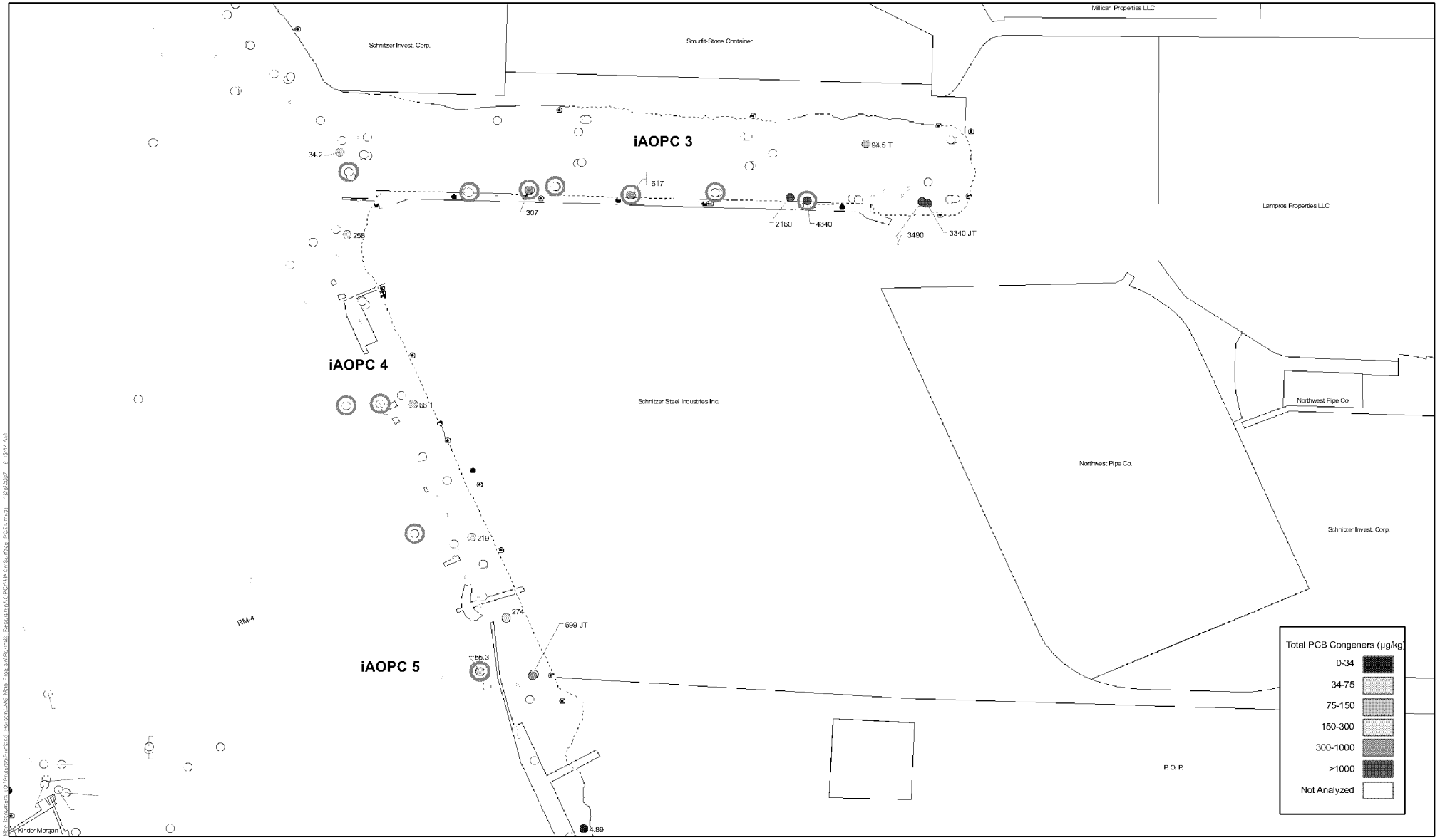
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.3-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 3,4,5**

BZTO104(e)032623




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

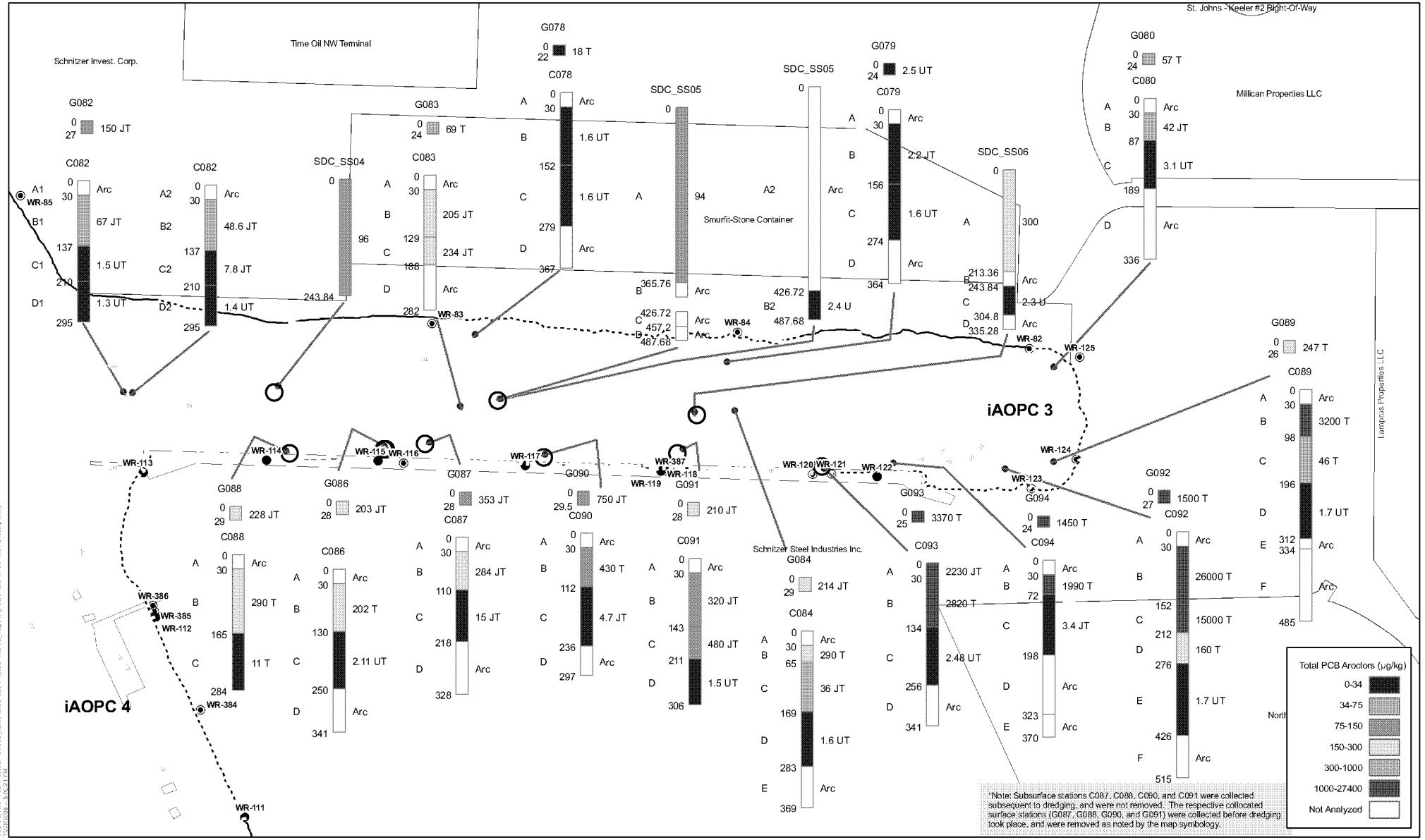
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.3-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 3,4,5**

BZTO104(e)032624




integral consulting inc.

LWG Lower Willamette Group

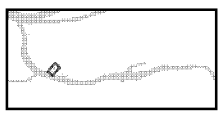
N

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

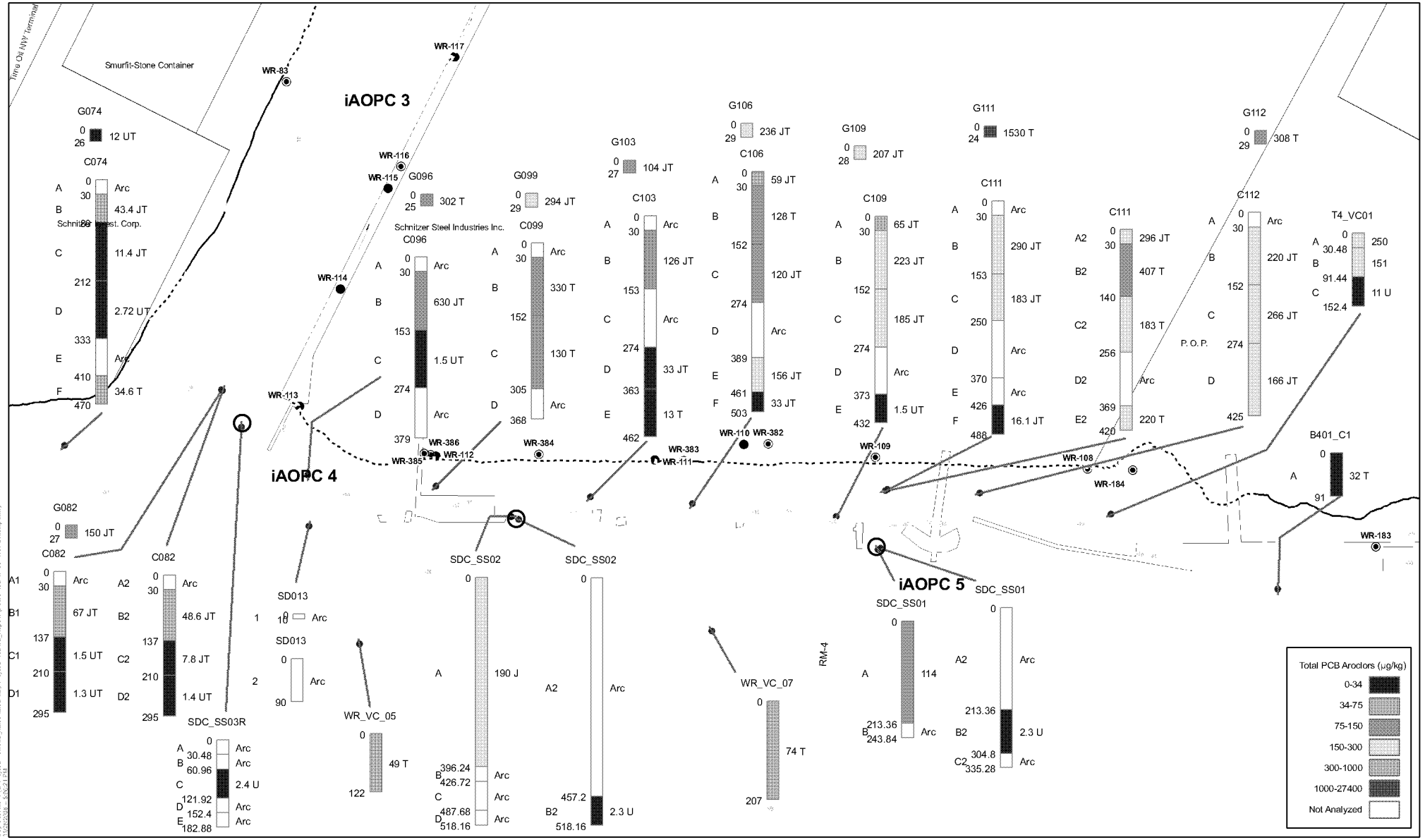
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped



**Map 11.3.3- 5a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 3**

BZTO104(e)032625




integral consulting inc.

LWG Lower Willamette Group

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

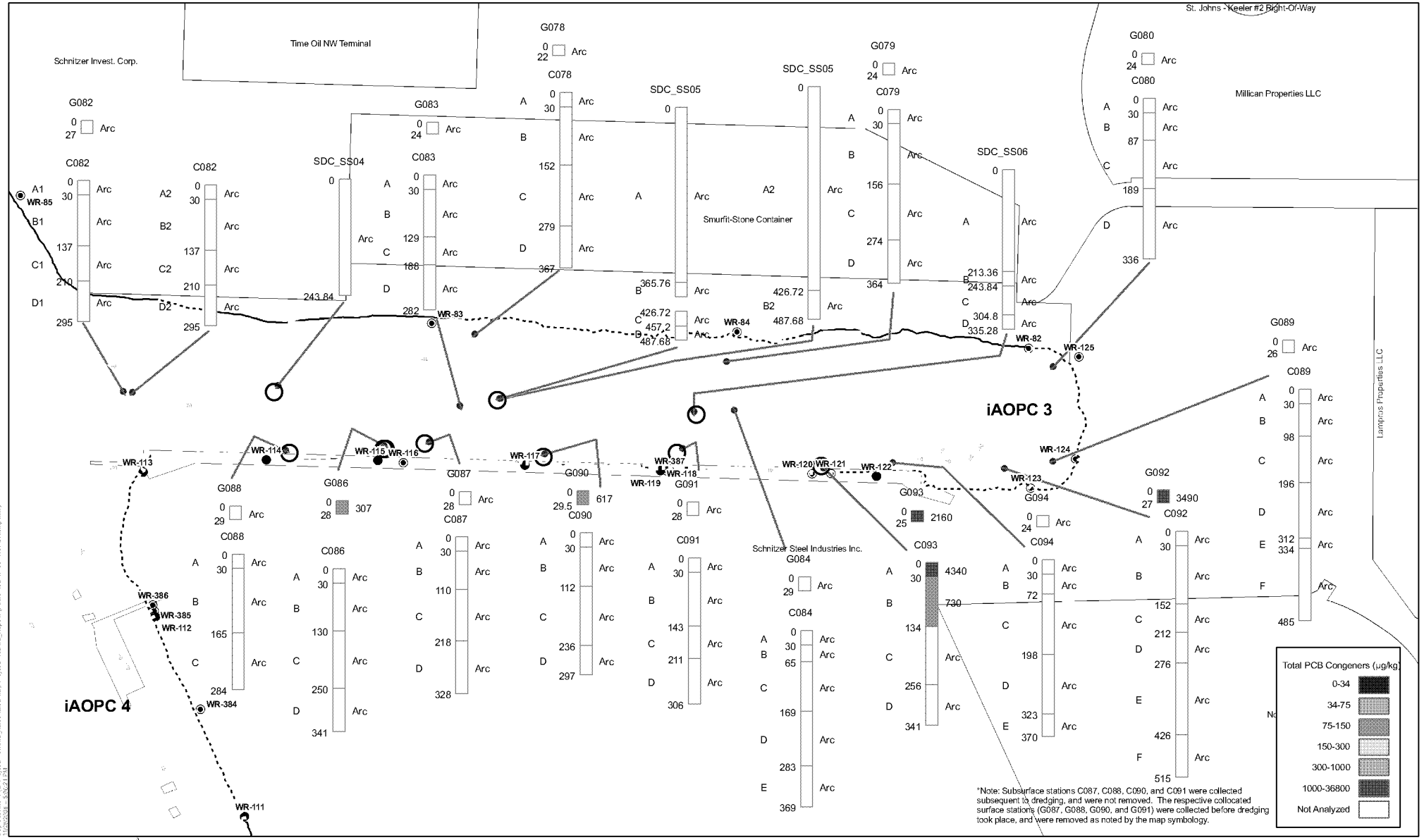
0 100 200 300 Feet

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

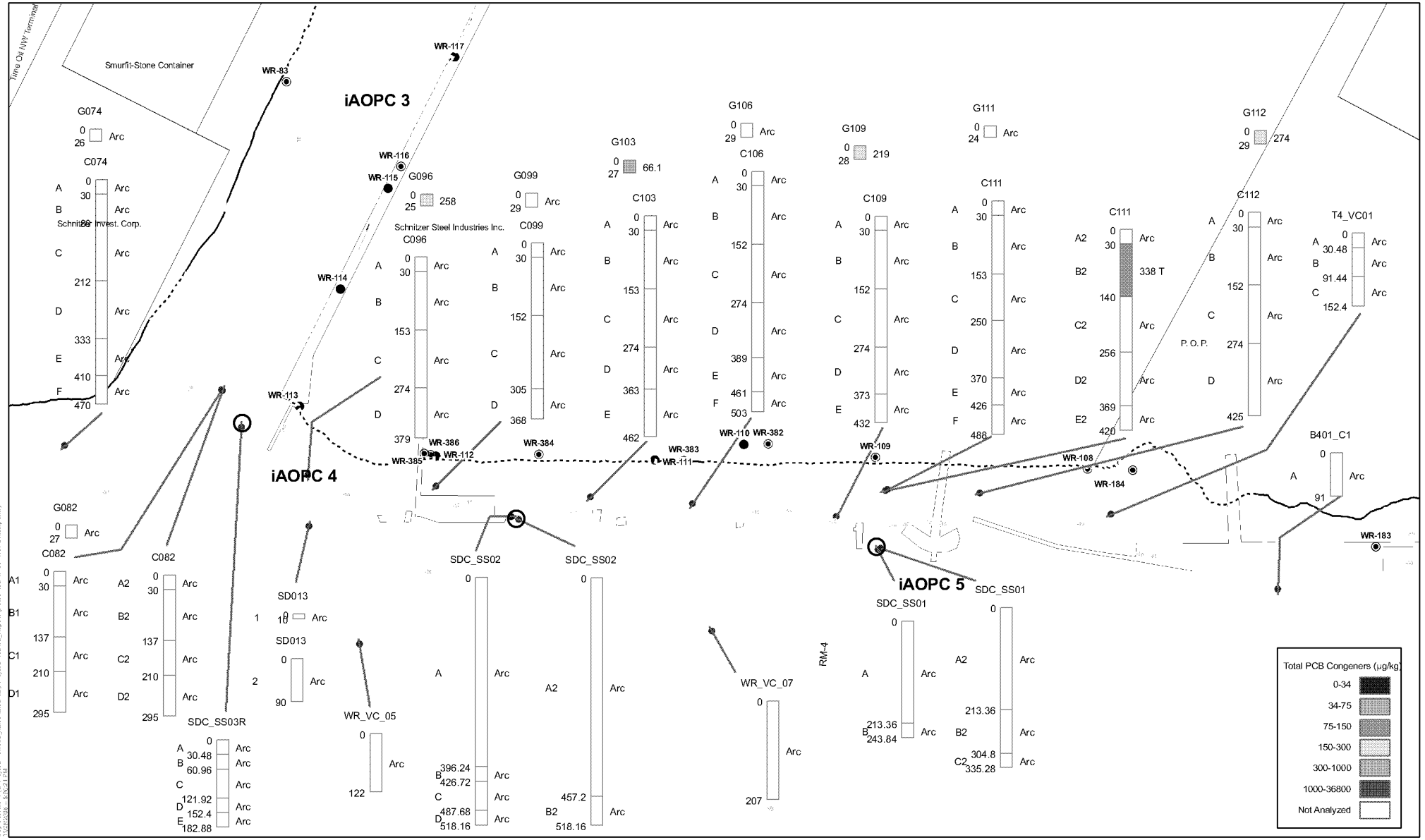
**Map 11.3.3- 5b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 4, 5**

BZTO104(e)032626



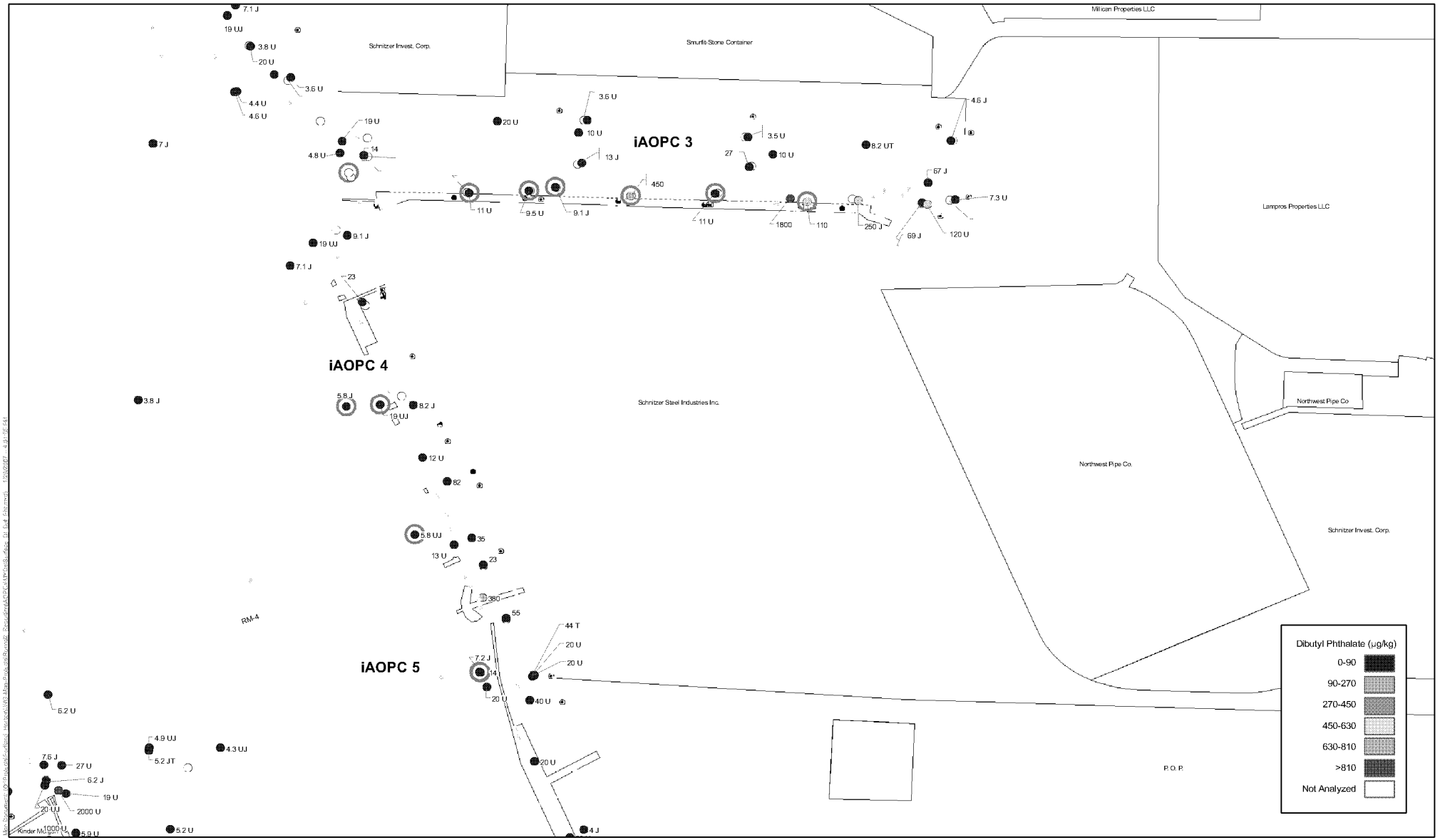

**Map 11.3.3 - 6a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 3**

BZTO104(e)032627



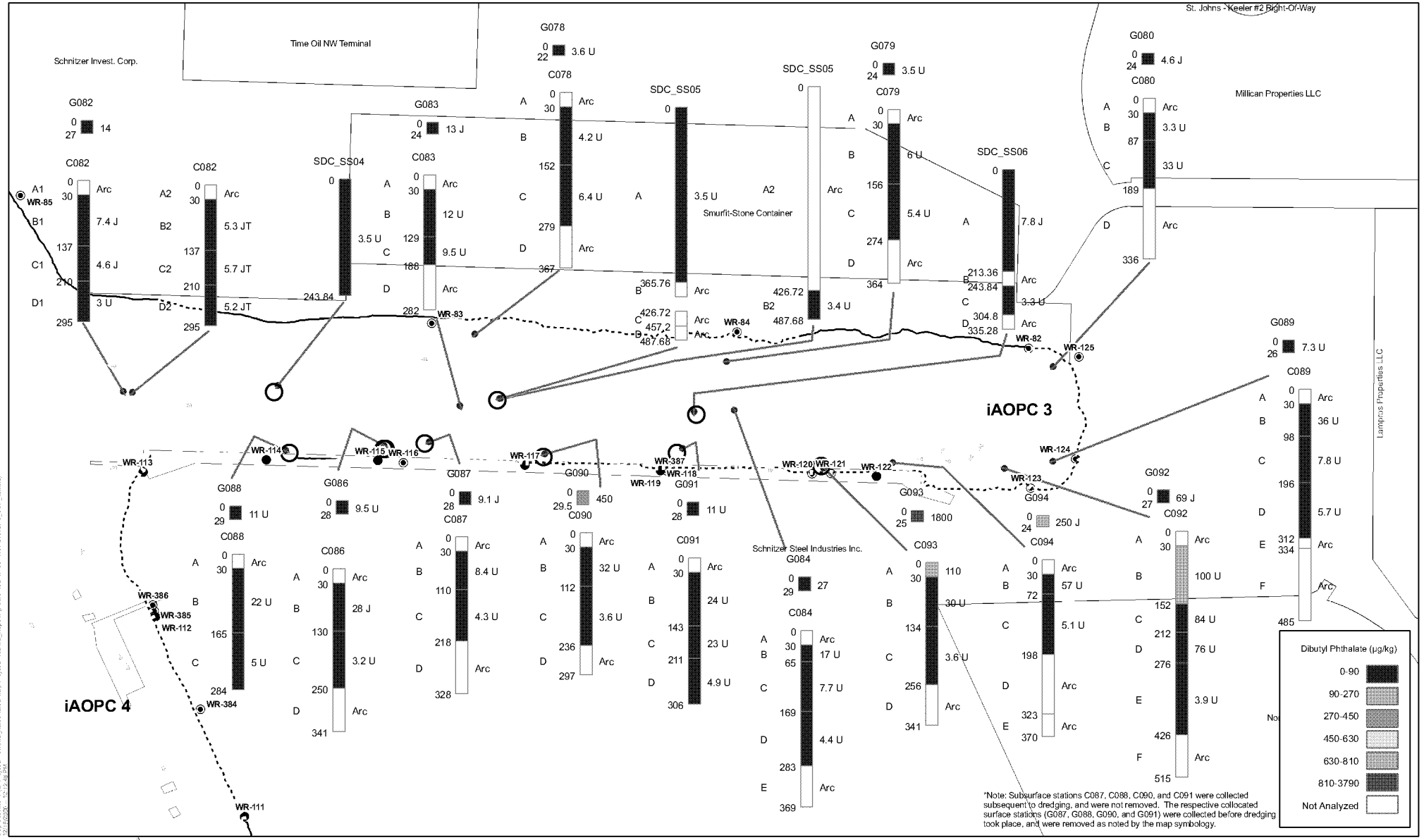

**Map 11.3.3- 6b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 4, 5**

BZTO104(e)032628



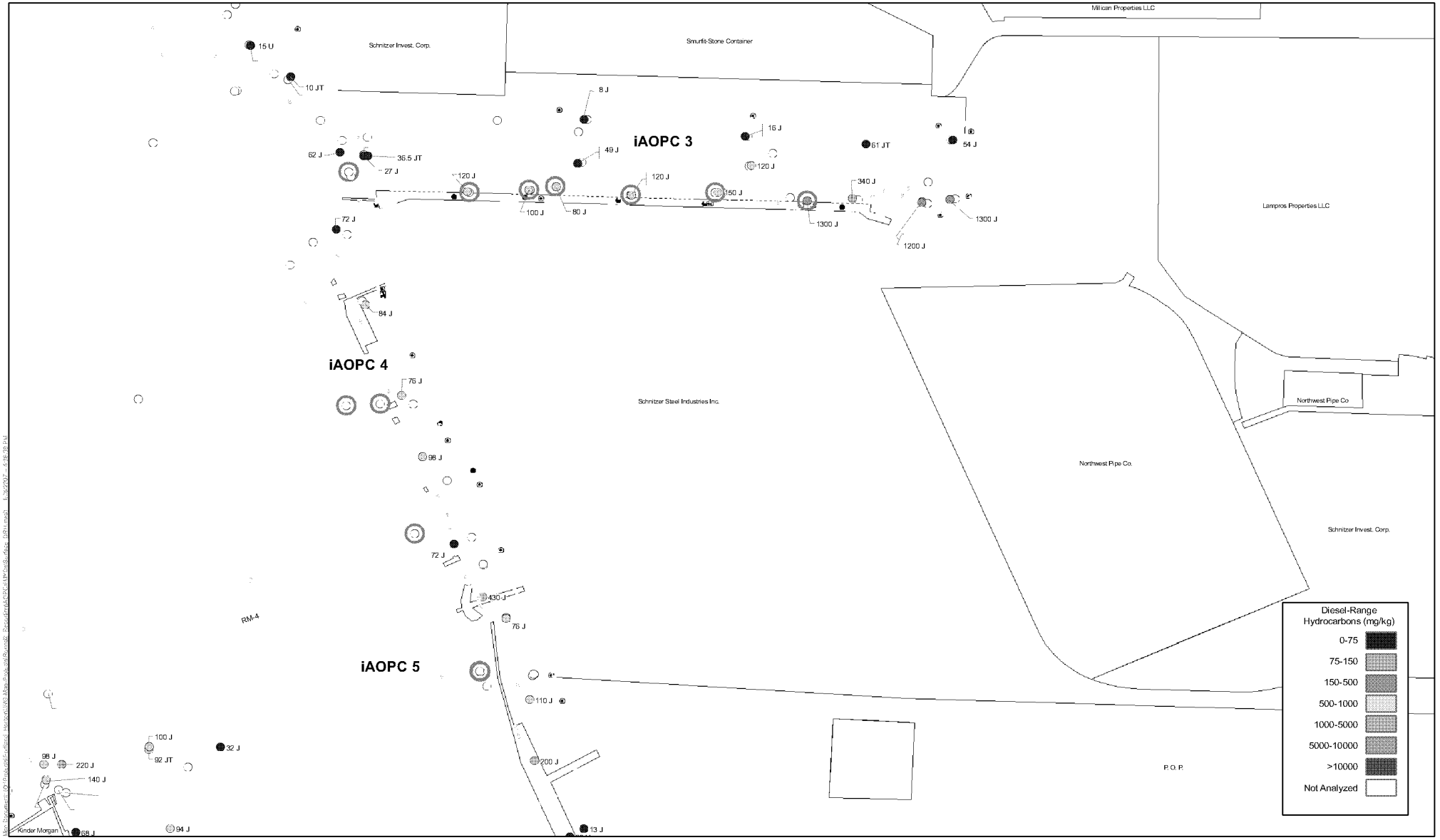

**Map 11.3.3-7**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Dibutyl Phthalate (µg/kg)**
**iAOPC 3,4,5**

BZTO104(e)032629



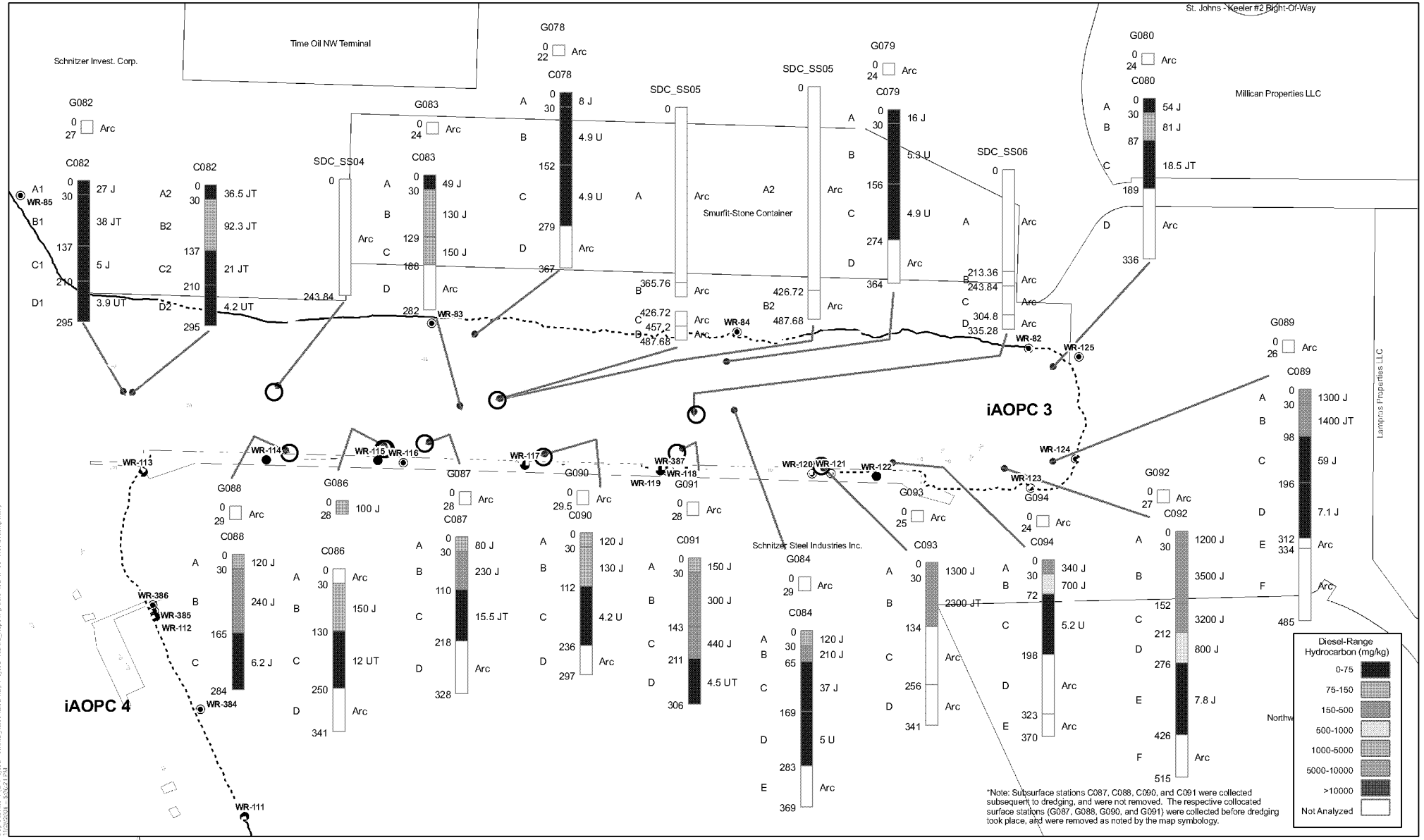

**Map 11.3.3-8**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Dibutyl Phthalate (µg/kg)**
**iAOPC 3**

BZTO104(e)032630



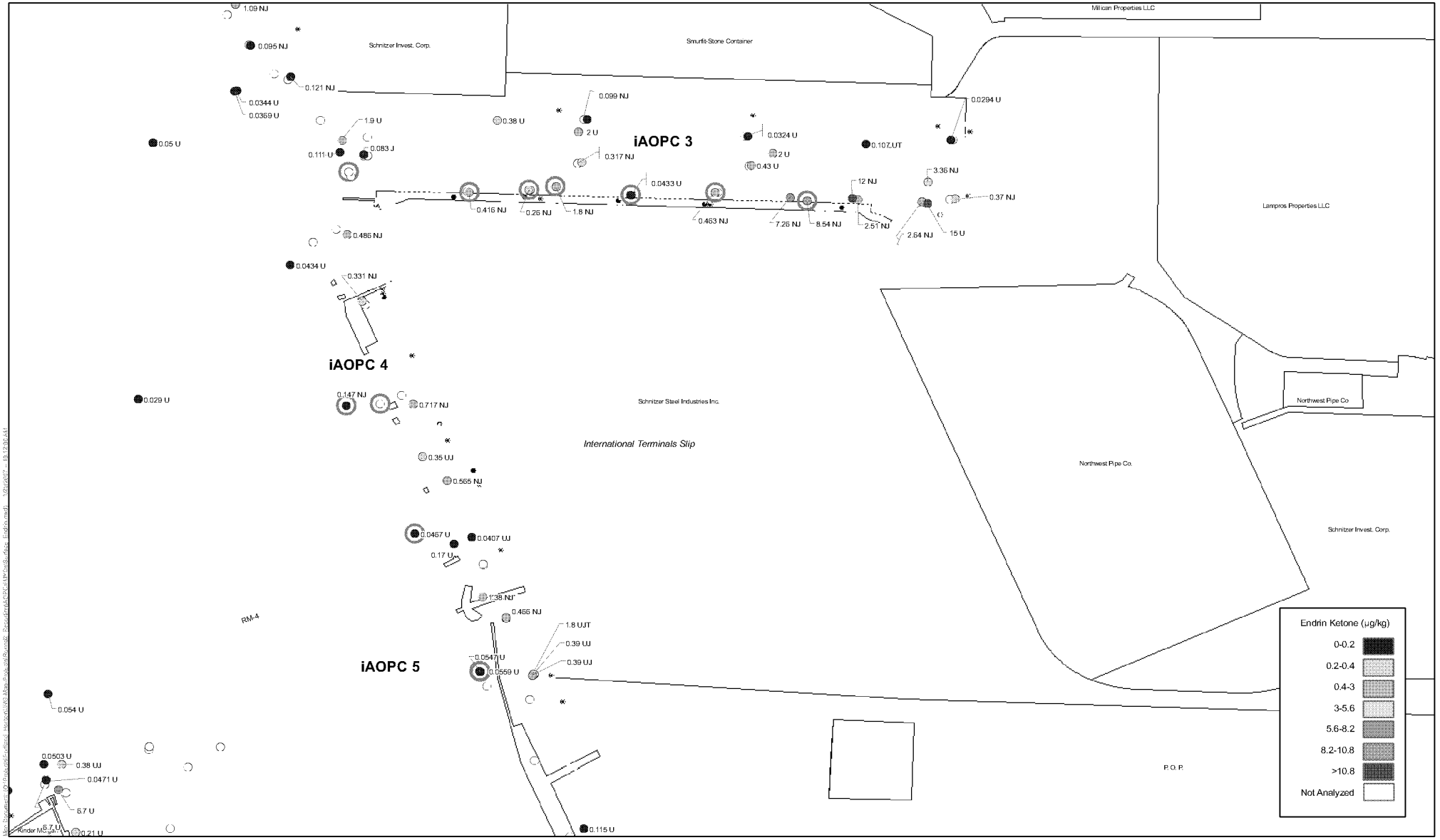

**Map 11.3.3-9**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Diesel-Range Hydrocarbons (mg/kg)**
**iAOPC 3,4,5**

BZTO104(e)032631



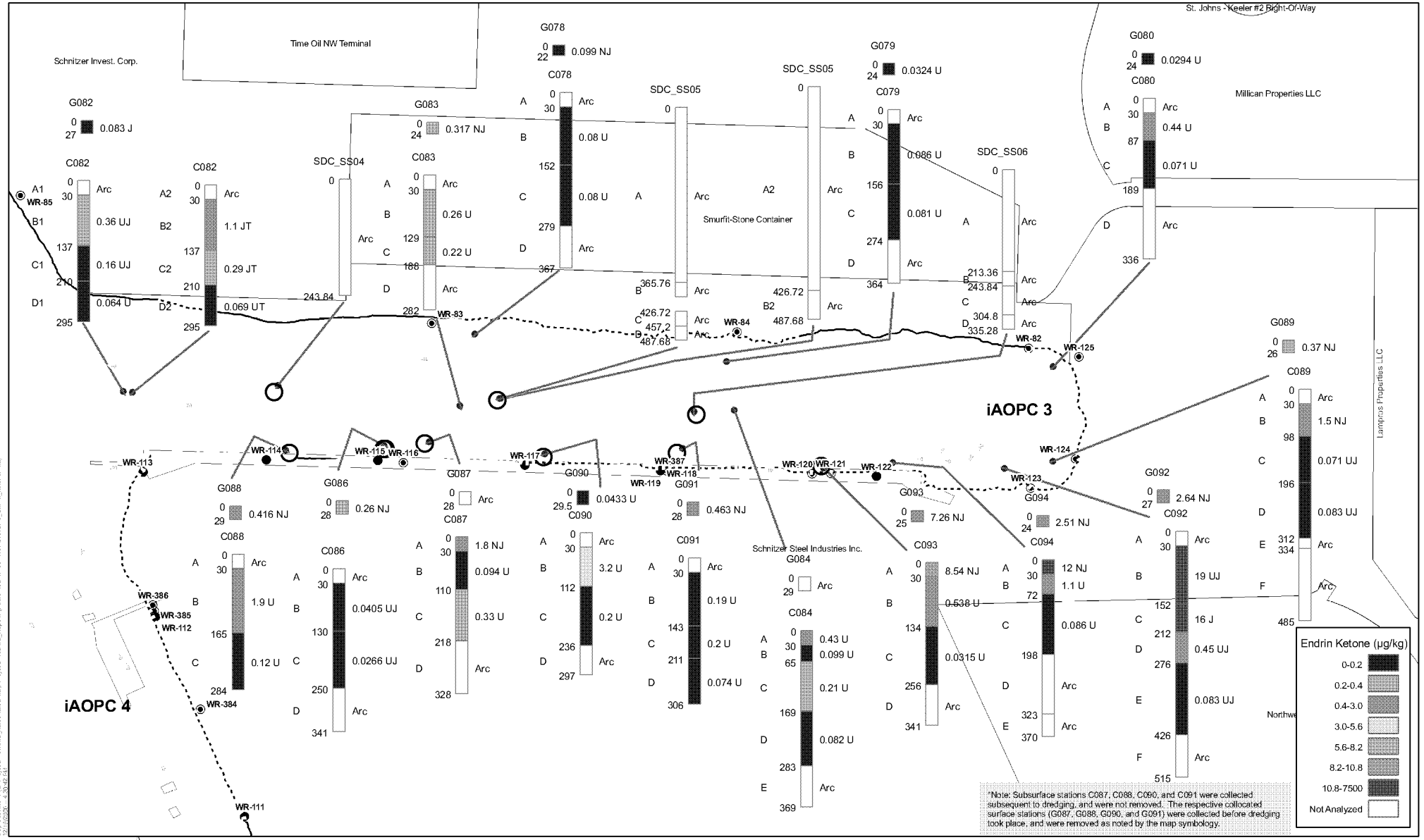

**Map 11.3.3 - 10**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Diesel-Range Hydrocarbon (mg/kg)**
**iAOPC 3**

BZTO104(e)032632




**Map 11.3.3-11**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Endrin Ketone (µg/kg)**
**iAOPC 3,4,5**

BZTO104(e)032633




integral consulting inc.

LWG Lower Willamette Group

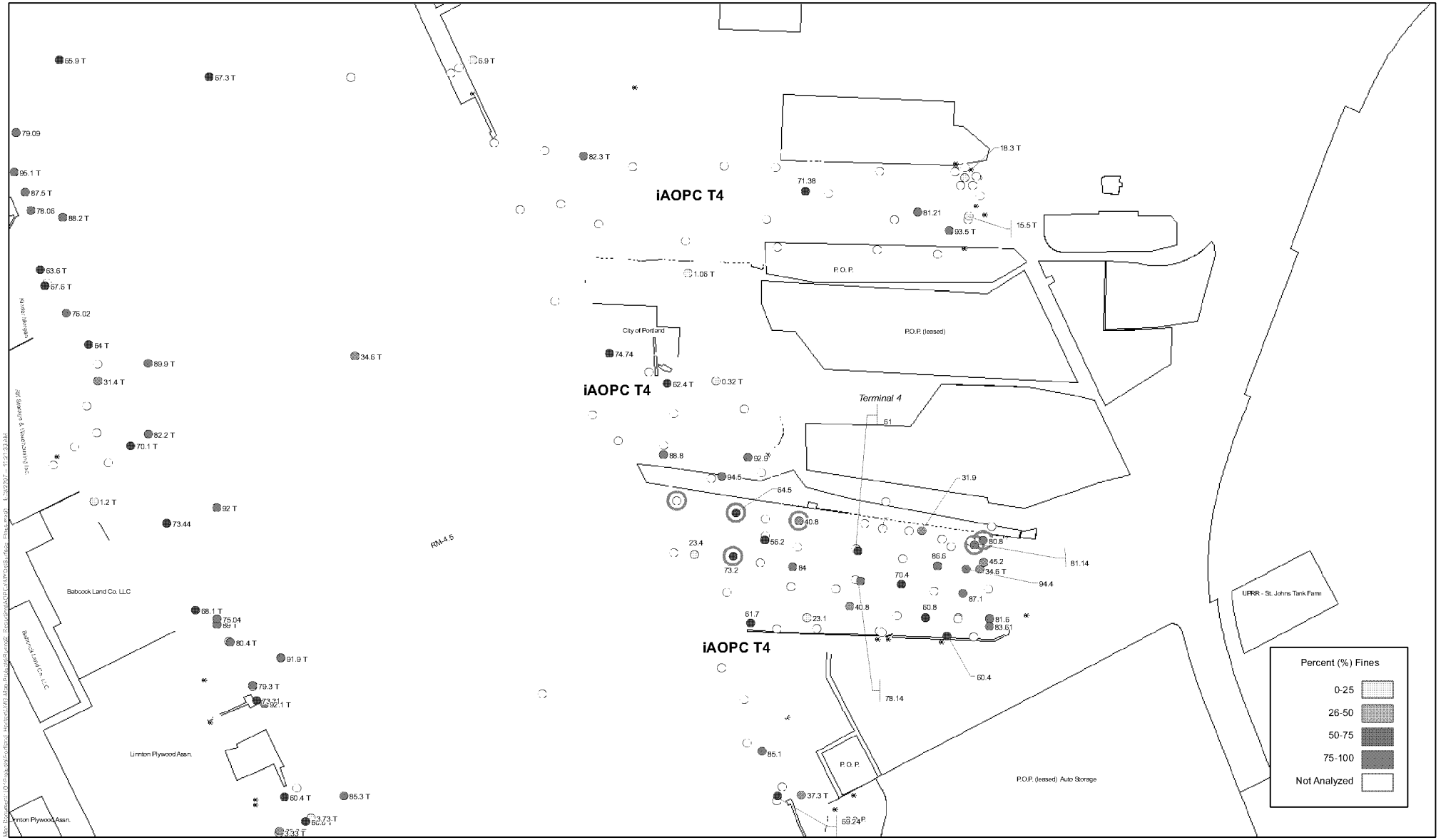
**Map 11.3.3- 12**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Endrin Ketone (µg/kg)**
**iAOPC 3**

BZTO104(e)032634

**Map 11.3.4-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**iAOPC Site Overview**
**iAOPC T4**

Map Document: (P:\Projects\Portland_Harbor\MXD_Map-Projects\Round2_Reporting\iAOPCs\SiteOverviews\T4.mxd)
1/31/2007 – 3:18:21 PM

BZTO104(e)032635




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

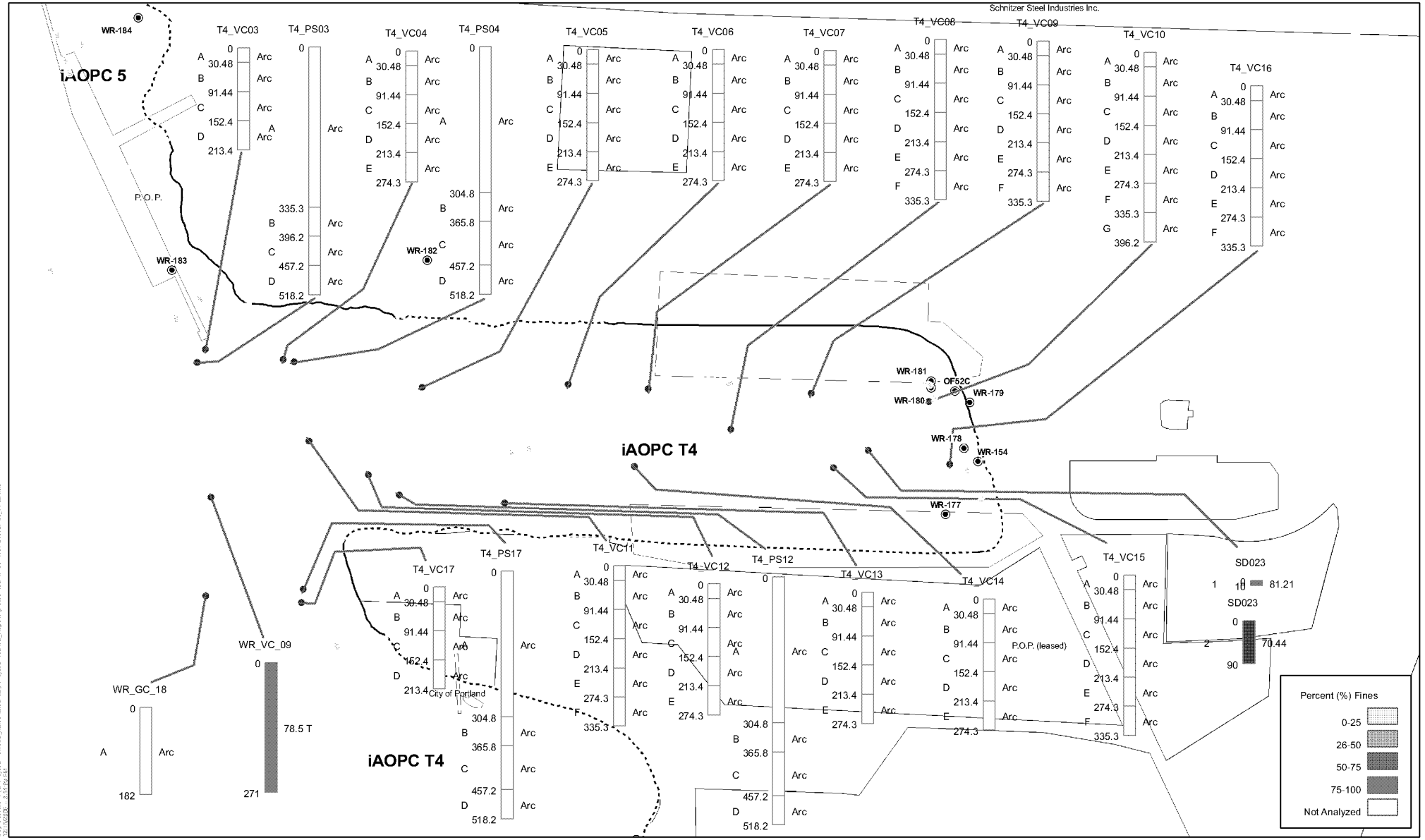
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.4-2**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Texture**
**Percent (%) Fines**
**iAOPC T4**

BZTO104(e)032636




integral consulting inc.

LWG Lower Willamette Group

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

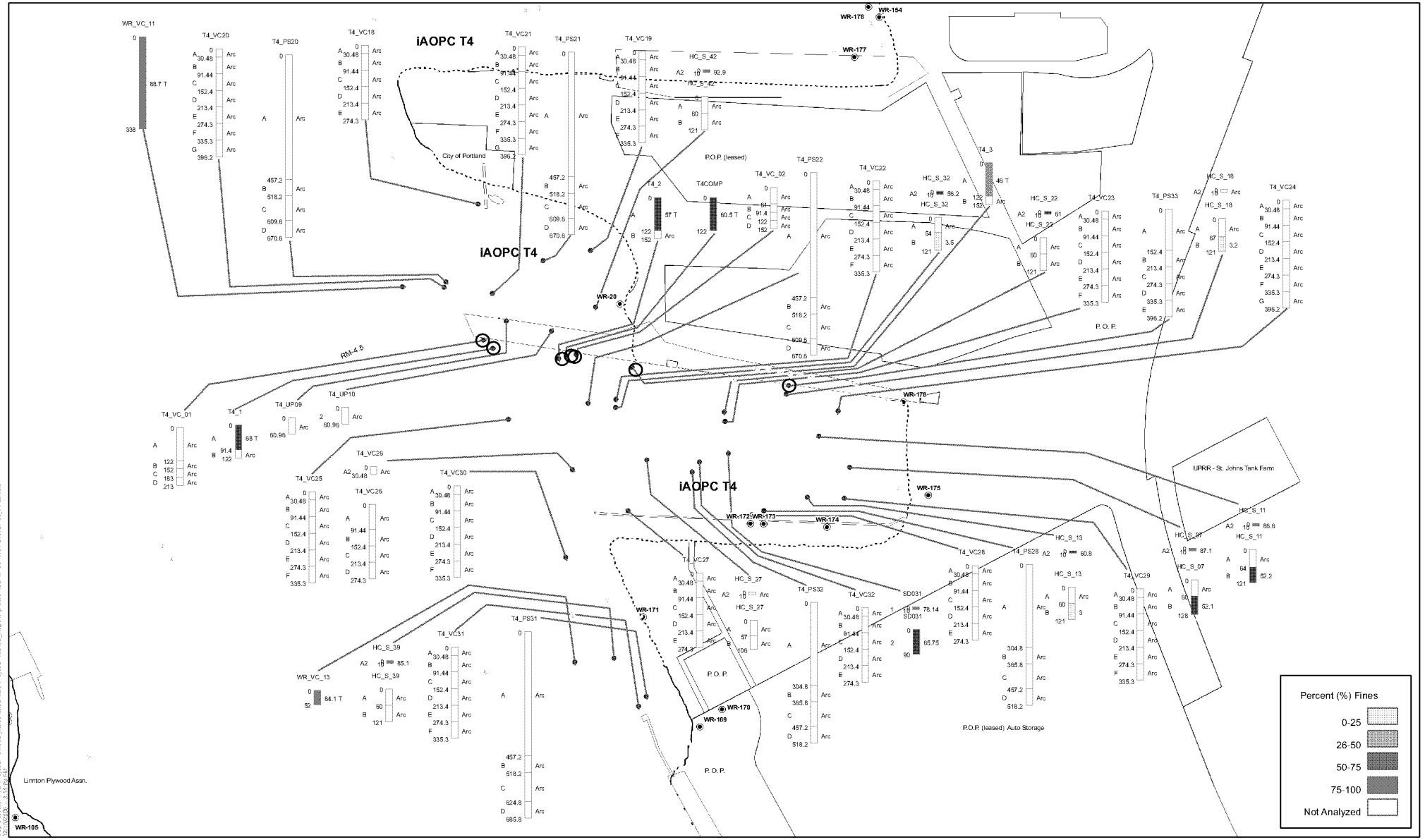
Active Outfalls
Unknown Outfalls
Abandoned Outfalls
Docks and Structures
River Miles
5 foot Contours (NAVD88)

Bathymetric Change
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening
Navigation Channel

iAOPC Boundary
Capping Footprint
Dredging (Post 1997)

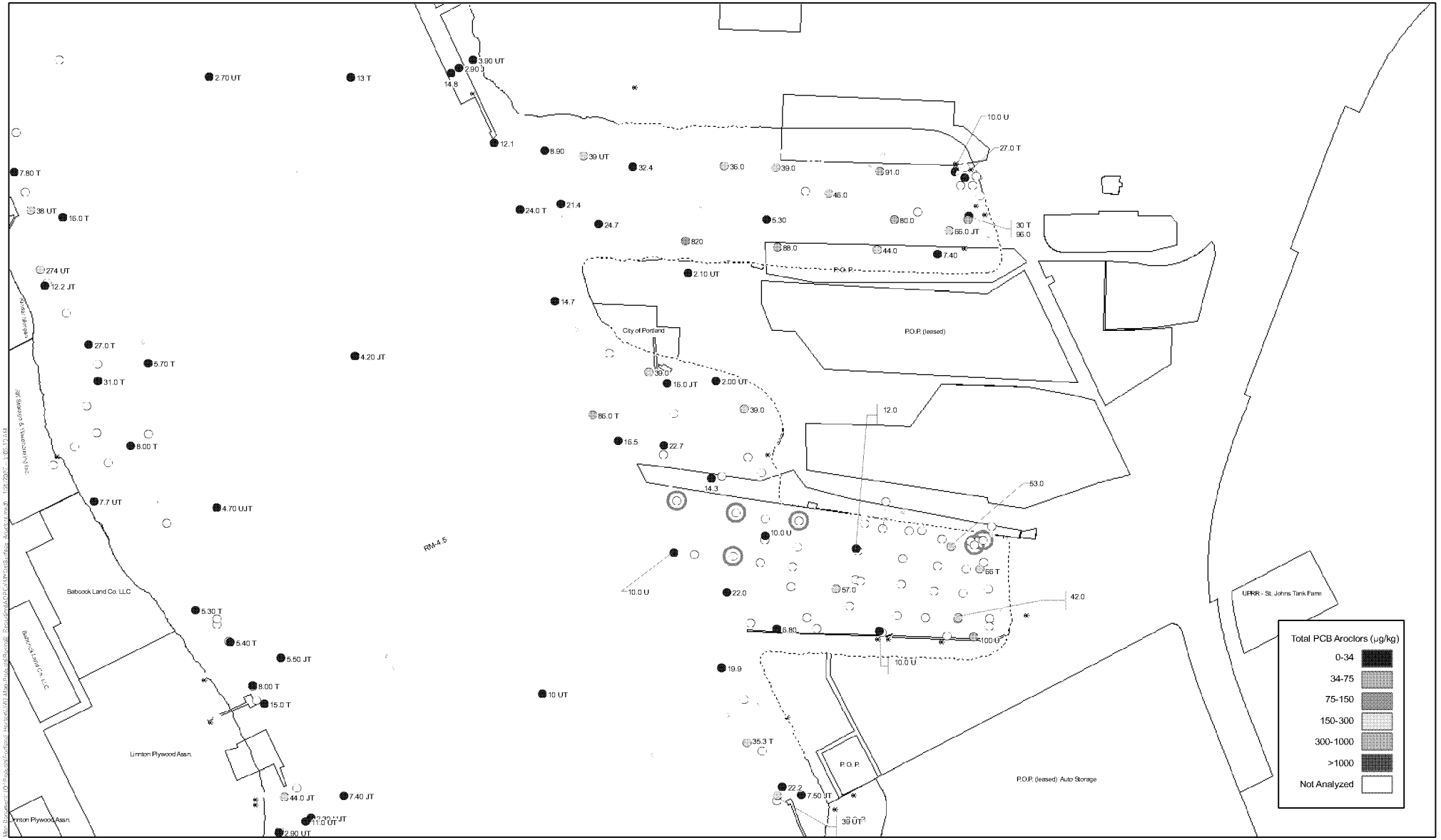
**Map 11.3.4- 3a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC T4**

BZTO104(e)032637



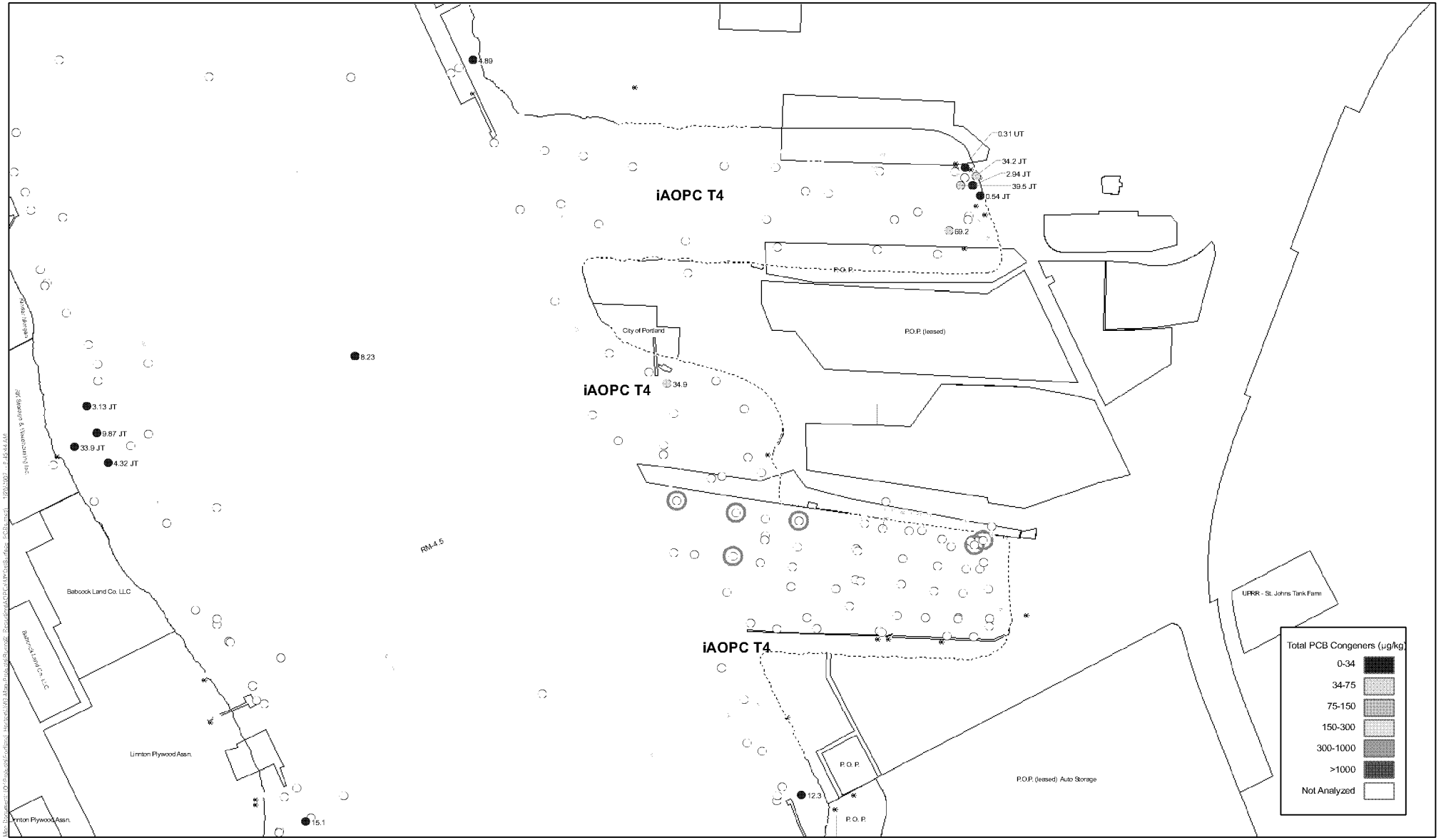

**Map 11.3.4- 3b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC T4**

BZTO104(e)032638




**Map 11.3.4-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC T4**

BZTO104(e)032639




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evens and Associates, Inc.

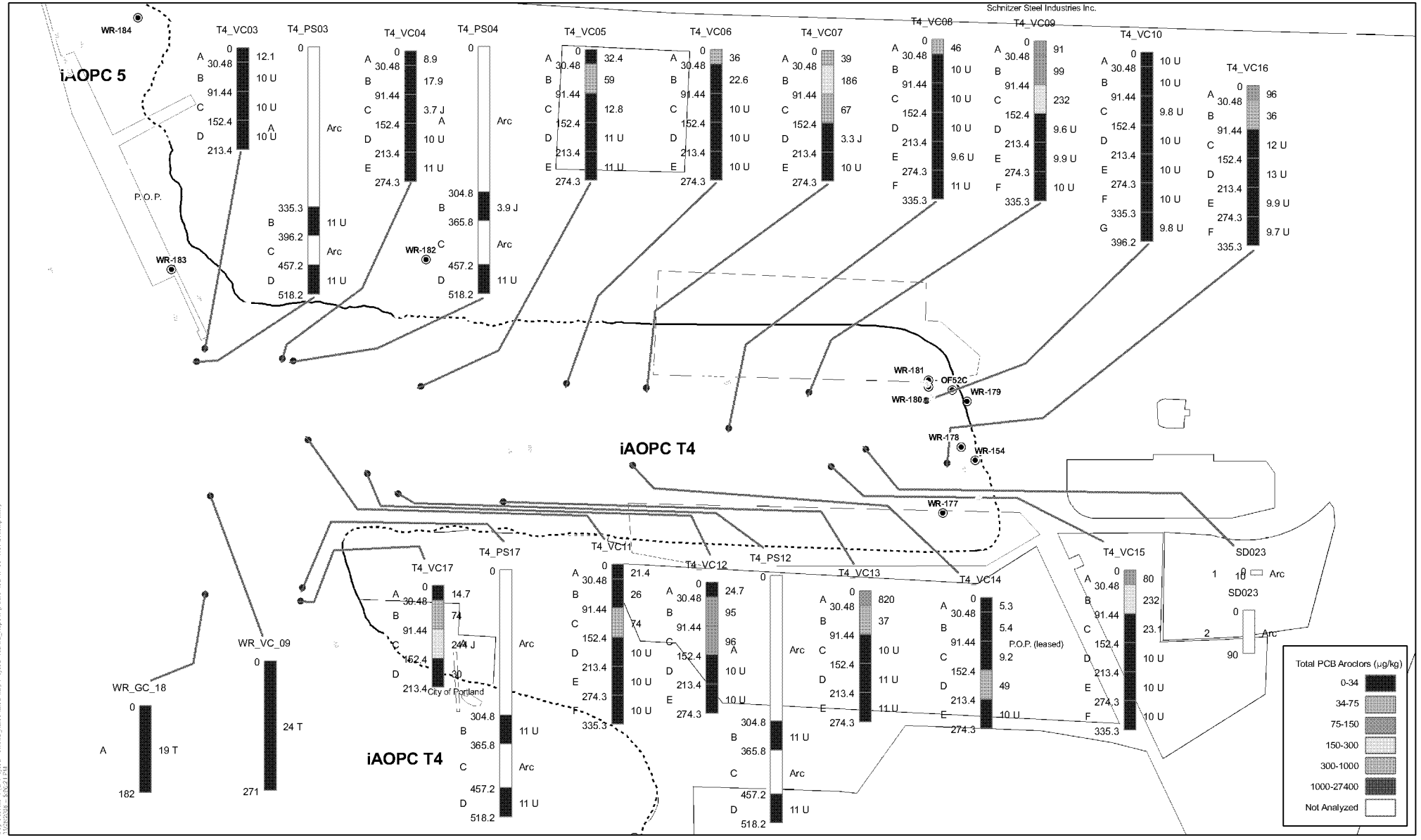
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

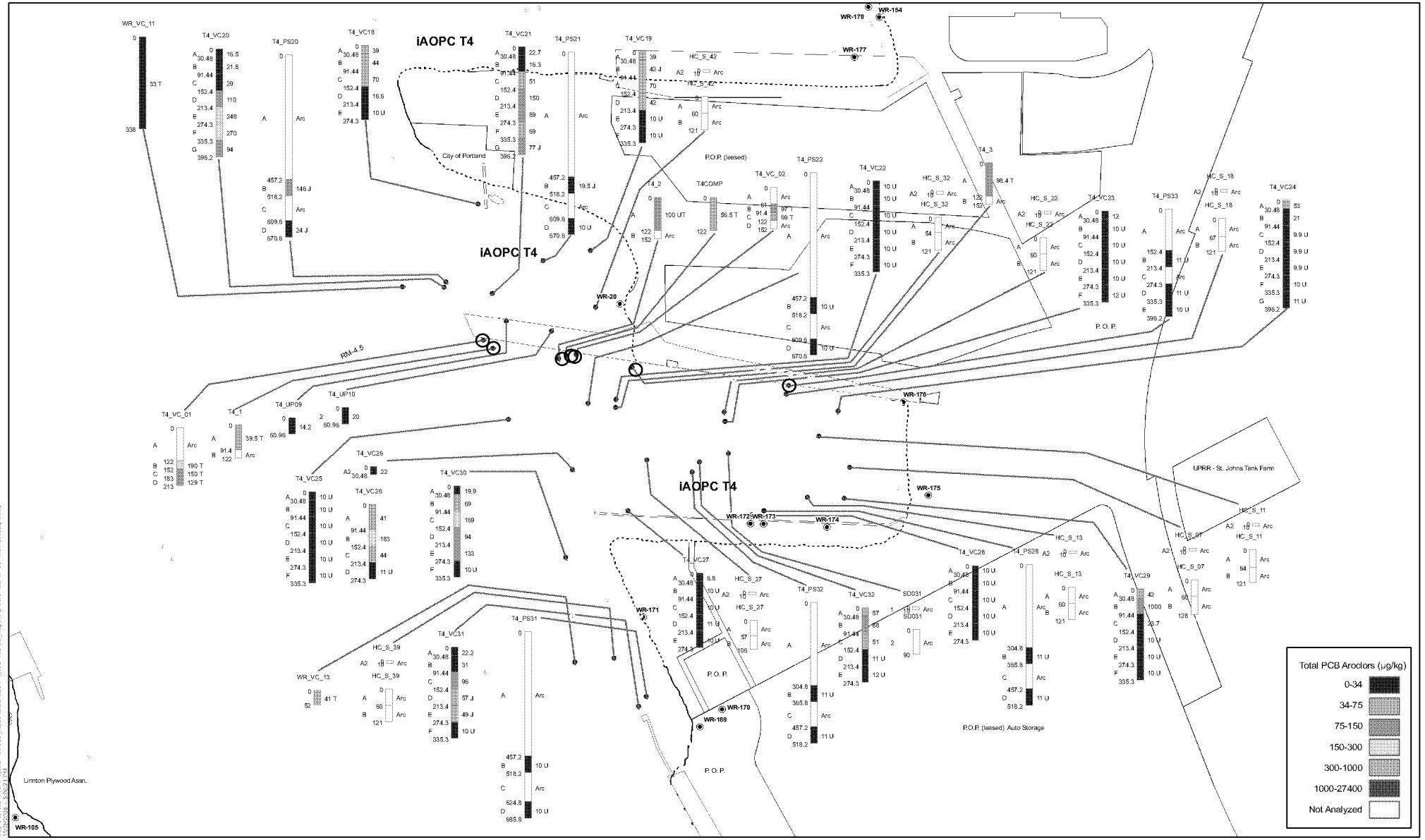
**Map 11.3.4-5**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC T4**

BZTO104(e)032640




**Map 11.3.4- 6a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC T4**

BZTO104(e)032641




integral consulting inc.

LWG Lower Willamette Group

N

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

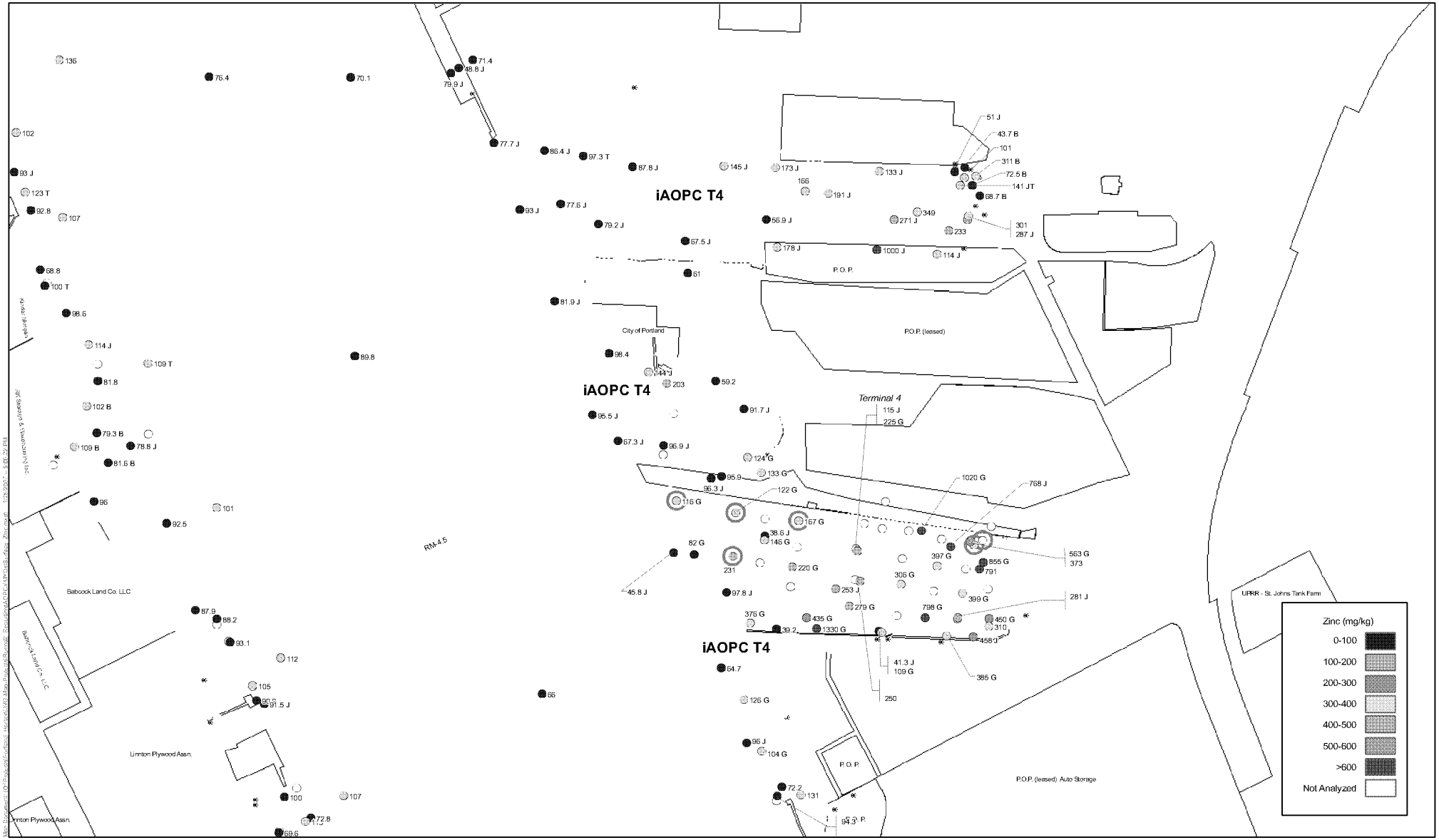
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- IAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.4- 6b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC T4**

BZTO104(e)032642




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

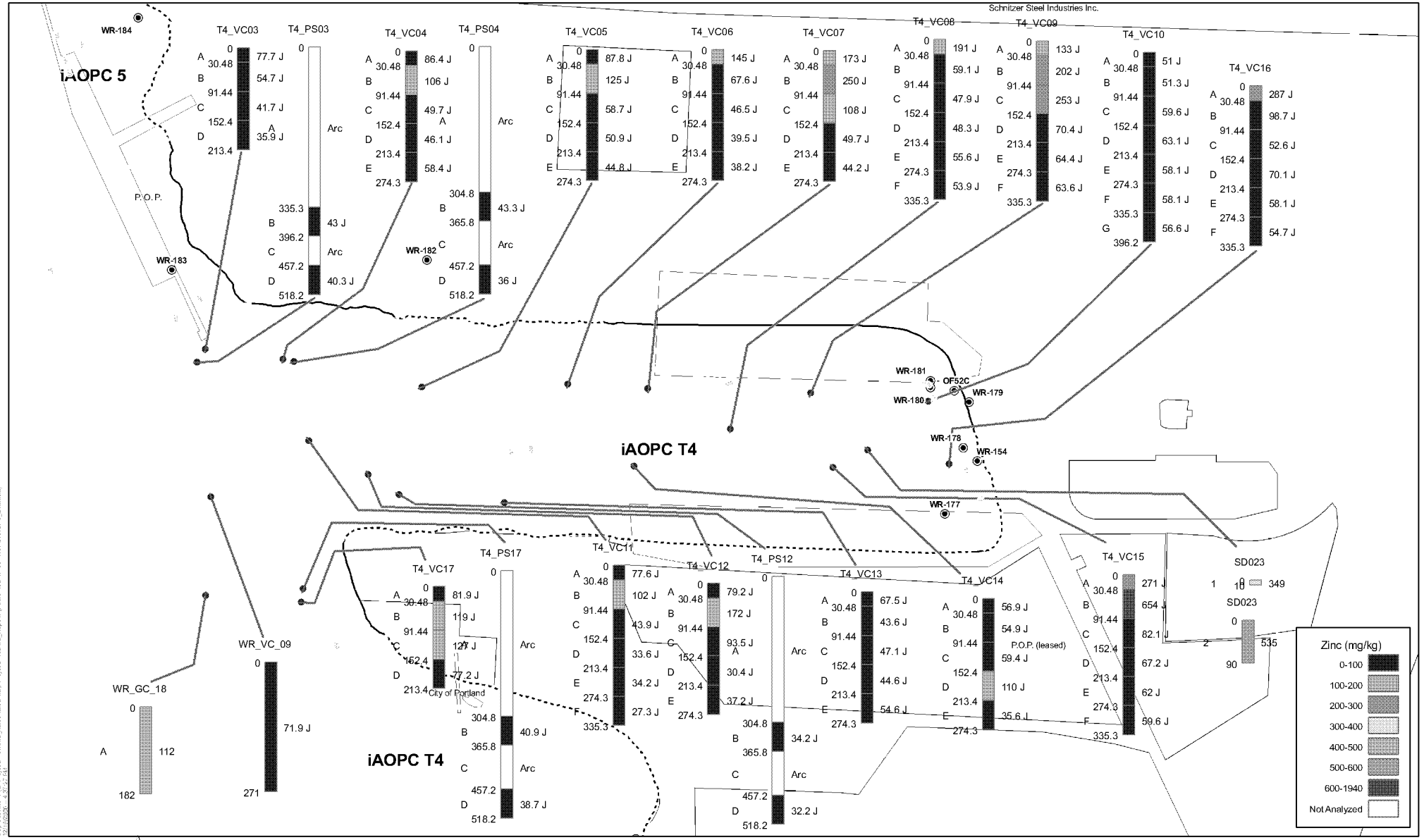
**Bathymetric Change**

- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)

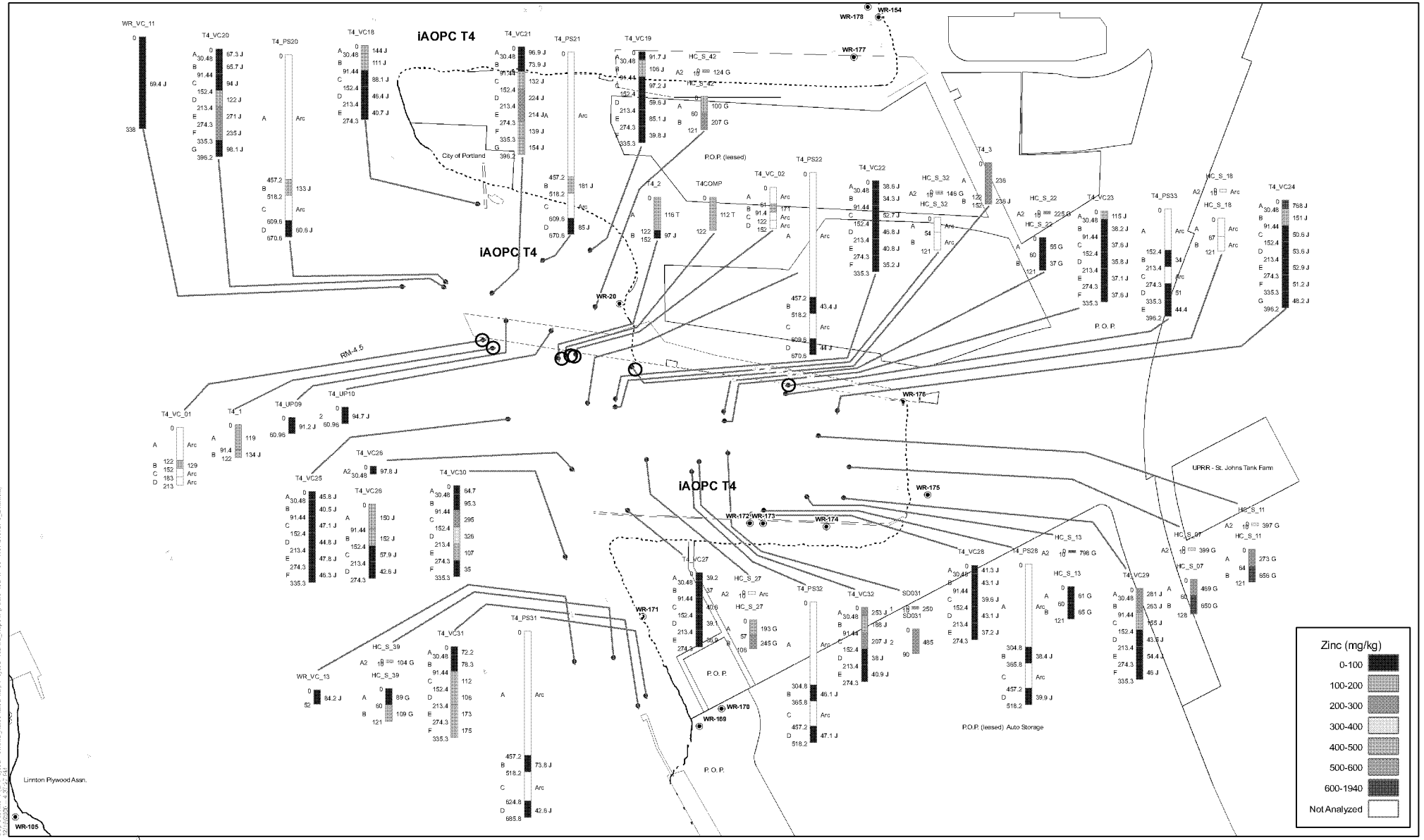
**Map 11.3.4-7**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Zinc (mg/kg)**
**iAOPC T4**

BZTO104(e)032643




**Map 11.3.4- 8a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Zinc (mg/kg)**
**iAOPC T4**

BZTO104(e)032644

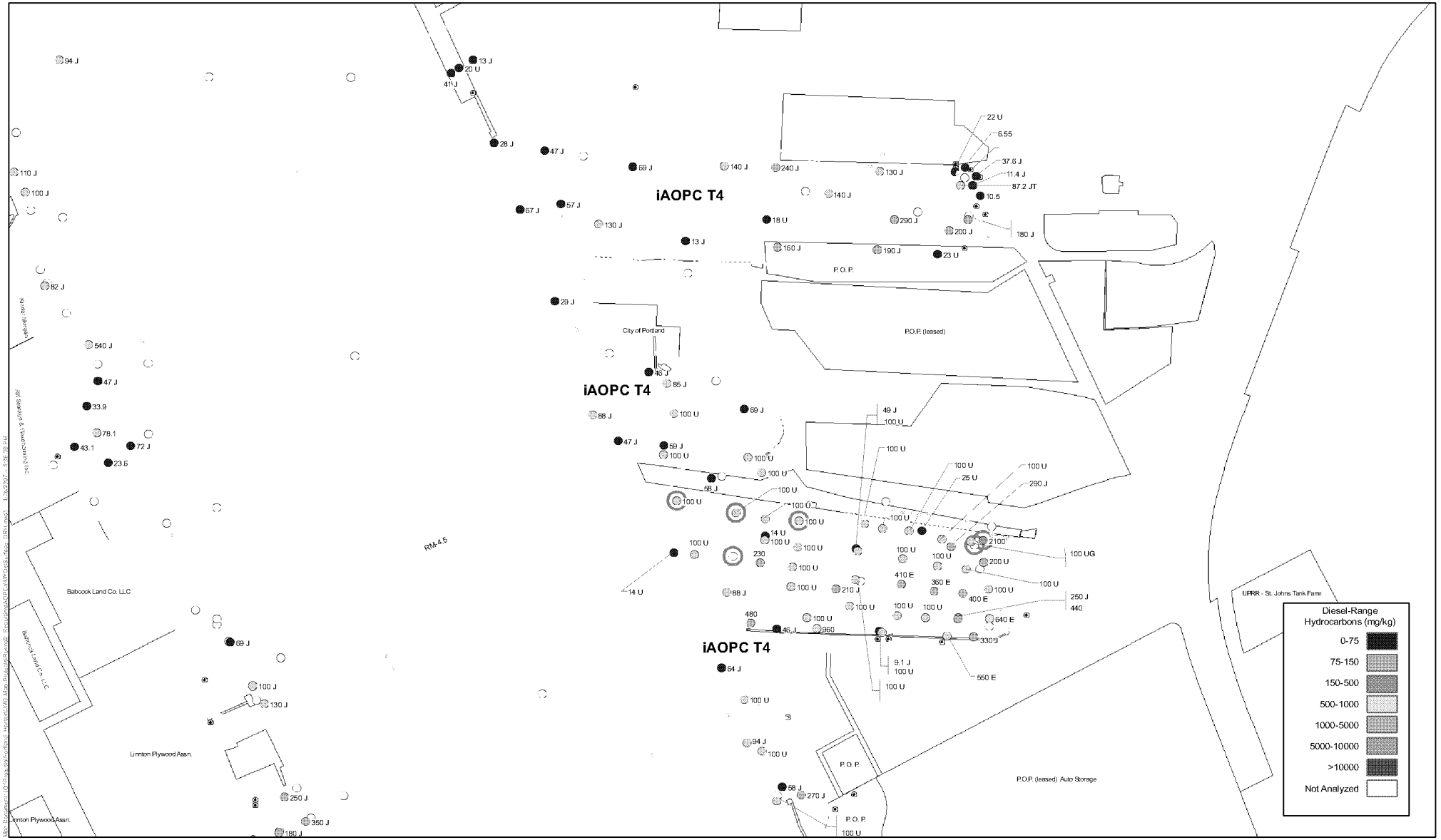



integral consulting inc.

LWG Lower Willamette Group

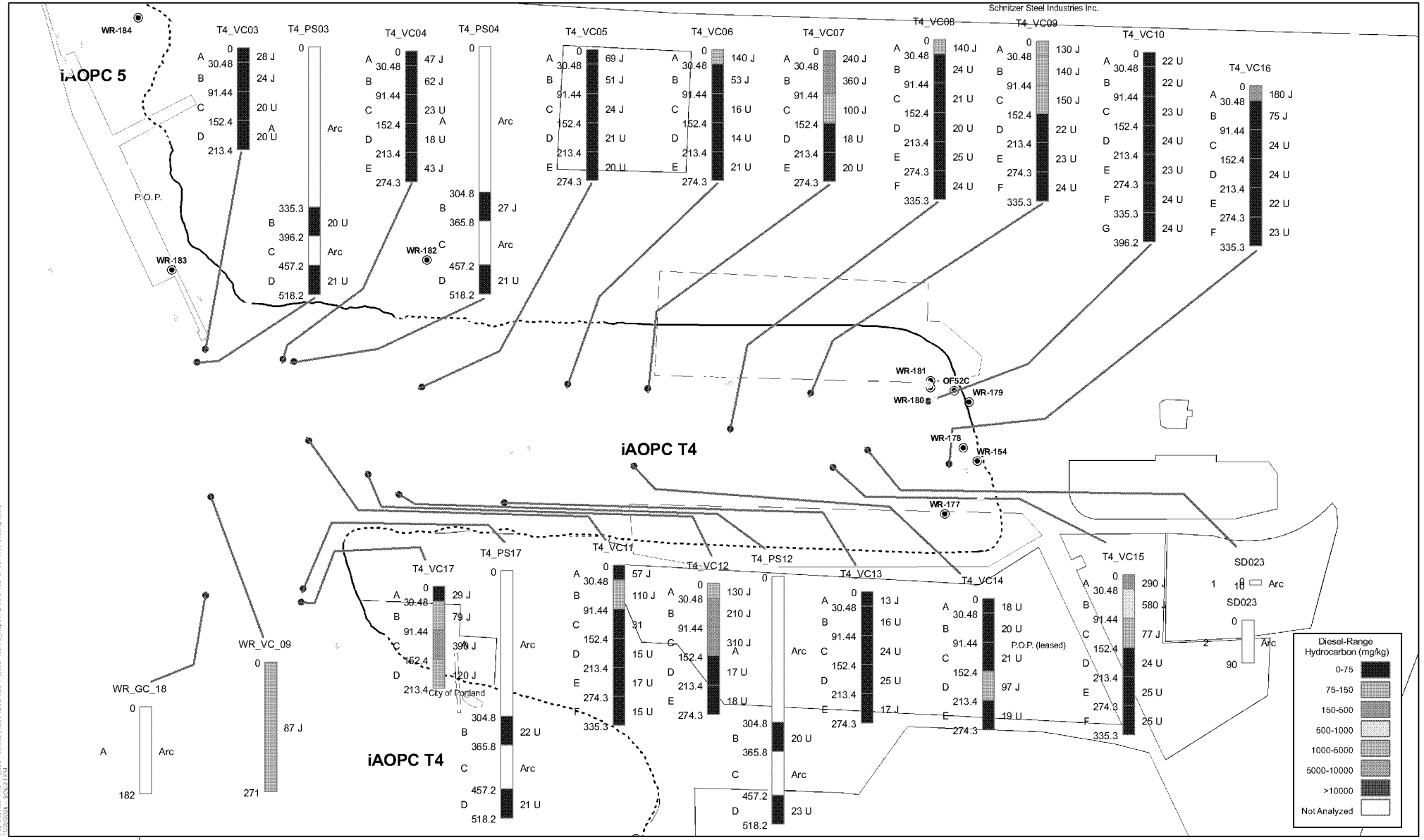
**Map 11.3.4- 8b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Zinc (mg/kg)**
**iAOPC T4**

BZTO104(e)032645



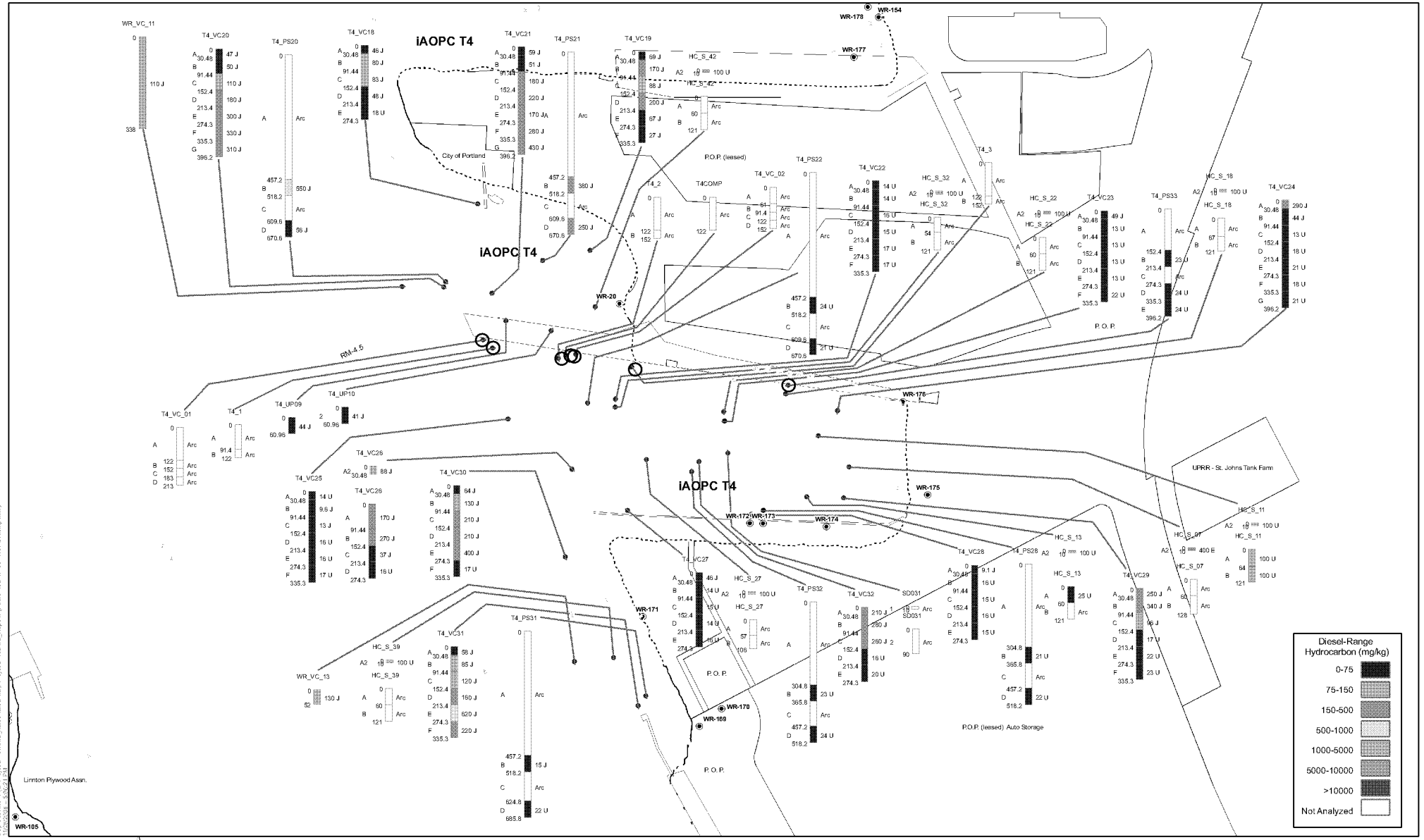

**Map 11.3.4-9**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Diesel-Range Hydrocarbons (mg/kg)**
**iAOPC T4**

BZTO104(e)032646



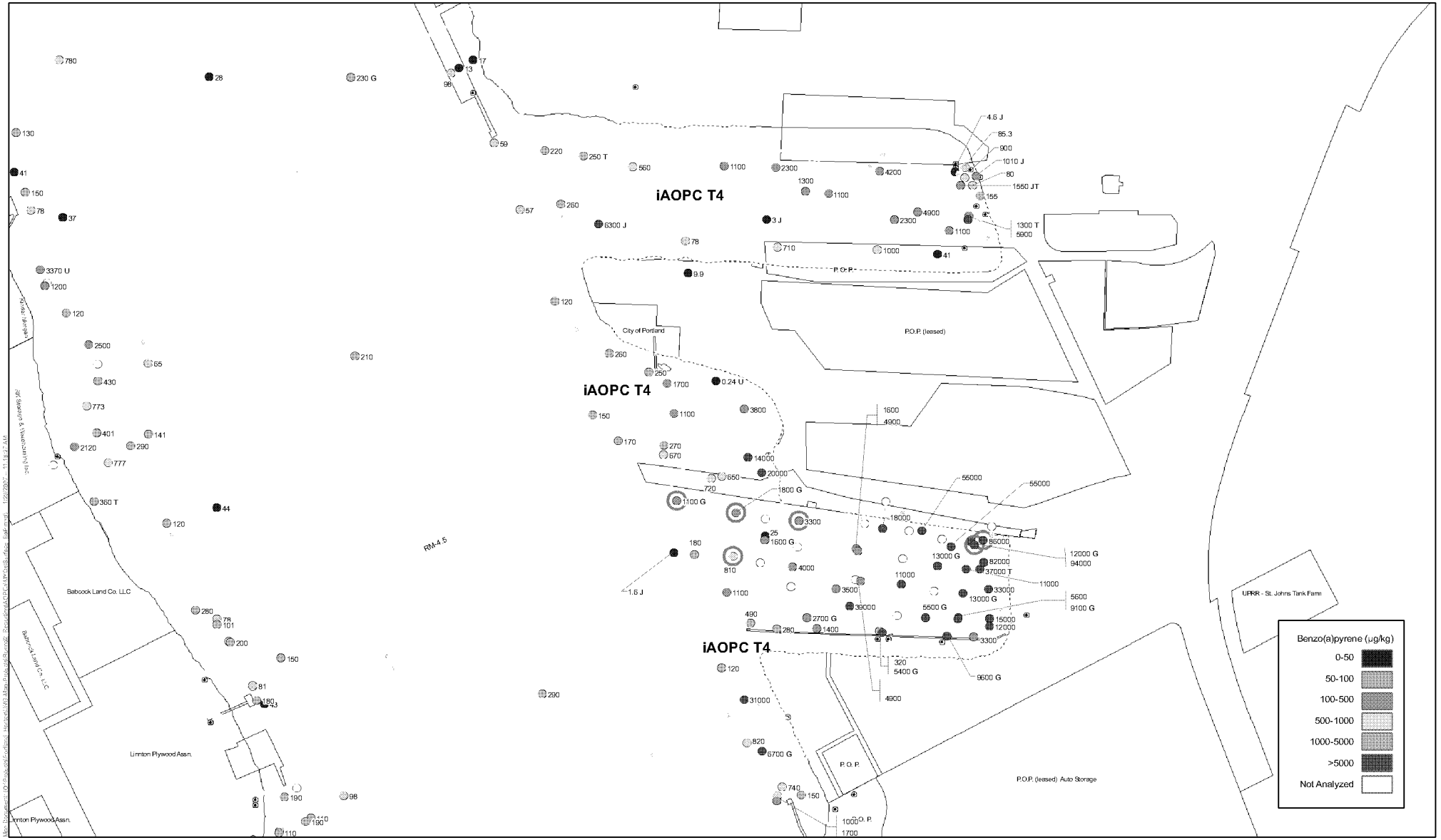

**Map 11.3.4-10a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Diesel-Range Hydrocarbon (mg/kg)**
**iAOPC T4**

BZTO104(e)032647




**Map 11.3.4-10b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Diesel-Range Hydrocarbon (mg/kg)**
**iAOPC T4**

BZTO104(e)032648




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

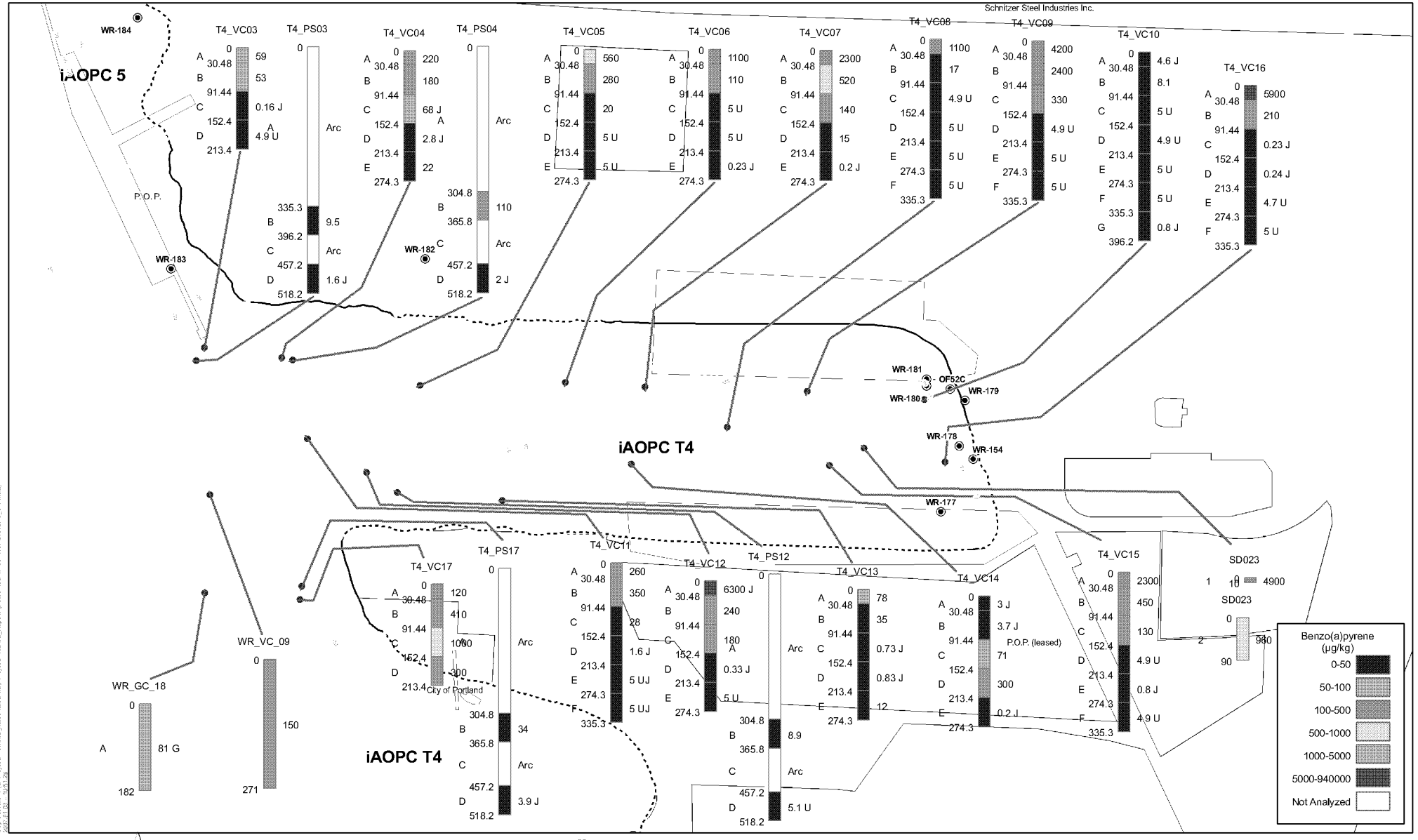
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

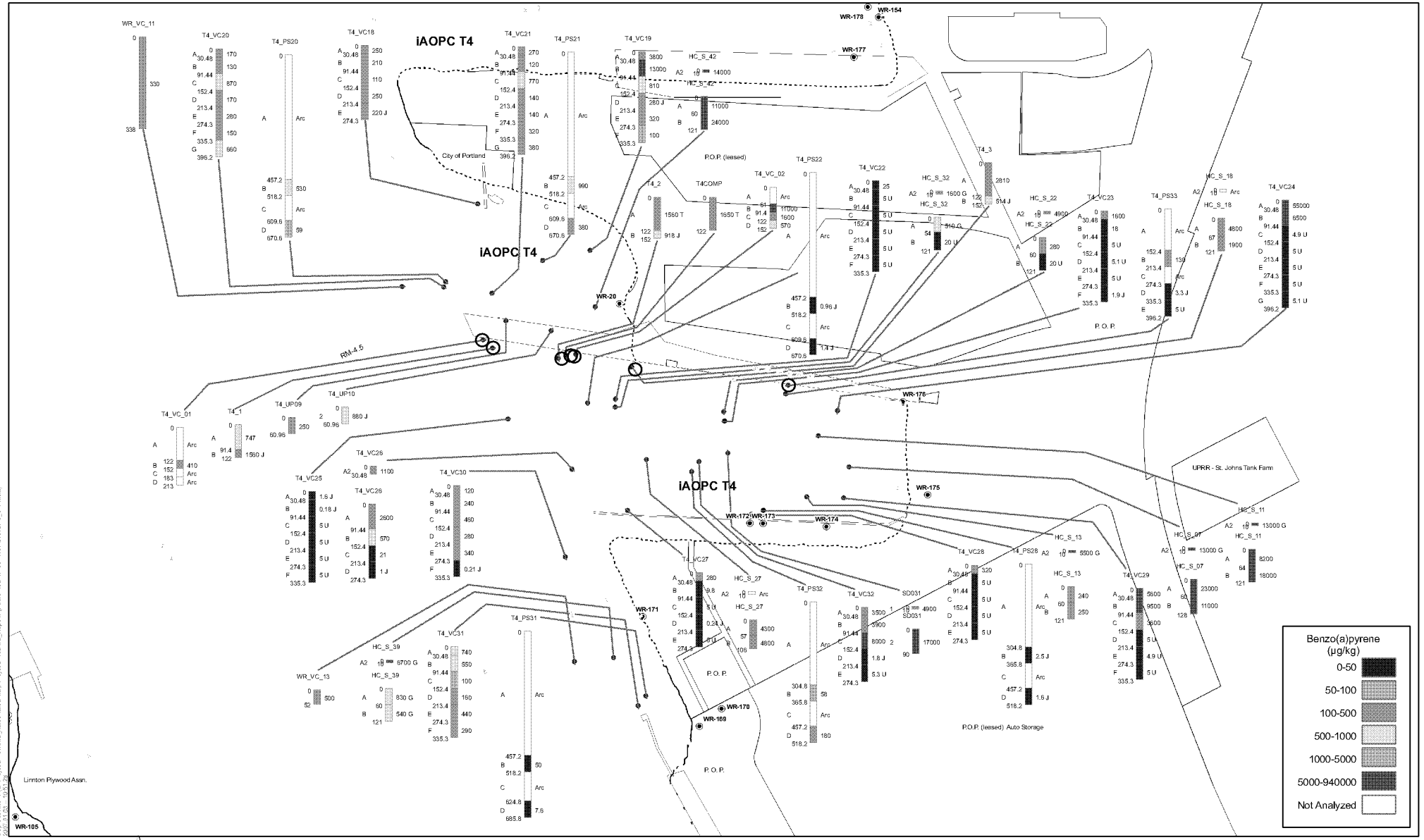
**Map 11.3.4-11**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Benzo(a)pyrene (µg/kg)**
**iAOPC T4**

BZTO104(e)032649




**Map 11.3.4 -12a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentration in Subsurface Sediment**
**Benzo(a)pyrene (µg/kg)**
**iAOPC T4**

BZTO104(e)032650




**Map 11.3.4-12b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentration in Subsurface Sediment**
**Benzo(a)pyrene (µg/kg)**
**iAOPC T4**

BZTO104(e)032651

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES
Transportation, Property boundaries: Metro RLIS.

Channel & River miles: US Army Corps of Engineers.

Bathymetric Information: David Evans and Associates, Inc.

RLIS Aerial Images: February 2005 'leaf off' flight (6" pixel).

iAOPCs
River Mile
Navigation Channel
River 18ft NAVD88

Docks and Structures
Capping
Dredging (Post 1997)

**Bathymetric Change**
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening

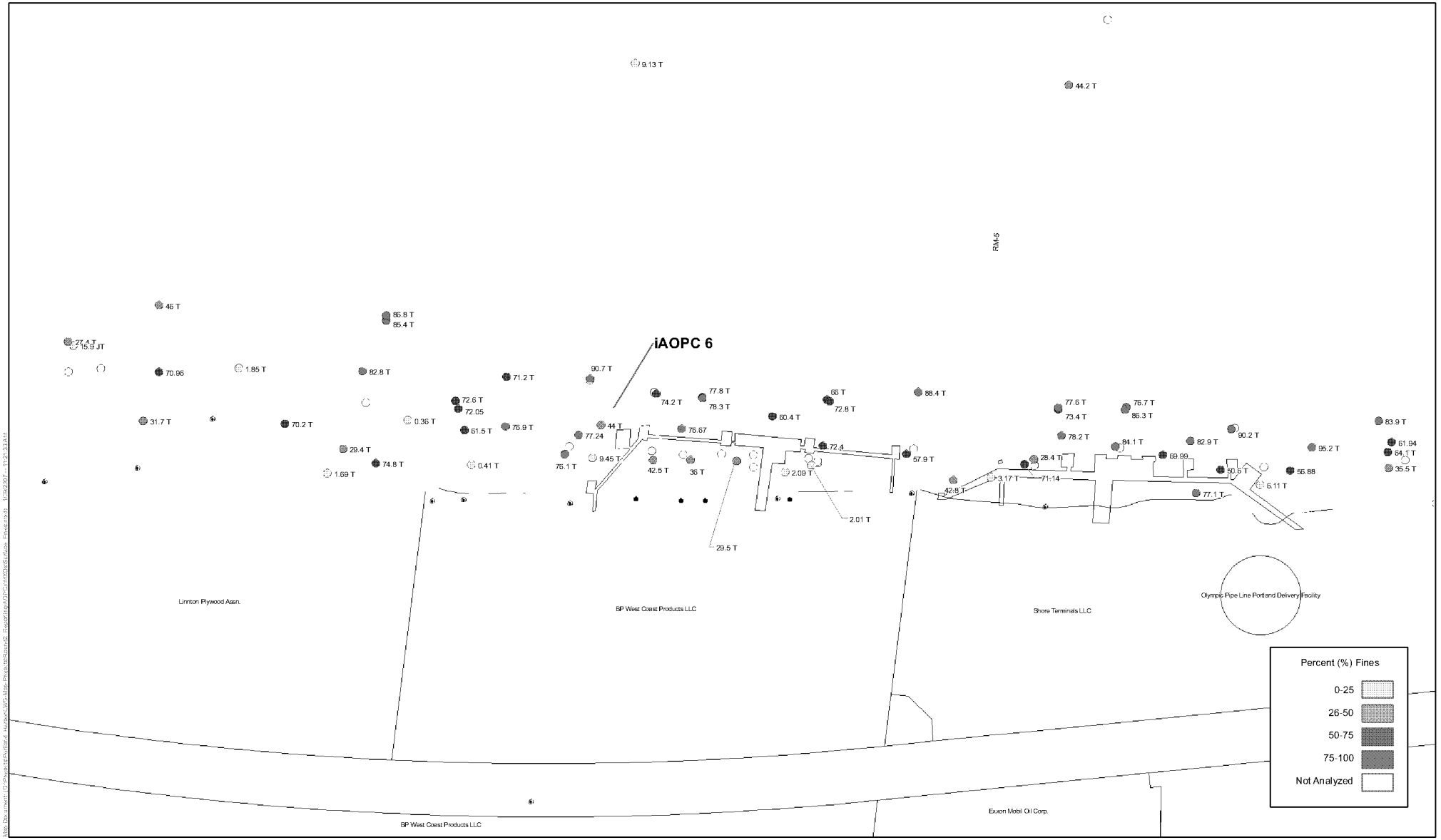
Clam, CF
Mudworm, LV
Crayfish, CR
Sculpin, SC
Multiplate Invertebrates, MI

Surface Water
Surface Sediment
Subsurface Sediment
TZW Sample Location (+38cm BML)

Active Outfalls
Unknown Outfalls
Abandoned Outfalls

**Map 11.3.5-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**iAOPC Site Overview**
**iAOPC 6**

BZTO104(e)032652




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 100 200 300 Feet

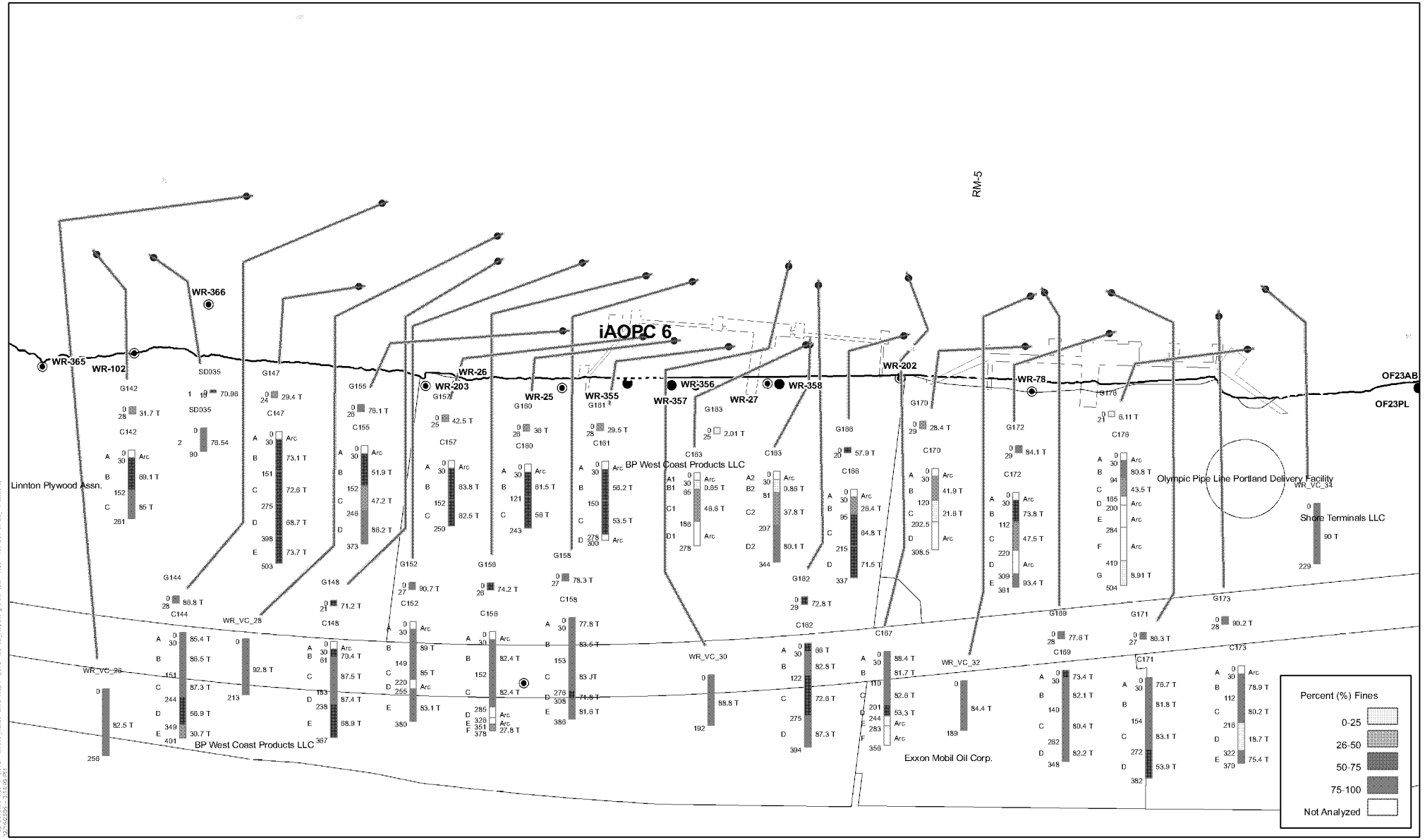
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.5-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Texture**
**Percent (%) Fines**
**iAOPC 6**

BZTO104(e)032653




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

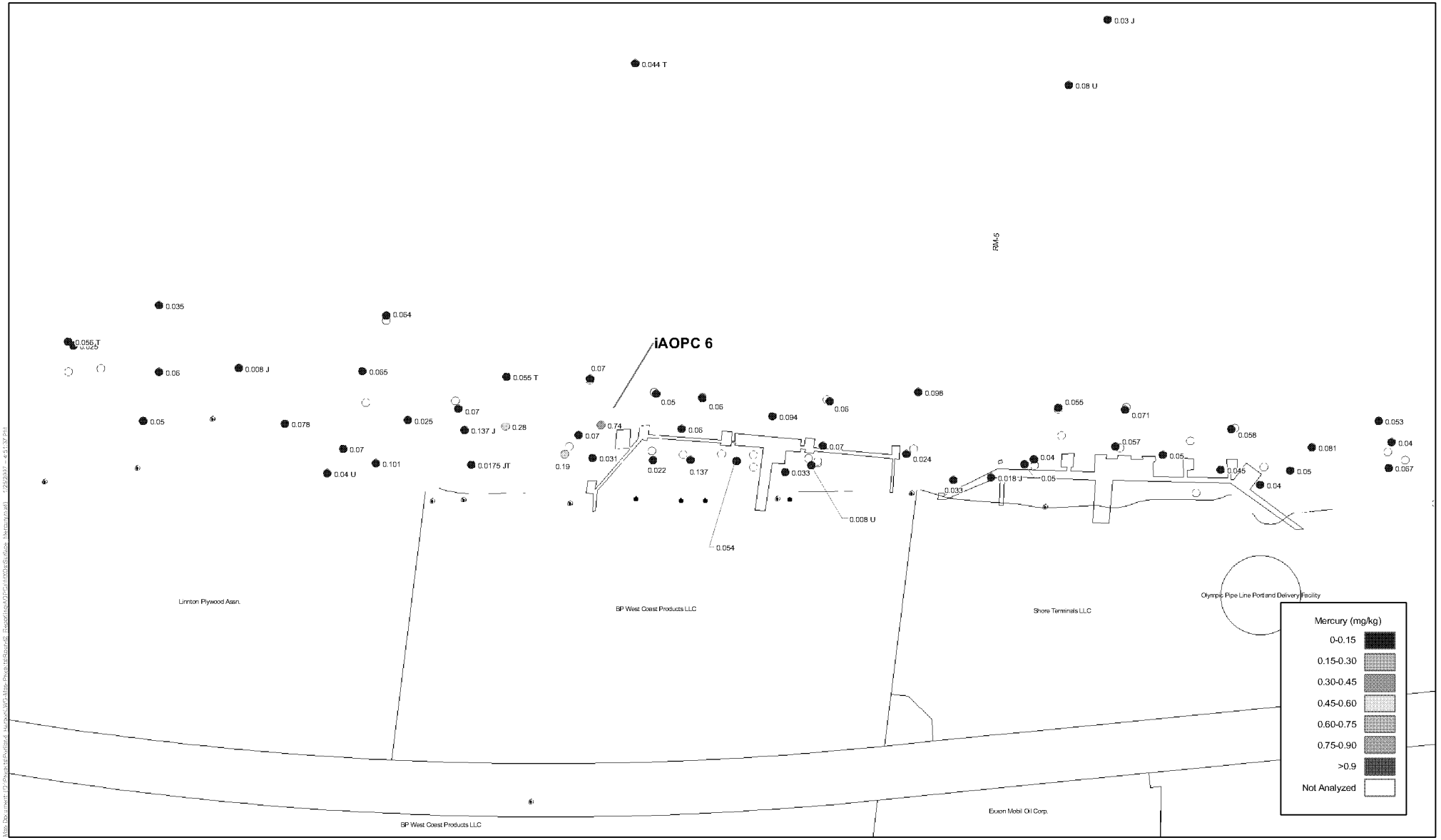
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.5- 2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 6**

BZTO104(e)032654




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

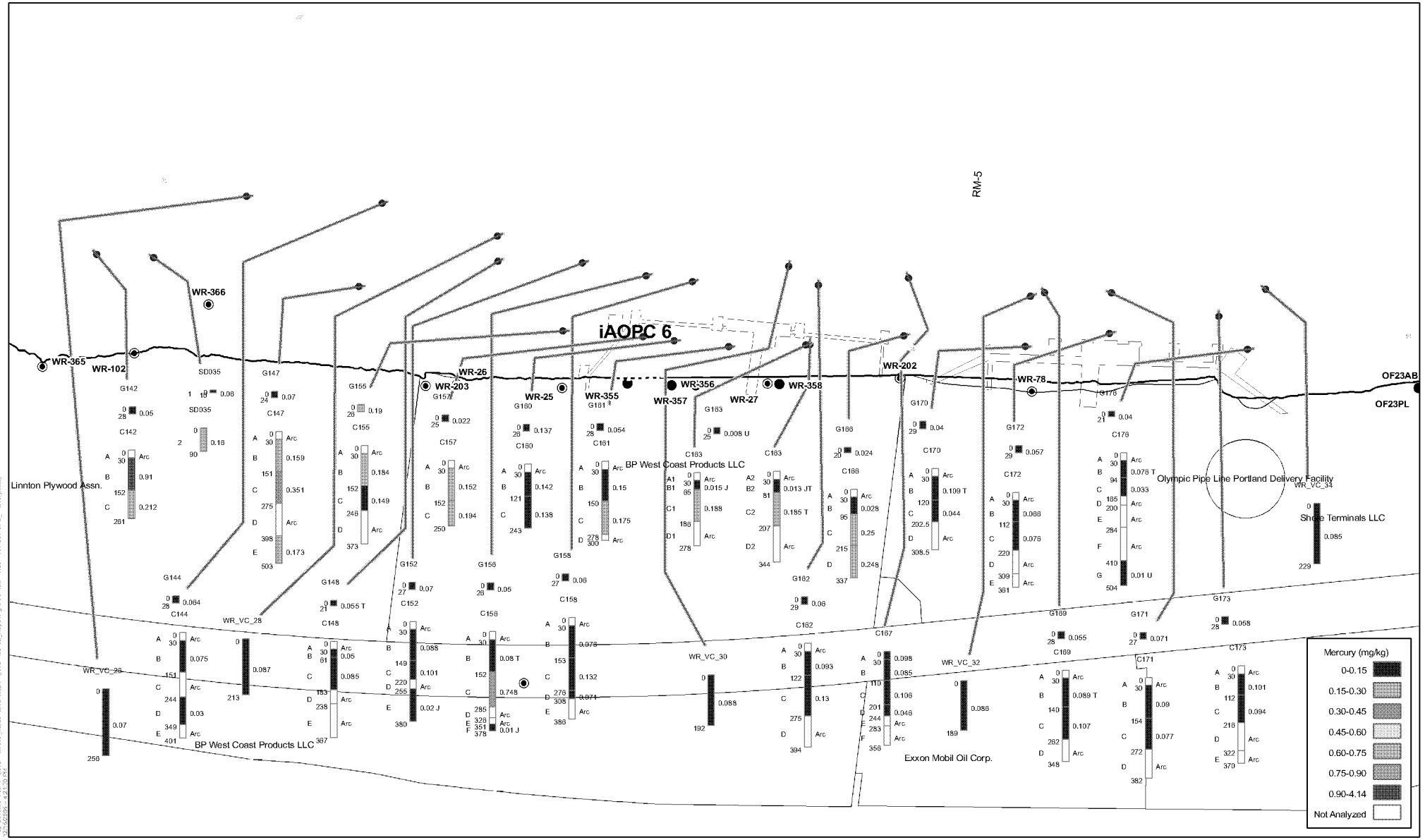
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- AOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.5-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Mercury (mg/kg)**
**iAOPC 6**

BZTO104(e)032655




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

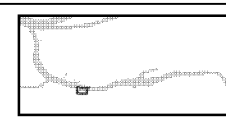
0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

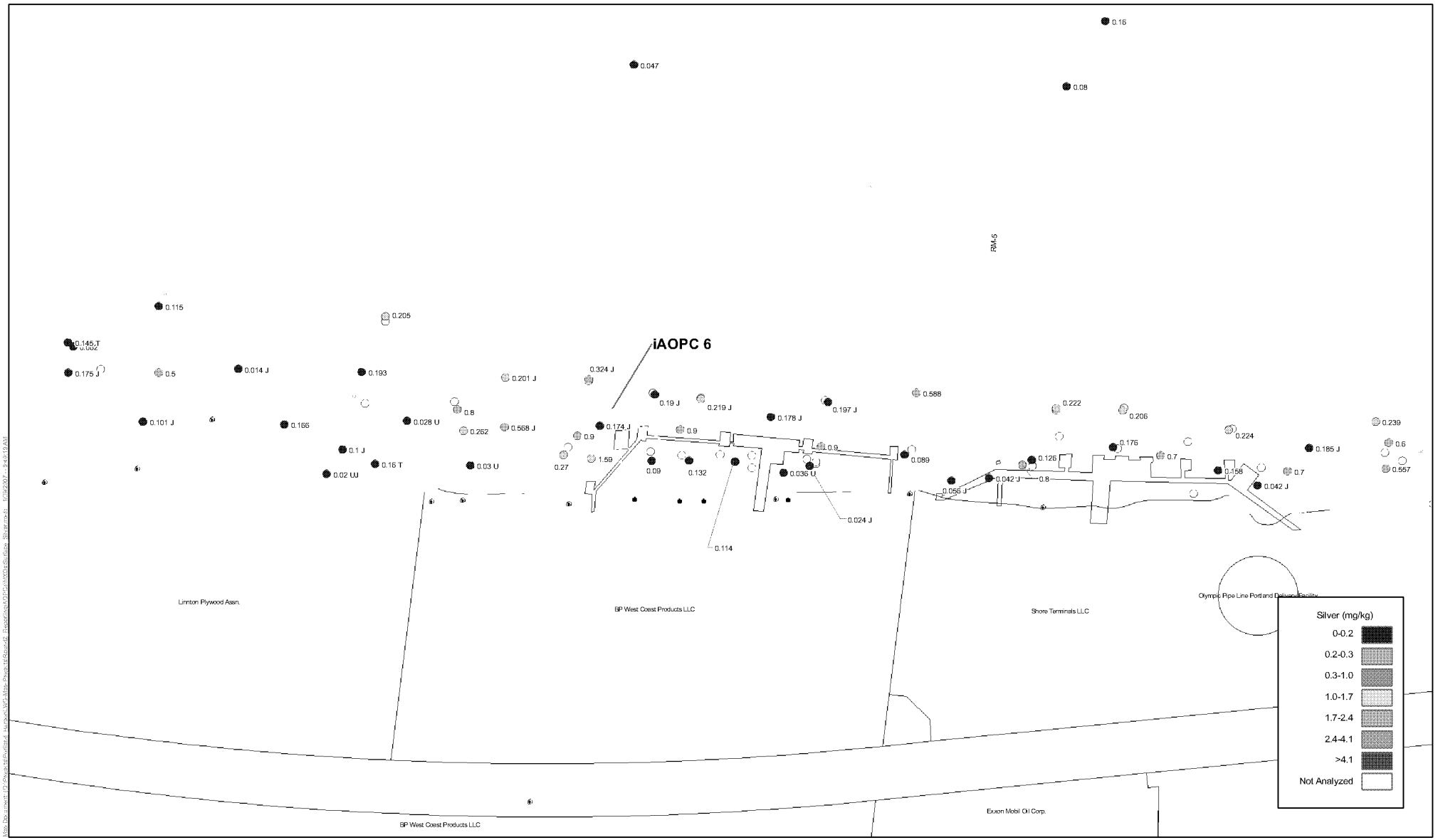
**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)
- Dredged or Capped



**Map 11.3.5-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Mercury (mg/kg)**
**iAOPC 6**

BZTO104(e)032656




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

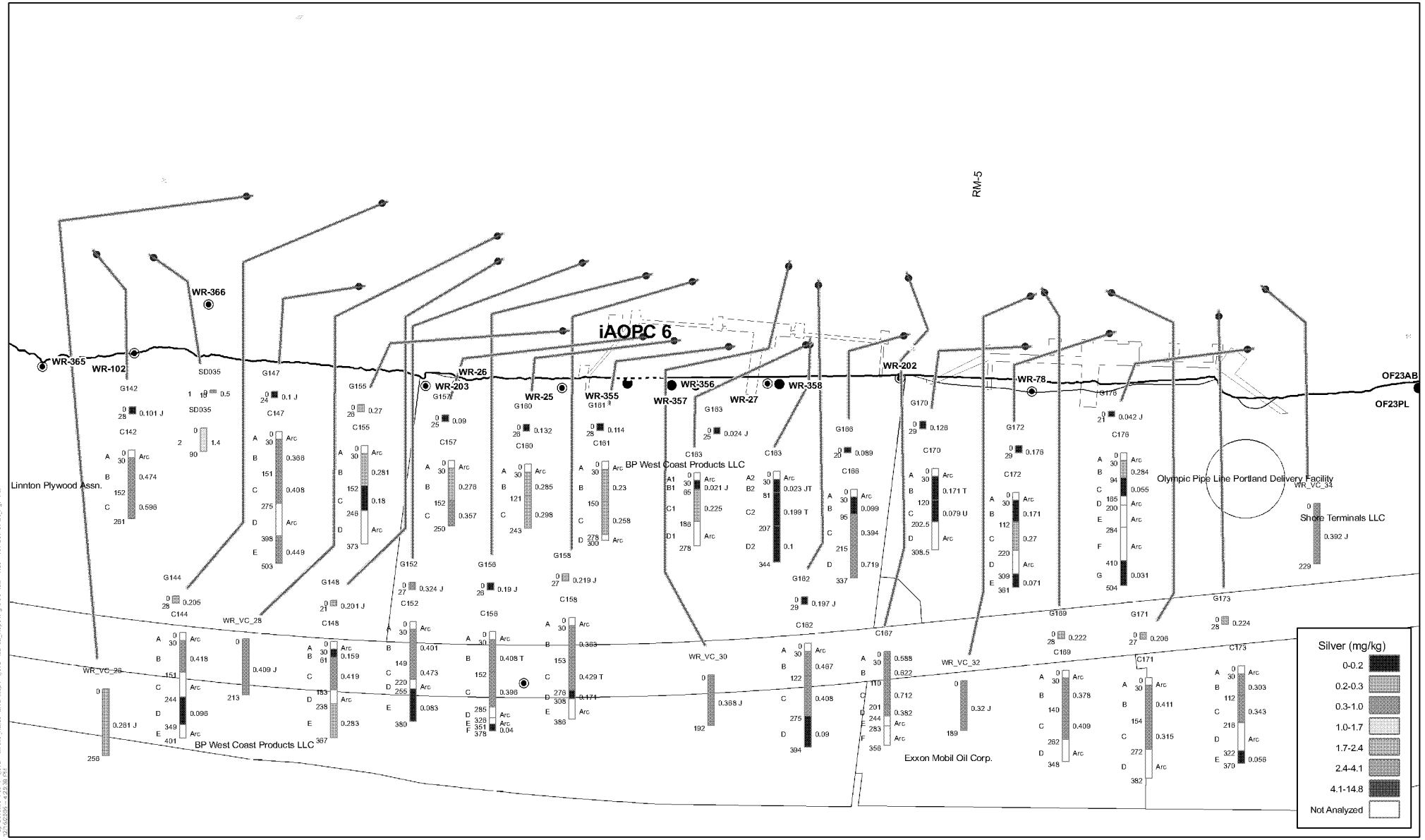
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.5-5**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Silver (mg/kg)**
**iAOPC 6**

BZTO104(e)032657




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

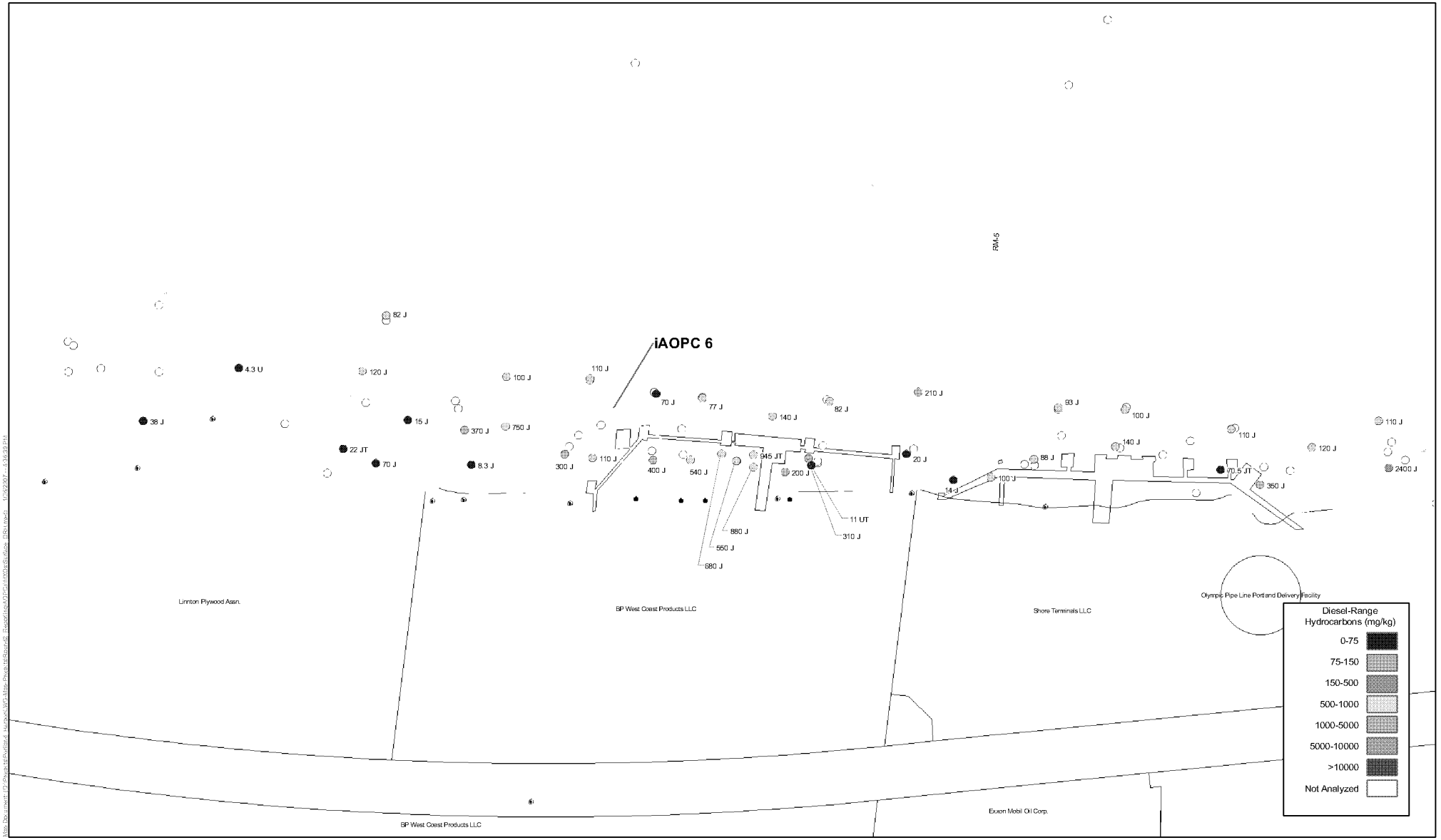
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.5-6**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Silver (mg/kg)**
**iAOPC 6**

BZTO104(e)032658




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

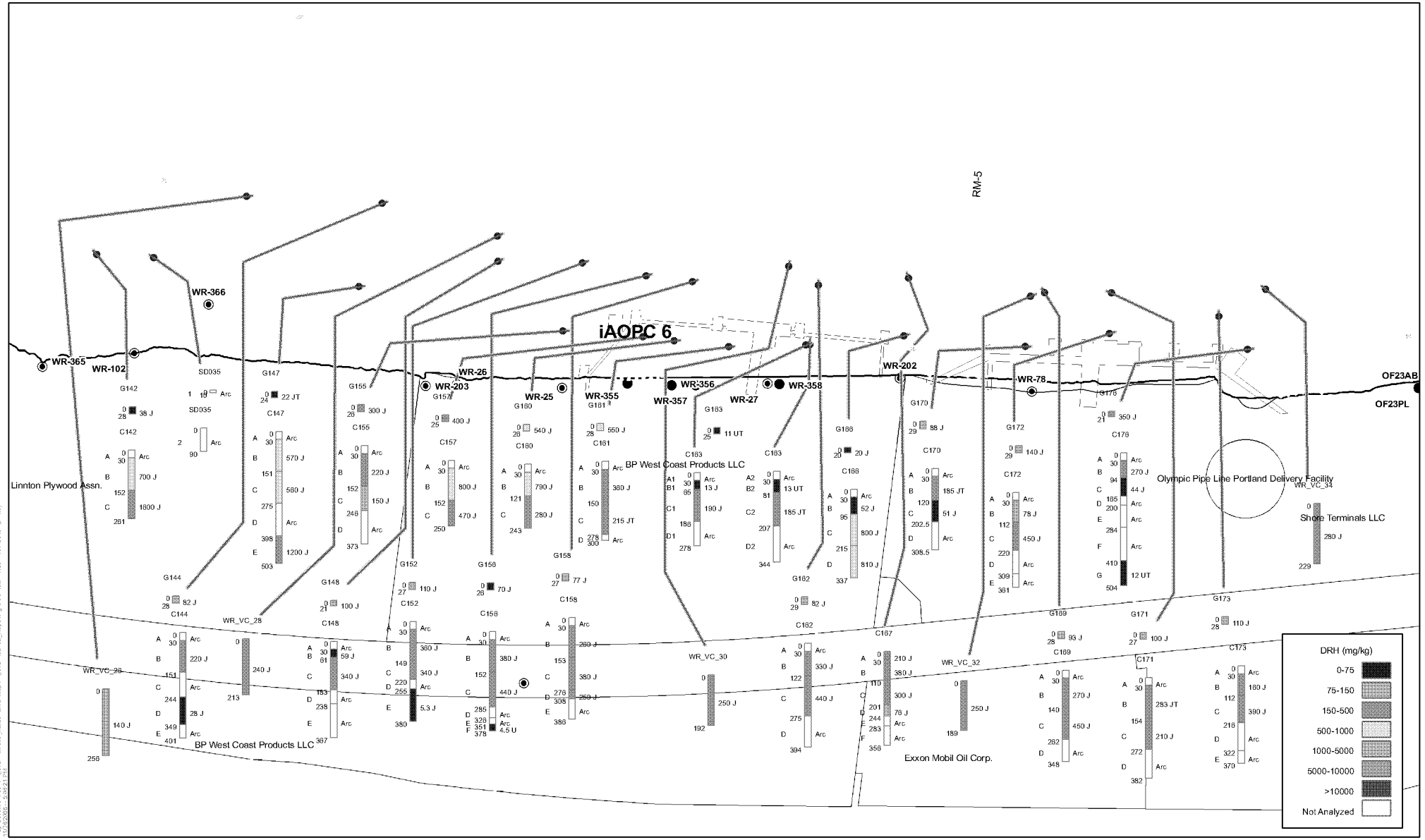
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.5-7**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Diesel-Range Hydrocarbons (mg/kg)**
**iAOPC 6**

BZTO104(e)032659




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

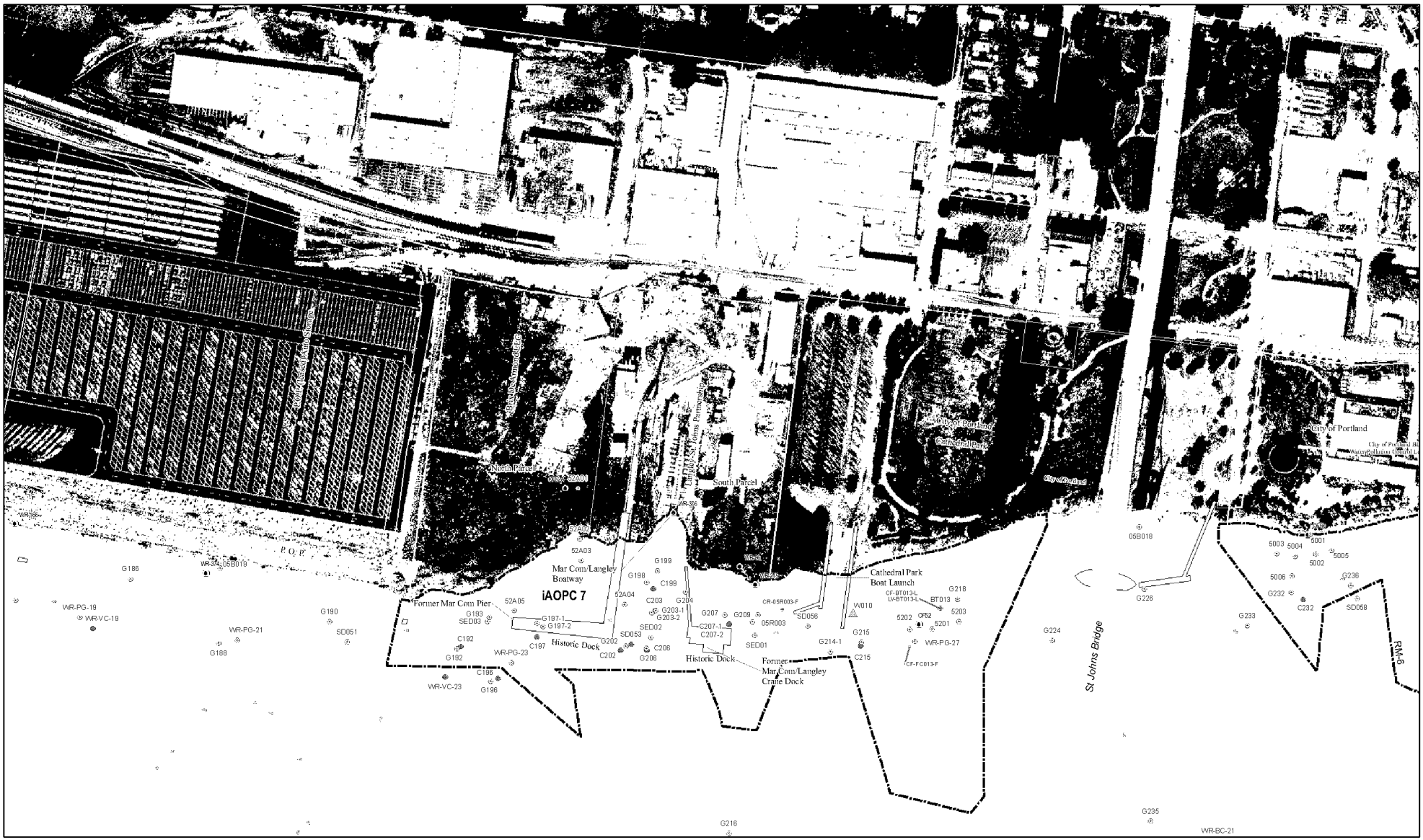
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.5-8**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Diesel-Range Hydrocarbon (mg/kg)**
**iAOPC 6**

BZTO104(e)032660




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES
Transportation, Property boundaries: Metro RLIS.

Channel & River miles: US Army Corps of Engineers.

Bathymetric Information: David Evans and Associates, Inc.

RLIS Aerial Images: February 2005 'leaf off' flight (6" pixel).

iAOPCs
River Mile
Navigation Channel
River 13ft NAVD88

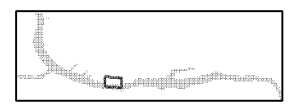
Docks and Structures
Capping
Dredging (Post 1997)

**Bathymetric Change**
-22 - -0.49 Shualling
-0.5 - 0.5
0.51 - 37 Deepening

Clam, CF
Mudworm, LV
Crayfish, CR
Sculpin, SC
Multiplate Invertebrates, MI

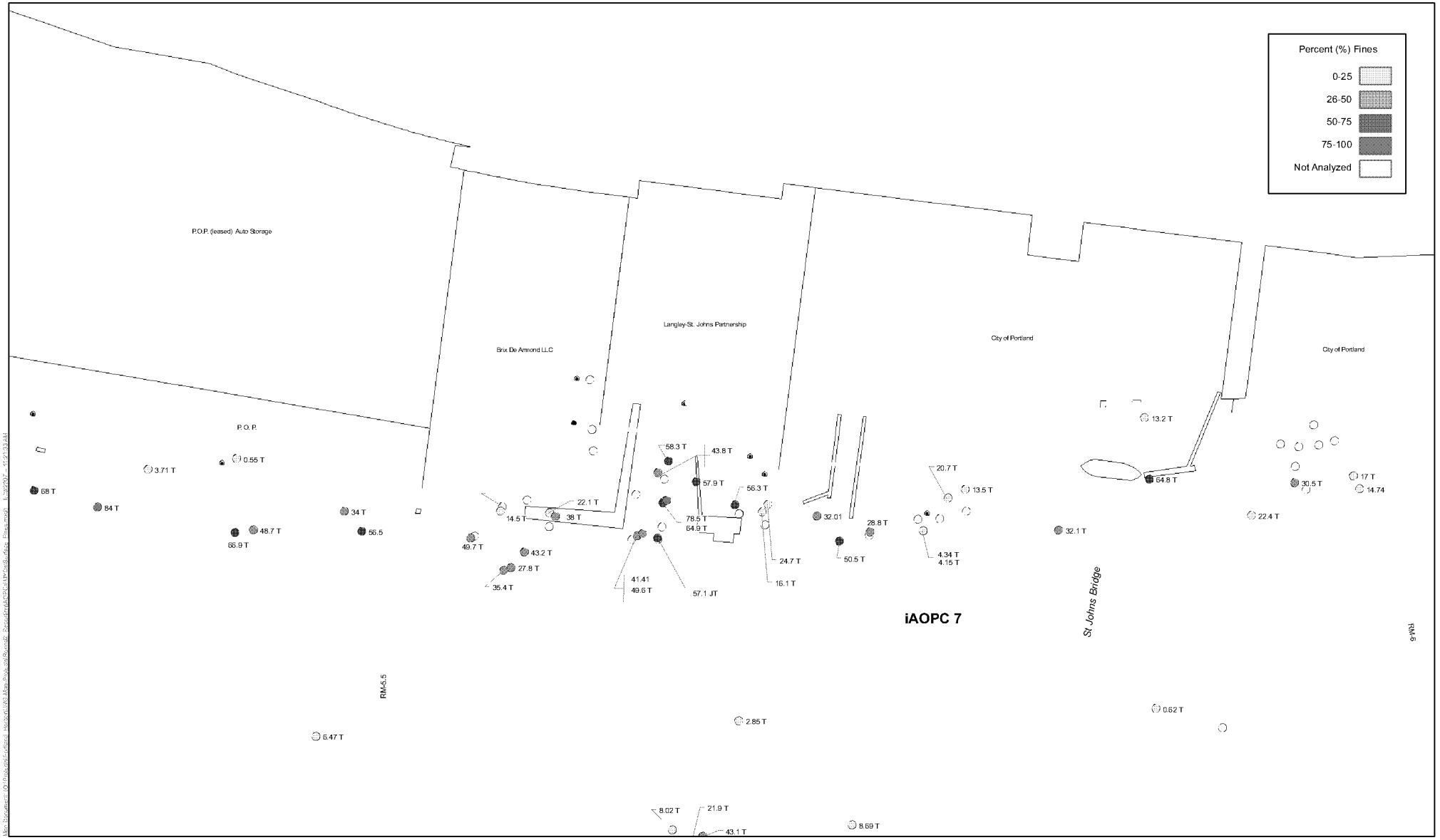
Surface Water
Surface Sediment
Subsurface Sediment
TZW Sample Location (<38cm BML)

Active Outfalls
Unknown Outfalls
Abandoned Outfalls



**Map 11.3.6-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**iAOPC Site Overview**
**iAOPC 7**

BZTO104(e)032661

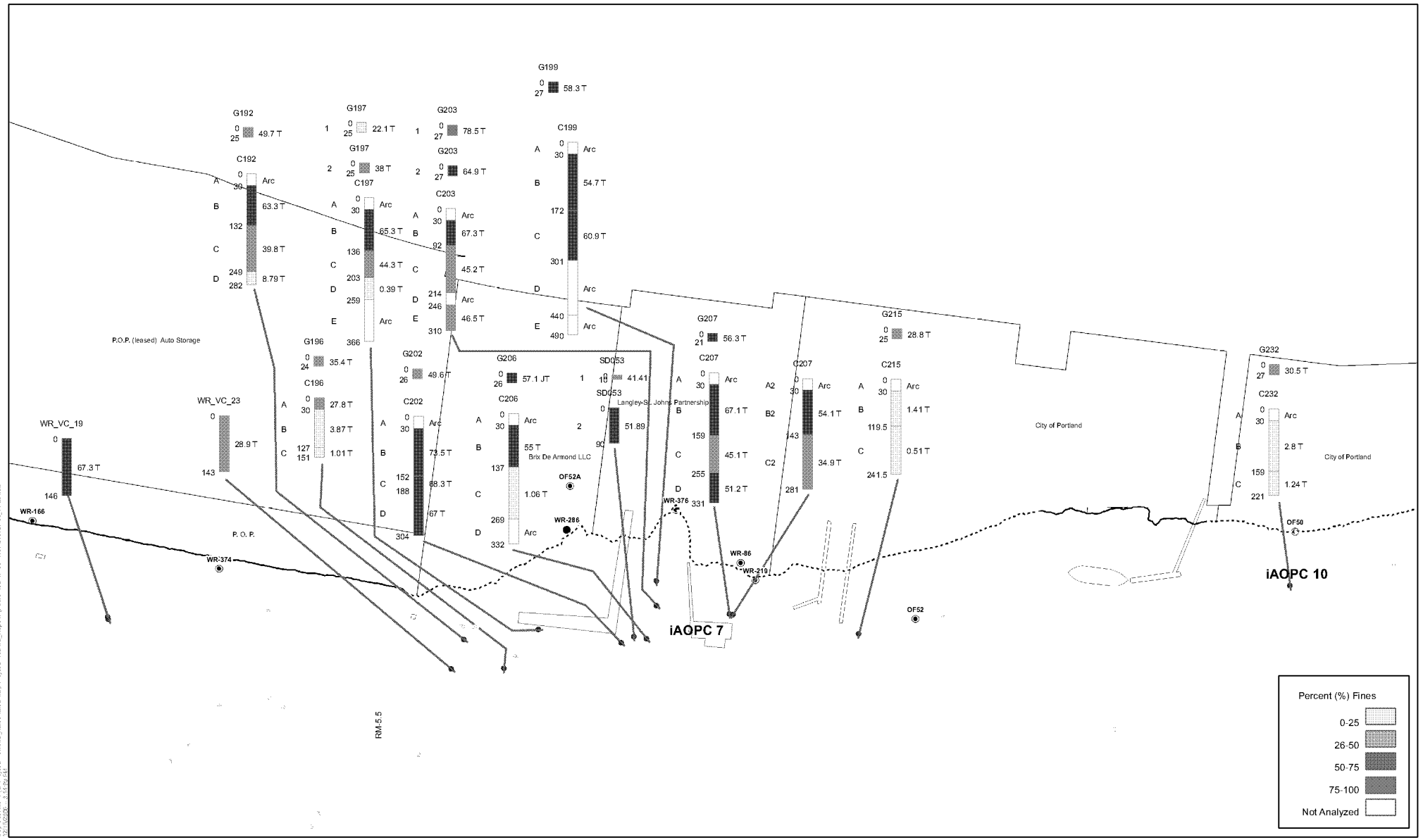



integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 11.3.6-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Texture**
**Percent (%) Fines**
**iAOPC 7**

BZTO104(e)032662




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.,
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

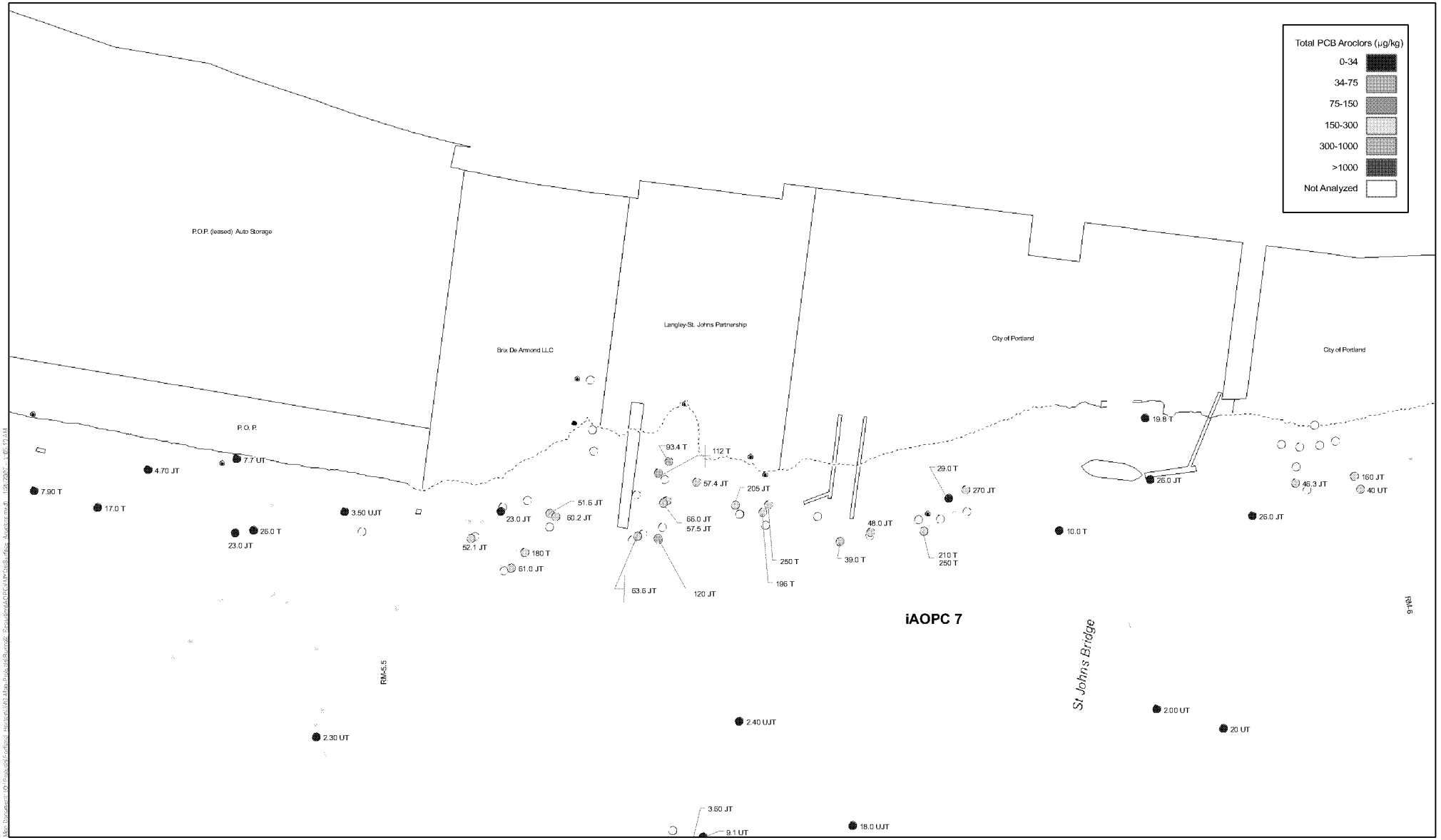
**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.6- 2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 7**

Map Document: (U:\Projects\Portland_Harbor\LWG-Maps-Projects\Round2_Report\LWG_Report_Figures\Subsurface\iAOPC7-10_Fines.mxd)
2/7/2008 - 3:14:09 PM

BZTO104(e)032663




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.6-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 7**

BZTO104(e)032664

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

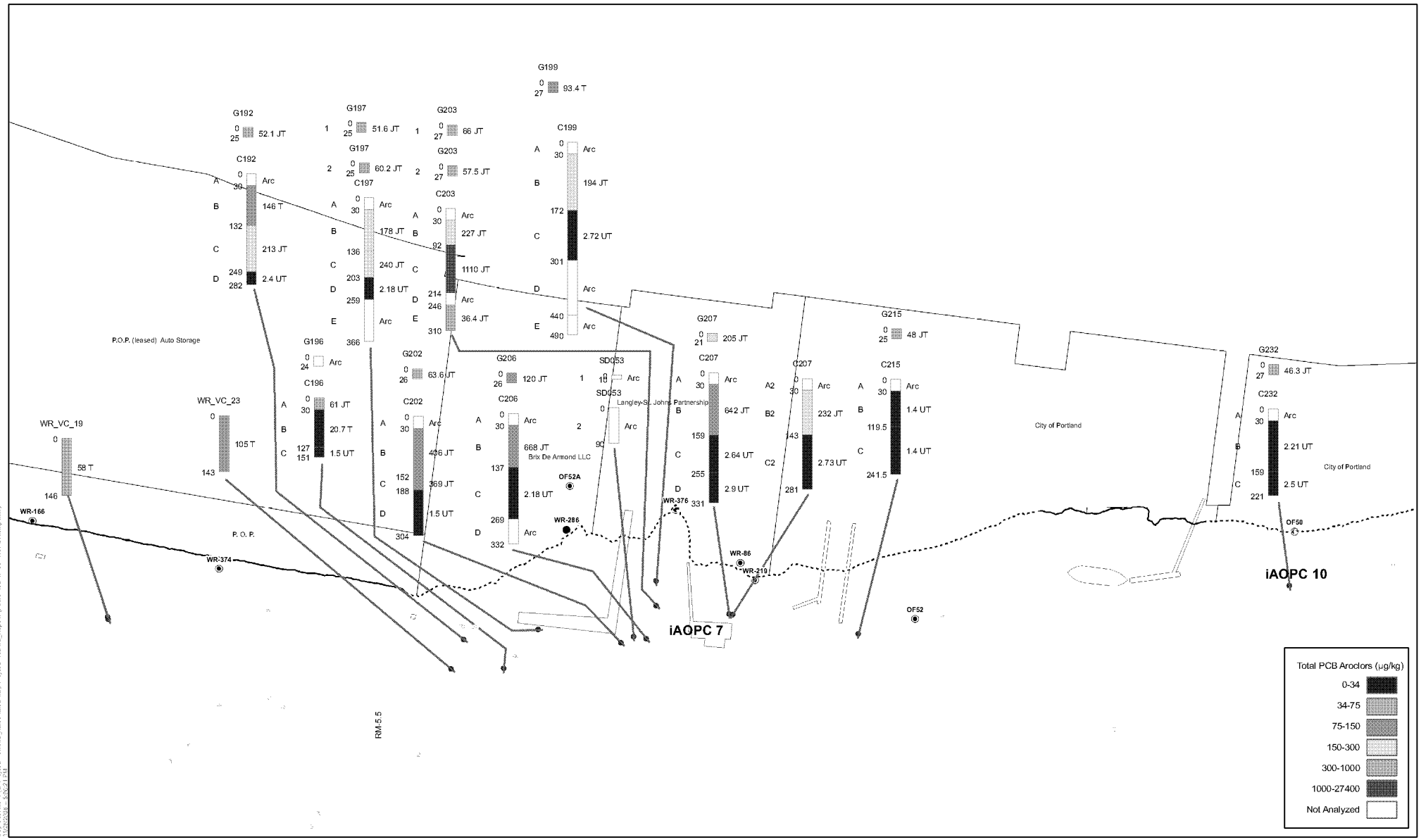
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.6-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 7**

BZTO104(e)032665




integral consulting inc.

LWG Lower Willamette Group

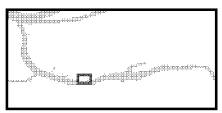
0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

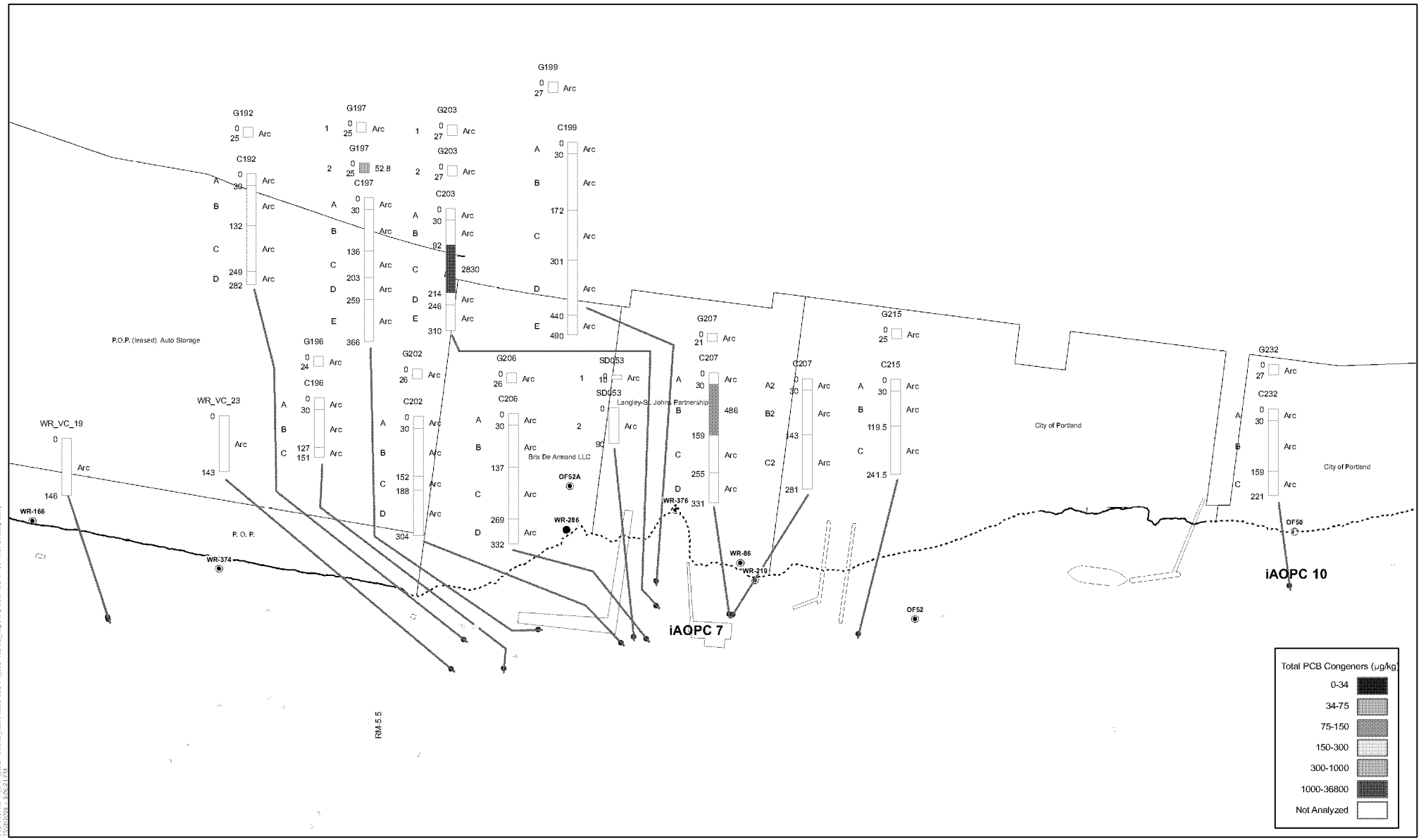
**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)



**Map 11.3.6-5**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 7**

BZTO104(e)032666




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

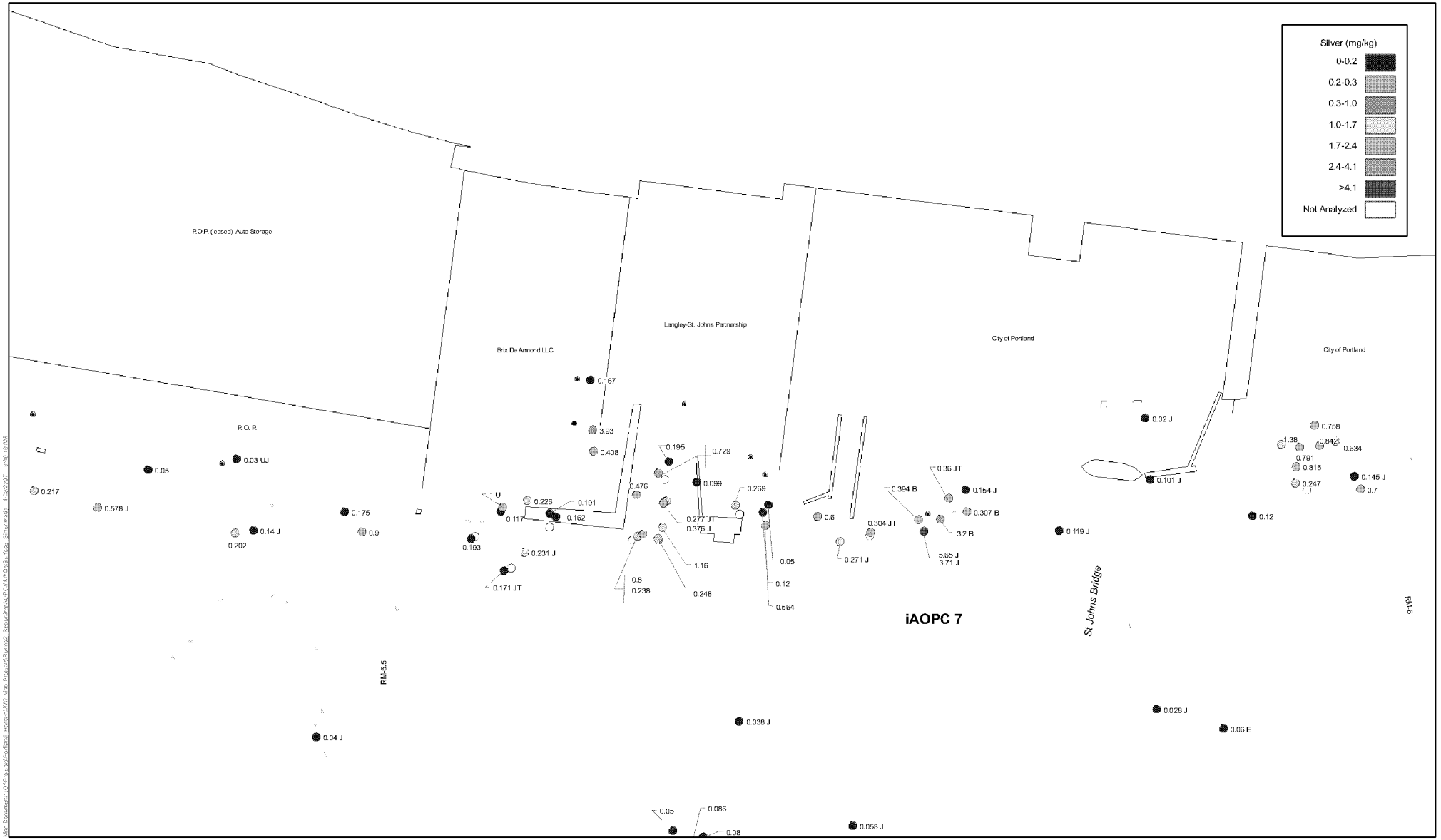
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- AOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

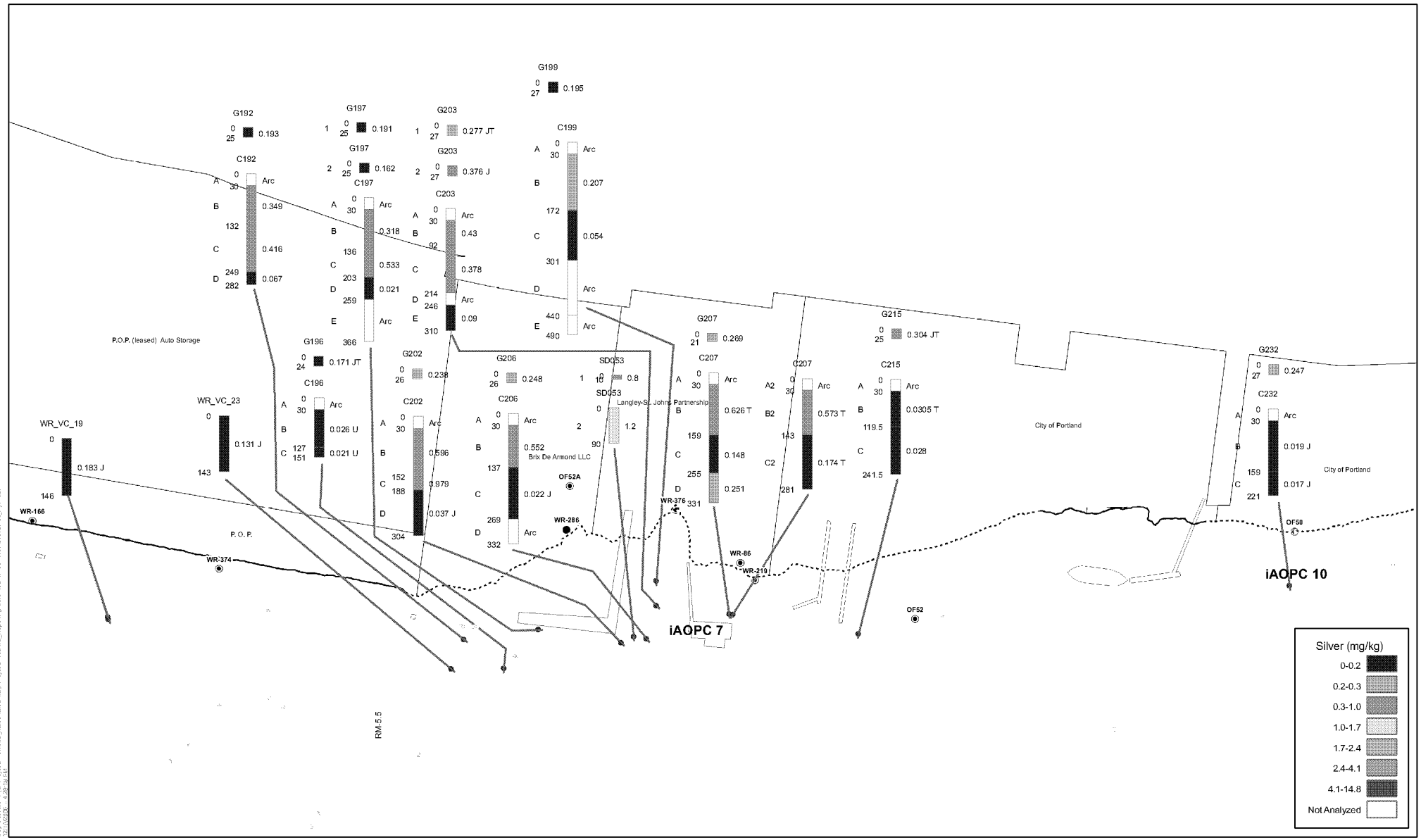
**Map 11.3.6-6**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 7**

BZTO104(e)032667




**Map 11.3.6-7**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Silver (mg/kg)**
**iAOPC 7**

BZTO104(e)032668




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.,
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.6-8**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Silver (mg/kg)**
**iAOPC 7**

BZTO104(e)032669

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

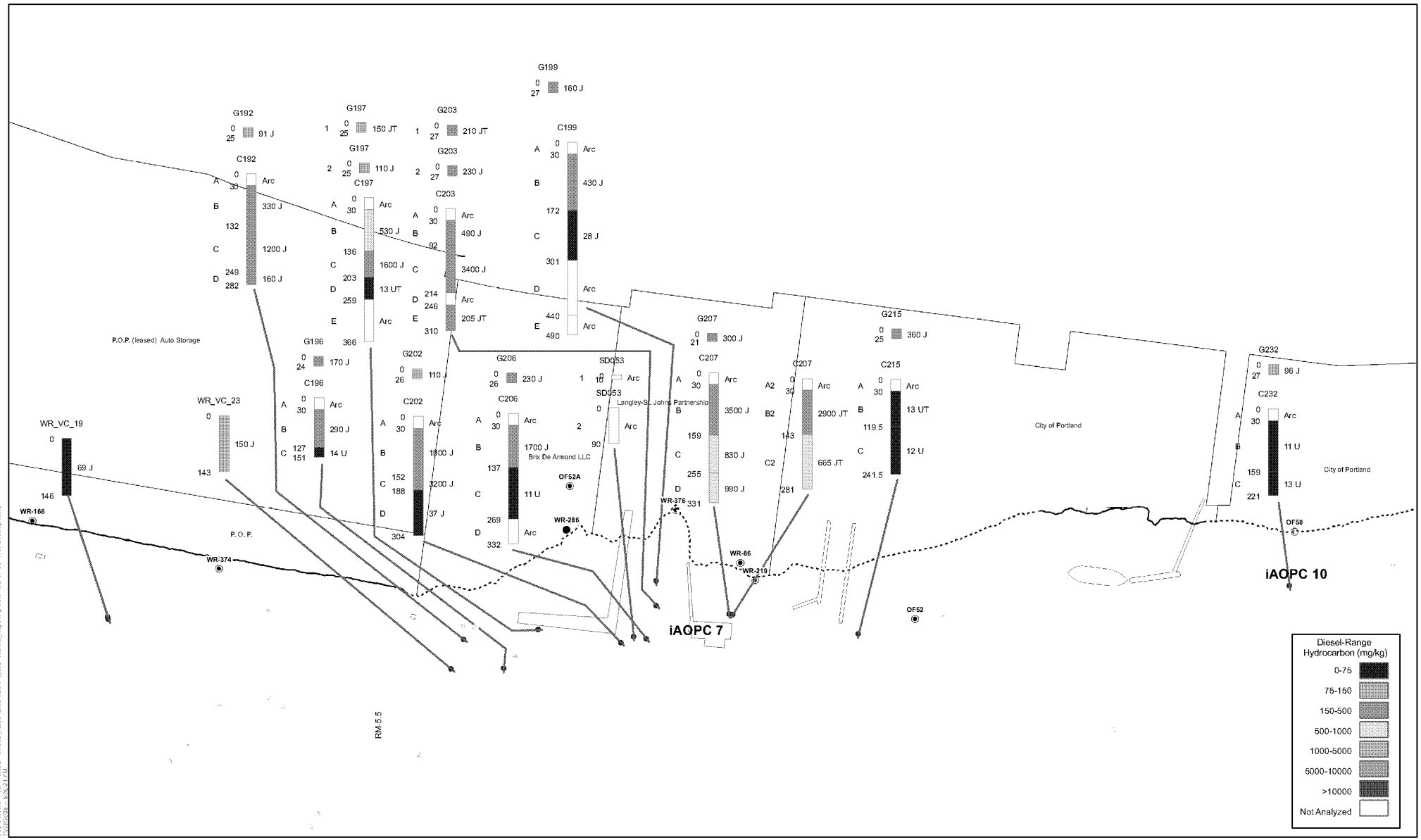
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.6-9**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Diesel-Range Hydrocarbons (mg/kg)**
**iAOPC 7**

BZTO104(e)032670




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

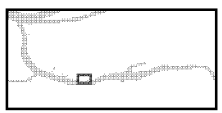
0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

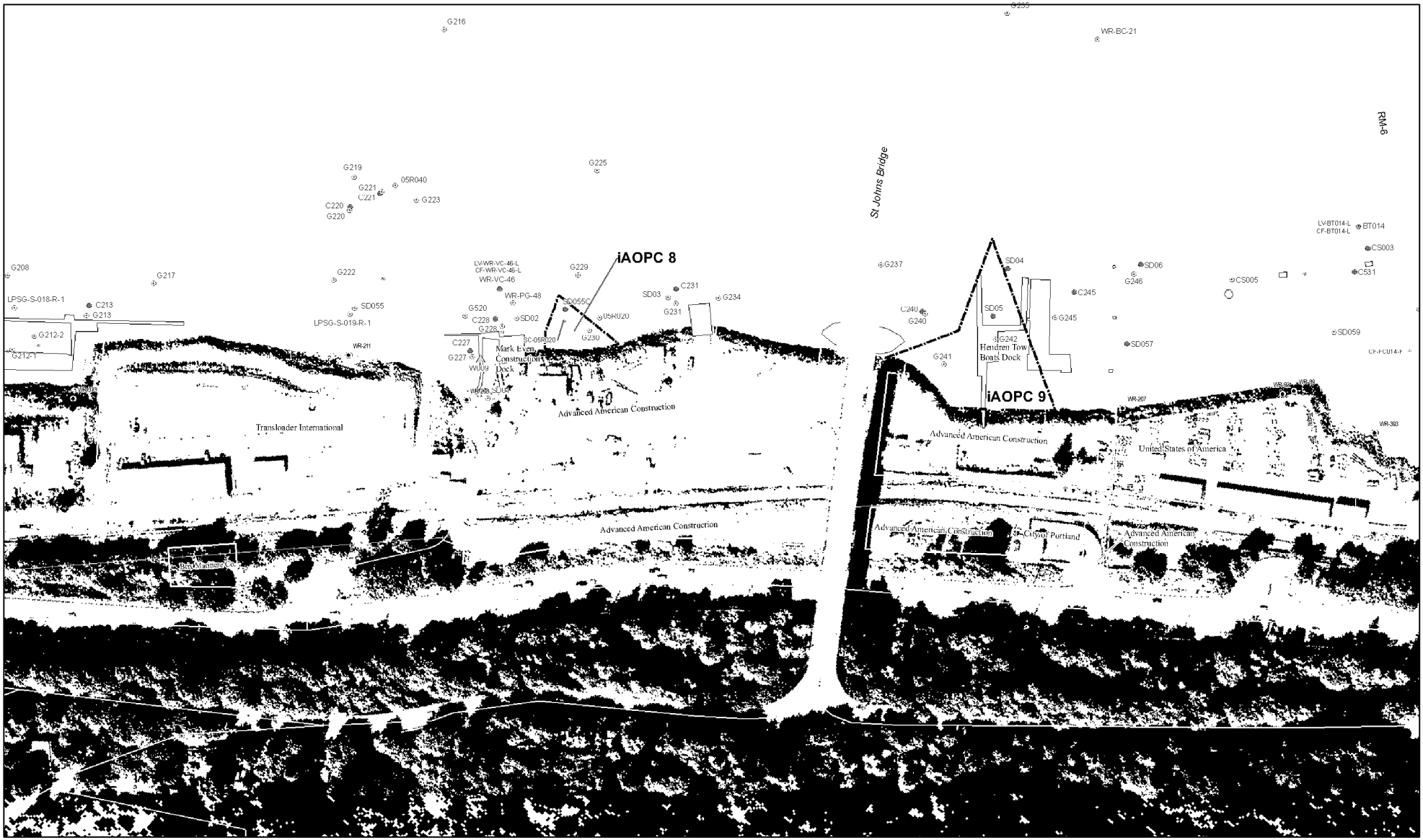
**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)



**Map 11.3.6 - 10**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Diesel-Range Hydrocarbon (mg/kg)**
**iAOPC 7**

BZTO104(e)032671




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES
Transportation, Property boundaries: Metro RLIS.

Channel & River miles: US Army Corps of Engineers.

Bathymetric Information: David Evans and Associates, Inc.

RLIS Aerial Images: February 2005 'leaf off' flight (6" pixel).

iAOPCs
River Mile
Navigation Channel
River 13ft NAVD88

Docks and Structures
Capping
Dredging (Post 1997)

**Bathymetric Change**
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening

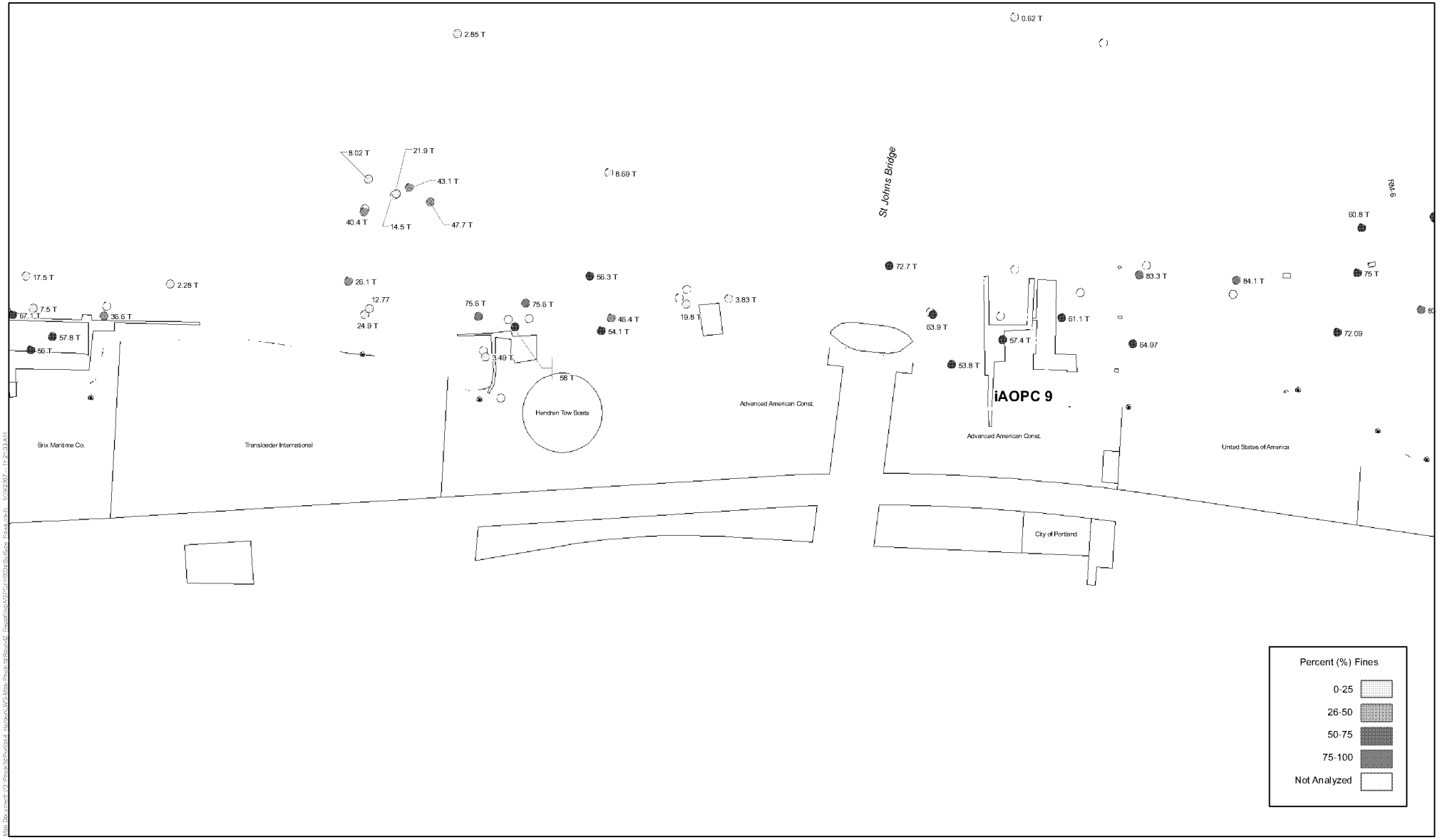
Clam, CF
Mudworm, LV
Crayfish, CR
Sculpin, SC
Multiplate Invertebrates, MI

Surface Water
Surface Sediment
Subsurface Sediment
TZW Sample Location (+38cm BML)

Active Outfalls
Unknown Outfalls
Abandoned Outfalls

**Map 11.3.7-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**iAOPC Site Overview**
**iAOPC 8,9**

BZTO104(e)032672




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Navigation Channel
- River_13ft_NAVD88

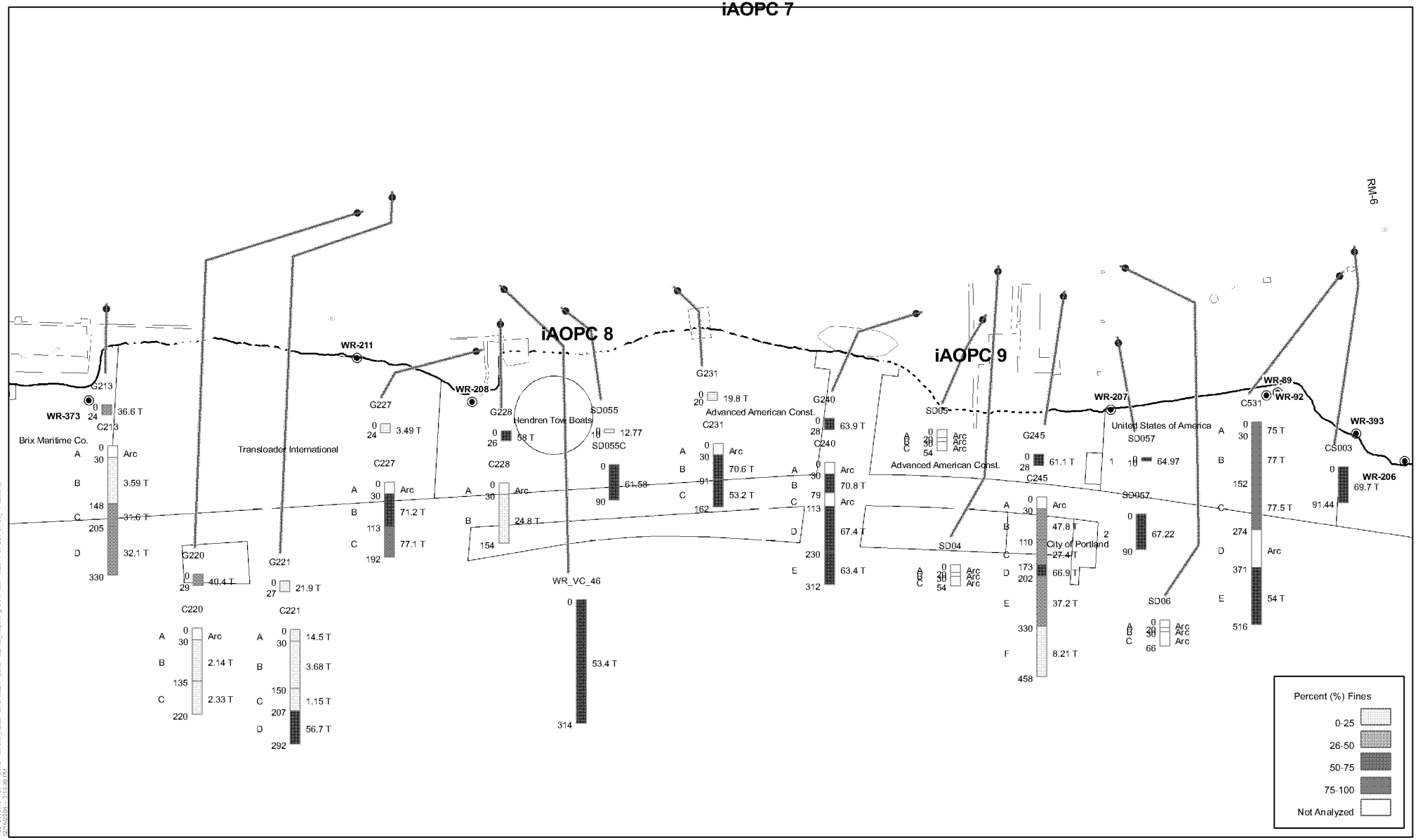
**Bathymetric Change**

- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.7-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Texture**
**Percent (%) Fines**
**iAOPC 8,9**

BZTO104(e)032673




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

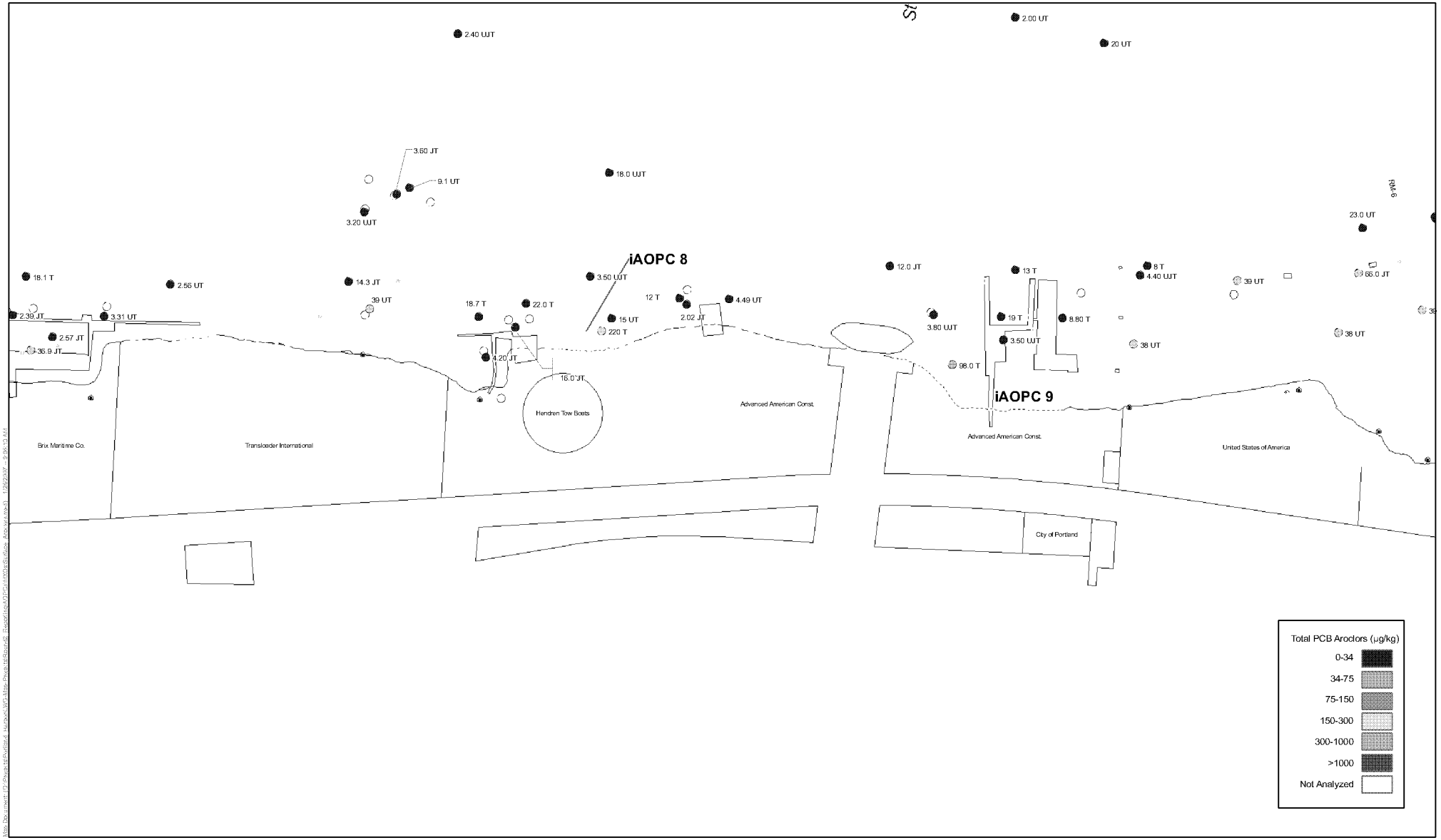
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.7- 2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 8, 9**

BZTO104(e)032674




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

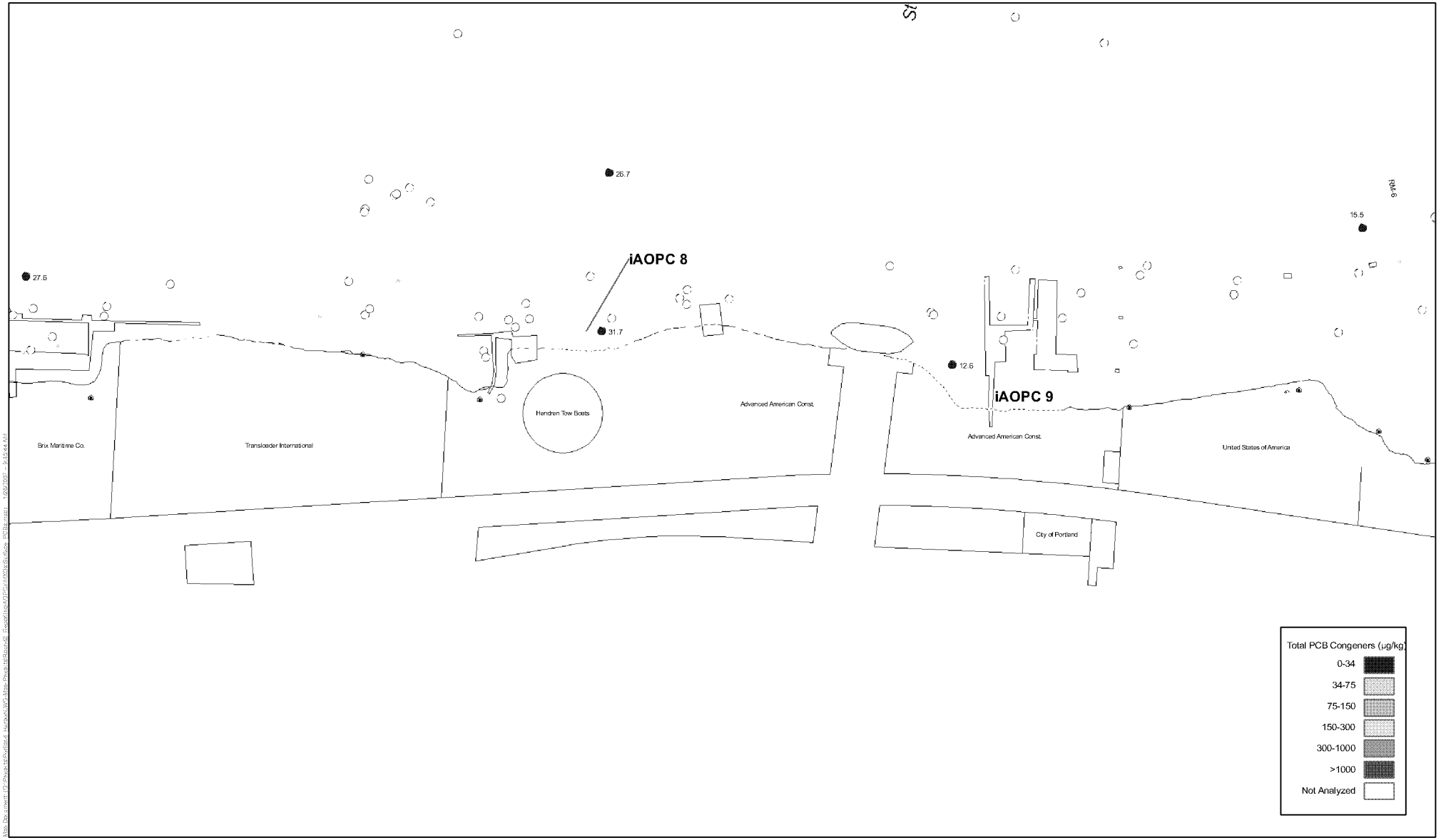
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.7-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 8,9**

BZTO104(e)032675




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

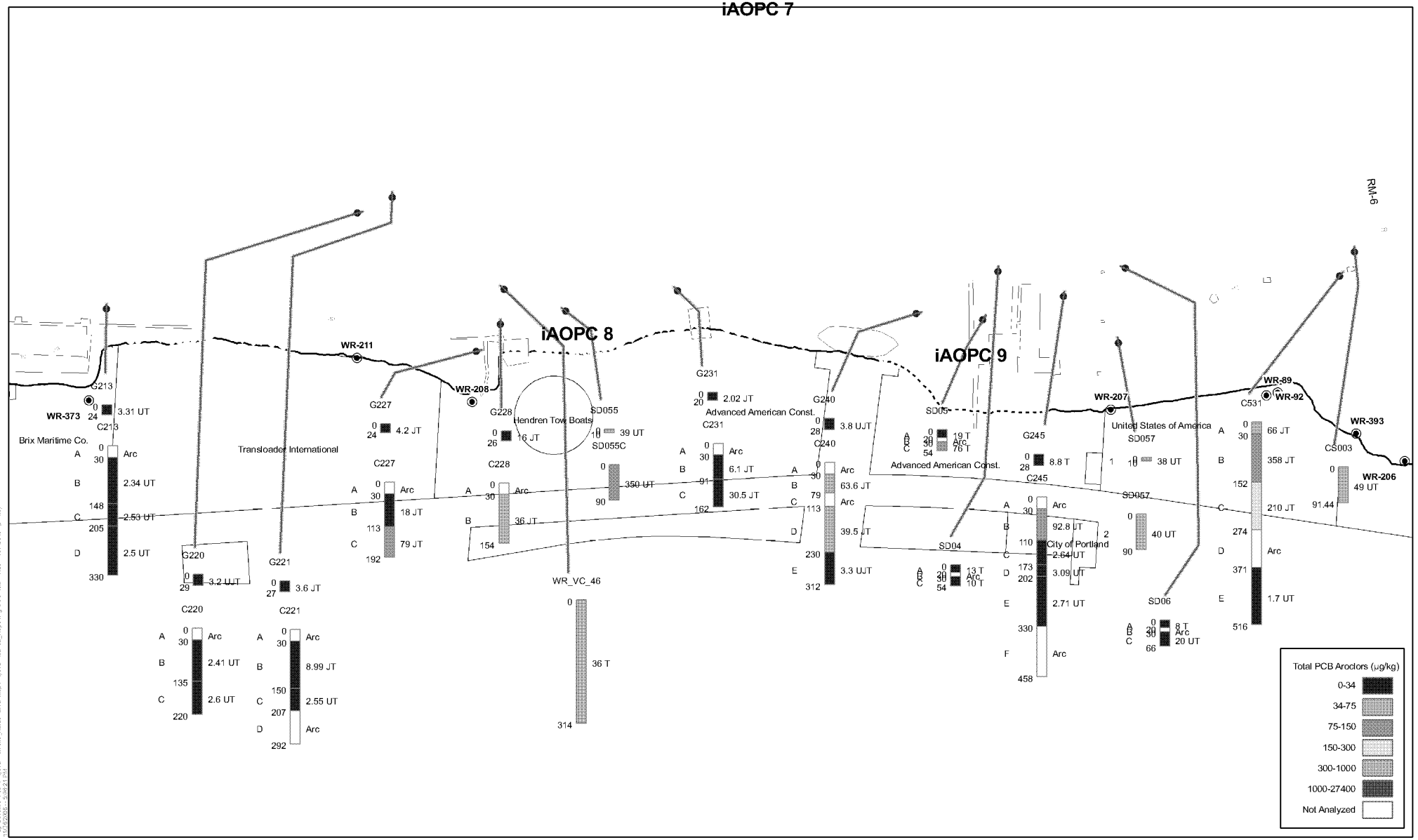
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.7-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 8,9**

BZTO104(e)032676




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

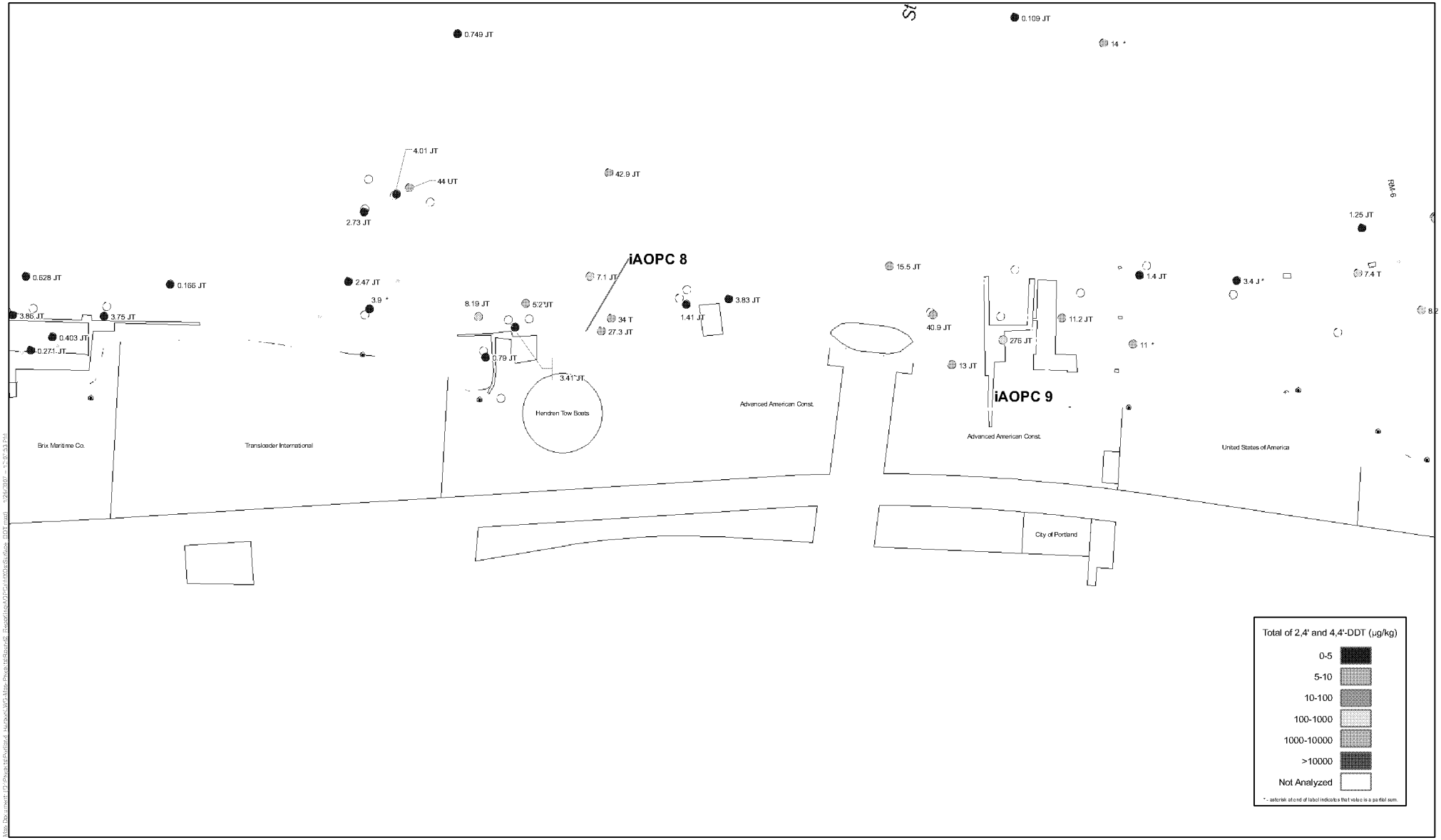
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

**Map 11.3.7-5**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 8, 9**

BZTO104(e)032677




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

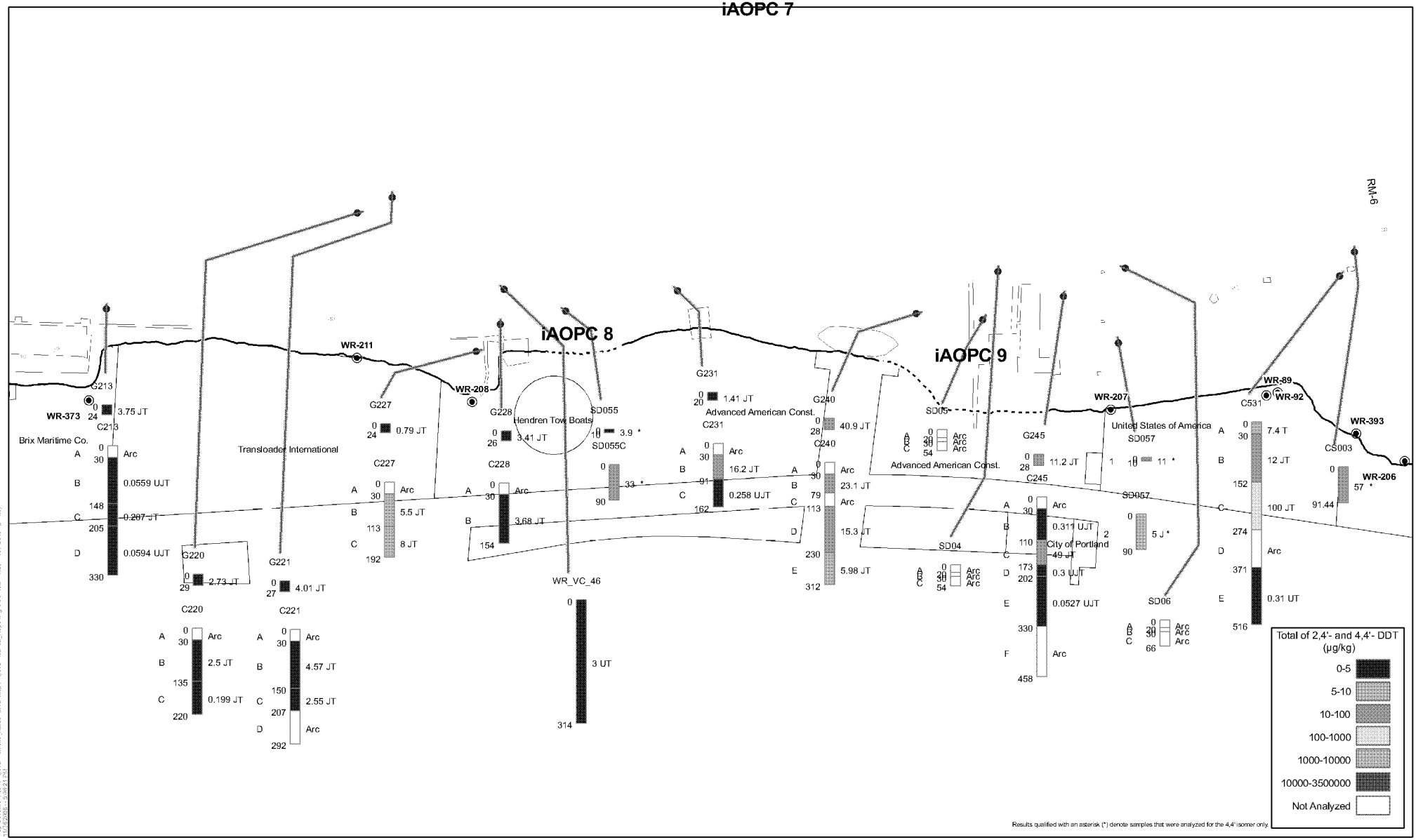
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

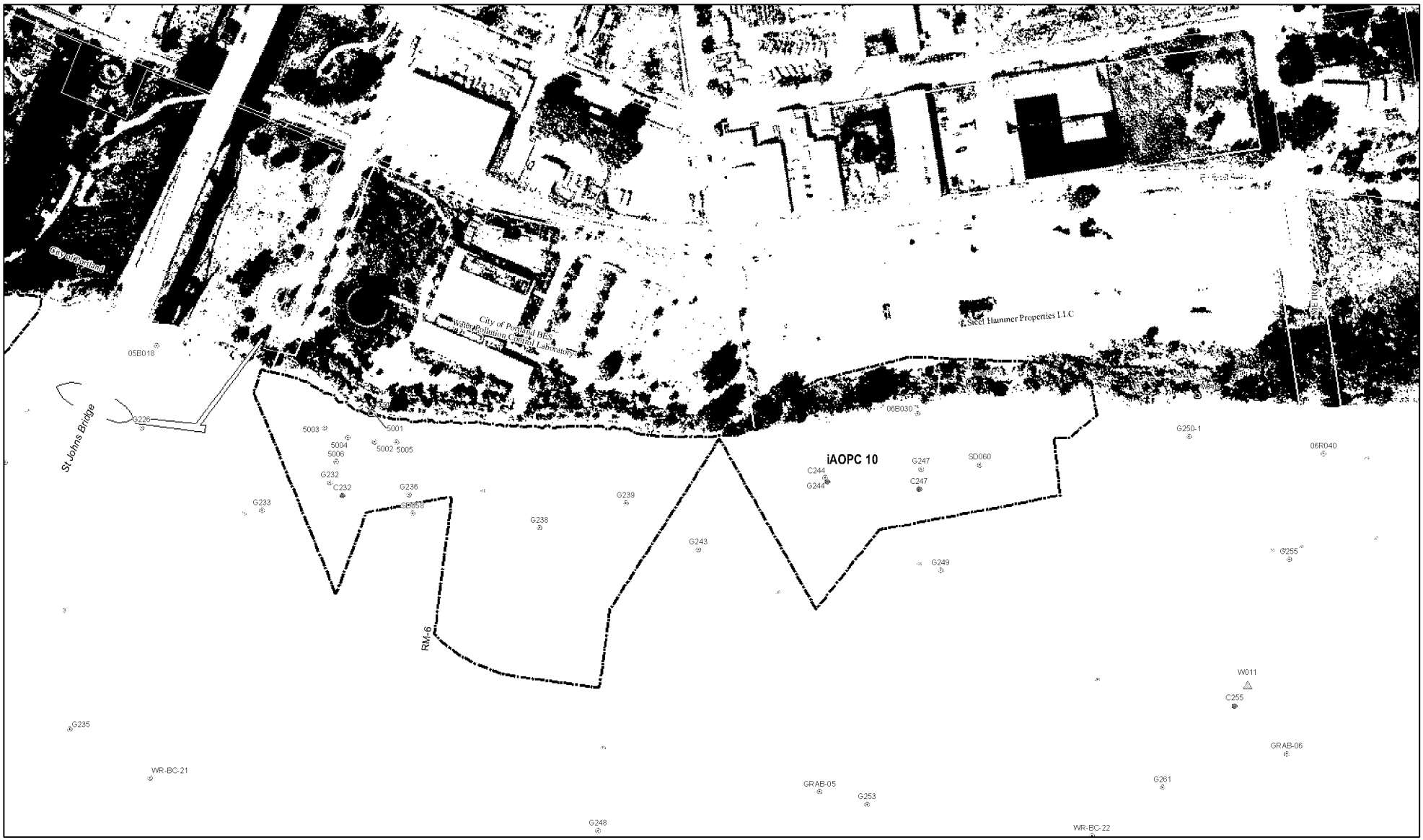
**Map 11.3.7-6**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total of 2,4' and 4,4'-DDT (µg/kg)**
**iAOPC 8,9**

BZTO104(e)032678




**Map 11.3.7-7**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total of 2,4'- and 4,4'- DDT (µg/kg)**
**iAOPC 8, 9**

BZTO104(e)032679




Map Document: (P:\Projects\Portland_Harbor\LWG-Map_Projects\Round2_Reporting\AOPCs\SiteOverviews\d11232007.mxd)
2/6/2007 -- 9:13:12 AM

integral consulting inc.

0 100 200 300 Feet

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property boundaries: Metro RLIS.

Channel & River miles: US Army Corps of Engineers.

Bathymetric Information: David Evans and Associates, Inc.

RLIS Aerial Images: February 2005 "leaf off" flight (6" pixel).

iAOPCs
River Mile
Navigation Channel
River 13ft NAVD88

Docks and Structures
Capping
Dredging (Post 1997)

Bathymetric Change
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening

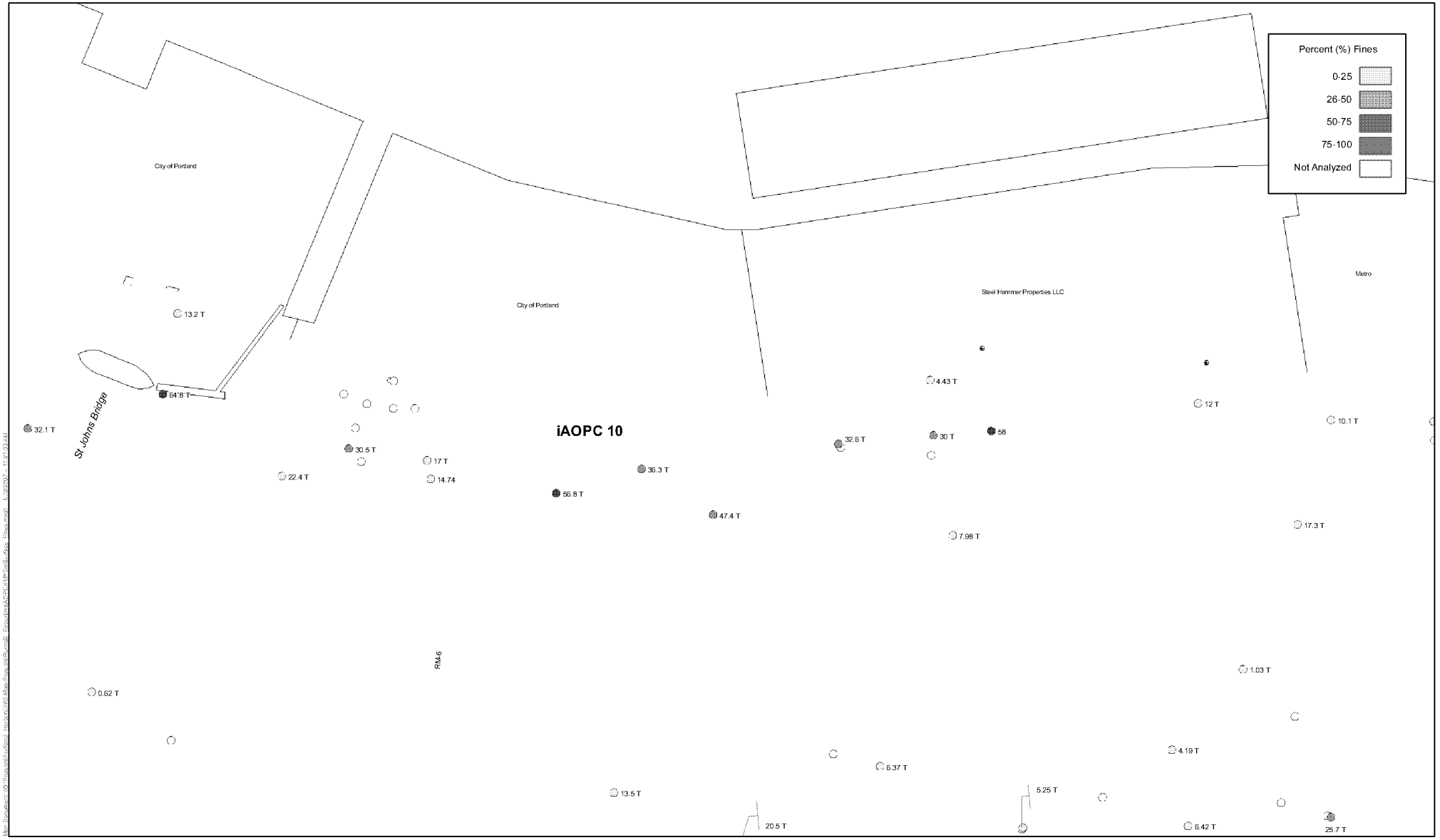
Clam, CF
Mudworm, LV
Crayfish, CR
Sculpin, SC
Multiplate Invertebrates, MI

Surface Water
Surface Sediment
Subsurface Sediment
TZW Sample Location (<38cm BML)

Active Outfalls
Unknown Outfalls
Abandoned Outfalls

**Map 11.3.8-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**iAOPC Site Overview**
**iAOPC 10**

BZTO104(e)032680




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

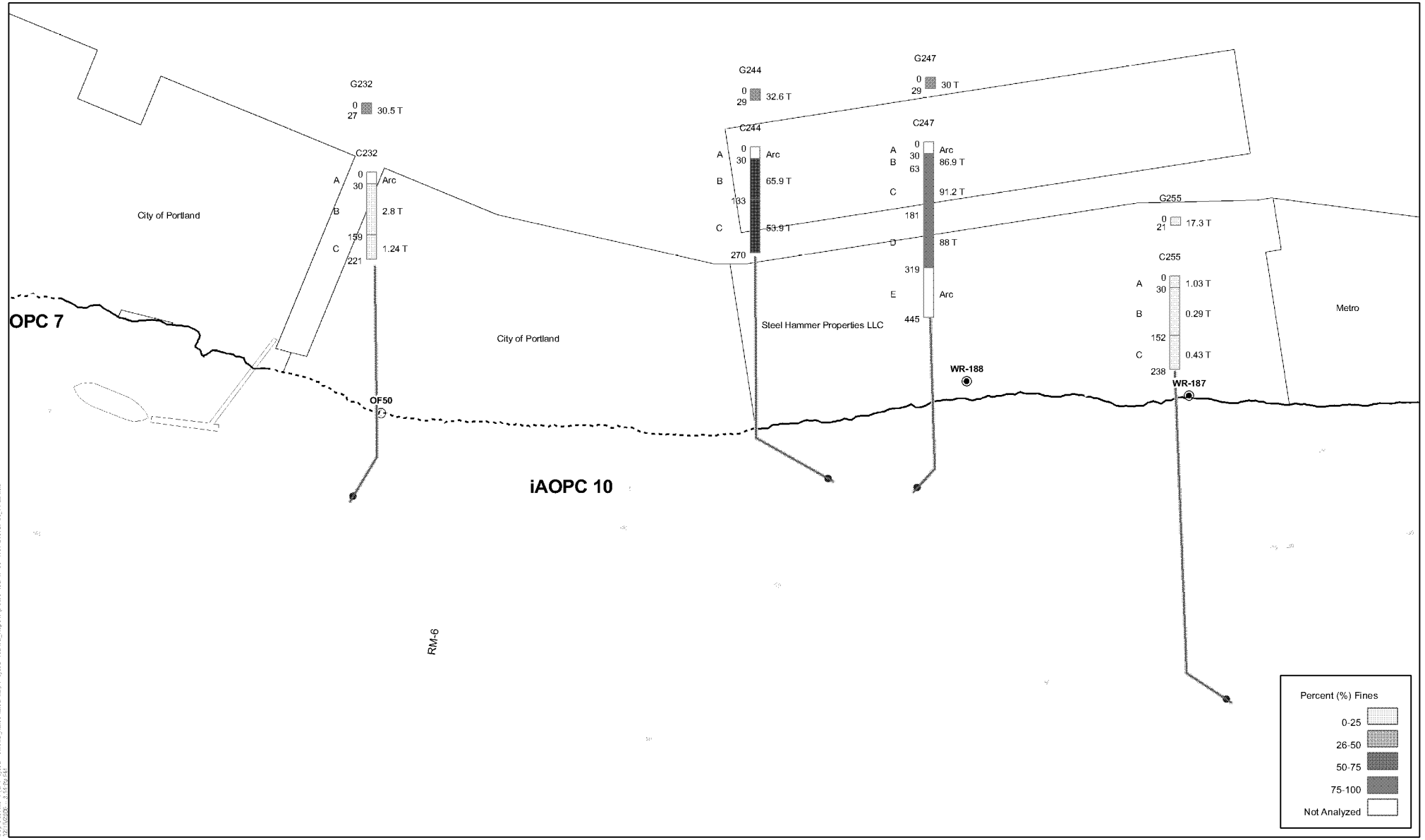
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

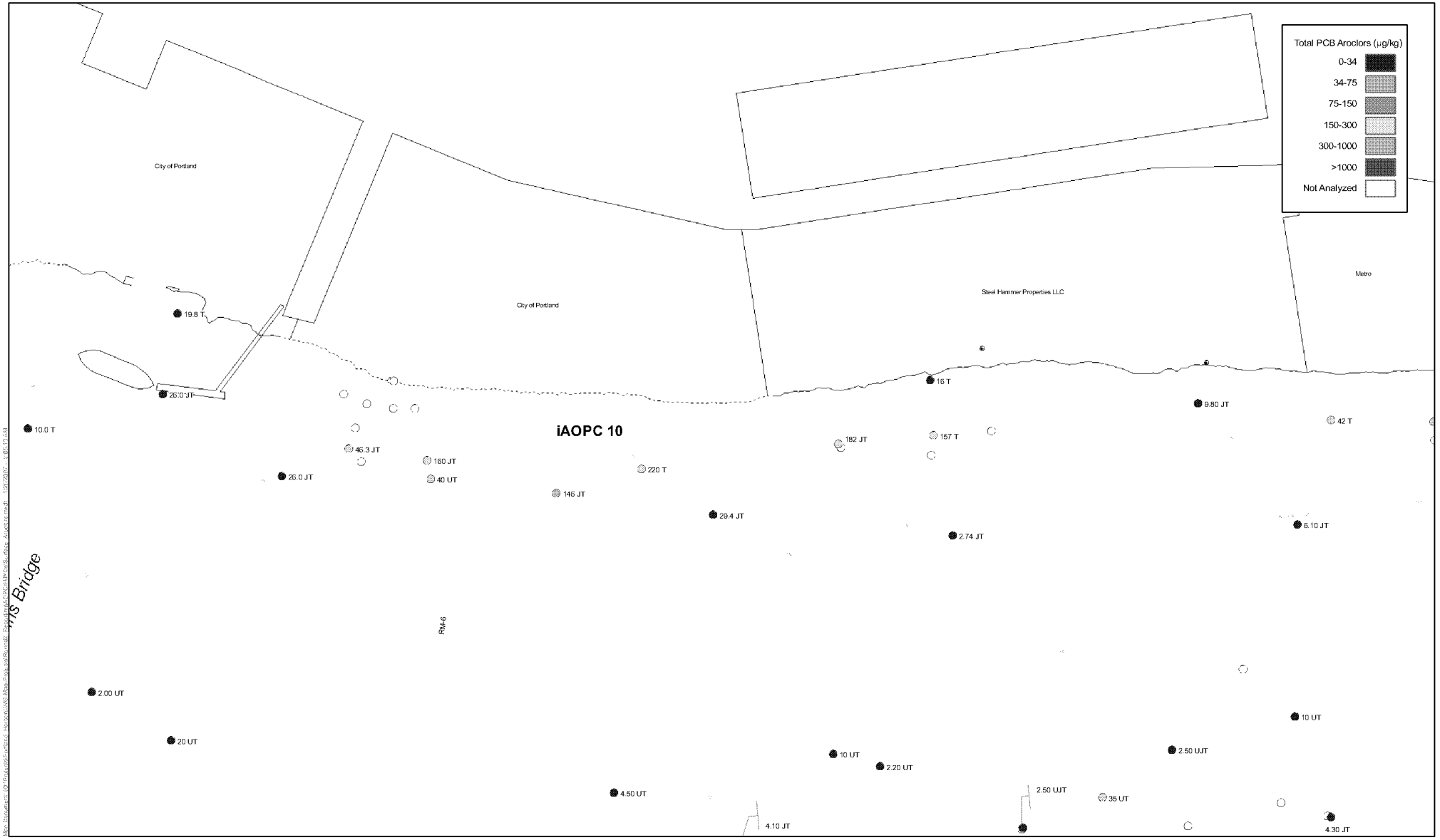
**Map 11.3.8-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Texture**
**Percent (%) Fines**
**iAOPC 10**

BZTO104(e)032681




**Map 11.3.8- 2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 10**

BZTO104(e)032682




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

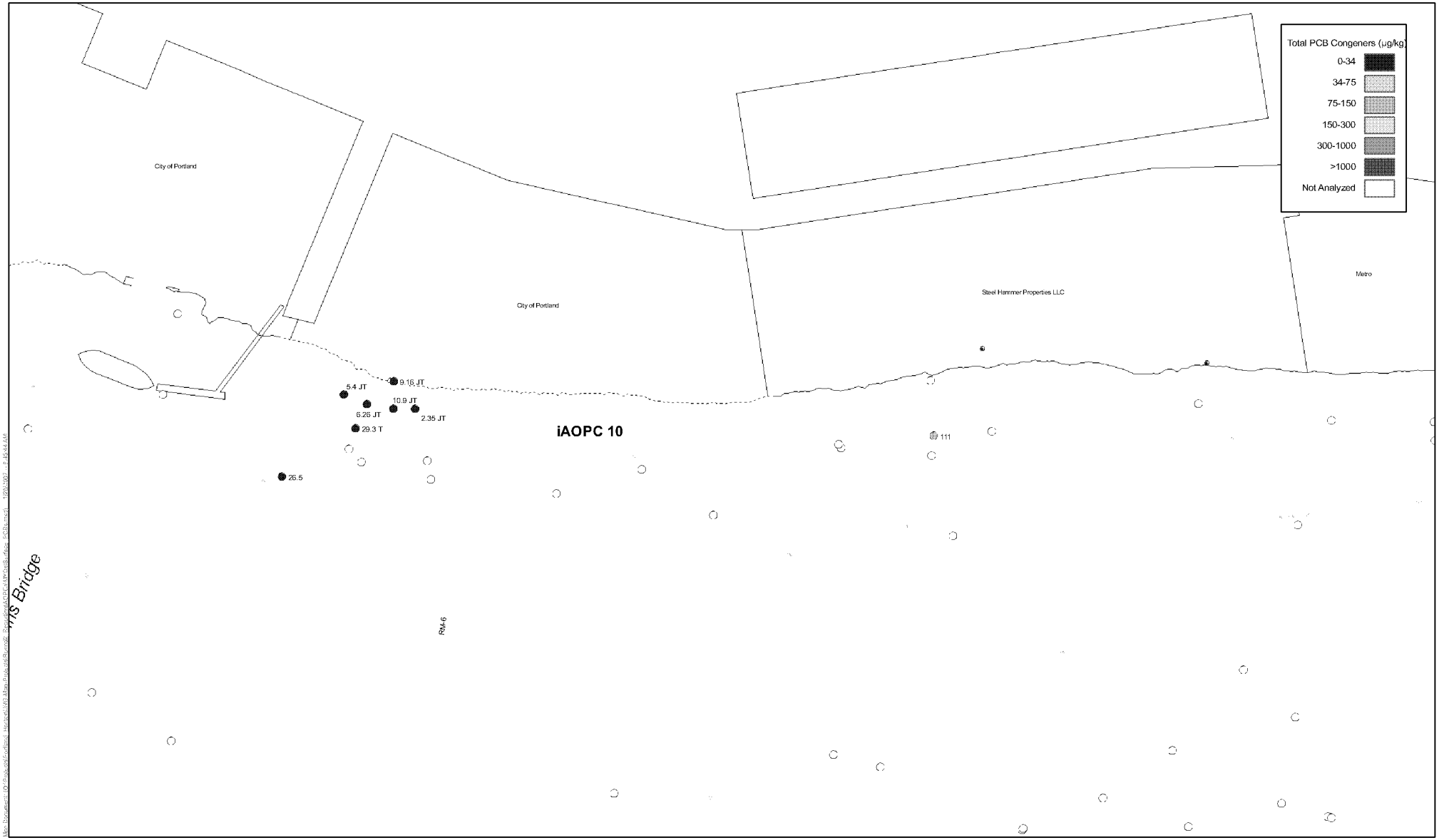
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.8-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 10**

BZTO104(e)032683




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

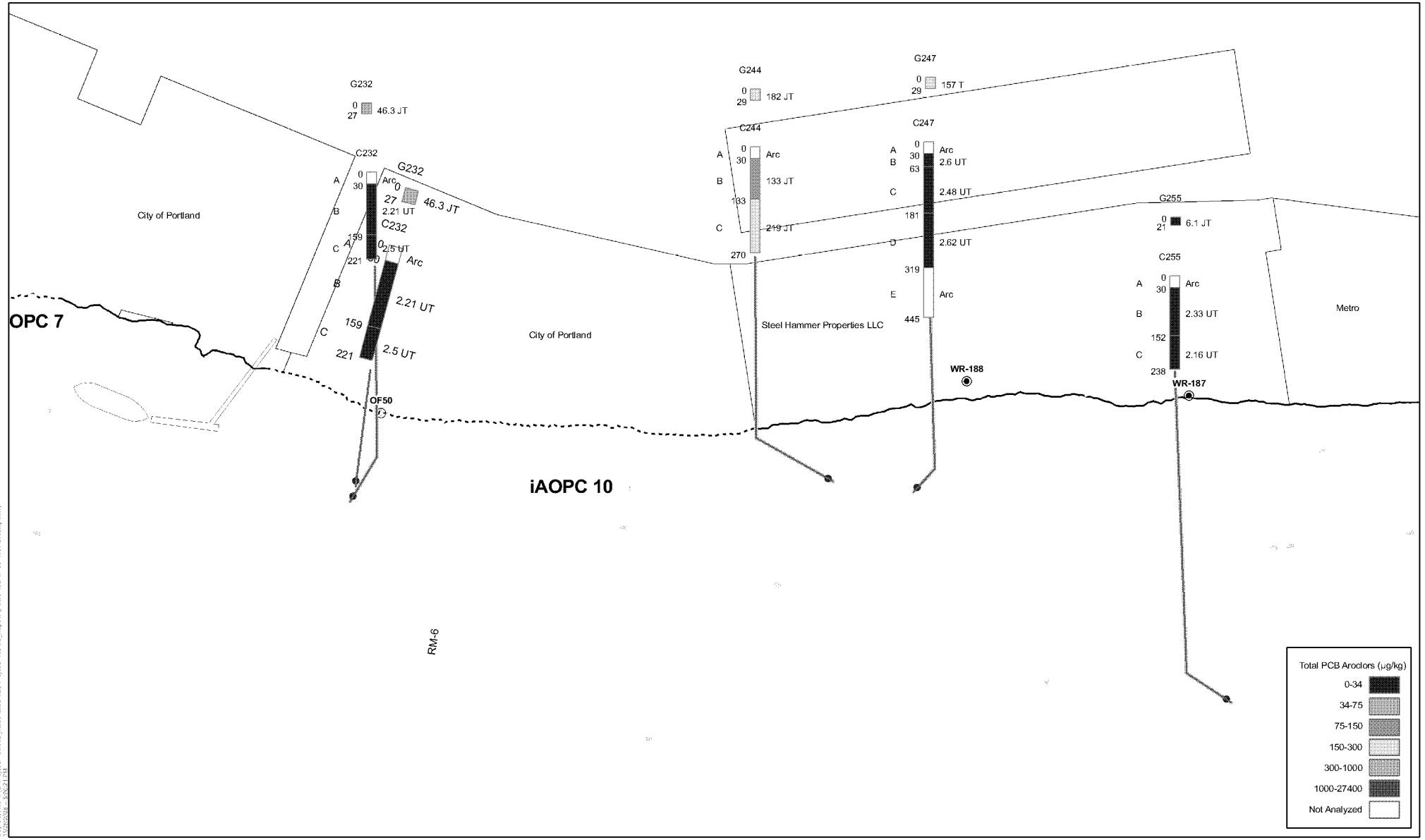
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.8-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 10**

BZTO104(e)032684




integral consulting inc.

LWG Lower Willamette Group

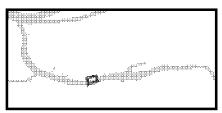
0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

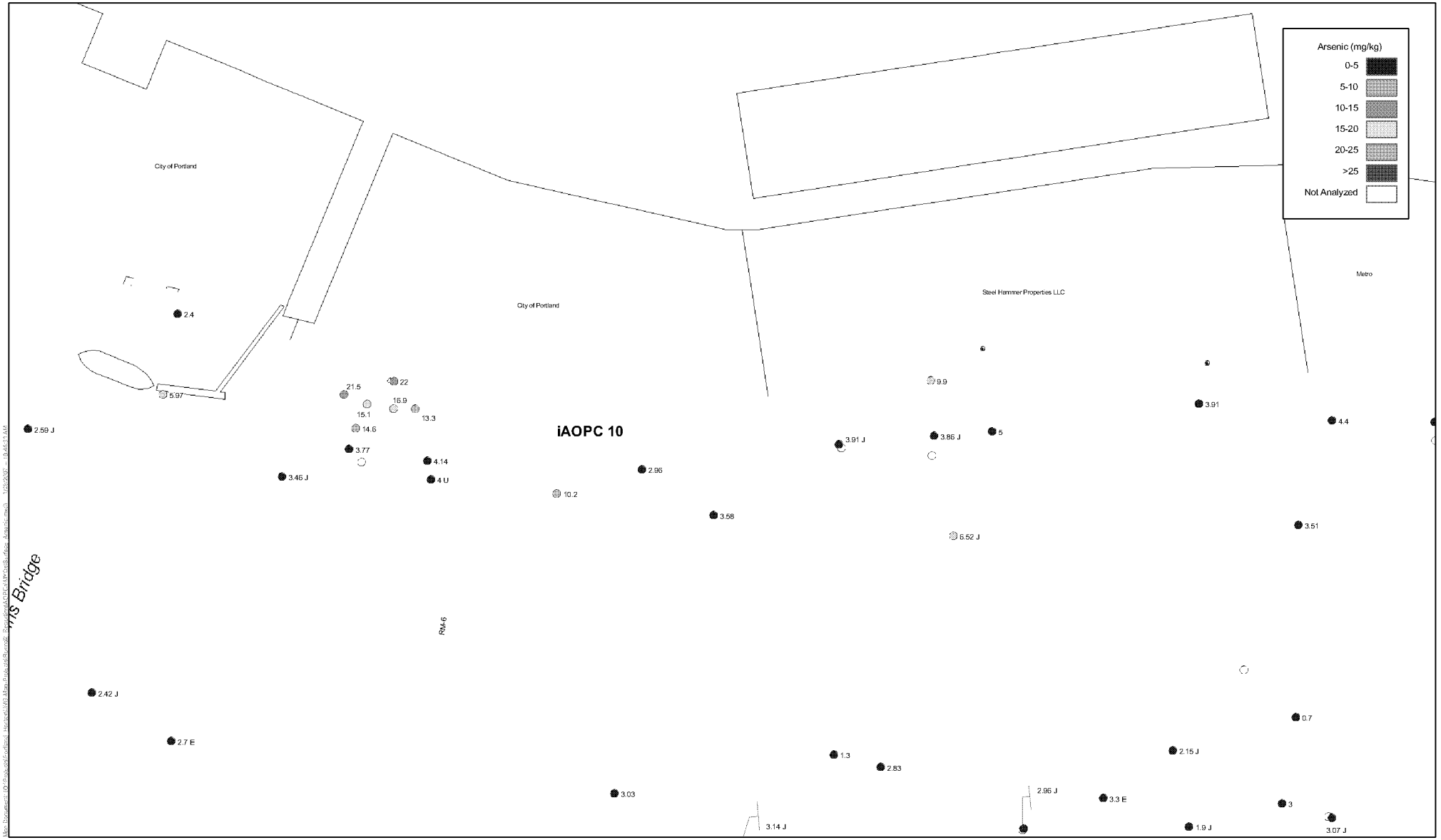
**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)



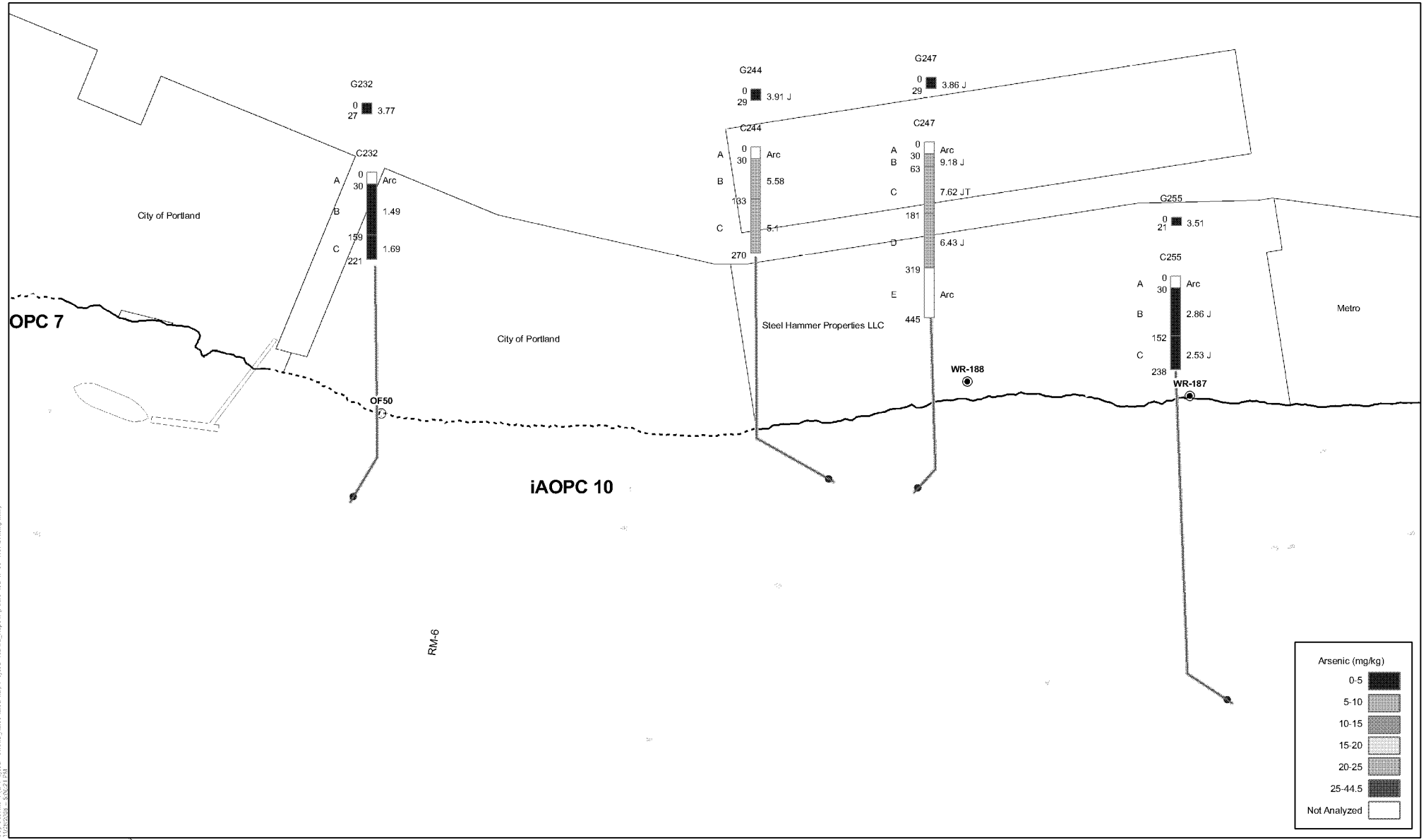
**Map 11.3.8-5**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 10**

BZTO104(e)032685




**Map 11.3.8-6**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Arsenic (mg/kg)**
**iAOPC 10**

BZTO104(e)032686




integral consulting inc.

LWG Lower Willamette Group

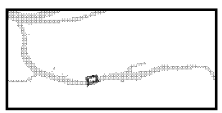
0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.,
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)



**Map 11.3.8-7**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Arsenic (mg/kg)**
**iAOPC 10**

BZTO104(e)032687

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES
Transportation, Property boundaries: Metro RLIS.

Channel & River miles: US Army Corps of Engineers.

Bathymetric Information: David Evans and Associates, Inc.

RLIS Aerial Images: February 2005 'leaf off' flight (6" pixel).

iAOPCs
River Mile
Navigation Channel
River 13ft NAVD88

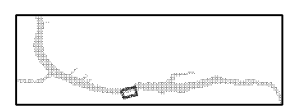
Docks and Structures
Capping
Dredging (Post 1997)

**Bathymetric Change**
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening

Clam, CF
Mudworm, LV
Crayfish, CR
Sculpin, SC
Multiplate Invertebrates, MI

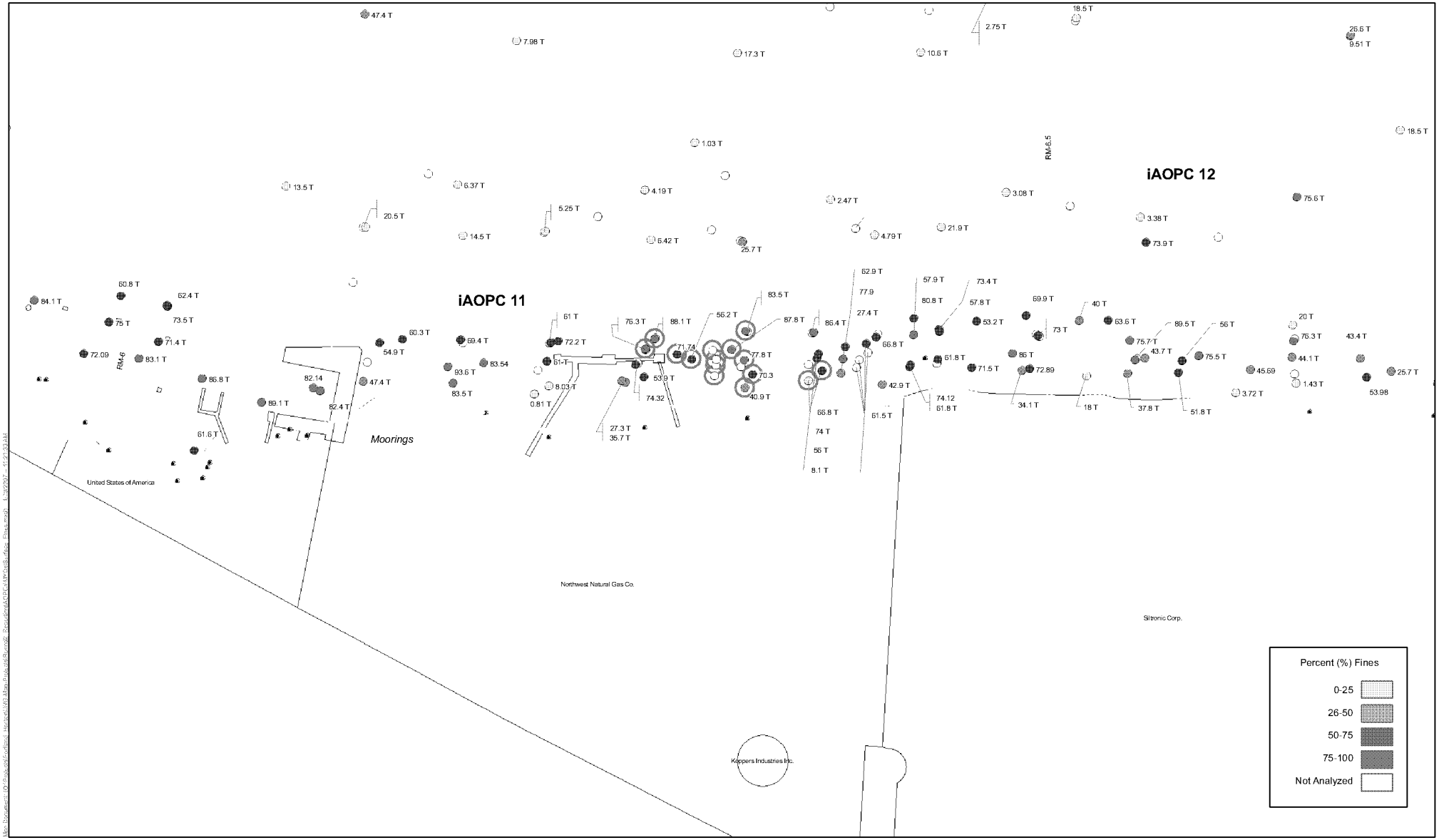
Surface Water
Surface Sediment
Subsurface Sediment
TZW Sample Location (<38cm BML)

Active Outfalls
Unknown Outfalls
Abandoned Outfalls



**Map 11.3.9-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**iAOPC Site Overview**
**iAOPC 11**

BZTO104(e)032688




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

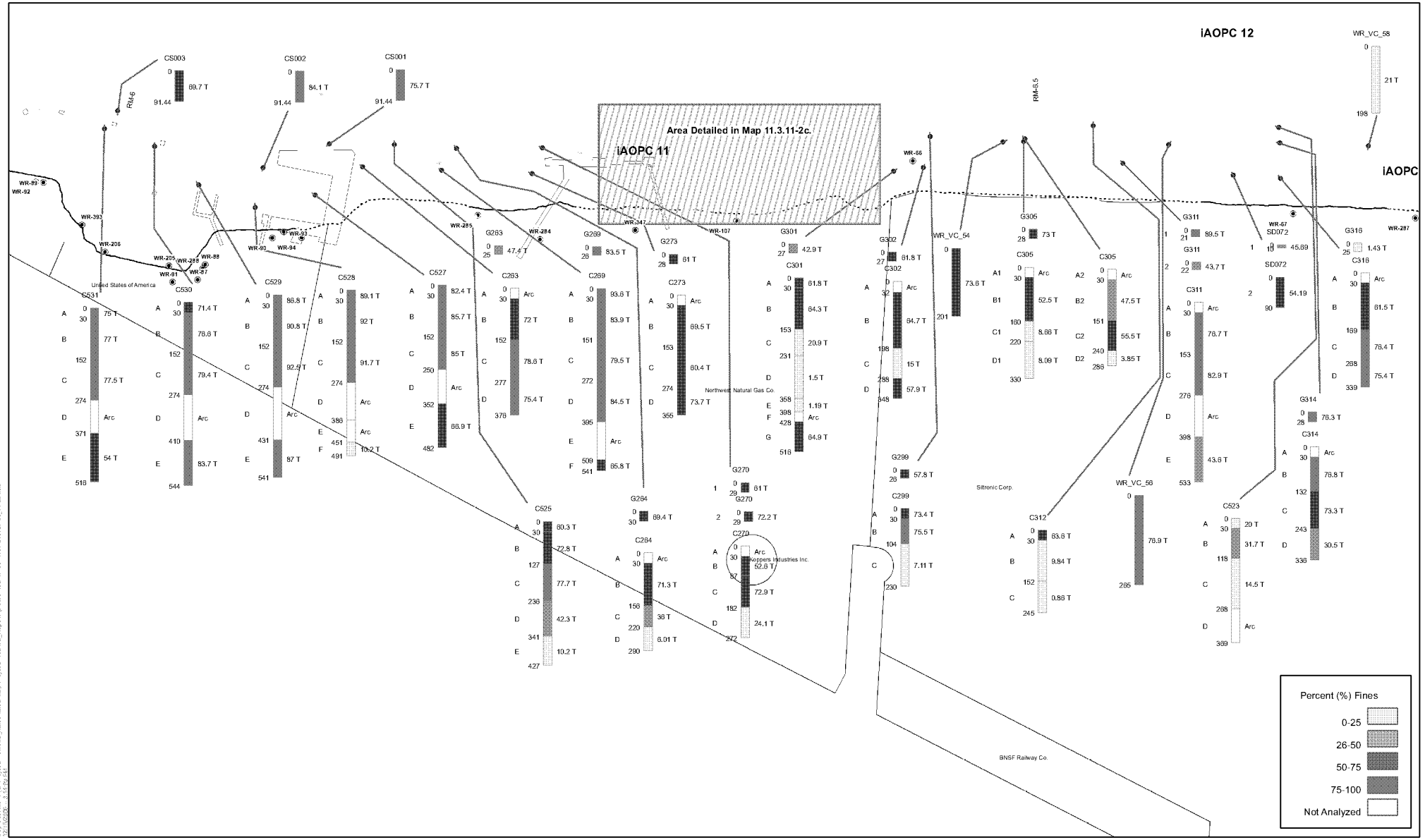
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.9-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Texture**
**Percent (%) Fines**
**iAOPC 11**

BZTO104(e)032689




integral consulting inc.

LWG Lower Willamette Group

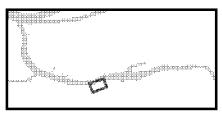
0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

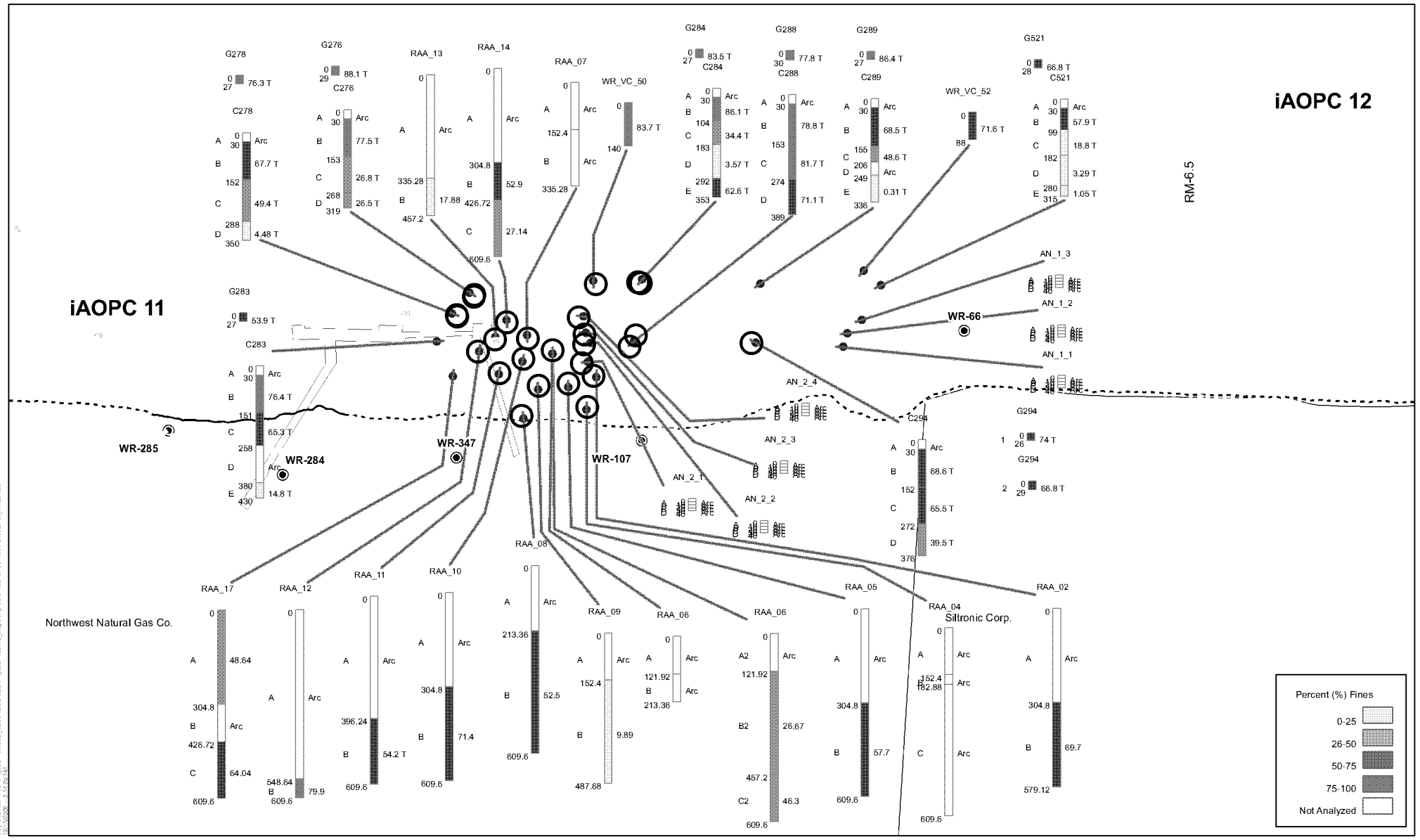
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)



**Map 11.3.9- 2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 11**

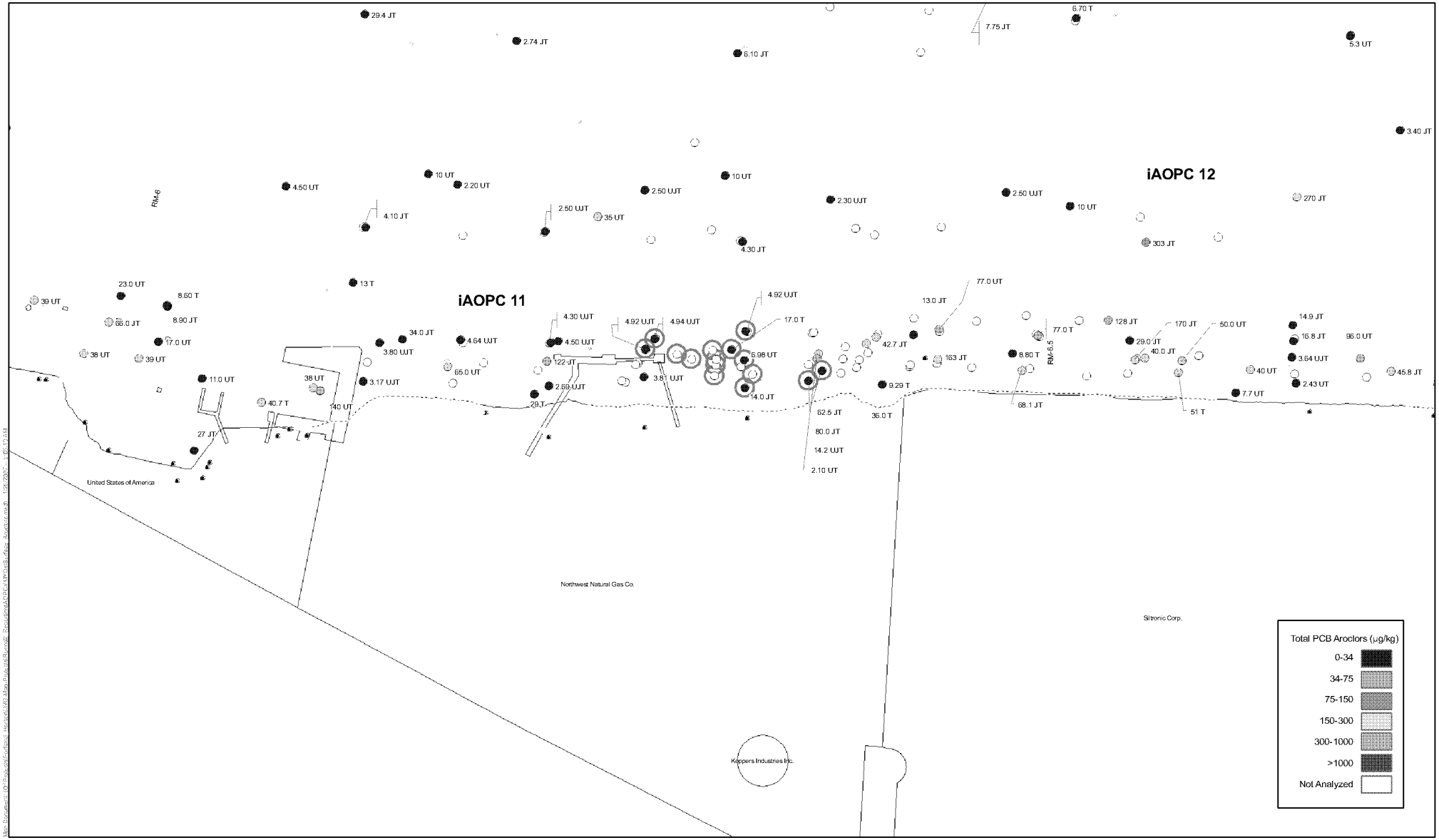
Map Document: (U:\Projects\Portland_Harbor\LWG Maps Projects\Round2_Report\LWG_Rpt2_FigSubsurfSed_Fines.mxd)
2/7/2008 - 3:16:09 PM

BZTO104(e)032690




**Map 11.3.9- 2c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Texture**
**Percent (%) Fines**
**iAOPC 11**

BZTO104(e)032691




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.9-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 11**

BZTO104(e)032692

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

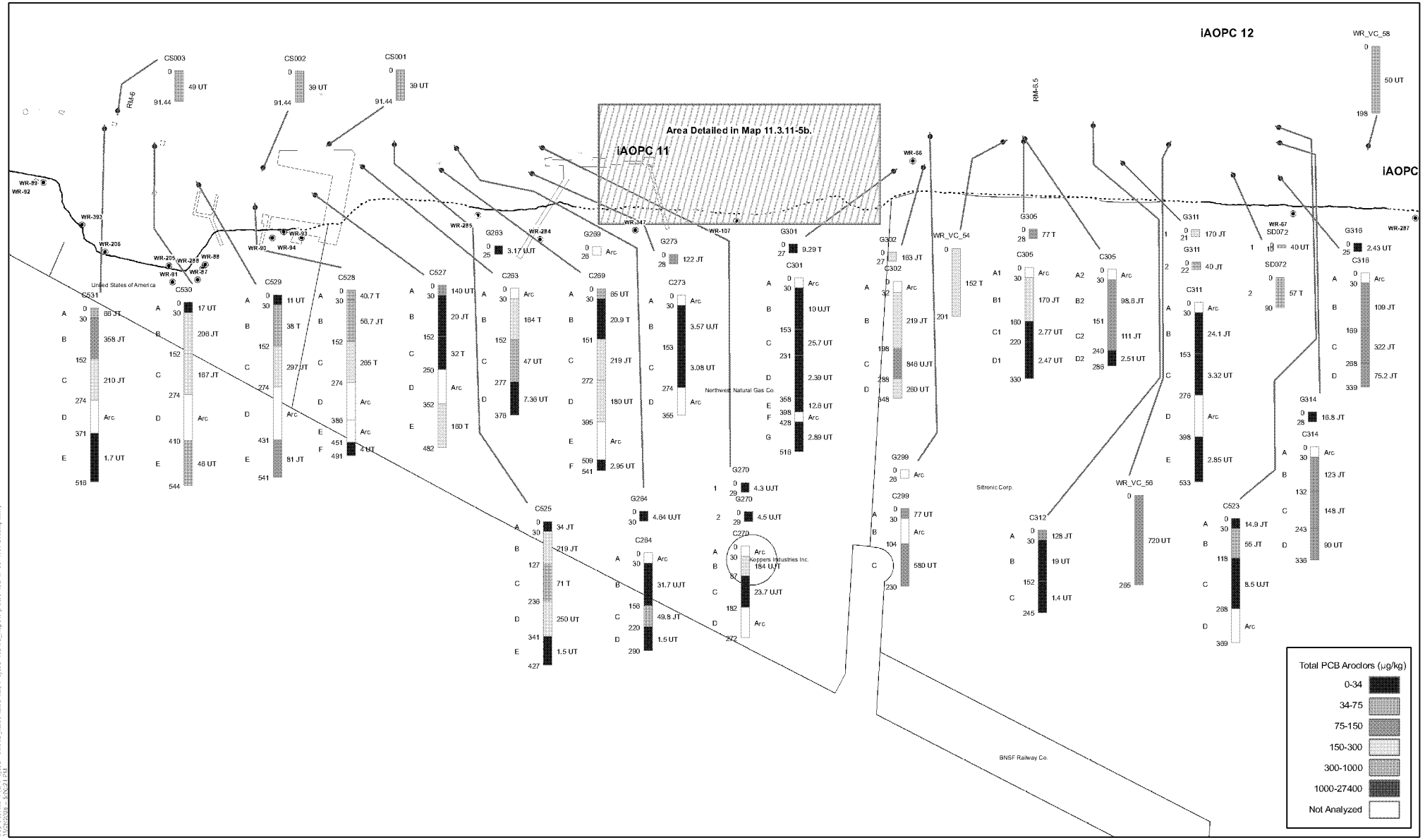
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.9-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 11**

BZTO104(e)032693




FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

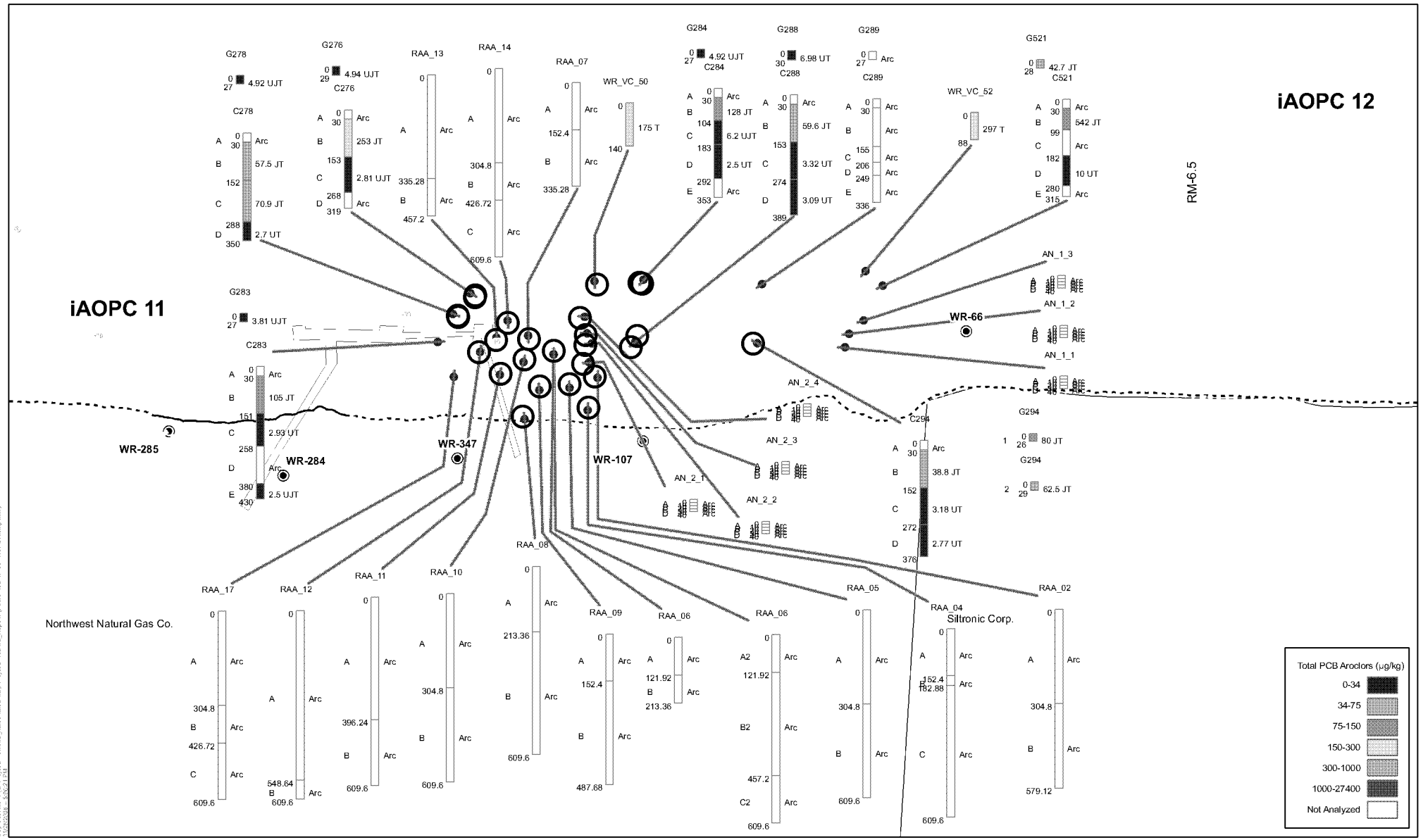
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

0 100 200 300 Feet

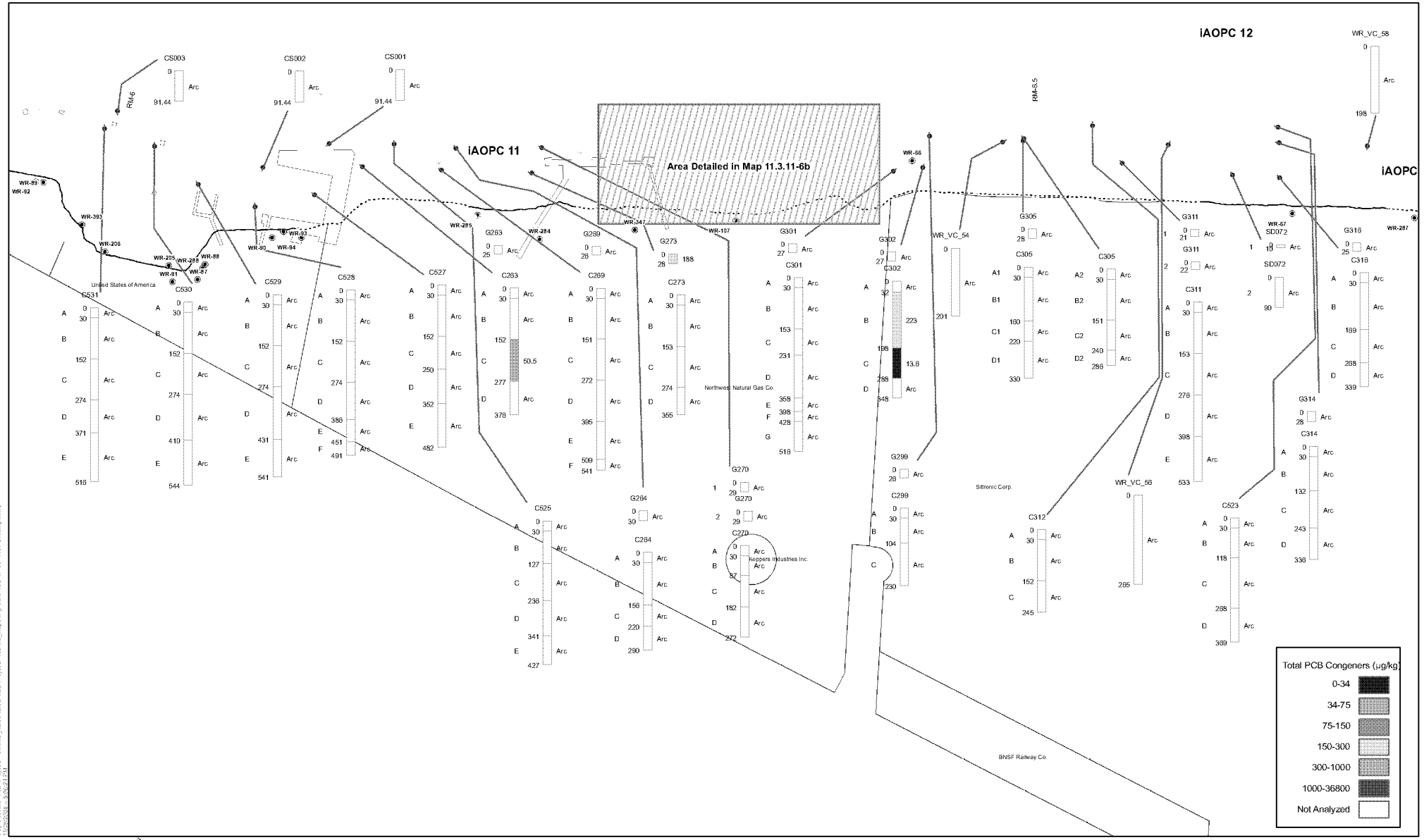
**Map 11.3.9 - 5a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 11**

BZTO104(e)032694



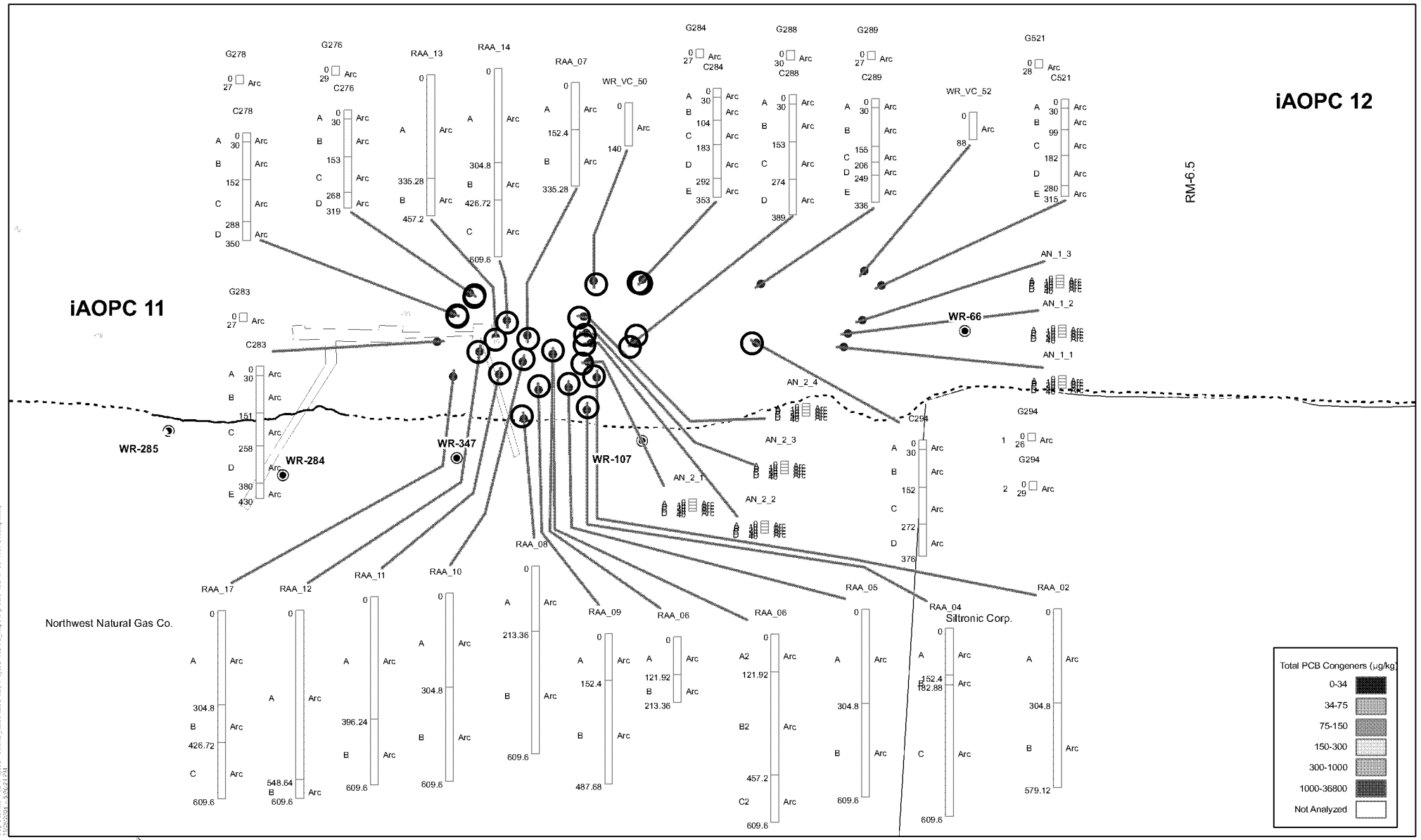

**Map 11.3.9- 5b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**
**iAOPC 11**

BZTO104(e)032695




**Map 11.3.9 - 6a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 11**

BZTO104(e)032696

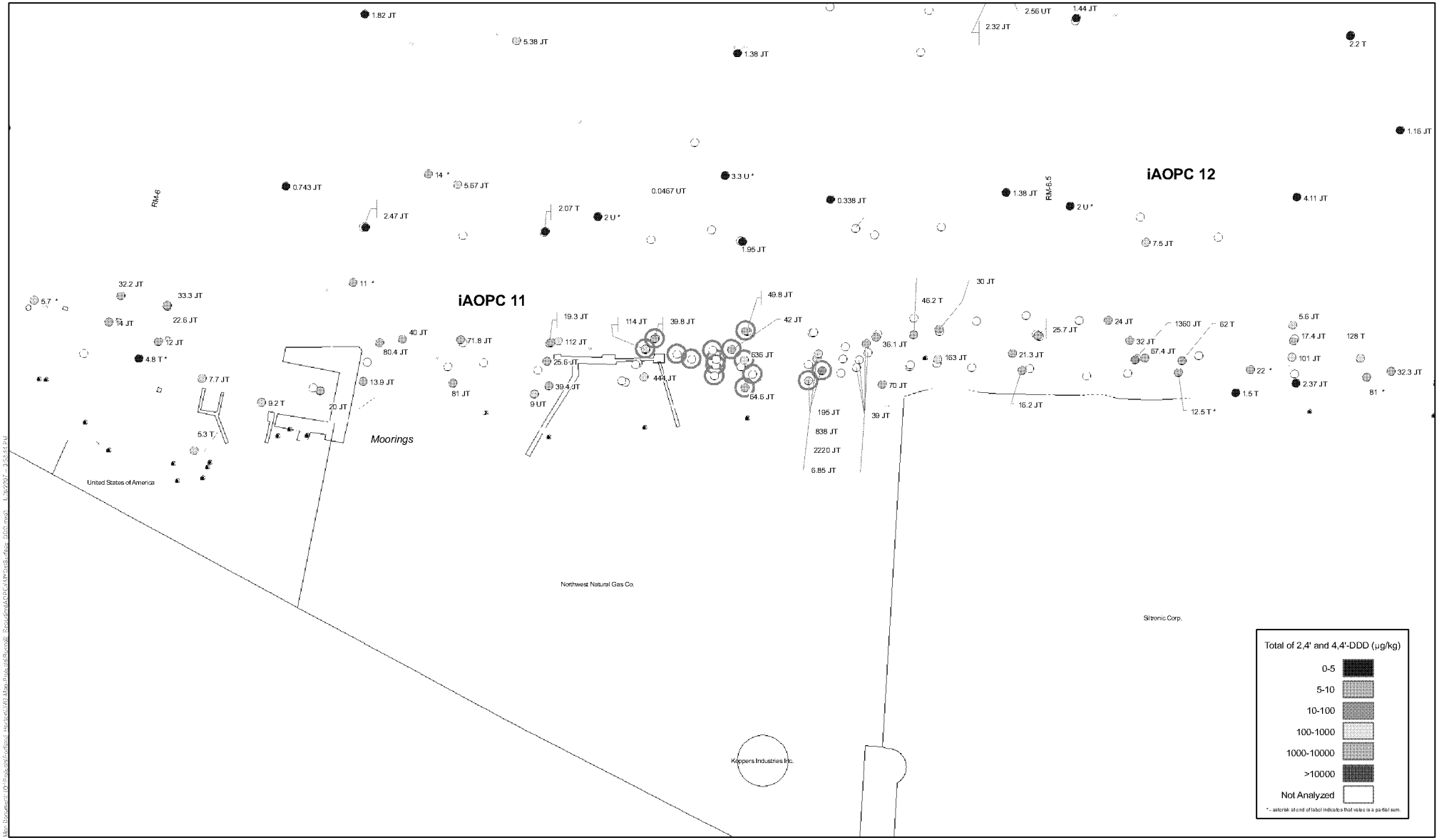



integral ecology inc.

LWG Lower Willamette Group

**Map 11.3.9- 6b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total PCB Congeners (µg/kg)**
**iAOPC 11**

BZTO104(e)032697




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

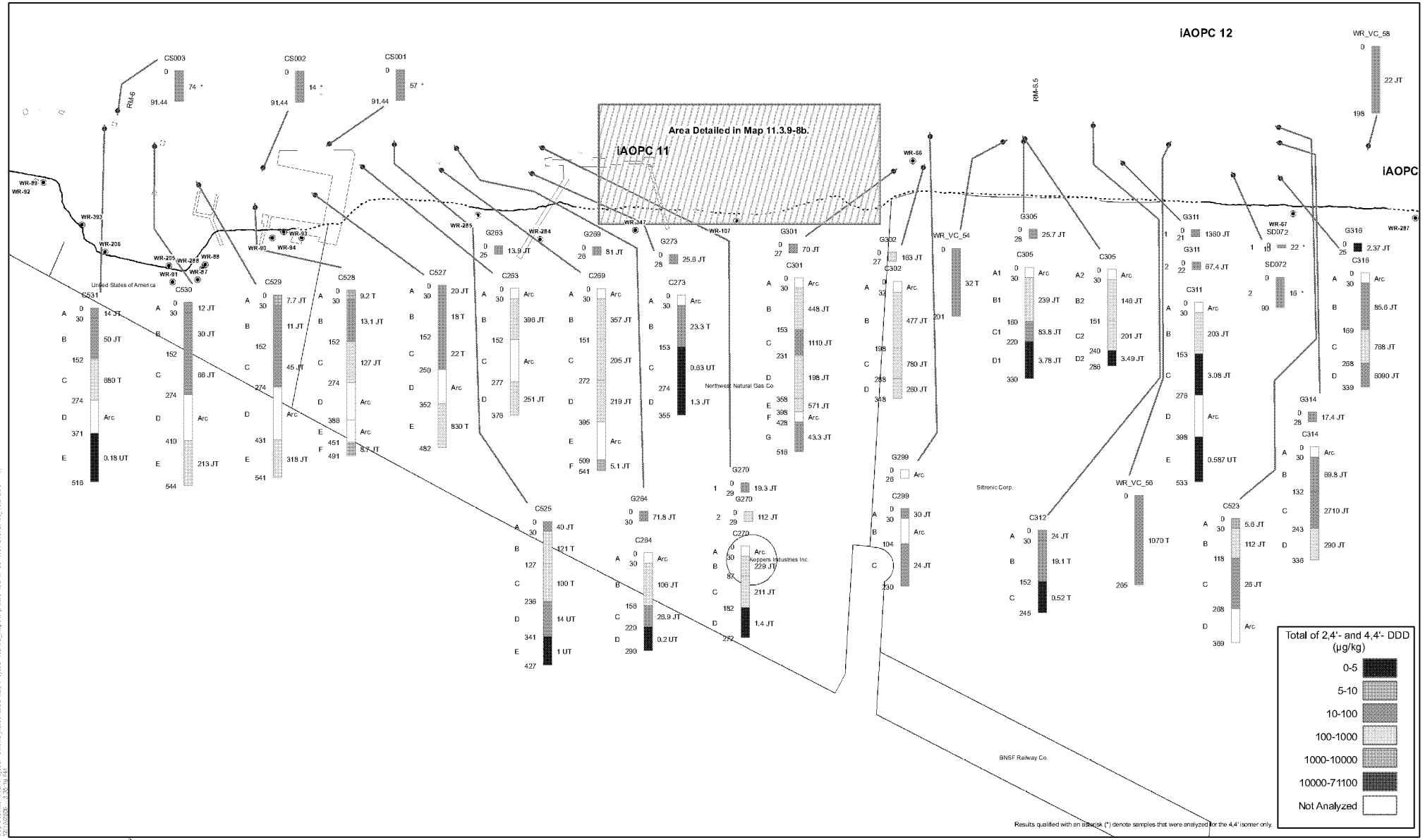
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- AOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.9-7**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Total of 2,4' and 4,4'-DDD (µg/kg)**
**iAOPC 11**

BZTO104(e)032698




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

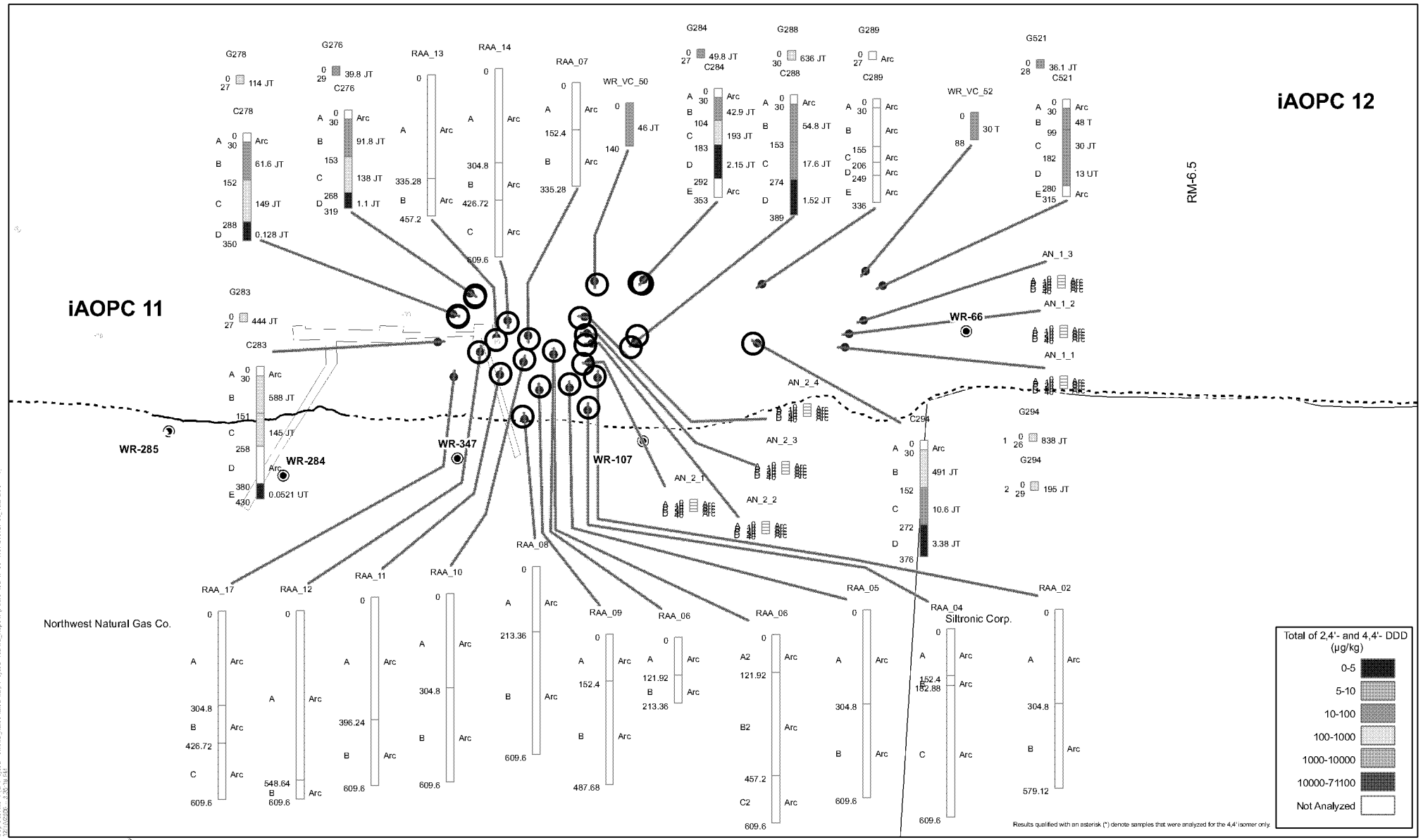
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel
- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

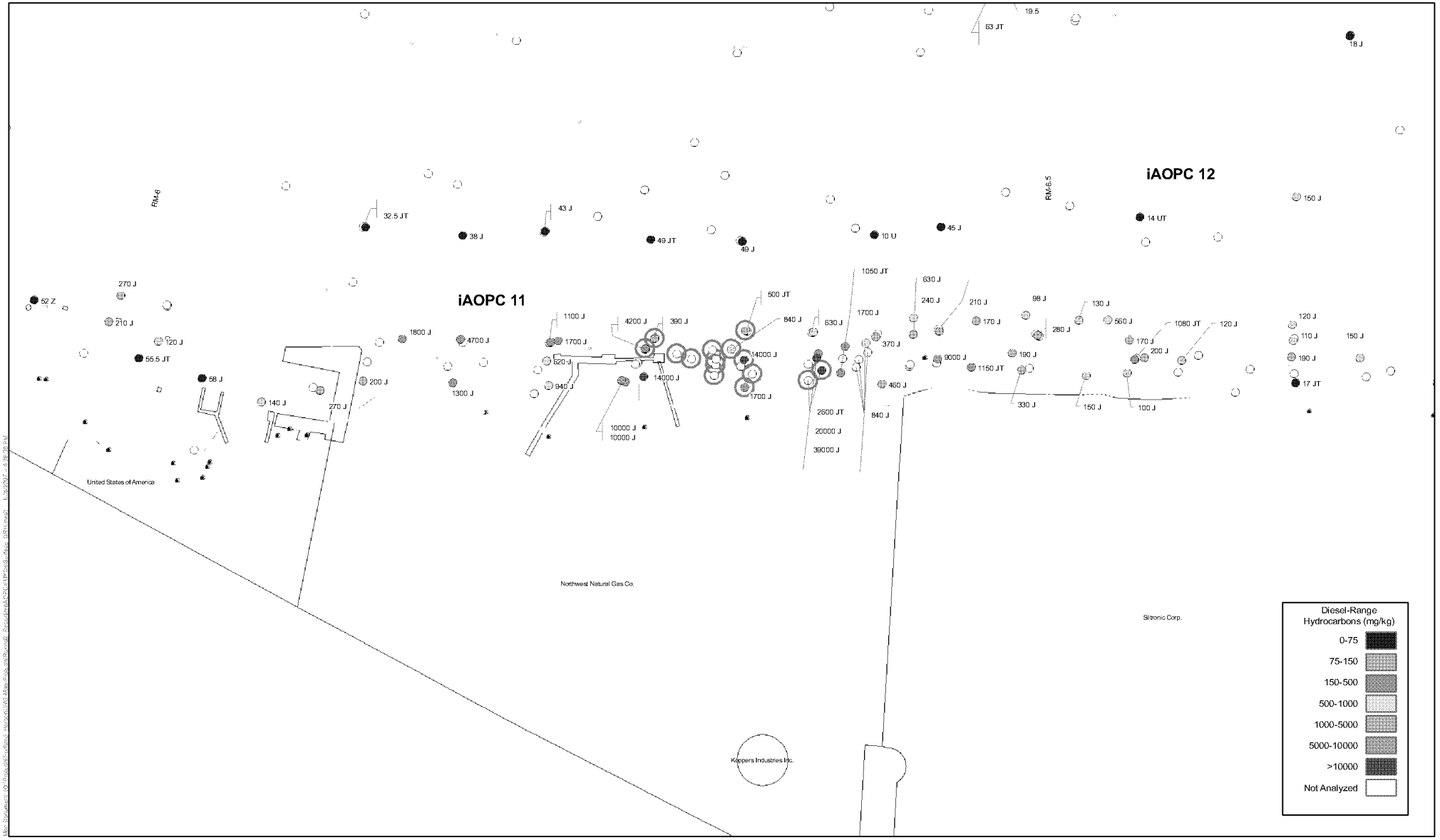
**Map 11.3.9 - 8a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total of 2,4'- and 4,4'- DDD (µg/kg)**
**iAOPC 11**

BZTO104(e)032699




**Map 11.3.9 - 8b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Total of 2,4'- and 4,4'- DDD (µg/kg)**
**iAOPC 11**

BZTO104(e)032700




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

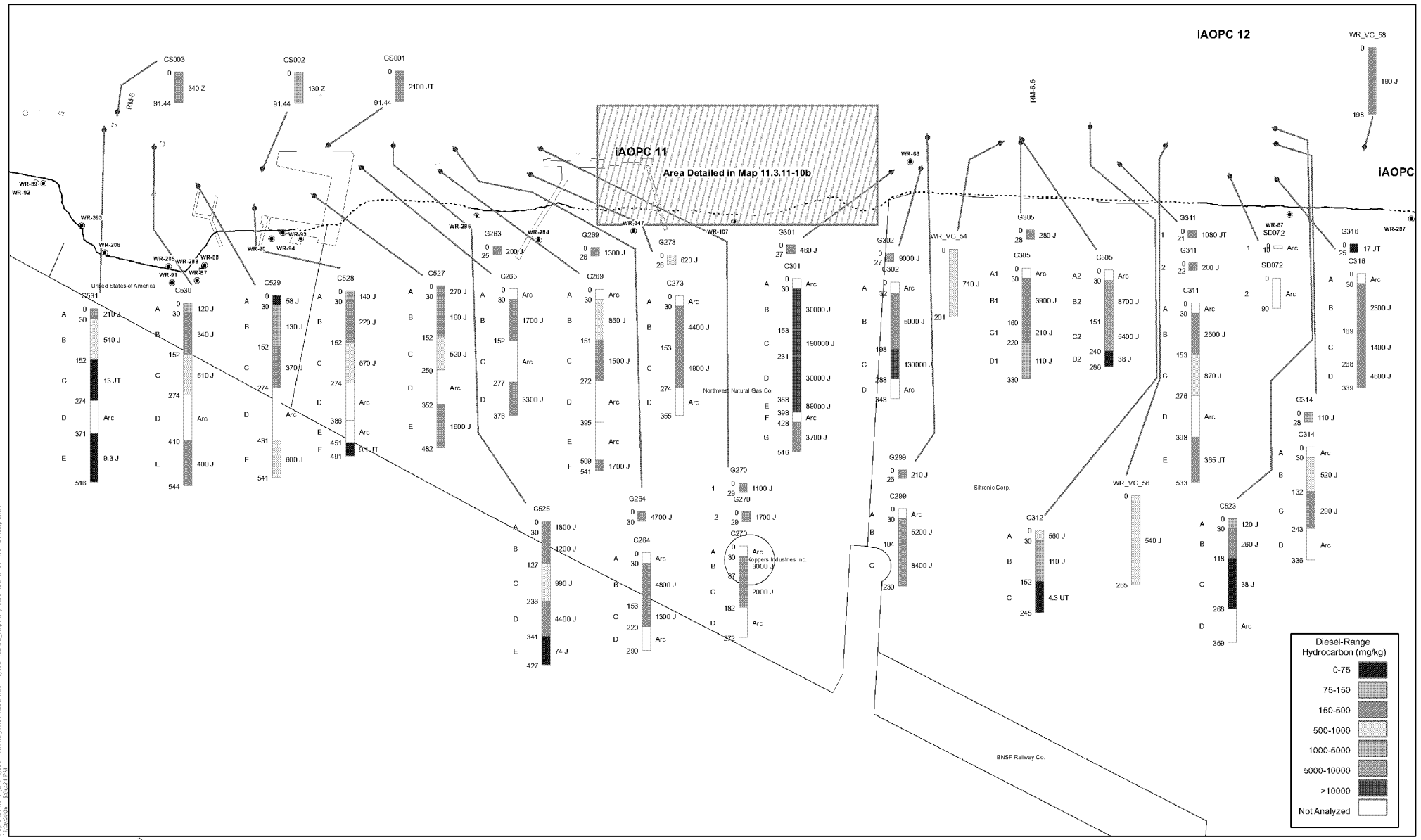
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

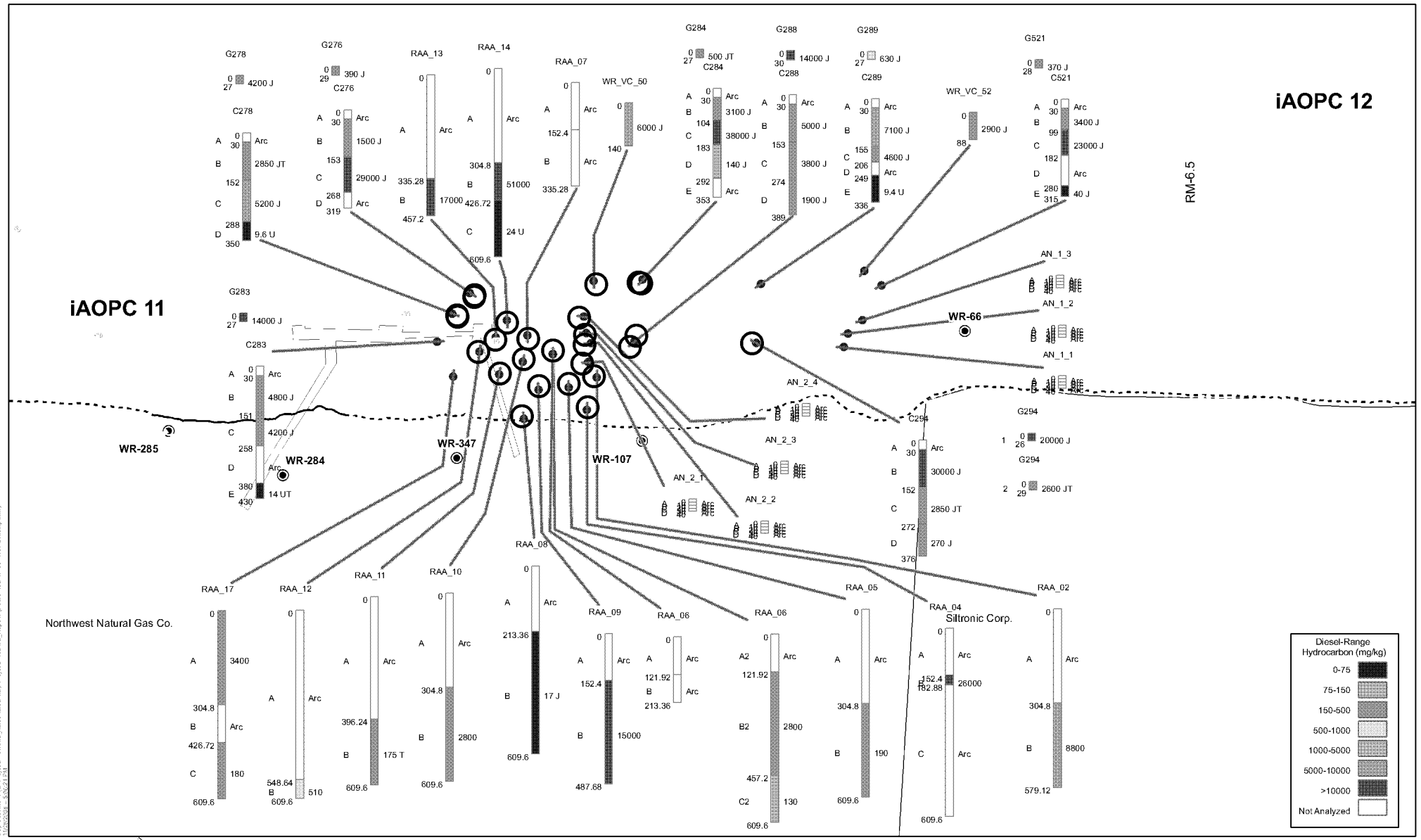
- iAOPC Boundary
- Capping footprint
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.9-9**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Diesel-Range Hydrocarbons (mg/kg)**
**iAOPC 11**

BZTO104(e)032701




BZTO104(e)032702




**Map 11.3.9-10b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Subsurface Sediment**
**Diesel-Range Hydrocarbon (mg/kg)**
**iAOPC 11**

BZTO104(e)032703

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

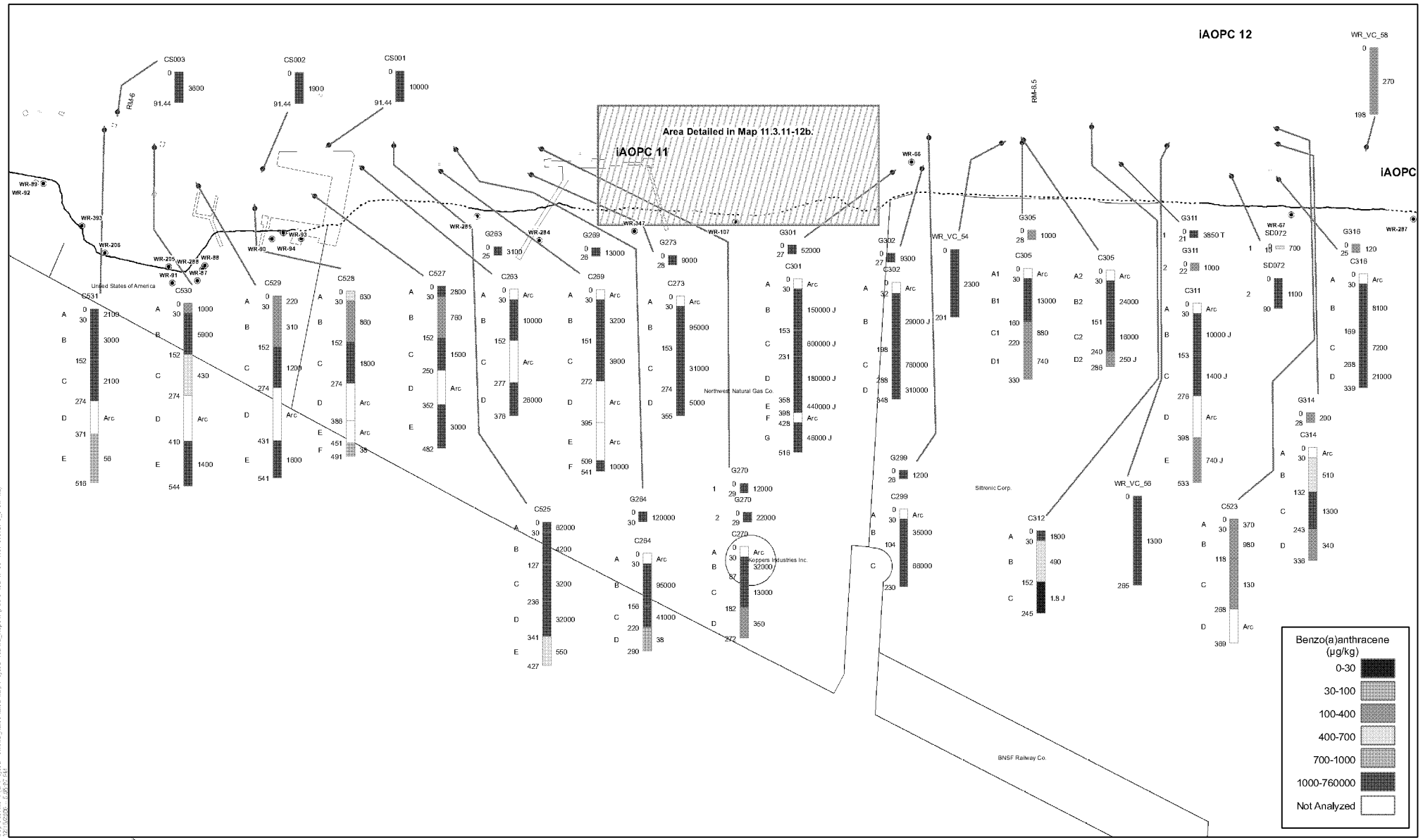
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- Navigation Channel
- River_13ft_NAVD88

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- 5 foot Contours (NAVD88)

- iAOPC Boundary
- capping
- Dredging (Post 1997)
- Dredged or Capped

**Map 11.3.9-11**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Surface Sediment**
**Benzo(a)anthracene (µg/kg)**
**iAOPC 11**

BZTO104(e)032704




integral consulting inc.

LWG Lower Willamette Group

0 100 200 300 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

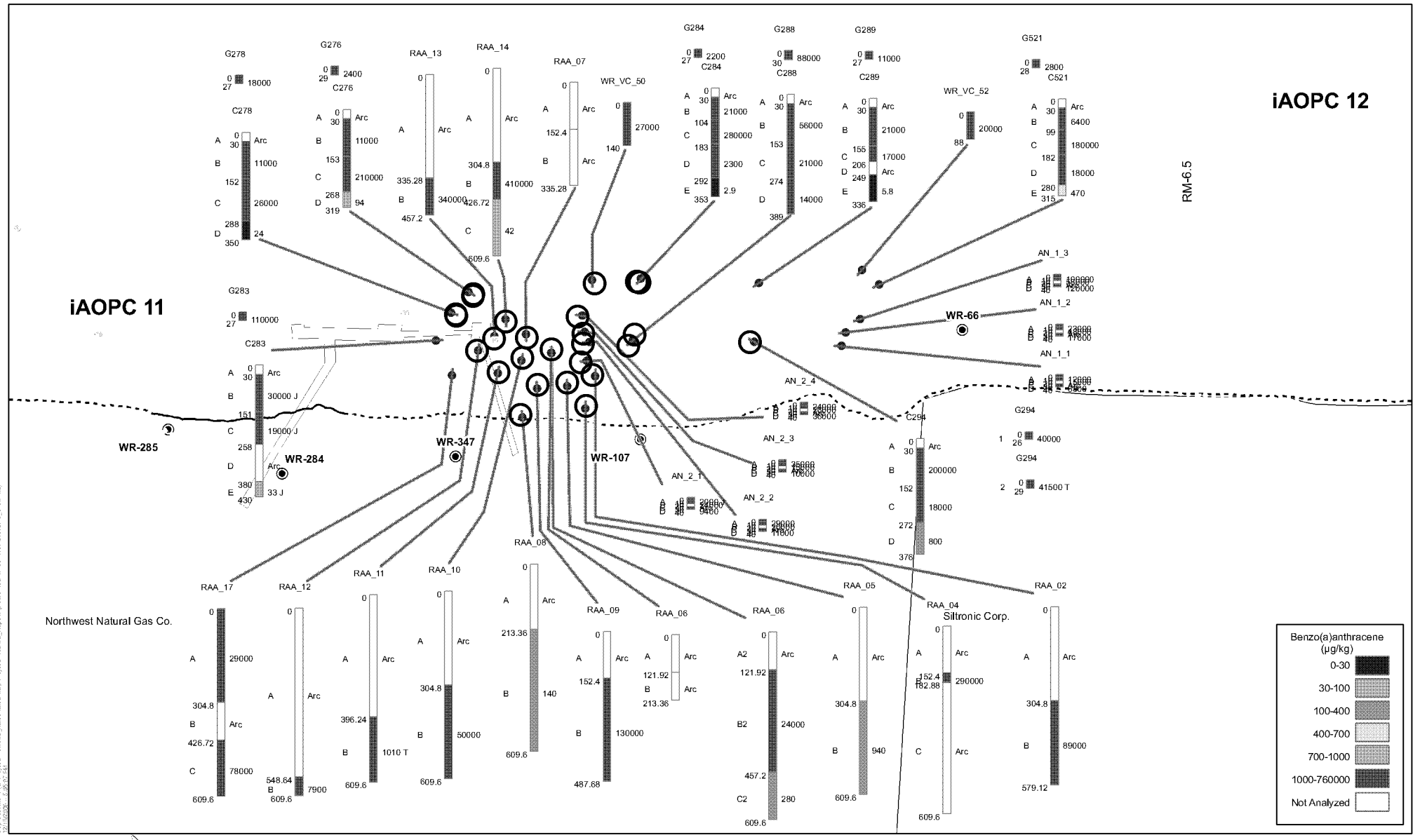
- Active Outfalls
- Unknown Outfalls
- Abandoned Outfalls
- Docks and Structures
- River Miles
- 5 foot Contours (NAVD88)

**Bathymetric Change**
- -22 - -0.49 Shoaling
- -0.5 - 0.5
- 0.51 - 37 Deepening
- Navigation Channel

- iAOPC Boundary
- Capping Footprint
- Dredging (Post 1997)

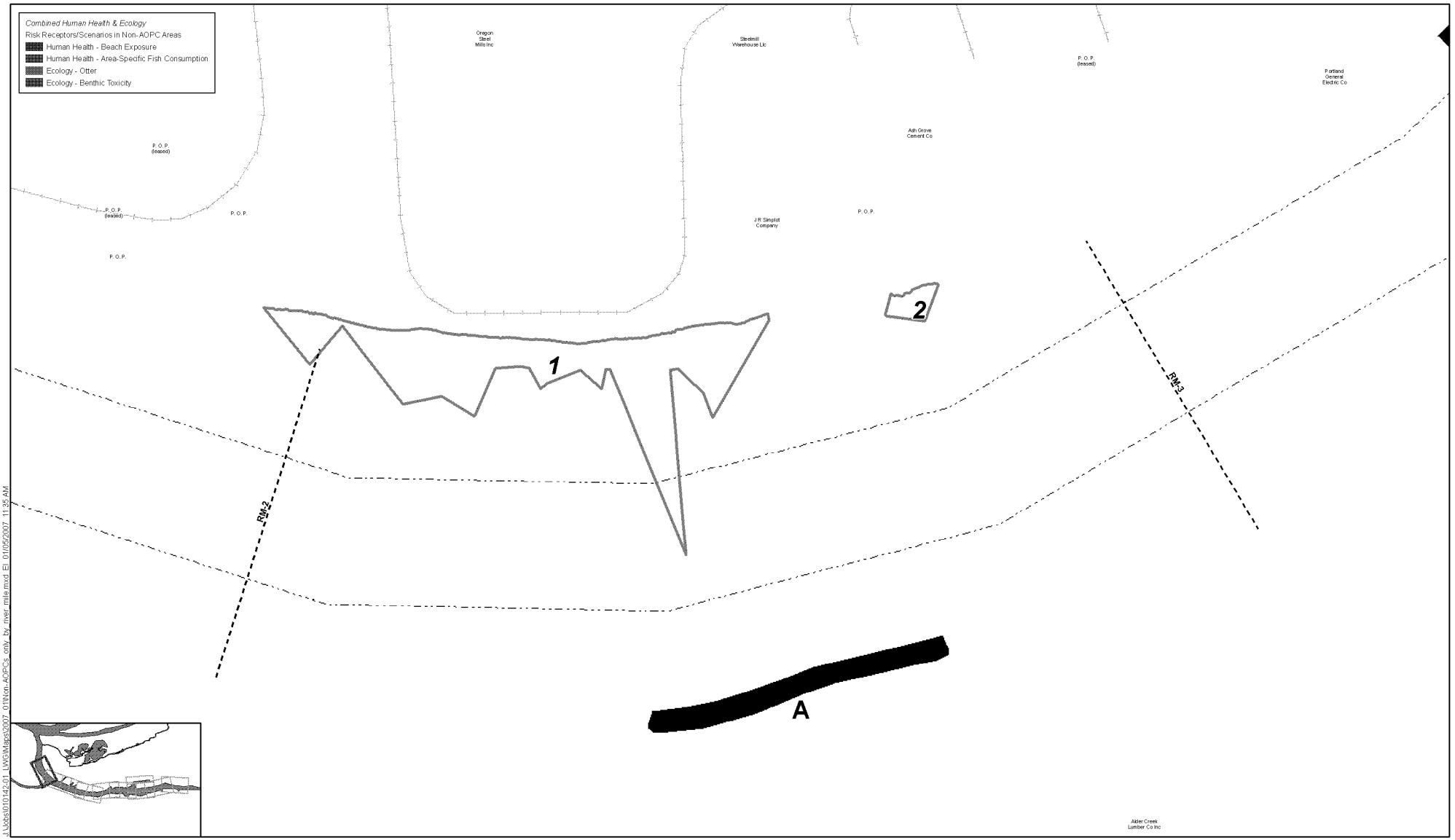
**Map 11.3.9-12a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentration in Subsurface Sediment**
**Benzo(a)anthracene (µg/kg)**
**iAOPC 11**

BZTO104(e)032705




**Map 11.3.912b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentration in Subsurface Sediment**
**Benzo(a)anthracene (µg/kg)**
**iAOPC 11**

BZTO104(e)032706




J:\Jobs\010142-01 LWG\Maps\2007_01\Non-AOPCs_only_by_river_mile.mxd EI 01/05/2007 11:35 AM

ANCHOR ENVIRONMENTAL, L.L.C. +I

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

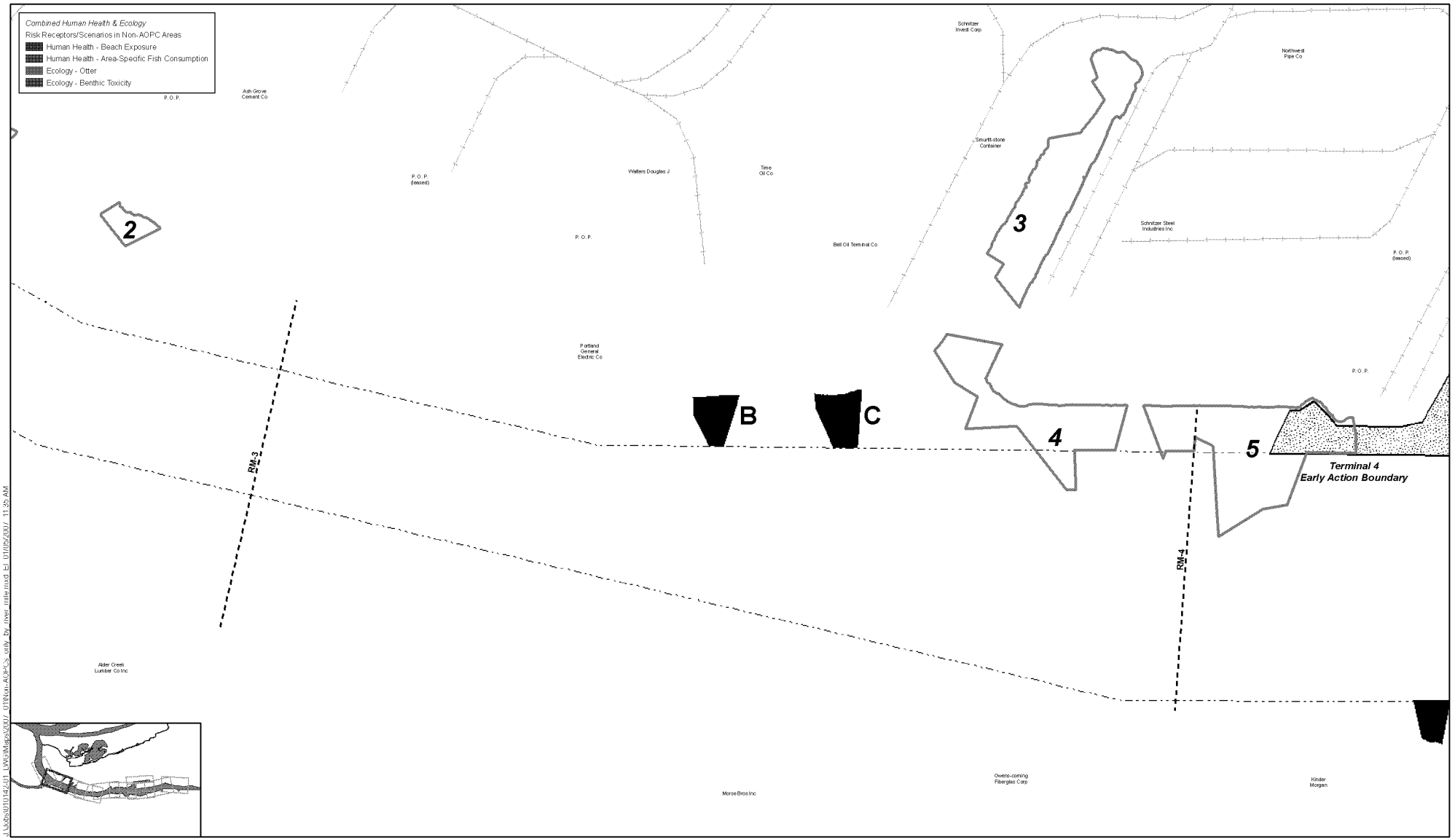
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 12.3-1a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Site Characterization Report**
**Human Health Scenarios and Ecological Receptors**
**Excluded From Initial Areas of Potential Concern**
**River Mile 02 to 03**

BZTO104(e)032707




J:\Jobs\010142-01_LWG\Maps\200_01\Non-AOPCs_only_by_river_mile.mxd El 01/05/2007 11:35 AM

ANCHOR ENVIRONMENTAL, L.L.C.

LWG LOWER WILLAMETTE GROUP

0 150 300 450 Feet

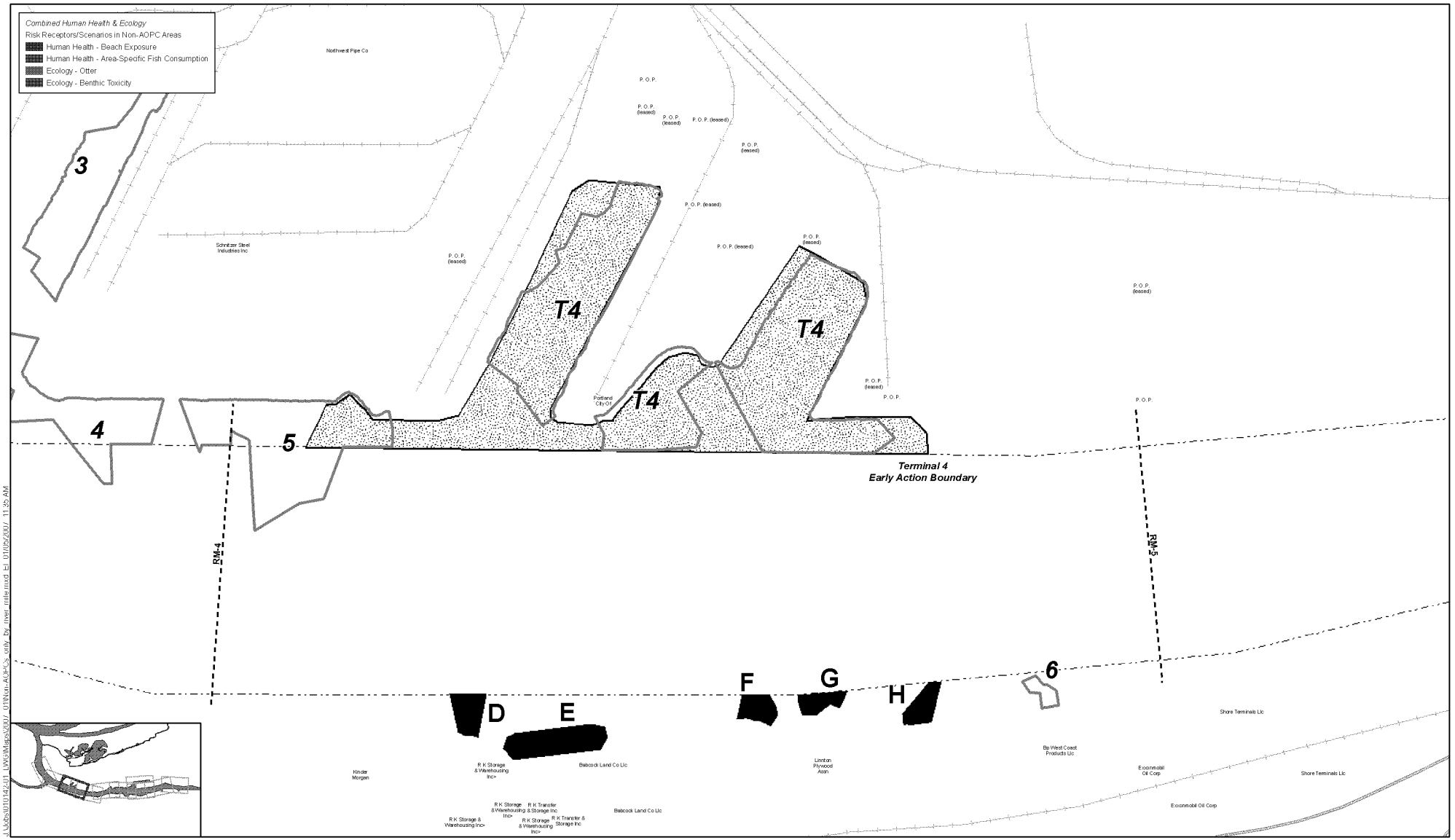
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 12.3-1b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Site Characterization Report**
**Human Health Scenarios and Ecological Receptors**
**Excluded From Initial Areas of Potential Concern**
**River Mile 03 to 04**

BZTO104(e)032708




J:\Jobs\010142-J10 LWG\Maps\2007_01\Non-AOPCs only_by river_reformed E1 01\05\2007 11:35 AM

ANCHOR ENVIRONMENTAL, L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

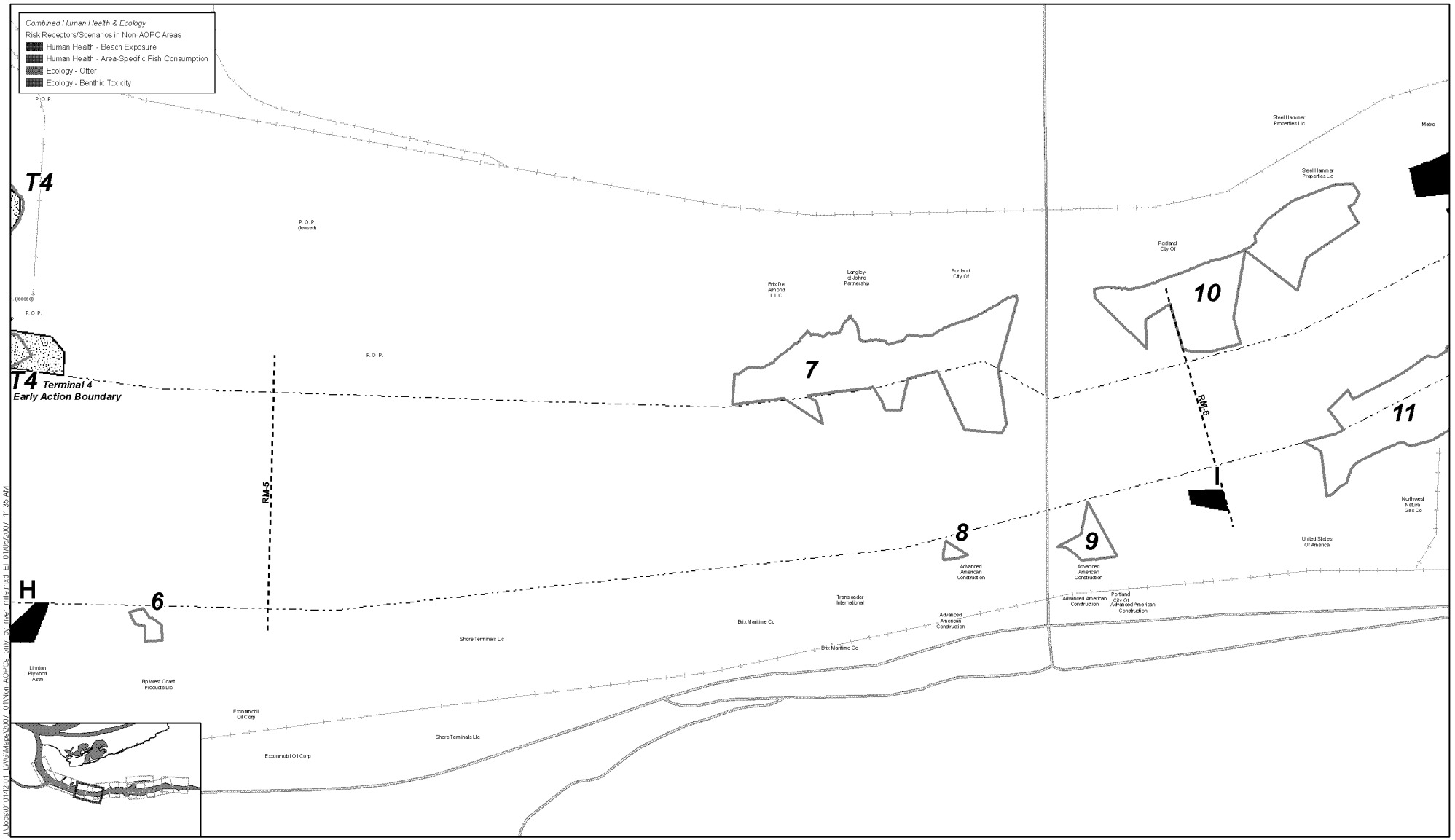
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 12.3-1c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Site Characterization Report**
**Human Health Scenarios and Ecological Receptors**
**Excluded From Initial Areas of Potential Concern**
**River Mile 04 to 05**

BZTO104(e)032709




J:\Jobs\010142-010 LWG\Maps\2007_01\Non-AOPCs only_By river mile.mxd 01/05/2007 11:35 AM

ANCHOR ENVIRONMENTAL, L.L.C.

LWG LOWER WILLAMETTE GROUP

0 150 300 450 Feet

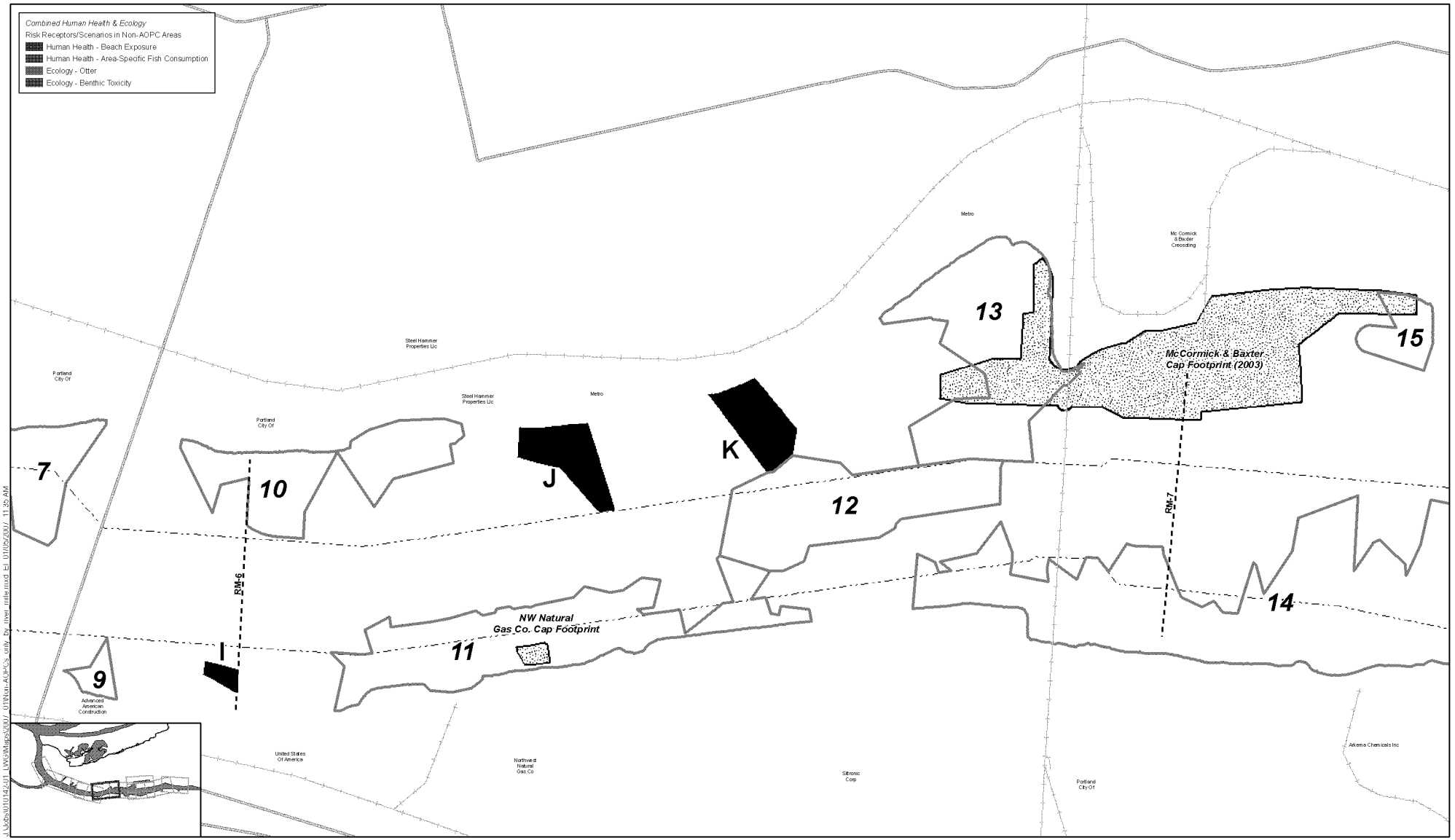
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 12.3-1d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Site Characterization Report**
**Human Health Scenarios and Ecological Receptors**
**Excluded From Initial Areas of Potential Concern**
**River Mile 05 to 06**

BZTO104(e)032710




J:\Jobs\010142-01_LWG\Maps\2007_01\Non-AOPCs_only_by_river_mile.mxd EJ 01/05/2007 11:35 AM

ANCHOR ENVIRONMENTAL, L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

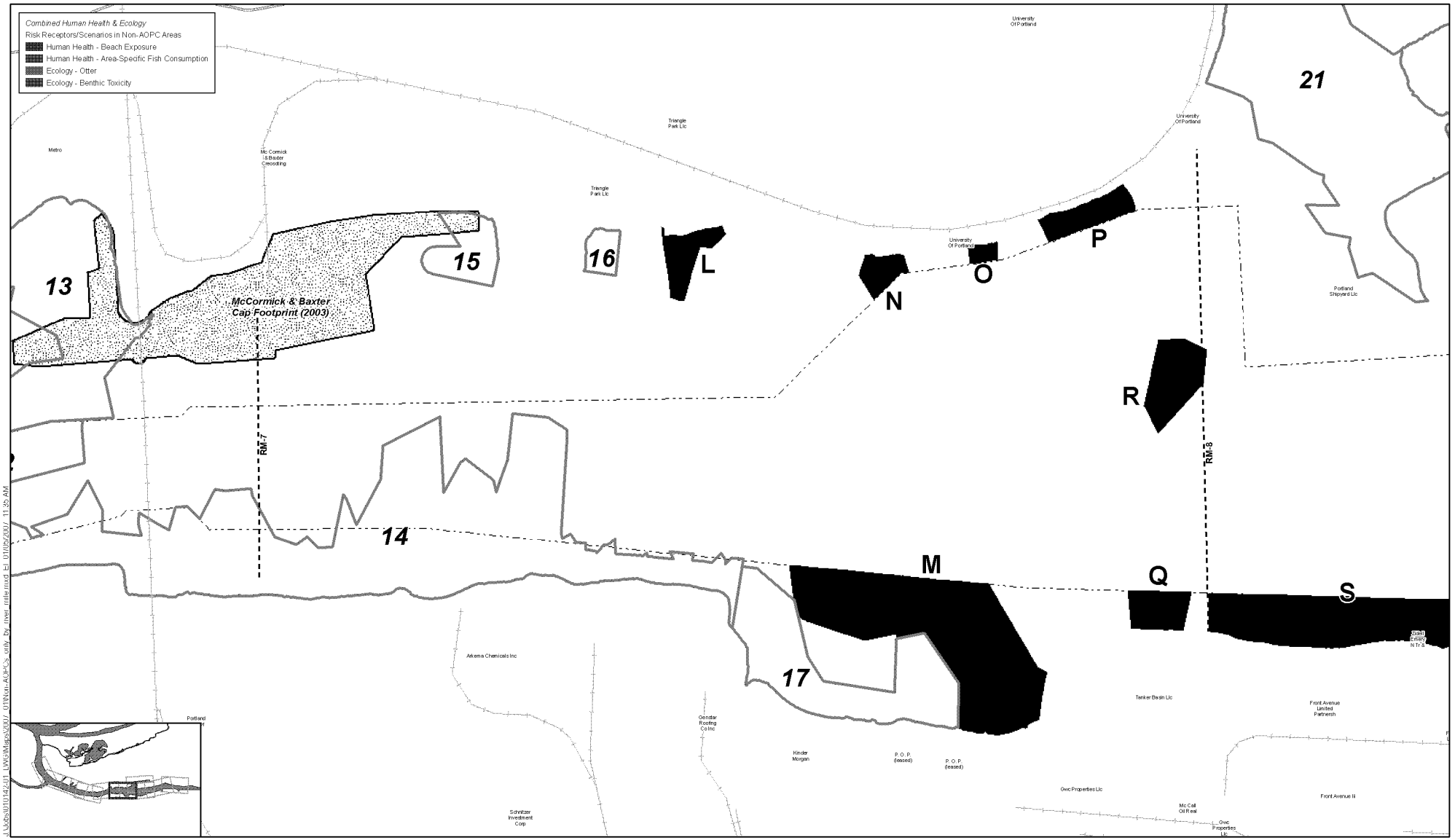
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 12.3-1e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Site Characterization Report**
**Human Health Scenarios and Ecological Receptors**
**Excluded From Initial Areas of Potential Concern**
**River Mile 06 to 07**

BZTO104(e)032711




ANCHOR ENVIRONMENTAL, L.L.C.

LWG LOWER WILLAMETTE GROUP

0 150 300 450 Feet

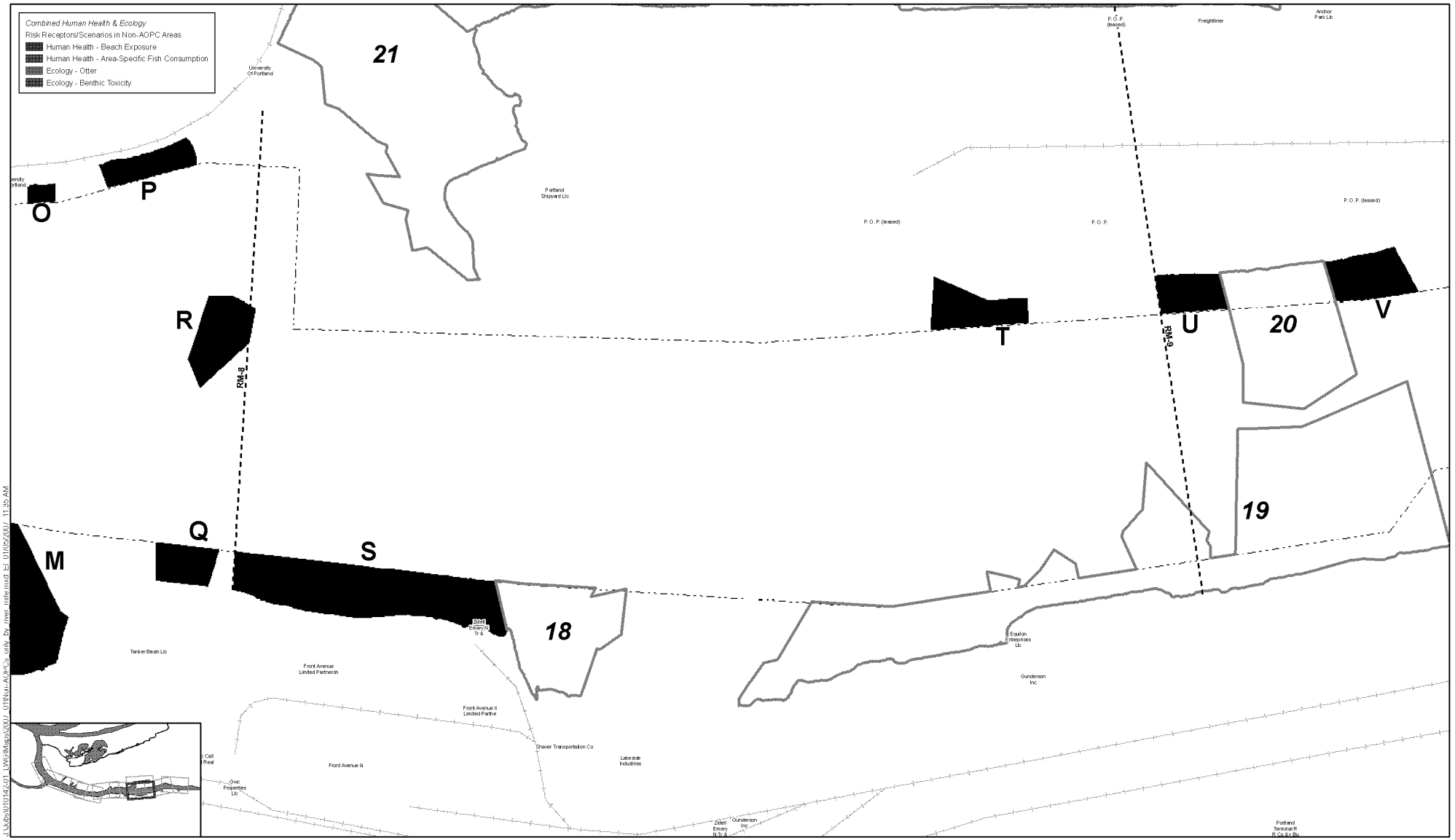
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 12.3-1f**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Site Characterization Report**
**Human Health Scenarios and Ecological Receptors**
**Excluded From Initial Areas of Potential Concern**
**River Mile 07 to 08**

BZTO104(e)032712




NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

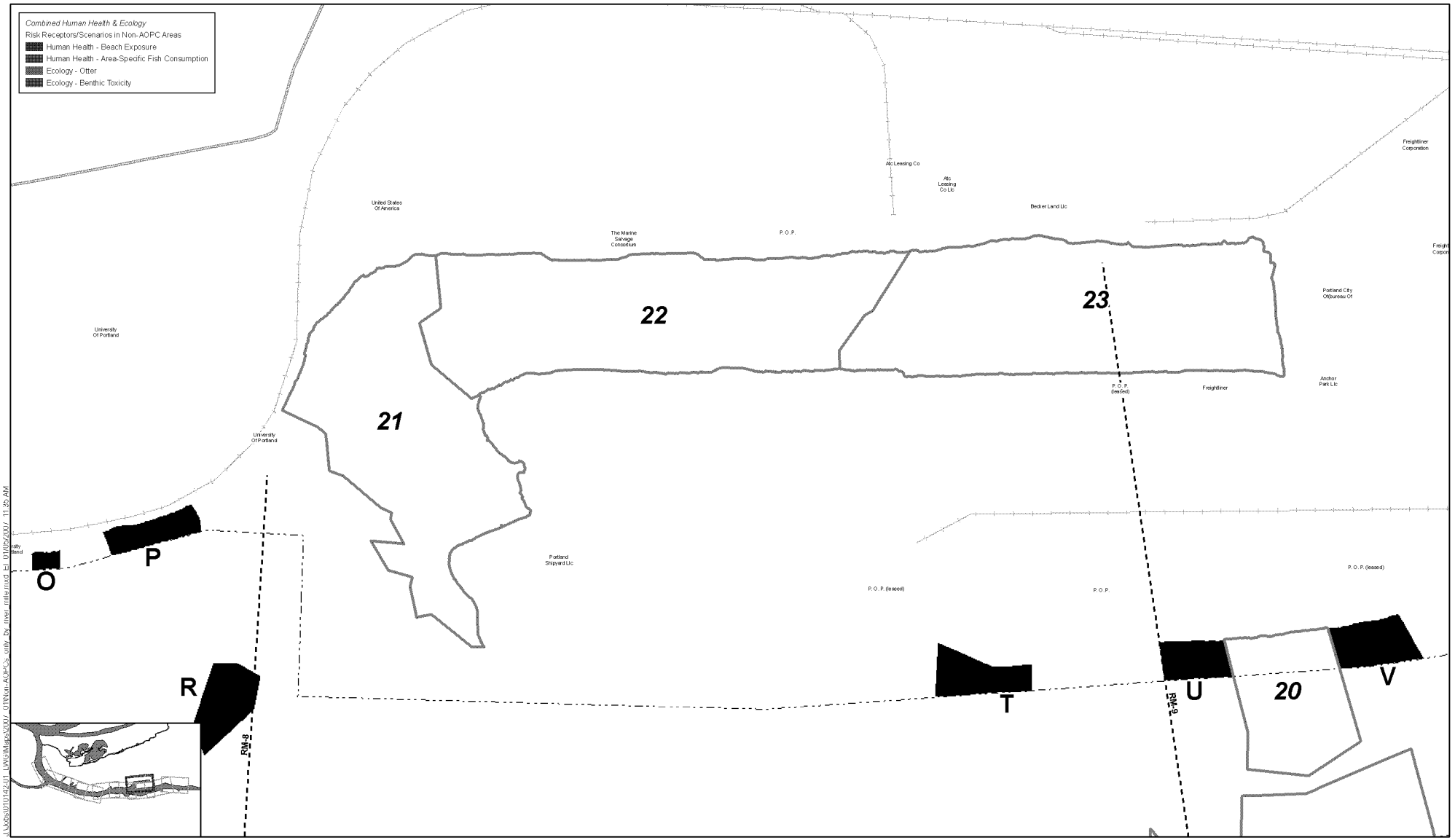
Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 12.3-1g**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Site Characterization Report**
**Human Health Scenarios and Ecological Receptors**
**Excluded From Initial Areas of Potential Concern**
**River Mile 08 to 09**

ANCHOR ENVIRONMENTAL, L.L.C.

LWG LOWER WILLAMETTE GROUP

BZTO104(e)032713




ANCHOR ENVIRONMENTAL, L.L.C.

LWG LOWER WILLAMETTE GROUP

0 150 300 450 Feet

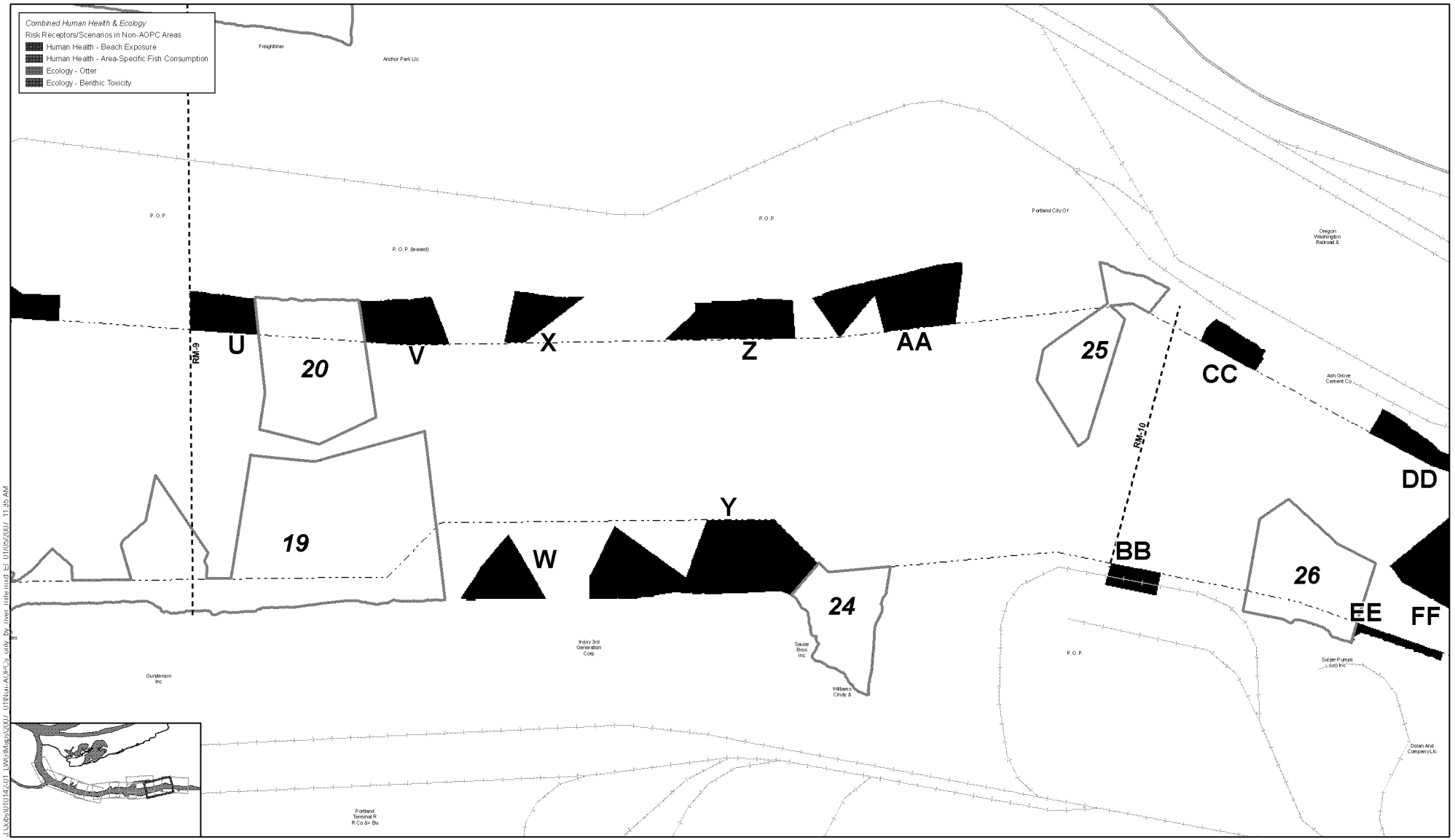
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 12.3-1h**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Site Characterization Report**
**Human Health Scenarios and Ecological Receptors**
**Excluded From Initial Areas of Potential Concern**
**River Mile 08 to 09 - Swan Is**

J:\Jobs\010142.01 LWG\Maps\2007_01\Non-AOPCs only_by river_rafe.mxd 01/05/2007 11:35 AM




J:\Jobs\010142-01_LWG\Maps\2007_01\Non-AOPCs_only_by_river_mile.mxd EI 01/05/2007 11:35 AM

ANCHOR ENVIRONMENTAL, L.L.C.

0 150 300 450 Feet

LWG LOWER WILLAMETTE GROUP

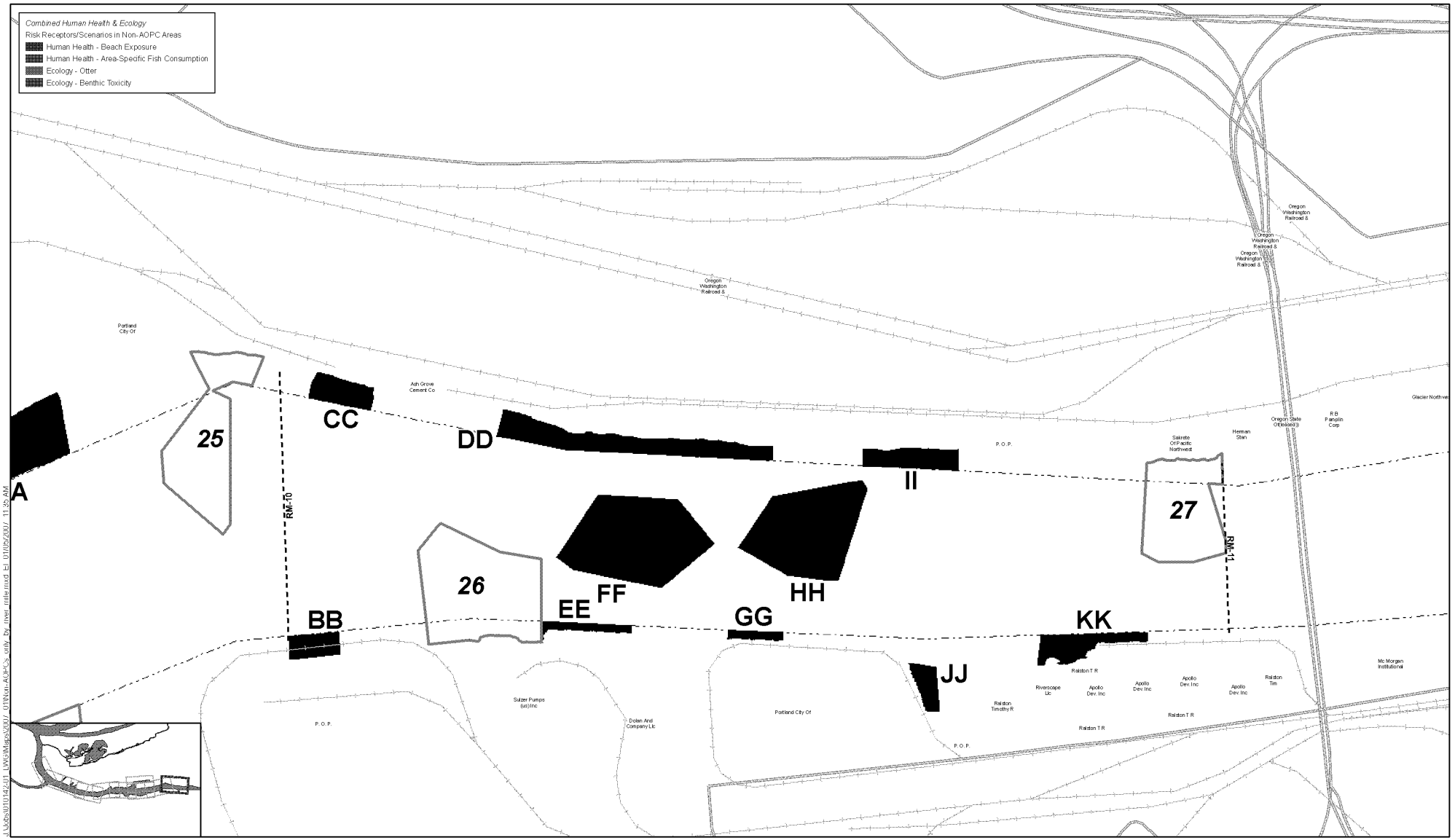
NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 12.3-1i**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Site Characterization Report**
**Human Health Scenarios and Ecological Receptors**
**Excluded From Initial Areas of Potential Concern**
**River Mile 09 to 10**

BZTO104(e)032715




ANCHOR ENVIRONMENTAL, L.L.C.

LWG LOWER WILLAMETTE GROUP

0 150 300 450 Feet

NOTE:
Shaded areas not included within iAPOCs do not contain sufficient evidence of risk to rise to the level of an iAOPC following the data reduction rules defined in Section 10.

FEATURE SOURCES:
River miles: US Army Corps of Engineers.
Waterfront taxlots, railroads, streets: RLIS, 2006

Map Features:
- River miles
- Railroads
- Navigation Channel
- Waterfront Taxlots
- Initial Areas of Potential Concern

**Map 12.3-1j**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Site Characterization Report**
**Human Health Scenarios and Ecological Receptors**
**Excluded From Initial Areas of Potential Concern**
**River Mile 10 to 11**

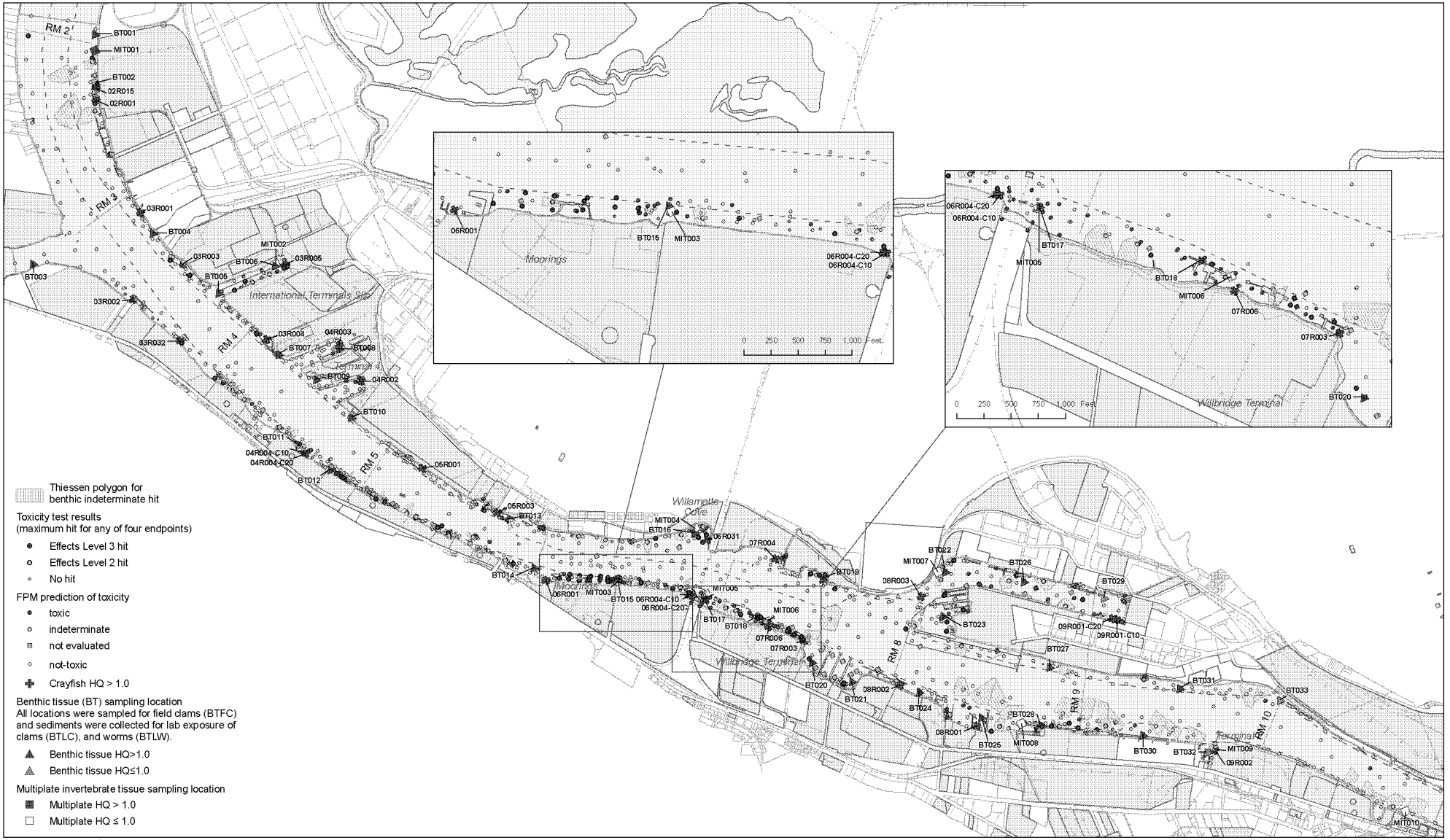
Wind Ward LLC environmental

LWG Lower Willamette Group

**Map 12.3-2**
**Laboratory-Exposed Tissue with Indeterminate Areas, FPM, and Toxicity Test Results**

**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**

BZTO104(e)032717




Prepared by KH 01/10/07, Map 2736, W:\Projects\01-25-01 Portland Harbor ERA\Data\GIS\Events\BenthicRisk

Windward environmental LLC

LWG Lower Willamette Group

N

0 1,000 2,000 3,000 4,000 5,000 Feet

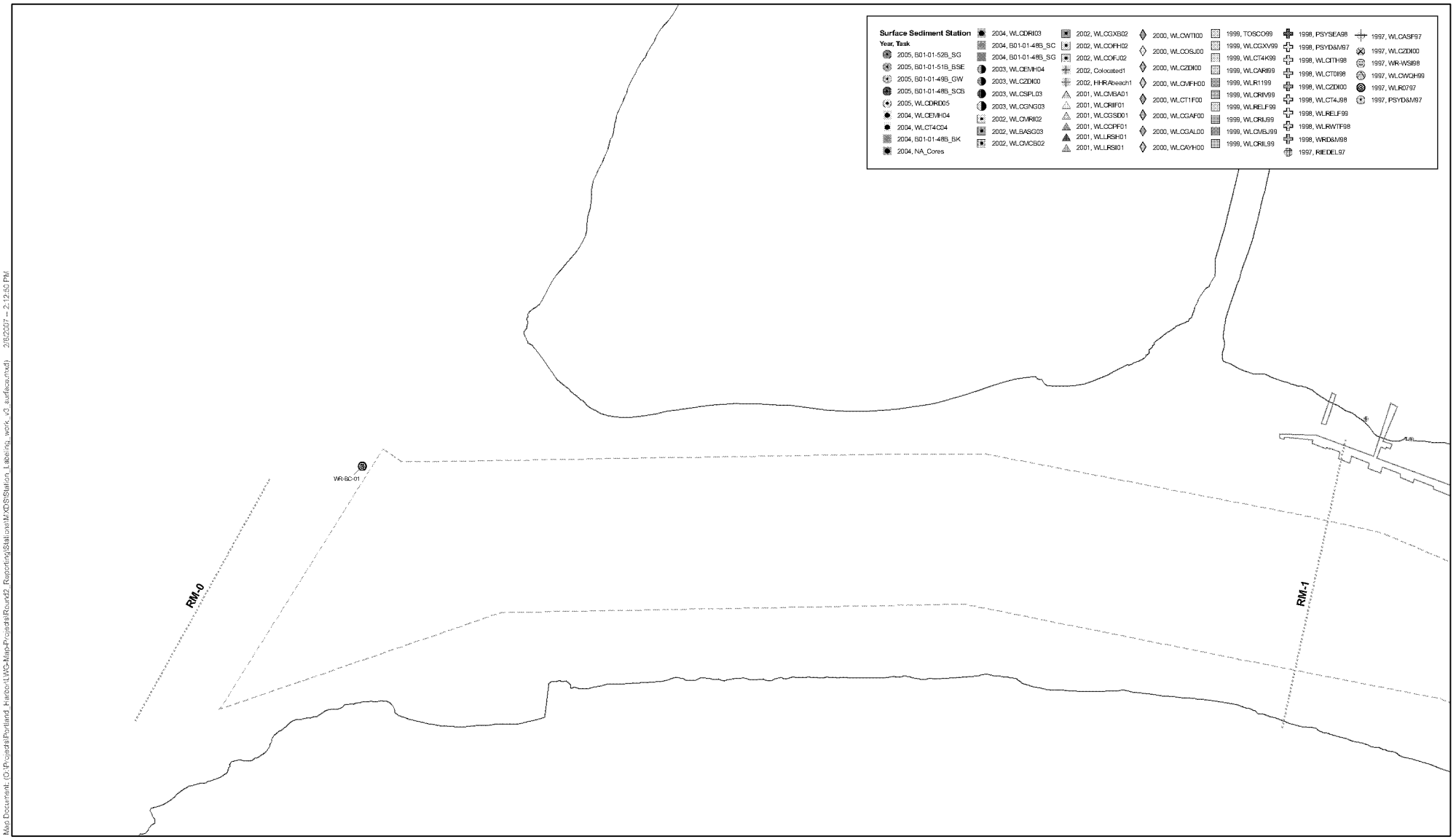
Upland site
Waterfront tax lot
Arterial
Highway
Freeway
Railroad
Dock or structure
River mile
Navigation channel
13-foot contour (in-river analysis elev.)
River or slough

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.

**Map 12.3-3**
**Field-Collected Tissue with HQ > 1.0**

**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**

BZTO104(e)032718




Map Document: (Q:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXD\SStation_Labeling_work_v3_surface.mxd) 2/6/2007 -- 2:12:50 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

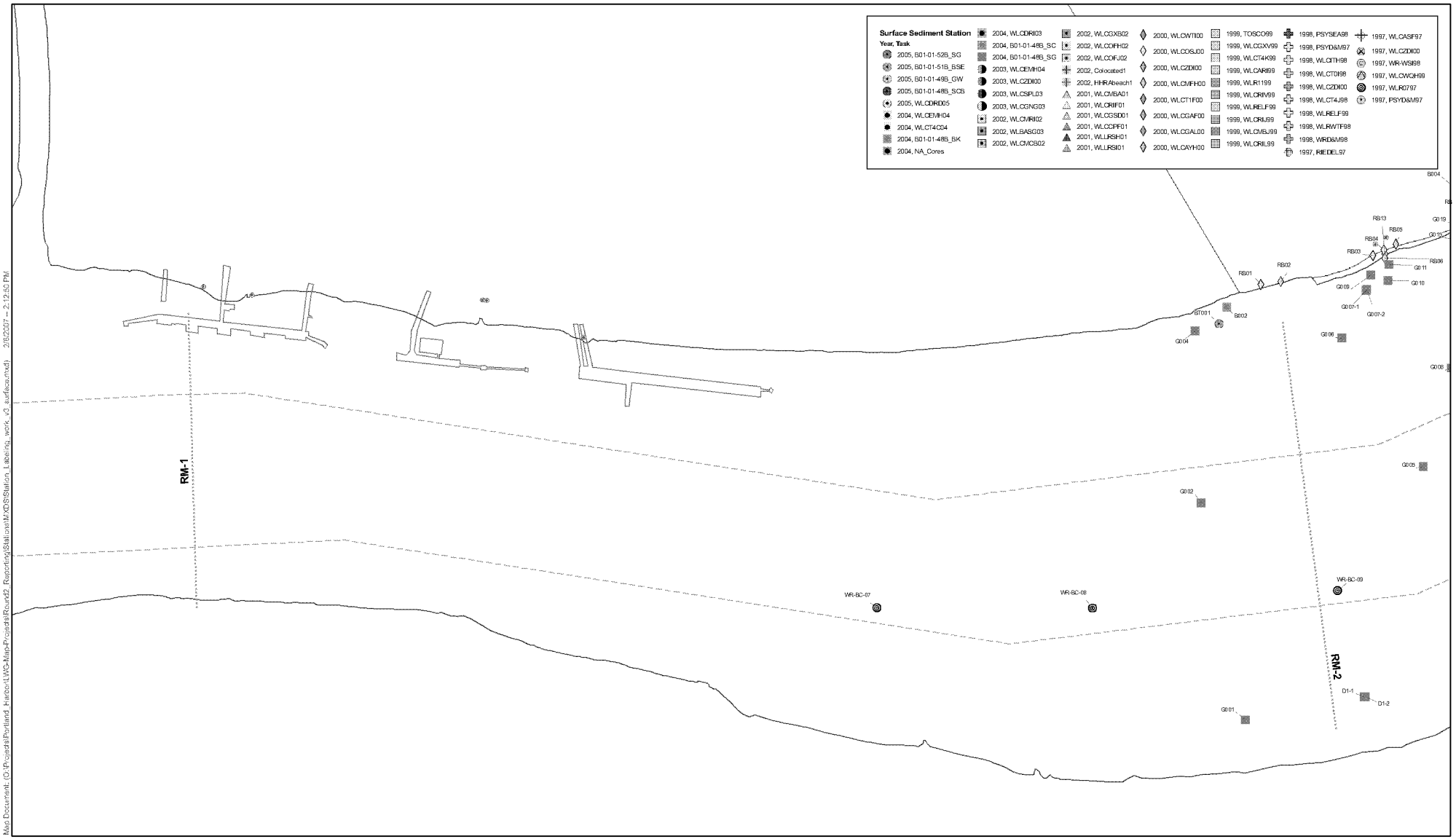
0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-1 a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 00 to 01**

BZTO104(e)032719




Map Document: (Q:\Projects\Portland Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXD\SStation_Labeling_work_v3_surface.mxd) 2/5/2007 -- 2:12:50 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

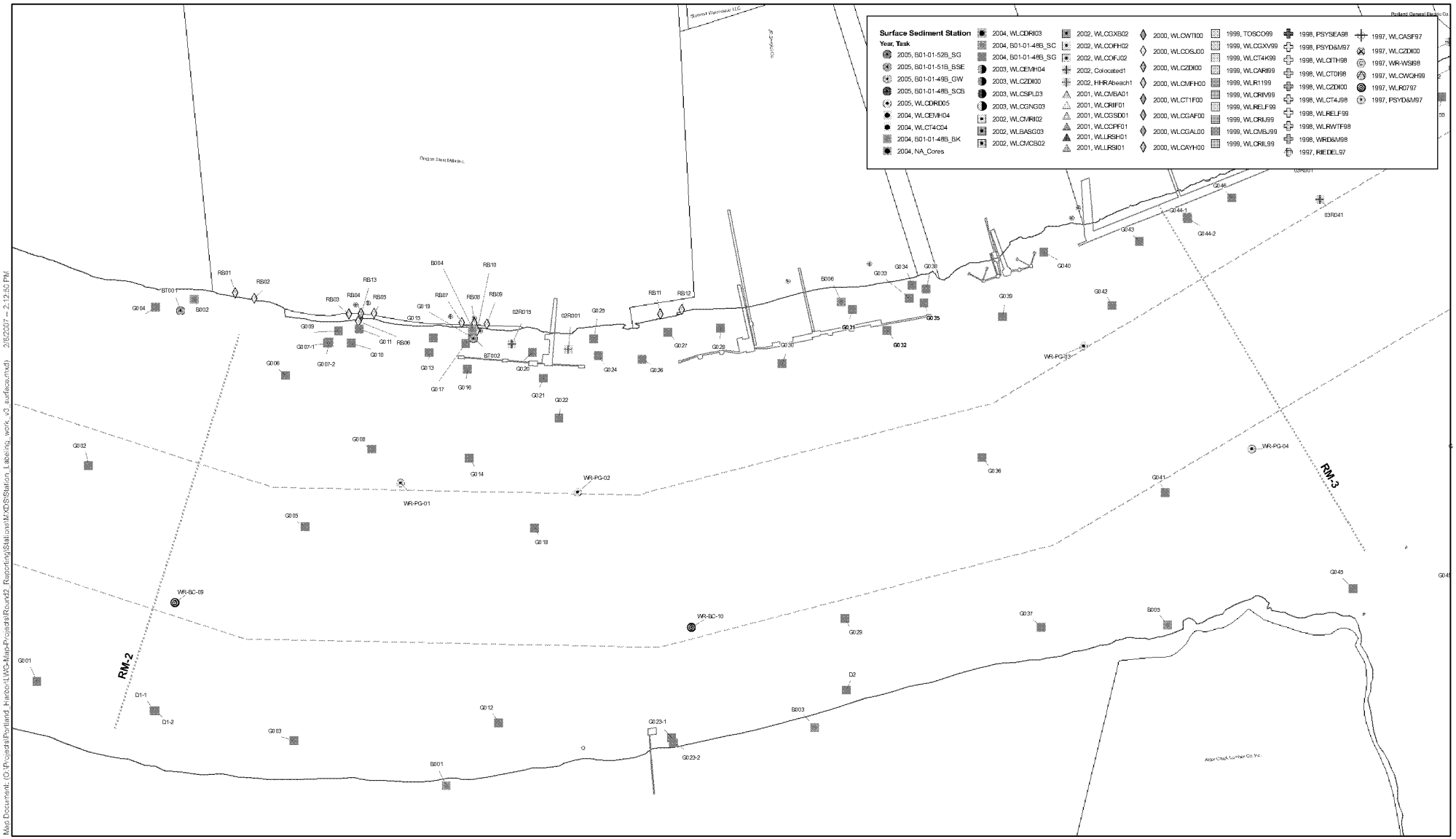
0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-1 b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 01 to 02**

BZTO104(e)032720




integral consulting inc.

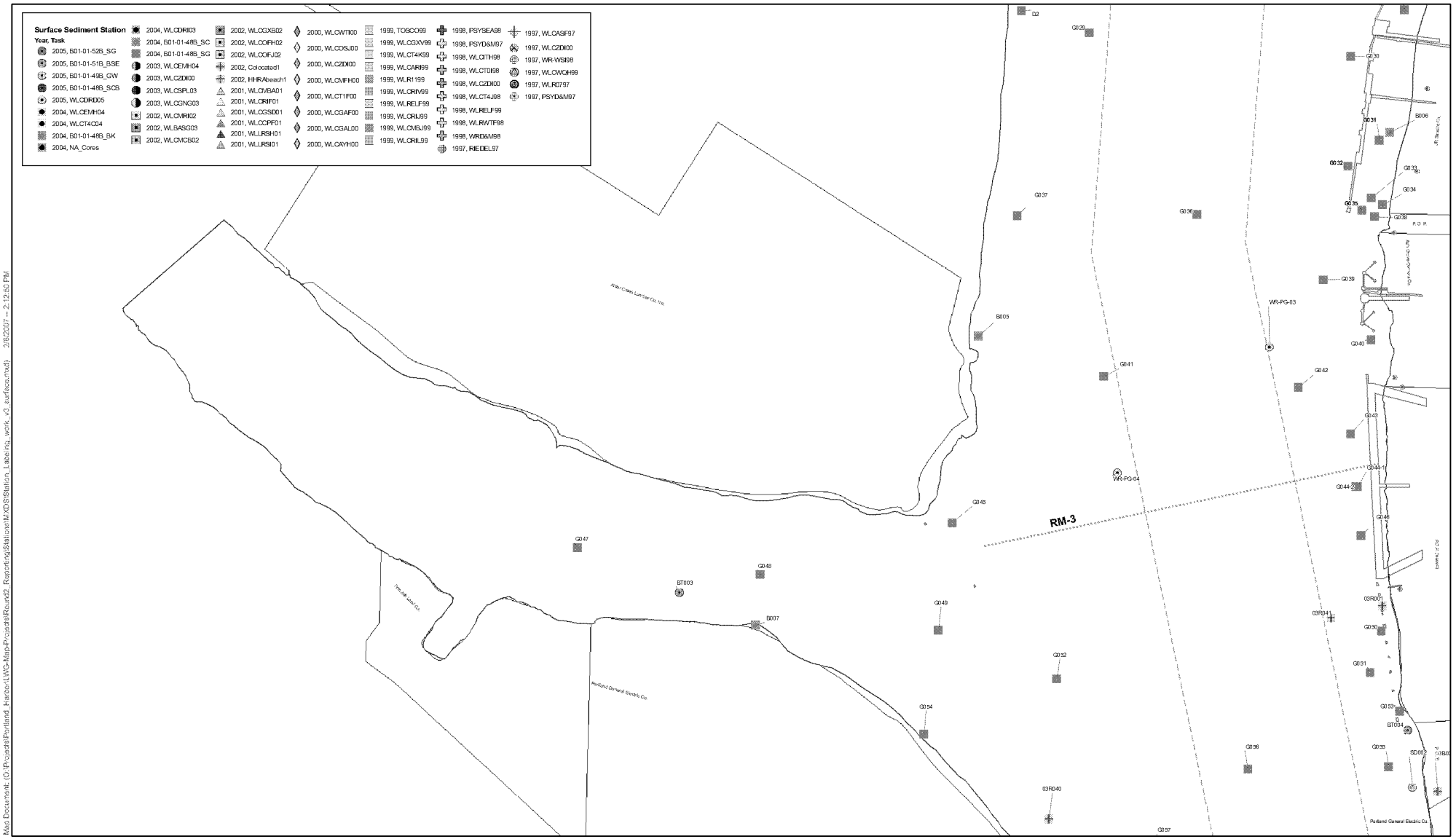
LWG Lower Willamette Group

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-1 c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 02 to 03**

BZTO104(e)032721




Map Document: (Q:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXDS\Station_Labeling_work_v3_surface.mxd) 2/6/2007 -- 2:12:50 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

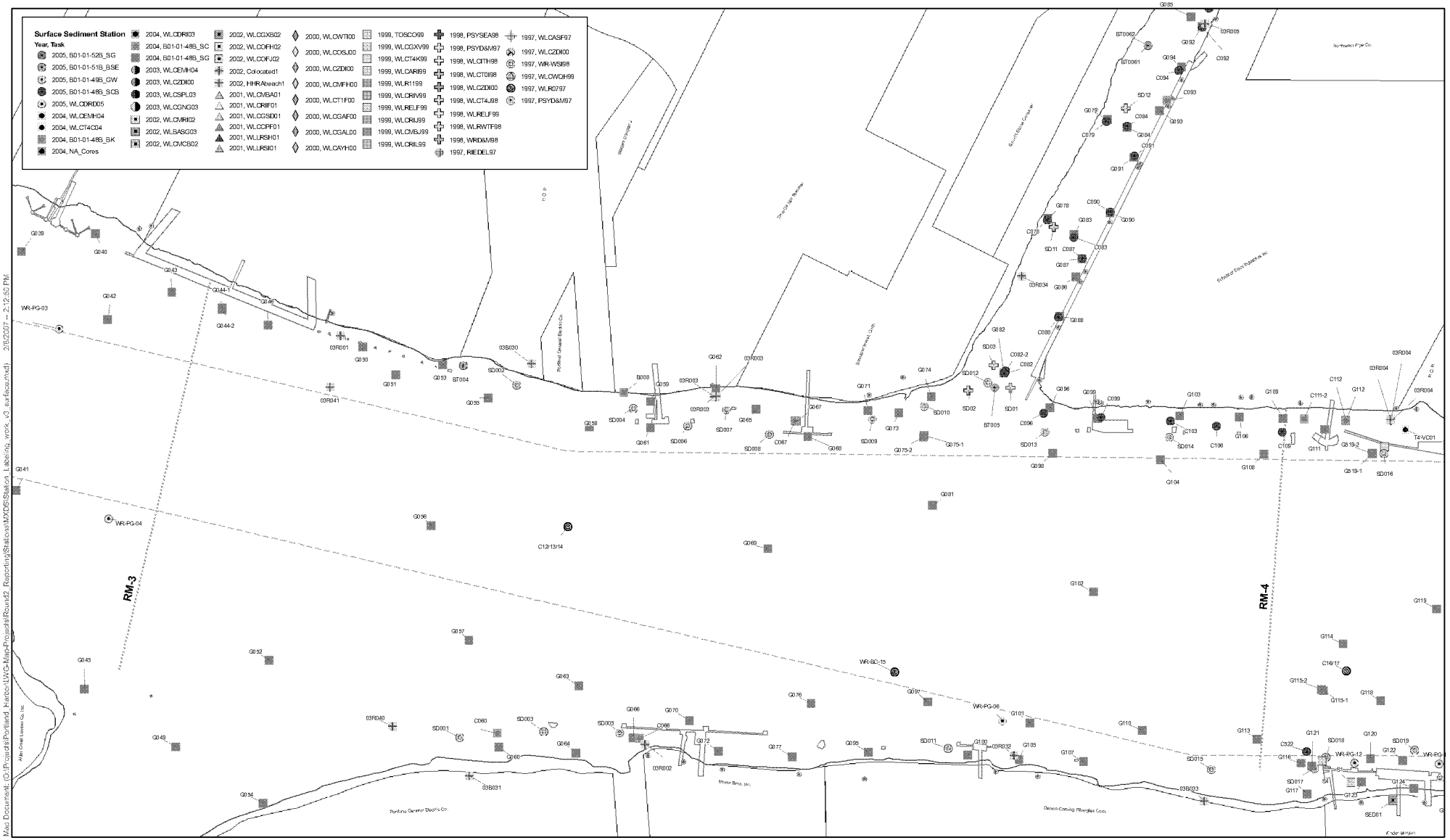
0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-1 d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 03 - Multnomah Channel**

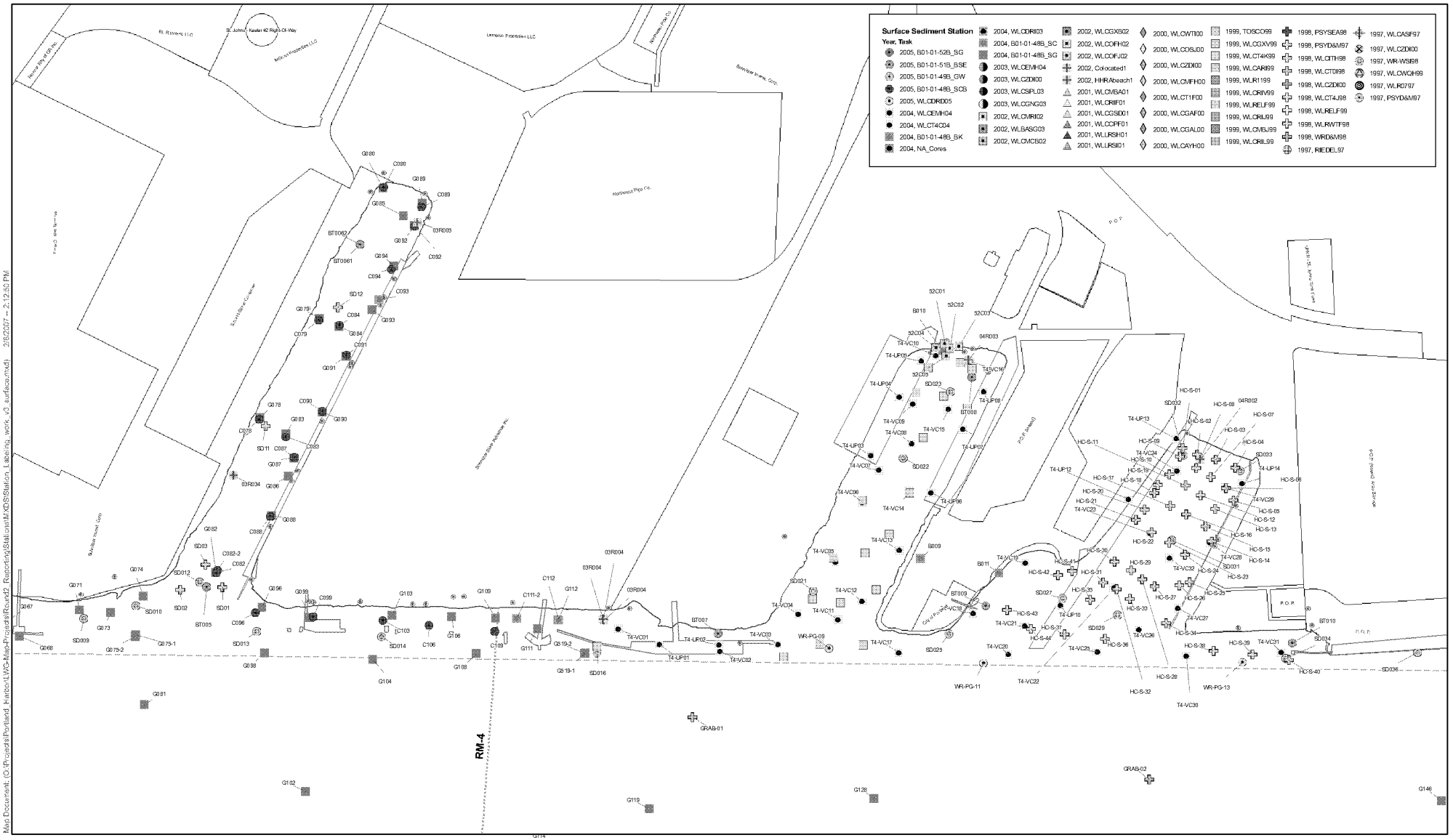
BZTO104(e)032722




Map Document: (O:\Projects\Portland Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXD\SStation_Labeling_work_v3_surface.mxd) 2/6/2007 -- 2:12:50 PM

**Map 2.1-1 e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 03 to 04**

BZTO104(e)032723




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXD\STation_Labeling_work_v3_surface.mxd) 2/6/2007 -- 2:12:50 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

**Map 2.1-1 f**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 04 - Slips**

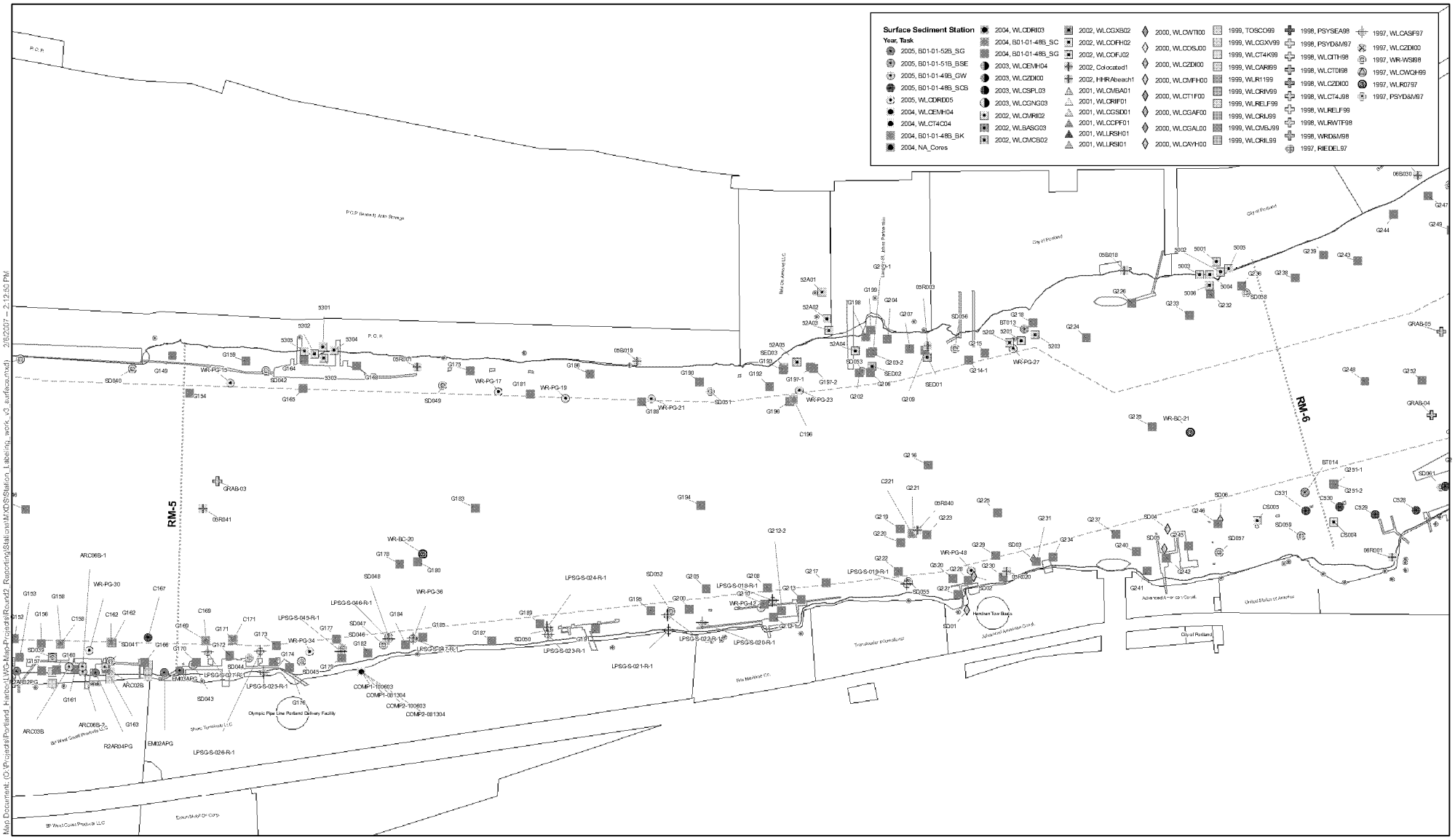
BZTO104(e)032724

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 2.1-1 g**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 04 to 05**

BZTO104(e)032725




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-1 h**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 05 to 06**

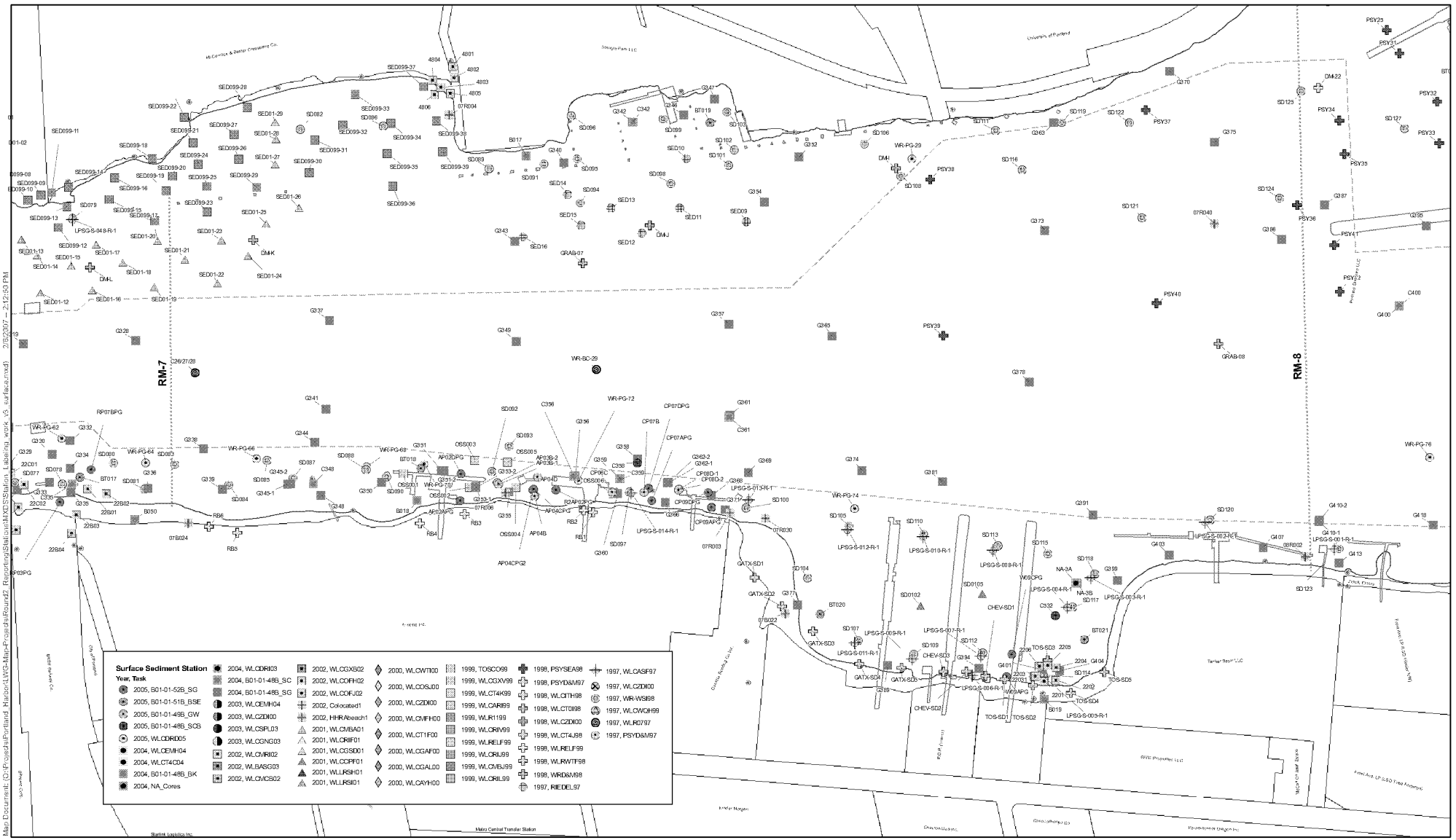
BZTO104(e)032726

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 2.1-1 i**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 06 to 07**

BZTO104(e)032727




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

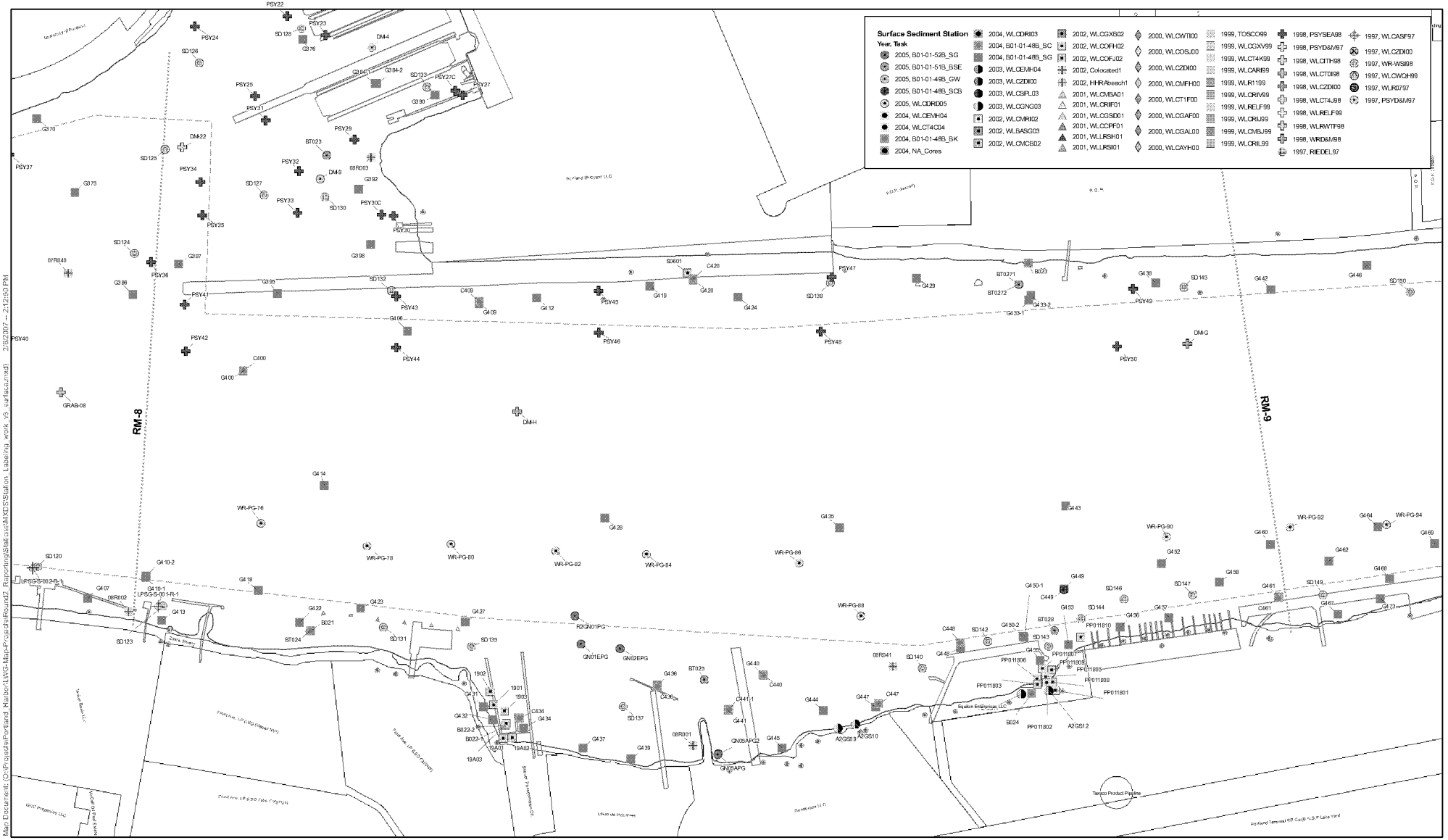
0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-1 j**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 07 to 08**

BZTO104(e)032728




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

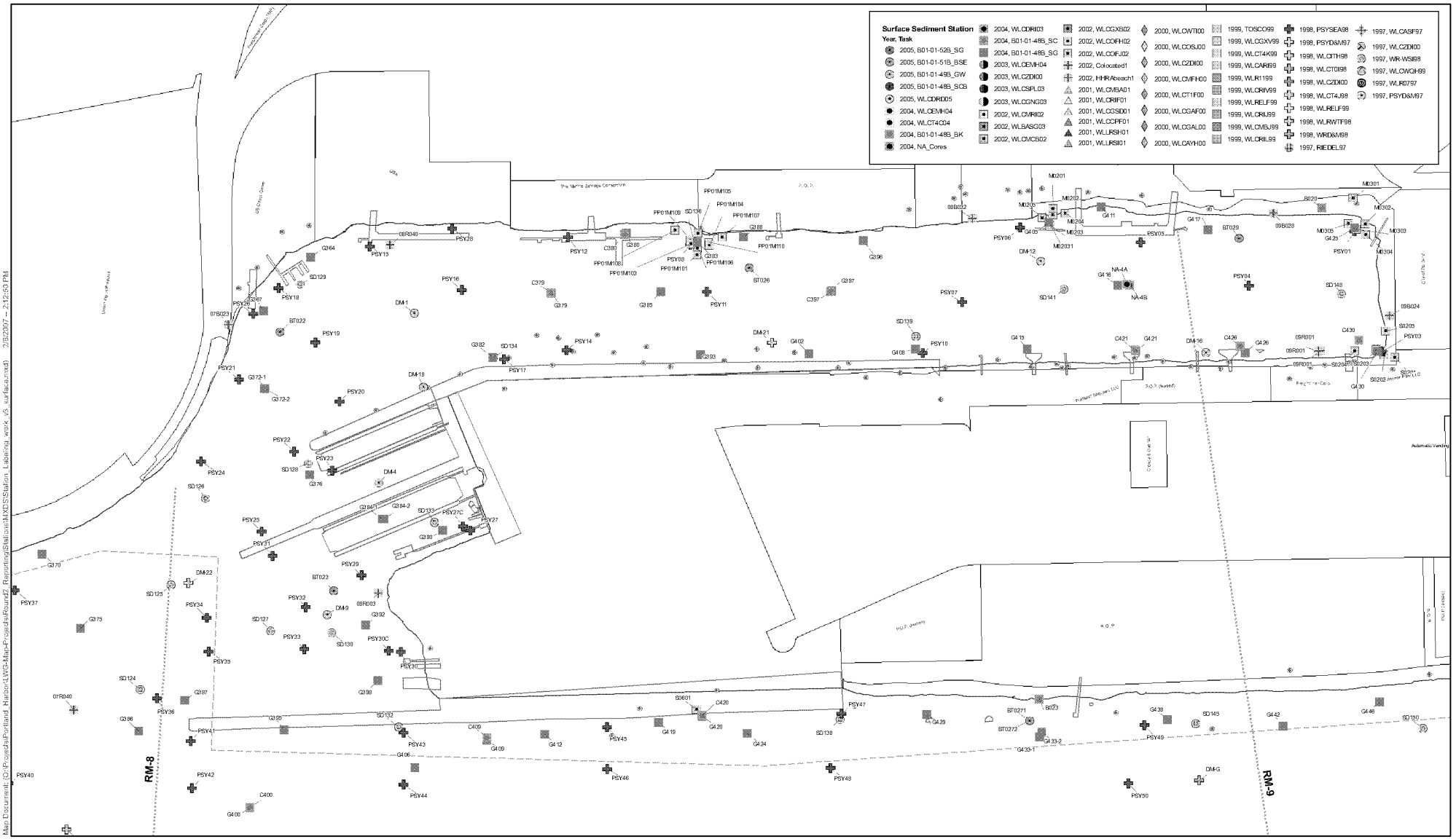
0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-1 k**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 08 to 09**

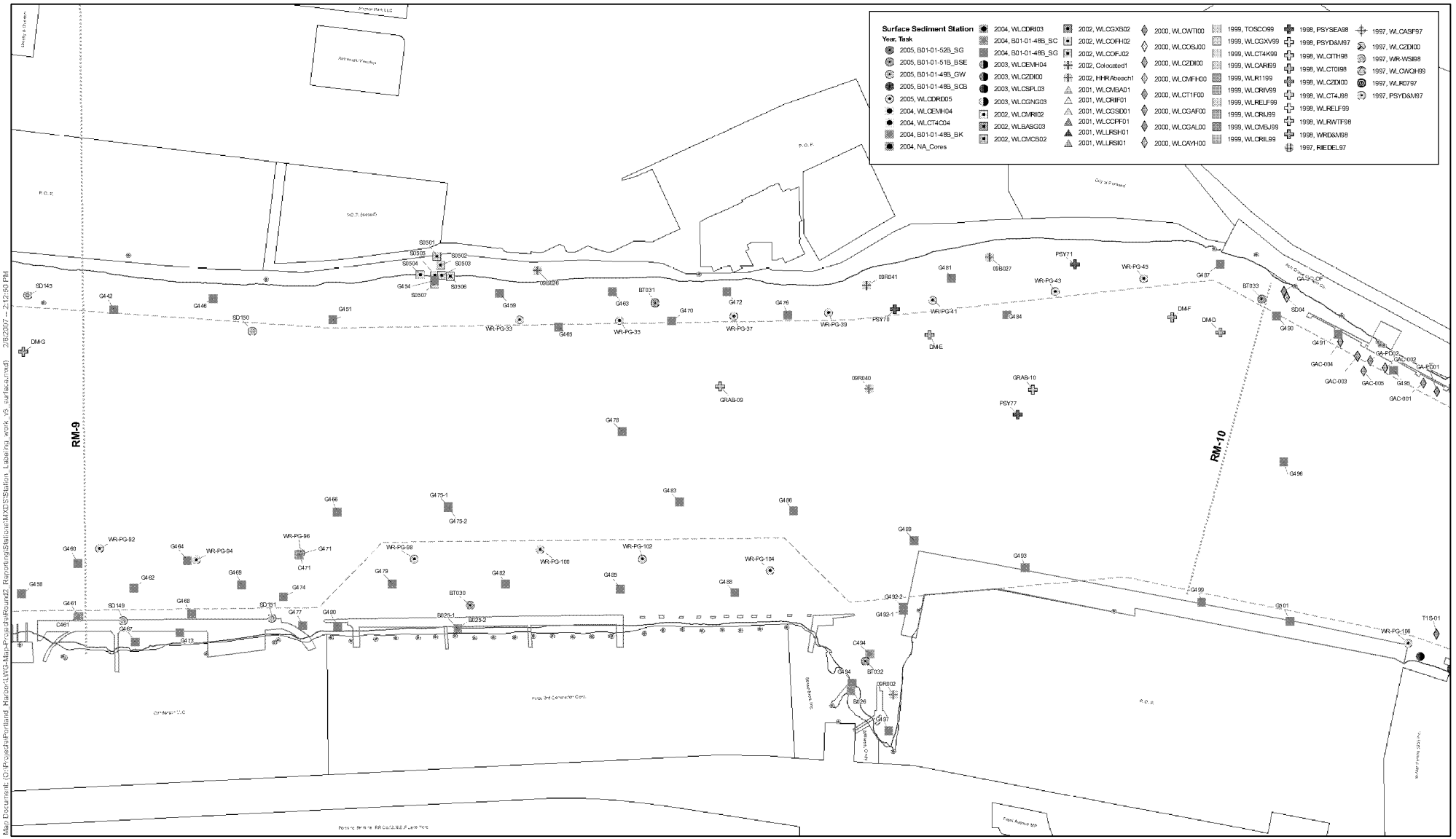
BZTO104(e)032729




Map Document: (Q:\Projects\Portland Harbor\LWG-Map-Projects\Round2_Reporting\Station Labeling_work_v3_surface.mxd) 2/9/2007 -- 2:12:50 PM

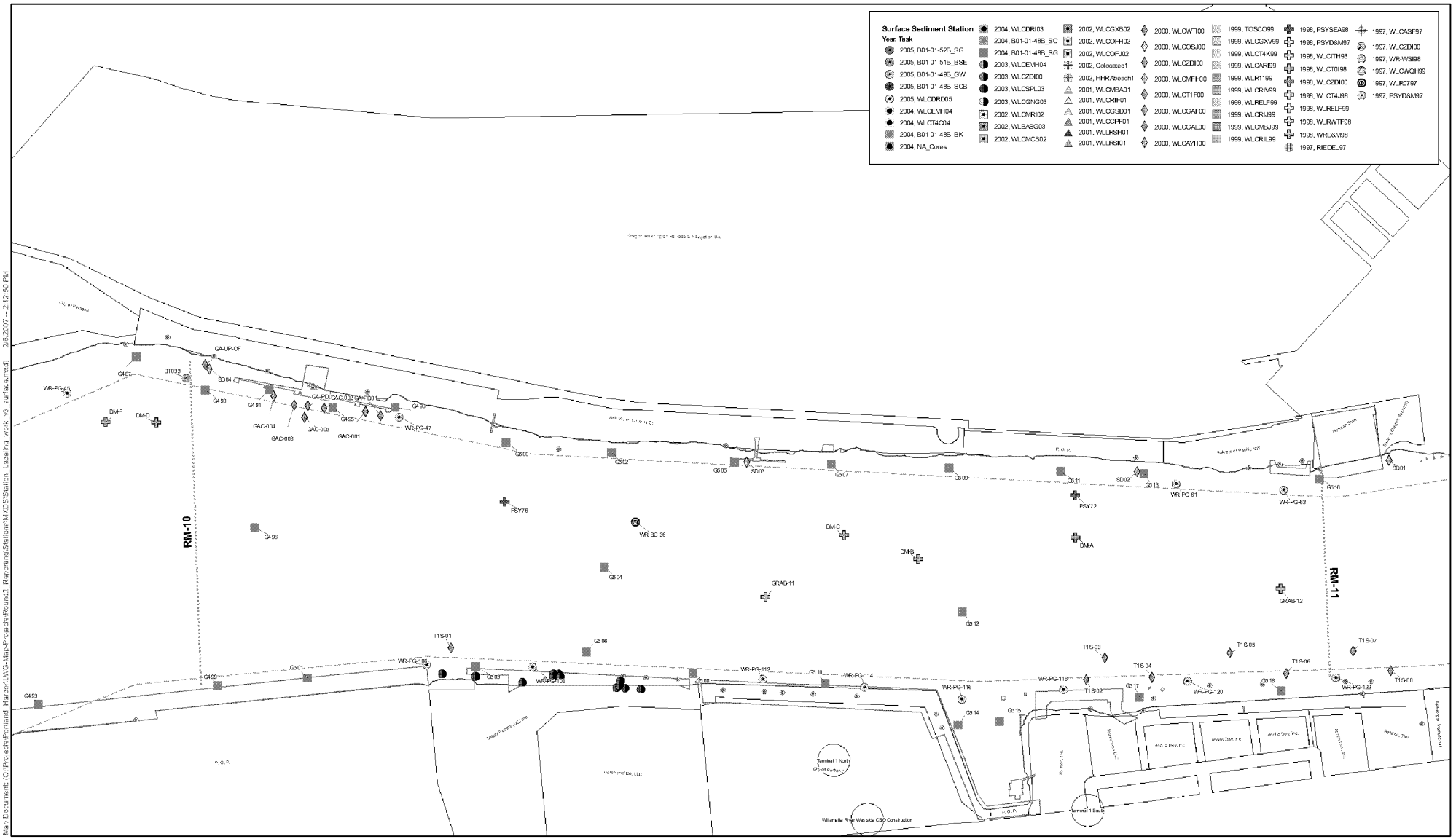
**Map 2.1-1 I**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 08 to 09 - Swan Is**

BZTO104(e)032730




**Map 2.1-1m**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 09 to 10**

BZTO104(e)032731

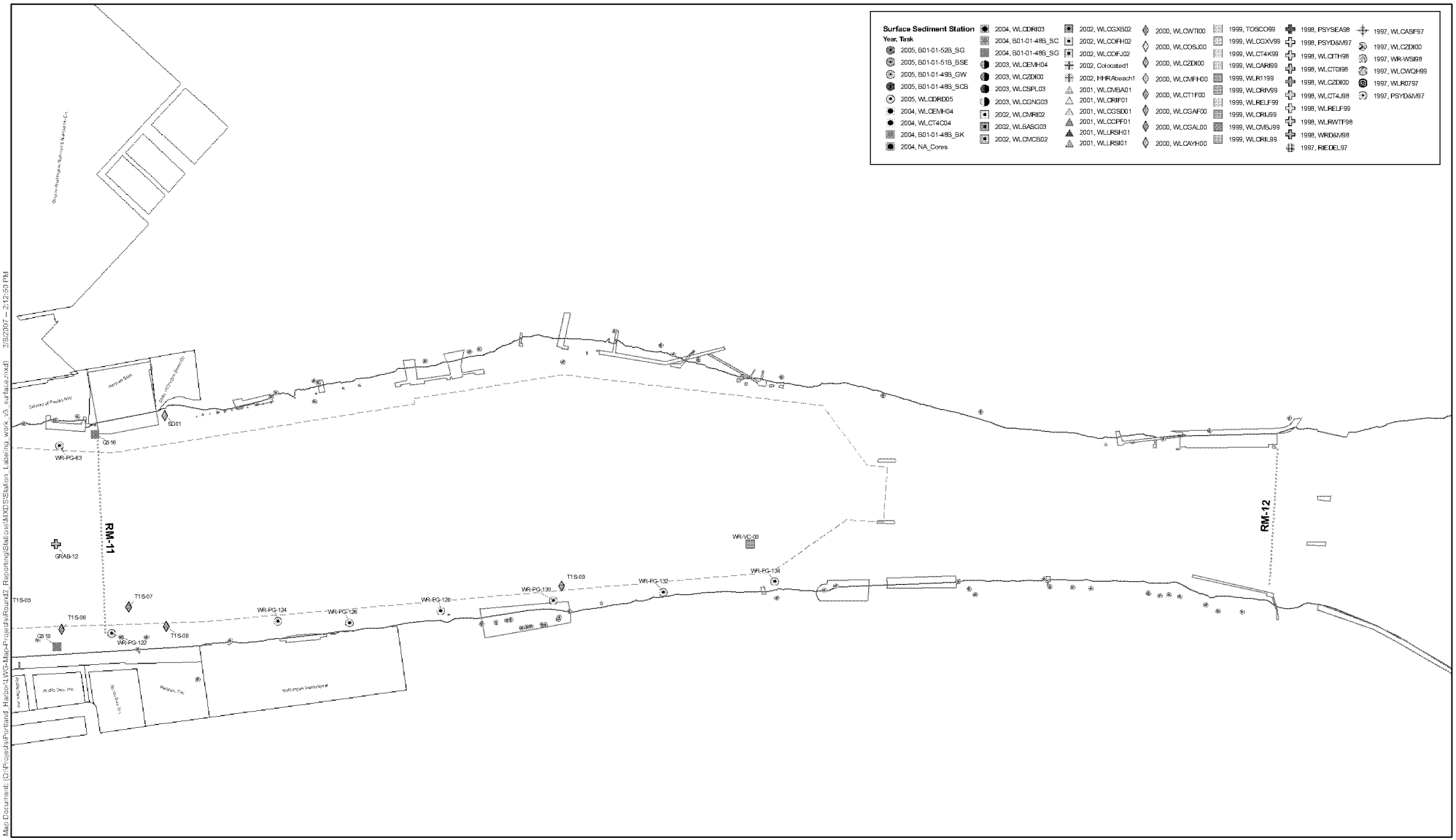



integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 2.1-1 n**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 10 to 11**

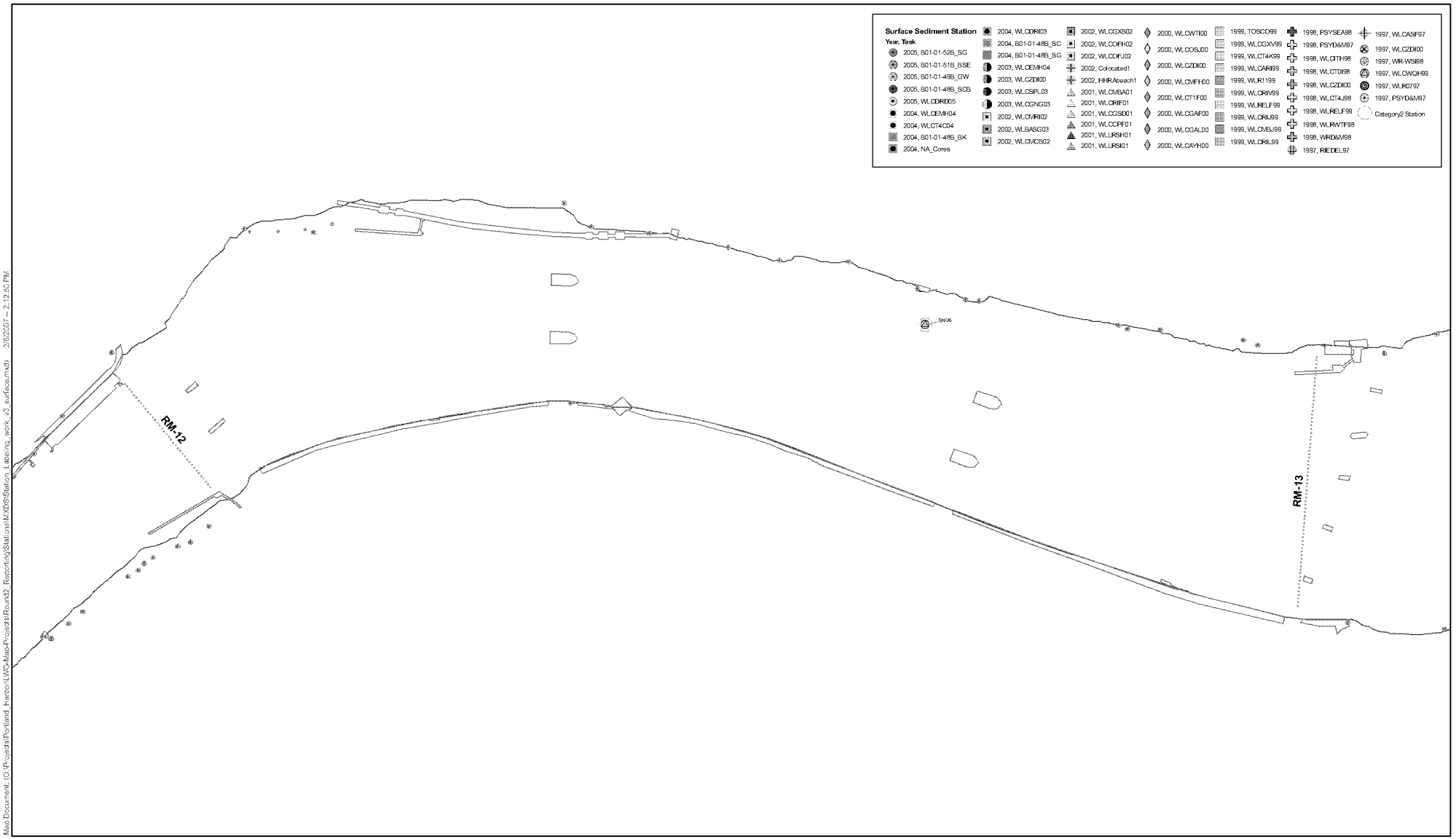
BZTO104(e)032732




Map Document: (Q:\Projects\Portland Harbor\LWG-Map-Projects\Round2_Reporting\Station Labeling_work_v3_surface.mxd) 2/9/2007 -- 2:12:50 PM

**Map 2.1-1 o**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 11 to 12**

BZTO104(e)032733



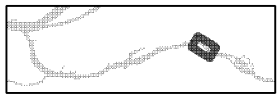

Map Document: (Q:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXD\STation_Labeling_work_v3_surface.mxd) 2/6/2007 -- 2:12:50 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 600 Feet

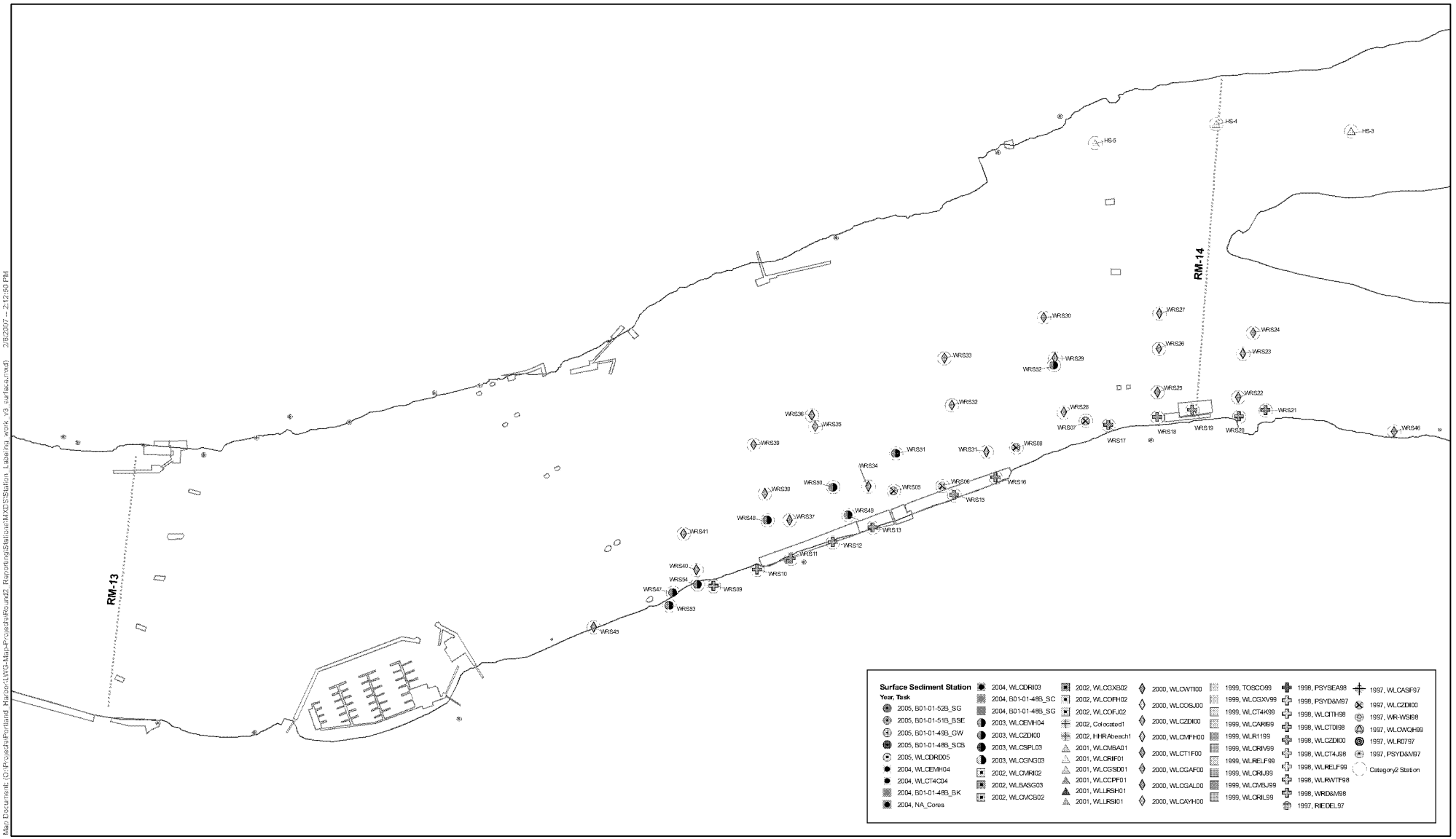
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.



Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-1 p**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 12 to 13**

BZTO104(e)032734

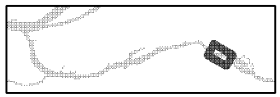



integral consulting inc.

0 200 400 600 Feet

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

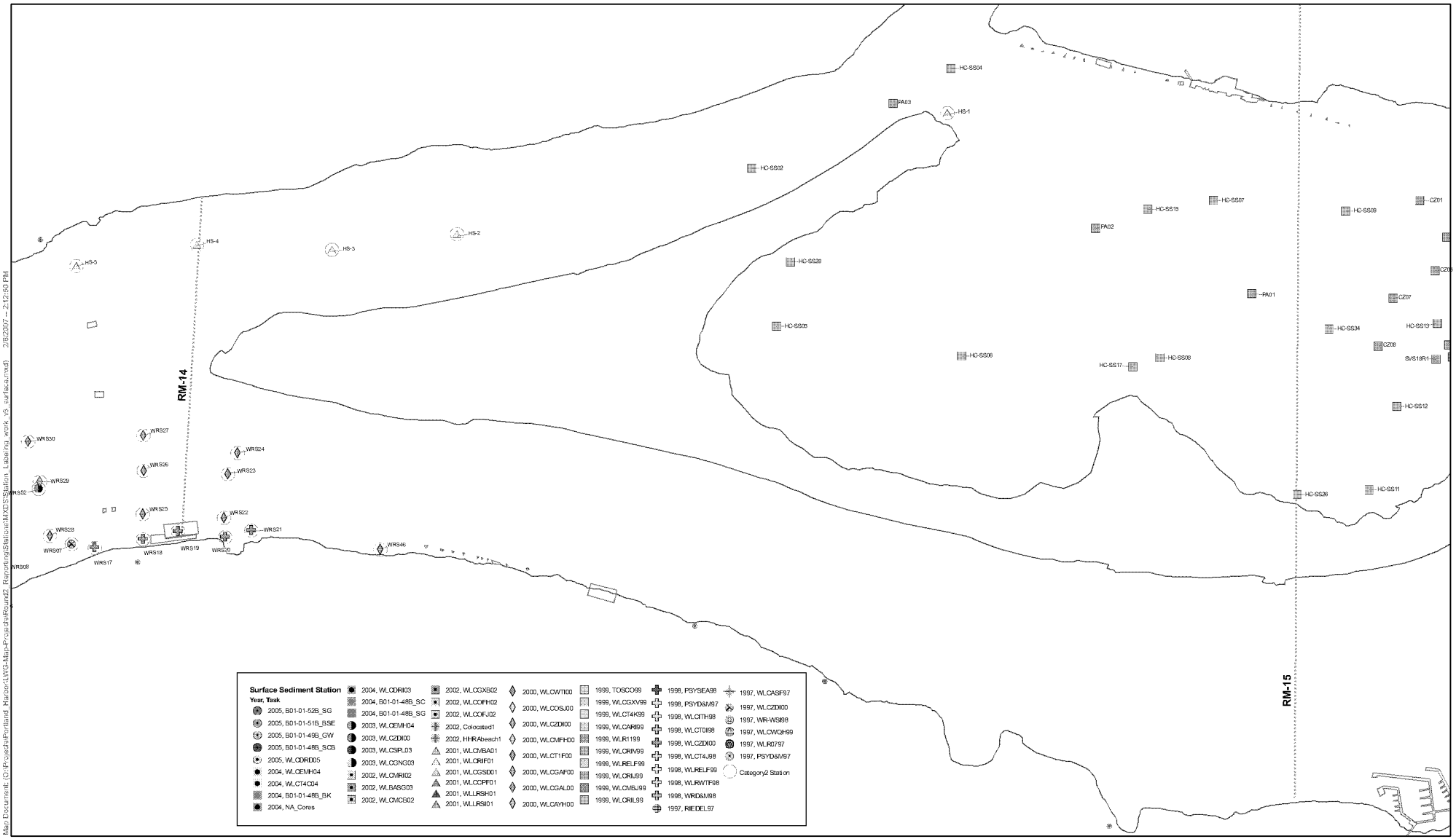


Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-1 q**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 13 to 14**

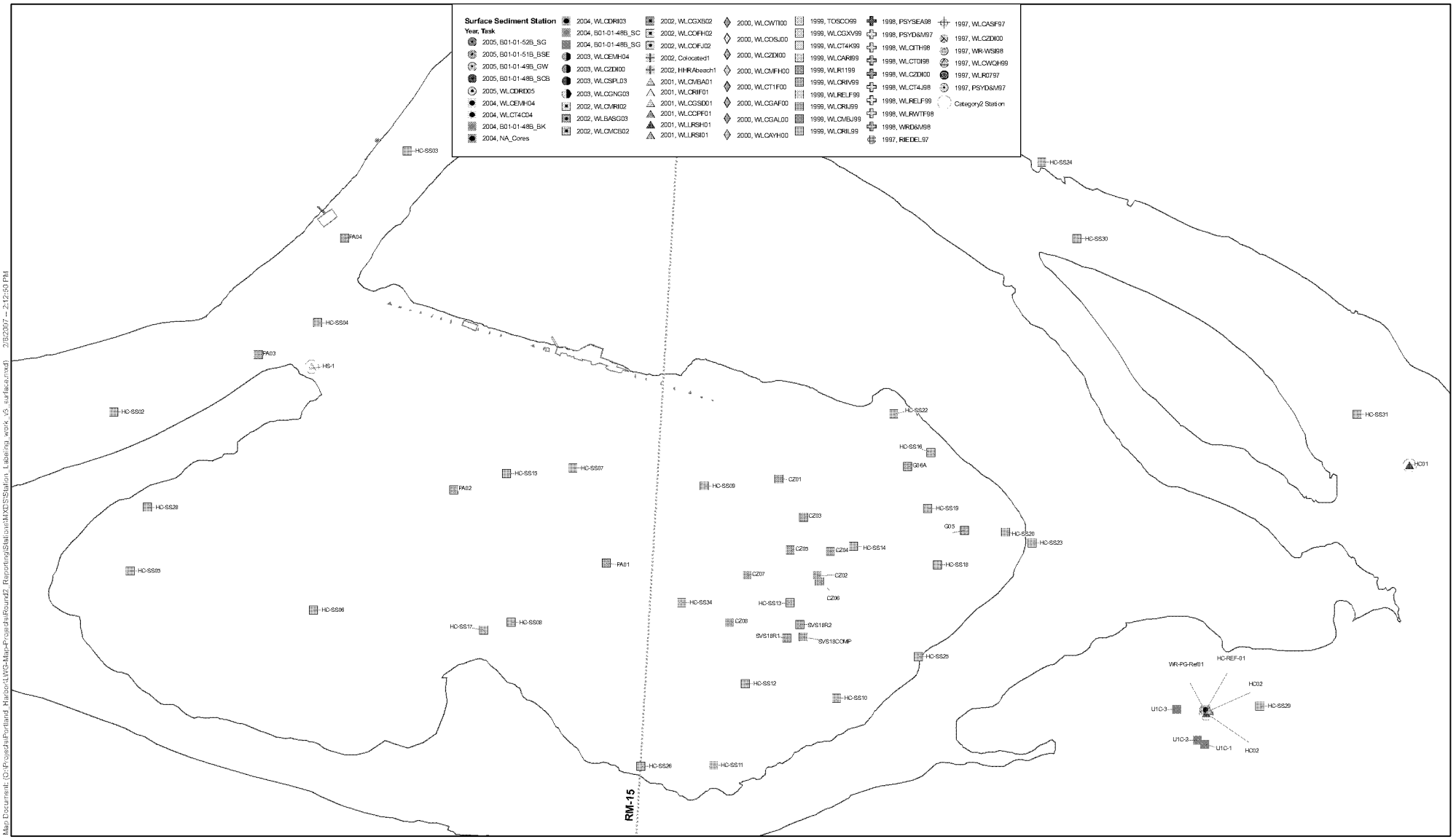
Map Document: (Q:\Projects\Portland Harbor\LWG-Map-Projects\Round2_Reporting\Station\MXD\SSStation_Labeling_work_v3_surface.mxd) 2/9/2007 -- 2:12:50 PM

BZTO104(e)032735




**Map 2.1-1 r**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 14 to 15**

BZTO104(e)032736




Map Document: (Q:\Projects\Portland Harbor\LWG-Map-Projects\Round2_Reporting\Station Labeling_work_v3_surface.mxd) 2/9/2007 -- 2:12:50 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

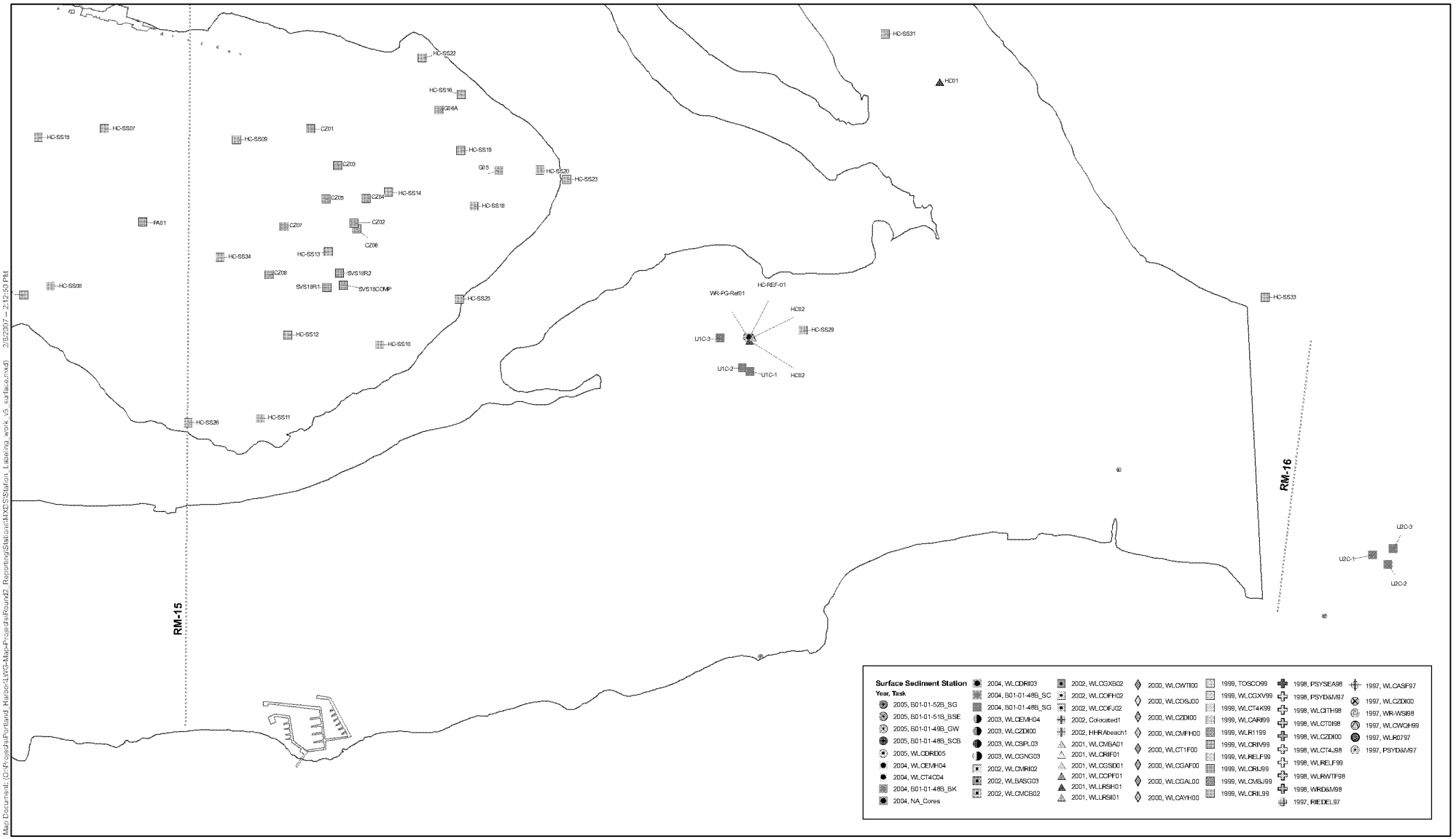
0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-1 s**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 14 -Ross Is.**

BZTO104(e)032737

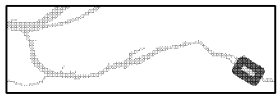



integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 600 Feet

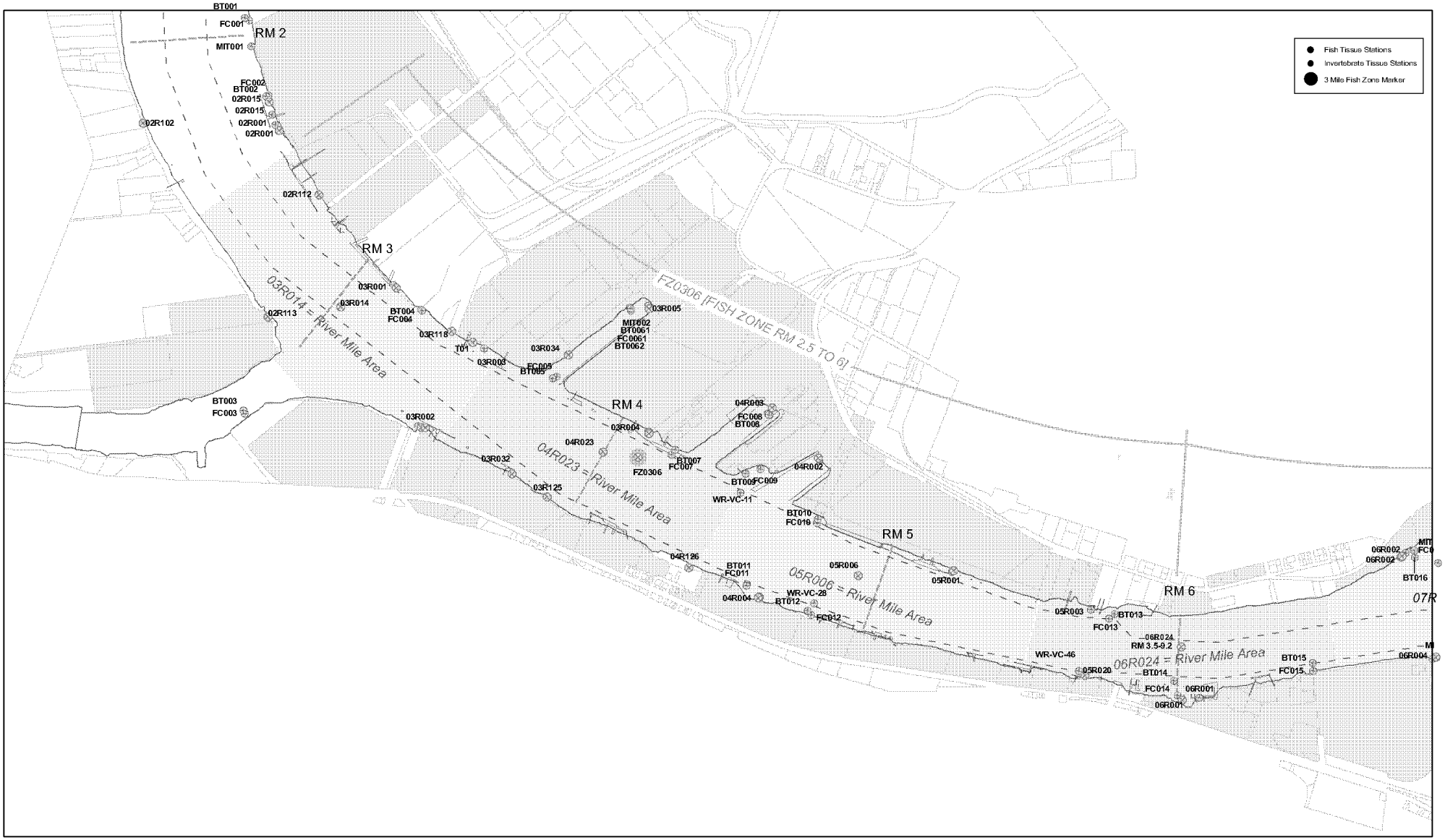
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.



Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-1 t**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Sediment Sample Station Location**
**River Mile 15 to 16**

BZTO104(e)032738




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\TissueMXDs\Tissue_Stations_fish_V2_A.mxd)
2/1/2007 -- 12:35:33 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 1,000 2,000 3,000 Feet

Navigation Channel
River Miles
Docks and Structures
Waterfront Taxlots
Upland Sites

**Map 2.1-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Fish and Invertebrate**
**Tissue Sampling Locations**

BZTO104(e)032739

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_fish_V2_B.mxd)
2/1/2007 -- 1:05:32 PM

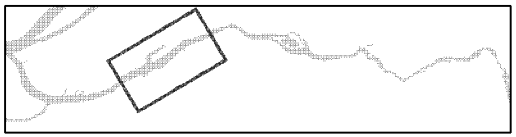
integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

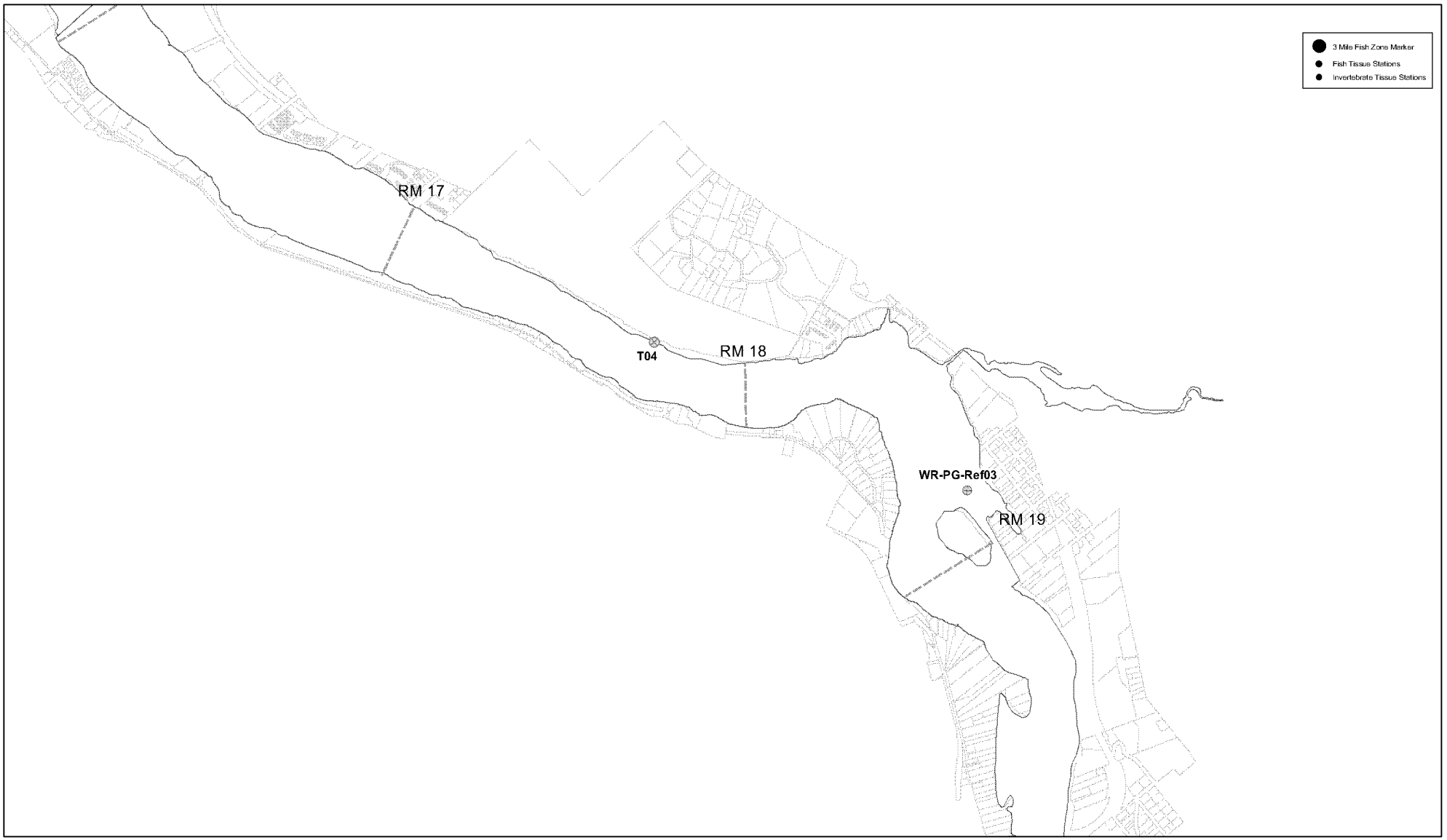
0 1,000 2,000 3,000 Feet

Navigation Channel
River Miles
Docks and Structures
Waterfront Taxlots
Upland Sites



**Map 2.1-2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Fish and Invertebrate**
**Tissue Sampling Locations**

BZTO104(e)032740




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\TissueMXDs\Tissue_Stations_fish_V2_C.mxd)
2/1/2007 -- 1:07:32 PM

integral consulting inc.

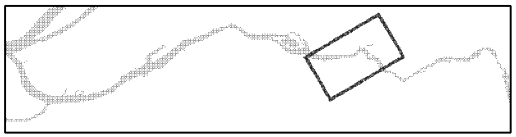
LWG LOWER WILLAMETTE GROUP

N

0 1,000 2,000 3,000 Feet

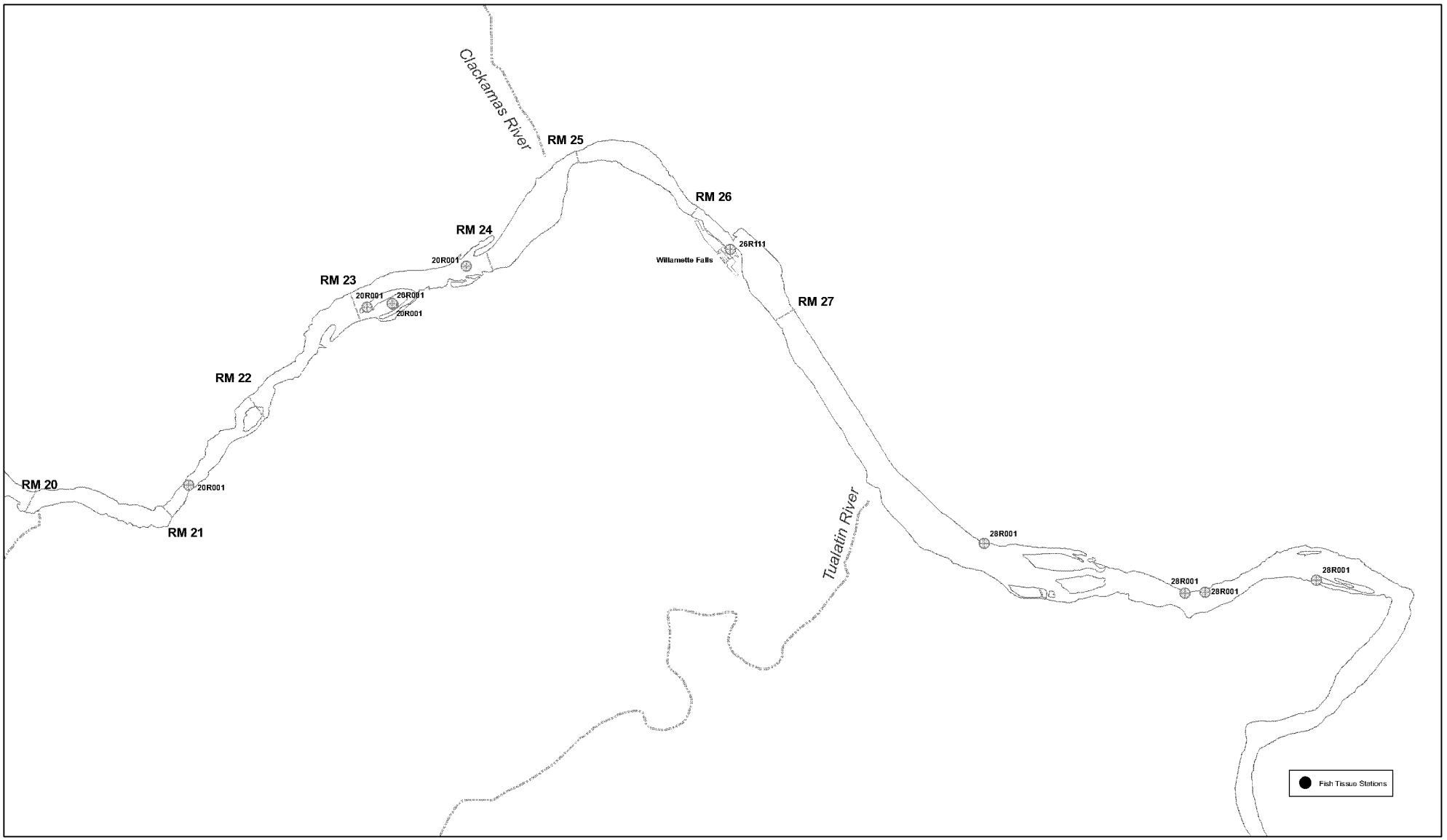
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Waterfront Ownership
Upland Sites
Waterfront Taxlots
Navigation Channel
River Miles



**Map 2.1-2c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Fish and Invertebrate**
**Tissue Sampling Locations**

BZTO104(e)032741




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_fish_V2_Upriver.mxd)
2/1/2007 -- 1:12:45 PM

integral consulting inc.

LWG
LOWER WILLAMETTE GROUP

N

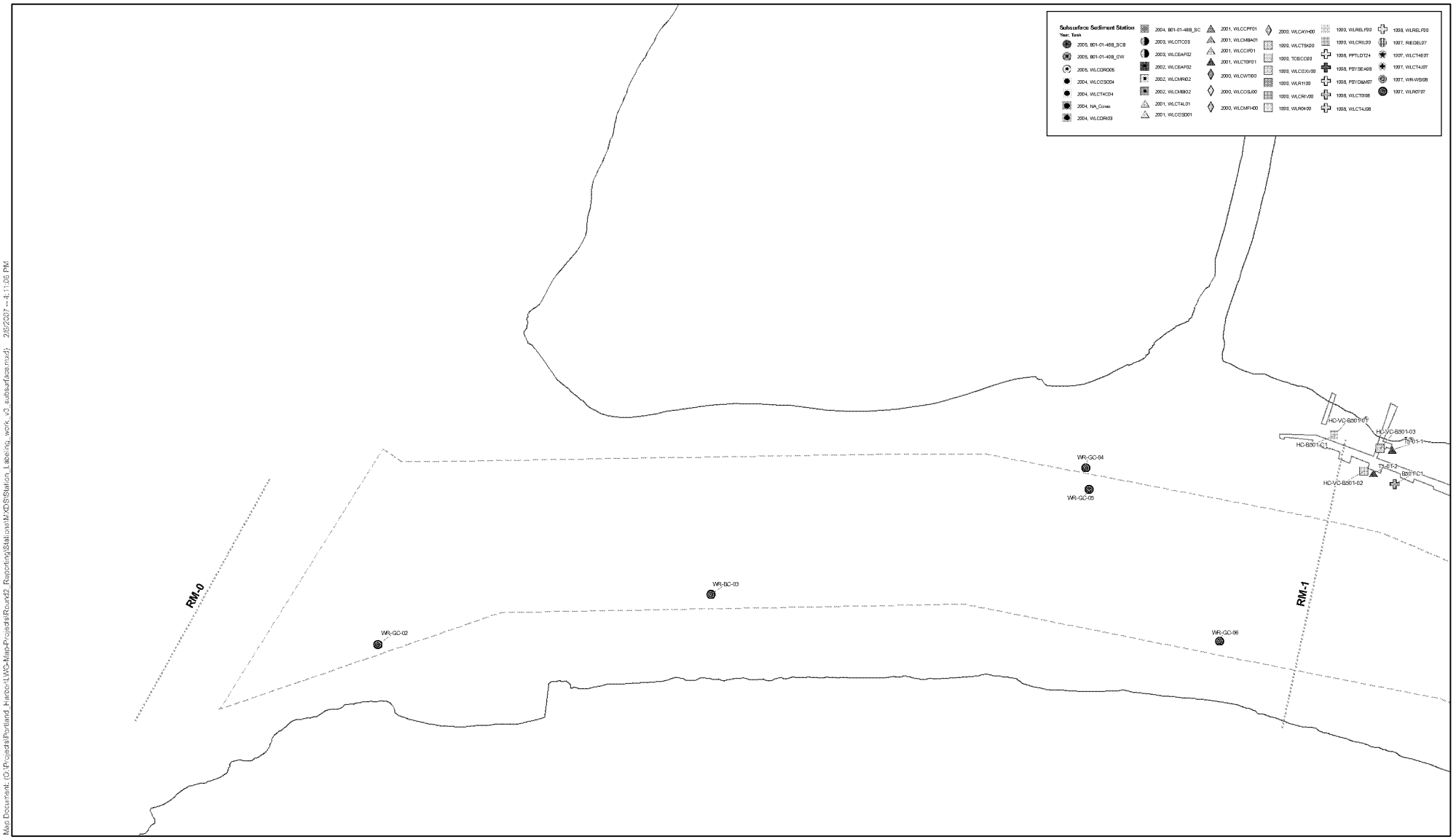
0 1,000 2,000 3,000 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
River miles

**Map 2.1-2d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Fish Tissue Sampling Locations**

BZTO104(e)032742




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXDS\Station_Labeling_work_v3_subsurface.mxd) 2/5/2007 -- 4:11:06 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

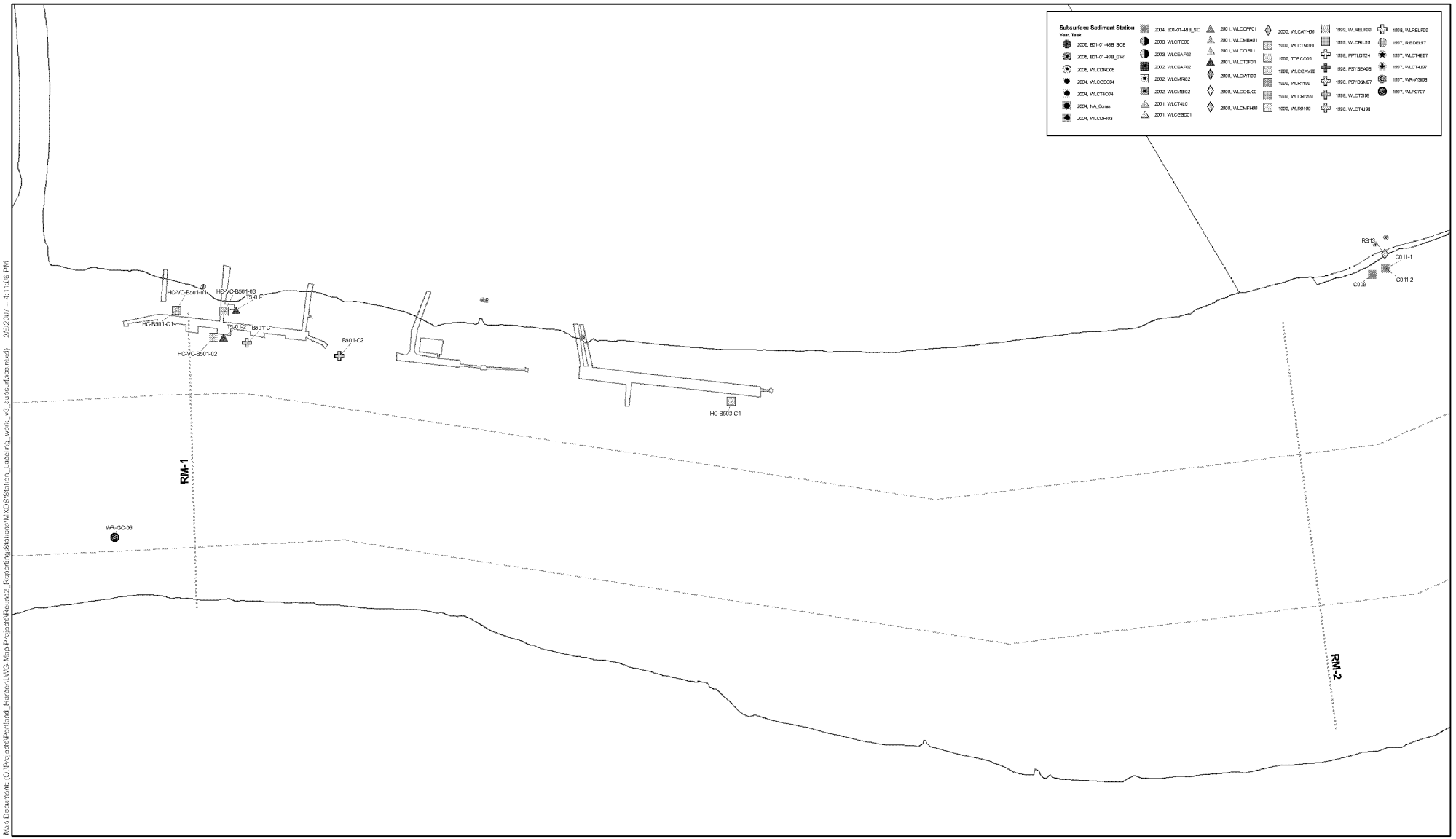
0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-3 a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 00 to 01**

BZTO104(e)032743




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-3 b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 01 to 02**

Map Document: (O:\Projects\Portland Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXDS\Station_Labeling_work_v3_subsurface.mxd) 2/5/2007 -- 4:11:06 PM

BZTO104(e)032744

Map Document: (O:\Projects\Portland Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXDS\Station_Labeling_work_v3_subsurface.mxd) 2/5/2017 -- 4:11:06 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-3 c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 02 to 03**

BZTO104(e)032745

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXDS\Station_Labeling_work_v3_subsurface.mxd) 2/5/2007 -- 4:11:06 PM

integral consulting inc.

LWG Lower Willamette Group

N

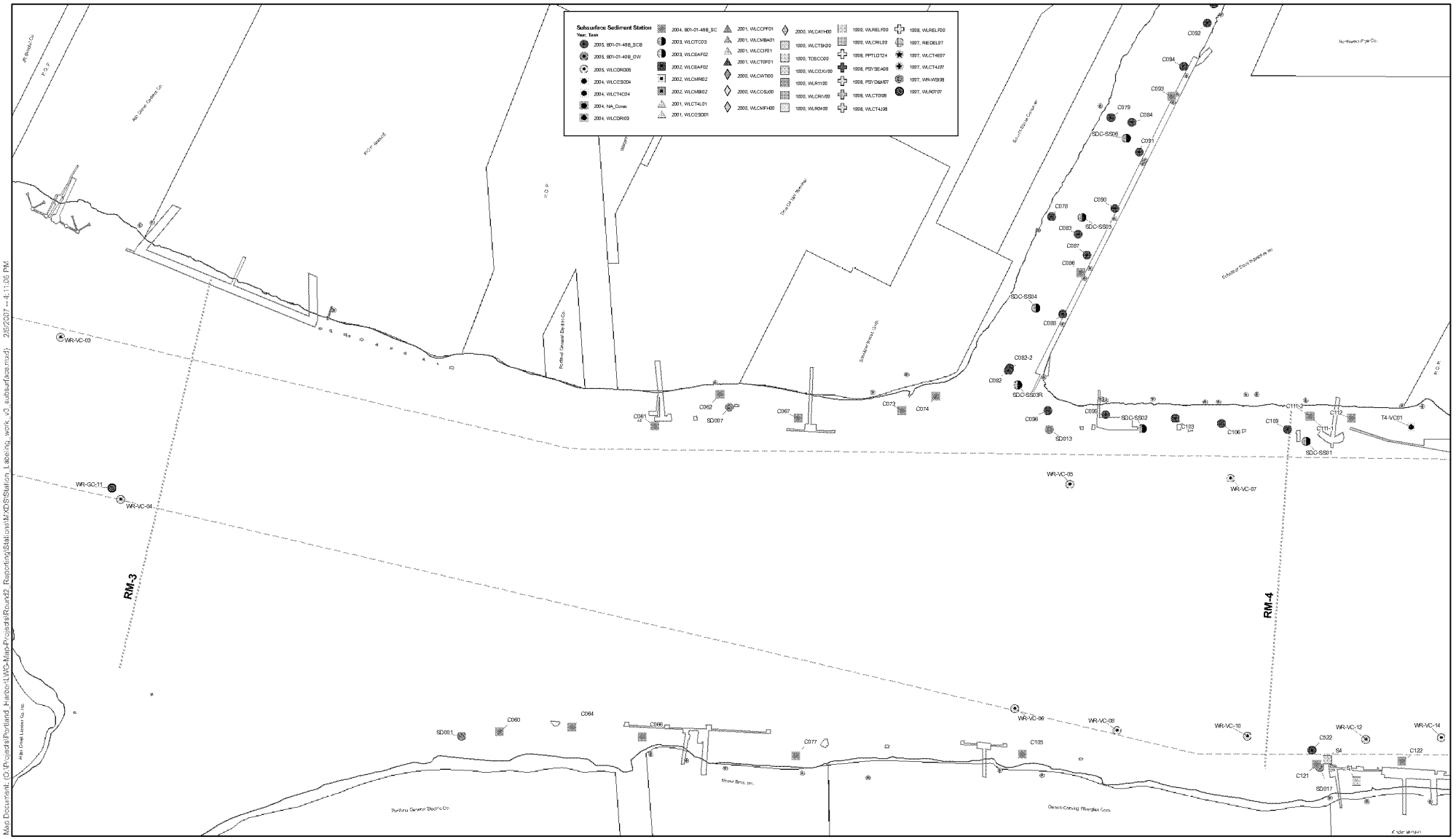
0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-3 d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 03 - Multnomah Channel**

BZTO104(e)032746



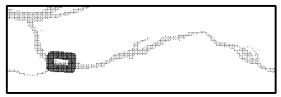

Map Document: (O:\Projects\Portland Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXD\SSStation_Labeling_work_v3_subsurface.mxd) 2/5/2017 -- 4:11:06 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.



- Outfalls
- River Miles
- Navigation Channel
- Docks & In-water Structures

**Map 2.1-3 e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 03 to 04**

BZTO104(e)032747

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-3 f**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 04 - Slips**

BZTO104(e)032748

integral consulting inc.

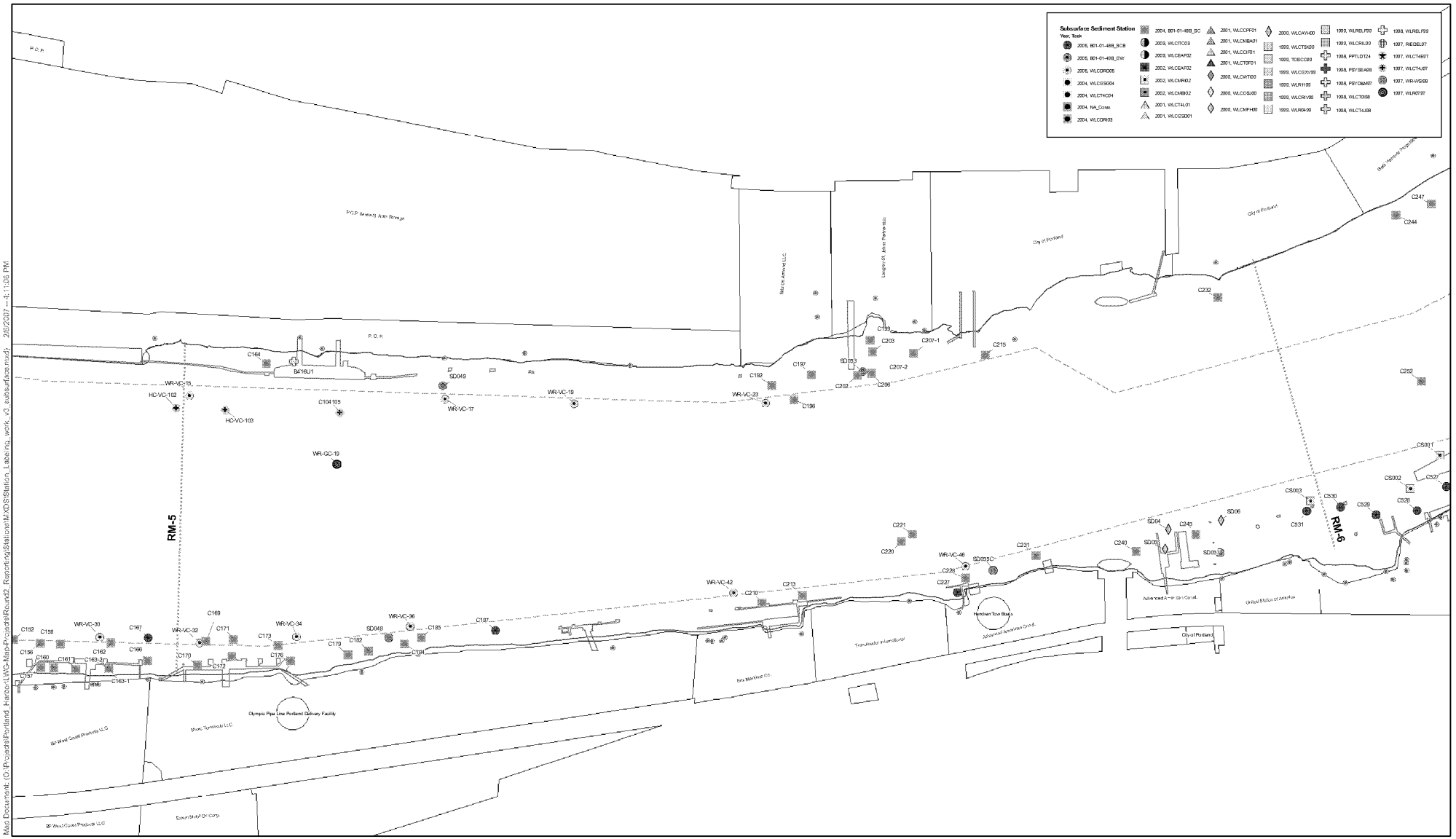
LWG LOWER WILLAMETTE GROUP

0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

**Map 2.1-3 g**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 04 to 05**

BZTO104(e)032749

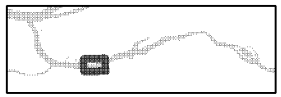



integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.



Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-3 h**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 05 to 06**

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXD\SSStation_Labeling_work_v3_subsurface.mxd) 2/5/2007 -- 4:11:06 PM

BZTO104(e)032750

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 2.1-3 i**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 06 to 07**

BZTO104(e)032751

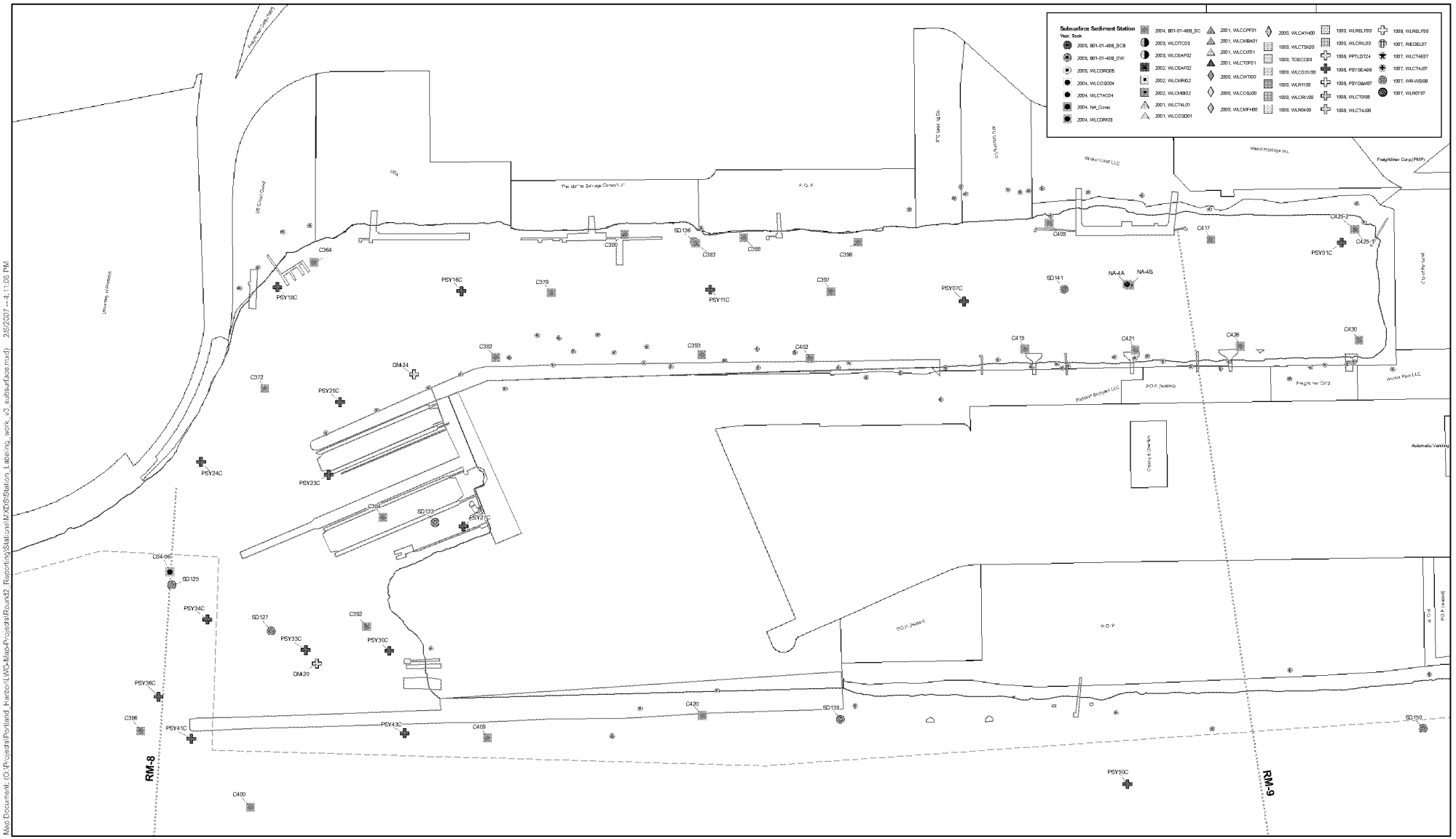
**Map 2.1-3 j**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 07 to 08**

BZTO104(e)032752

Map Document: (Q:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXDs\Station_Labeling_work_v3_subsurface.mxd) 2/5/2017 -- 4:11:06 PM

**Map 2.1-3 k**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 08 to 09**

BZTO104(e)032753




Map Document: (Q:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXD\STation_Labeling_work_v3_subsurface.mxd) 2/5/2007 -- 4:11:06 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

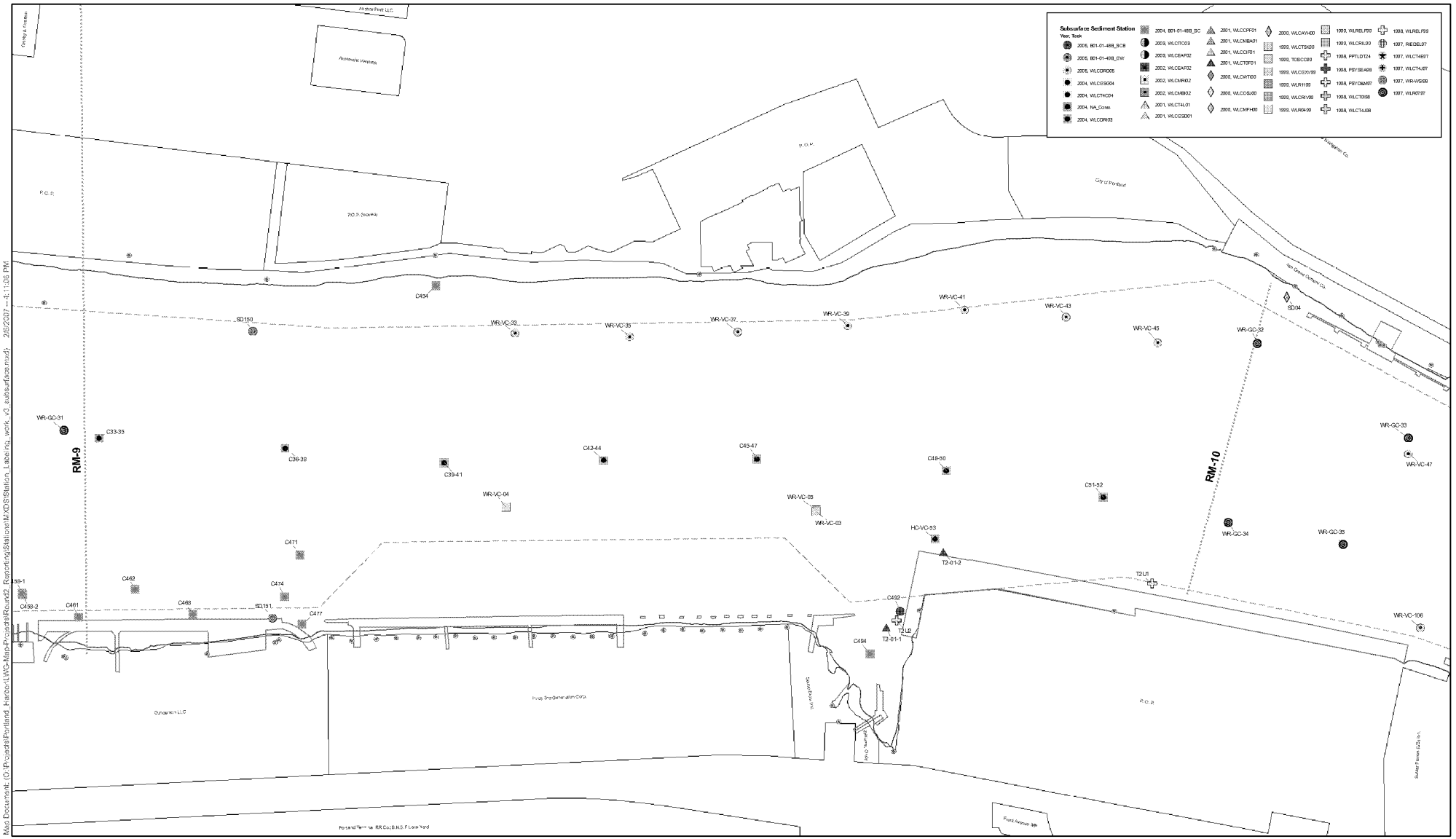
0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-3 I**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 08 to 09 - Swan Is**

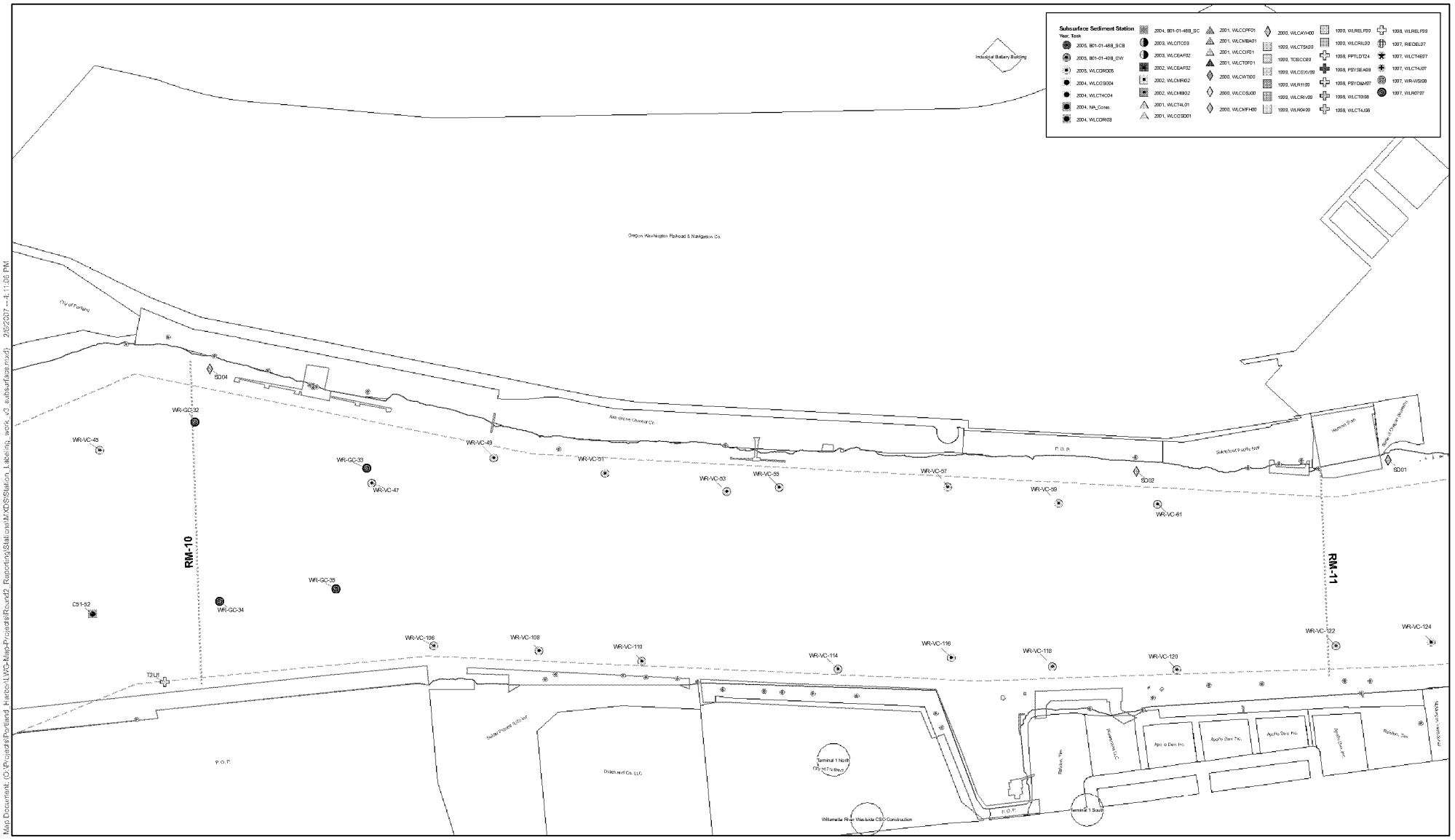
BZTO104(e)032754




Map Document: (O:\Projects\Portland_Harbor\LWC-Map-Projects\Round2_Reporting\Stations\MXD\SSStation_Labeling_work_v3_subsurface.mxd) 2/5/2017 -- 4:11:06 PM

**Map 2.1-3 m**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 09 to 10**

BZTO104(e)032755




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

**Map 2.1-3 n**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 10 to 11**

Map Document: (O:\Projects\Portland Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXD\STation_Labeling_work_v3_subsurface.mxd) 2/5/2007 -- 4:11:06 PM

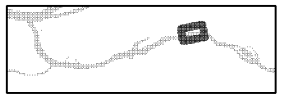
BZTO104(e)032756

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.



Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-3 o**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 11 to 12**

Map Document: (O:\Projects\Portland Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXD\SSStation_Labeling_work_v3_subsurface.mxd) 2/5/2017 -- 4:11:06 PM

BZTO104(e)032757

Map Document: (Q:\Projects\Portland Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXD\SSStation Labeling_work_v3_subsurface.mxd) 2/9/2007 -- 4:11:36 PM

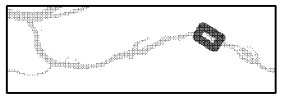
integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 200 400 600 Feet

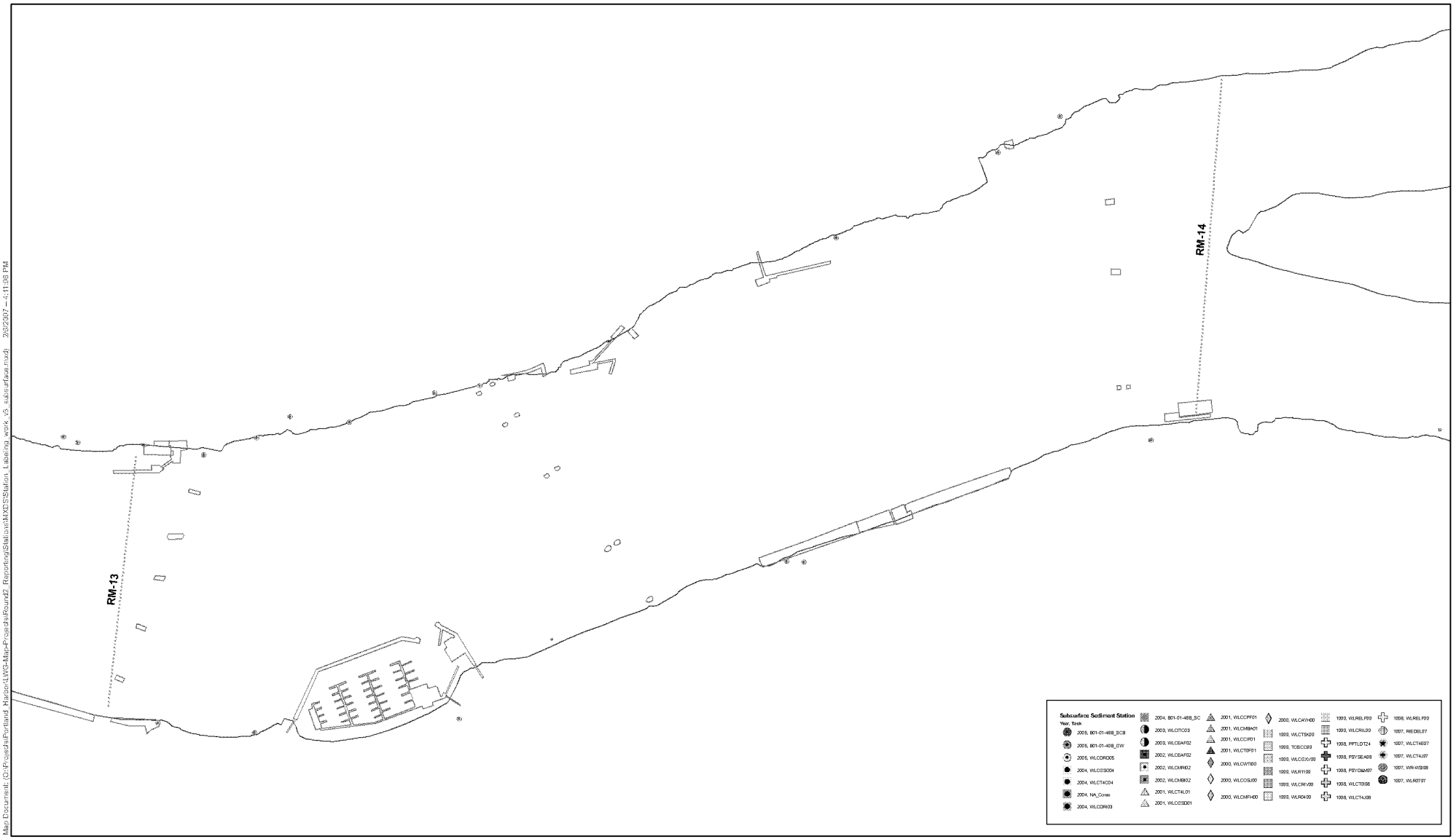
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.



Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-3 p**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 12 to 13**

BZTO104(e)032758



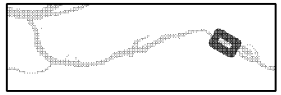

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.



Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-3 q**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 13 to 14**

Map Document: (Q:\Projects\Portland Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXD\STStation Labeling work v3_subsurface.mxd) 2/9/2007 -- 4:11:36 PM

BZTO104(e)032759

BZTO104(e)032760

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXD\STation_Labeling_work_v3_subsurface.mxd) 2/5/2007 -- 4:11:06 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-3 s**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 14 -Ross Is.**

BZTO104(e)032761

Map Document: (Q:\Projects\Portland Harbor\LWG-Map-Projects\Round2_Reporting\Stations\MXD\SSStation Labeling_work_v5_subsurface.mxd) 2/9/2007 -- 4:11:36 PM

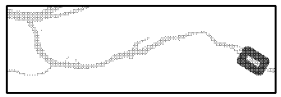
integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 200 400 600 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

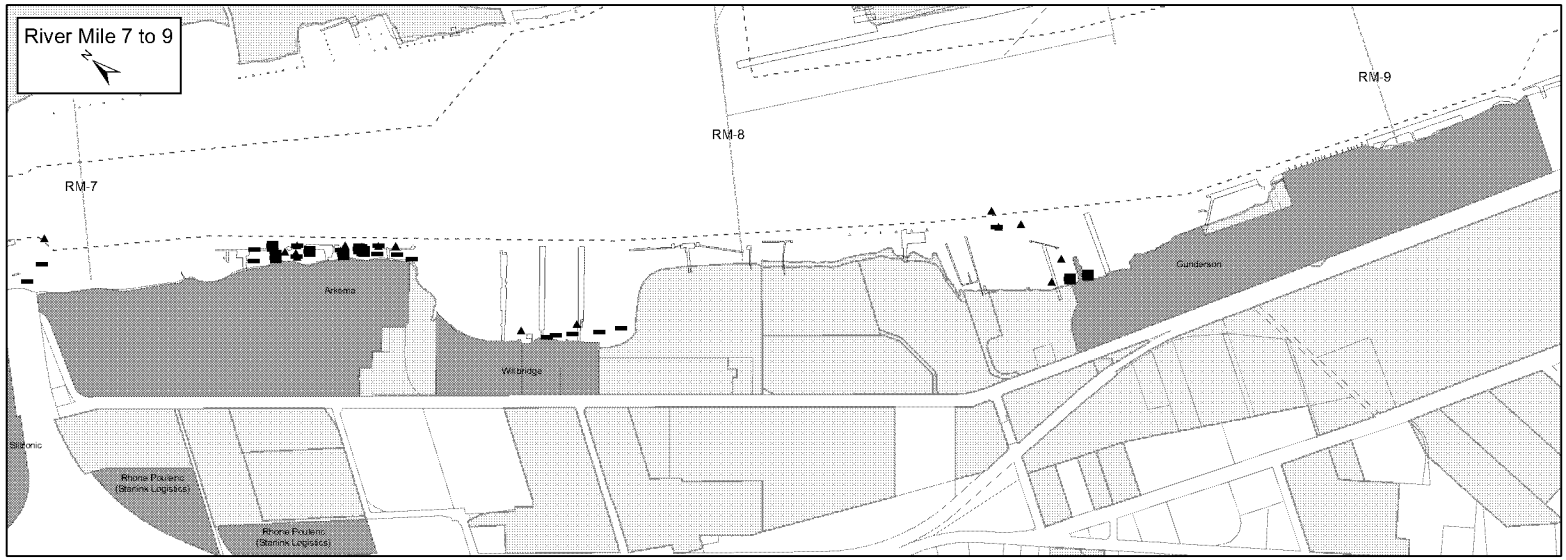


Outfalls
River Miles
Navigation Channel
Docks & In-water Structures

**Map 2.1-3 t**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Subsurface Sediment Sample Station Location**
**River Mile 15 to 16**

BZTO104(e)032762

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG Map Projects\TZW\Analyte Maps\TZW_Water_Sample_Locations_Whole_River_20070208.mxd - 2/8/2007 @ 6:19:21 PM




**Round 2 Transition Zone Water Sampling Locations**

- ▲ Peeper, 0-38 cm
- ■ Paired Trident, 30 cm and >60 cm
- ▬ Trident, 30 cm
- ▬ Trident, >90 cm
- ● Push Probe, non-LWG, 30 cm

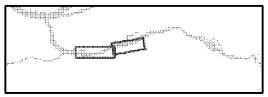
integral consulting inc.

LWG Lower Willamette Group

Map Features:
- R2 GWPA Study Site
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots

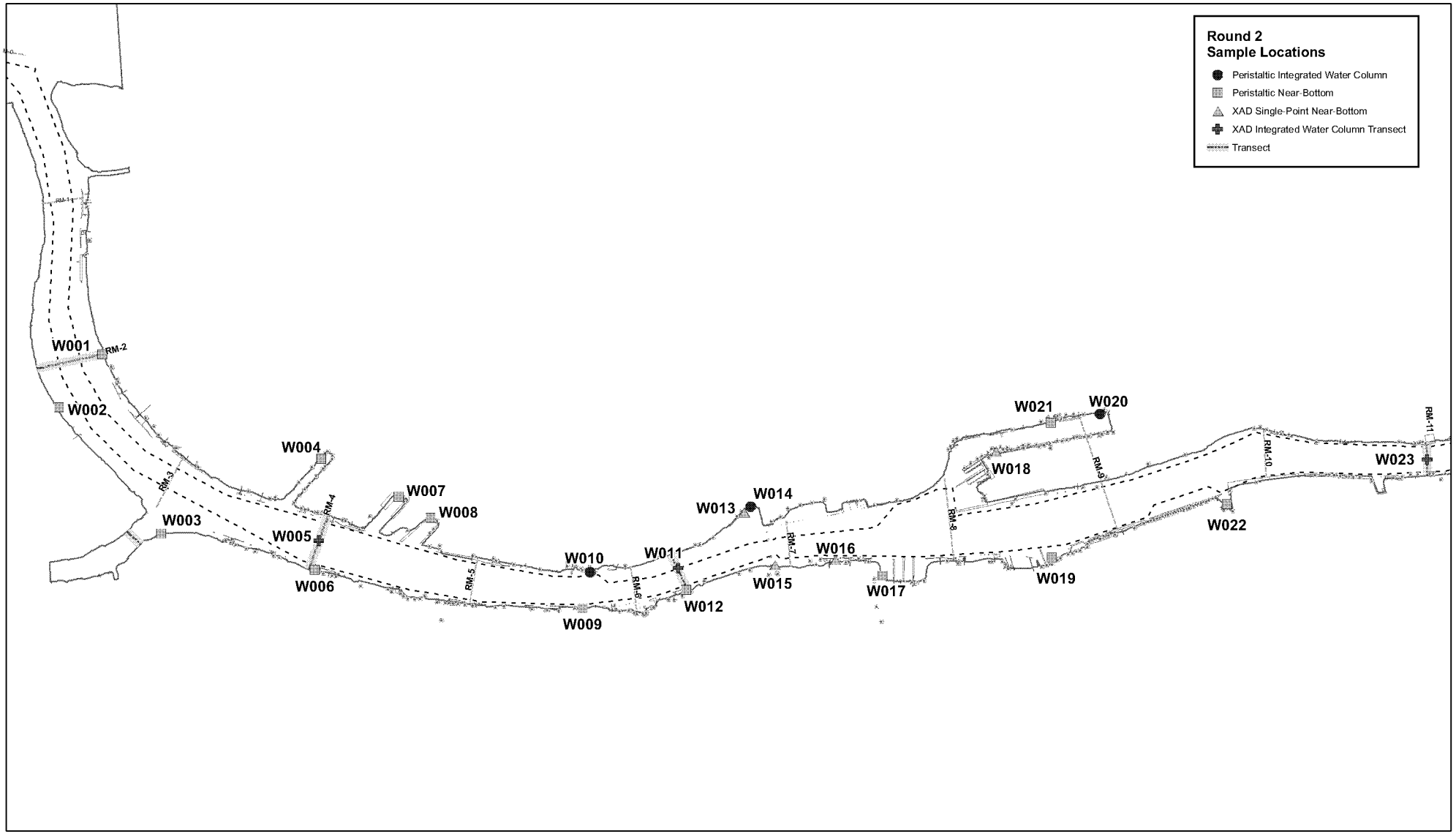
0 250 500 750 1,000 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers
Bathymetric Information: David Evans and Associates, Inc.



**Map 2.1-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Transition Zone Water**
**Sampling Locations**

BZTO104(e)032763




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Map_2-1-5_SurfaceWater_station_map.mxd) 2/8/2007 – 10:21:42 AM

integral consulting inc.

LWG Lower Willamette Group

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 0.5 1 Miles

Docks and Structures
Waterfront Taxlots
Upland Sites (2006)
Outfalls
River Mile
Navigation Channel
2004 Bathymetry
High : 10.4101
Low : -90.584

**Map 2.1-5**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Water Station Locations**

BZTO104(e)032764

integral consulting inc.

LWG Lower Willamette Group

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Riverbank conditions: Windward LLC
RLIS Aerial Images of February 2005 "leaf off" flight (6" pixel)

N

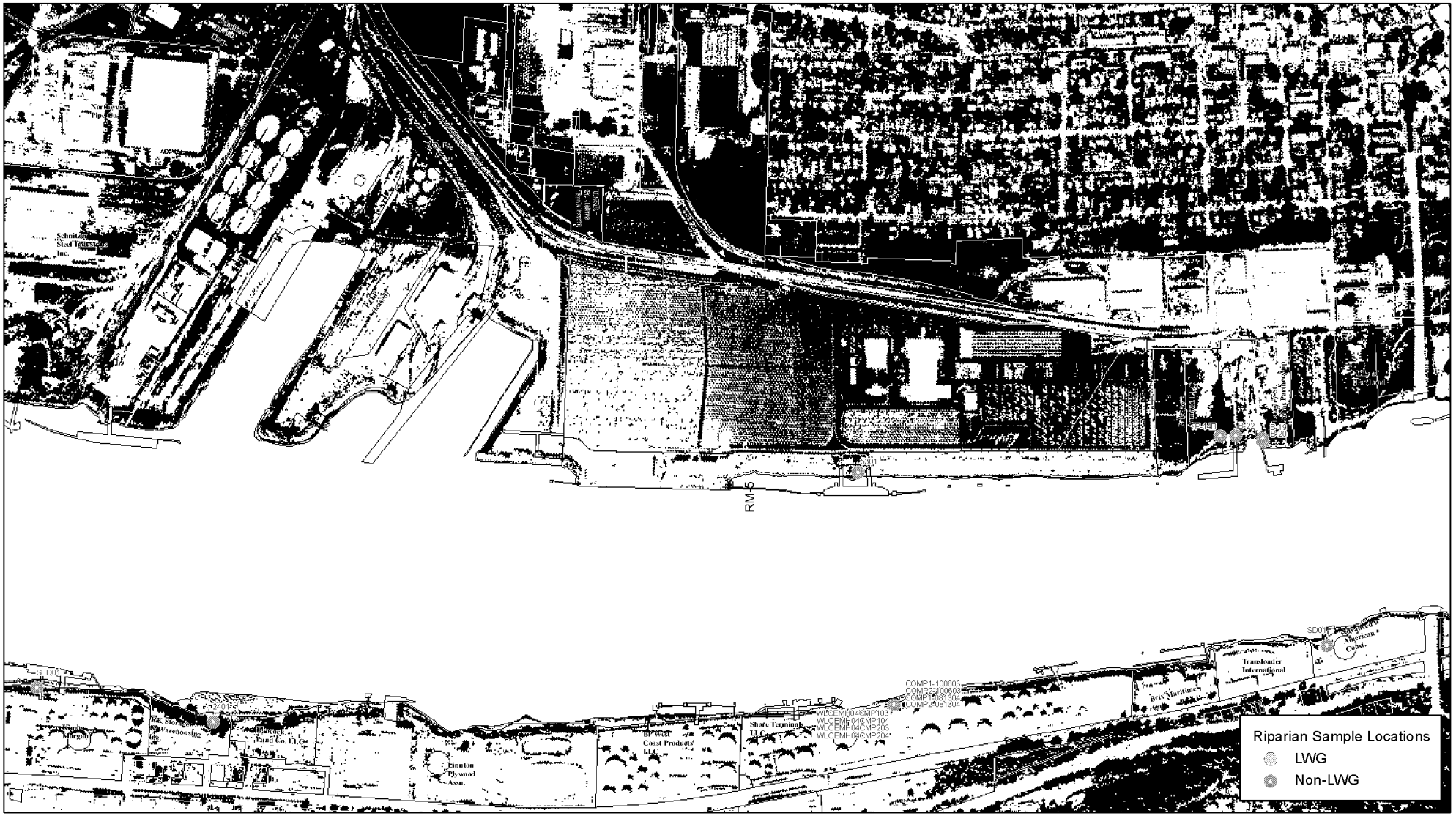
0 230 460 690 Feet

River Miles
Navigation Channel
Docks and Structures
River Edge

Bathymetric Change
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening

**Map 2.2-1a**
**Portland Harbor RIFS**
**Comprehensive Round 2 Report**
**Riparian Sampling Locations (>13 to <22 ft. NAVD88)**

BZTO104(e)032765




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Riverbank conditions: Windward LLC
RLIS Aerial Images of February 2005 'leaf off' flight (6" pixel)

0 320 640 960 Feet

River Miles
Navigation Channel
Docks and Structures
River Edge

Bathymetric Change
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening

**Map 2.2-1b**
**Portland Harbor RIFS**
**Comprehensive Round 2 Report**
**Riparian Sampling Locations (>13 to <22 ft. NAVD88)**

BZTO104(e)032766

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Riverbank conditions: Windward LLC
RLIS Aerial Images of February 2005 'leaf off' flight (6" pixel)

0 330 660 990 Feet

River Miles
Navigation Channel
Docks and Structures
River Edge

Bathymetric Change
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening

**Map 2.2-1c**
**Portland Harbor RIFS**
**Comprehensive Round 2 Report**
**Riparian Sampling Locations (>13 to <22 ft. NAVD88)**

BZTO104(e)032767

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Riverbank conditions: Windward LLC
RLIS Aerial Images of February 2005 'leaf off' flight (6" pixel)

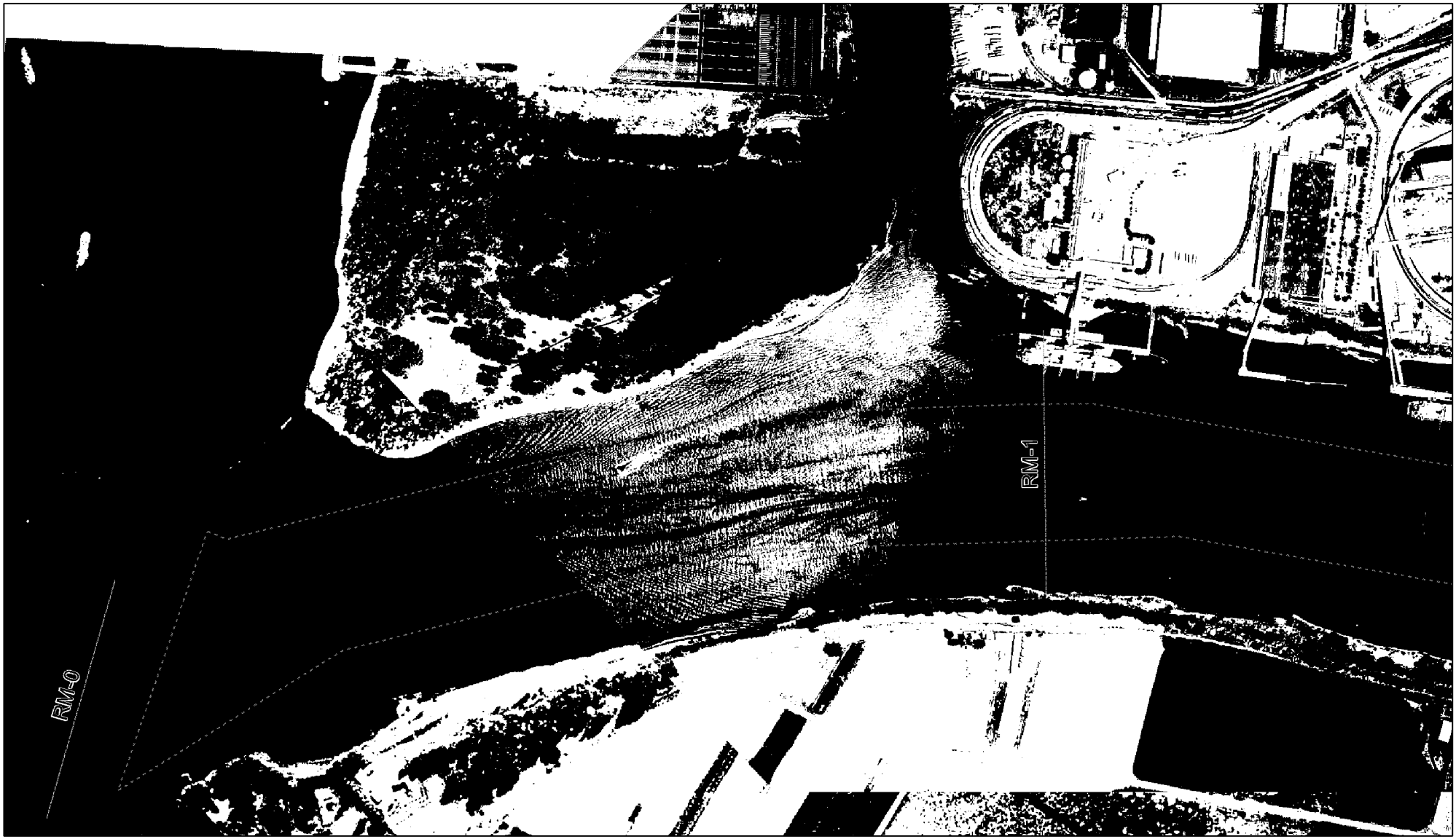
0 330 660 990 Feet

River Miles
Navigation Channel
Docks and Structures
River Edge

Bathymetric Change
-22 - -0.49 Shoaling
-0.5 - 0.5
0.51 - 37 Deepening

**Map 2.2-1d**
**Portland Harbor RIFS**
**Comprehensive Round 2 Report**
**Riparian Sampling Locations (>13 to <22 ft. NAVD88)**

BZTO104(e)032768




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 125 250 500 Feet

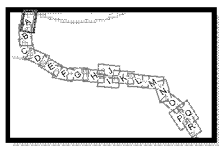
FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (8" pixel).

Supplemental SBG Aerial Images of October 2001 (4' pixel).

Channel and River Miles: US Army Corp of Engineers.

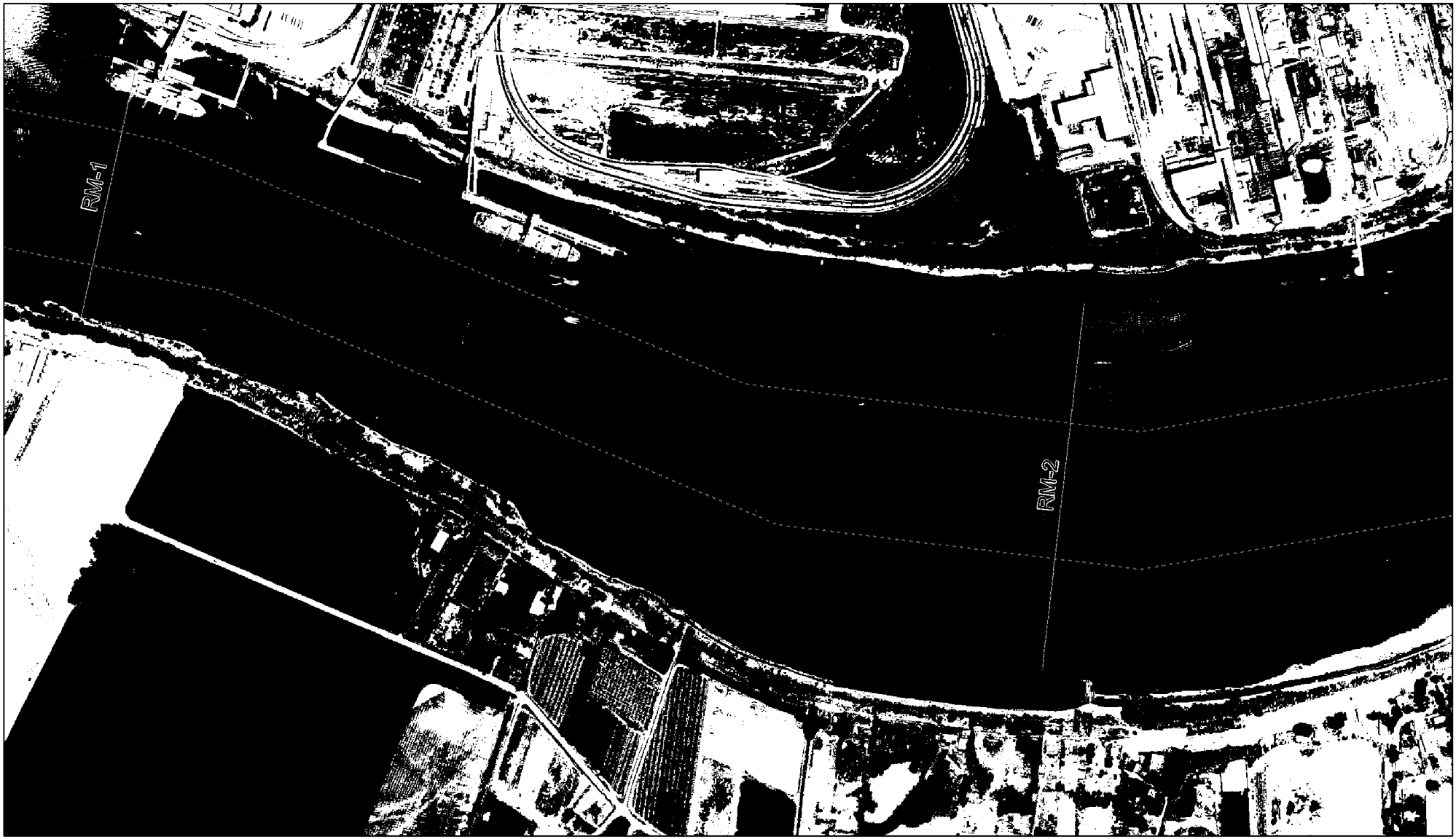
River Miles

Navigation Channel



**Map 4.1-1a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 0-01**

BZTO104(e)032769




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 125 250 500 Feet

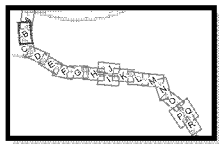
FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (8" pixel).

Supplemental SBG Aerial Images of October 2001 (4' pixel).

Channel and River Miles: US Army Corp of Engineers.

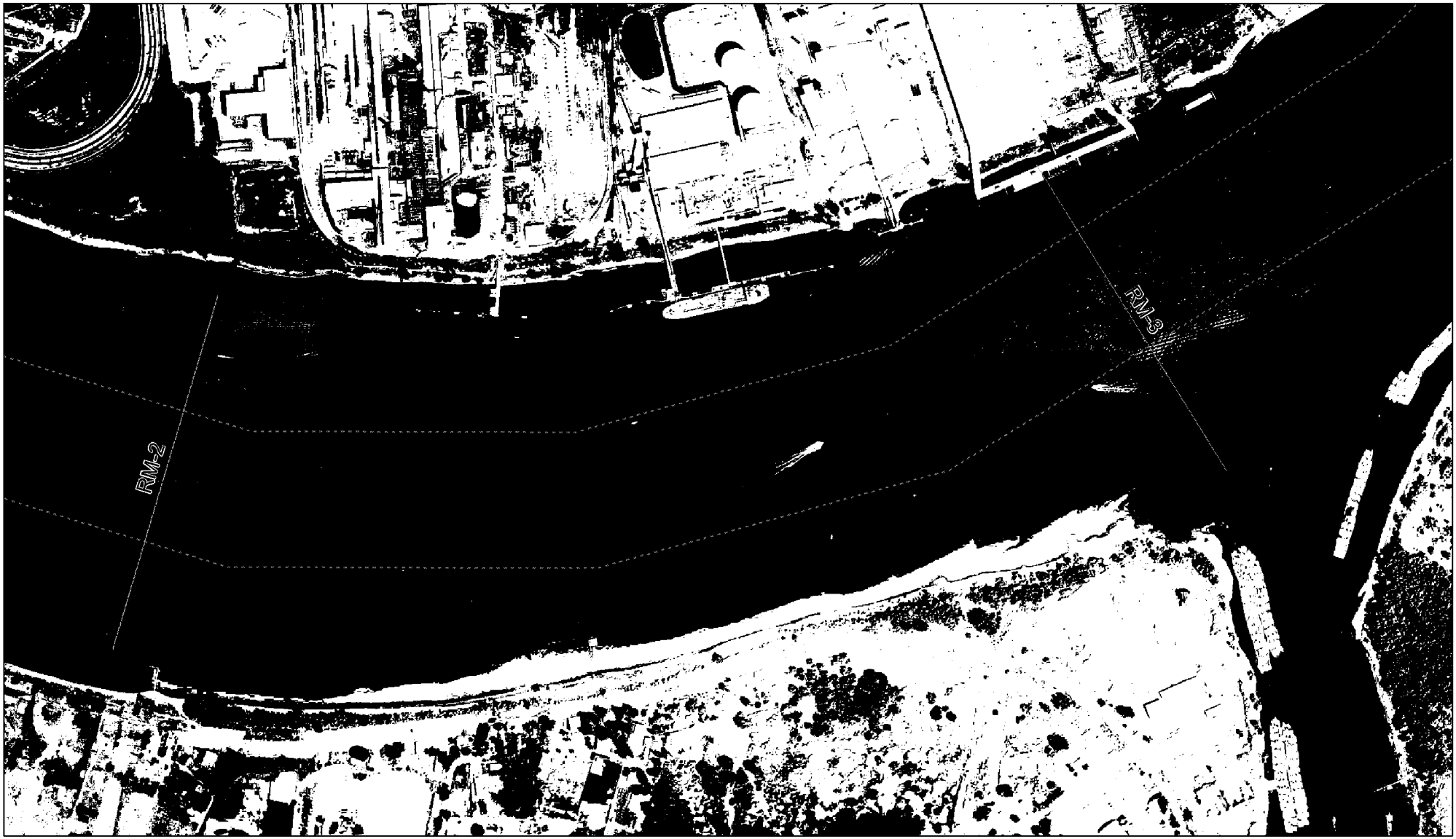
River Miles

Navigation Channel



**Map 4.1-1b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 01-02**

BZTO104(e)032770




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 125 250 500 Feet

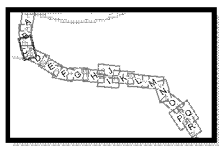
FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (8" pixel).

Supplemental SBG Aerial Images of October 2001 (4' pixel).

Channel and River Miles: US Army Corp of Engineers.

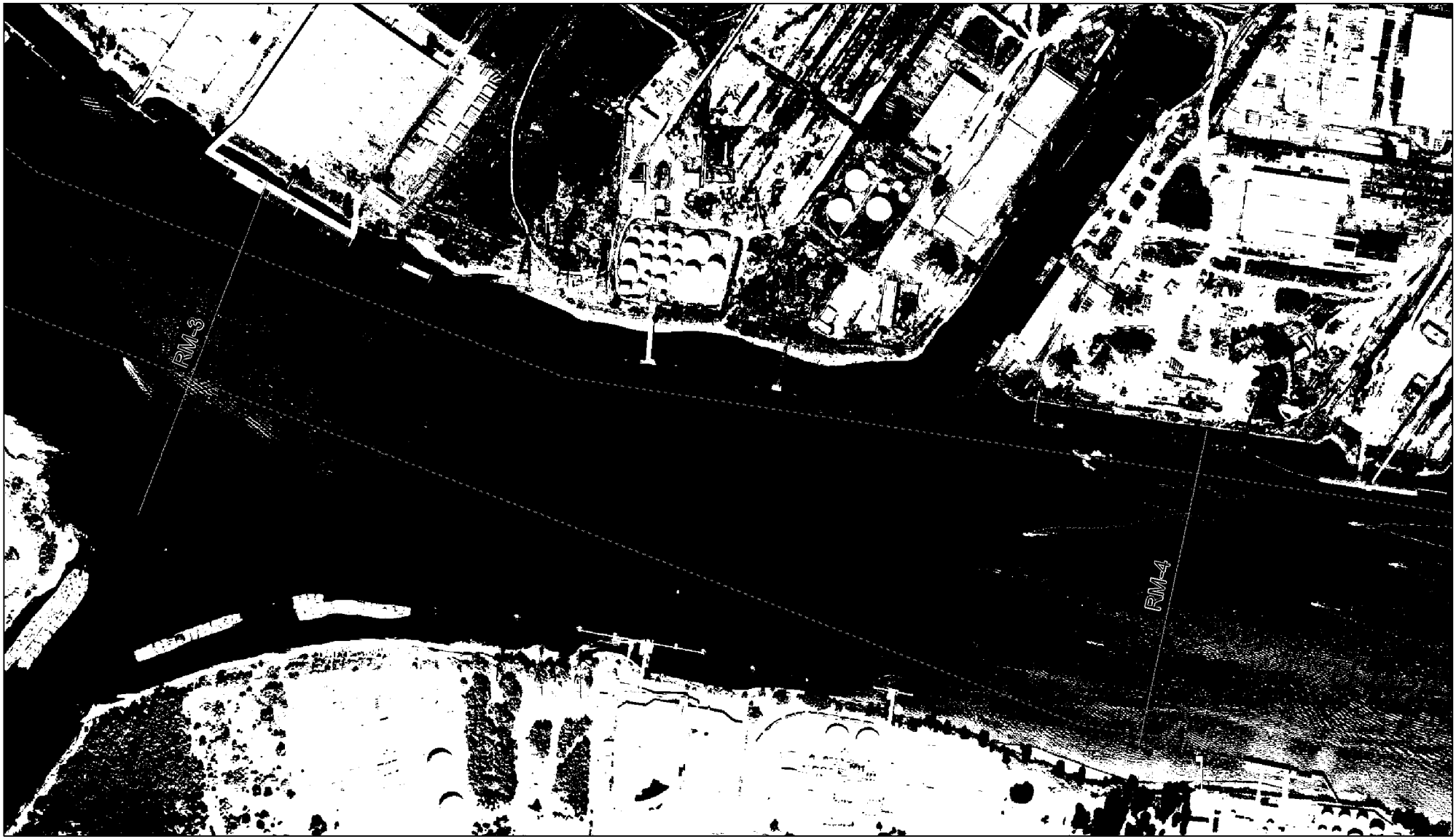
River Miles

Navigation Channel



**Map 4.1-1c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 02-03**

BZTO104(e)032771




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 125 250 500 Feet

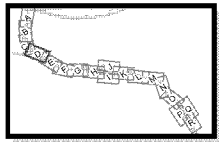
FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (8" pixel).

Supplemental SBG Aerial Images of October 2001 (4' pixel).

Channel and River Miles: US Army Corp of Engineers.

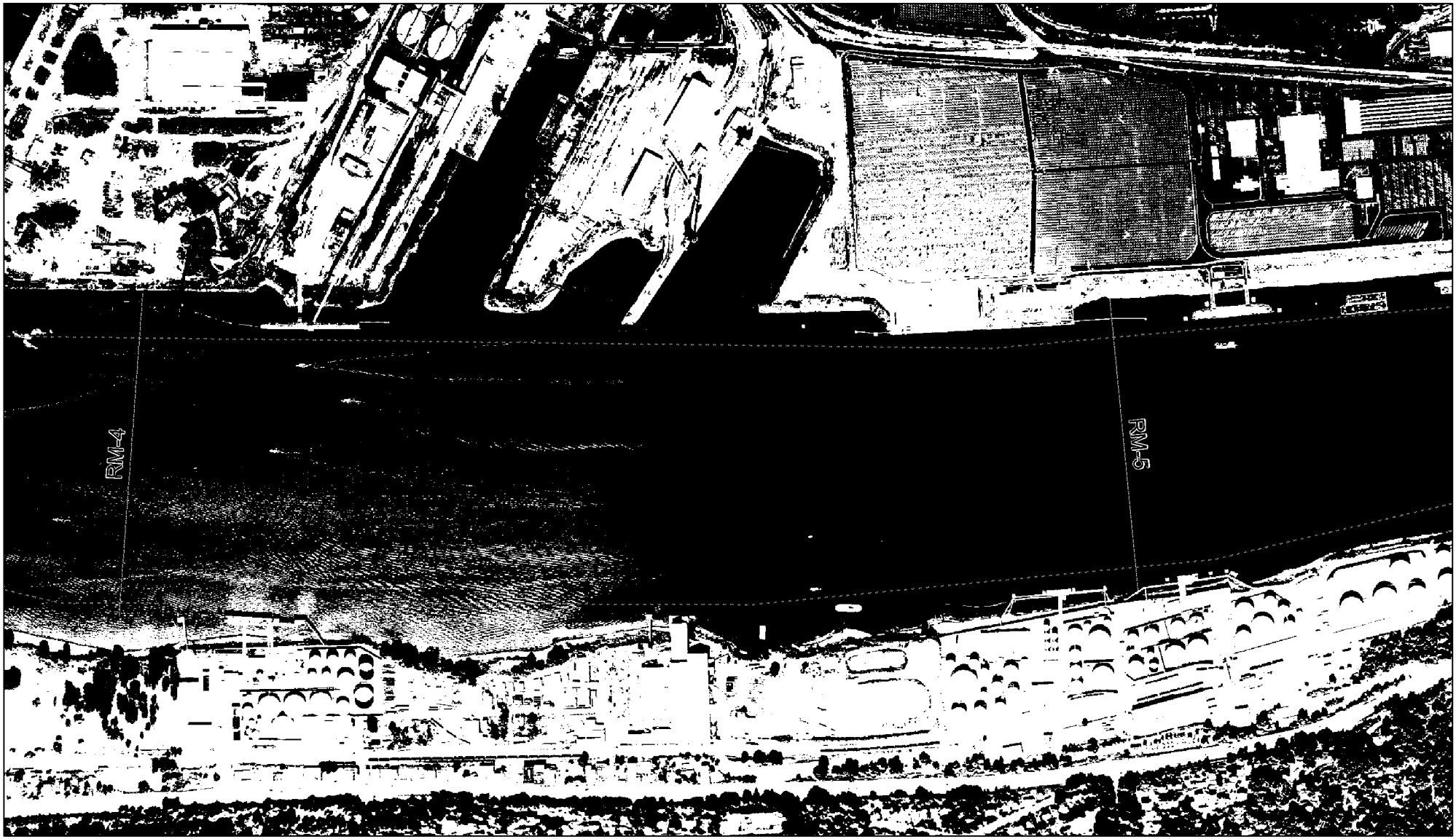
River Miles

Navigation Channel



**Map 4.1-1d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 03-04**

BZTO104(e)032772




integral consulting inc.

LWG
LOWER WILLAMETTE GROUP

0 125 250 500 Feet

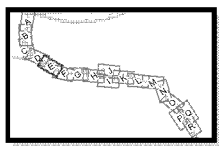
FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (8" pixel).

Supplemental SBG Aerial Images of October 2001 (4' pixel).

Channel and River Miles: US Army Corp of Engineers.

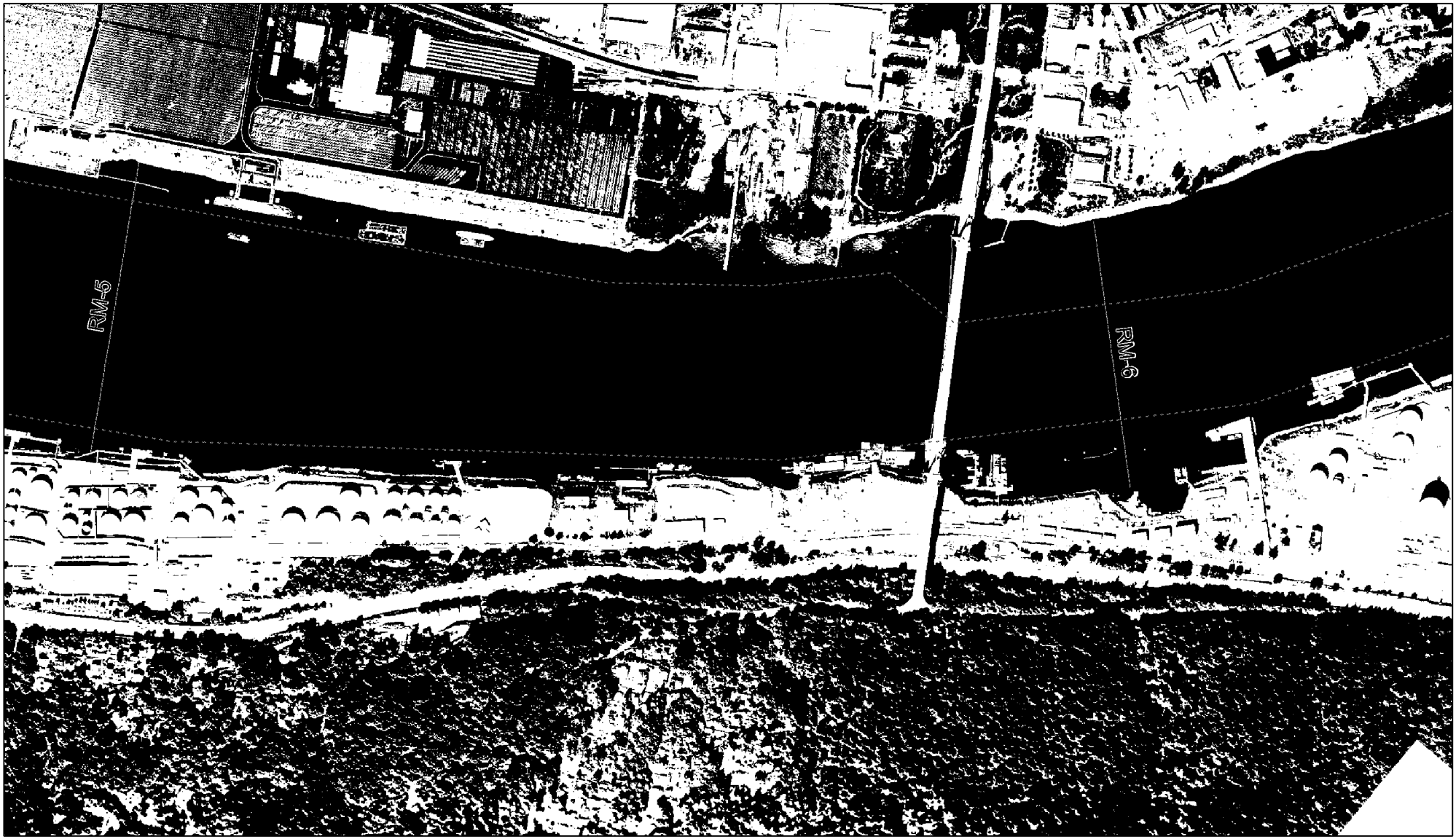
River Miles

Navigation Channel



**Map 4.1-1e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 04-05**

BZTO104(e)032773




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 125 250 500 Feet

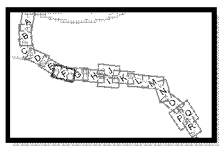
FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (8" pixel).

Supplemental SBG Aerial Images of October 2001 (4' pixel).

Channel and River Miles: US Army Corp of Engineers.

River Miles

Navigation Channel



**Map 4.1-1f**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 05-06**

BZTO104(e)032774

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 125 250 500 Feet

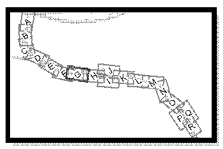
FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (8" pixel).

Supplemental SBG Aerial Images of October 2001 (4' pixel).

Channel and River Miles: US Army Corp of Engineers.

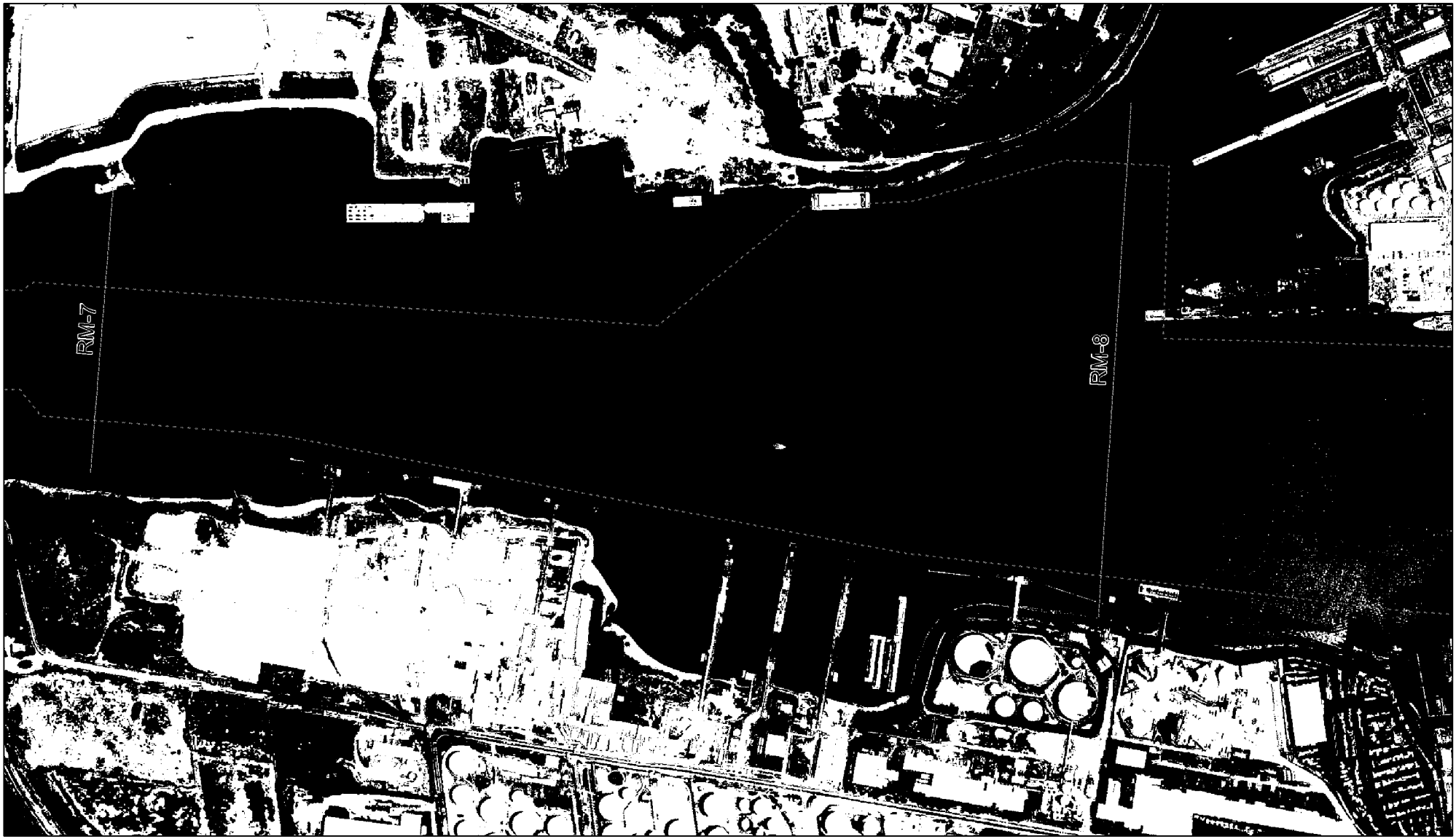
River Miles

Navigation Channel



**Map 4.1-1g**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 06-07**

BZTO104(e)032775




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 125 250 500 Feet

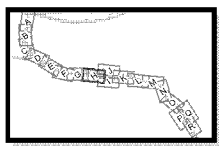
FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (8" pixel).

Supplemental SBG Aerial Images of October 2001 (4' pixel).

Channel and River Miles: US Army Corp of Engineers.

River Miles

Navigation Channel



**Map 4.1-1h**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 07-08**

BZTO104(e)032776

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 125 250 500 Feet

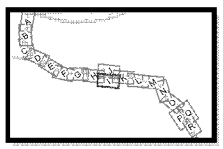
FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (8" pixel).

Supplemental SBG Aerial Images of October 2001 (4' pixel).

Channel and River Miles: US Army Corp of Engineers.

River Miles

Navigation Channel



**Map 4.1-1i**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 08-09 West**

BZTO104(e)032777

integral consulting inc.

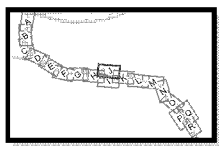
LWG LOWER WILLAMETTE GROUP

0 125 250 500 Feet

FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (6" pixel).
Supplemental SBG Aerial Images of October 2001 (4' pixel).
Channel and River Miles: US Army Corp of Engineers.

River Miles

Navigation Channel



**Map 4.1-1j**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 08-09 East**

BZTO104(e)032778

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 125 250 500 Feet

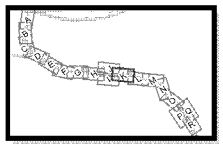
FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (8" pixel).

Supplemental SBG Aerial Images of October 2001 (4' pixel).

Channel and River Miles: US Army Corp of Engineers.

River Miles

Navigation Channel



**Map 4.1-1k**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 09-10**

BZTO104(e)032779

Map Document: P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\OrthoIndex\Orthos_ERS.mxd
2/5/2007 -- 10:45:59 AM

integral consulting inc.

LWG
LOWER WILLAMETTE GROUP

0 125 250 500 Feet

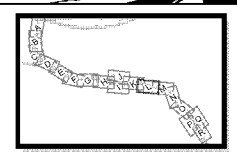
FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (8" pixel).

Supplemental SBG Aerial Images of October 2001 (4' pixel).

Channel and River Miles: US Army Corp of Engineers.

River Miles

Navigation Channel



**Map 4.1-1I**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 10-11**

BZTO104(e)032780

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 125 250 500 Feet

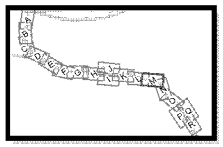
FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (8" pixel).

Supplemental SBG Aerial Images of October 2001 (4' pixel).

Channel and River Miles: US Army Corp of Engineers.

River Miles

Navigation Channel



**Map 4.1-1m**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 11-12**

BZTO104(e)032781

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 125 250 500 Feet

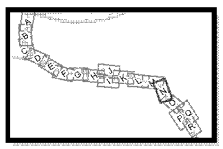
FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (8" pixel).

Supplemental SBG Aerial Images of October 2001 (4' pixel).

Channel and River Miles: US Army Corp of Engineers.

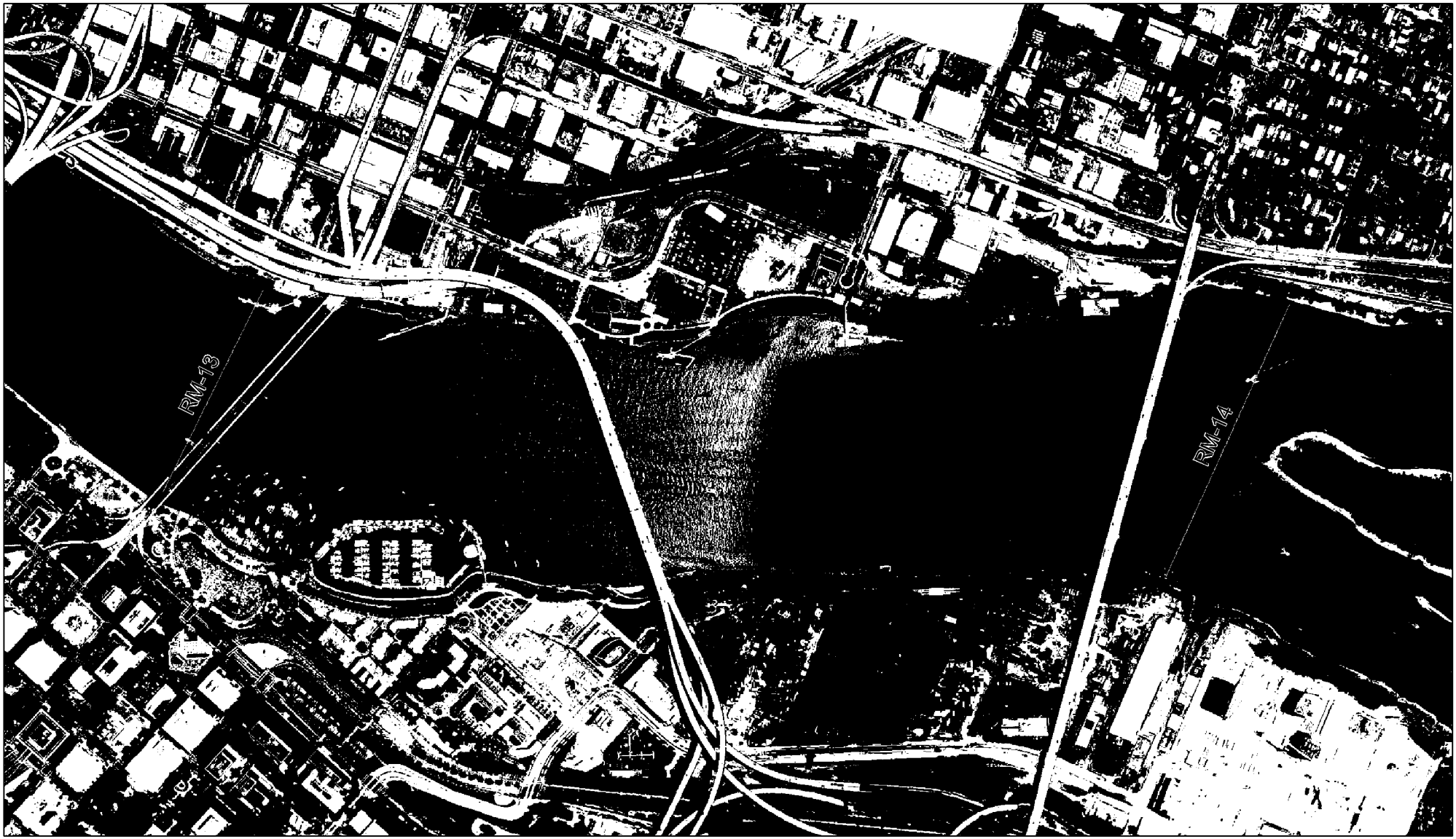
River Miles

Navigation Channel



**Map 4.1-1n**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 12-13**

BZTO104(e)032782




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 125 250 500 Feet

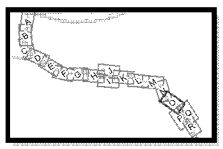
FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (8" pixel).

Supplemental SBG Aerial Images of October 2001 (4' pixel).

Channel and River Miles: US Army Corp of Engineers.

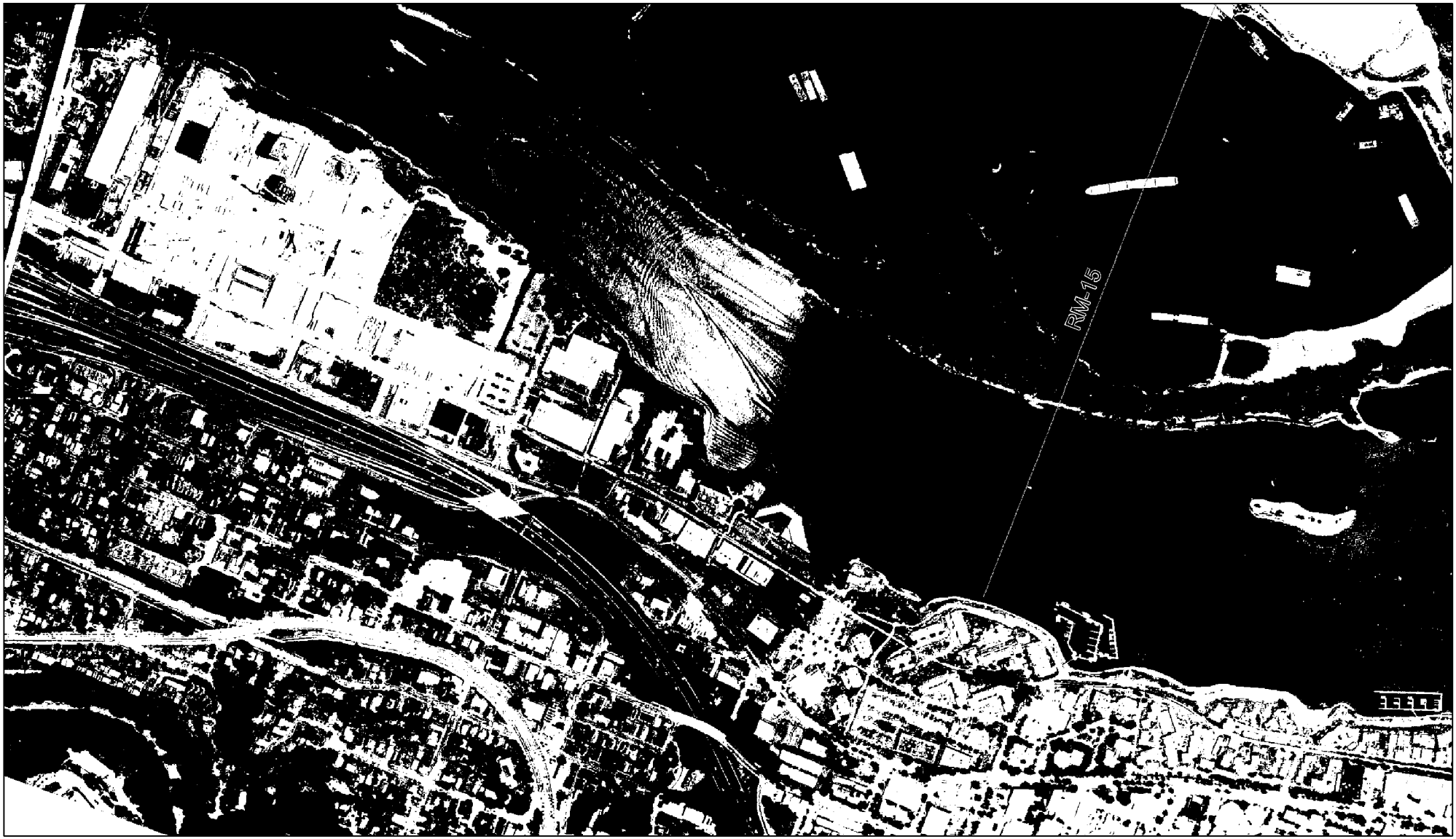
River Miles

Navigation Channel



**Map 4.1-1o**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 13-14**

BZTO104(e)032783




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 125 250 500 Feet

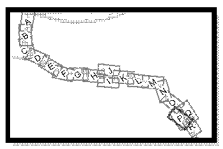
FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (8" pixel).

Supplemental SBG Aerial Images of October 2001 (4' pixel).

Channel and River Miles: US Army Corp of Engineers.

River Miles

Navigation Channel



**Map 4.1-1p**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 14-15 West**

BZTO104(e)032784

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 125 250 500 Feet

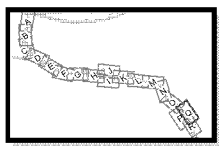
FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (8" pixel).

Supplemental SBG Aerial Images of October 2001 (4' pixel).

Channel and River Miles: US Army Corp of Engineers.

River Miles

Navigation Channel



**Map 4.1-1q**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 14-15 East**

BZTO104(e)032785

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 125 250 500 Feet

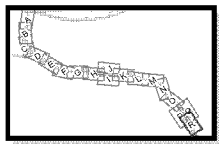
FEATURE SOURCES:
RLIS Aerial Images of February 2005 'leaf off' flight (8" pixel).

Supplemental SBG Aerial Images of October 2001 (4' pixel).

Channel and River Miles: US Army Corp of Engineers.

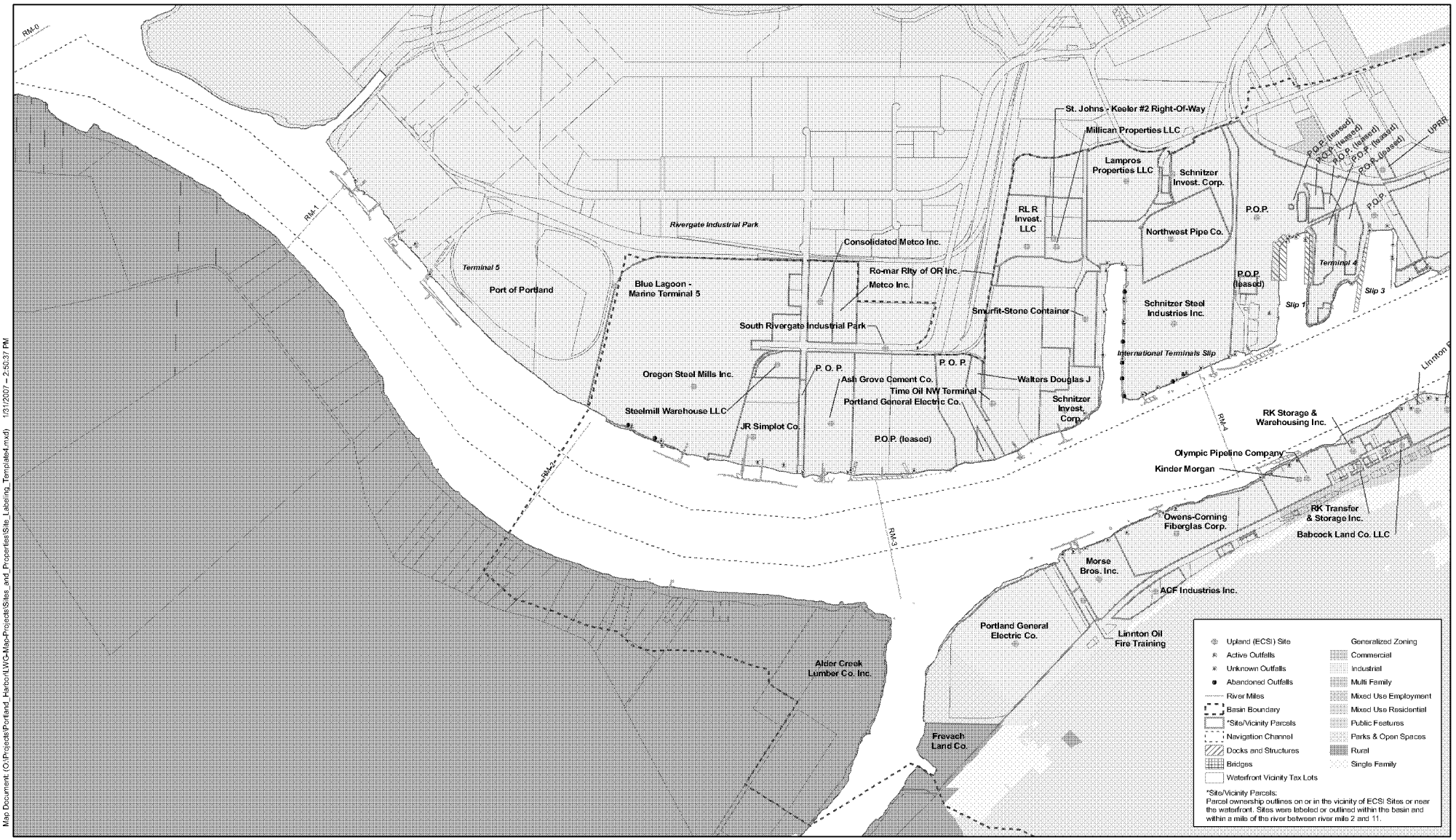
River Miles

Navigation Channel



**Map 4.1-1r**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2005 Aerial Photos**
**River Mile 15-16**

BZTO104(e)032786



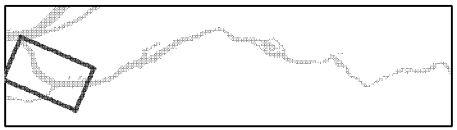

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Sites_and_Properties\Site_Labeling_Template4.mxd) 1/31/2007 -- 2:50:37 PM

integral consulting inc.

LWG Lower Willamette Group

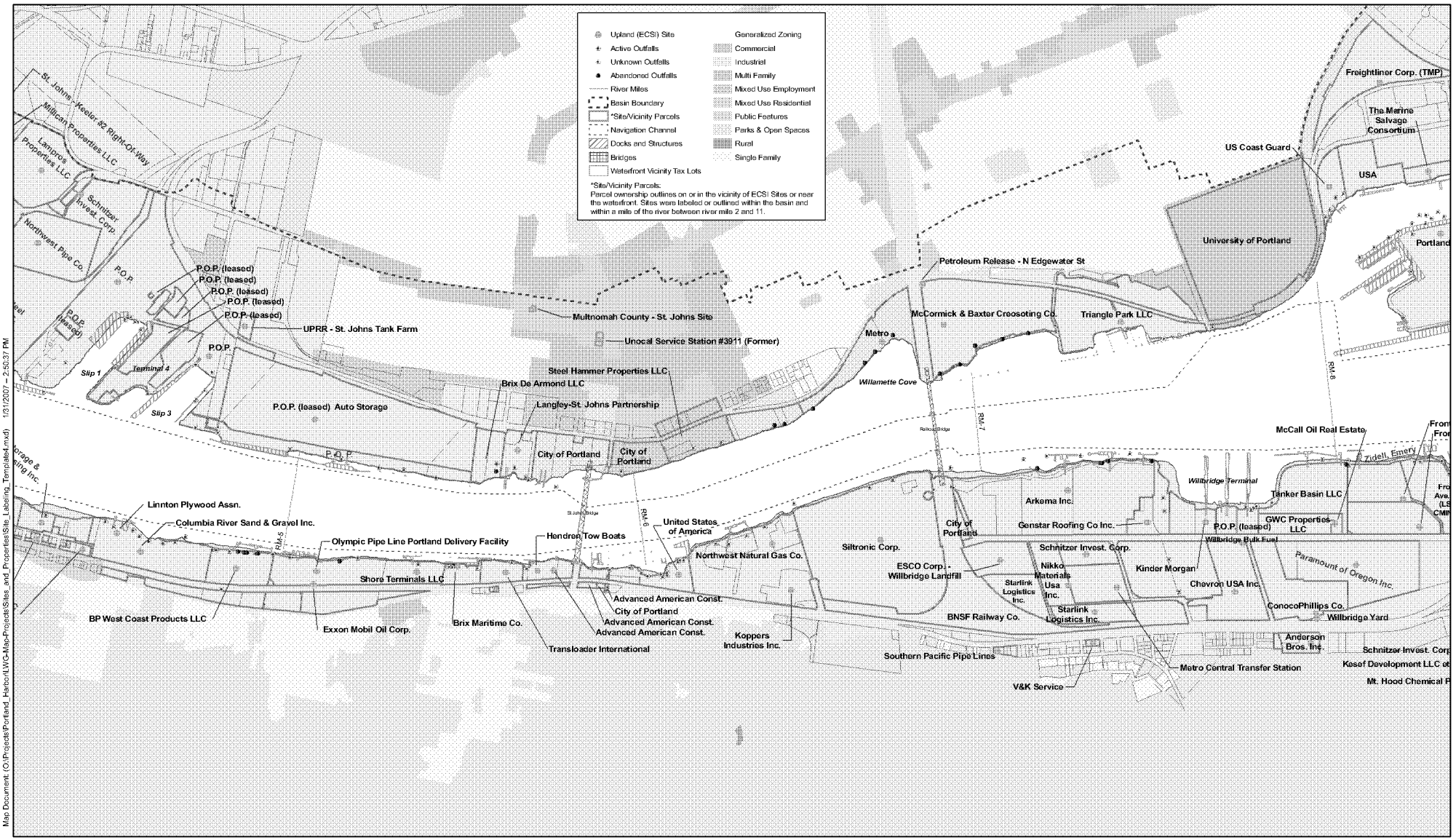
FEATURE SOURCES:
Transportation, Property, Zoning, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evens and Associates, Inc.
Outfalls: City of Portland, April 2005.

0 1,000 2,000 Feet



**Map 4.1-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Land Zoning and Ownership**

BZTO104(e)032787

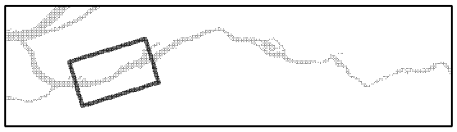



integral consulting inc.

LWG LOWER WILLAMETTE GROUP

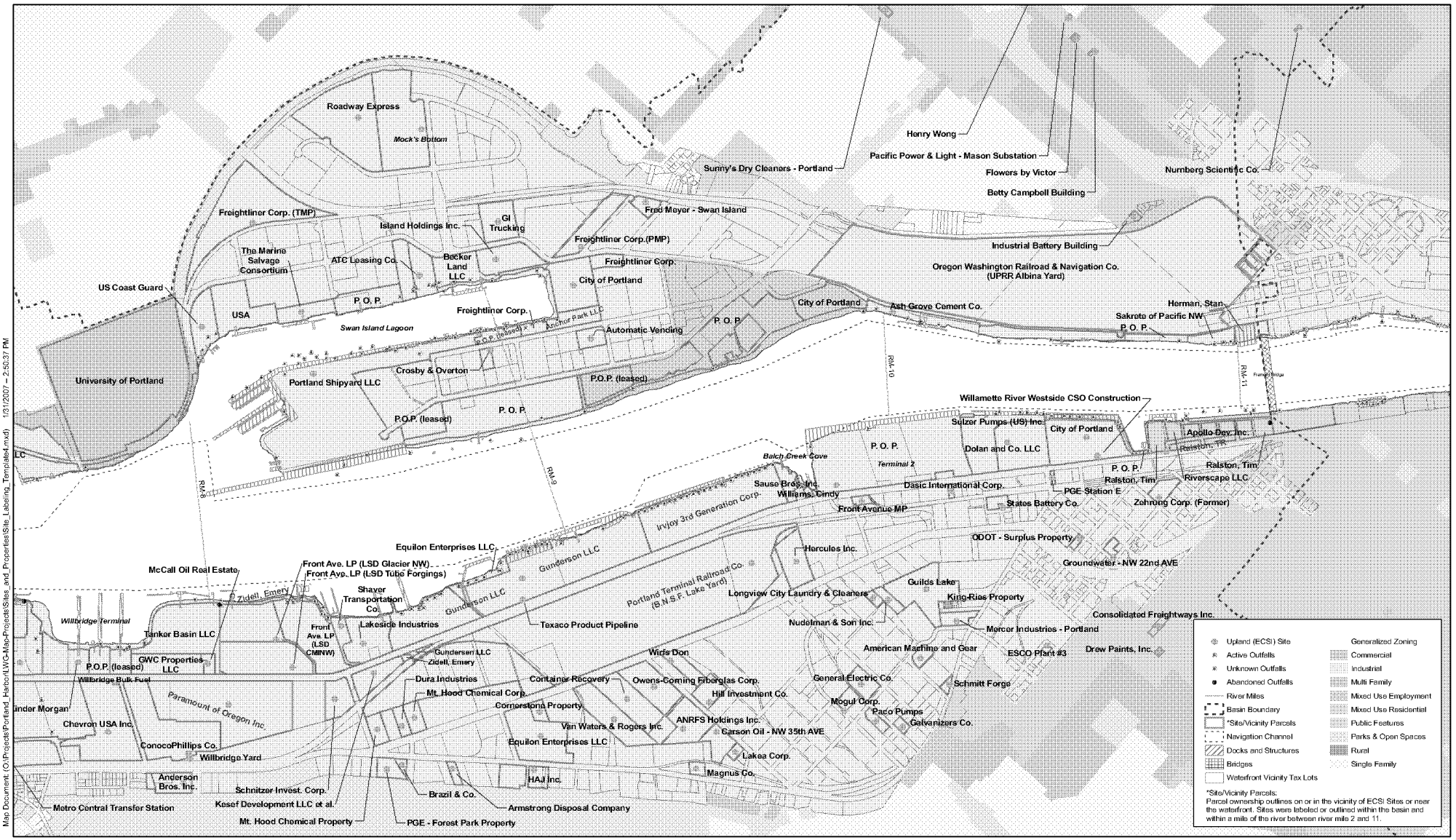
FEATURE SOURCES:
Transportation, Property, Zoning, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Outfalls: City of Portland, April 2005.

0 1,000 2,000 Feet



**Map 4.1-2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Land Zoning and Ownership**

BZTO104(e)032788



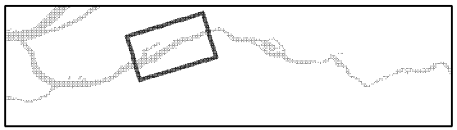

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Sites_and_Properties\Site_Labeling_Template4.mxd) 1/31/2007 -- 2:50:37 PM

integral consulting inc.

LWG Lower Willamette Group

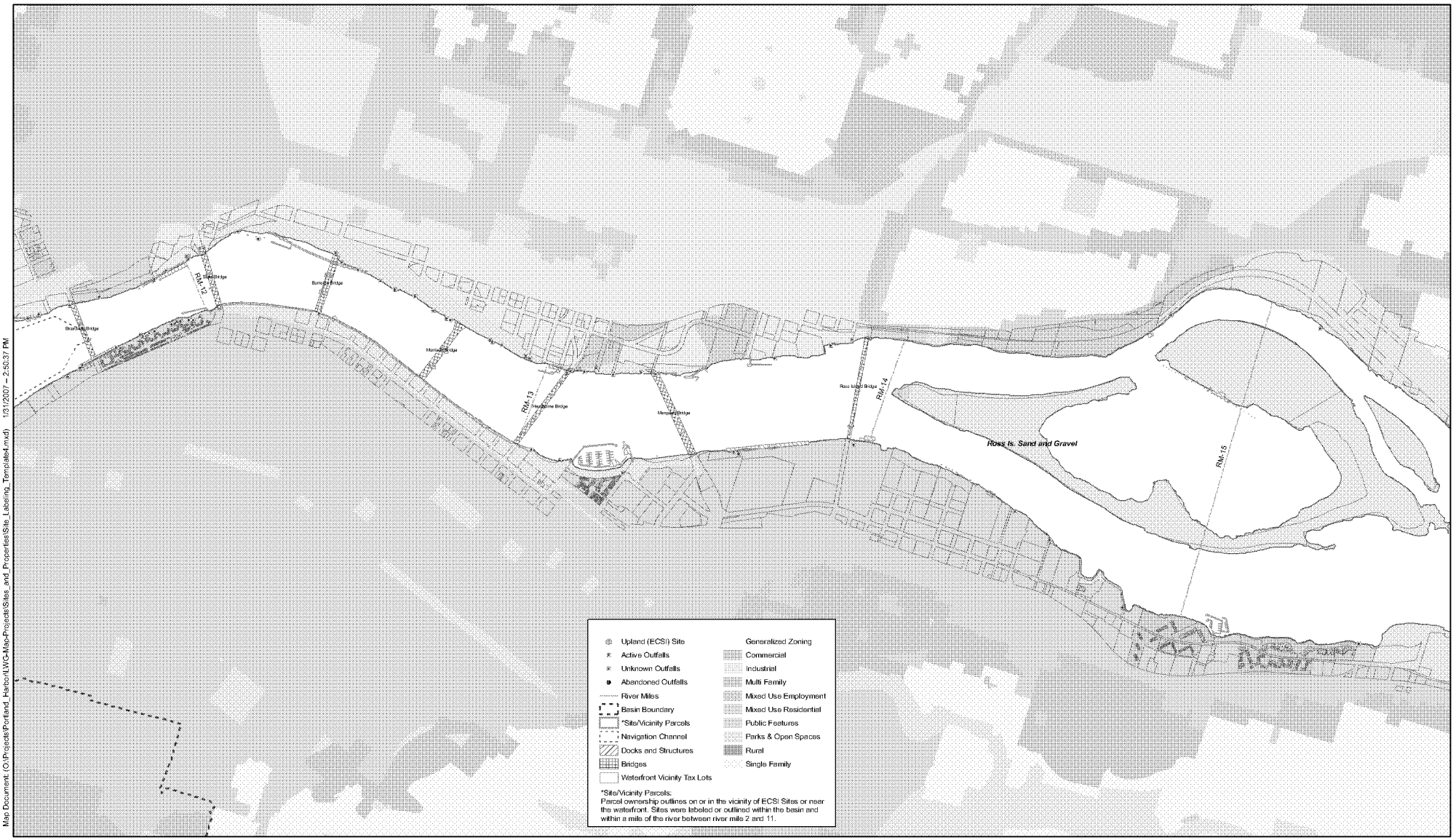
FEATURE SOURCES:
Transportation, Property, Zoning, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Outfalls: City of Portland, April 2006.

0 1,000 2,000 Feet



**Map 4.1-2c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Land Zoning and Ownership**

BZTO104(e)032789



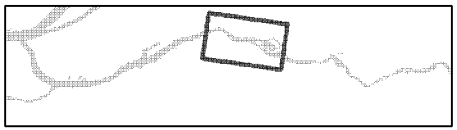

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Sites_and_Properties\Site_Labeling_Template4.mxd) 1/31/2007 -- 2:50:37 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, Zoning, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Outfalls: City of Portland, April 2005.

0 1,000 2,000 Feet



**Map 4.1-2d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Land Zoning and Ownership**

BZTO104(e)032790

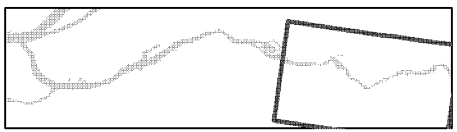
Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Sites_and_Properties\Site_Labeling_Template4.mxd) 1/31/2007 – 2:50:37 PM

integral consulting inc.

LWG Lower Willamette Group

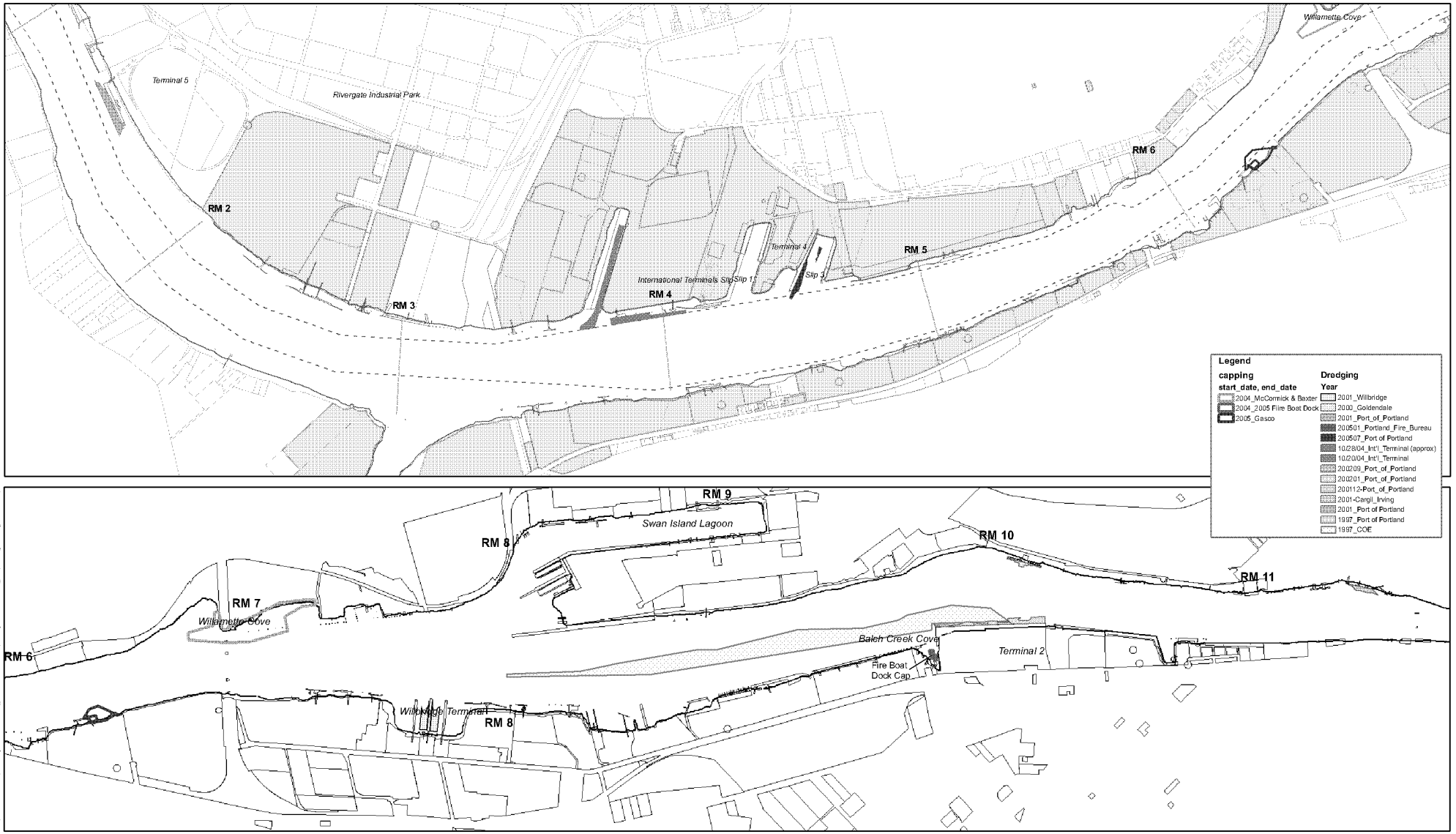
0 1,000 2,000 Feet

FEATURE SOURCES:
Transportation, Property, Zoning, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Outfalls: City of Portland, April 2005.



**Map 4.1-2e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Land Zoning and Ownership**

BZTO104(e)032791

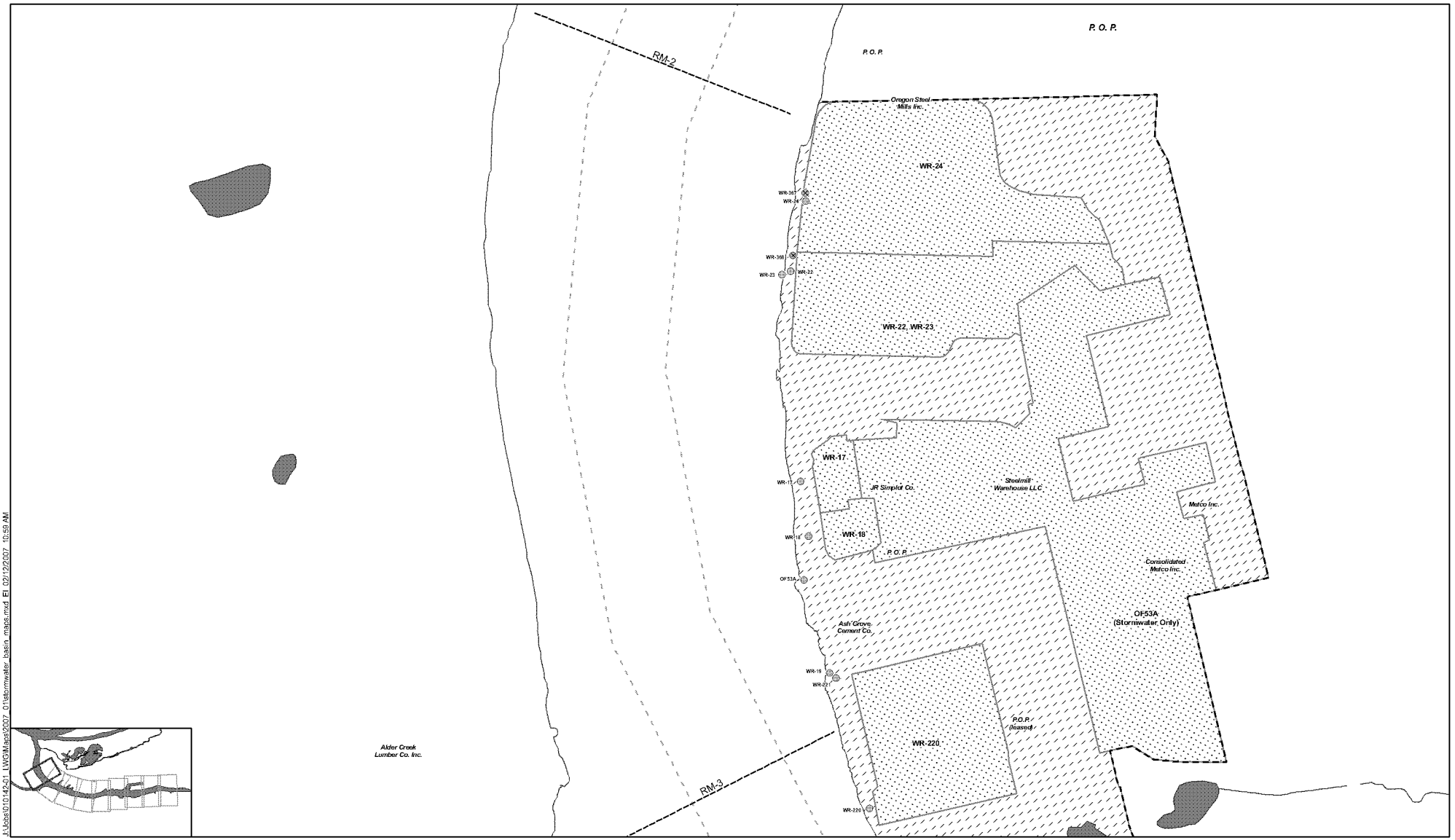



integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 4.1-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Dredged and Capped Areas Since 1997**

BZTO104(e)032792




J:\Jobs\010142-01 LWG\Mxds\2007_01\stormwater_basin_maps.mxd EI 02/12/2007 10:59 AM

ANCHOR ENVIRONMENTAL, L.L.C.

LWG LOWER WILLAMETTE GROUP

0 150 300 450 600 Feet

FEATURE SOURCES:
Land Use/Zoning, Streams, Water Bodies: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.

**Joint Source Control Strategy Sites (Dec. 2005)**
Black Sites - Not a source of continuing contamination to the river
Purple Sites - Cleanup Underway
Red Sites - High Priority Remedial Investigation
Green Sites - High Priority Expanded Preliminary Assessment
Blue Sites - Medium/Low Priority Preliminary Assessment
Gray Sites - Not Addressed in Joint Source Control Document

Map Features:

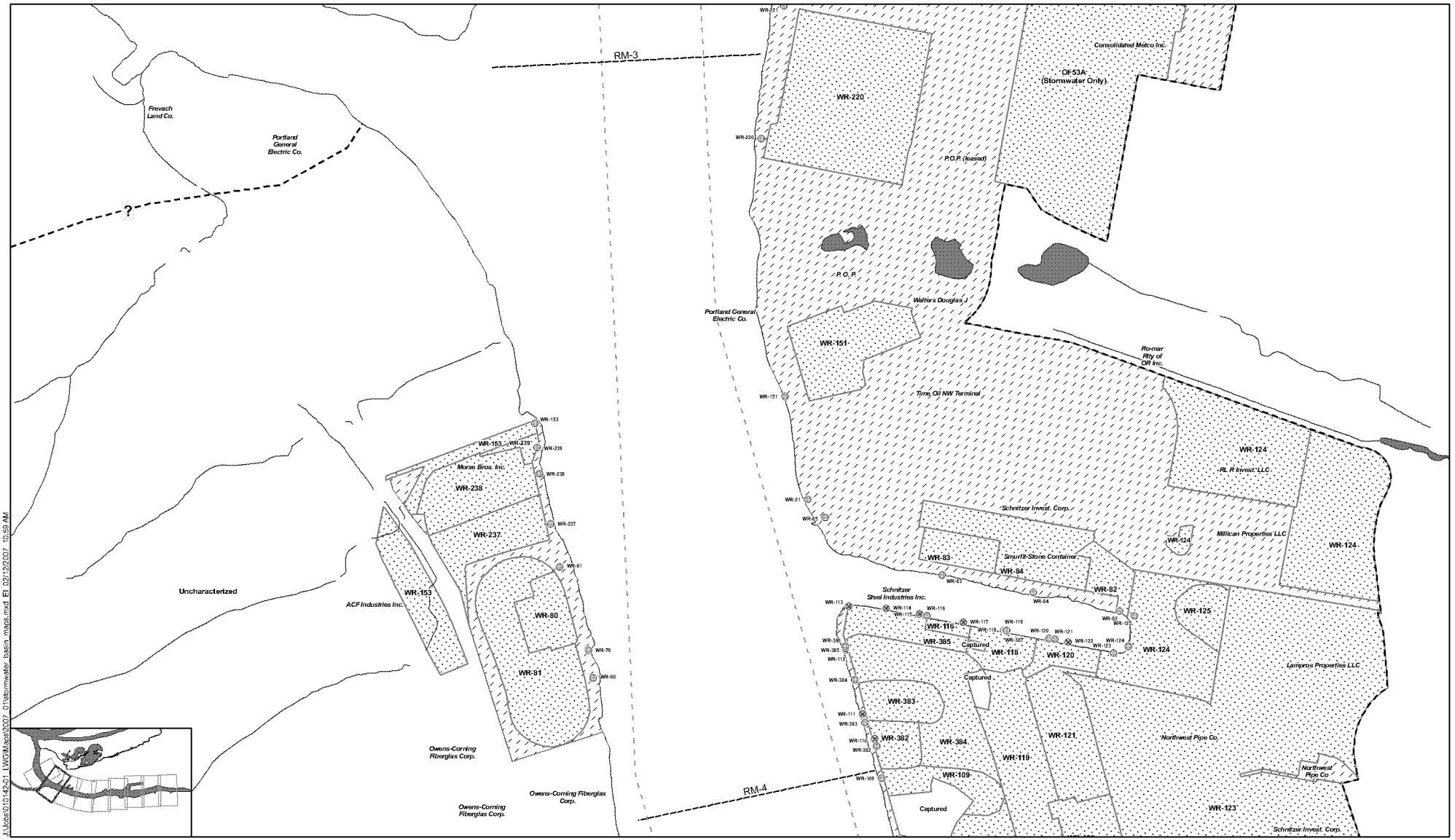
**Land Use Zoning**
- Commercial
- Industrial
- Multi Family
- Mixed Use
- Parks & Open Spaces
- Rural
- Single Family

- Outfall Drainage Basin
- Approx. Drainage Boundary
- Known Infiltration/Sheeting
- Treated/Controlled Runoff
- Uncharacterized
- River miles

**Outfall Status (2006)**
*(Color Indicates Priority)*
- Active Status
- Inactive Status

**Map 4.1-4a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Stormwater Outfalls, Drainage Basins and Land Use Zoning**
**River Mile 02 to 03**

BZTO104(e)032793




J:\Jobs\010142-01 LWG\Maps\2007_01\stormwater_basin_maps.mxd EI 02/12/2007 10:59 AM

ANCHOR ENVIRONMENTAL, L.L.C.

LWG LOWER WILLAMETTE GROUP

N

0 150 300 450 600 Feet

FEATURE SOURCES:
Land Use/Zoning, Streams, Water Bodies: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.

**Joint Source Control Strategy Sites (Dec. 2005)**
Black Sites - Not a source of continuing contamination to the river
Purple Sites - Cleanup Underway
Red Sites - High Priority Remedial Investigation
Green Sites - High Priority Expanded Preliminary Assessment
Blue Sites - Medium/Low Priority Preliminary Assessment
Gray Sites - Not Addressed in Joint Source Control Document

Map Features:

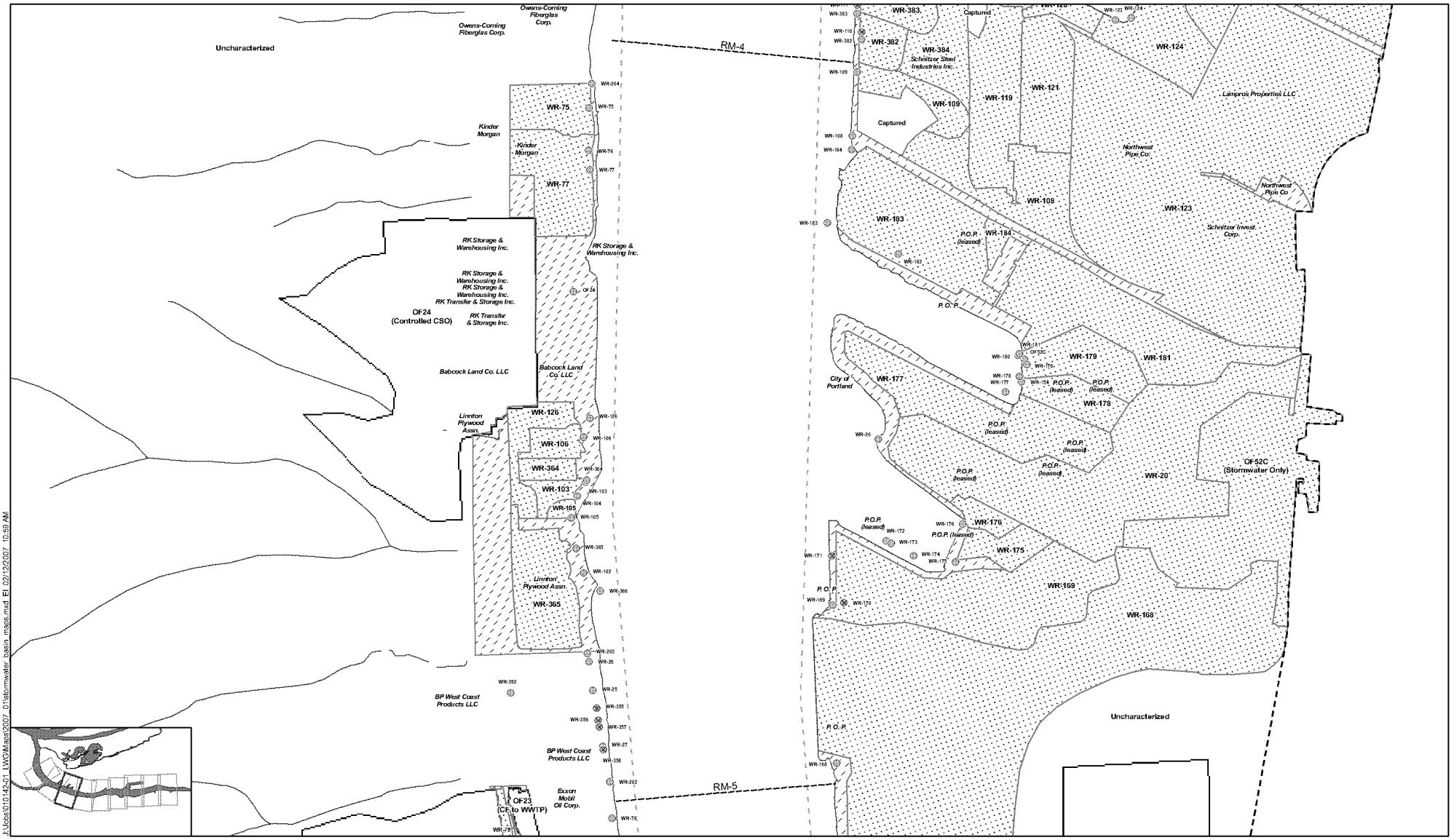
**Land Use Zoning**
- Commercial
- Industrial
- Multi Family
- Mixed Use
- Parks & Open Spaces
- Rural
- Single Family

- Outfall Drainage Basin
- Approx. Drainage Boundary
- Known Infiltration/Sheeting
- Treated/Controlled Runoff
- Uncharacterized
- River miles

**Outfall Status (2006)**
*(Color Indicates Priority)*
- Active Status
- Inactive Status

**Map 4.1-4b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Stormwater Outfalls, Drainage Basins and Land Use Zoning**
**River Mile 03 to 04**

BZTO104(e)032794




J:\Jobs\010142-01_LWG\Maps\2007_01\stormwater_basin_maps.mxd EI 02/12/2007 10:59 AM

ANCHOR ENVIRONMENTAL, L.L.C.

LWG LOWER WILLAMETTE GROUP

0 150 300 450 600 Feet

FEATURE SOURCES:
Land Use/Zoning, Streams, Water Bodies: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.

**Joint Source Control Strategy Sites (Dec. 2005)**
Black Sites - Not a source of continuing contamination to the river
Purple Sites - Cleanup Underway
Red Sites - High Priority Remedial Investigation
Green Sites - High Priority Expanded Preliminary Assessment
Blue Sites - Medium/Low Priority Preliminary Assessment
Gray Sites - Not Addressed in Joint Source Control Document

Map Features:

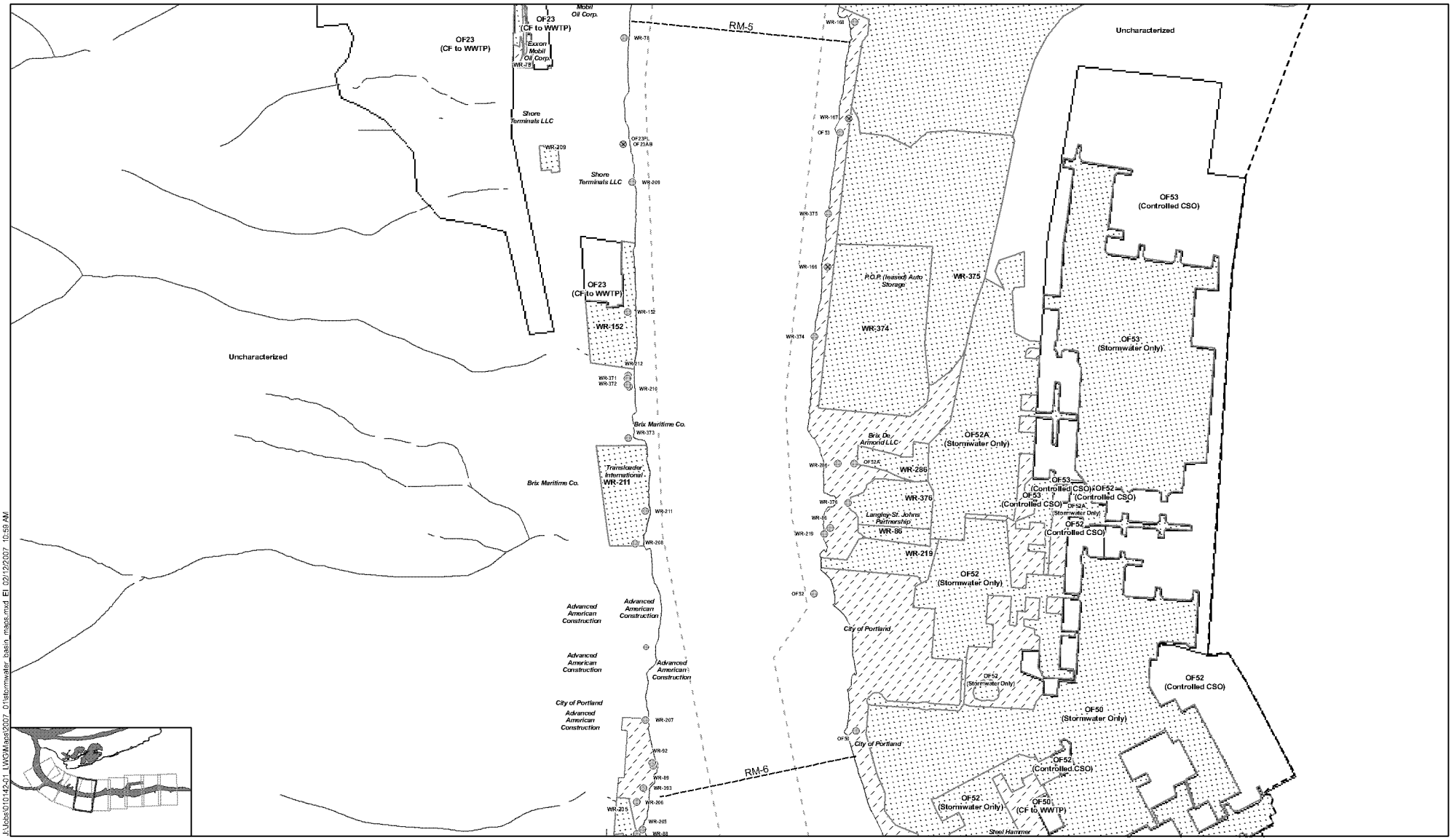
**Land Use Zoning**
- Commercial
- Industrial
- Multi Family
- Mixed Use
- Parks & Open Spaces
- Rural
- Single Family

- Outfall Drainage Basin
- Approx. Drainage Boundary
- Known Infiltration/Sheeting
- Treated/Controlled Runoff
- Uncharacterized
- River miles

**Outfall Status (2006)**
*(Color Indicates Priority)*
- Active Status
- Inactive Status

**Map 4.1-4c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Stormwater Outfalls, Drainage Basins and Land Use Zoning**
**River Mile 04 to 05**

BZTO104(e)032795




J:\Jobs\010142-01 LWG\Maps\2007_01\stormwater_basin_maps.mxd EI 02/12/2007 10:59 AM

ANCHOR ENVIRONMENTAL, L.L.C.

LWG LOWER WILLAMETTE GROUP

0 150 300 450 600 Feet

FEATURE SOURCES:
Land Use/Zoning, Streams, Water Bodies: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.

**Joint Source Control Strategy Sites (Dec. 2005)**
Black Sites - Not a source of continuing contamination to the river
Purple Sites - Cleanup Underway
Red Sites - High Priority Remedial Investigation
Green Sites - High Priority Expanded Preliminary Assessment
Blue Sites - Medium/Low Priority Preliminary Assessment
Gray Sites - Not Addressed in Joint Source Control Document

Map Features:

**Land Use Zoning**
- Commercial
- Industrial
- Multi Family
- Mixed Use
- Parks & Open Spaces
- Rural
- Single Family

- Outfall Drainage Basin
- Approx. Drainage Boundary
- Known Infiltration/Sheeting
- Treated/Controlled Runoff
- Uncharacterized
- River miles

**Outfall Status (2006)**
*(Color Indicates Priority)*
- Active Status
- Inactive Status

**Map 4.1-4d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Stormwater Outfalls, Drainage Basins and Land Use Zoning**
**River Mile 05 to 06**

BZTO104(e)032796

J:\Jobs\010142-01 LWG\Maps\2007_01\stormwater_basin_maps.mxd EI 02/12/2007 10:59 AM

ANCHOR ENVIRONMENTAL, L.L.C.

LWG LOWER WILLAMETTE GROUP

0 150 300 450 600 Feet

FEATURE SOURCES:
Land Use/Zoning, Streams, Water Bodies: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.

**Joint Source Control Strategy Sites (Dec. 2005)**
Black Sites - Not a source of continuing contamination to the river
Purple Sites - Cleanup Underway
Red Sites - High Priority Remedial Investigation
Green Sites - High Priority Expanded Preliminary Assessment
Blue Sites - Medium/Low Priority Preliminary Assessment
Gray Sites - Not Addressed in Joint Source Control Document

Map Features:

**Land Use Zoning**
- Commercial
- Industrial
- Multi Family
- Mixed Use
- Parks & Open Spaces
- Rural
- Single Family

- Outfall Drainage Basin
- Approx. Drainage Boundary
- Known Infiltration/Sheeting
- Treated/Controlled Runoff
- Uncharacterized
- River miles

**Outfall Status (2006)**
*(Color Indicates Priority)*
- Active Status
- Inactive Status

**Map 4.1-4e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Stormwater Outfalls, Drainage Basins and Land Use Zoning**
**River Mile 06 to 07**

BZTO104(e)032797

J:\Jobs\010142-01 LWG\Maps\2007_01\stormwater_basin_maps.mxd EI 02/12/2007 10:59 AM

ANCHOR ENVIRONMENTAL, L.L.C.

LWG LOWER WILLAMETTE GROUP

0 150 300 450 600 Feet

FEATURE SOURCES:
Land Use/Zoning, Streams, Water Bodies: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.

**Joint Source Control Strategy Sites (Dec. 2005)**
Black Sites - Not a source of continuing contamination to the river
Purple Sites - Cleanup Underway
Red Sites - High Priority Remedial Investigation
Green Sites - High Priority Expanded Preliminary Assessment
Blue Sites - Medium/Low Priority Preliminary Assessment
Gray Sites - Not Addressed in Joint Source Control Document

Map Features:

**Land Use Zoning**
- Commercial
- Industrial
- Multi Family
- Mixed Use
- Parks & Open Spaces
- Rural
- Single Family

- Outfall Drainage Basin
- Approx. Drainage Boundary
- Known Infiltration/Sheeting
- Treated/Controlled Runoff
- Uncharacterized
- River miles

**Outfall Status (2006)**
*(Color Indicates Priority)*
- Active Status
- Inactive Status

**Map 4.1-4f**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Stormwater Outfalls, Drainage Basins and Land Use Zoning**
**River Mile 07 to 08**

BZTO104(e)032798

**Map 4.1-4g**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Stormwater Outfalls, Drainage Basins and Land Use Zoning**
**River Mile 08 to 09**

J:\Jobs\010142-01 LWG\Maps\2007_01\stormwater_basin_maps.mxd EI 02/12/2007 10:59 AM

BZTO104(e)032799

**Map 4.1-4h**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Stormwater Outfalls, Drainage Basins and Land Use Zoning**
**River Mile 09 to 10**

BZTO104(e)032800

J:\Jobs\010142-01 LWG\Mxds\2007_01\stormwater_basin_maps.mxd EI 02/12/2007 10:59 AM

ANCHOR ENVIRONMENTAL, L.L.C.

LWG LOWER WILLAMETTE GROUP

0 150 300 450 600 Feet

FEATURE SOURCES:
Land Use/Zoning, Streams, Water Bodies: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.

**Joint Source Control Strategy Sites (Dec. 2005)**
Black Sites - Not a source of continuing contamination to the river
Purple Sites - Cleanup Underway
Red Sites - High Priority Remedial Investigation
Green Sites - High Priority Expanded Preliminary Assessment
Blue Sites - Medium/Low Priority Preliminary Assessment
Gray Sites - Not Addressed in Joint Source Control Document

Map Features:

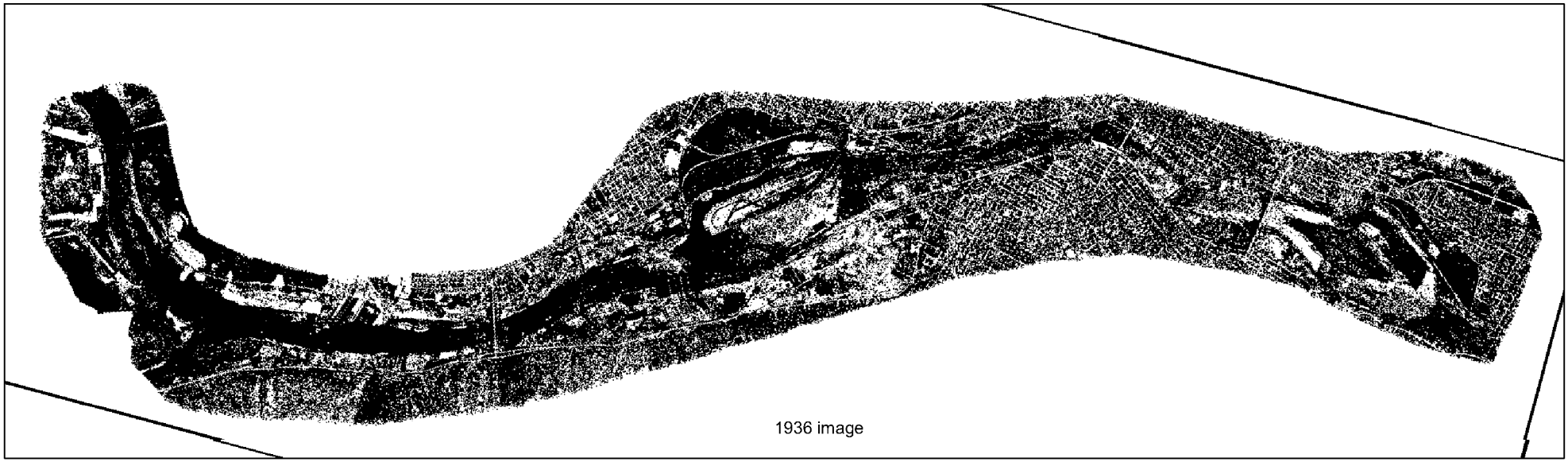
**Land Use Zoning**
- Commercial
- Industrial
- Multi Family
- Mixed Use
- Parks & Open Spaces
- Rural
- Single Family

- Outfall Drainage Basin
- Approx. Drainage Boundary
- Known Infiltration/Sheeting
- Treated/Controlled Runoff
- Uncharacterized
- River miles

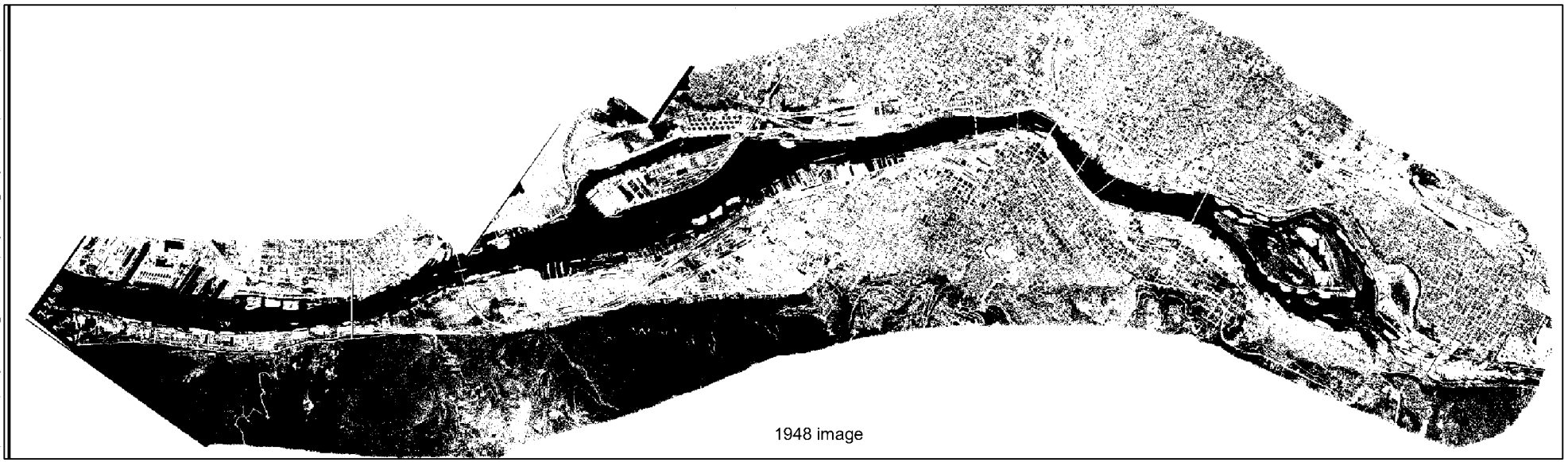
**Outfall Status (2006)**
*(Color Indicates Priority)*
- Active Status
- Inactive Status

**Map 4.1-4i**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Stormwater Outfalls, Drainage Basins and Land Use Zoning**
**River Mile 10 to 11**

BZTO104(e)032801



1936 image



1948 image

integral consulting inc.

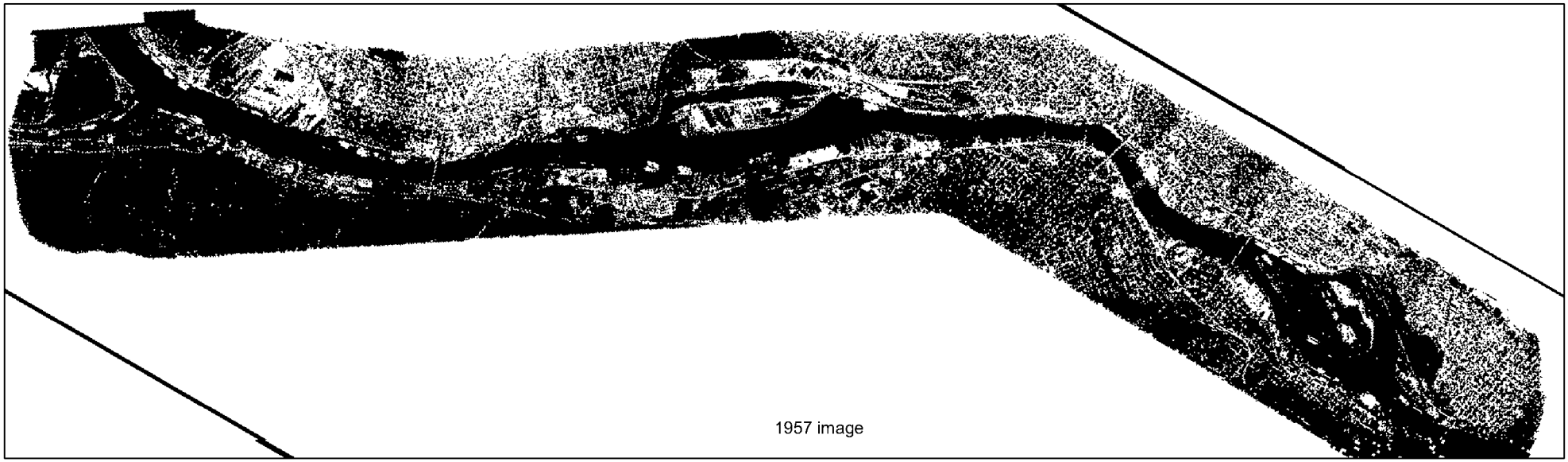
LWG Lower Willamette Group

Note:
Historic composite photos souce unknown.
No scale.

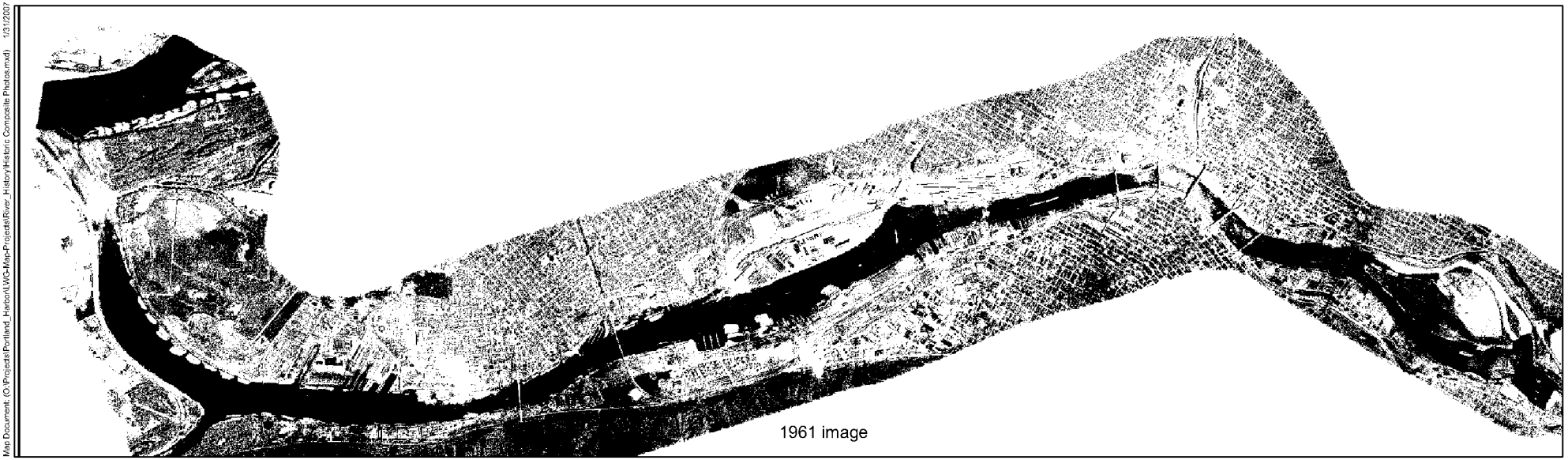
**Map 4.1-5a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Composited Historic Images**

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\River_History\Historic Composite Photos.mxd) 1/31/2007 -- 1:30:35 PM

BZTO104(e)032802



1957 image



1961 image

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\River_History\Historic Composite Photos.mxd) 1/31/2007 -- 1:30:35 PM

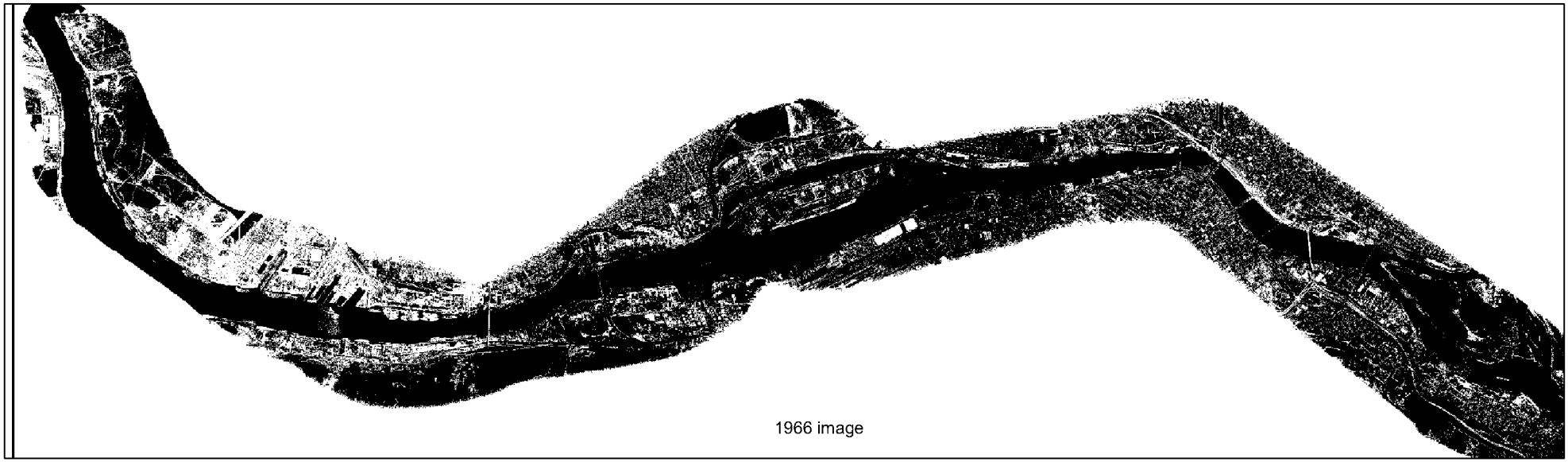
integral consulting inc.

LWG Lower Willamette Group

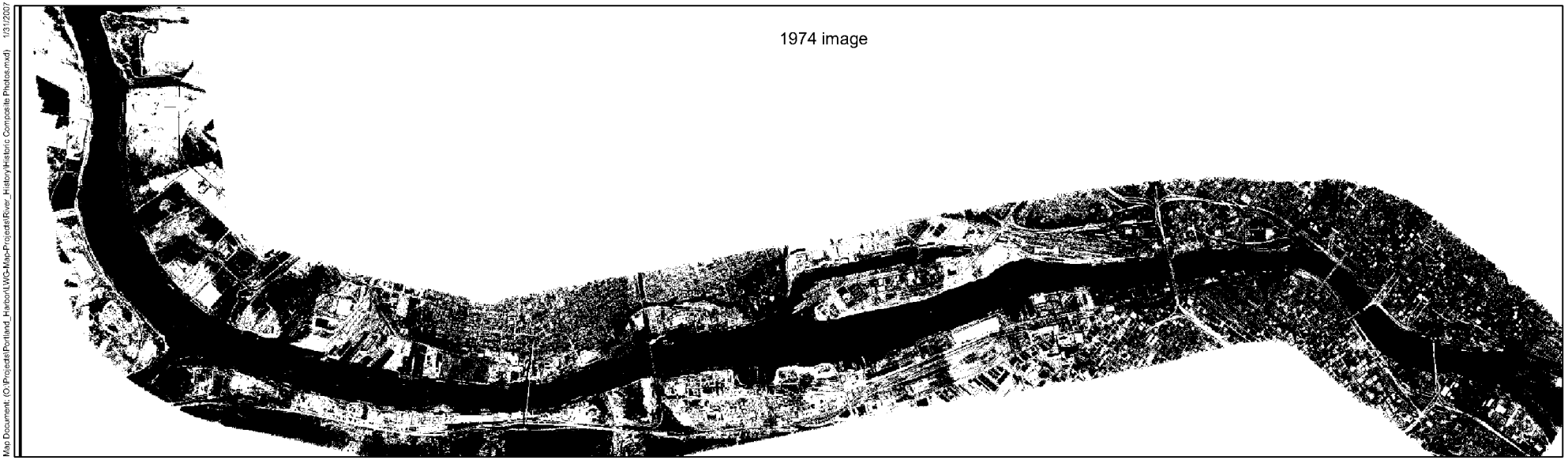
N

Note:
Historic composite photos souce unknown.
No scale.

**Map 4.1-5b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Composited Historic Images**



1966 image



1974 image

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\River_History\Historic Composite Photos.mxd) 1/31/2007 -- 1:30:35 PM

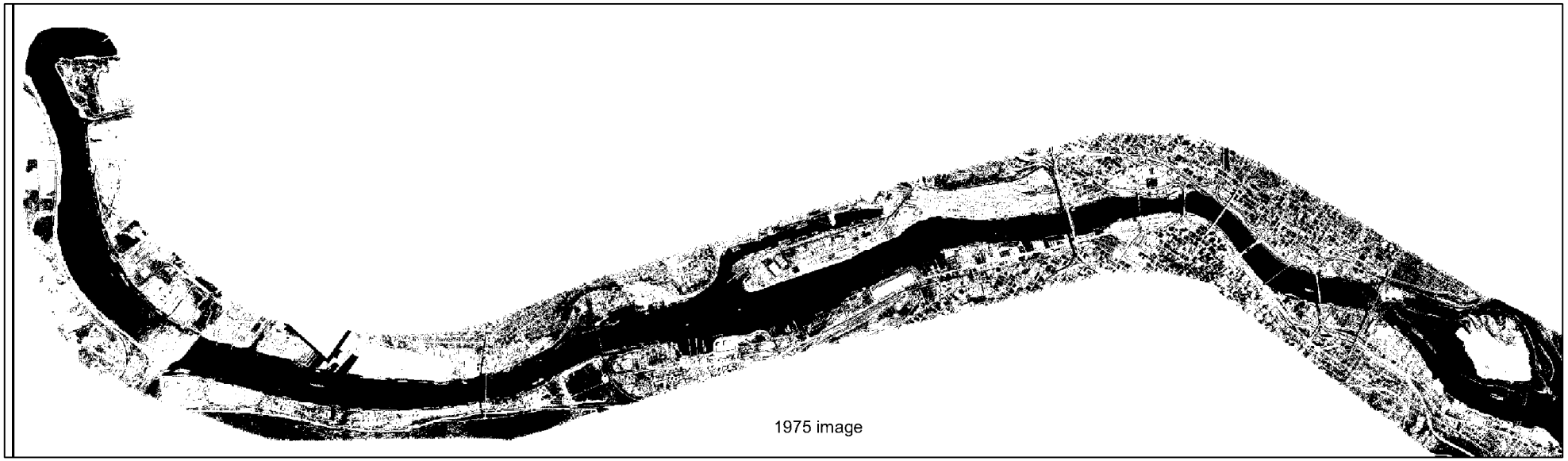
integral consulting inc.

LWG Lower Willamette Group

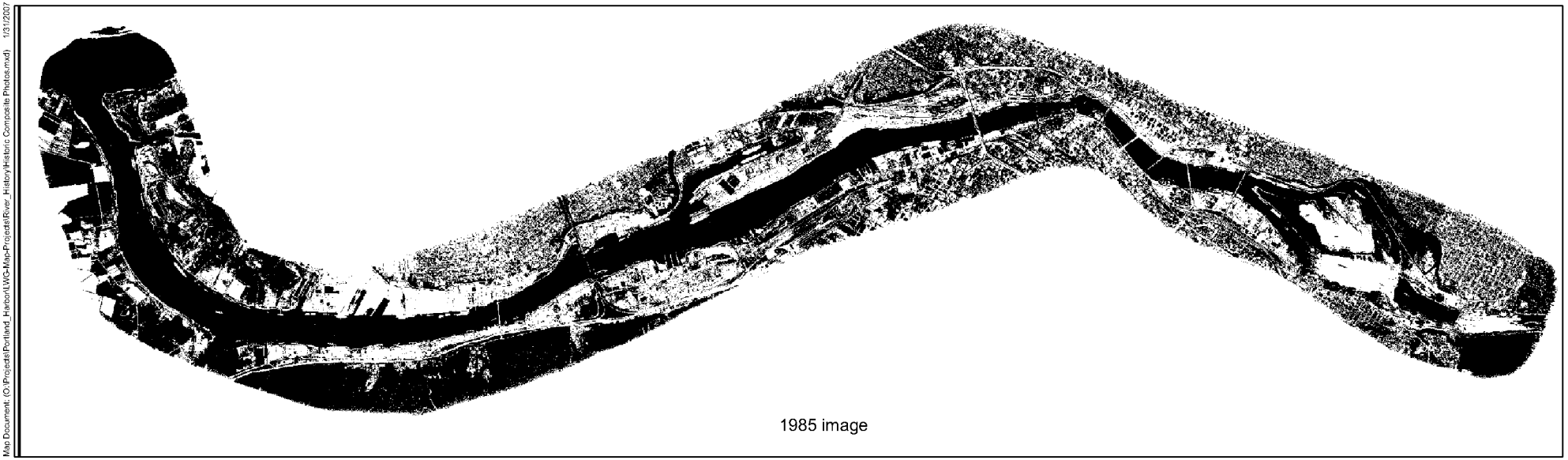
N

Note:
Historic composite photos souce unknown.
No scale.

**Map 4.1-5c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Composited Historic Images**



1975 image



1985 image

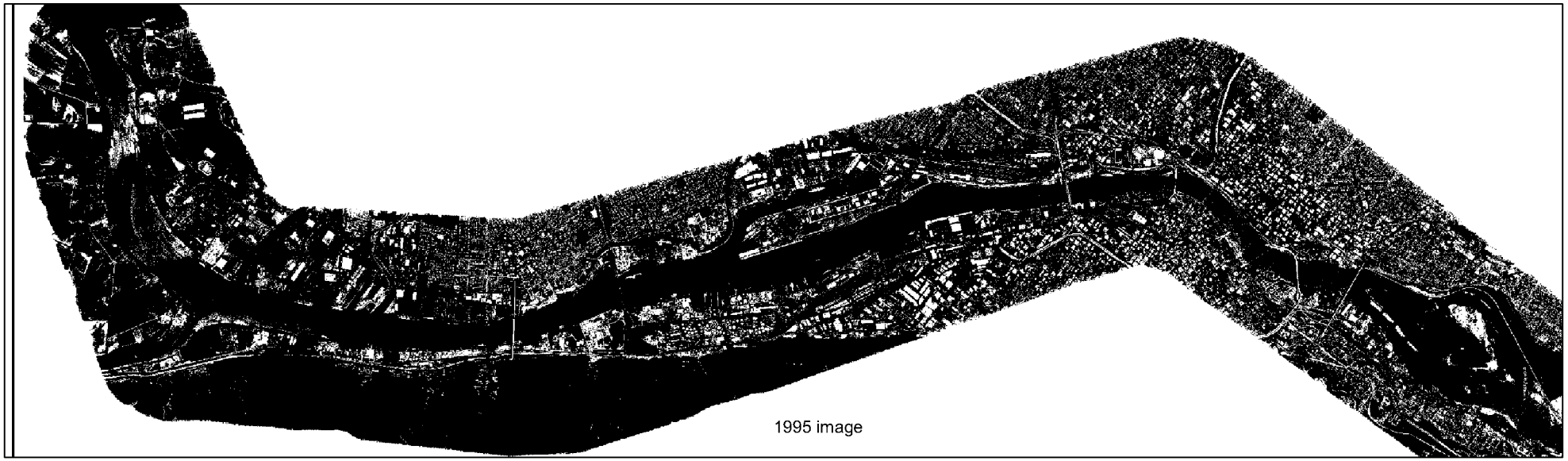
Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\River_History\Historic Composite Photos.mxd) 1/31/2007 -- 1:30:35 PM

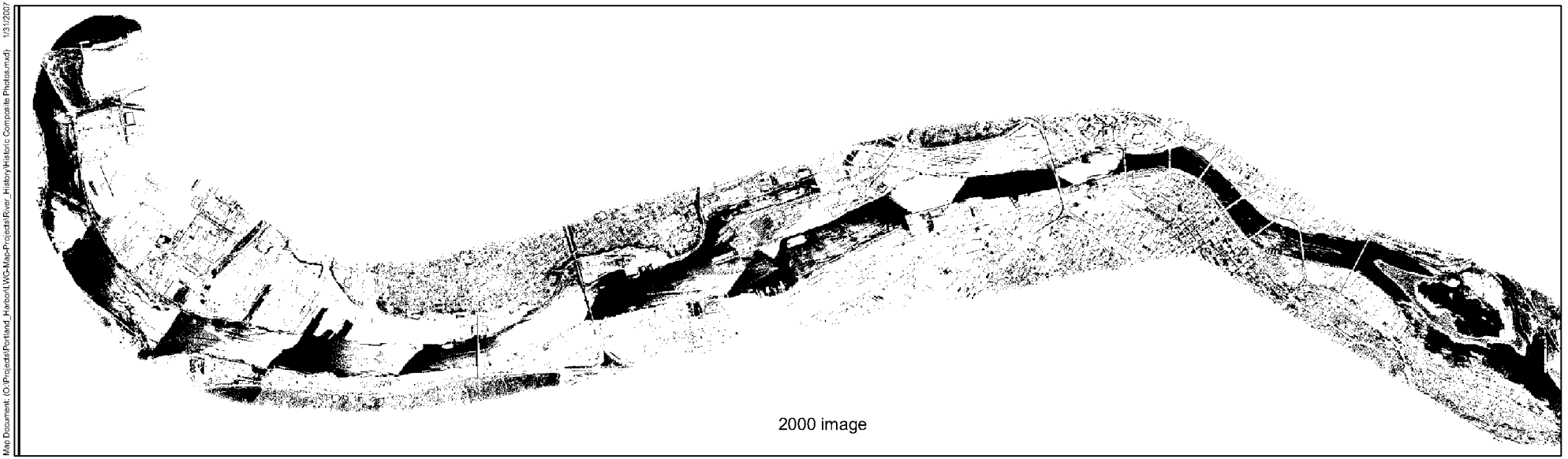
integral consulting inc.

LWG Lower Willamette Group

Note:
Historic composite photos souce unknown.
No scale.

**Map 4.1-5d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Composited Historic Images**



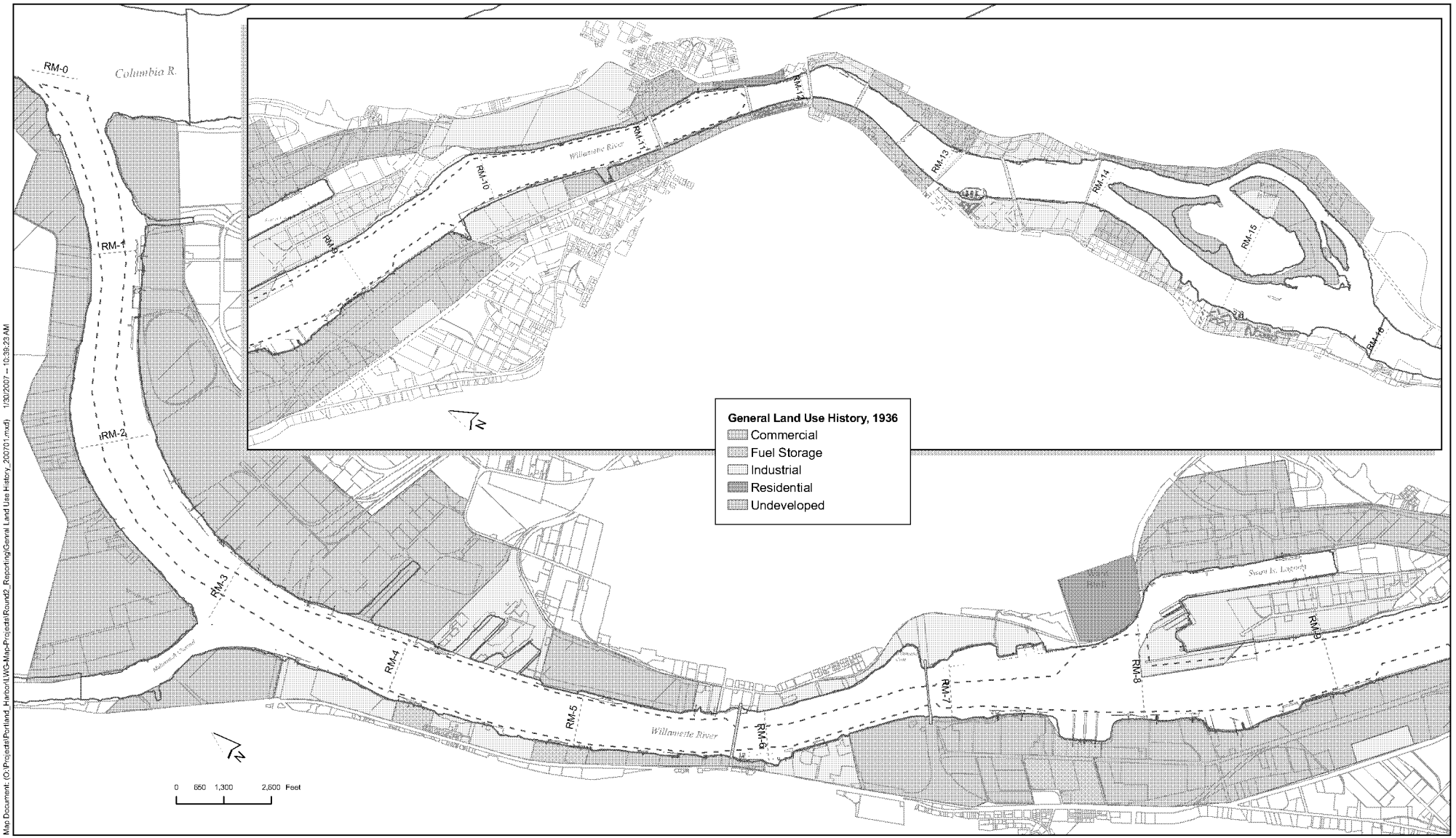

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\River_History\Historic Composite Photos.mxd) 1/31/2007 -- 1:30:35 PM

integral consulting inc.

LWG Lower Willamette Group

Note:
Historic composite photos souce unknown.
No scale.

**Map 4.1-5e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Composited Historic Images**



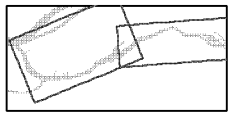

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\General Land Use History_200701.mxd) 1/30/2007 -- 10:39:23 AM

integral consulting inc.

LWG Lower Willamette Group

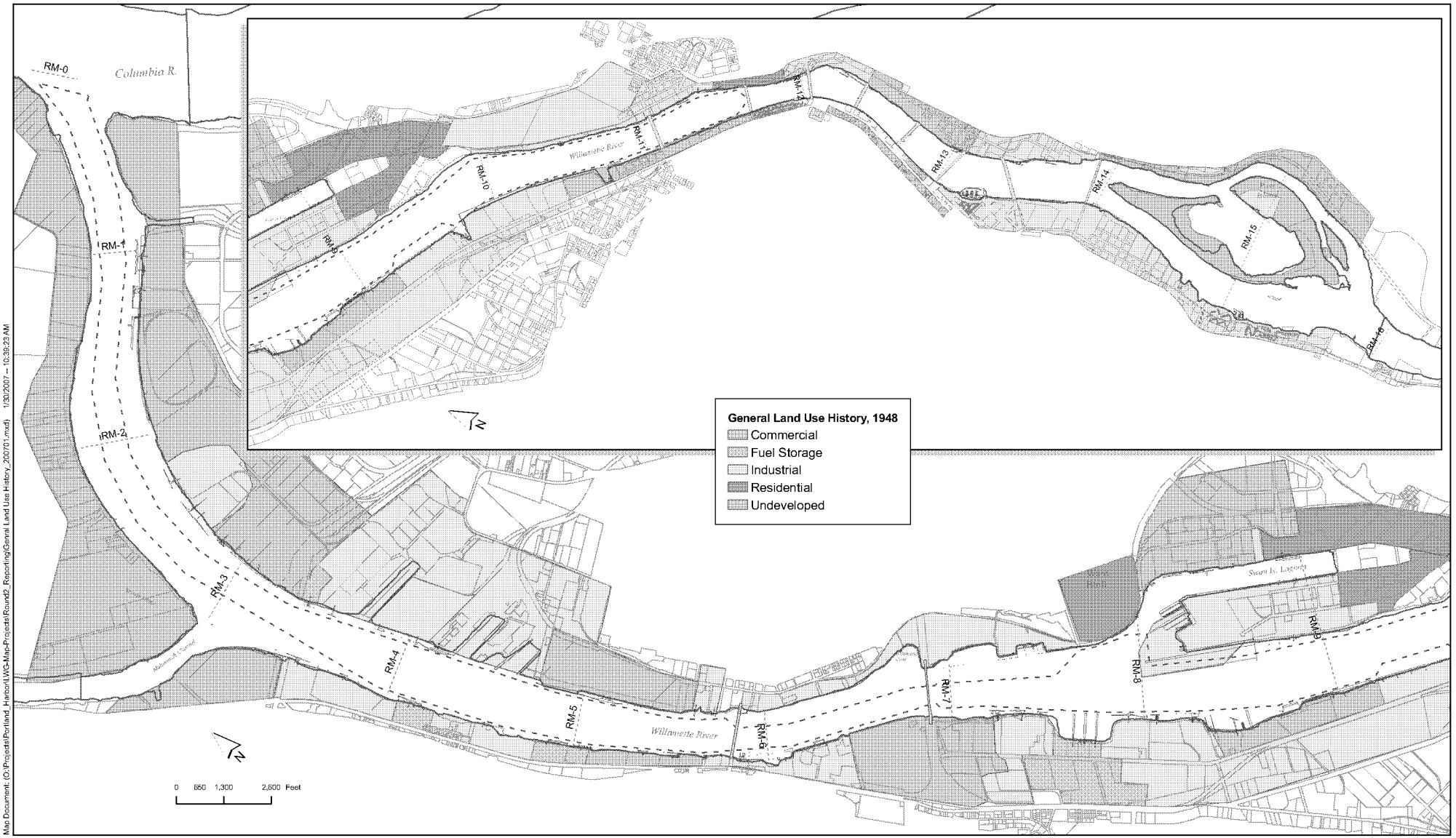
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Land Use shown on this map was generalized while referencing historic aerial photographs.

Bridge
Rivermiles
Docks and Structures
Navigation Channel
Waterfront Taxlots



**Map 4.1-6**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**General Land Use in 1936**

BZTO104(e)032807



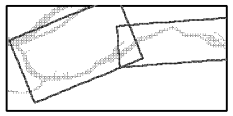

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\General Land Use History_200701.mxd) 1/30/2007 -- 10:39:23 AM

integral consulting inc.

LWG Lower Willamette Group

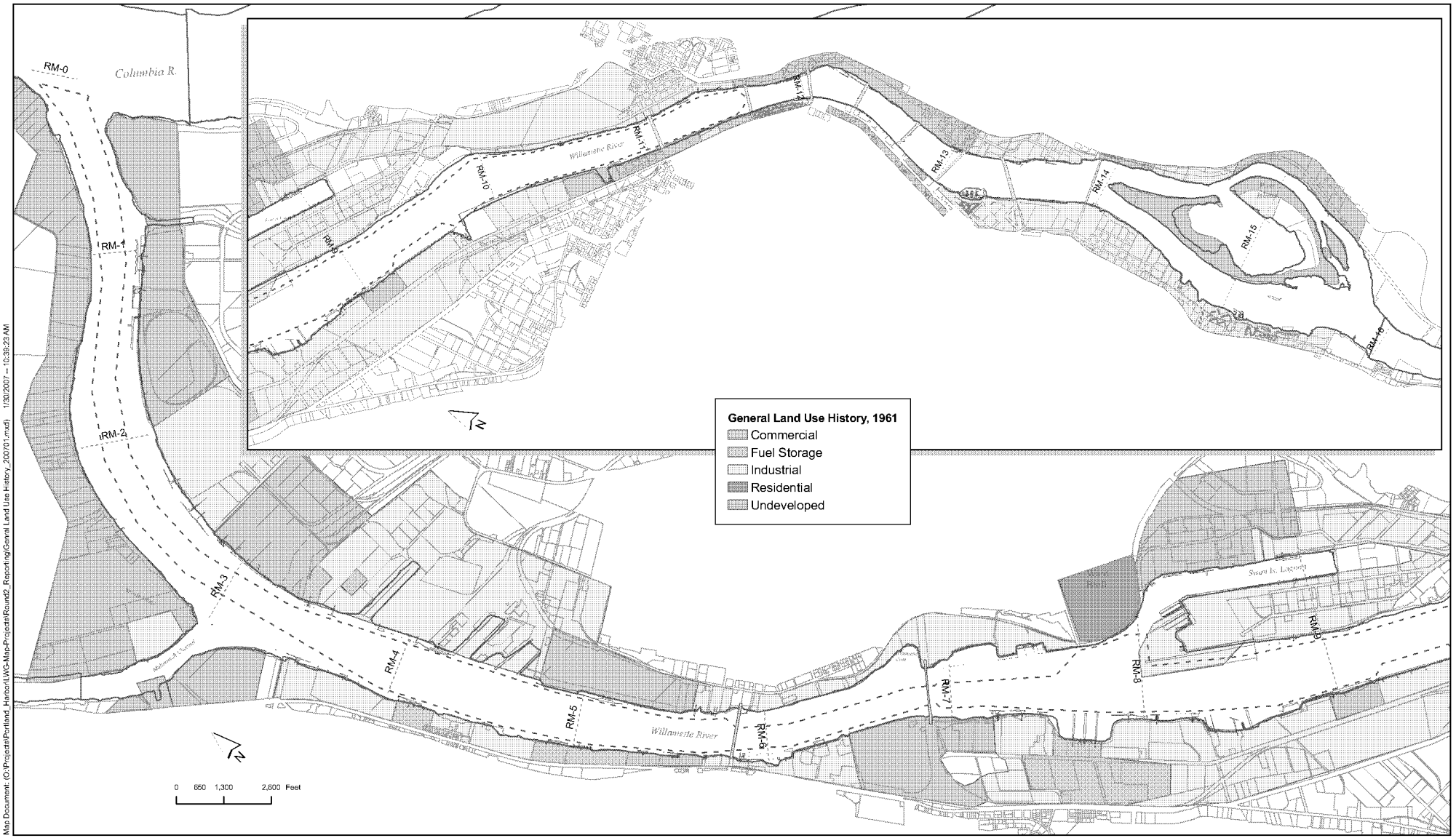
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Land Use shown on this map was generalized while referencing historic aerial photographs.

Bridge
Rivermiles
Docks and Structures
Navigation Channel
Waterfront Taxlots



**Map 4.1-7**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**General Land Use in 1948**

BZTO104(e)032808



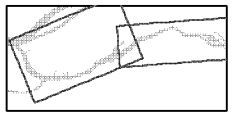

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\General Land Use History_200701.mxd) 1/30/2007 -- 10:39:23 AM

integral consulting inc.

LWG Lower Willamette Group

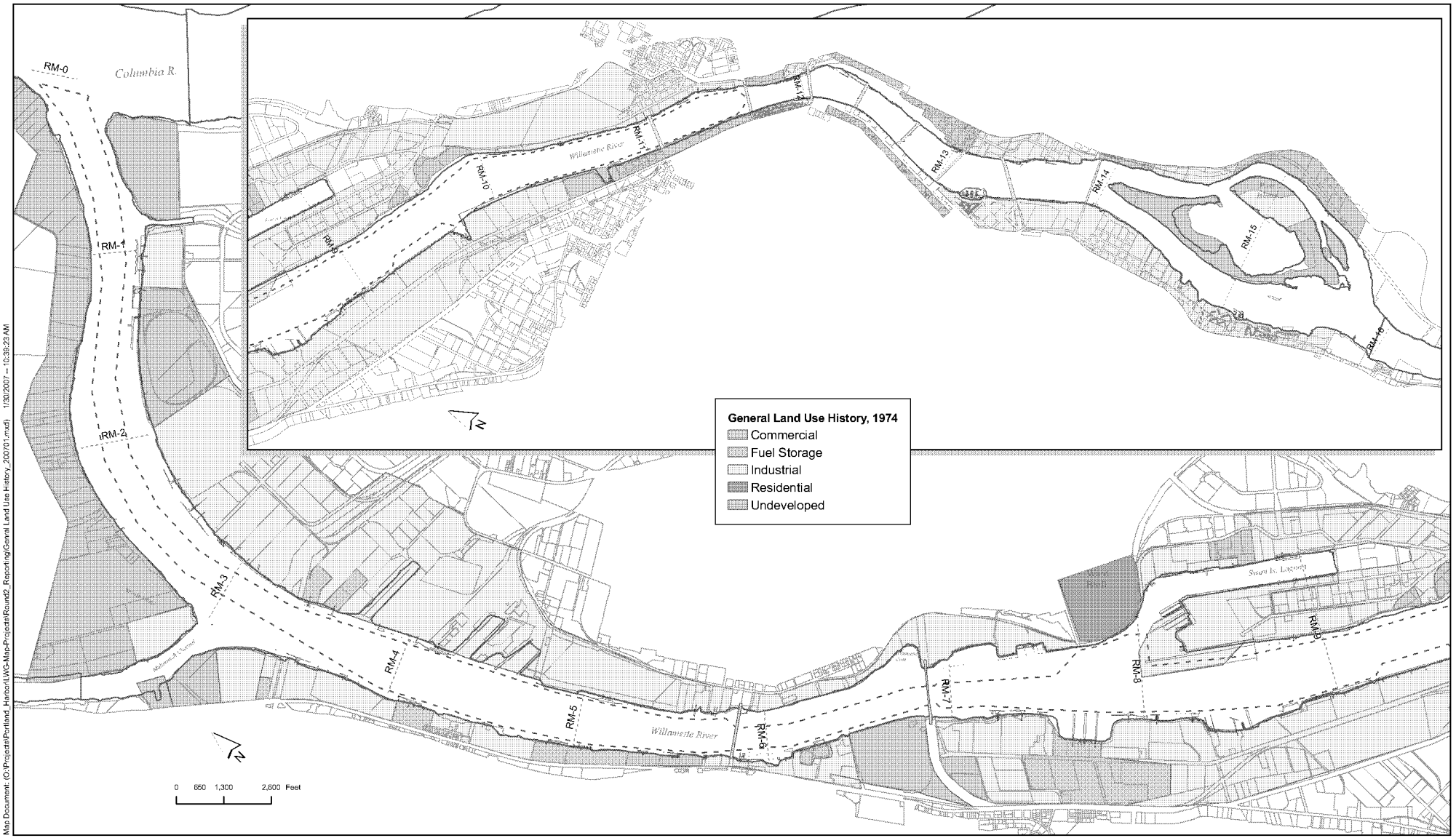
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Land Use shown on this map was generalized while referencing historic aerial photographs.

Bridge
Rivermiles
Docks and Structures
Navigation Channel
Waterfront Taxlots



**Map 4.1-8**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**General Land Use in 1961**

BZTO104(e)032809



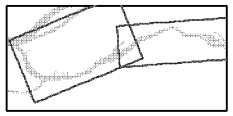

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\General Land Use History_200701.mxd) 1/30/2007 -- 10:39:23 AM

integral consulting inc.

LWG Lower Willamette Group

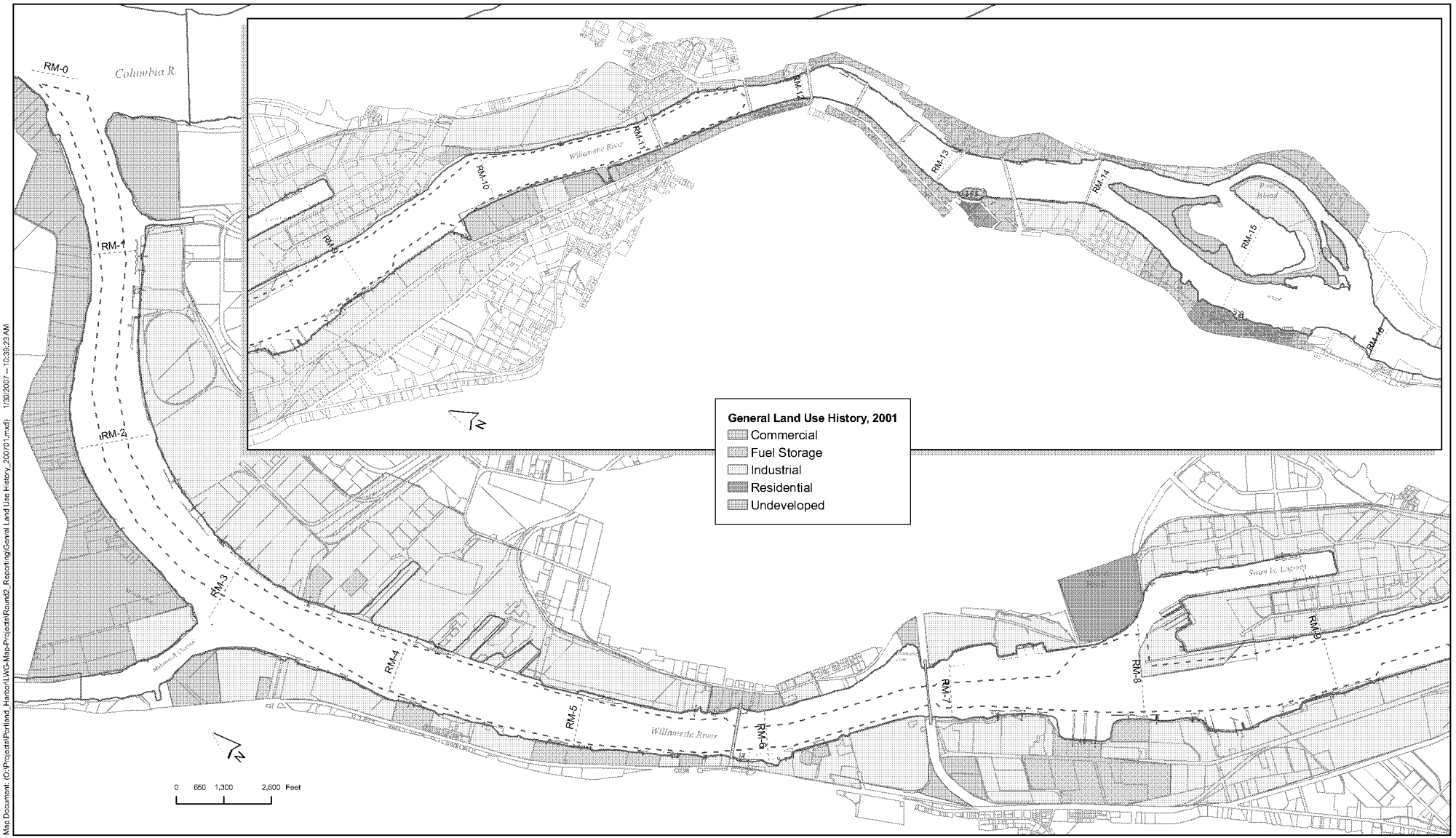
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Land Use shown on this map was generalized while referencing historic aerial photographs.

Bridge
Rivermiles
Docks and Structures
Navigation Channel
Waterfront Taxlots



**Map 4.1-9**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**General Land Use in 1974**

BZTO104(e)032810



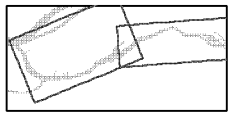

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\General Land Use History_200701.mxd) 1/30/2007 -- 10:39:23 AM

integral consulting inc.

LWG Lower Willamette Group

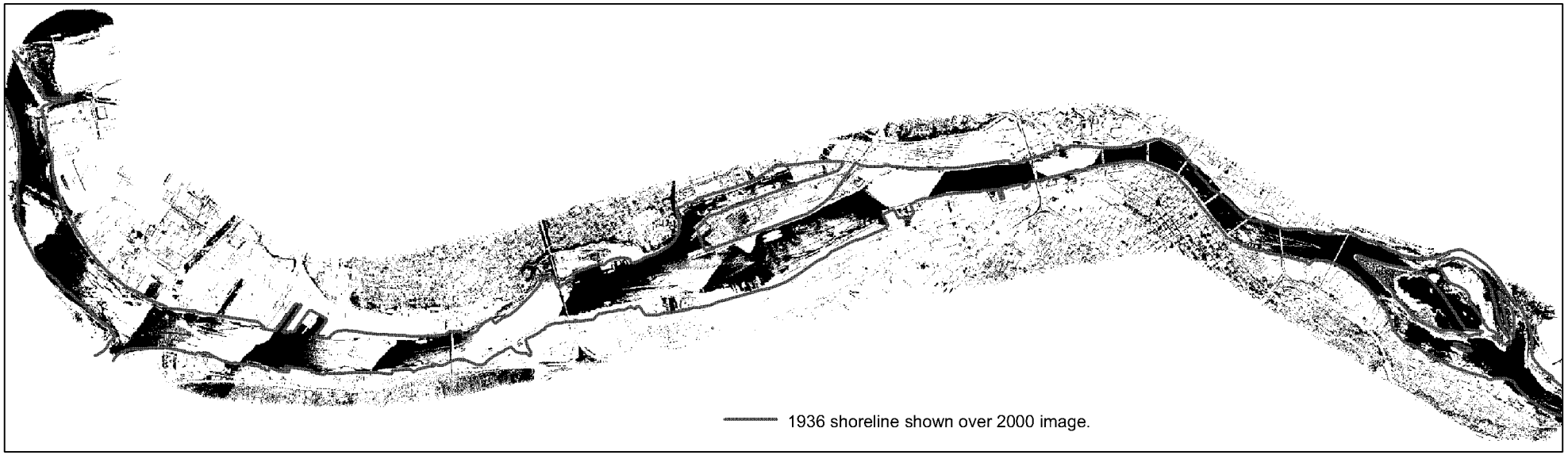
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Land Use shown on this map was generalized while referencing historic aerial photographs.

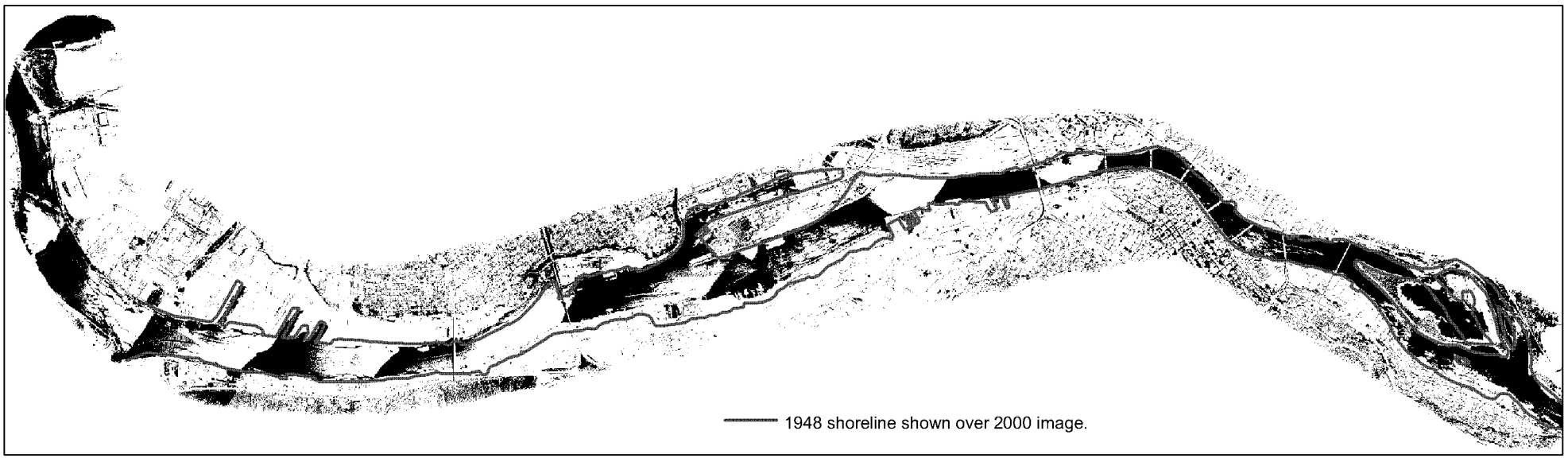
Bridge
Rivermiles
Docks and Structures
Navigation Channel
Waterfront Taxlots



**Map 4.1-10**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**General Land Use in 2001**

BZTO104(e)032811




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\River_History\Historic Riverbank Changes.mxd) 1/31/2007 – 2:35:28 PM

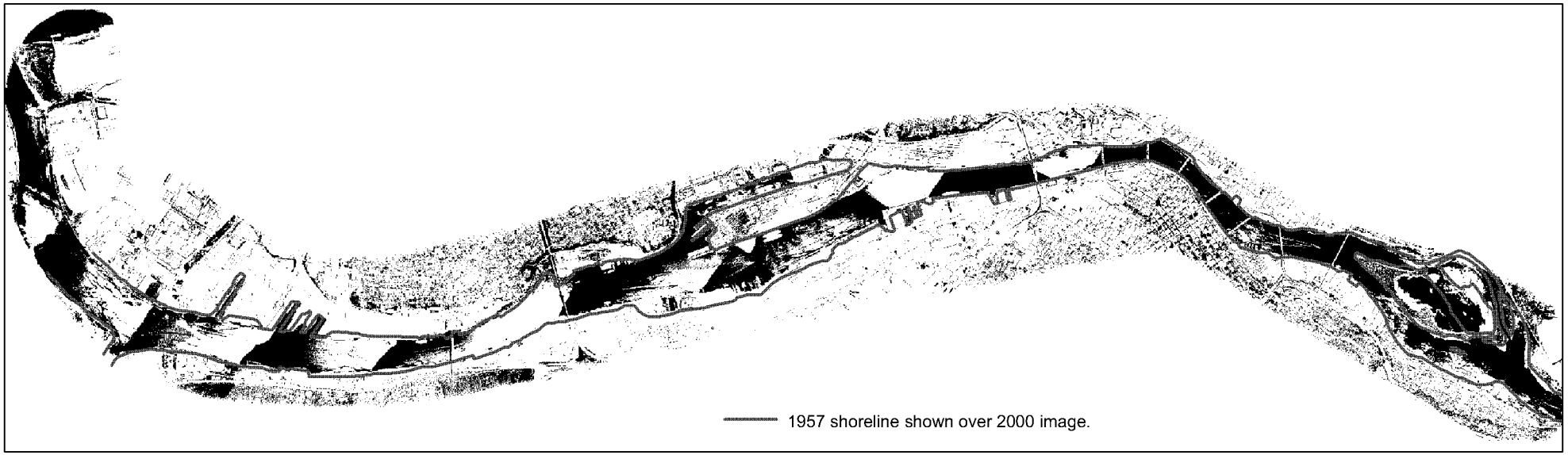
integral consulting inc.

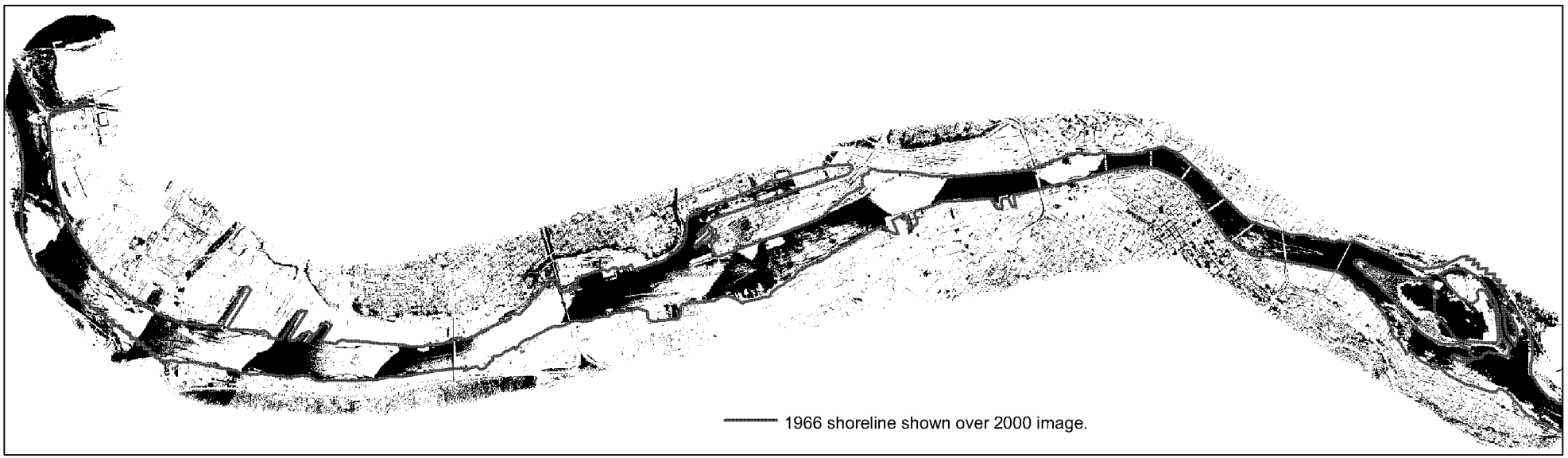
LWG Lower Willamette Group

Note:
The red shorelines in this series were drawn while referencing historic aerial photos as indicated. Relative positions are approximate. Historic composite photos were fit visually to match relatively unchanged areas common through time.
No scale.

Historic Shoreline

**Map 4.1-11a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Historic Shoreline Changes**




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\River_History\Historic Riverbank Changes.mxd) 1/31/2007 – 2:35:28 PM

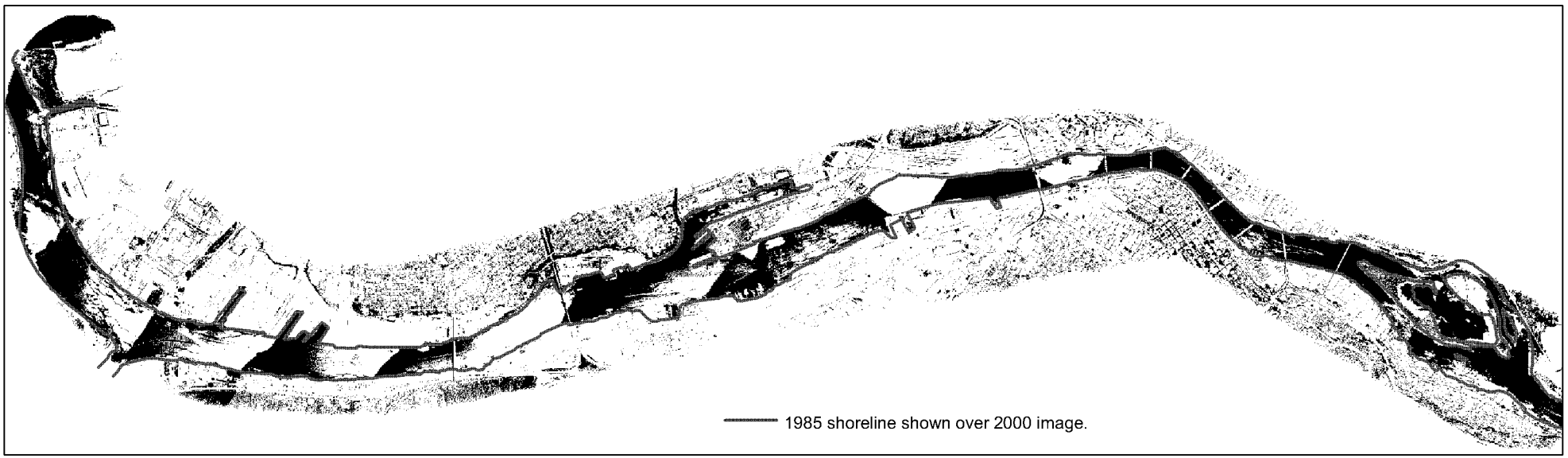
integral consulting inc.

LWG Lower Willamette Group

Note:
The red shorelines in this series were drawn while referencing historic aerial photos as indicated. Relative positions are approximate. Historic composite photos were fit visually to match relatively unchanged areas common through time.
No scale.

Historic Shoreline

**Map 4.1-11b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Historic Shoreline Changes**




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\River_History\Historic Riverbank Changes.mxd) 1/31/2007 – 2:35:28 PM

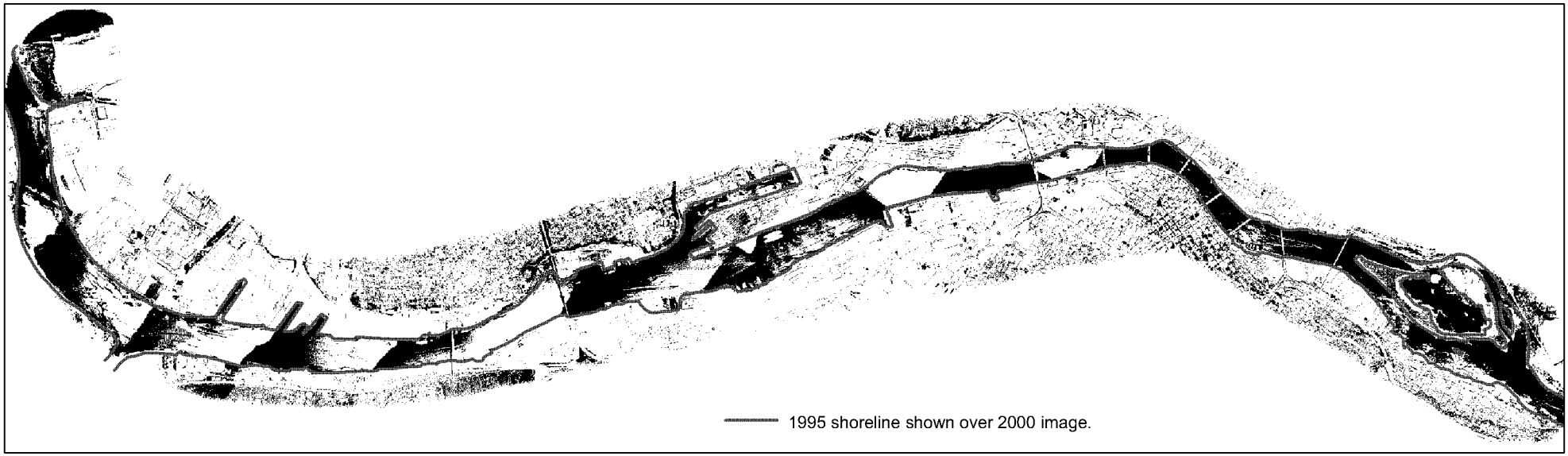
integral consulting inc.

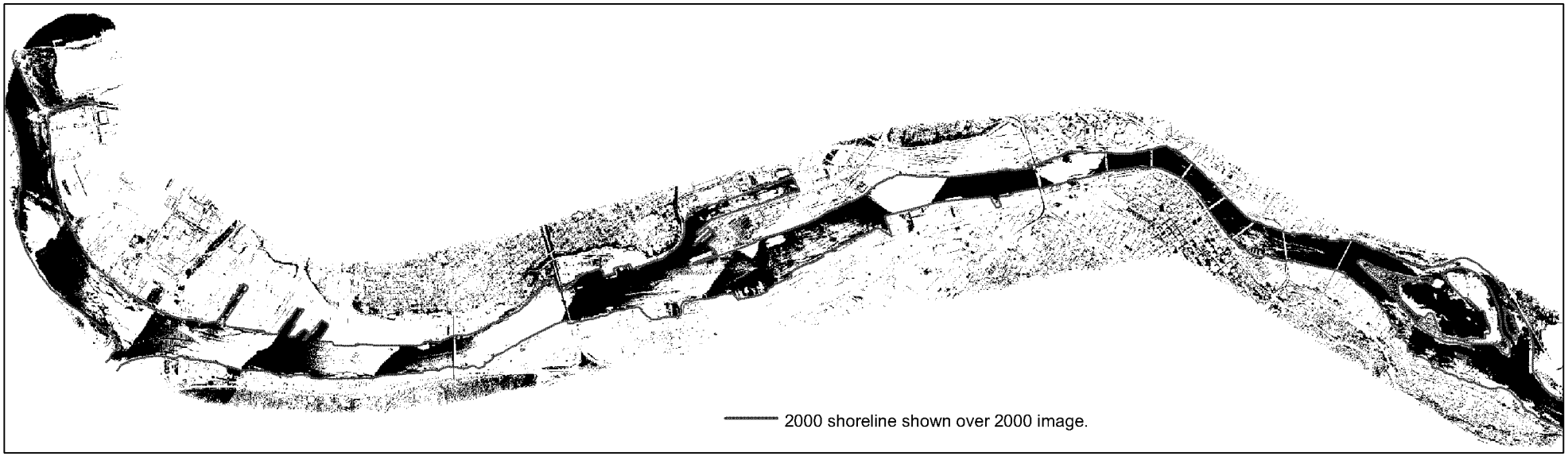
LWG Lower Willamette Group

Note:
The red shorelines in this series were drawn while referencing historic aerial photos as indicated. Relative positions are approximate. Historic composite photos were fit visually to match relatively unchanged areas common through time.
No scale.

Historic Shoreline

**Map 4.1-11c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Historic Shoreline Changes**




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\River_History\Historic Riverbank Changes.mxd) 1/31/2007 – 2:35:28 PM

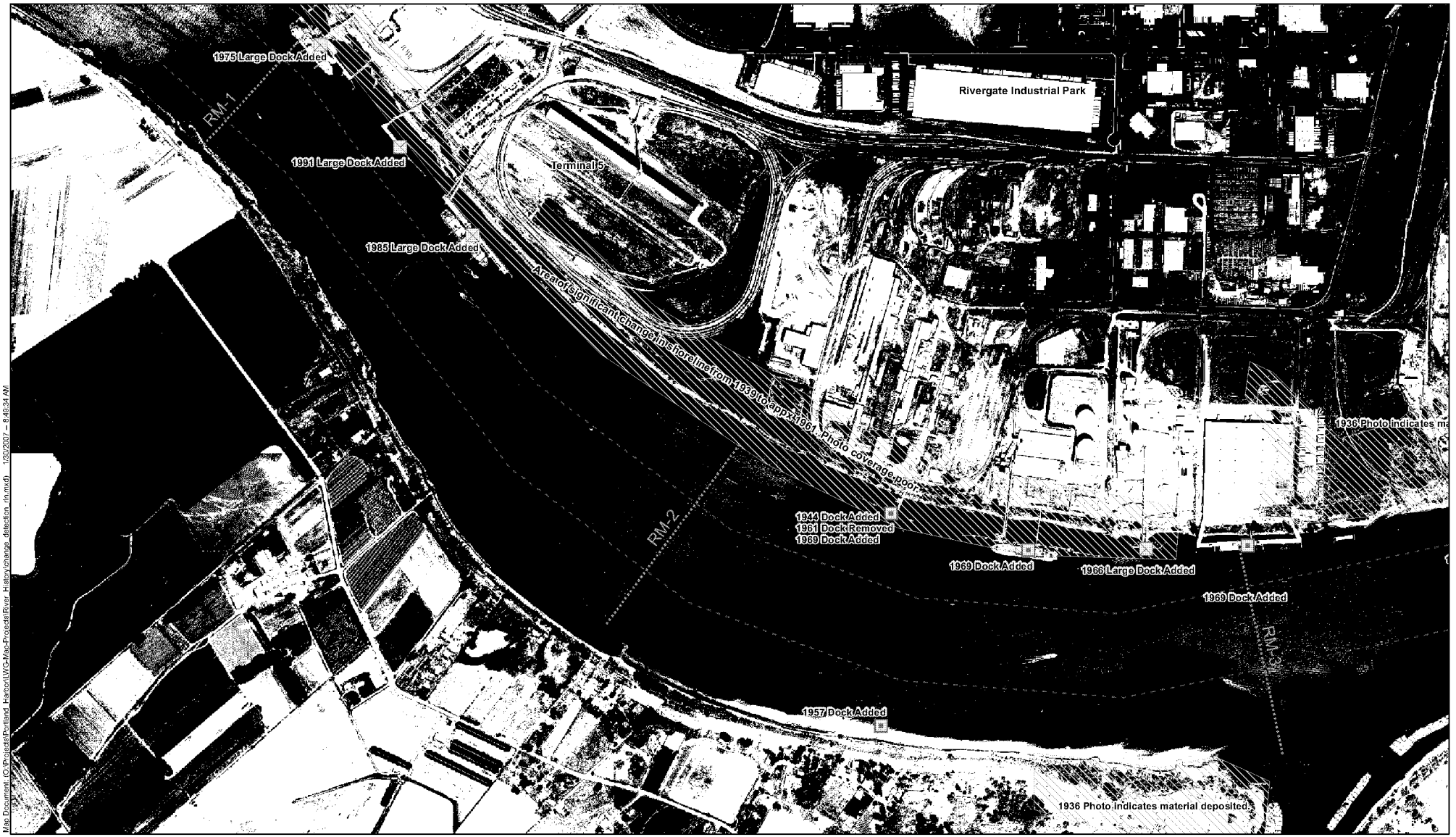
integral consulting inc.

LWG Lower Willamette Group

Note:
The red shorelines in this series were drawn while referencing historic aerial photos as indicated. Relative positions are approximate. Historic composite photos were fit visually to match relatively unchanged areas common through time.
No scale.

Historic Shoreline

**Map 4.1-11d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Historic Shoreline Changes**




Map Document: (O:\Projects\Portland_Harbor\LWG-Mac-Projects\River_History\change_detection_rh.mxd) 1/30/2007 -- 8:49:34 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Channel & River miles: US Army Corps of Engineers.
RLIS Aerial Images of February 2005 "leaf off" flight (6" pixel).

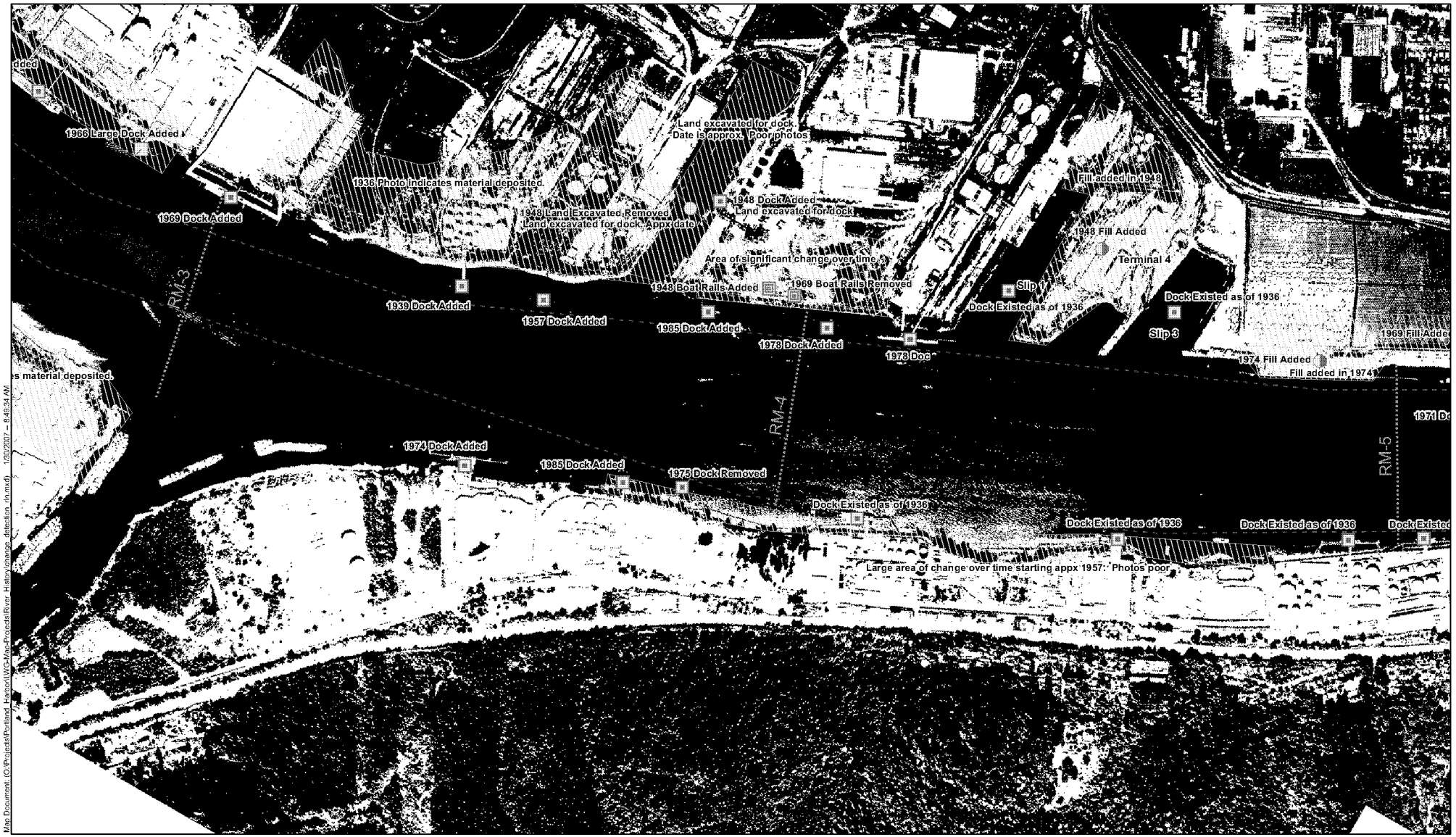
0 330 660 1,320 Feet

Boat Rolls
Dock
Fill Placement
Land Excavated
Large Dock
Pier
Rivermiles
Areas of Change
Navigation Channel
Bridges

**Label Note:**
The dates of the points and polygon features were labeled based on dates taken from the historic composite images. For example if a dock was not present in 1936 but was present in 1948, then it was labeled as 1948.

**Map 4.1-12a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Historic Overwater Operations**

BZTO104(e)032816




Map Document: (O:\Projects\Portland_Harbor\LWG-Maps\Projects\River_History\change_detection_rlv.mxd) 1/30/2007 – 8:49:34 AM

integral consulting inc.

LWG Lower Willamette Group

FEATURE SOURCES:
Channel & River miles: US Army Corps of Engineers.
RLIS Aerial Images of February 2005 "leaf off" flight (6" pixel).

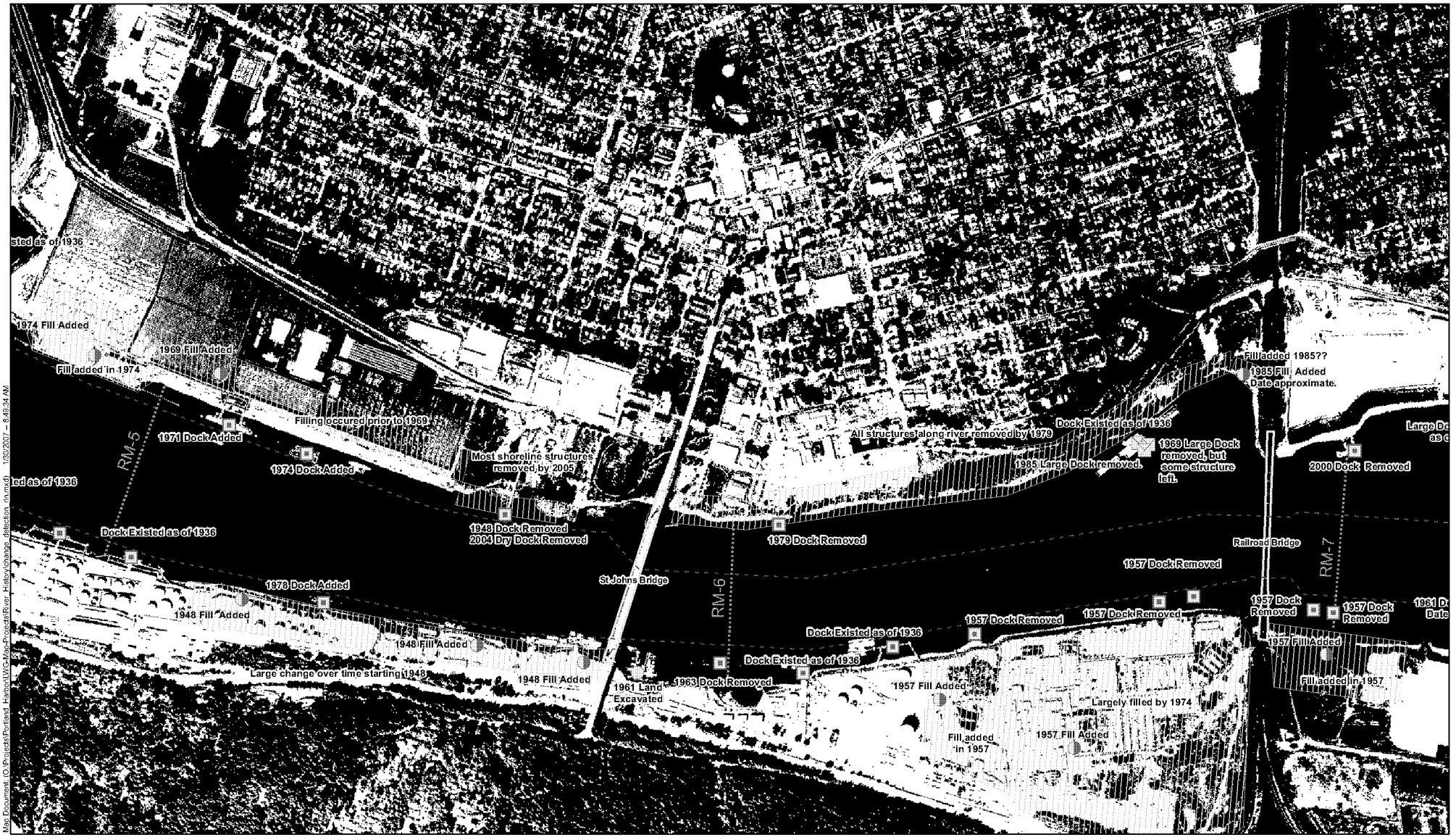
0 330 660 1,320 Feet

Boat Rails
Dock
Fill Placement
Land Excavated
Large Dock
Pier
Rivermiles
Areas of Change
Navigation Channel
Bridges

**Label Note:**
The dates of the points and polygon features were labeled based on dates taken from the historic composite images. For example if a dock was not present in 1936 but was present in 1948, then it was labeled as 1948.

**Map 4.1-12b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Historic Overwater Operations**

BZTO104(e)032817




integral consulting inc.

LWG Lower Willamette Group

0 330 660 1,320 Feet

FEATURE SOURCES:
Channel & River miles: US Army Corps of Engineers.
RLIS Aerial Images of February 2005 "leaf off" flight (6" pixel).

Boat Rolls
Dock
Fill Placement
Land Excavated
Large Dock
Pier
Areas of Change
Navigation Channel
Bridges
Rivermiles

**Label Note:**
The dates of the points and polygon features were labeled based on dates taken from the historic composite images. For example if a dock was not present in 1936 but was present in 1948, then it was labeled as 1948.

**Map 4.1-12c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Historic Overwater Operations**

Map Document: (O:\Projects\Portland_Harbor\LWG-Mac-Projects\River_History\change_detection_rln.mxd) 1/30/2007 -- 8:49:34 AM

BZTO104(e)032818

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\River_History\change_detection_rln.mxd) 1/30/2007 -- 8:49:34 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 330 660 1,320 Feet

FEATURE SOURCES:
Channel & River miles: US Army Corps of Engineers.
RLIS Aerial Images of February 2005 "leaf off" flight (6" pixel).

Boat Rails
Dock
Fill Placement
Land Excavated
Large Dock
Pier
Rivermiles
Areas of Change
Navigation Channel
Bridges

**Label Note:**
The dates of the points and polygon features were labeled based on dates taken from the historic composite images. For example if a dock was not present in 1936 but was present in 1948, then it was labeled as 1948.

**Map 4.1-12d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Historic Overwater Operations**

BZTO104(e)032819

Map Document: (O:\Projects\Portland_Harbor\LWG-Maps\Projects\River History\change_detection_rls.mxd) 1/30/2007 -- 8:49:34 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 330 660 1,320 Feet

FEATURE SOURCES:
Channel & River miles: US Army Corps of Engineers.
RLIS Aerial Images of February 2005 "leaf off" flight (6" pixel).

Boat Rolls
Dock
Fill Placement
Land Excavated
Large Dock
Pier
Rivermiles
Areas of Change
Navigation Channel
Bridges

**Label Note:**
The dates of the points and polygon features were labeled based on dates taken from the historic composite images. For example if a dock was not present in 1936 but was present in 1948, then it was labeled as 1948.

**Map 4.1-12e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Historic Overwater Operations**

BZTO104(e)032820

Map Document: (Q:\Projects\Portland_Harbor\LWG-Mxds\Projects\River_History\change_detection_rin.mxd) 1/30/2007 -- 8:49:34 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 330 660 1,320 Feet

FEATURE SOURCES:
Channel & River miles: US Army Corps of Engineers.
RLIS Aerial Images of February 2005 "leaf off" flight (6" pixel).

Boat Rolls
Dock
Fill Placement
Land Excavated
Large Dock
Pier
Rivermiles
Areas of Change
Navigation Channel
Bridges

**Label Note:**
The dates of the points and polygon features were labeled based on dates taken from the historic composite images. For example if a dock was not present in 1936 but was present in 1948, then it was labeled as 1948.

**Map 4.1-12f**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Historic Overwater Operations**

integral consulting inc.

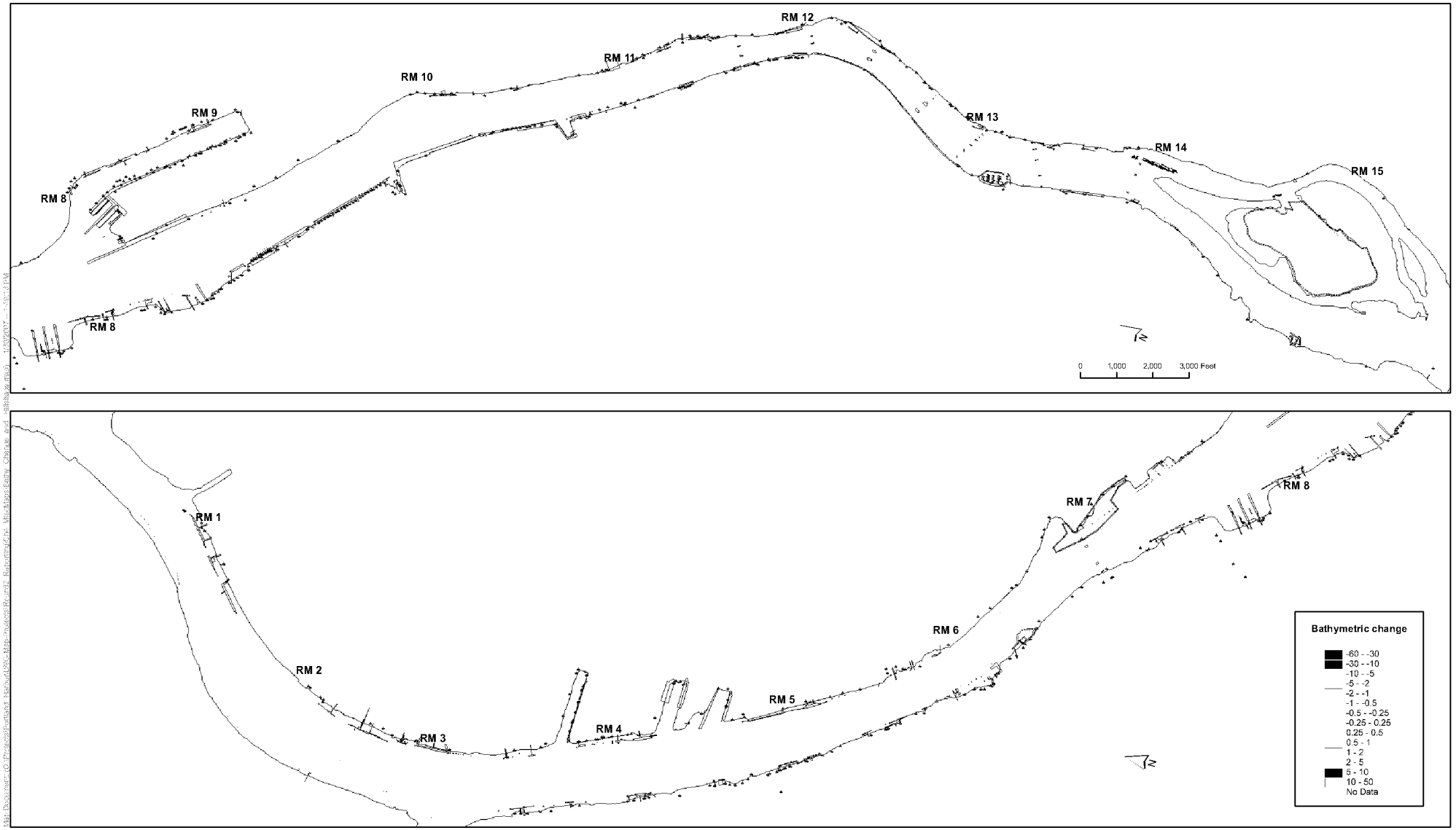
LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- River miles
- Navigation Channel
- Docks and Structures
- Waterfront Taxlots
- Capped Areas
- Upland Sites (2006)

**Map 4.4-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**2004 Bathymetry Hillshade**

BZTO104(e)032822




integral consulting inc.

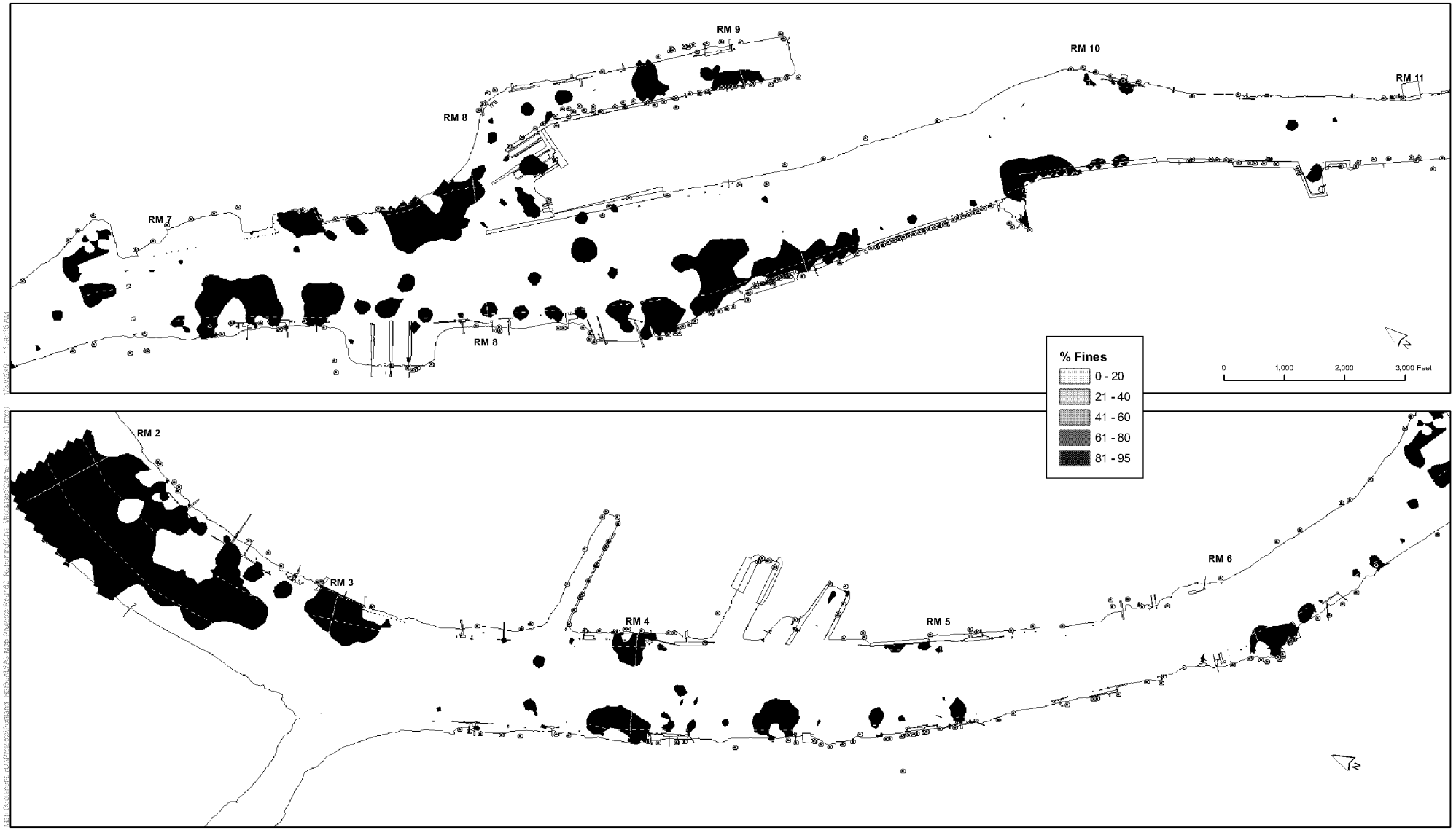
LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River miles
Navigation Channel
Docks and Structures
Waterfront Taxlots
Capped Areas
Upland Sites (2006)

**Map 4.4-2**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Bathymetric Change**
**Winter 2002 to Winter 2004**

BZTO104(e)032823




integral consulting inc.

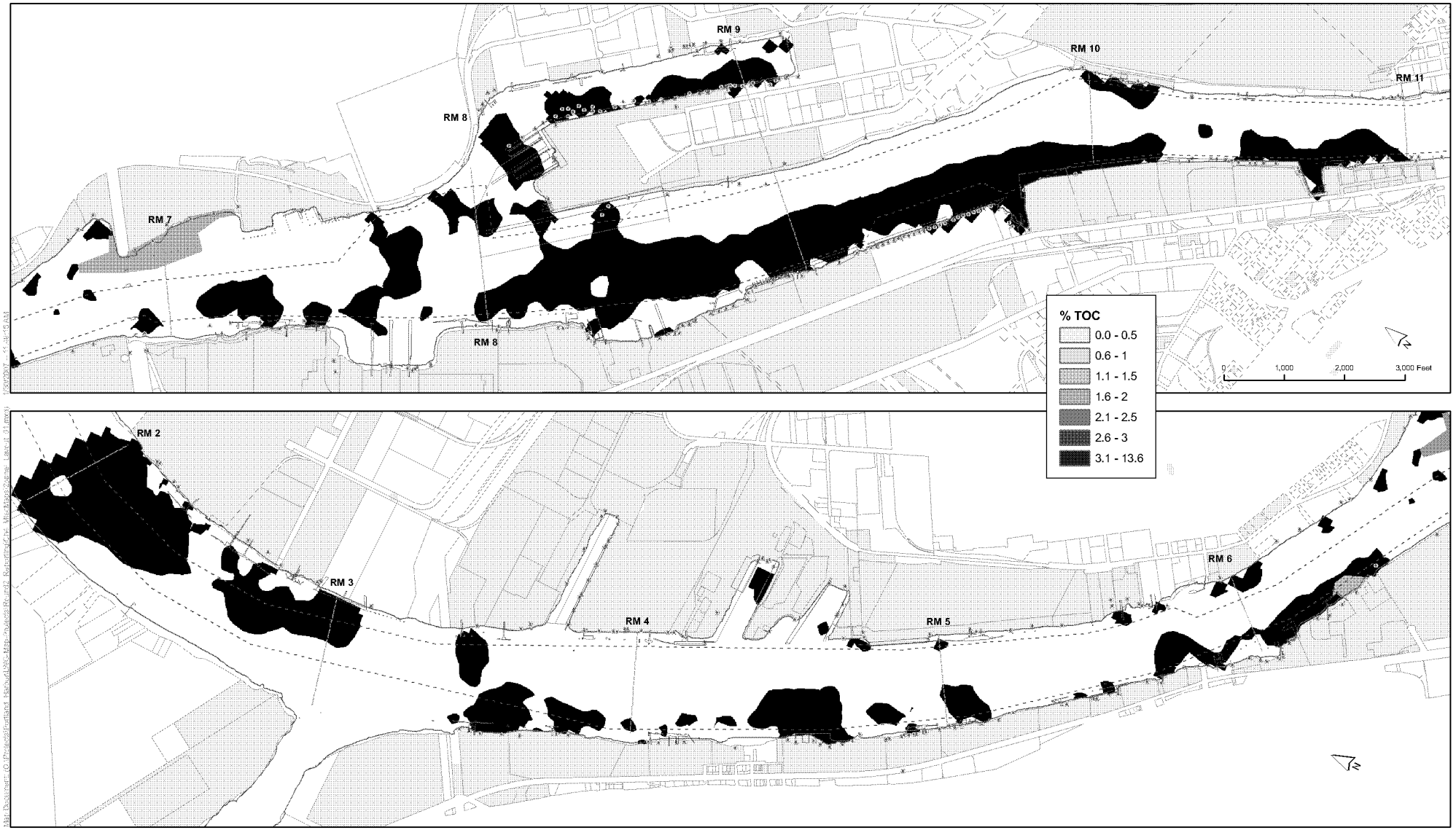
LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River miles
Navigation Channel
Docks and Structures
Waterfront Taxlots
2004 Capping
2005 Capping
Upland Sites (2006)

**Map 4.4-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Contoured Surface Sediment Texture**
**Percent Fines**

BZTO104(e)032824



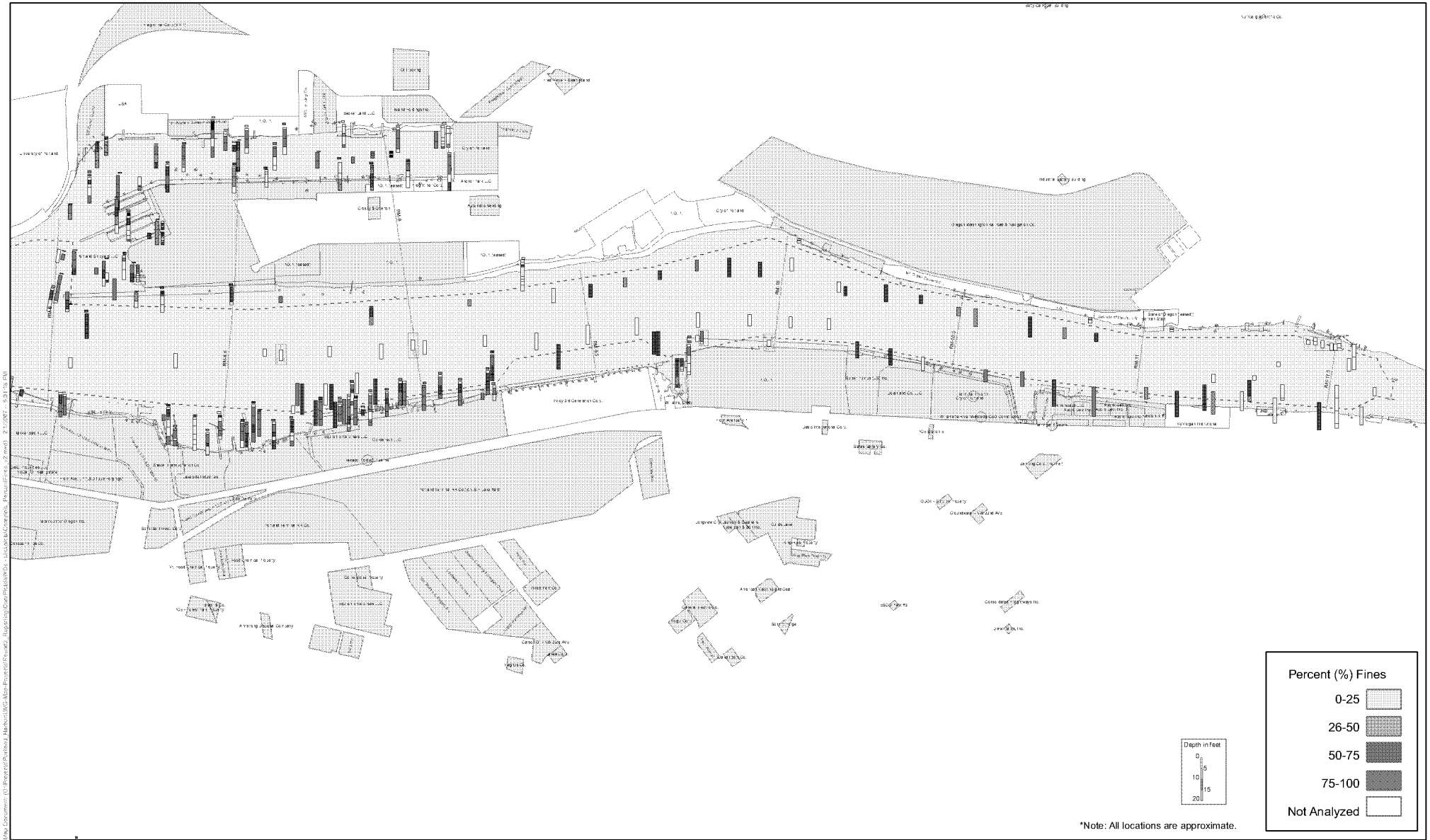

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River miles
Navigation Channel
Docks and Structures
Waterfront Taxlots
2004 Capping
2005 Capping
Upland Sites (2006)

**Map 4.4-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Contoured Surface Sediment Total Organic Carbon Content**
**Percent TOC**




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 600 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
Docks and Structures
Navigation Channel
Dredged/Capped Sampes

River Mile 8-12

**Map 4.4-5a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Sediment Texture With Depth**
**Percent (%) Fines**

BZTO104(e)032826

| | |
|---|---|
| integral consulting inc. | 0 200 400 600 800 Feet |

LWG
LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
Docks and Structures
Navigation Channel
Dredged/Capped Sampes

River Mile 5-8

**Map 4.4-5b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Sediment Texture With Depth**
**Percent (%) Fines**

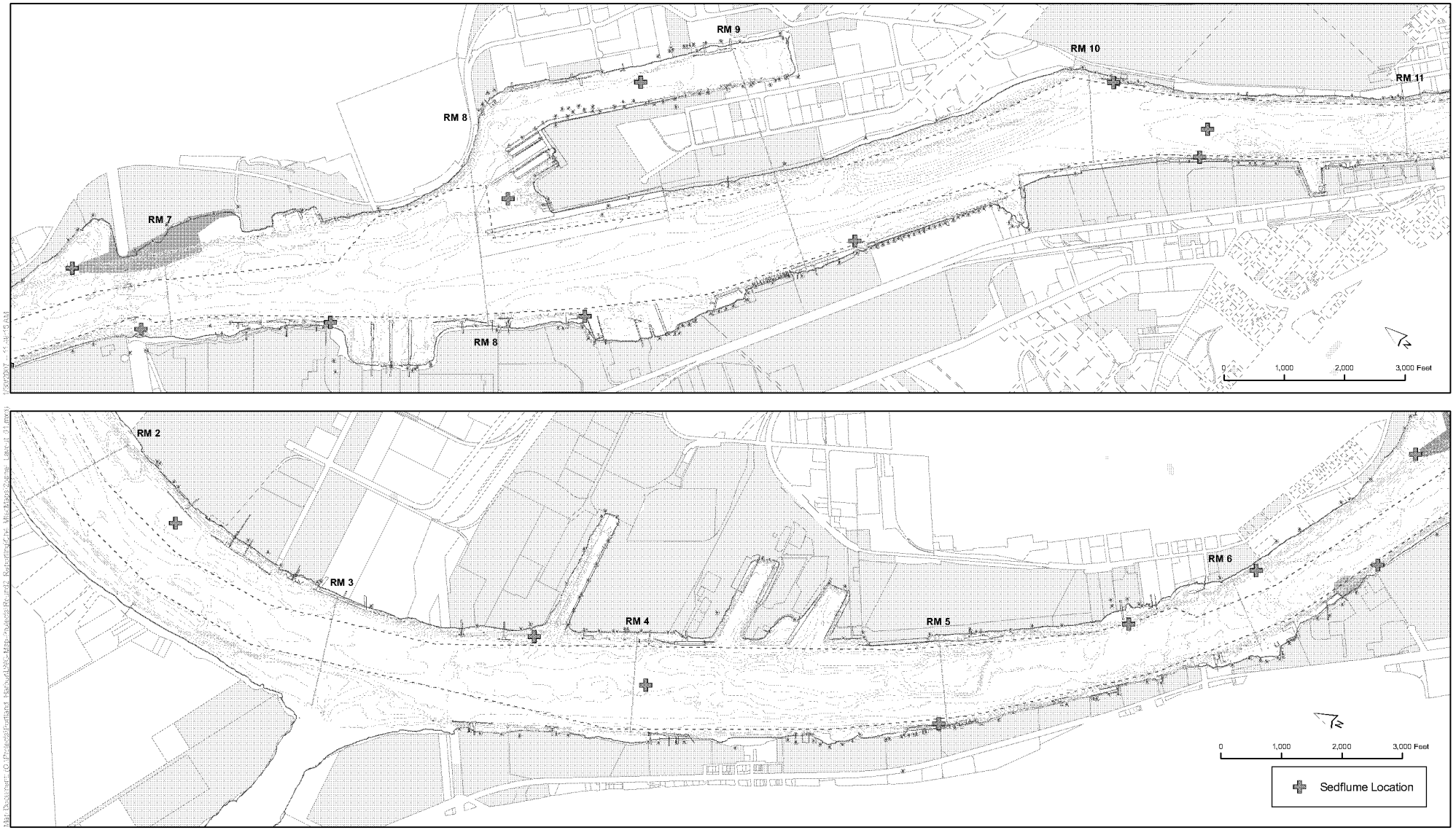
BZTO104(e)032827

0 200 400 600 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
Docks and Structures
Navigation Channel
Dredged/Capped Sampes

**Map 4.4-5c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Sediment Texture With Depth**
**Percent (%) Fines**




integral consulting inc.

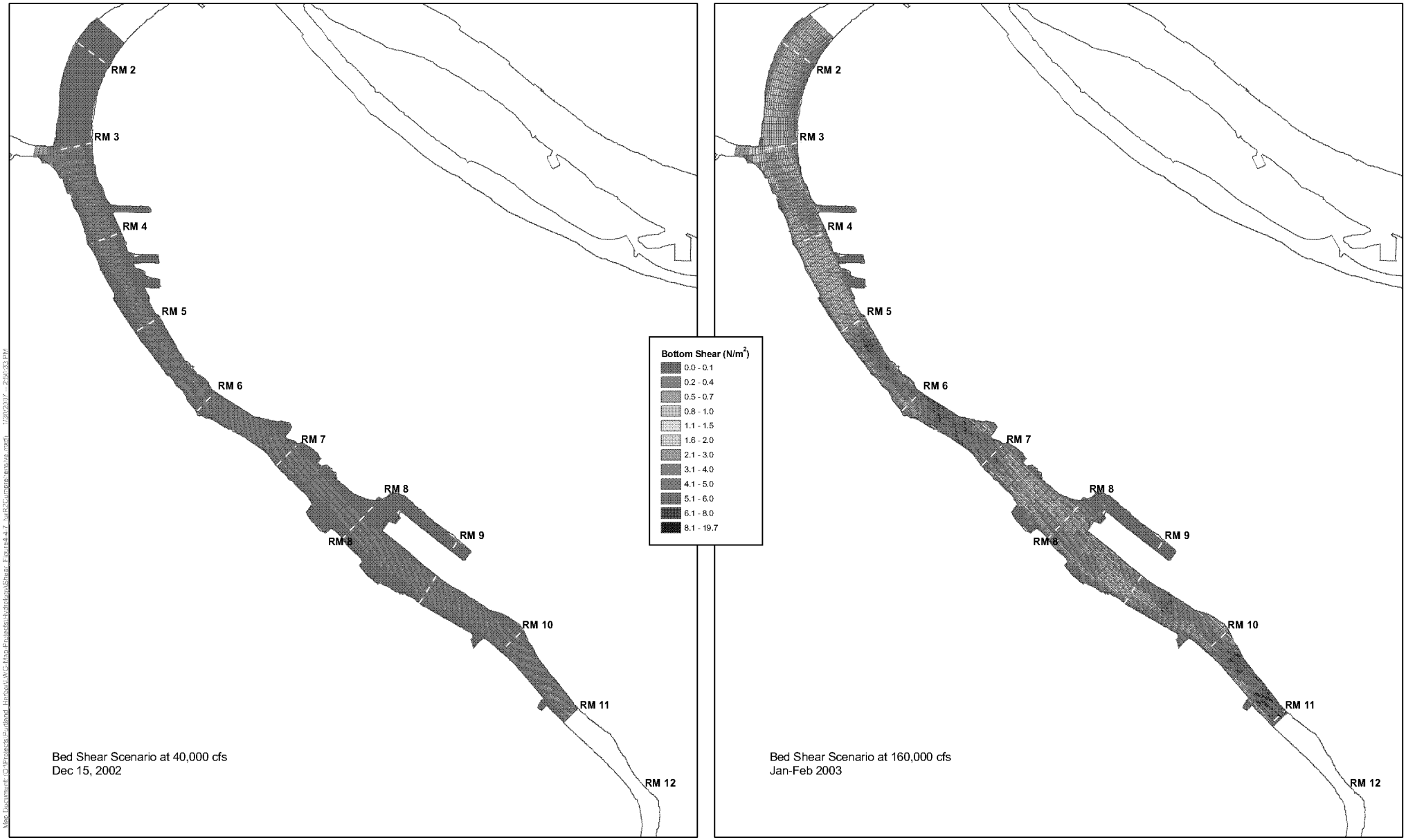
LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- River miles
- Navigation Channel
- Docks and Structures
- Waterfront Taxlots
- 5 foot Contour
- 2004 Capping
- 2005 Capping
- Upland Sites (2006)

**Map 4.4-6**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Sedflume Core Locations**

BZTO104(e)032829




integral consulting inc.

LWG Lower Willamette Group

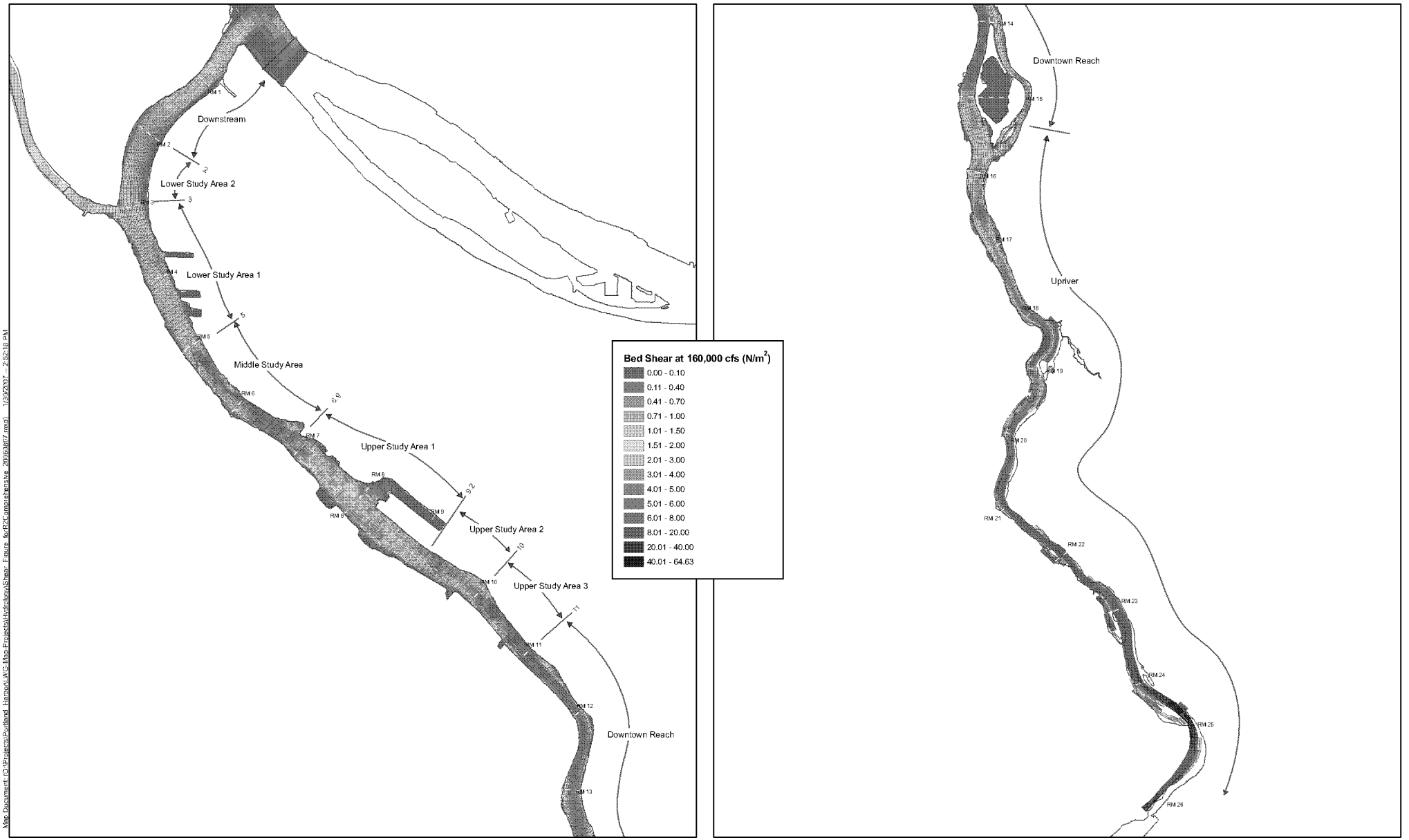
N

0 2,000 4,000 8,000 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Bed shear: West Consultants.

**Map 4.4-7**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Bed Shear Results from Hydromodel**

BZTO104(e)032830




Map Document: (O:\Projects\Portland Harbor\LWG Map Projects\Hydrodynamic\Shear Figure for P2Comprehensive 20060907.mxd) 1/3/2007 - 2:52:18 PM

integral

LWG Lower Willamette Group

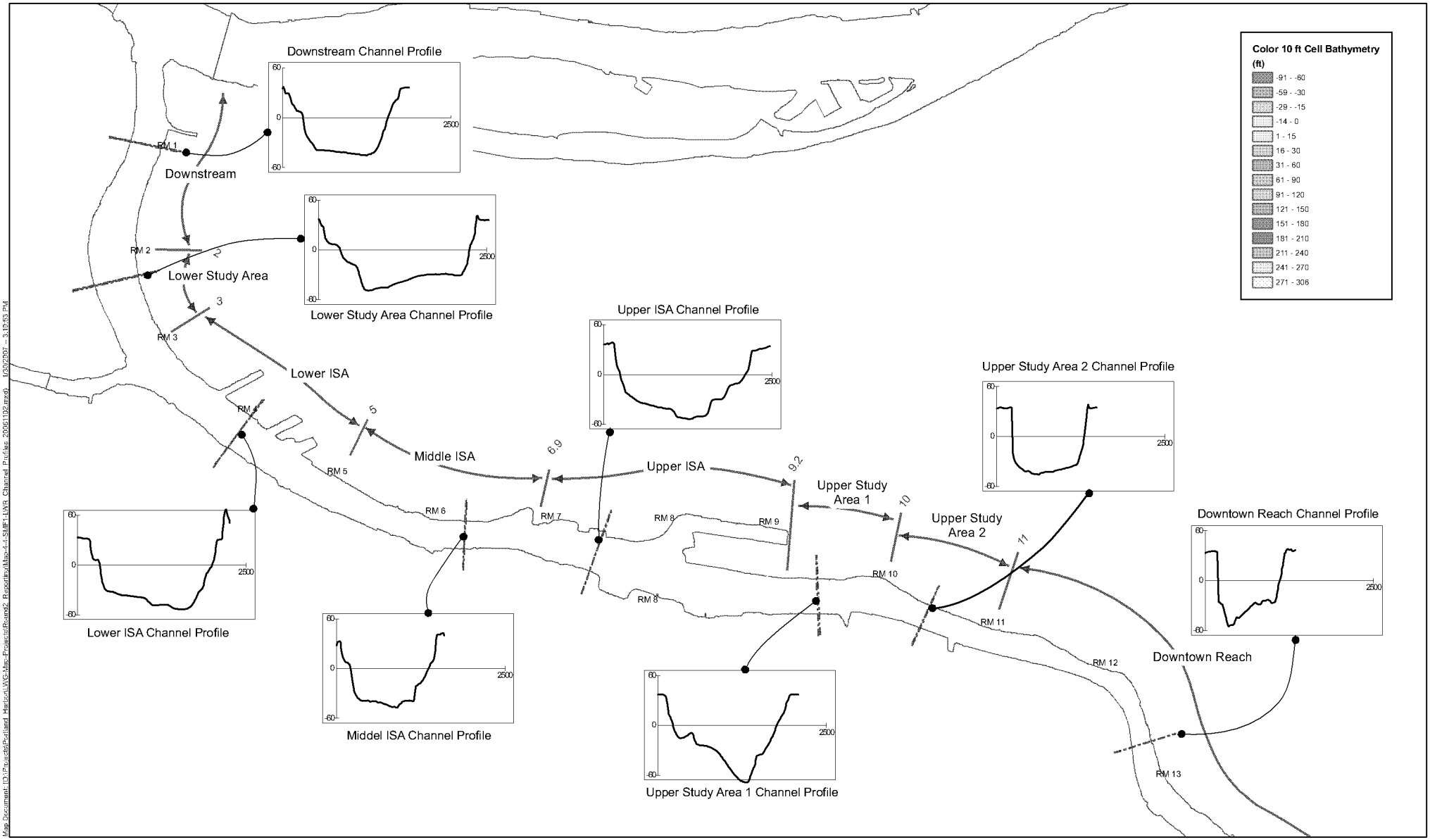
N

0 2,000 4,000 8,000 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Bed shear: West Consultants.

**Map 4.5-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Predicted Bed Shear Stresses and Sediment Transport Regimes**

BZTO104(e)032831




integral consulting inc.

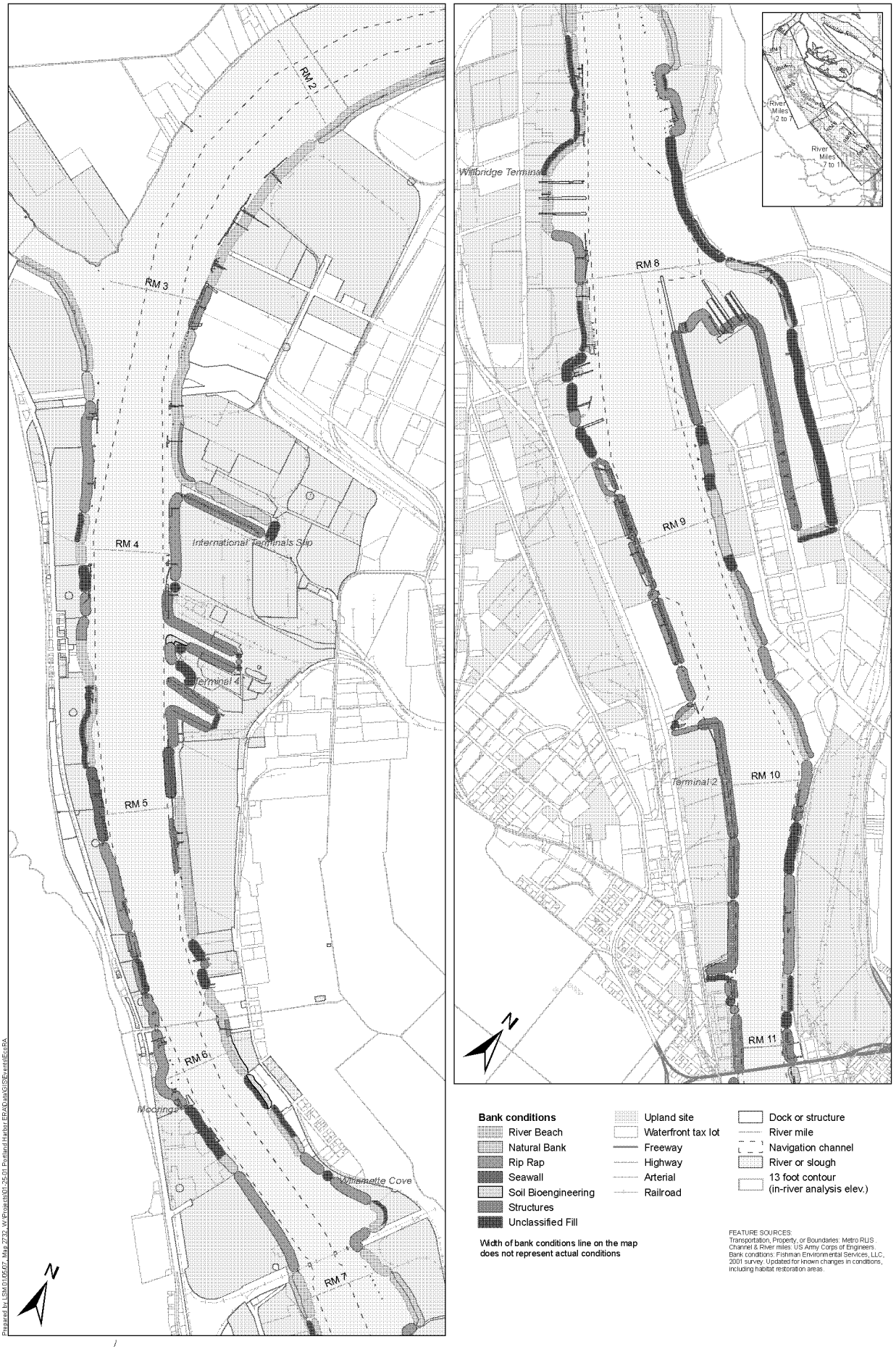
LWG Lower Willamette Group

0 2,000 4,000 8,000 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Bed shear: West Consultants.

**Map 4.5-2**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**LWR Channel Profiles**

BZTO104(e)032832




Wind Ward environmental LLC

LWG Lower Willamette Group

Map **4.6-1**
**Riverbank Types**
**River Miles 2 to 11**

**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**

BZTO104(e)032833

Prepared by LSM 01/05/07, Map 2732, W:\Projects\01-25-01 Portland Harbor ERA\Data\GIS\Events\EcoRA

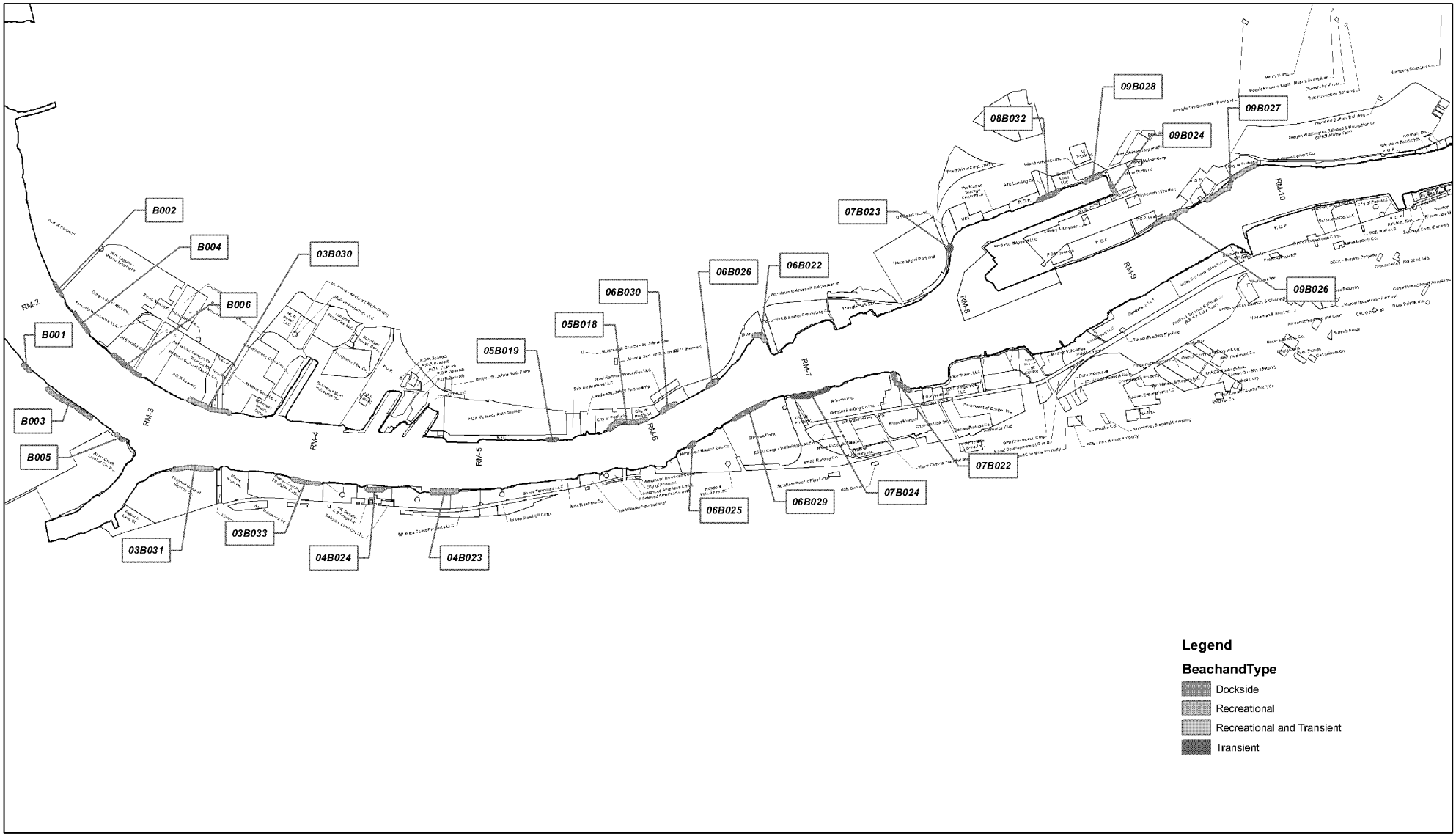
Wind Ward environmental LLC

LWG Lower Willamette Group

Map **4.6-2**
**Wildlife Habitat in the Study Area**
**River Miles 2 to 11**

**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**

BZTO104(e)032834




Map Document: (Z:\Projects\LWG\Events\2007\0108_HHRA\)
2/21/2007

**Kennedy/Jenks Consultants**
**Engineers & Scientists**

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

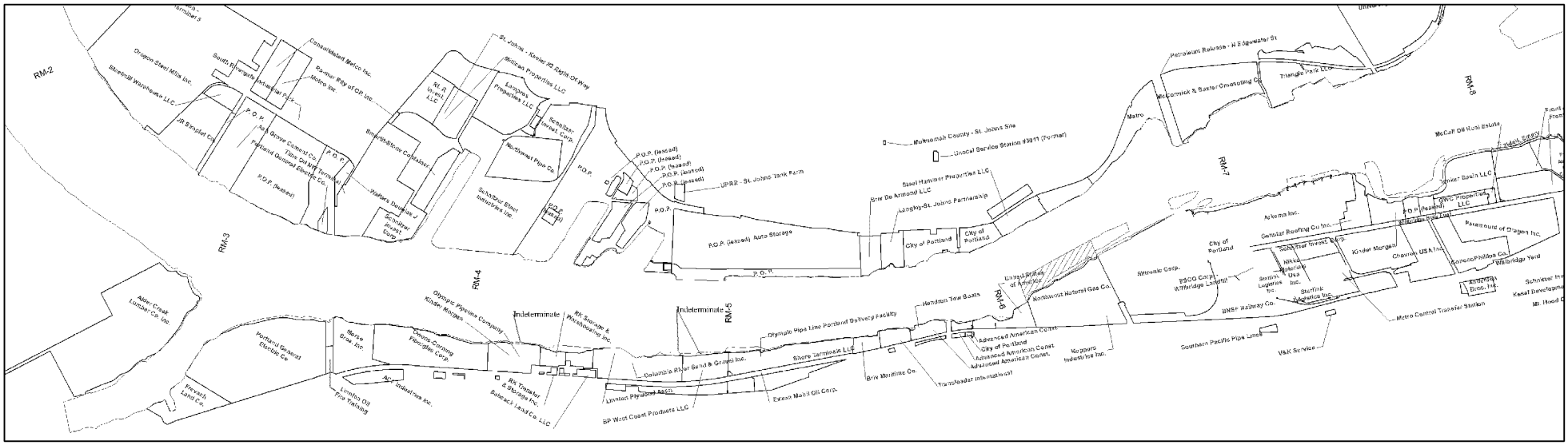
0 1,400 2,800 Feet

Ownership at Waterfront Sites
Navigation Channel
River miles

Map 4.7-1
**Portland Harbor RI/FS**
Comprehensive Round 2 Report

Designated Potential Human Use Areas and
Associated Beach Sediment Samples

BZTO104(e)032835




**Groundwater Plume Legend:**

**Herbicides/Pesticides Plumes** ? ? ? ? Uncertain Edge

- deep
- intermediate
- shallow

Purple = deep & shallow

Green = intermediate and shallow

Orange = deep & intermediate

**Potential Groundwater Plume Discharge Zones**

- Interpreted Groundwater Discharge Zone
- Indeterminate Potential Groundwater Discharge Zone

Note: In-river groundwater discharge zones represent potential plume discharge areas for one or more of all COIs studied, and do not necessarily correspond to the upland plume analyte presented on the map.

**Feature Legend:**

- Navigation Channel
- River miles
- Site/Vicinity Tax Lot Owners
- Waterfront Taxlots

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

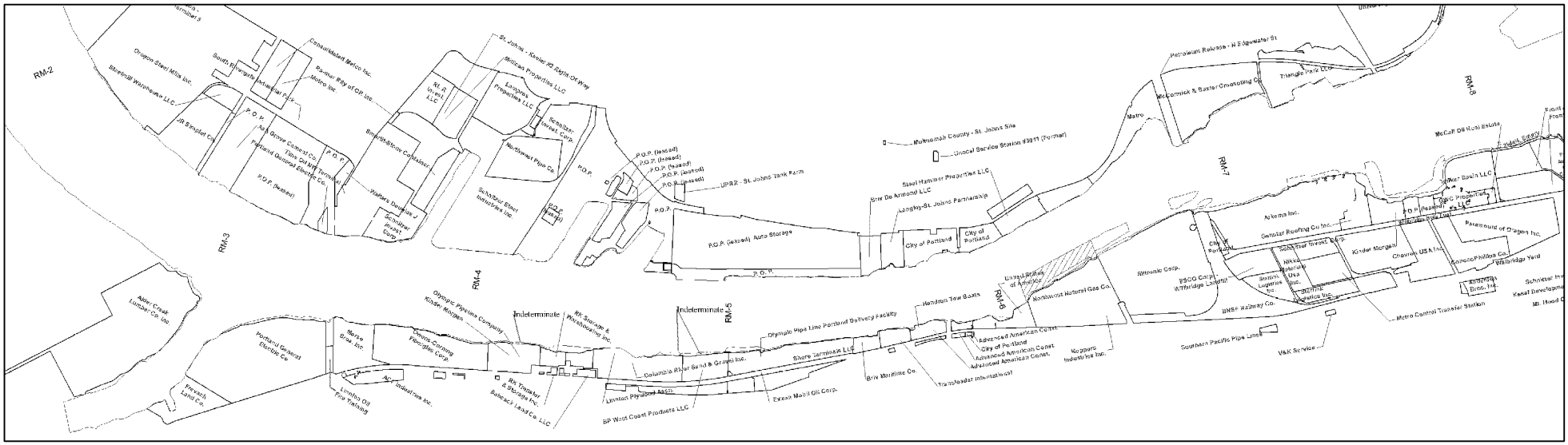
0 1,000 2,000 3,000 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Conceptual_Site_Model\GW_Plumes_2-panel_v3_ERS_011406.mxd)
2/5/2007 -- 11:55:34 AM

**Map 5.1-1a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Extent of Groundwater Impact, Herbicides/Pesticides**

BZTO104(e)032836




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Conceptual_Site_Model\GW_Plumes_2-panel_v3_ERS_011406.mxd)
2/5/2007 – 11:55:34 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

**Map 5.1-1b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Extent of Groundwater Impact, Metals**

BZTO104(e)032837

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Conceptual_Site_Model\GW_Plumes_2-panel_v3_ERS_011406.mxd)
2/5/2007 -- 11:55:34 AM

integral consulting inc.

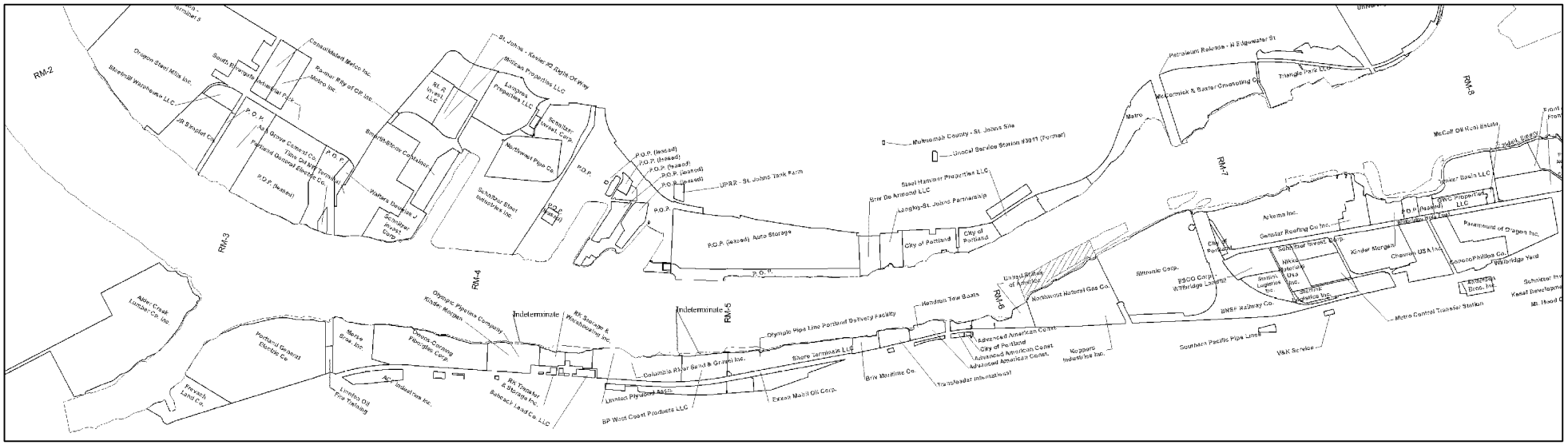
LWG
LOWER WILLAMETTE GROUP

0 1,000 2,000 3,000 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

**Map 5.1-1c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Extent of Groundwater Impact, Cyanide**

BZTO104(e)032838




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Conceptual_Site_Model\GW_Plumes_2-panel_v3_ERS_011406.mxd)
2/5/2007 – 11:55:34 AM

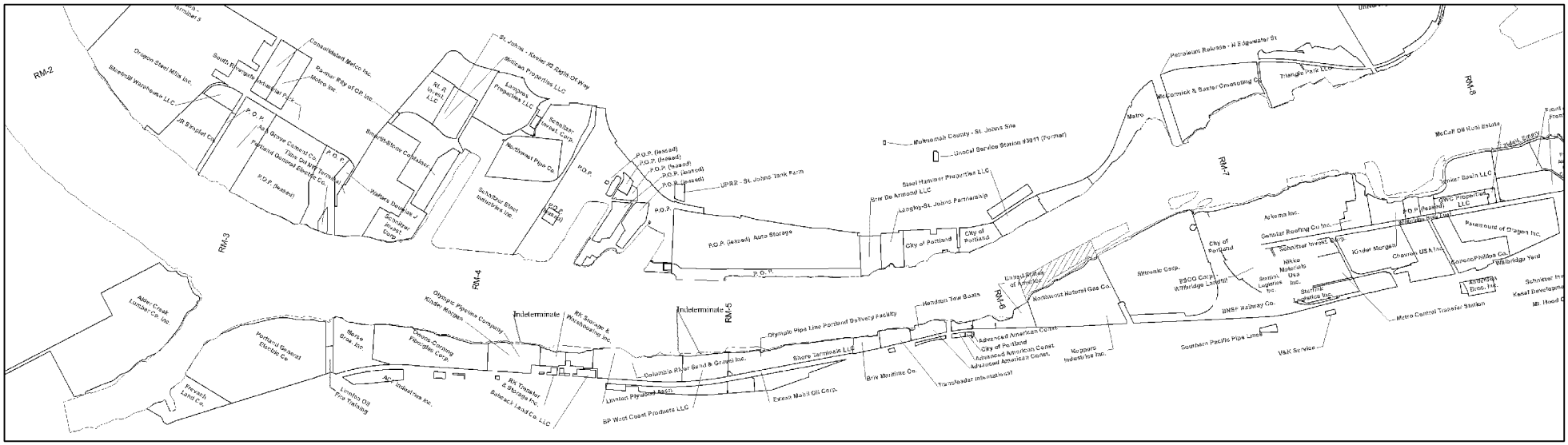
integral consulting inc.

LWG Lower Willamette Group

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

**Map 5.1-1d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Extent of Groundwater Impact, Perchlorate**

BZTO104(e)032839




**Groundwater Plume Legend:**

**Dioxin Plumes**

- deep
- intermediate
- shallow

Purple = deep & shallow

Green = intermediate and shallow

Orange = deep & intermediate

**Potential Groundwater Plume Discharge Zones**

- Interpreted Groundwater Discharge Zone
- Indeterminate Potential Groundwater Discharge Zone

Note: In-river groundwater discharge zones represent potential plume discharge areas for one or more of all COIs studied, and do not necessarily correspond to the upland plume analyte presented on the map.

**Feature Legend:**

- Navigation Channel
- River miles
- Site/Vicinity Tax Lot Owners
- Waterfront Taxlots

integral consulting inc.

LWG Lower Willamette Group

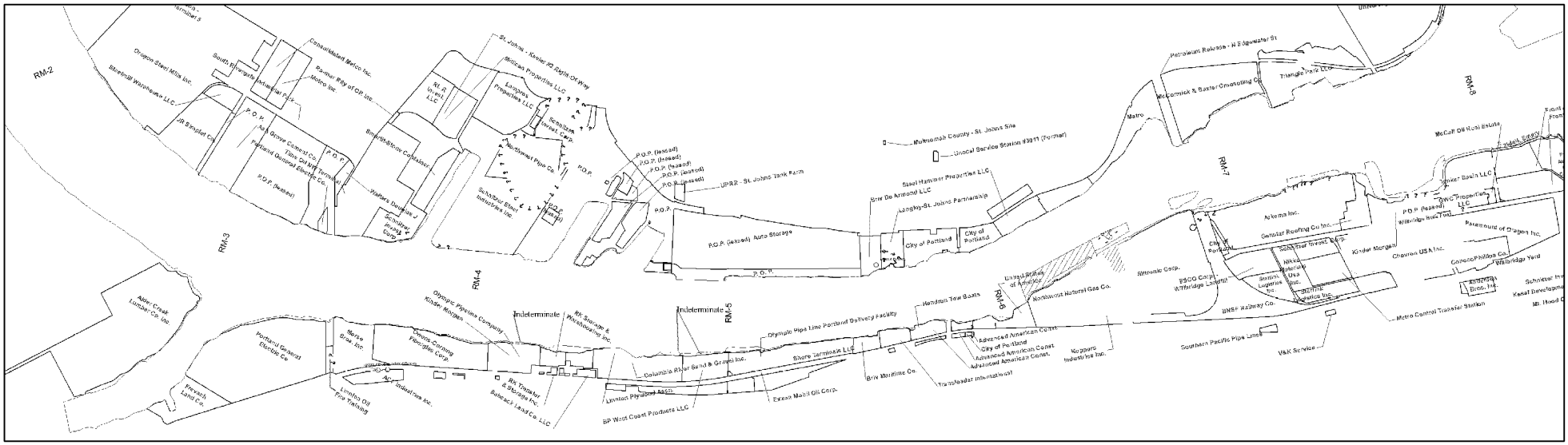
0 1,000 2,000 3,000 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

**Map 5.1-1e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Extent of Groundwater Impact, Dioxin**

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Conceptual_Site_Model\GW_Plumes_2-panel_v3_ERS_011406.mxd)
2/5/2007 – 11:55:34 AM

BZTO104(e)032840




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Conceptual_Site_Model\GW_Plumes_2-panel_v3_ERS_011406.mxd)
2/5/2007 -- 11:55:34 AM

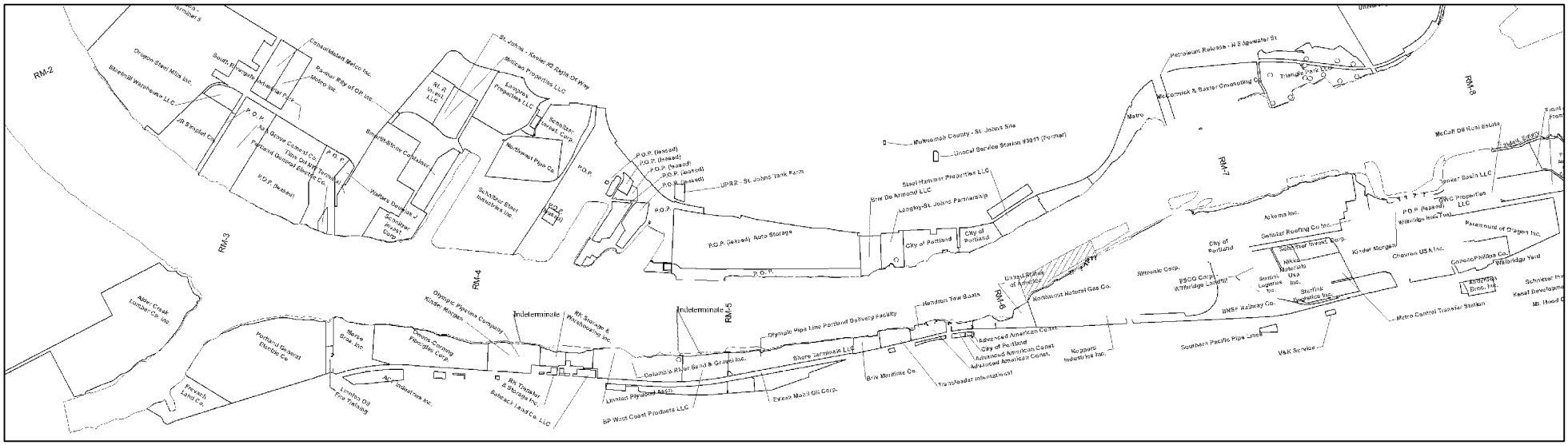
integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

**Map 5.1-1f**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Extent of Groundwater Impact, VOCs**

BZTO104(e)032841




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Conceptual_Site_Model\GW_Plumes_2-panel_v3_ERS_011406.mxd)
2/5/2007 – 11:55:34 AM

integral consulting inc.

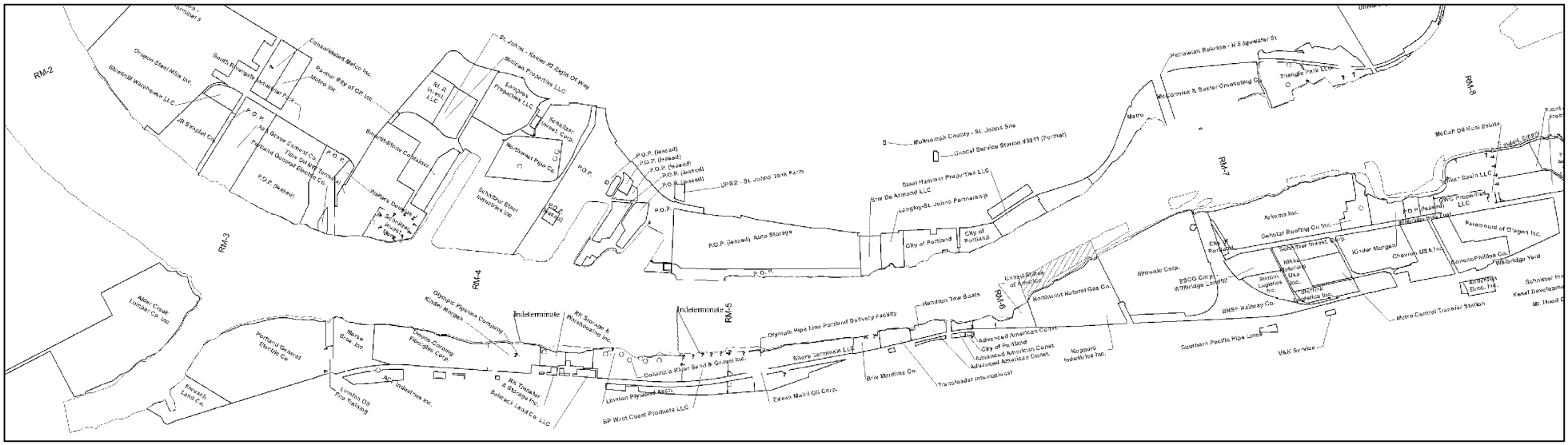
LWG Lower Willamette Group

0 1,000 2,000 3,000 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

**Map 5.1-1g**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Extent of Groundwater Impact, SVOCs**

BZTO104(e)032842




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Conceptual_Site_Model\GW_Plumes_2-panel_v3_ERS_011406.mxd)
2/5/2007 – 11:55:34 AM

integral consulting inc.

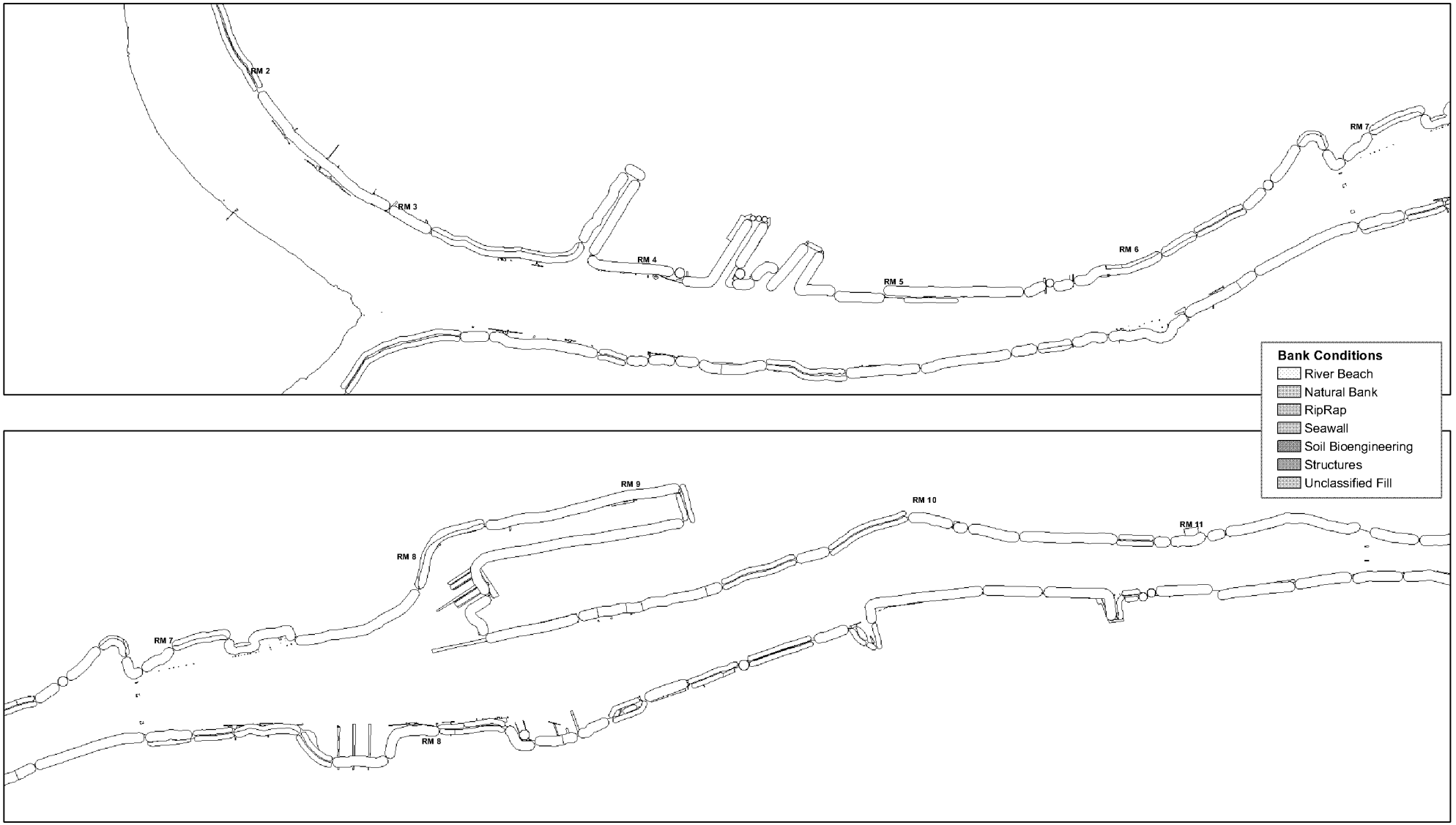
LWG Lower Willamette Group

0 1,000 2,000 3,000 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

**Map 5.1-1h**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Extent of Groundwater Impact, Petroleum**

BZTO104(e)032843




integral consulting inc.

LWG Lower Willamette Group

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Riverbank conditions: Windward LLC

0 1,000 2,000 3,000 Feet

River Miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

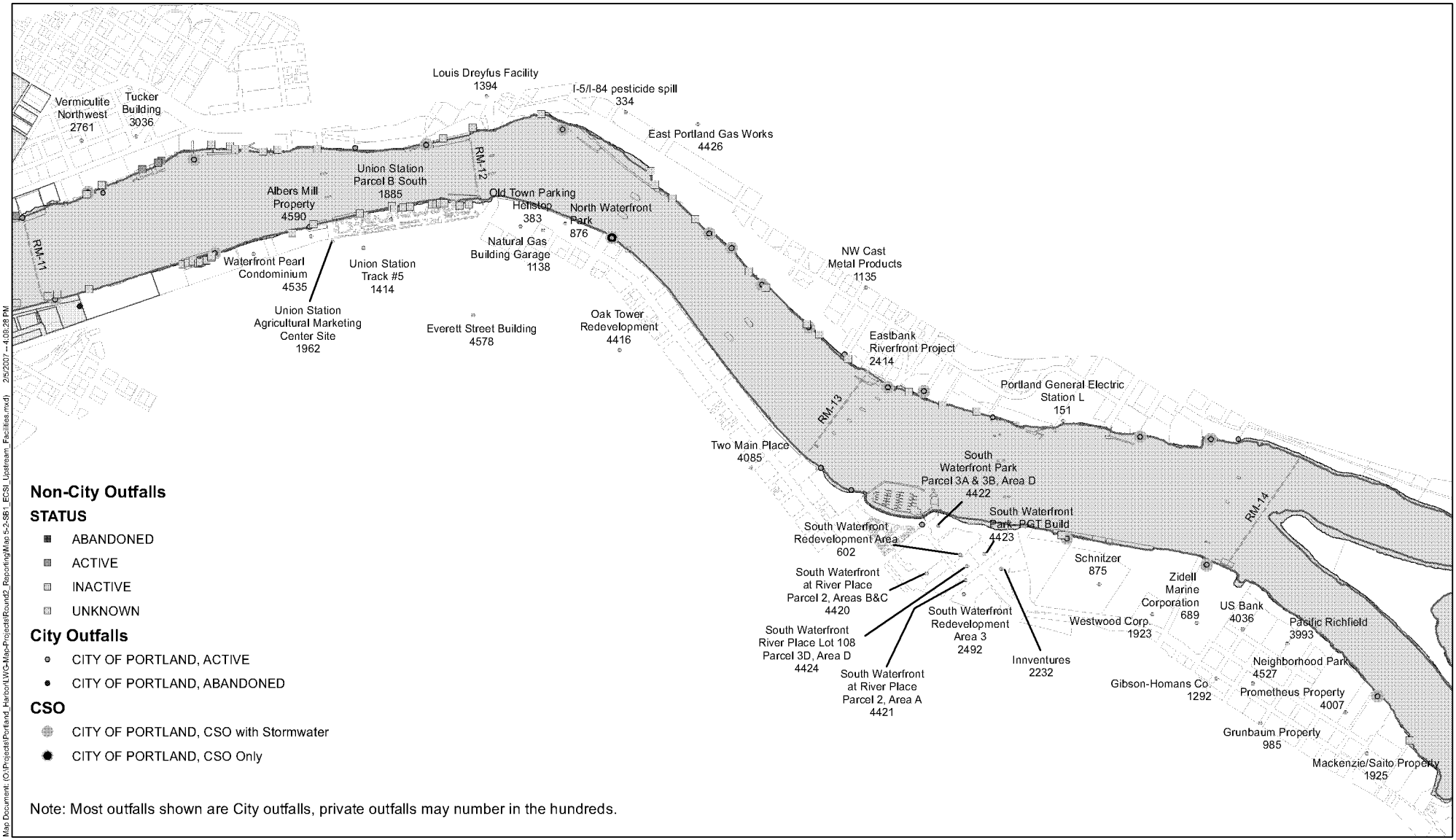
**Riverbank Conditions**

Riverbank conditions are shown in up to three bands adjacent to the shoreline depending on how many different conditions are present. Neither the distance of the bank condition symbol from the shoreline nor the width of the symbol from the shoreline to the outer edge represent actual measurements.

Note: Beaches may have developed from natural processes but banks likely resulted from fill placement and grading.

**Map 5.1-2**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Riverbank Conditions**

BZTO104(e)032844




## Non-City Outfalls

### STATUS

- ABANDONED
- ACTIVE
- INACTIVE
- UNKNOWN

## City Outfalls

- CITY OF PORTLAND, ACTIVE
- CITY OF PORTLAND, ABANDONED

## CSO

- CITY OF PORTLAND, CSO with Stormwater
- CITY OF PORTLAND, CSO Only

Note: Most outfalls shown are City outfalls, private outfalls may number in the hundreds.

Map Document: (O:\Projects\Portland_Harbor\LWG-Mxd-Projects\Round2_Reporting\Map 5-2-1&1_ECSI_Upstream_Facilities.mxd) 2/5/2007 -- 4:08:26 PM

integral consulting inc.

LWG Lower Willamette Group

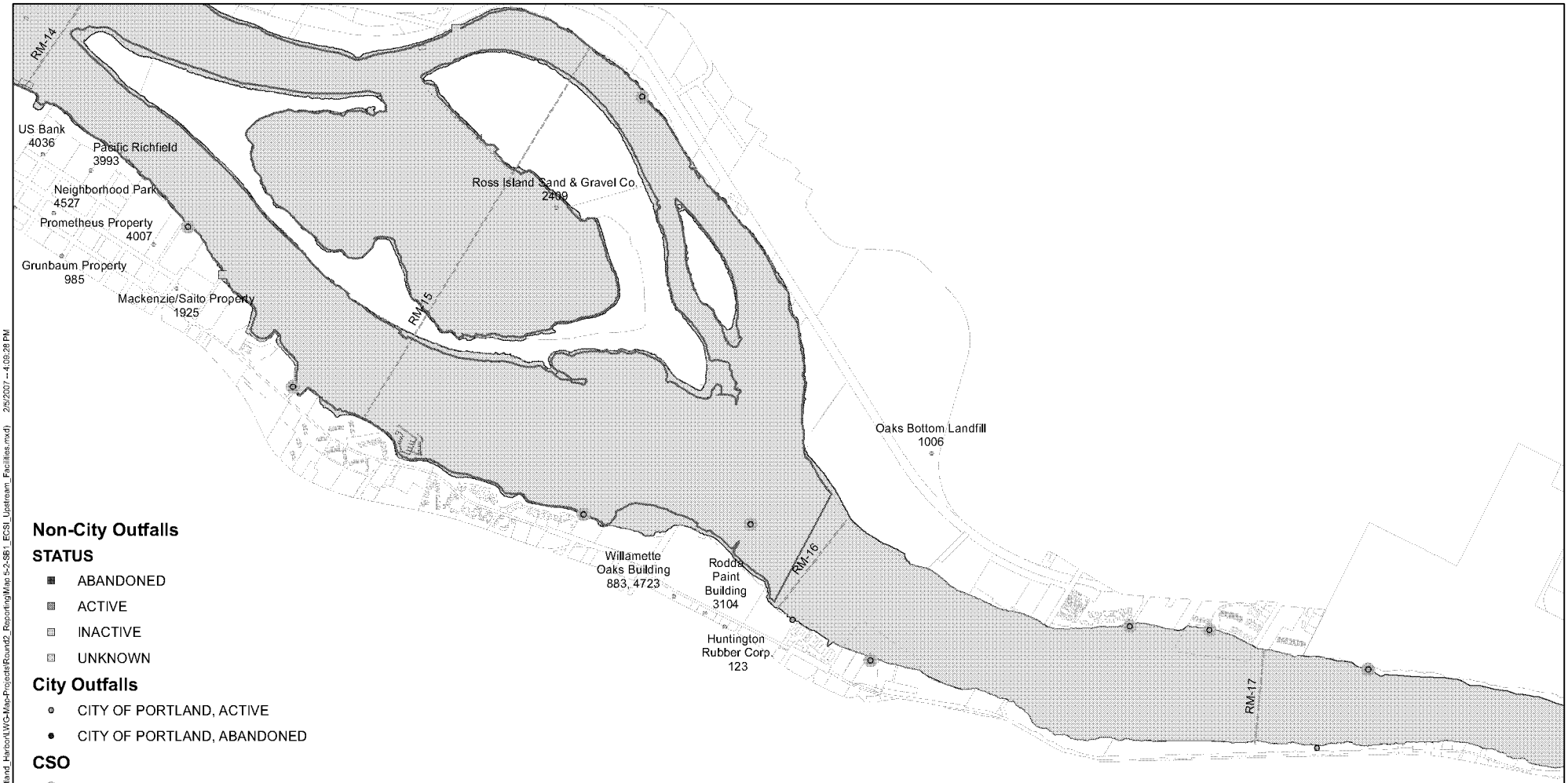
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
ECSI Locations: ECSI Names, Numbers and Addresses obtained from the DEQ Environmental Cleanup Site Inventory, addresses geocoded manually to X,Y coordinates for point display.
Locations are approximate.

Docks and Structures
River miles
Assessors Tax Lot Owner Name
Waterfront Tax lots
Upland Sites
ECSI Facility Location

**Map 5.2-1a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**ECSI Facilities and Portland Outfalls**
**Upstream of River Mile 11**

BZTO104(e)032845




## Non-City Outfalls

### STATUS

- ABANDONED
- ACTIVE
- INACTIVE
- UNKNOWN

## City Outfalls

- CITY OF PORTLAND, ACTIVE
- CITY OF PORTLAND, ABANDONED

## CSO

- CITY OF PORTLAND, CSO with Stormwater
- CITY OF PORTLAND, CSO Only

Note: Most outfalls shown are City outfalls, private outfalls may number in the hundreds.

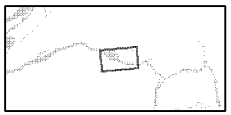
Map Document: (O:\Projects\Portland_Harbor\LWG-Mac-Projects\Round2_Reporting\Map 5-2-2&1_ECSI_Upstream_Facilities.mxd) 2/5/2007 -- 4:08:26 PM

integral consulting inc.

LWG Lower Willamette Group

0 300 600 900 1,200 Feet

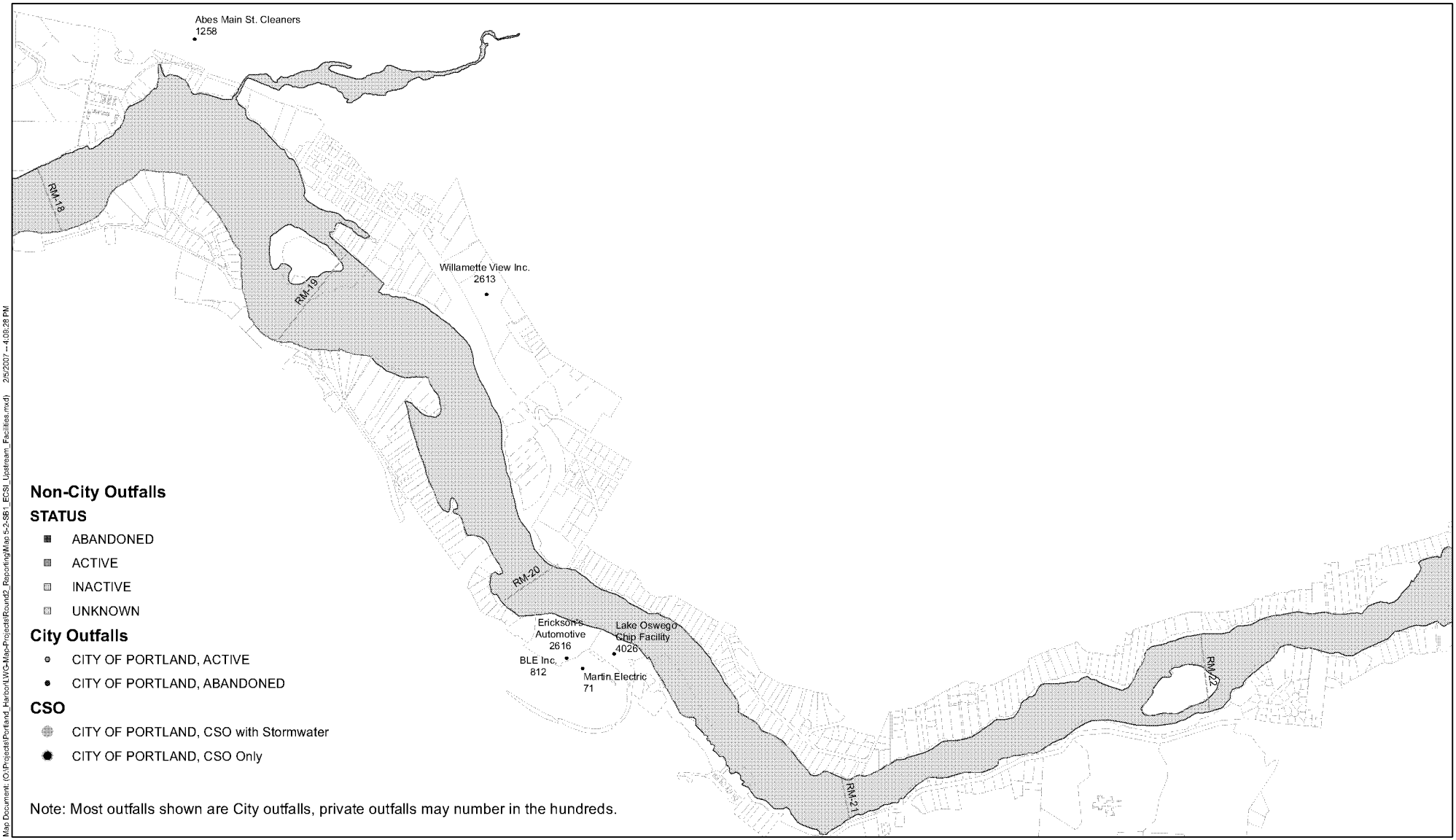
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
ECSI Locations: ECSI Names, Numbers and Addresses obtained from the DEQ Environmental Cleanup Site Inventory, addresses geocoded manually to X,Y coordinates for point display. Locations are approximate.



- Docks and Structures
- River miles
- Assessors Tax Lot Owner Name
- Waterfront Tax lots
- Upland Sites
- ECSI Facility Location

**Map 5.2-1b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**ECSI Facilities and Portland Outfalls**
**Upstream of River Mile 11**

BZTO104(e)032846



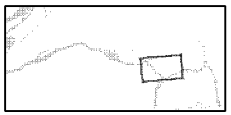

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Map 5-2-SR1_ECSI_Upstream_Facilities.mxd) 2/5/2007 -- 4:08:26 PM

integral consulting inc.

LWG Lower Willamette Group

0 300 600 900 1,200 Feet

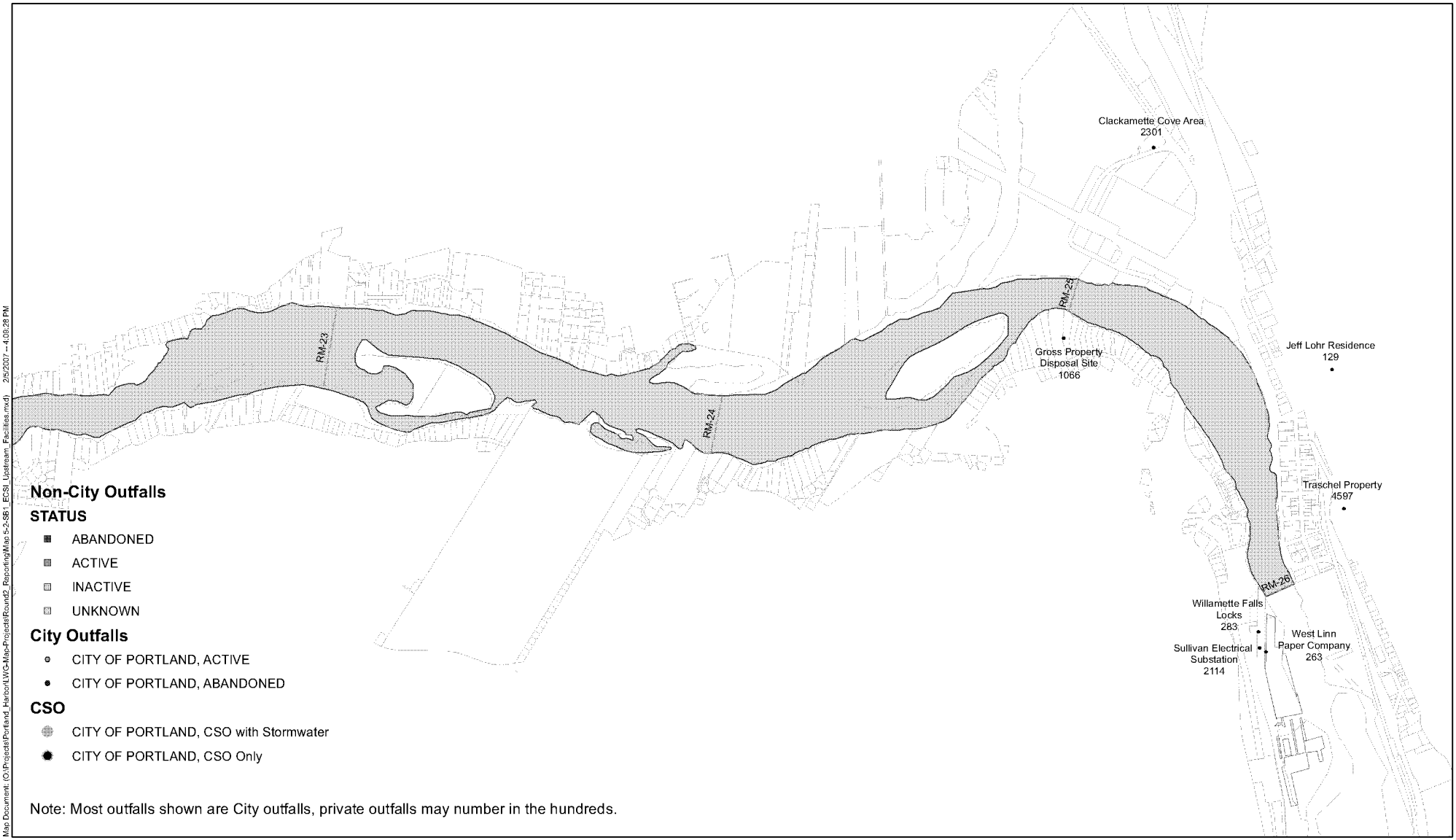
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
ECSI Locations: ECSI Names, Numbers and Addresses obtained from the DEQ Environmental Cleanup Site Inventory, addresses geocoded manually to X,Y coordinates for point display.
Locations are approximate.



Docks and Structures
River miles
Assessors Tax Lot Owner Name
Waterfront Tax lots
Upland Sites
ECSI Facility Location

**Map 5.2-1c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**ECSI Facilities and Portland Outfalls**
**Upstream of River Mile 11**

BZTO104(e)032847




Note: Most outfalls shown are City outfalls, private outfalls may number in the hundreds.

Map Document: (O:\Projects\Portland_Harbor\LWG-Mxd-Projects\Round2_Reporting\Map 5-2-1d61_ECSI_Upstream_Facilities.mxd) 2/6/2007 -- 4:08:26 PM

integral consulting inc.

LWG Lower Willamette Group

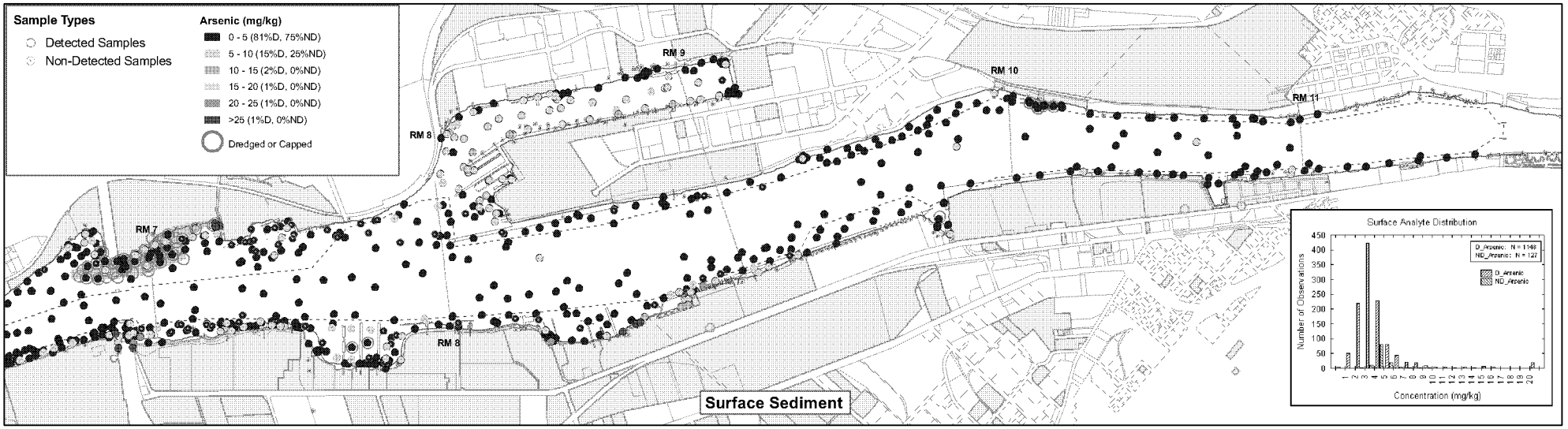
0 300 600 900 1,200 Feet

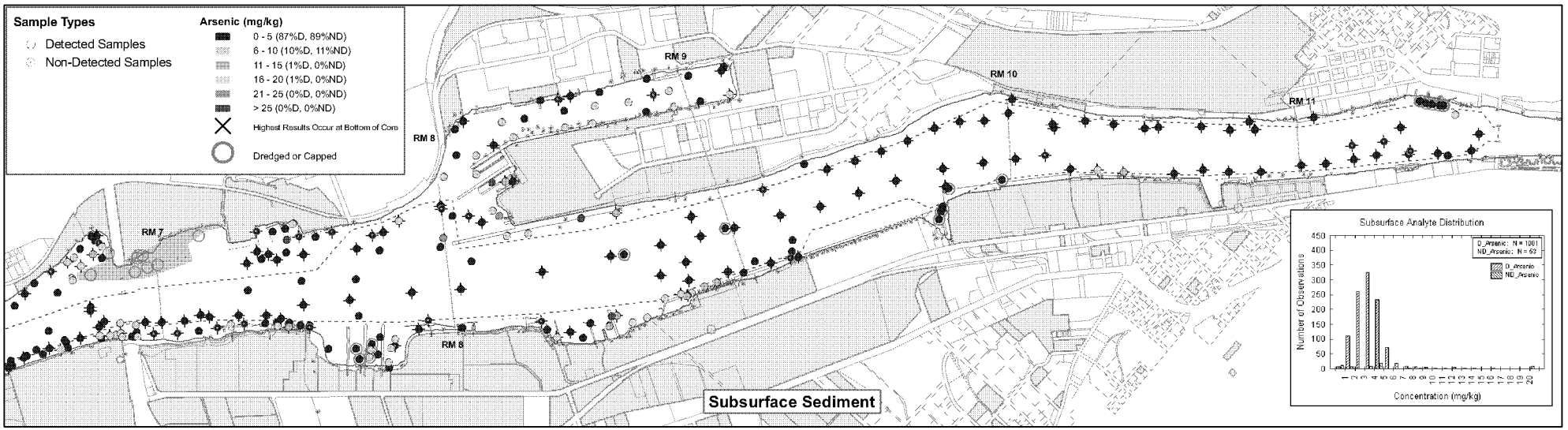
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
ECSI Locations: ECSI Names, Numbers and Addresses obtained from the DEQ Environmental Cleanup Site Inventory, addresses geocoded manually to X,Y coordinates for point display.
Locations are approximate.

Docks and Structures
River miles
Assessors Tax Lot Owner Name
Waterfront Tax lots
Upland Sites
ECSI Facility Location

**Map 5.2-1d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**ECSI Facilities and Portland Outfalls**
**Upstream of River Mile 11**

BZTO104(e)032848




integral consulting inc.

LWG Lower Willamette Group

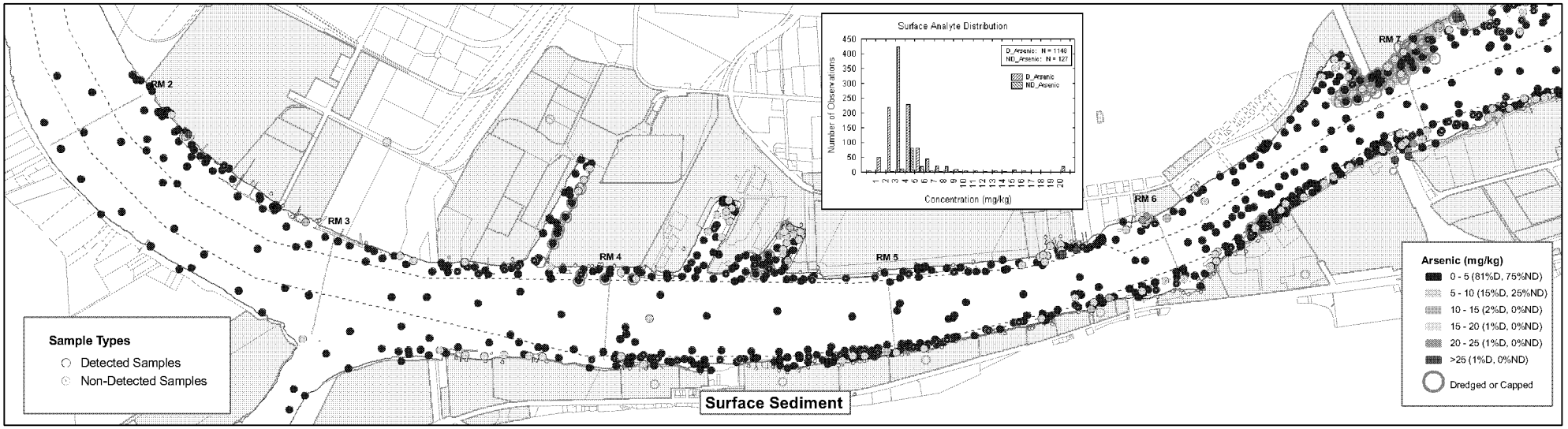
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

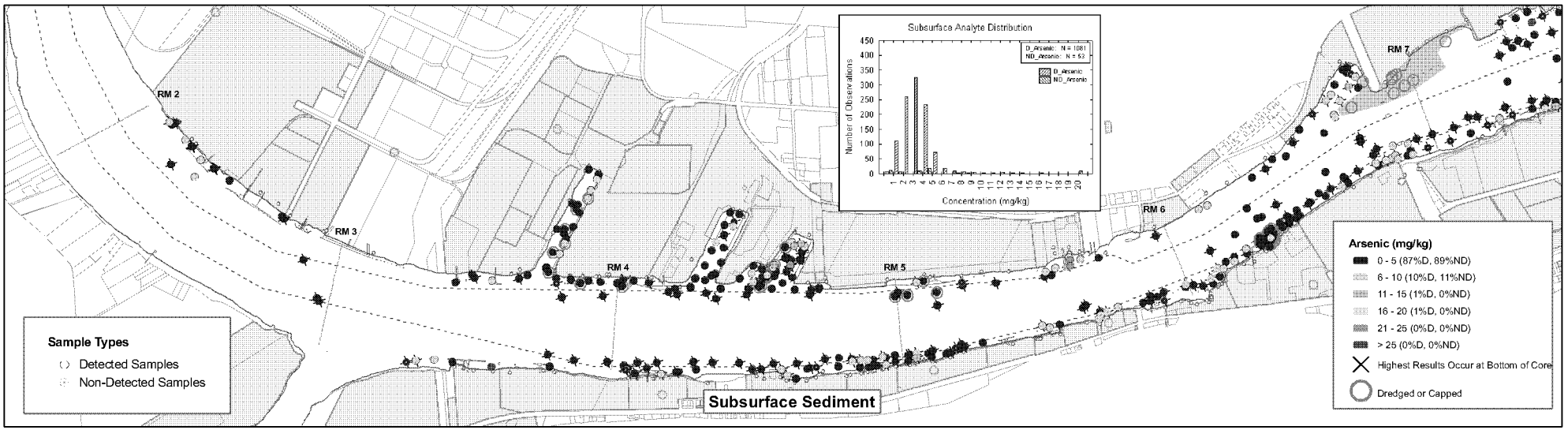
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-1a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Arsenic (mg/kg)**

BZTO104(e)032849




integral consulting inc.

LWG Lower Willamette Group

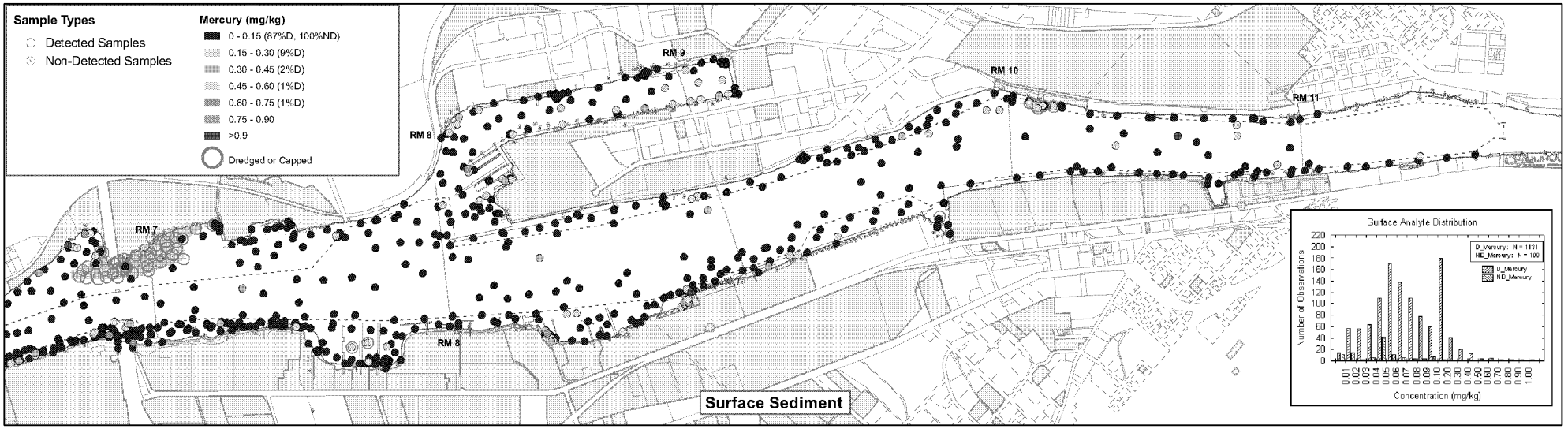
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

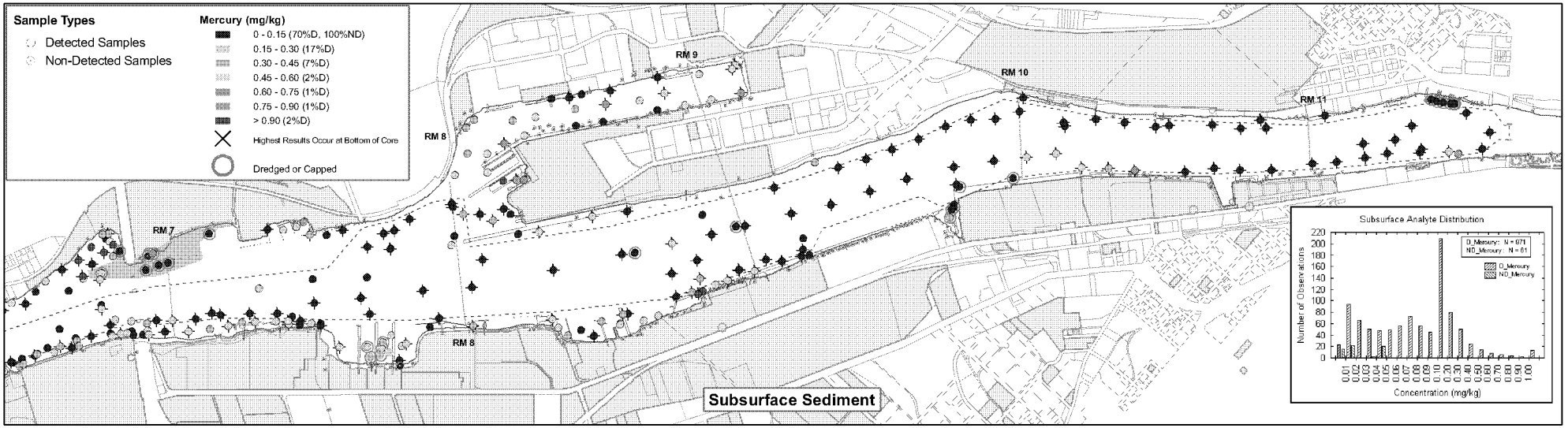
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-1b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Arsenic (mg/kg)**

BZTO104(e)032850




integral consulting inc.

LWG Lower Willamette Group

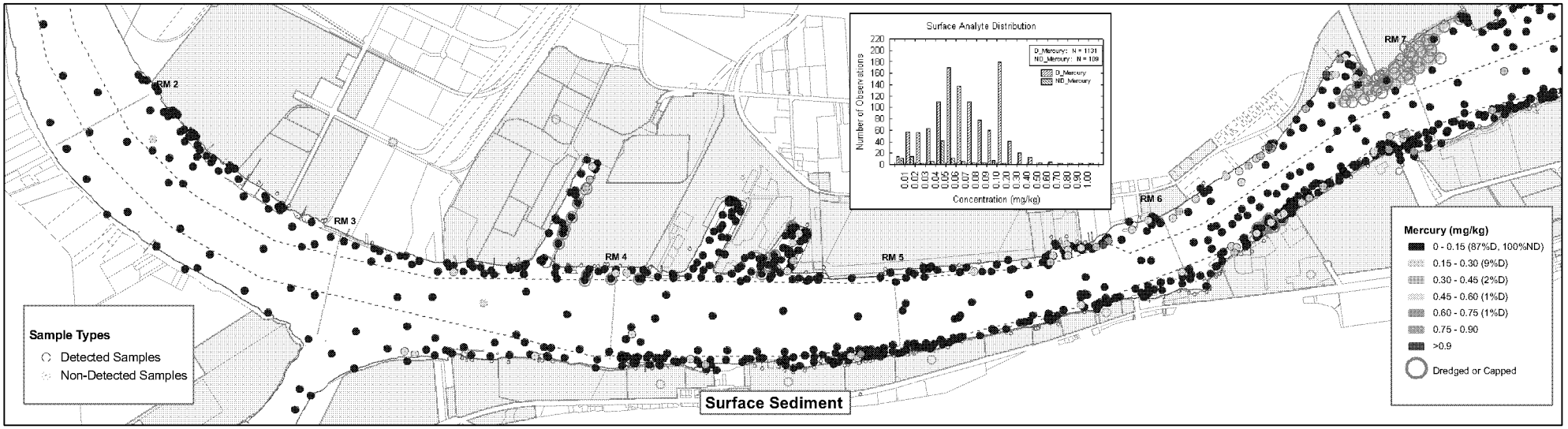
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

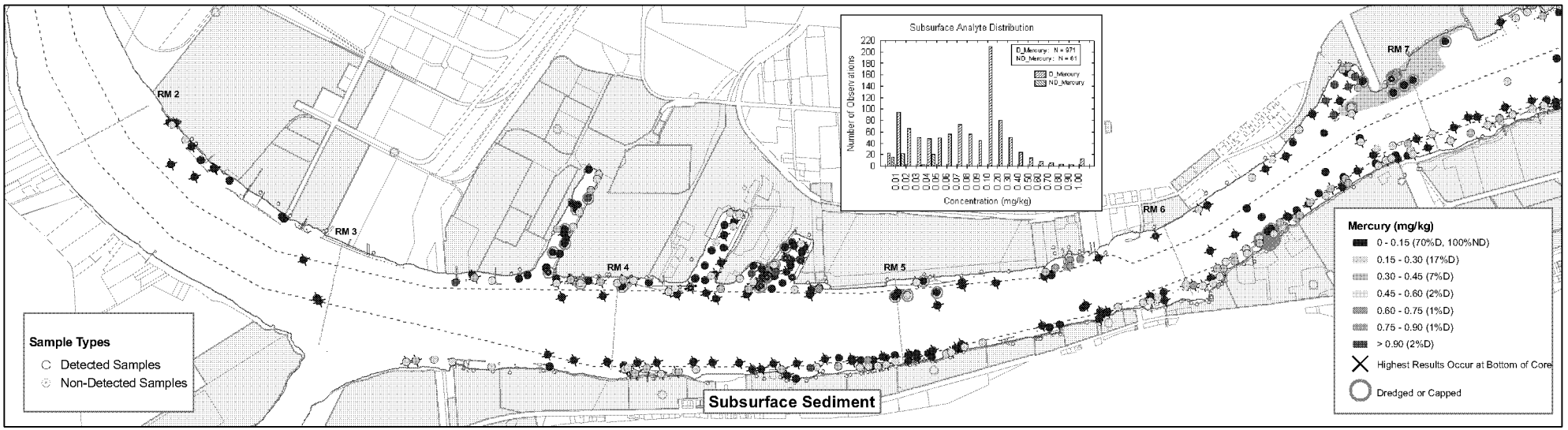
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Mercury (mg/kg)**

BZTO104(e)032851




integral consulting inc.

LWG Lower Willamette Group

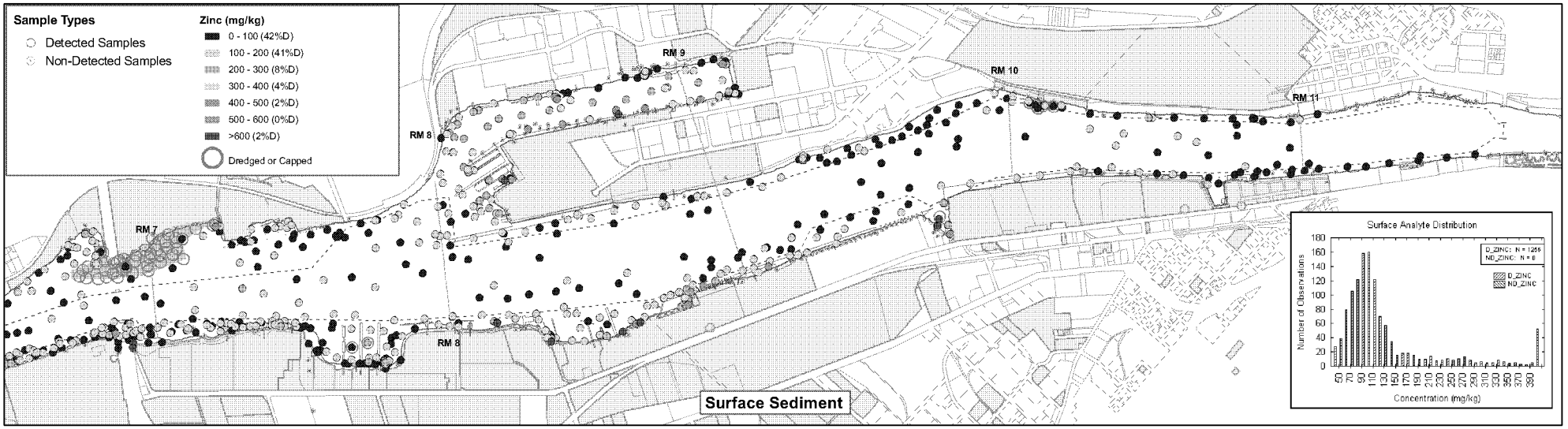
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

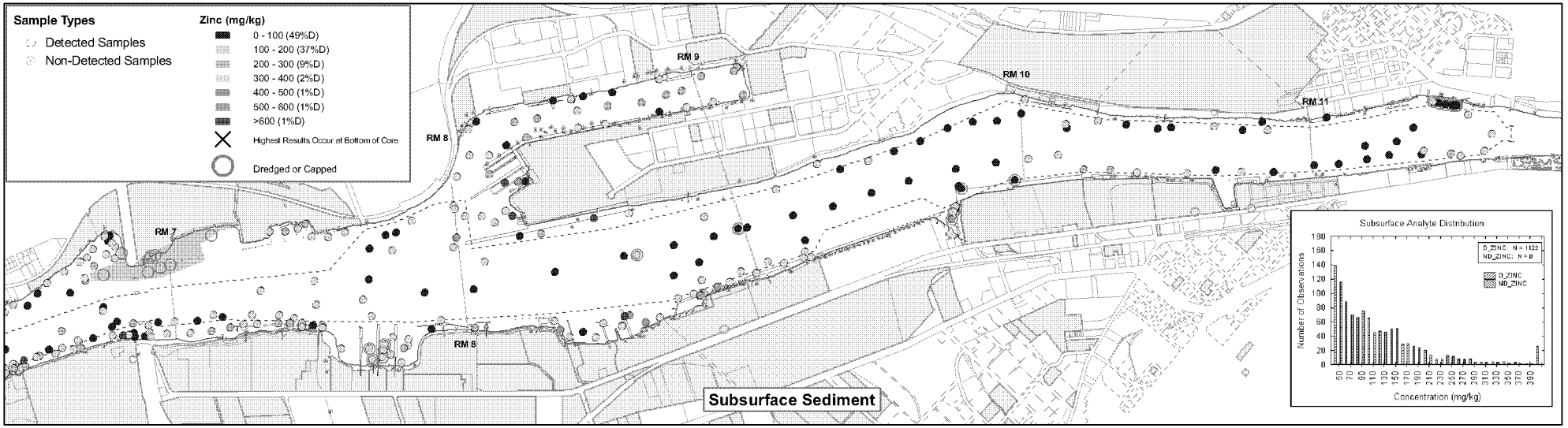
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Mercury (mg/kg)**

BZTO104(e)032852




integral consulting inc.

LWG Lower Willamette Group

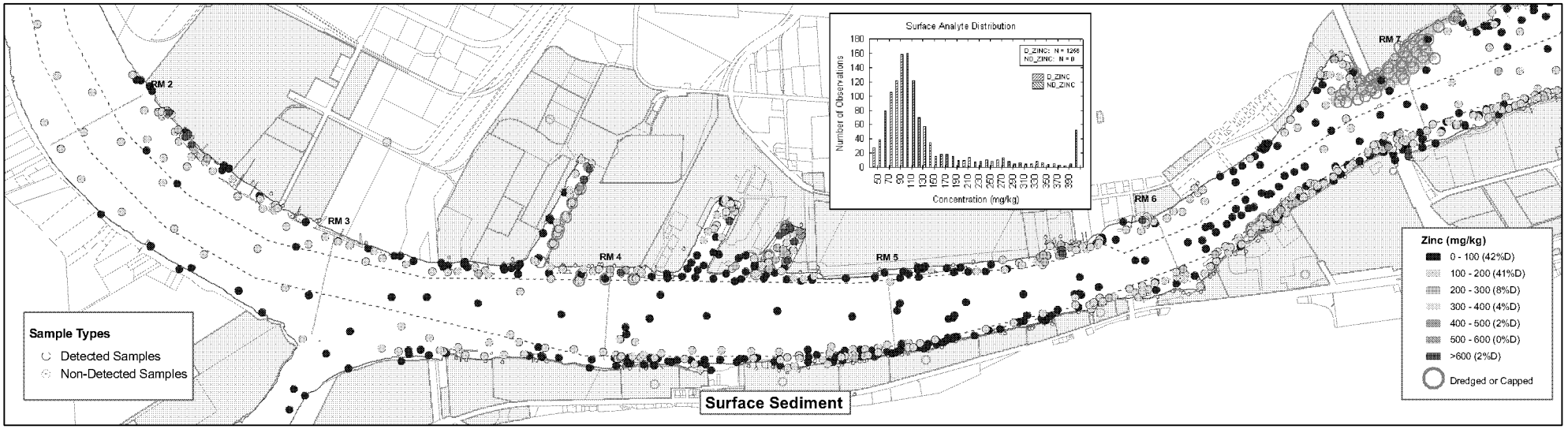
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

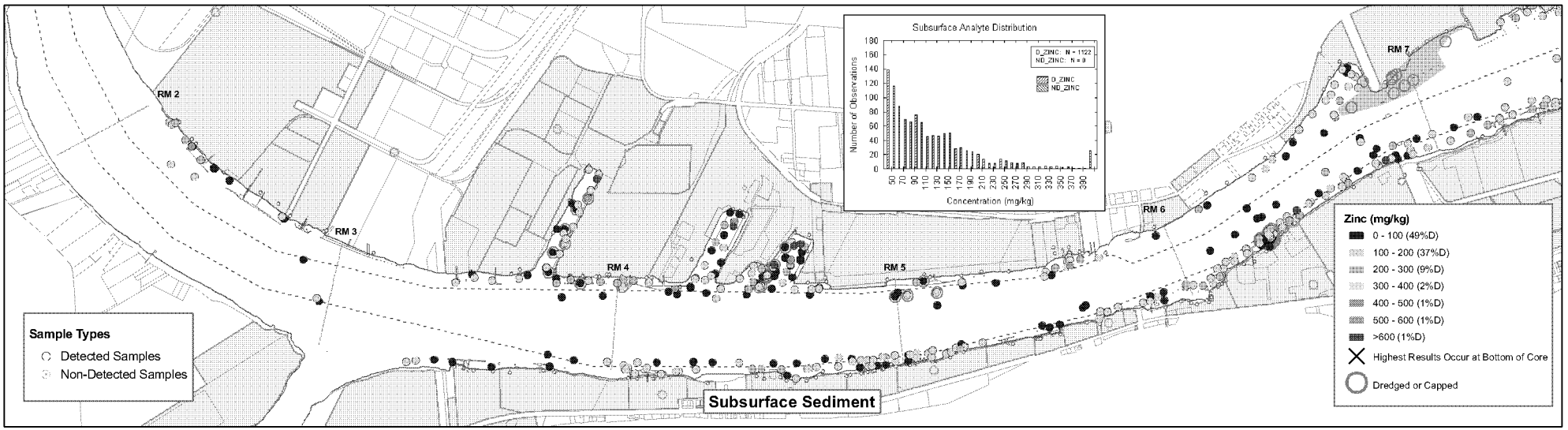
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-3a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Zinc (mg/kg)**

BZTO104(e)032853




integral consulting inc.

LWG Lower Willamette Group

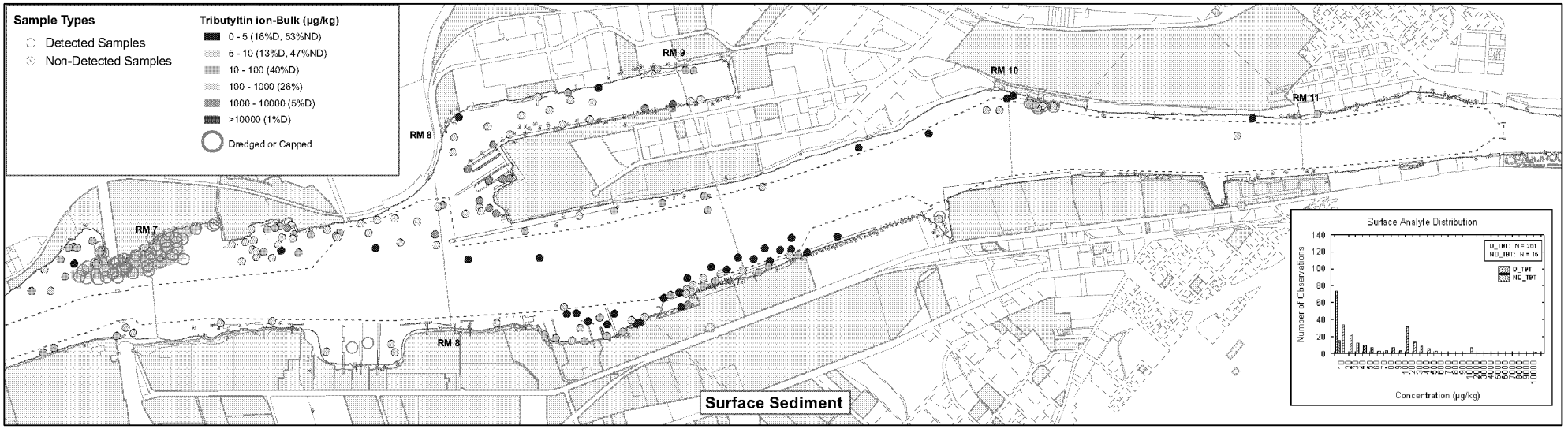
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

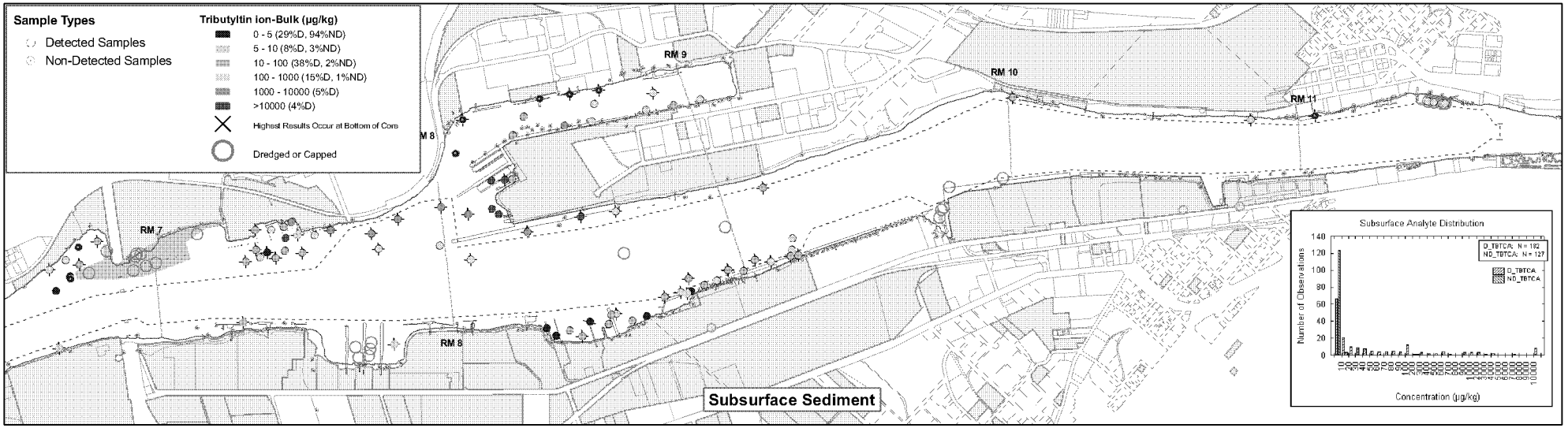
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-3b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Zinc (mg/kg)**

BZTO104(e)032854




integral consulting inc.

LWG Lower Willamette Group

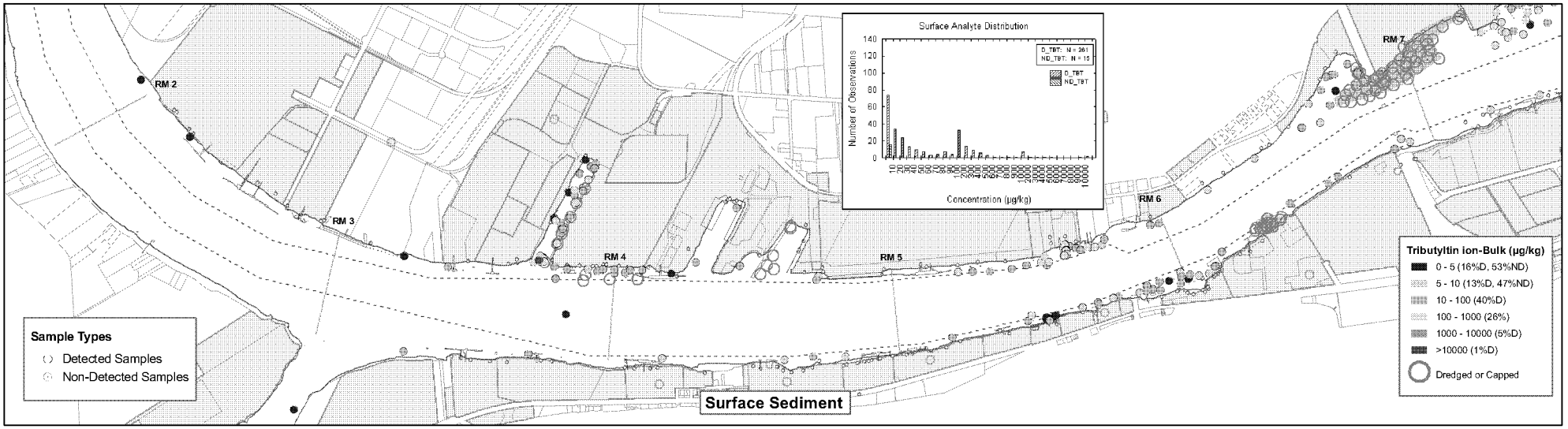
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

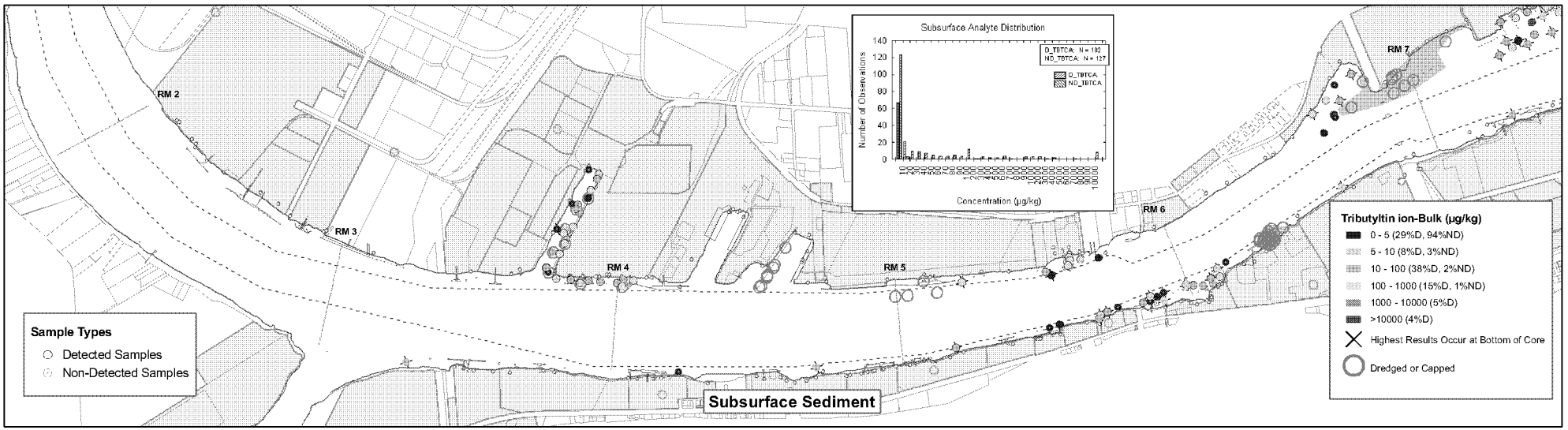
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-4a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Tributyltin ion (µg/kg)**

BZTO104(e)032855




integral consulting inc.

LWG Lower Willamette Group

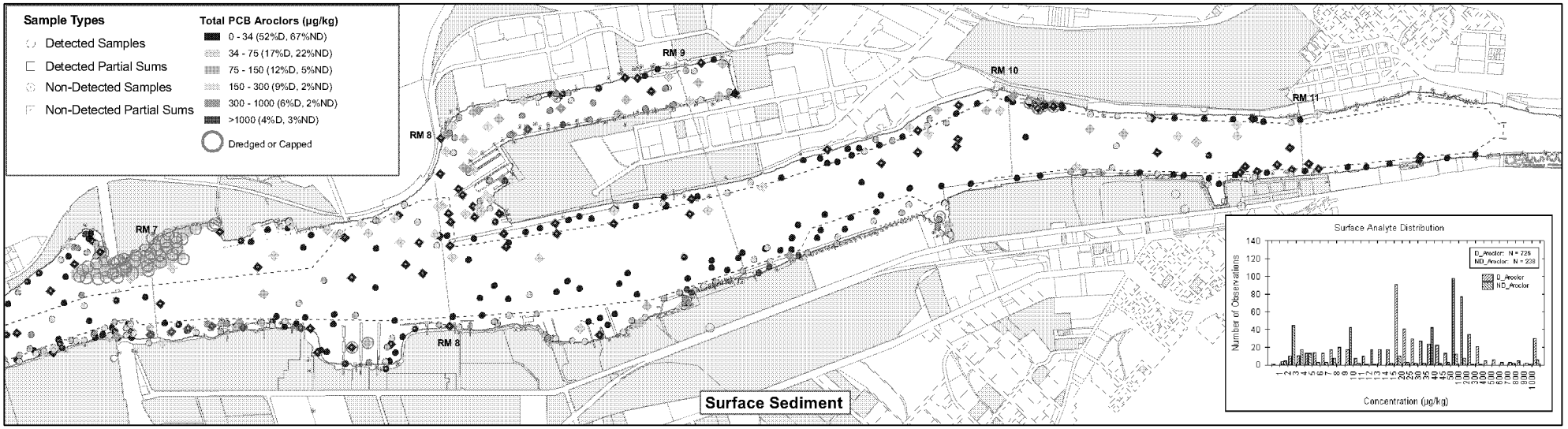
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

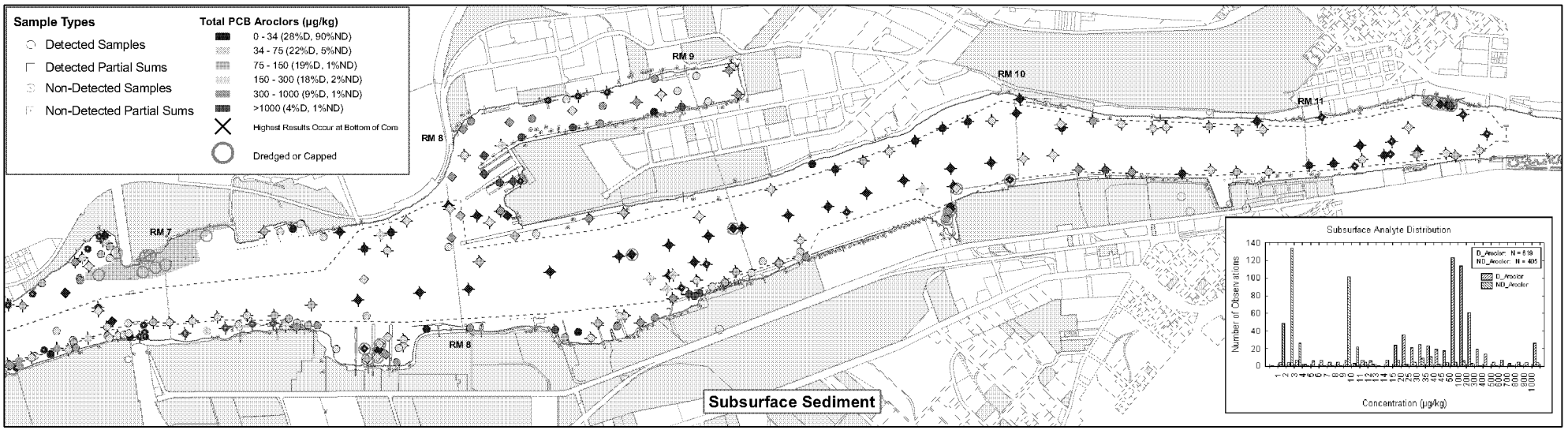
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-4b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum concentrations in Surface and Subsurface Sediment**
**Tributyltin ion (µg/kg)**

BZTO104(e)032856




integral consulting inc.

LWG Lower Willamette Group

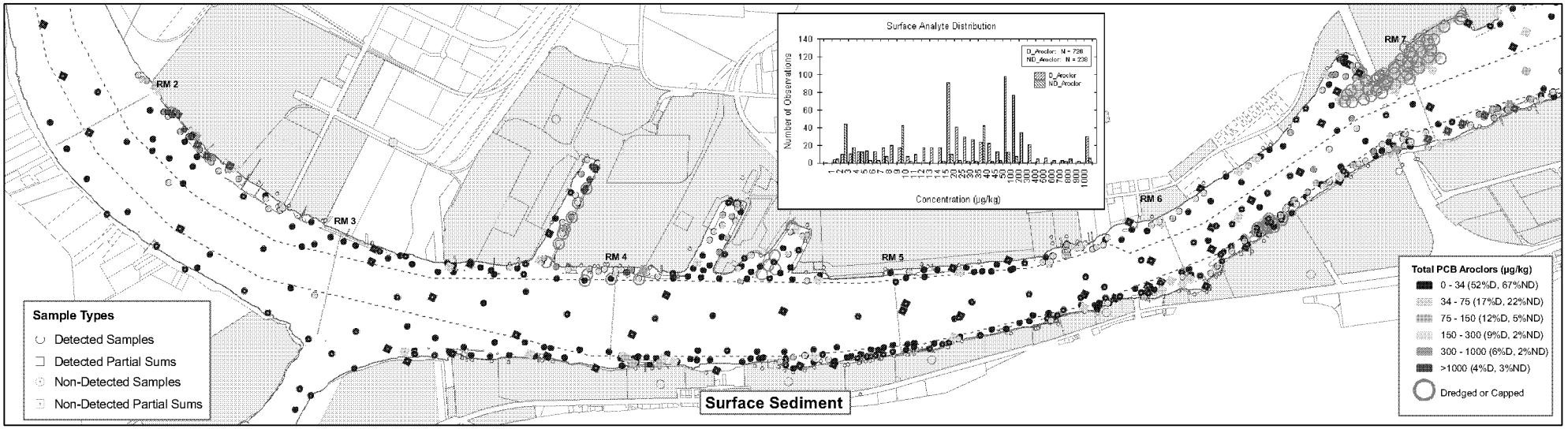
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

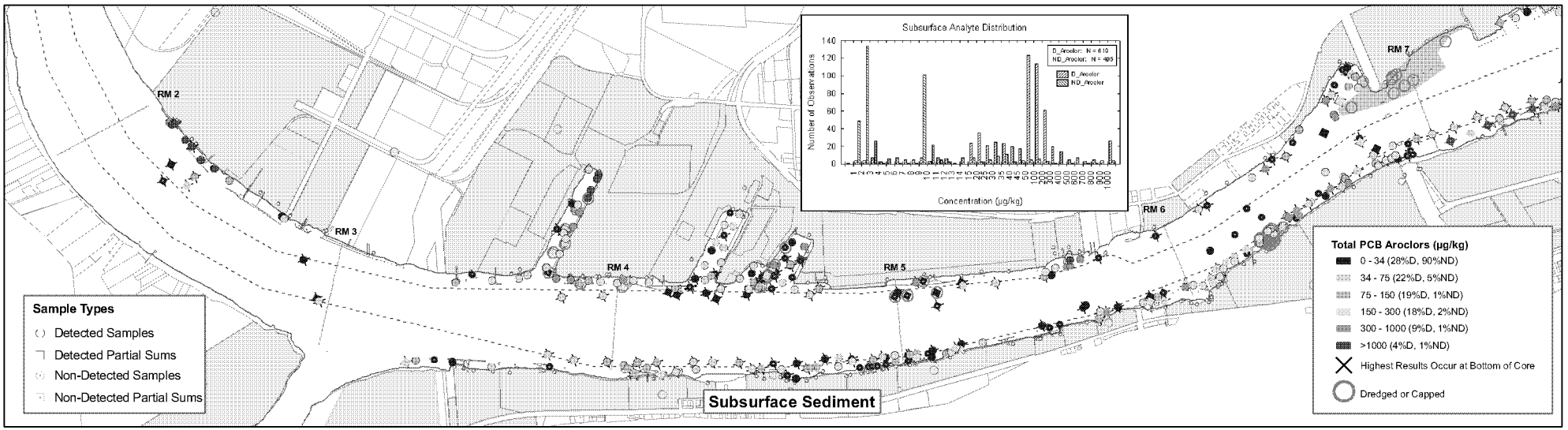
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Upland Sites
Waterfront Taxlots

**Map 6.1-5a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**

BZTO104(e)032857




integral consulting inc.

LWG Lower Willamette Group

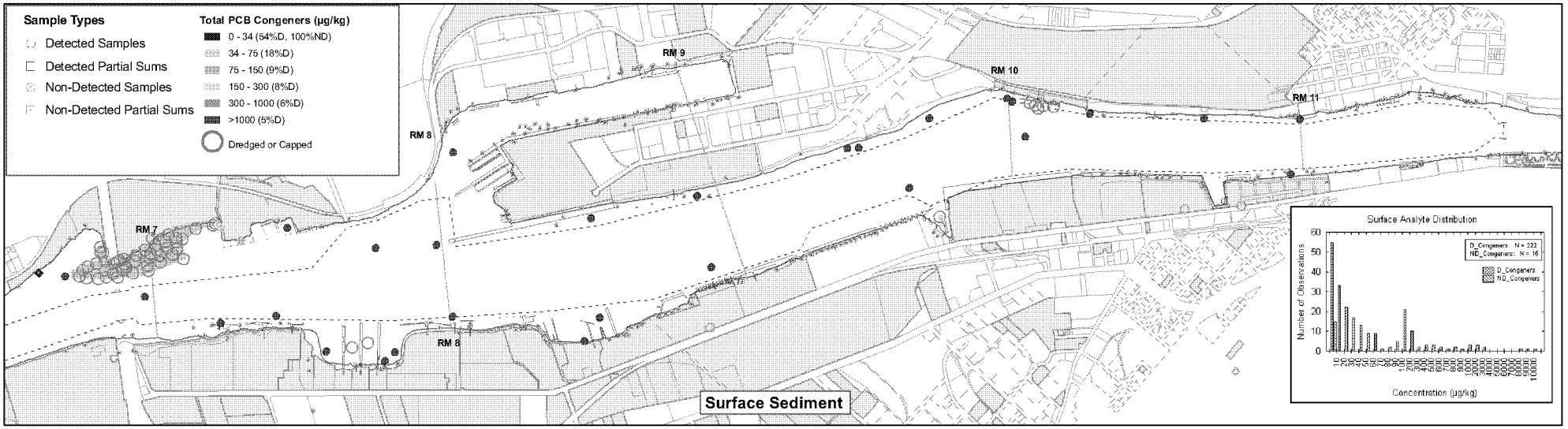
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

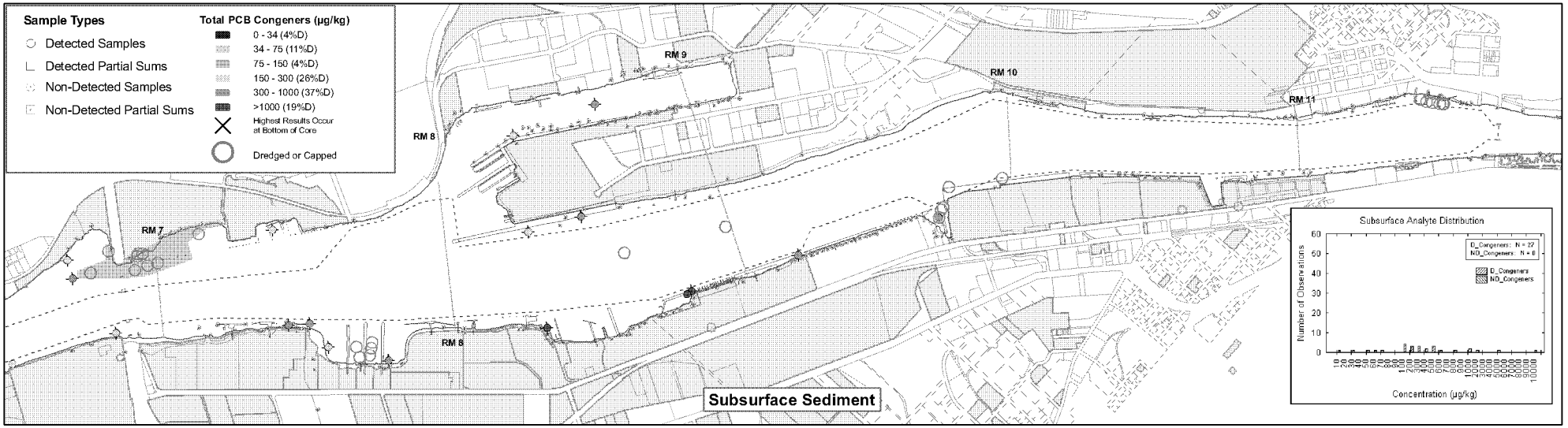
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites

**Map 6.1-5b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total PCB Aroclors (µg/kg)**

BZTO104(e)032858




integral consulting inc.

LWG Lower Willamette Group

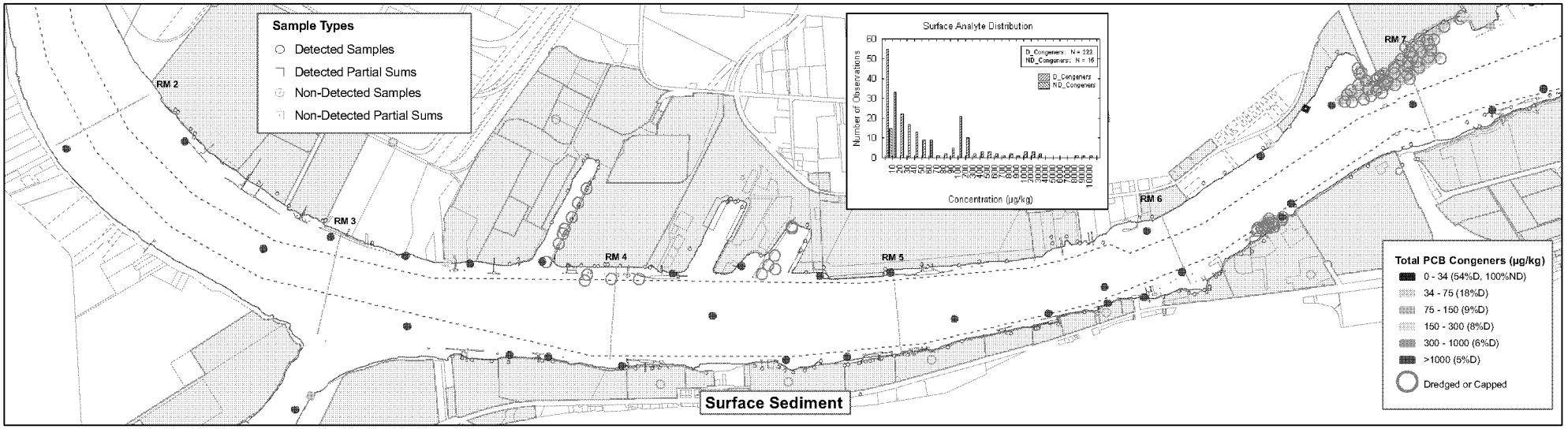
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

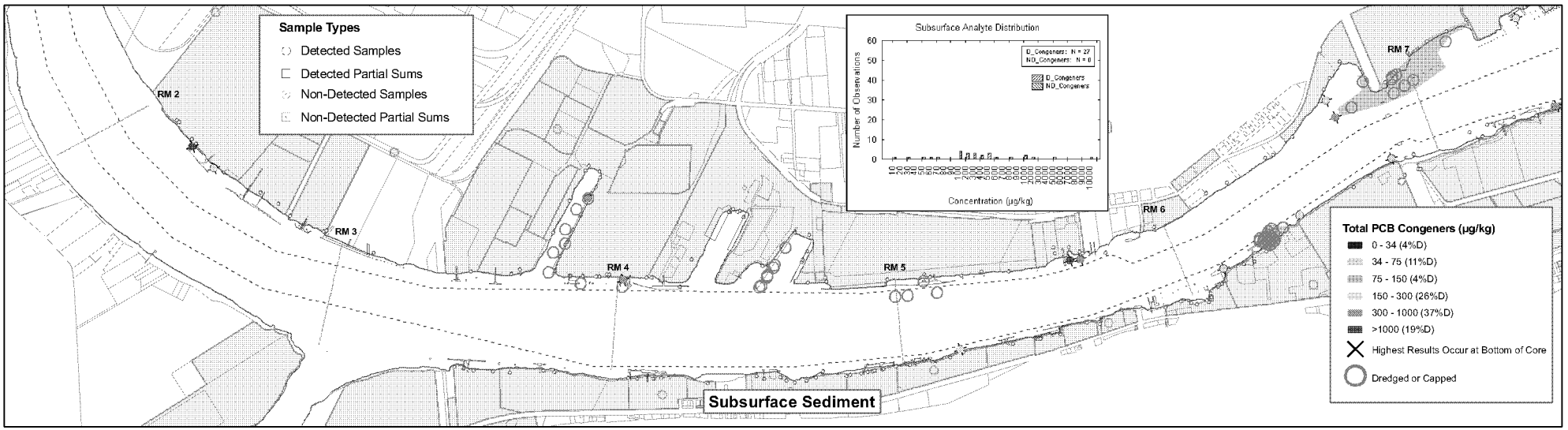
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-6a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total PCB Congeners (µg/kg)**

BZTO104(e)032859




integral consulting inc.

LWG Lower Willamette Group

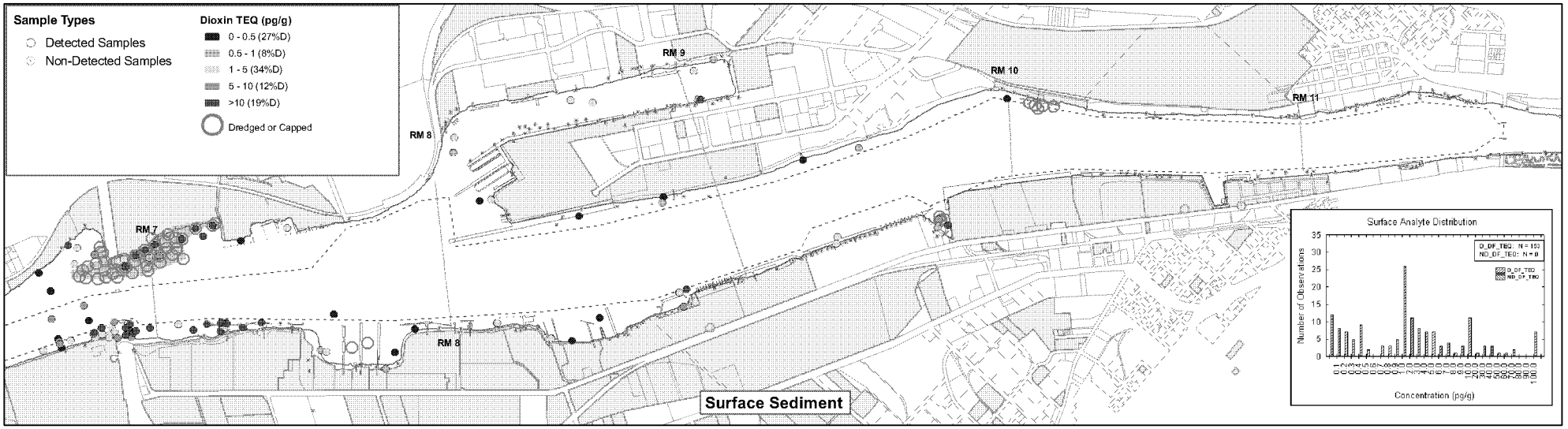
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

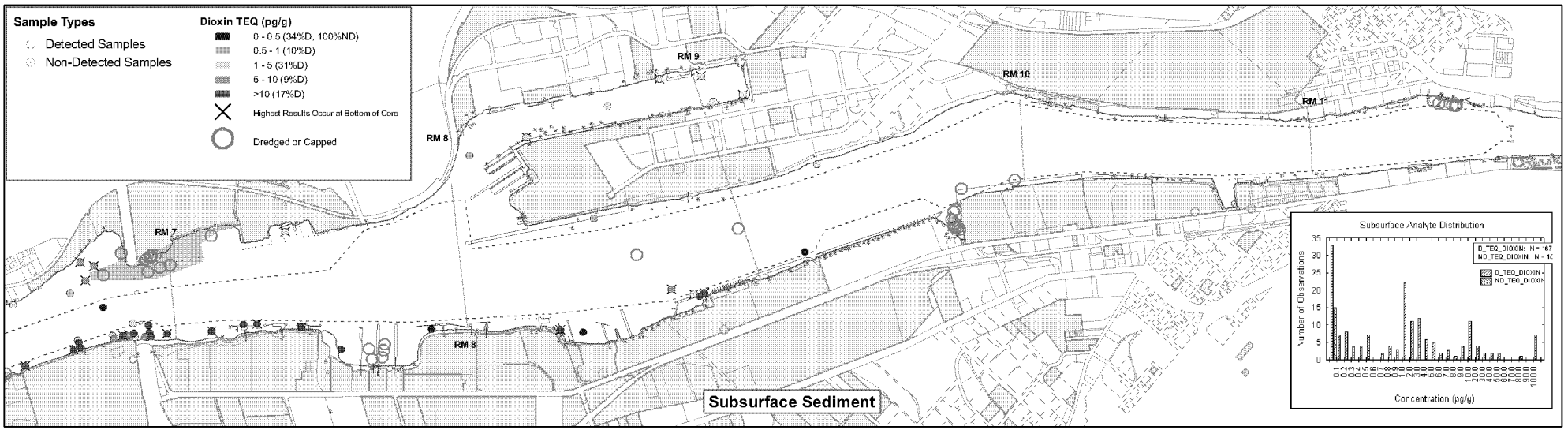
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-6b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total PCB Congeners (µg/kg)**

BZTO104(e)032860




integral consulting inc.

LWG Lower Willamette Group

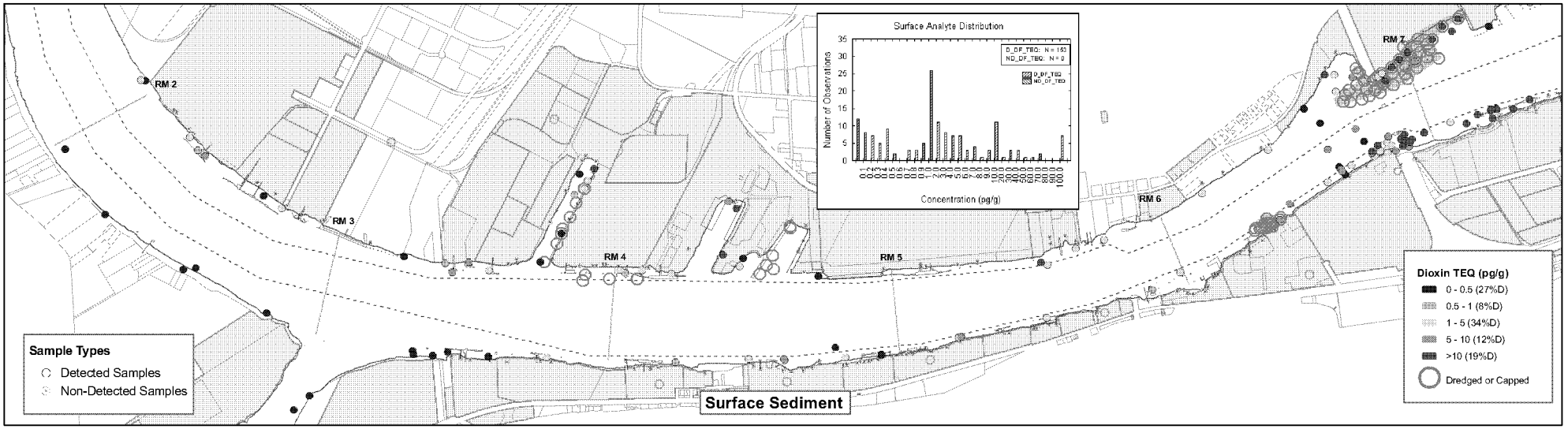
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

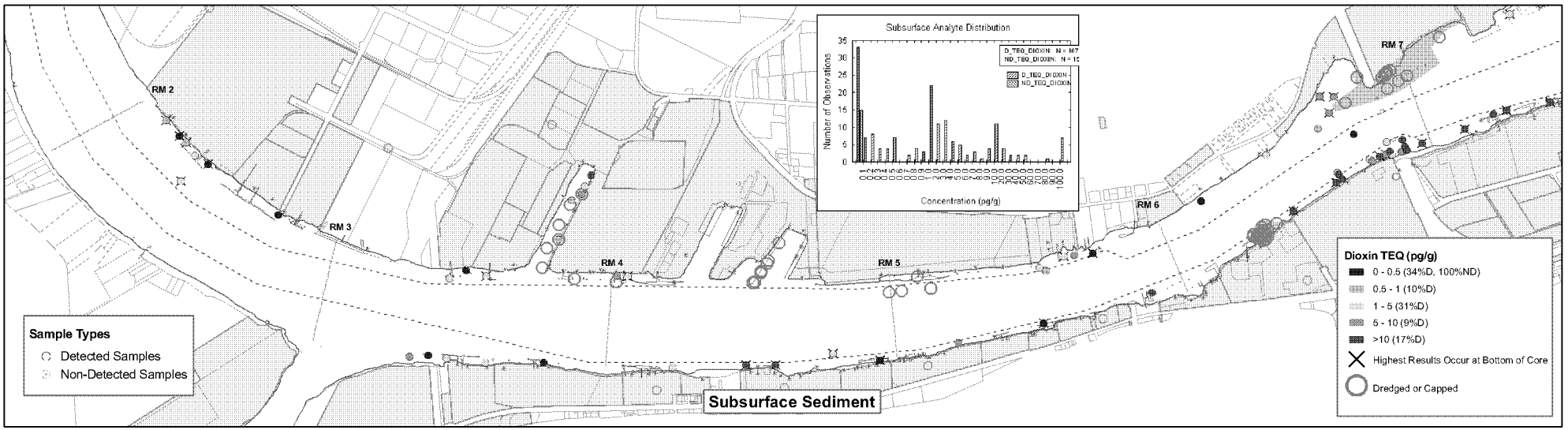
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-7a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Dioxin 2,3,7,8-TCDD Toxic Equivalence (pg/g)**

BZTO104(e)032861




integral consulting inc.

LWG Lower Willamette Group

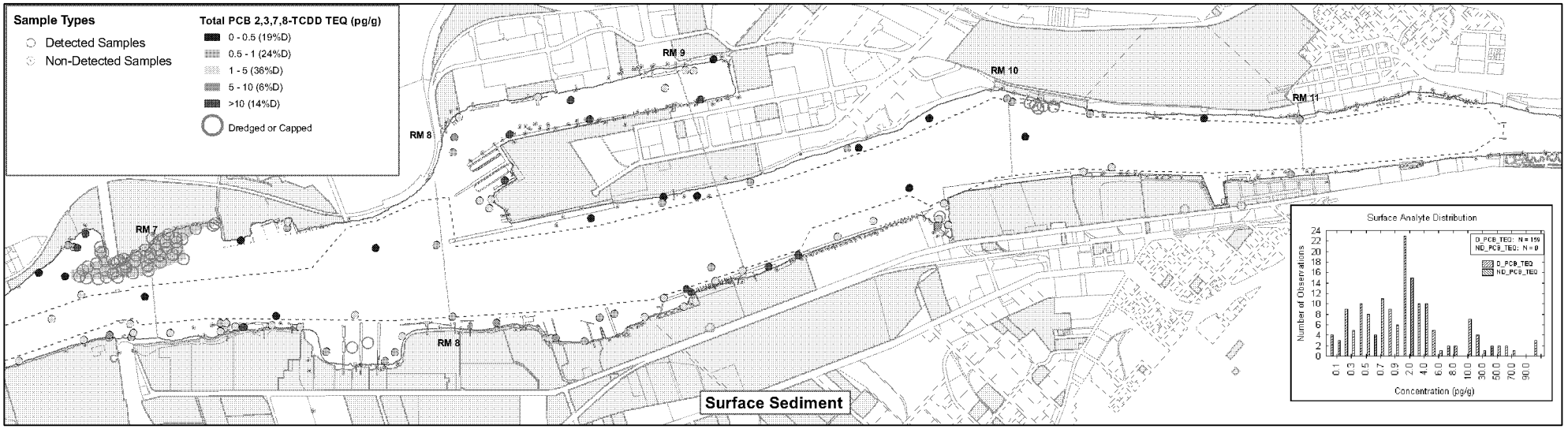
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

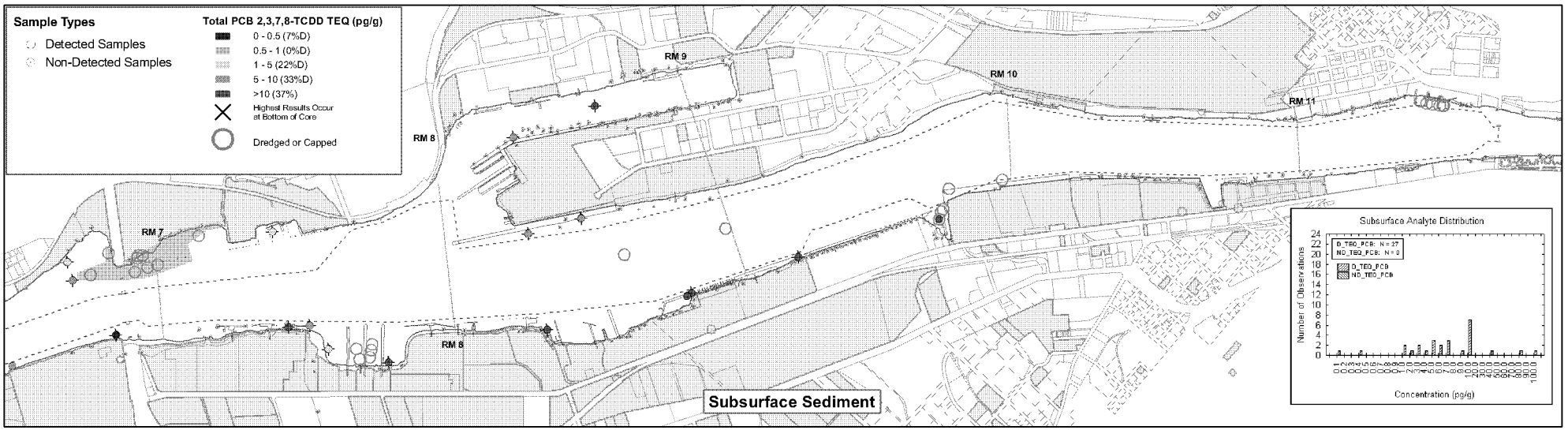
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-7b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Dioxin 2,3,7,8-TCDD Toxic Equivalence (pg/g)**

BZTO104(e)032862




integral consulting inc.

LWG Lower Willamette Group

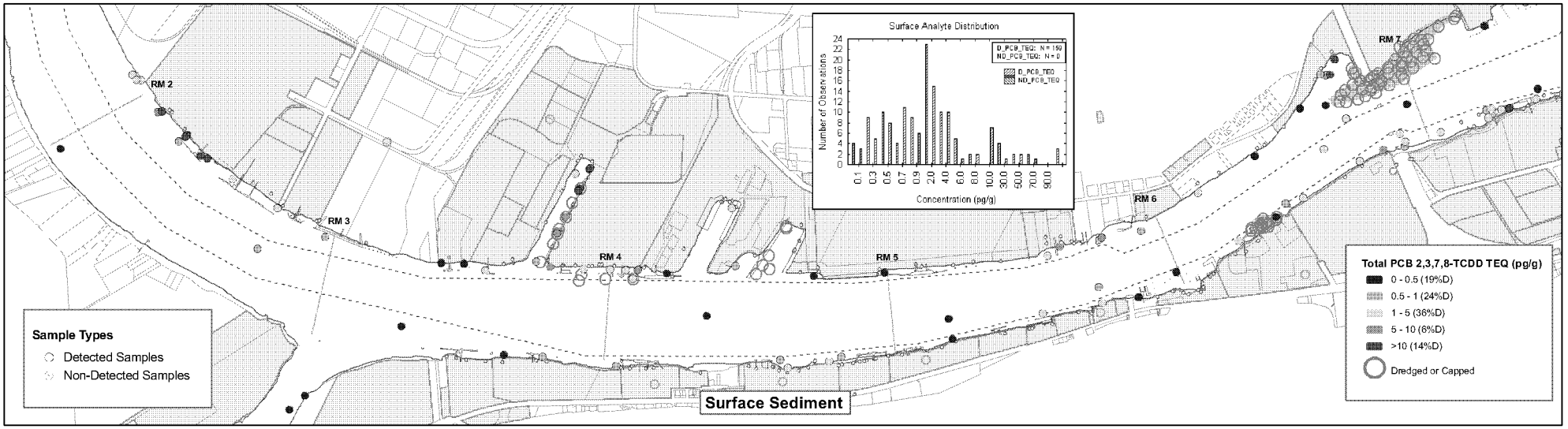
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

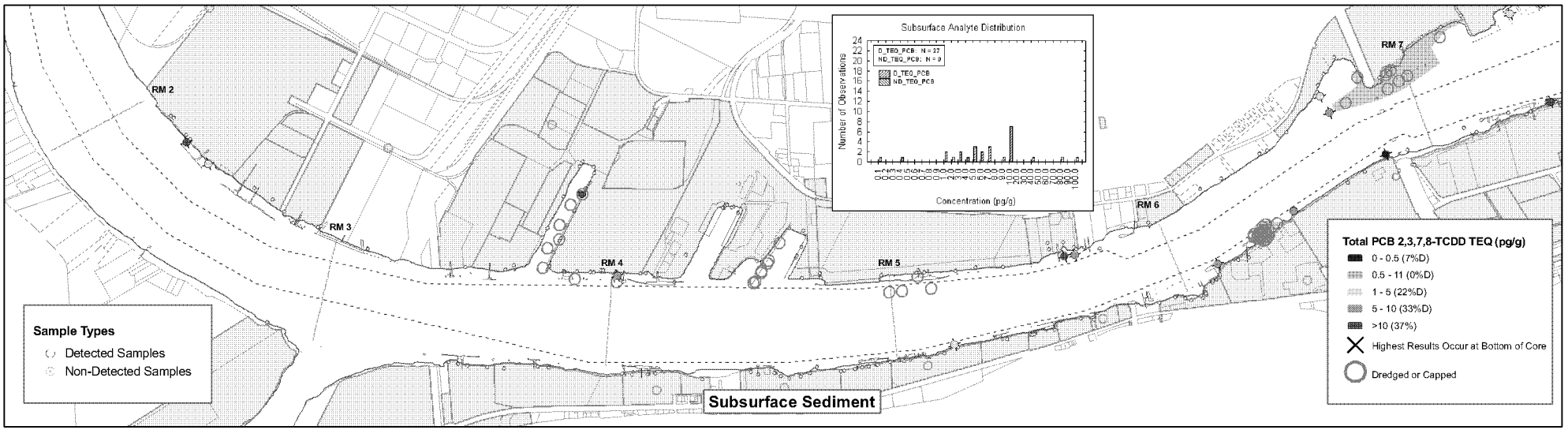
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-8a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total PCB 2,3,7,8-TCDD TEQ (pg/g)**

BZTO104(e)032863




integral consulting inc.

LWG Lower Willamette Group

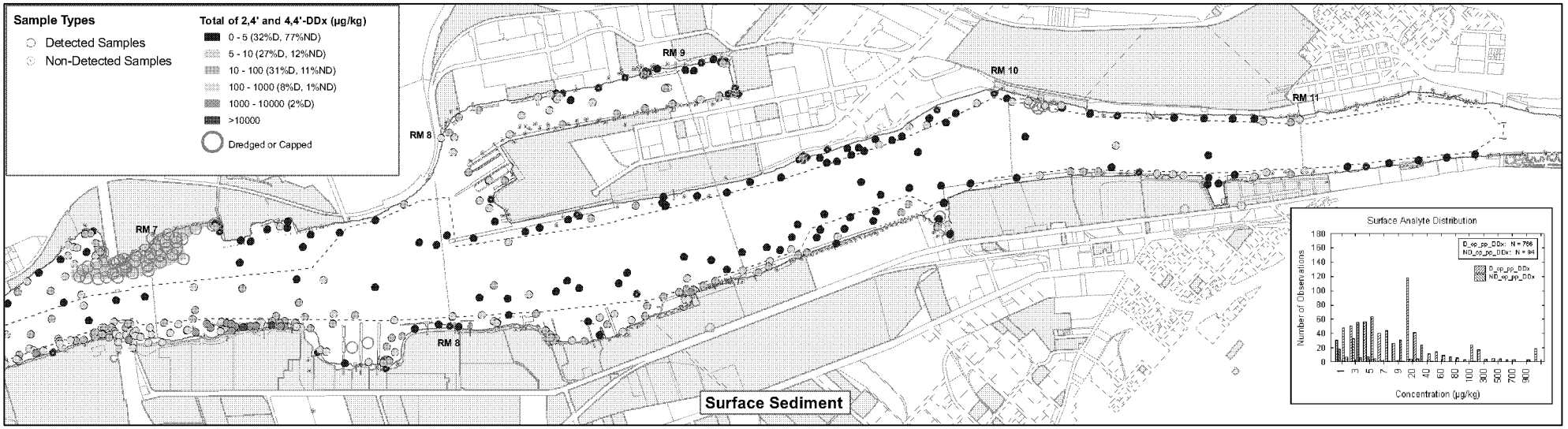
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

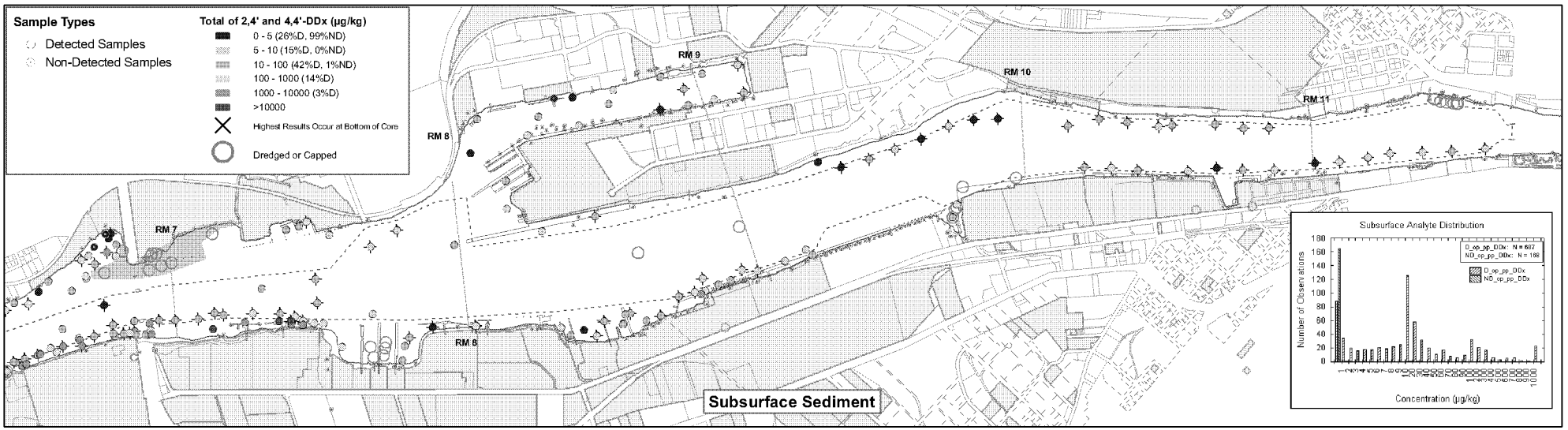
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-8b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total PCB 2,3,7,8-TCDD TEQ (pg/g)**

BZTO104(e)032864




integral consulting inc.

LWG Lower Willamette Group

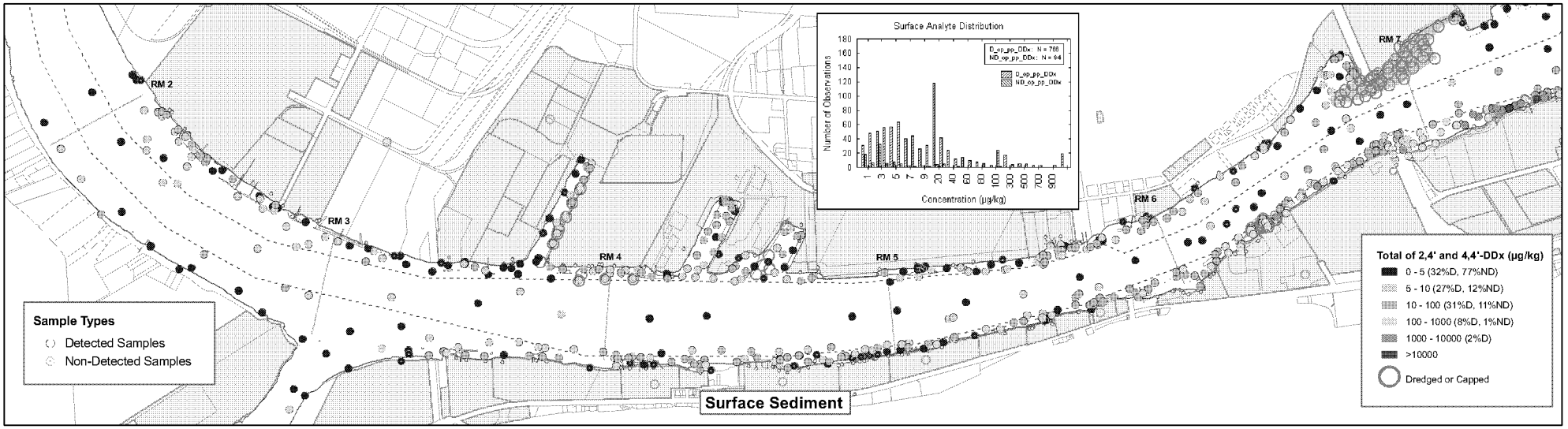
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

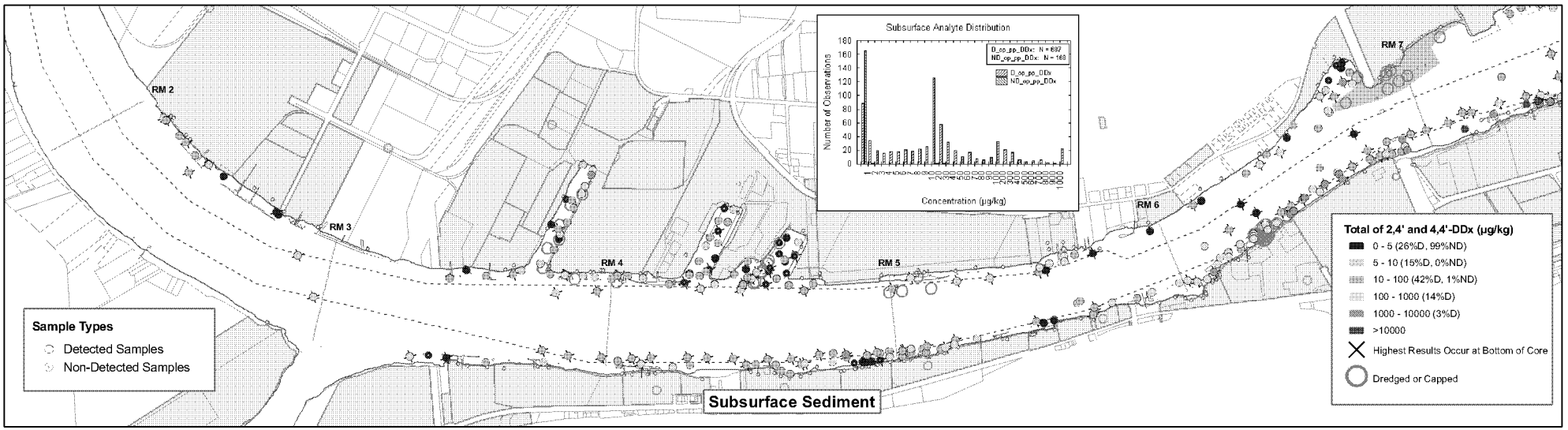
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-9a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total of 2,4' and 4,4'-DDD, -DDE, -DDT (µg/kg)**

BZTO104(e)032865




integral consulting inc.

LWG Lower Willamette Group

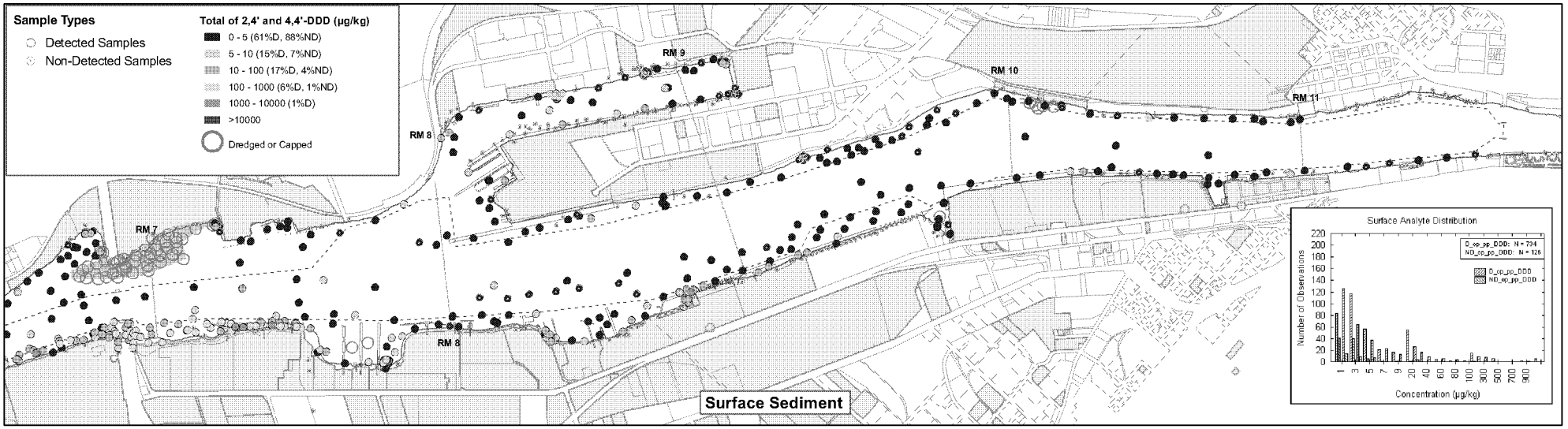
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

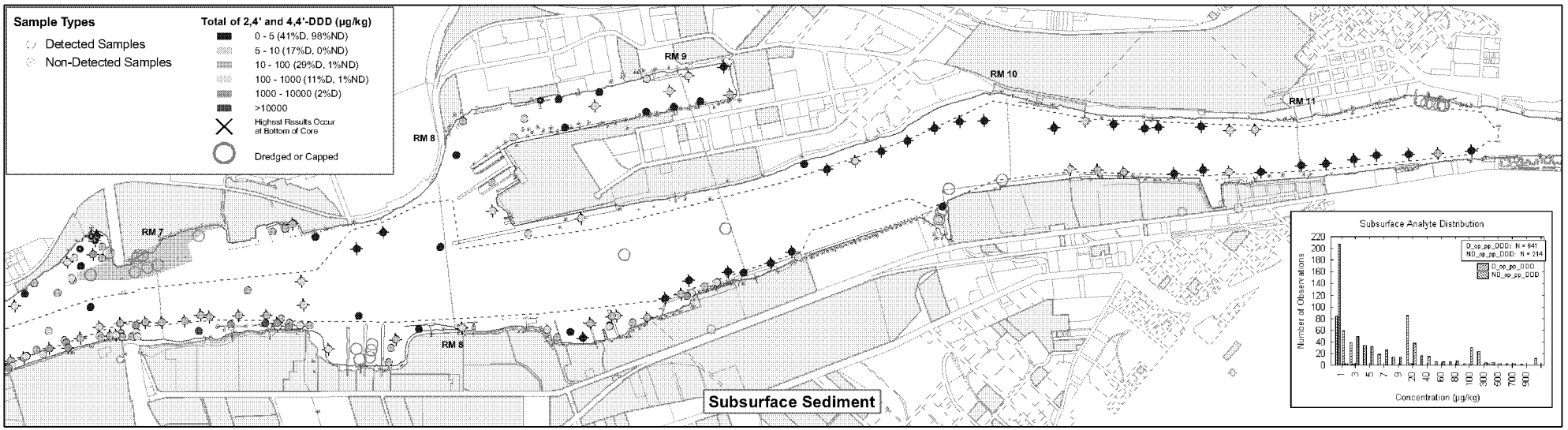
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-9b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total of 2,4' and 4,4'-DDD, -DDE, -DDT (µg/kg)**

BZTO104(e)032866




integral consulting inc.

LWG Lower Willamette Group

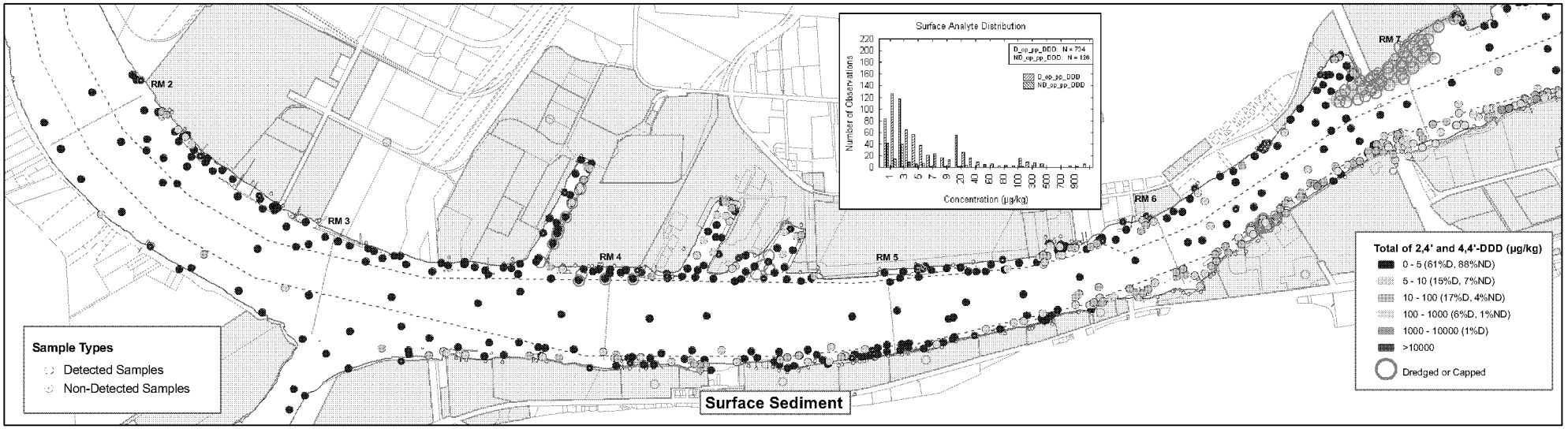
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

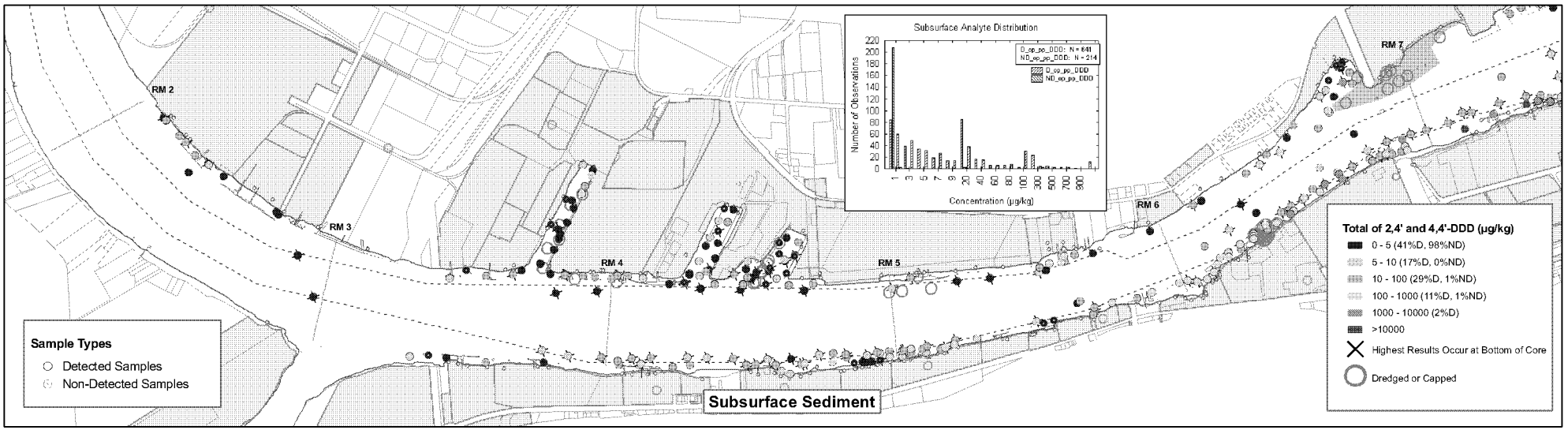
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-10a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total of 2,4' and 4,4'-DDD (µg/kg)**

BZTO104(e)032867




integral consulting inc.

LWG Lower Willamette Group

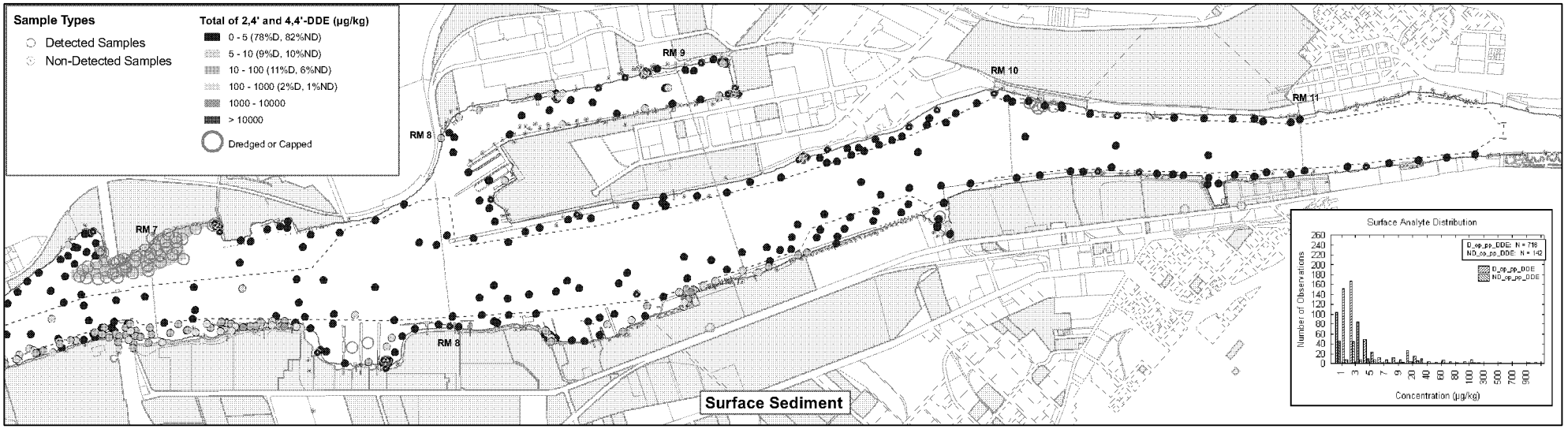
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

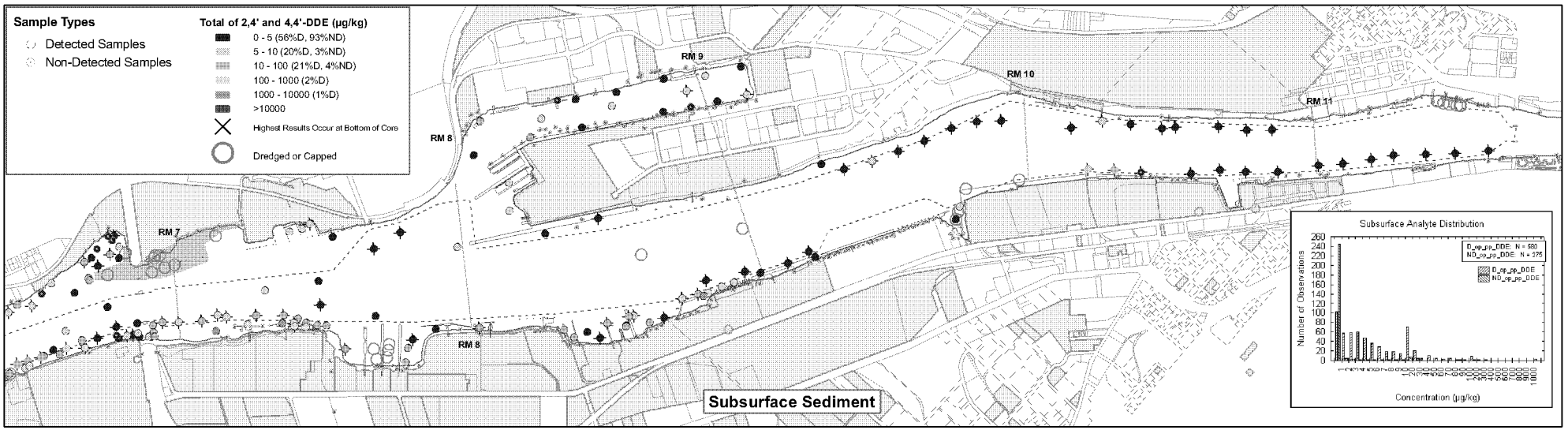
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-10b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total of 2,4' and 4,4'-DDD (µg/kg)**

BZTO104(e)032868




integral consulting inc.

LWG Lower Willamette Group

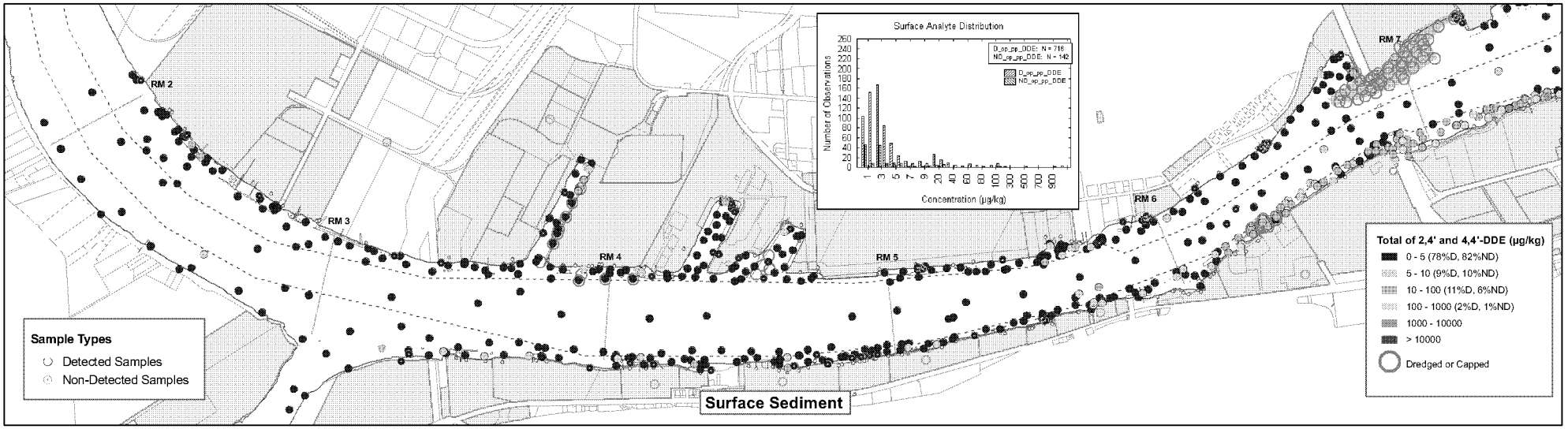
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

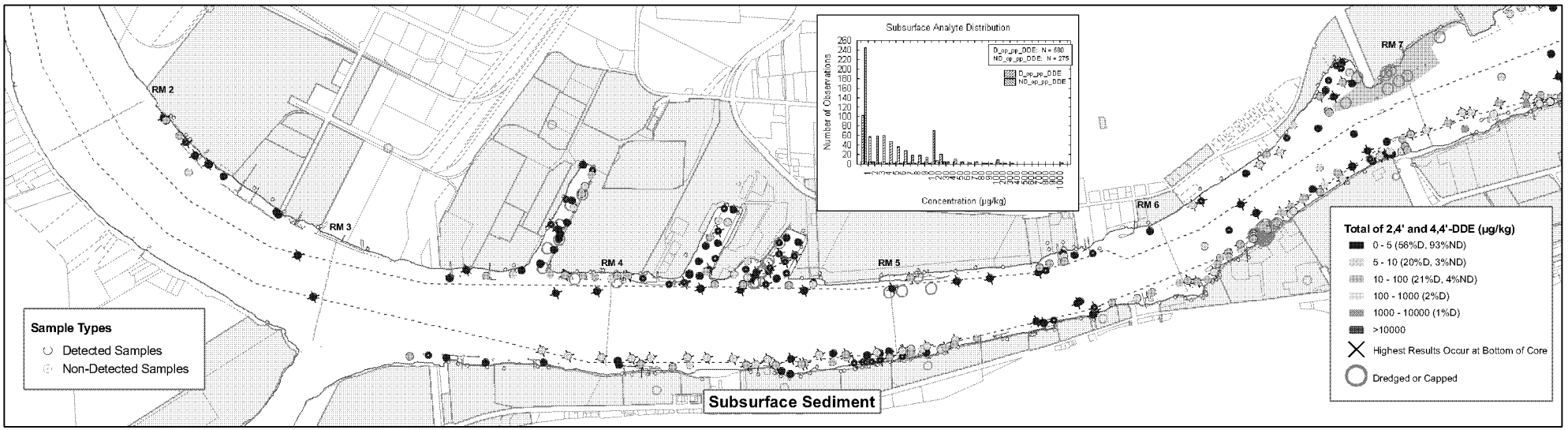
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-11a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total of 2,4' and 4,4'-DDE (µg/kg)**

BZTO104(e)032869




integral consulting inc.

LWG Lower Willamette Group

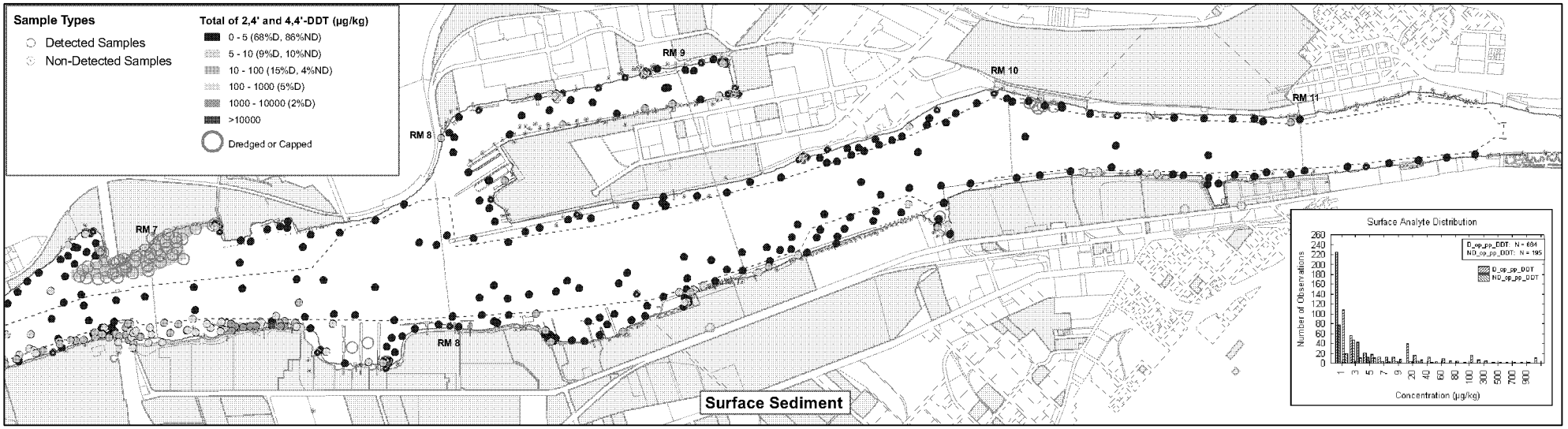
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

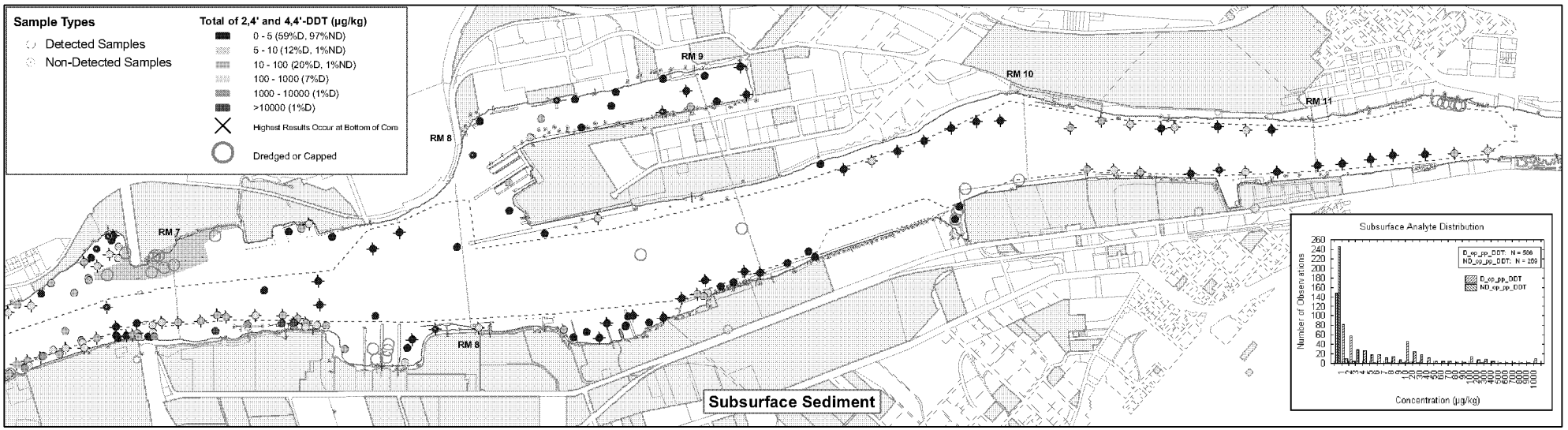
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-11b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total of 2,4' and 4,4'-DDE (µg/kg)**

BZTO104(e)032870




integral consulting inc.

LWG Lower Willamette Group

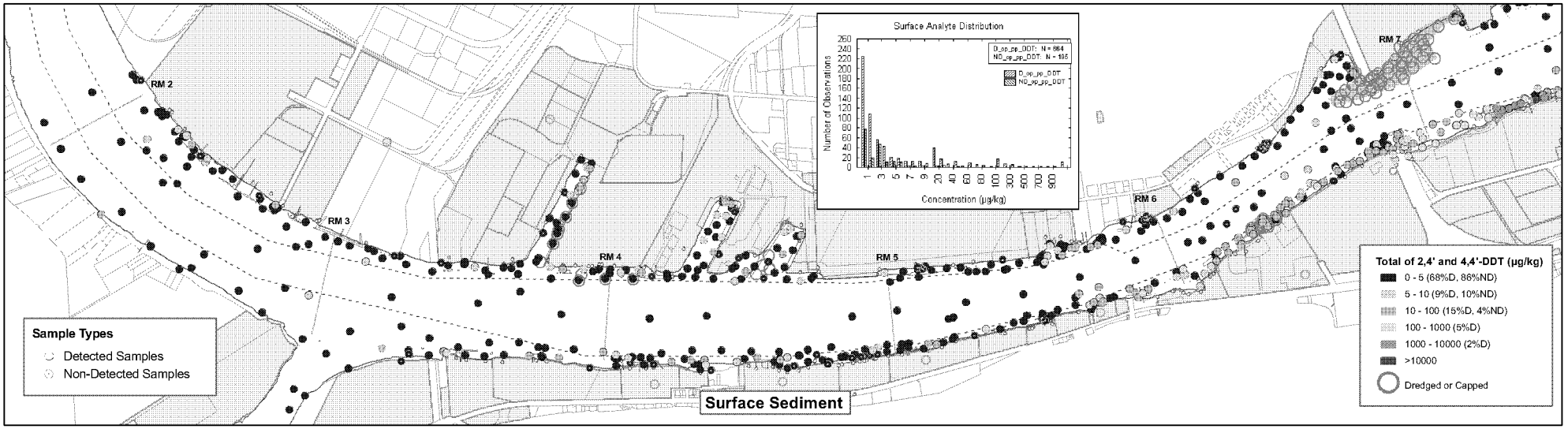
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

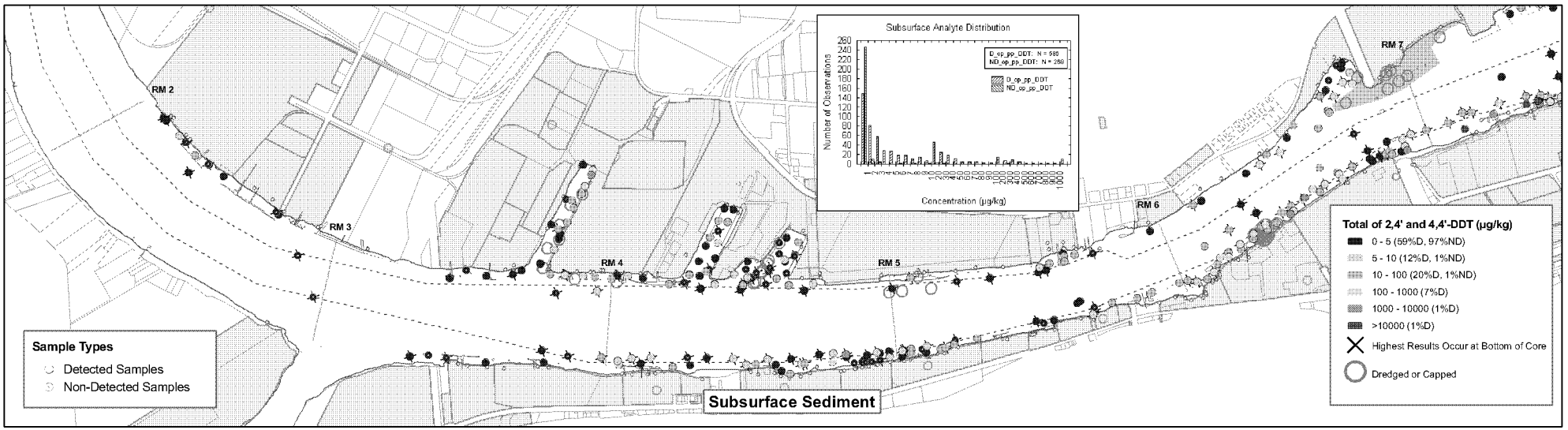
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-12a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total of 2,4' and 4,4'-DDT (µg/kg)**

BZTO104(e)032871




integral consulting inc.

LWG Lower Willamette Group

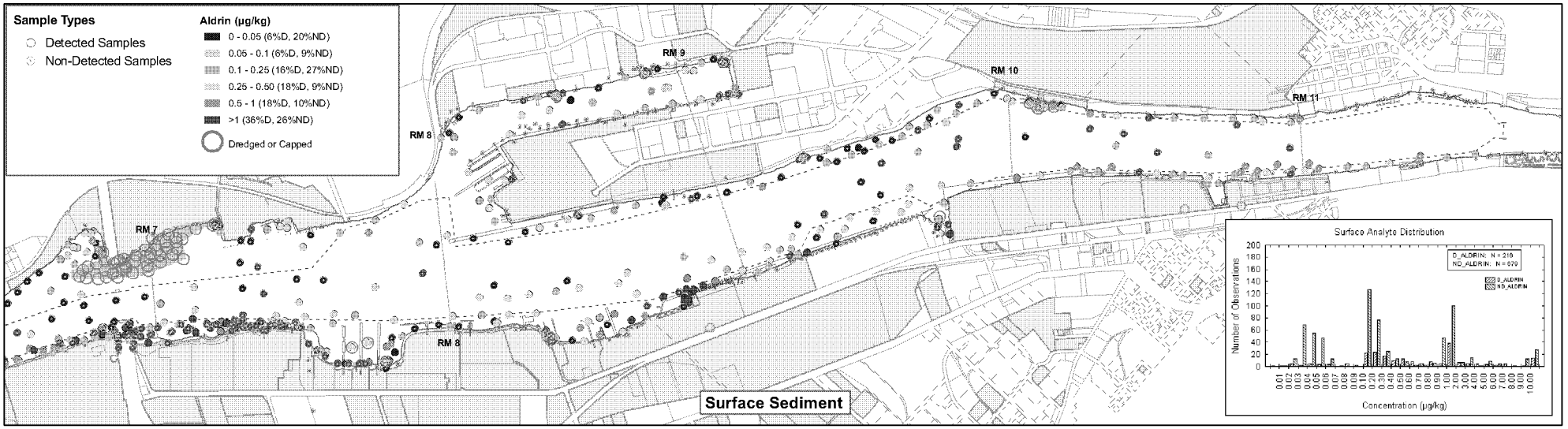
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

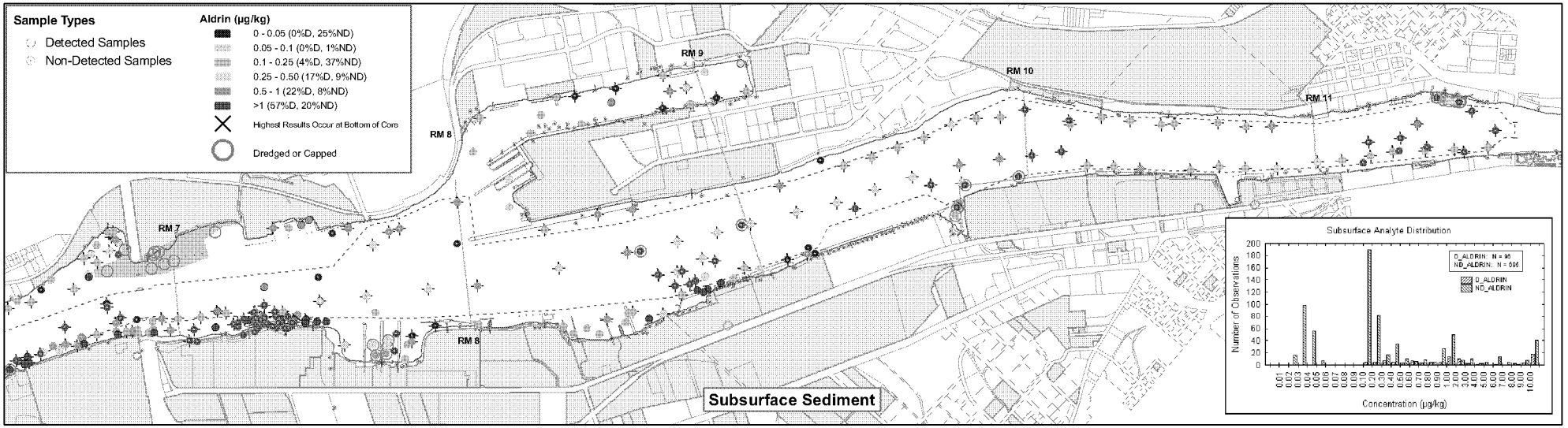
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-12b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total of 2,4' and 4,4'-DDT (µg/kg)**

BZTO104(e)032872




integral consulting inc.

LWG Lower Willamette Group

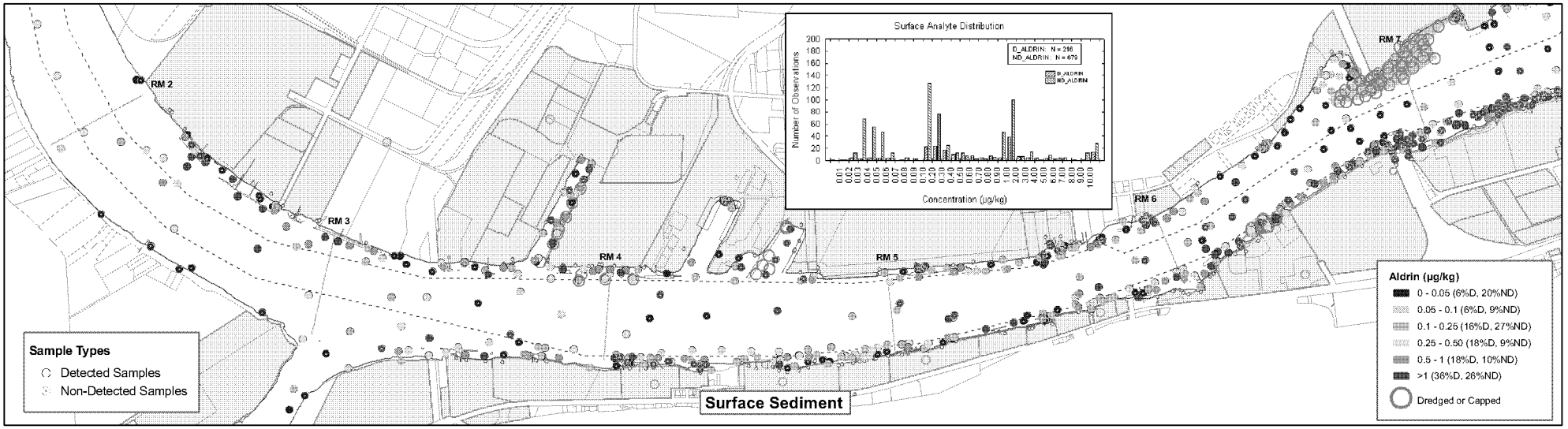
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

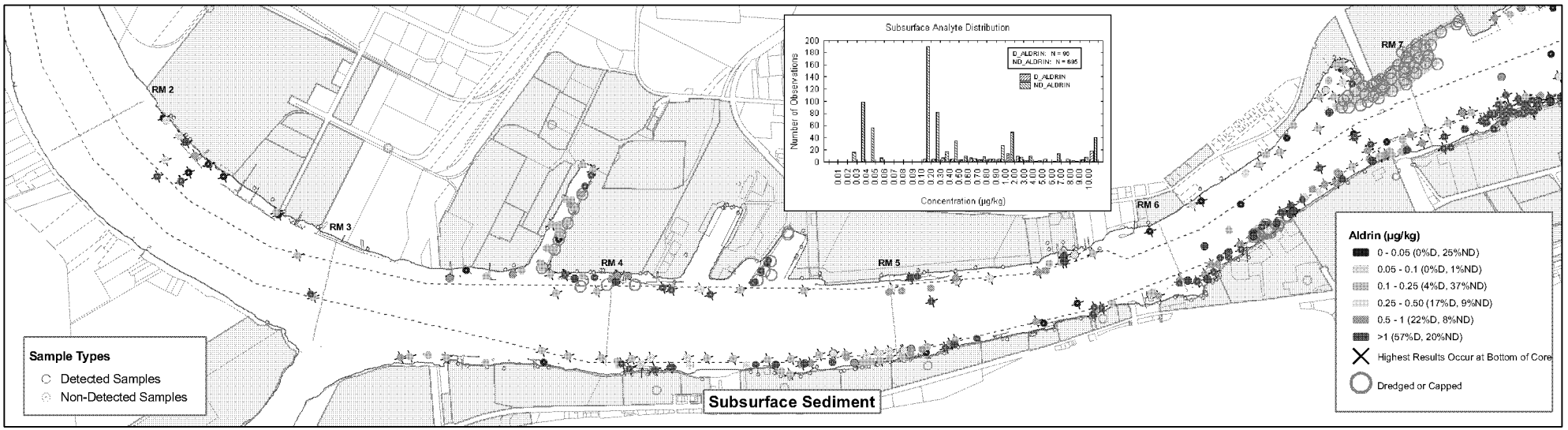
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-13a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Aldrin (µg/kg)**

BZTO104(e)032873




integral consulting inc.

LWG Lower Willamette Group

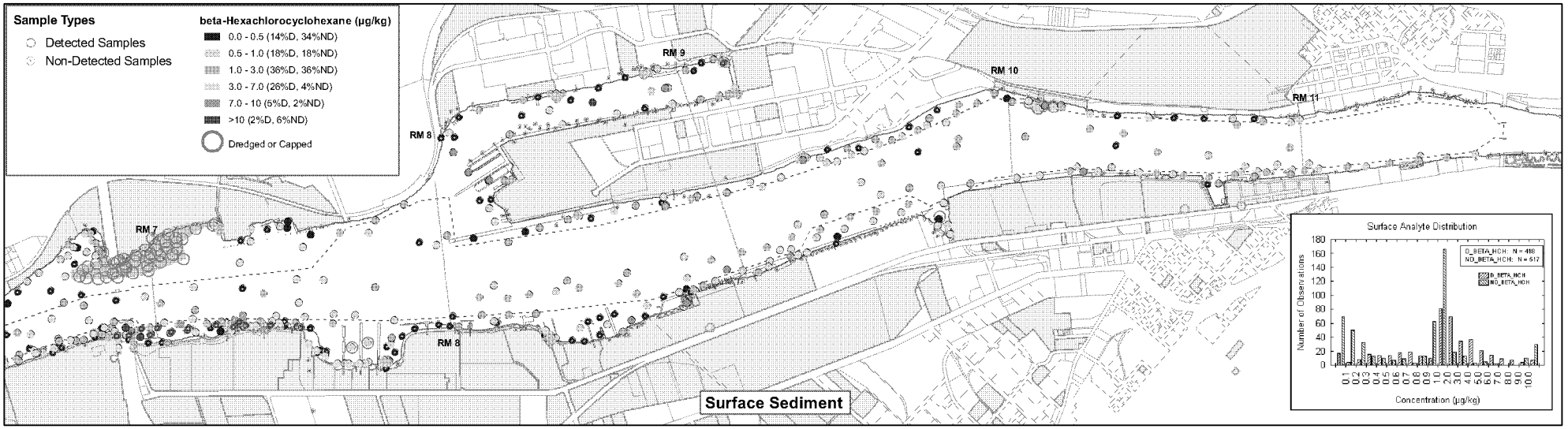
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

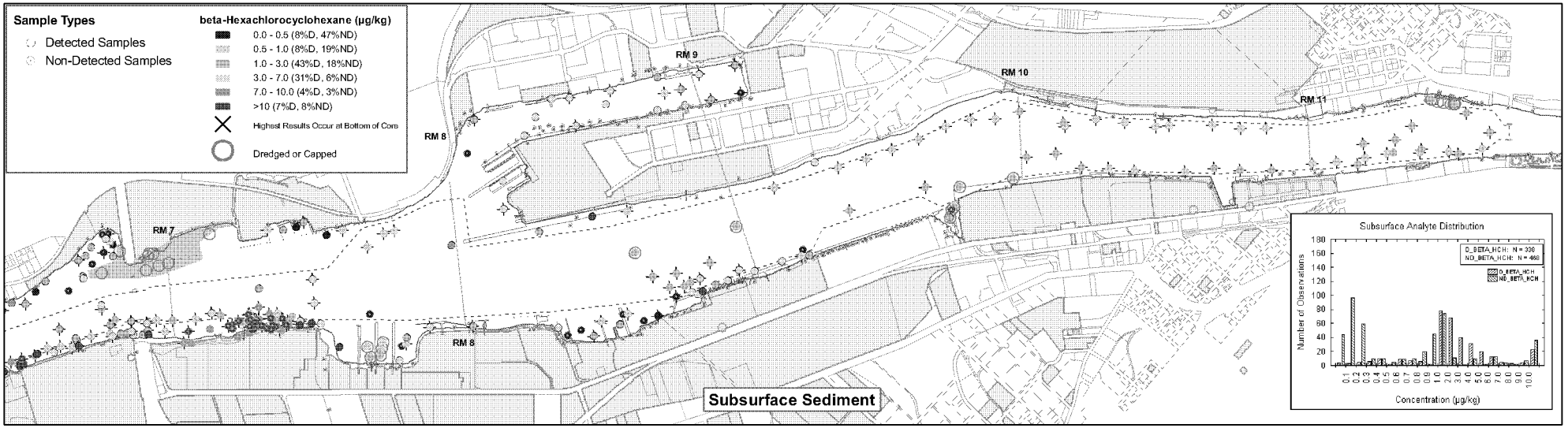
Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

0 1,000 2,000 3,000 Feet

**Map 6.1-13b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Aldrin (µg/kg)**

BZTO104(e)032874




integral consulting inc.

LWG Lower Willamette Group

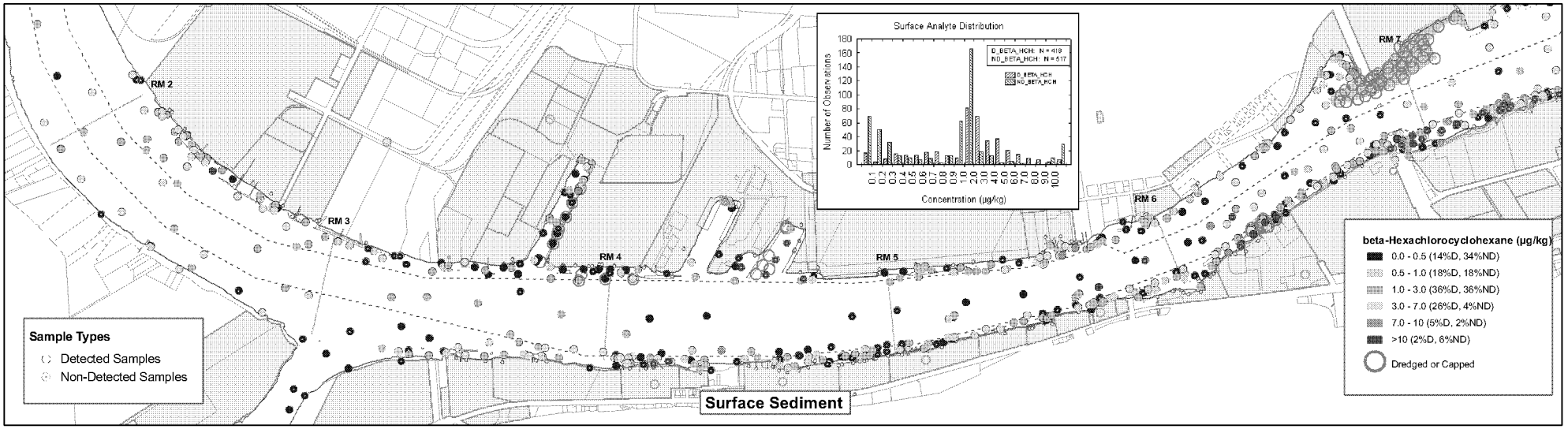
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

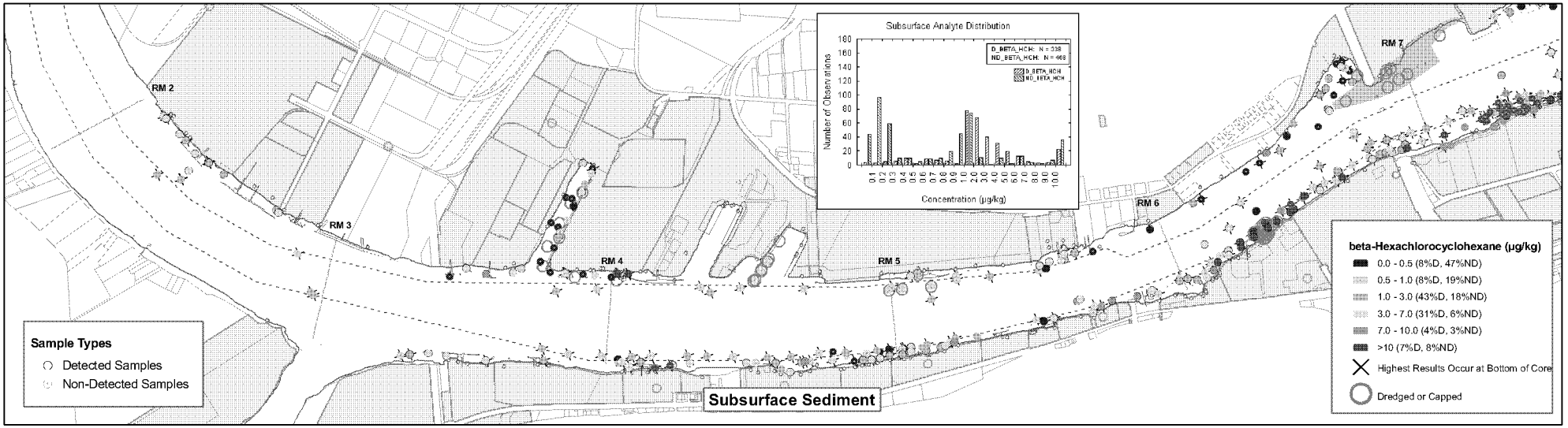
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-14a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**beta-Hexachlorocyclohexane (µg/kg)**

BZTO104(e)032875




integral consulting inc.

LWG Lower Willamette Group

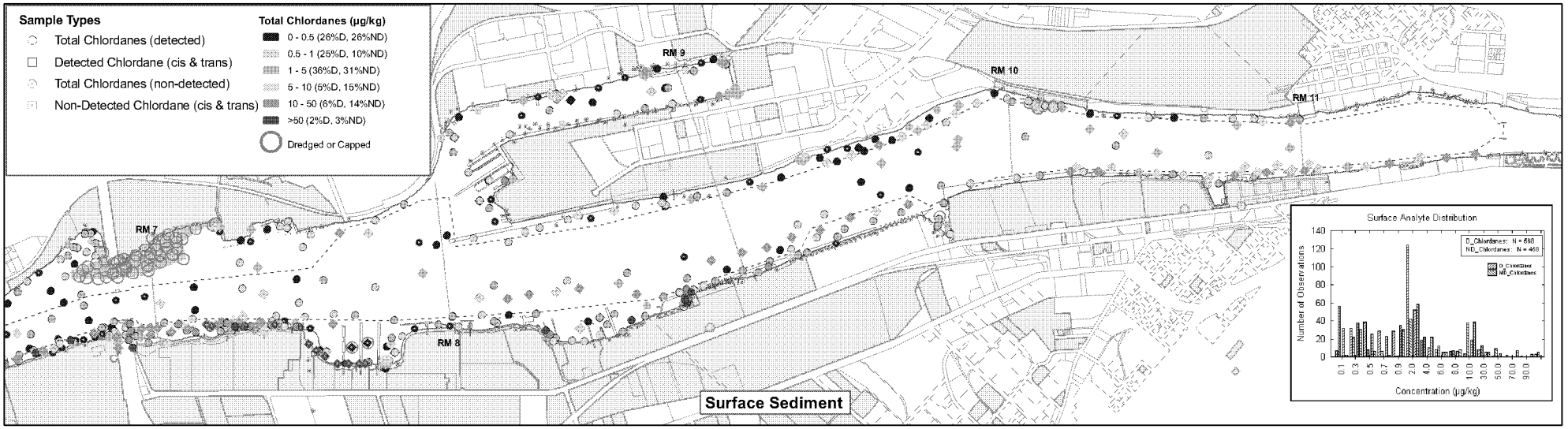
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

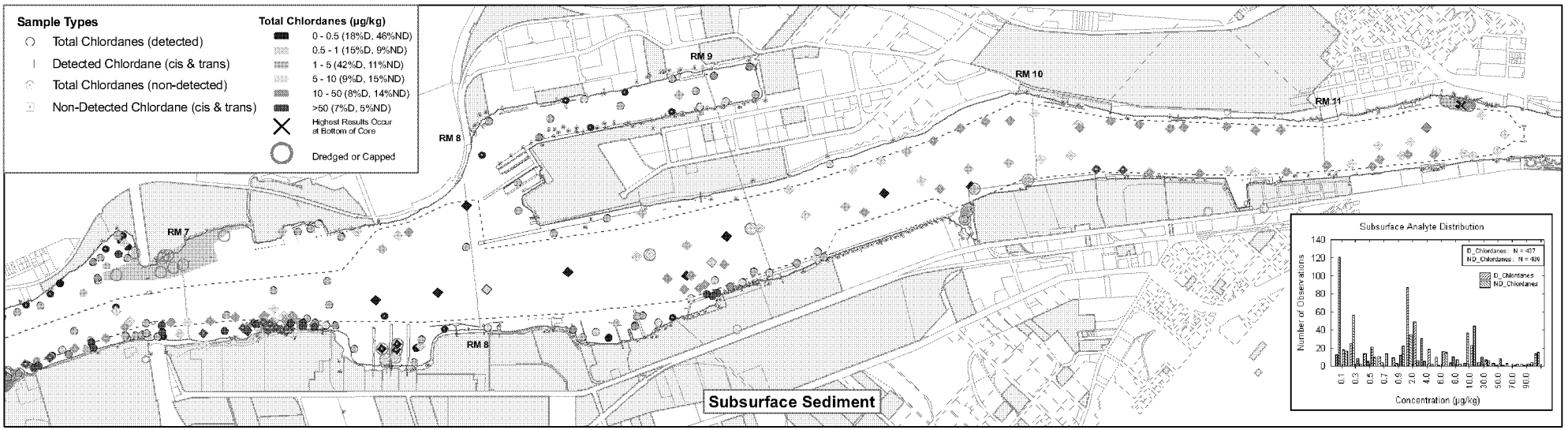
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-14b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**beta-Hexachlorocyclohexane (µg/kg)**

BZTO104(e)032876




integral consulting inc.

LWG Lower Willamette Group

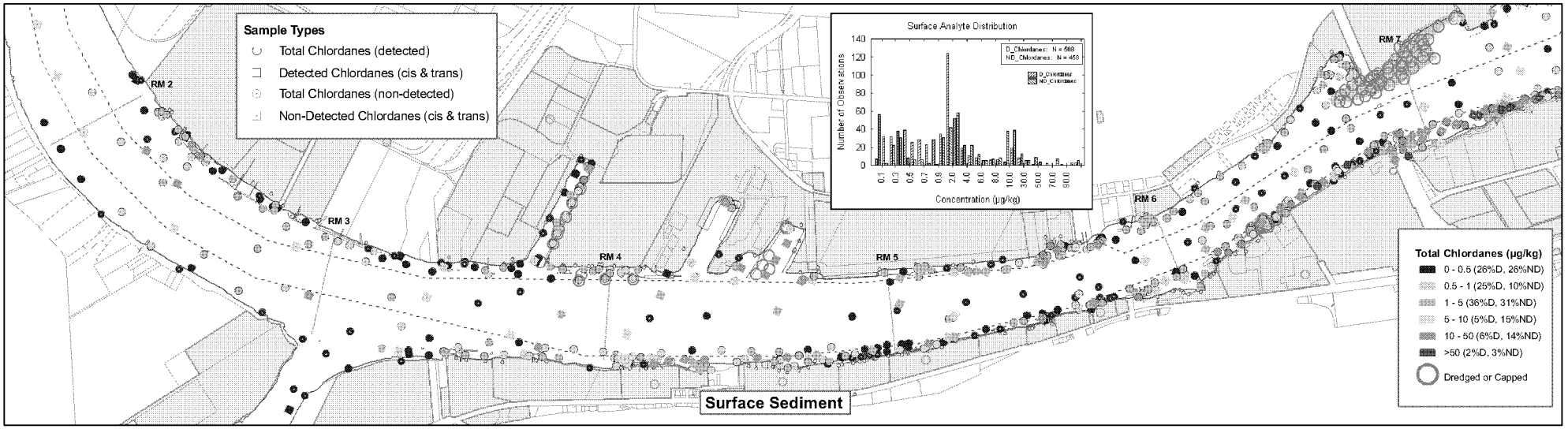
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

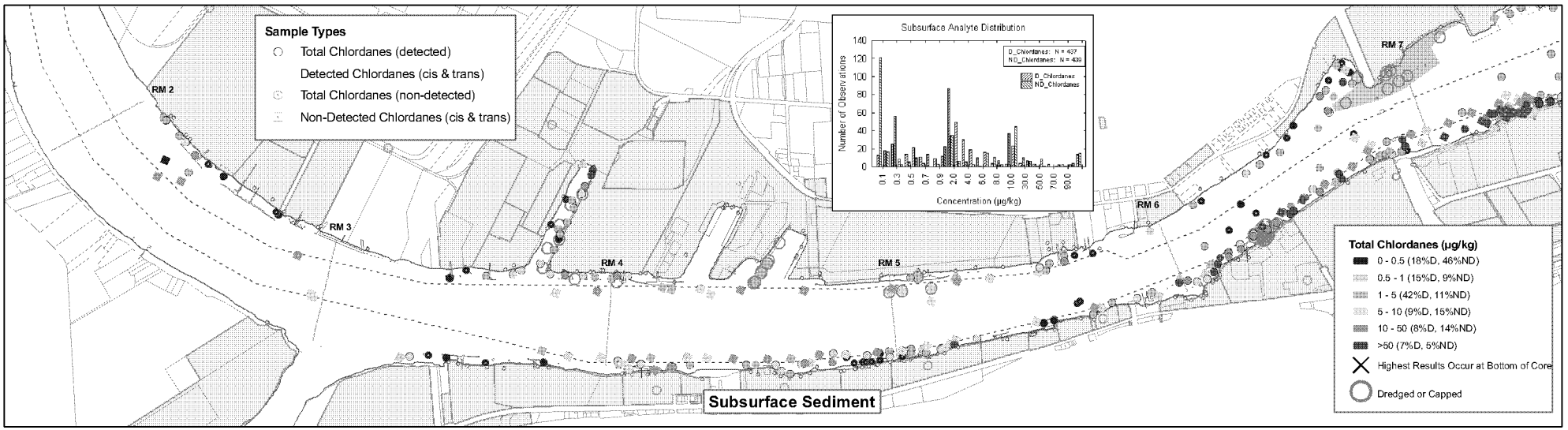
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-15a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total Chlordanes (µg/kg)**

BZTO104(e)032877




integral consulting inc.

LWG Lower Willamette Group

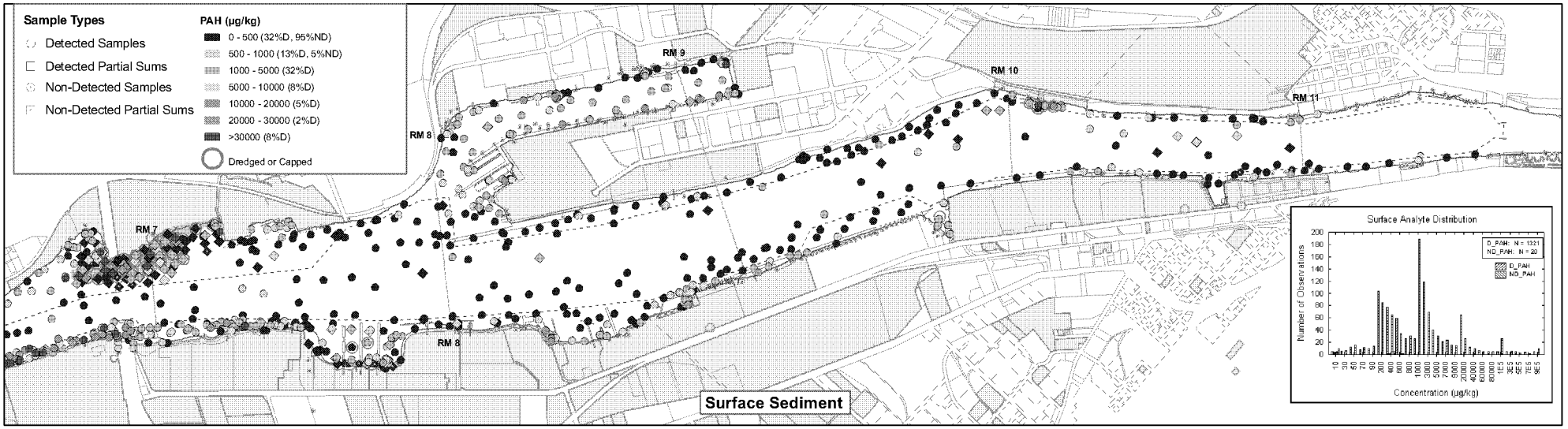
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

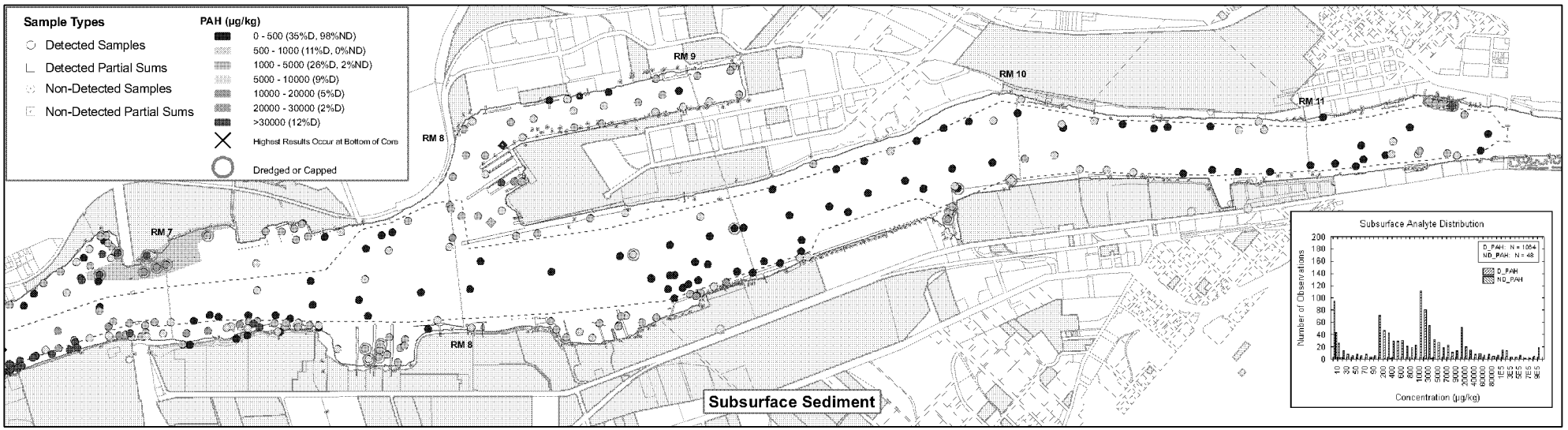
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-15b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total Chlordanes (µg/kg)**

BZTO104(e)032878




integral consulting inc.

LWG Lower Willamette Group

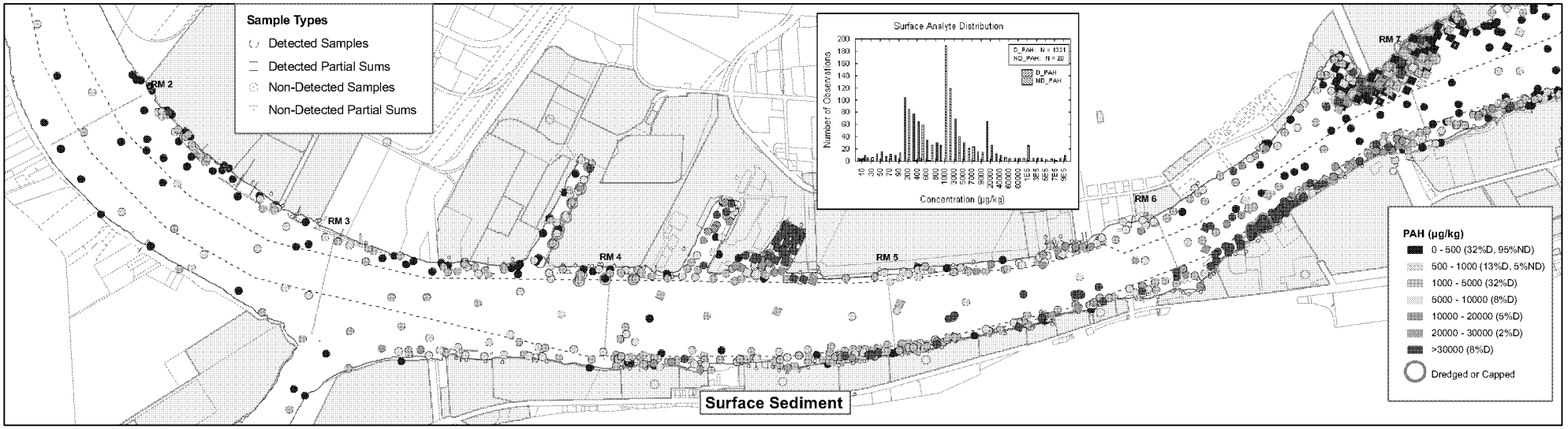
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

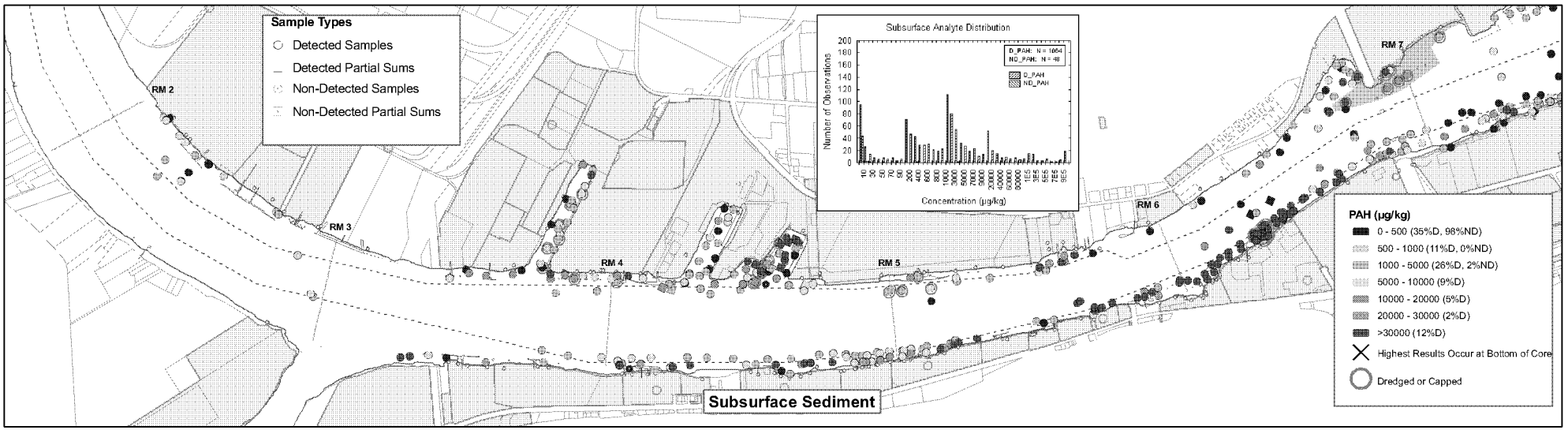
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-16a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Polycyclic Aromatic Hydrocarbons (µg/kg)**

BZTO104(e)032879




integral consulting inc.

LWG Lower Willamette Group

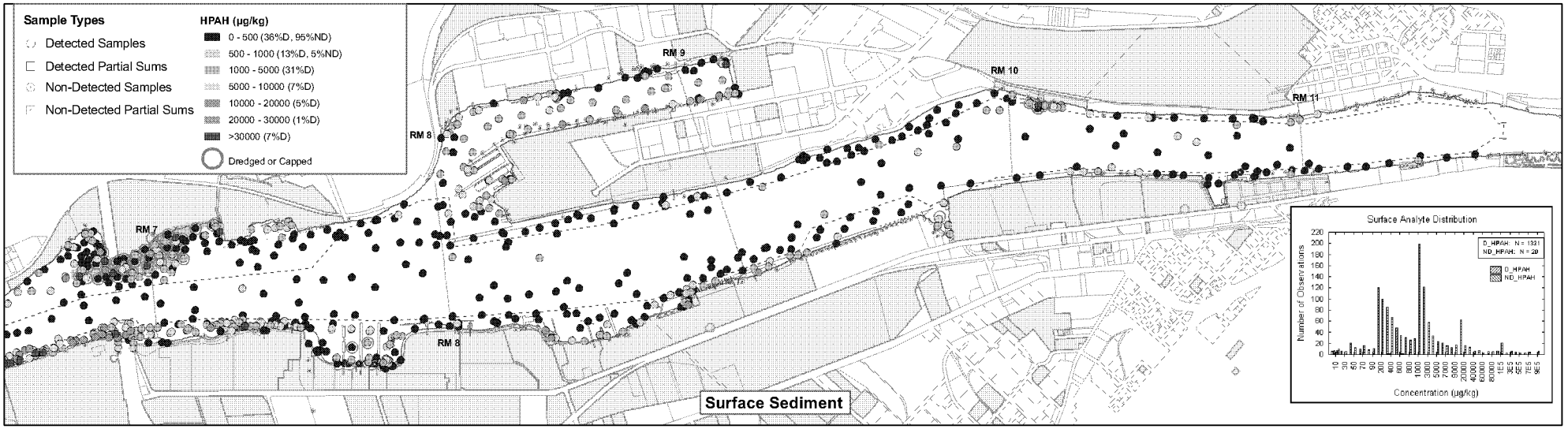
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

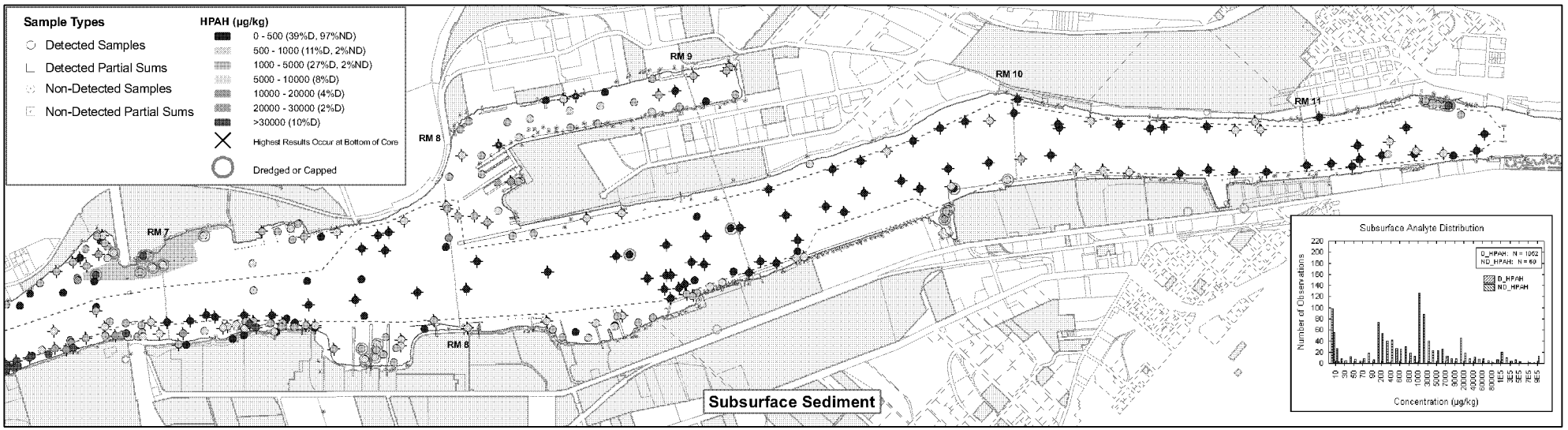
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-16b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Polycyclic Aromatic Hydrocarbons (µg/kg)**

BZTO104(e)032880




integral consulting inc.

LWG Lower Willamette Group

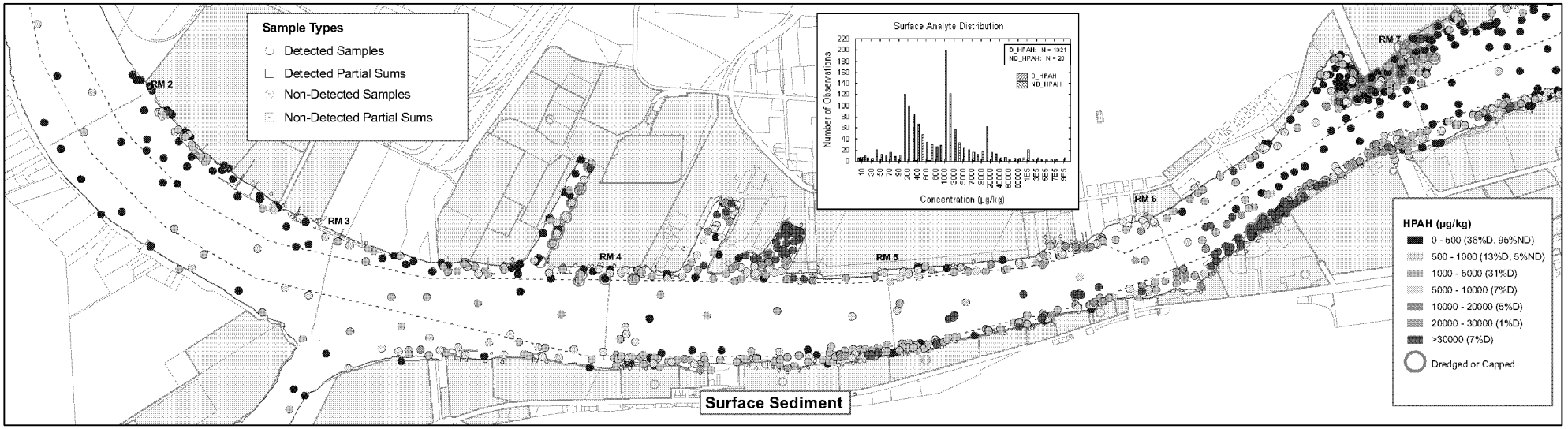
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

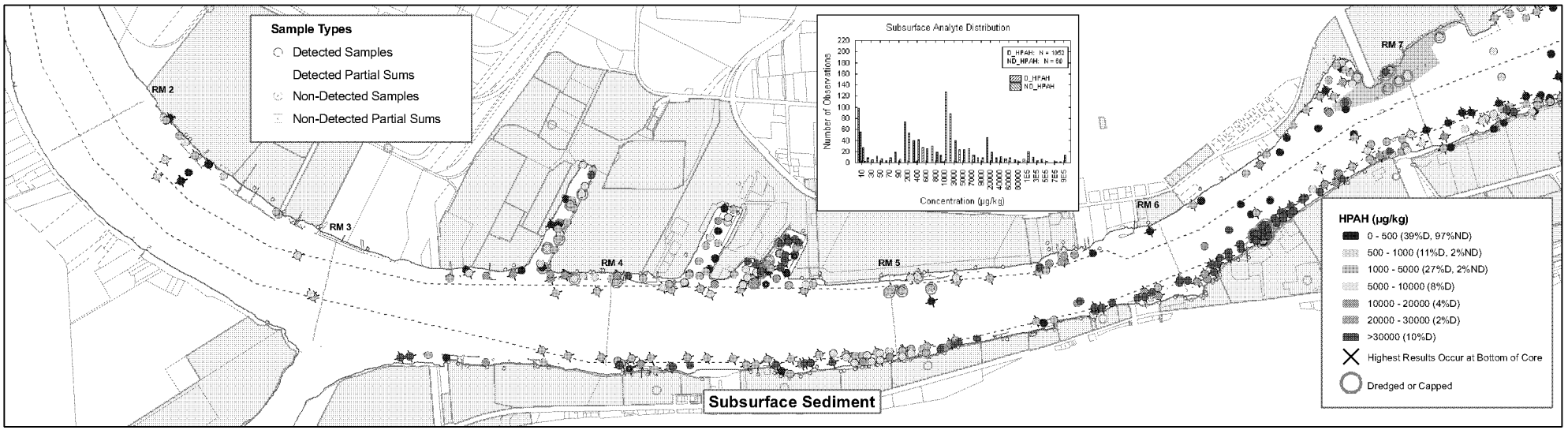
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-17a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**High Molecular Weight PAHs (µg/kg)**

BZTO104(e)032881




integral consulting inc.

LWG Lower Willamette Group

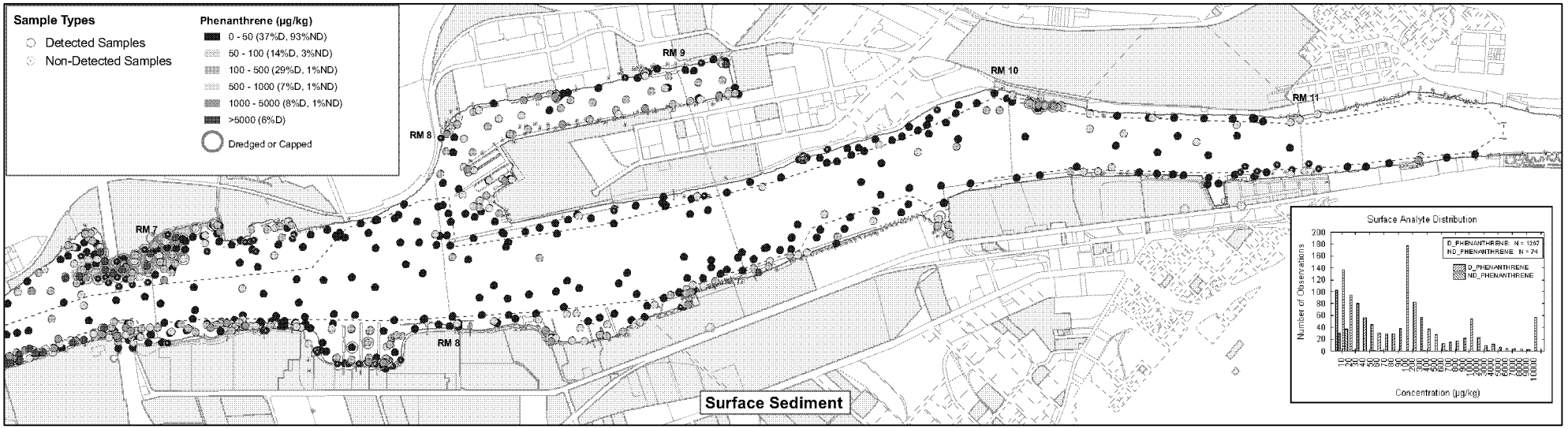
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

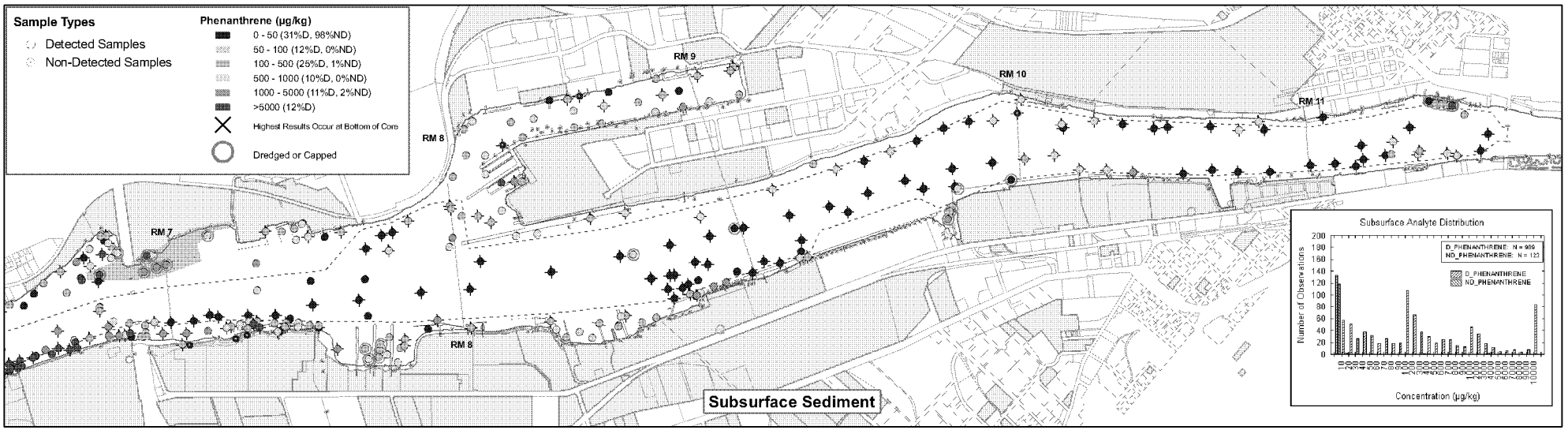
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-17b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**High Molecular Weight PAHs (µg/kg)**

BZTO104(e)032882




integral consulting inc.

LWG Lower Willamette Group

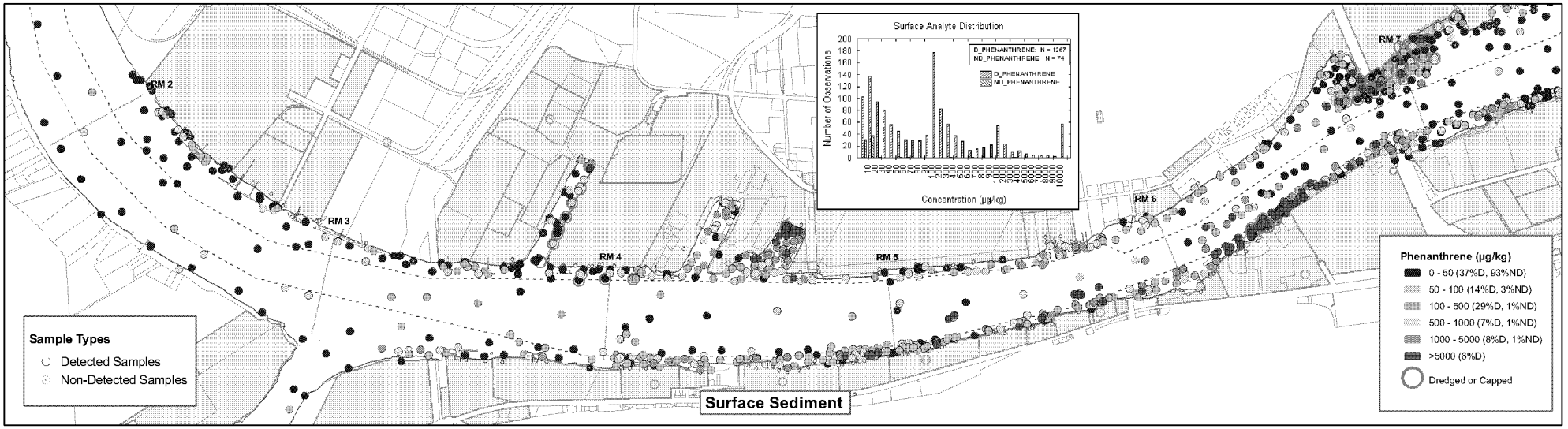
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

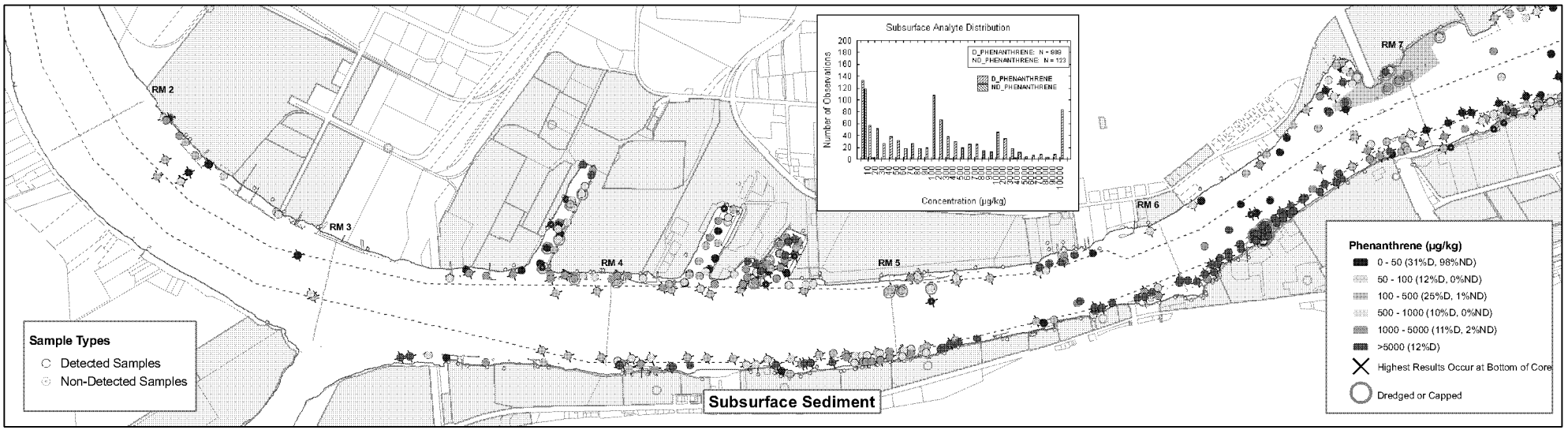
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-18a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Phenanthrene (µg/kg)**

BZTO104(e)032883




integral consulting inc.

LWG Lower Willamette Group

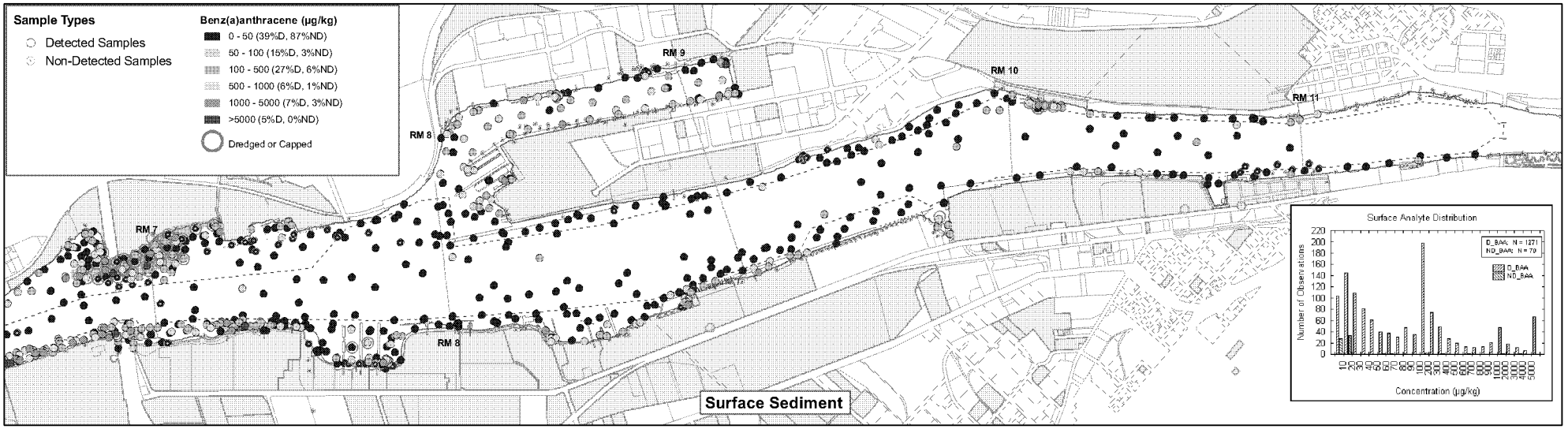
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

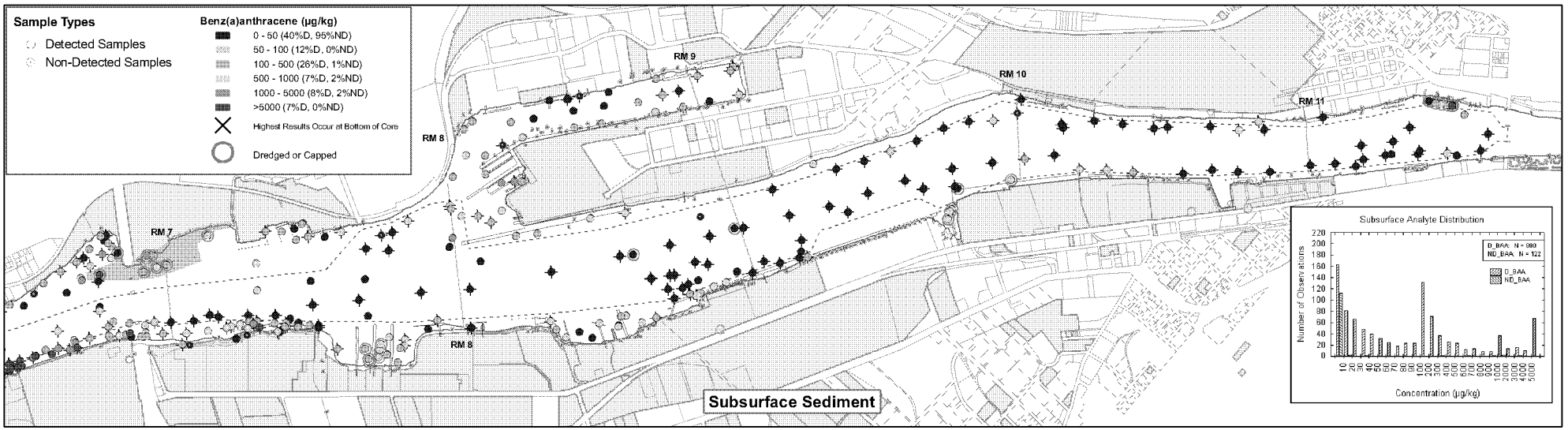
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-18b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Phenanthrene (µg/kg)**

BZTO104(e)032884




integral consulting inc.

LWG Lower Willamette Group

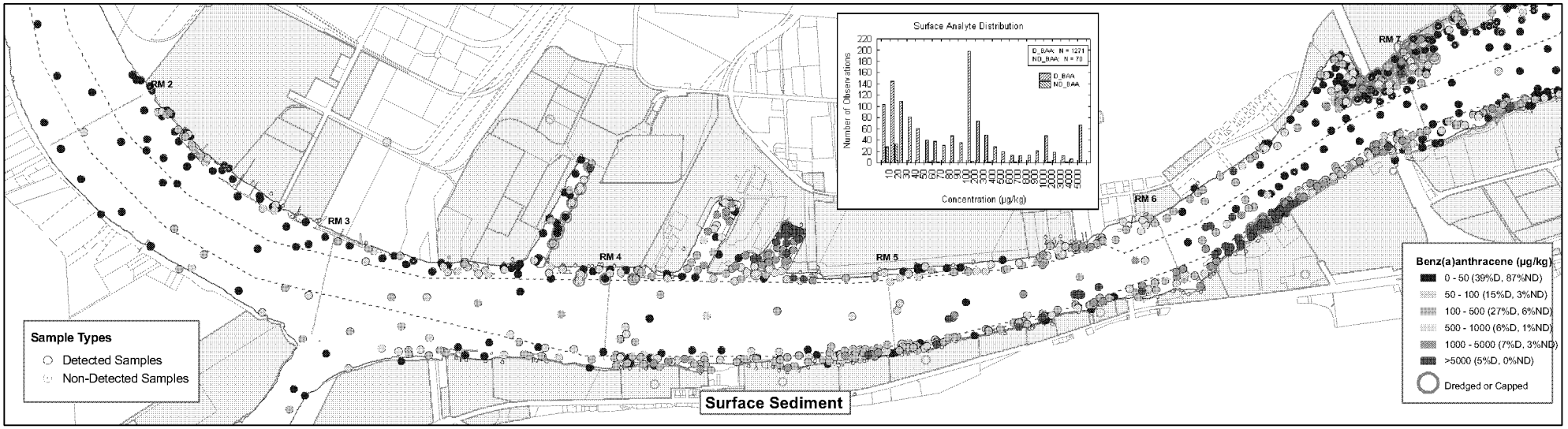
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

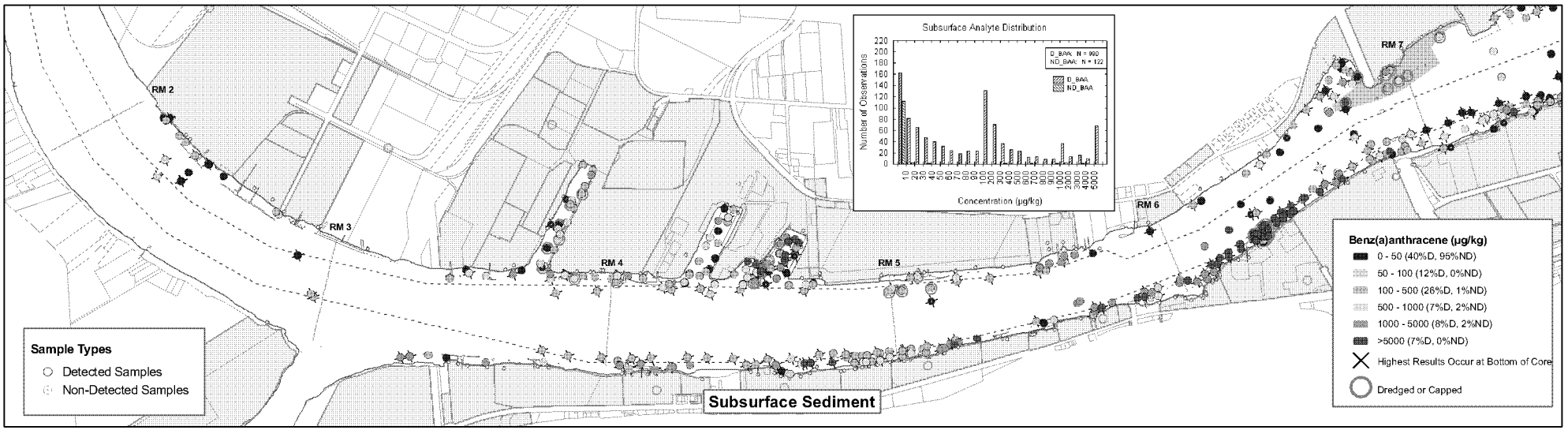
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-19a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Benzo(a)anthracene (µg/kg)**

BZTO104(e)032885




integral consulting inc.

LWG Lower Willamette Group

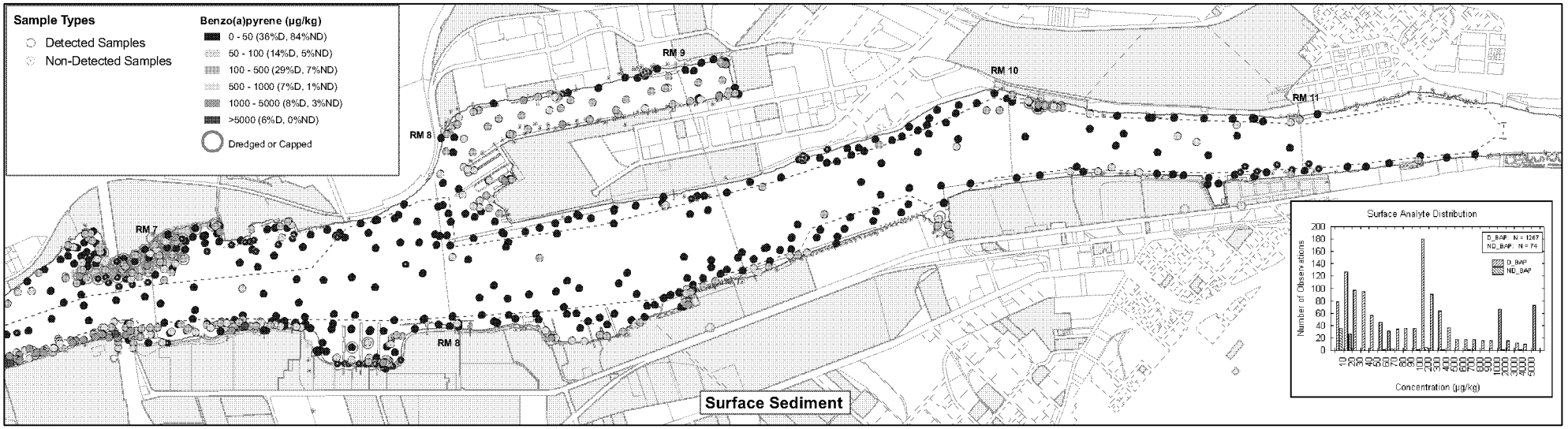
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

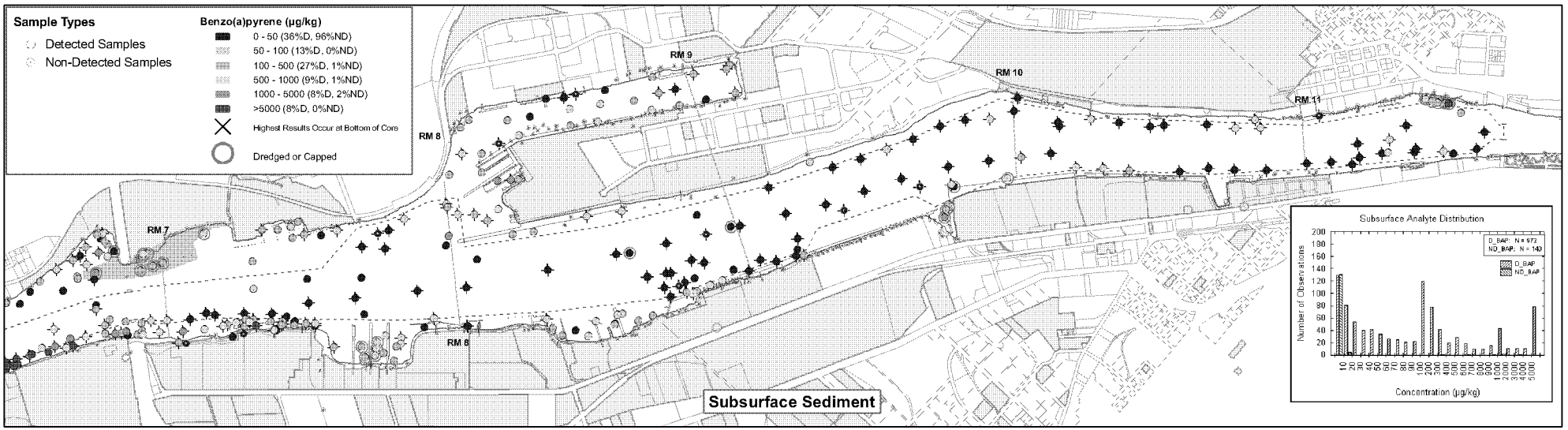
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-19b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Benzo(a)anthracene (µg/kg)**

BZTO104(e)032886




integral consulting inc.

LWG Lower Willamette Group

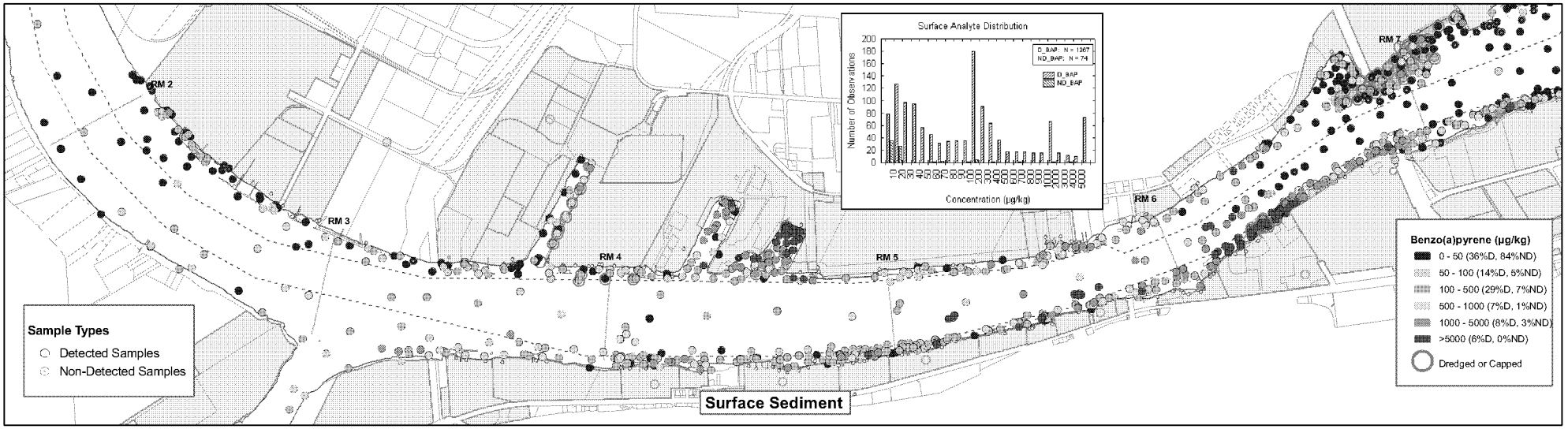
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

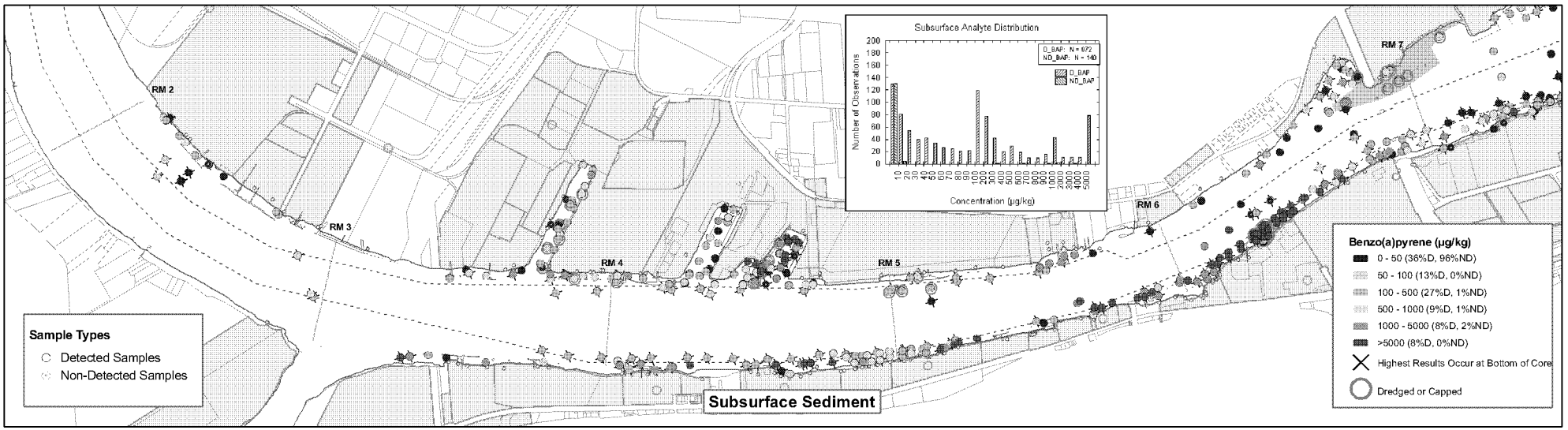
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-20a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Benzo(a)pyrene (µg/kg)**

BZTO104(e)032887




integral consulting inc.

LWG Lower Willamette Group

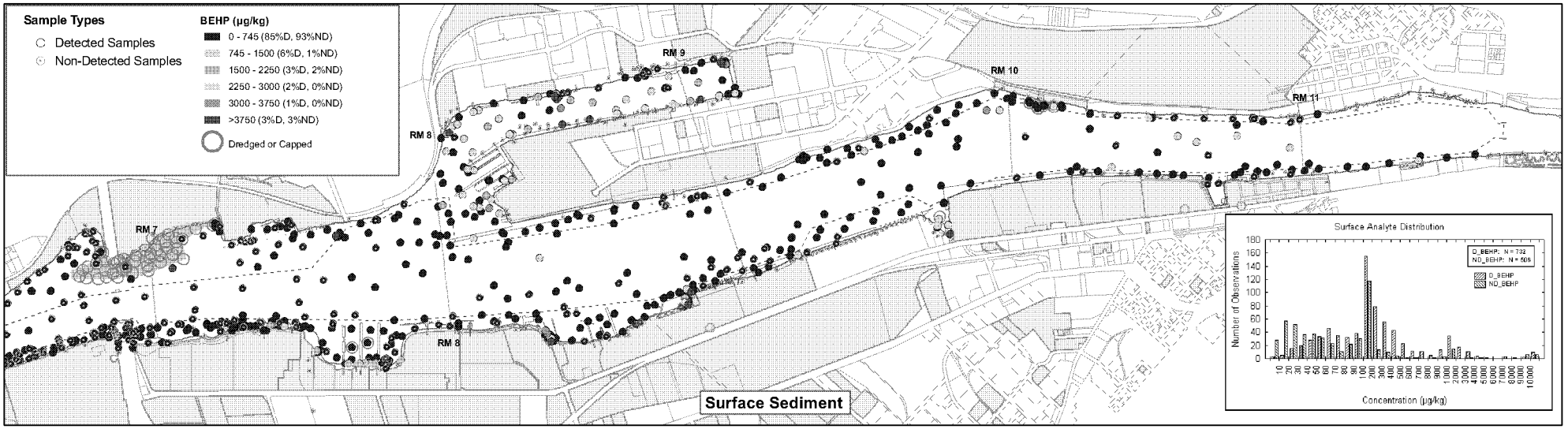
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

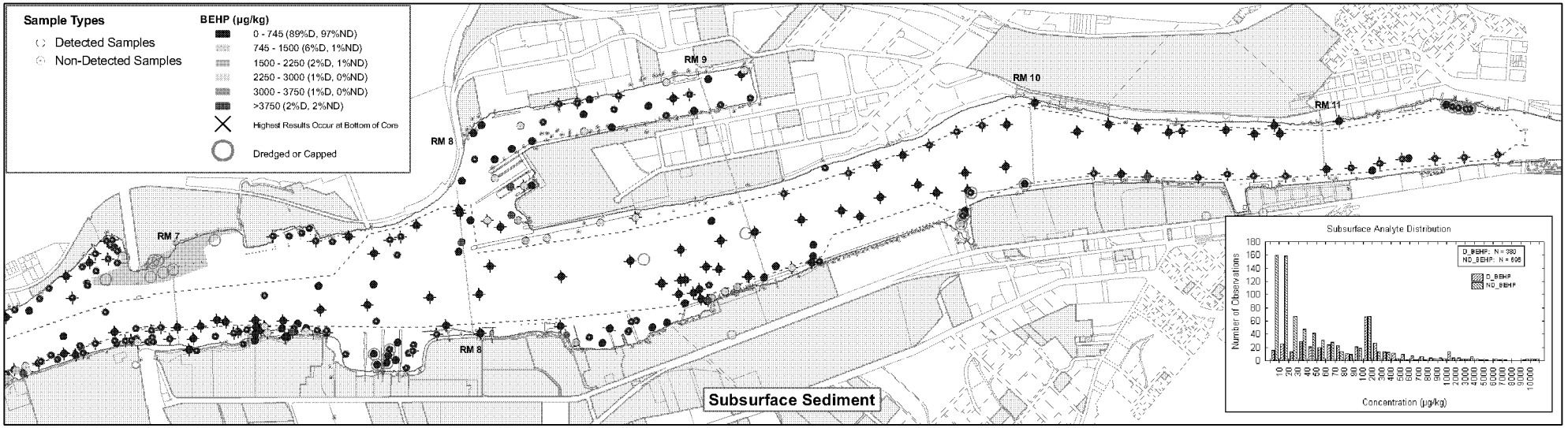
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-20b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Benzo(a)pyrene (µg/kg)**

BZTO104(e)032888




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

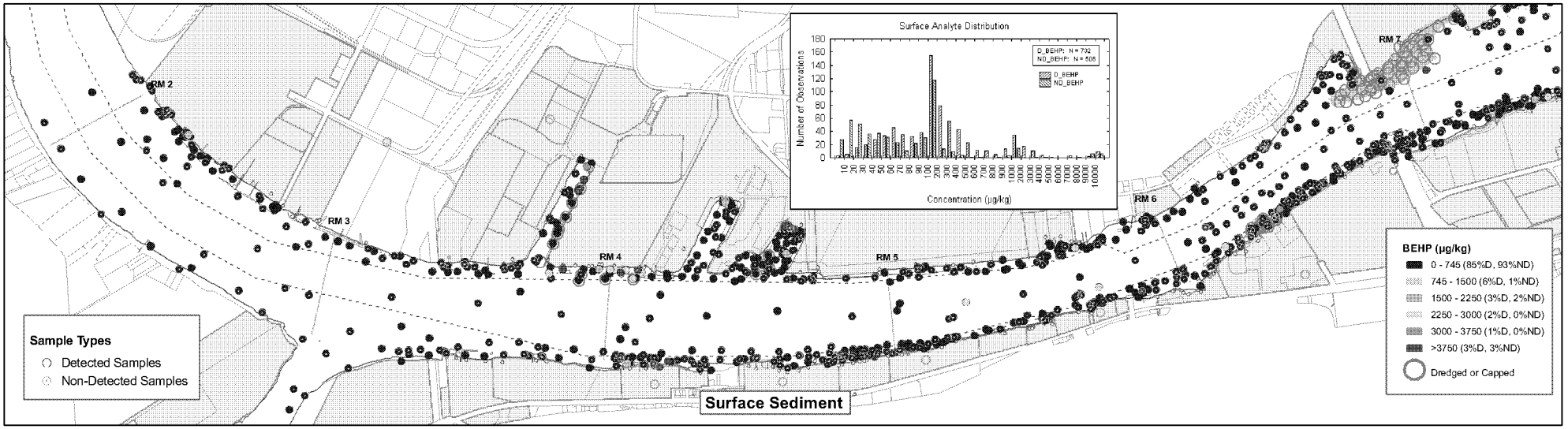
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

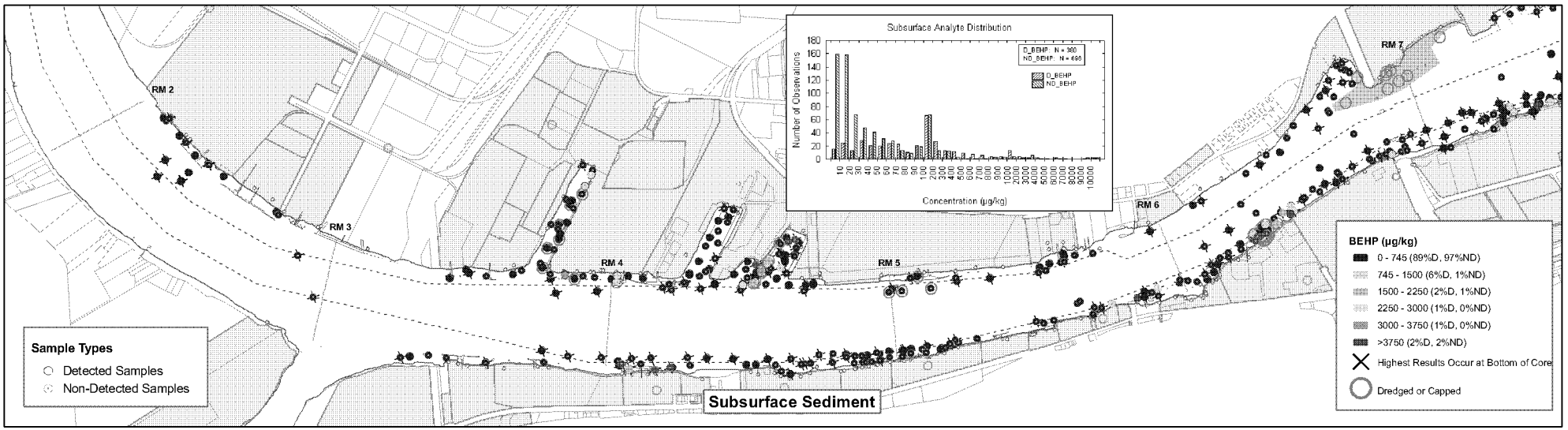
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-21a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Bis(2-ethylhexyl) phthalate (µg/kg)**

BZTO104(e)032889




integral consulting inc.

LWG Lower Willamette Group

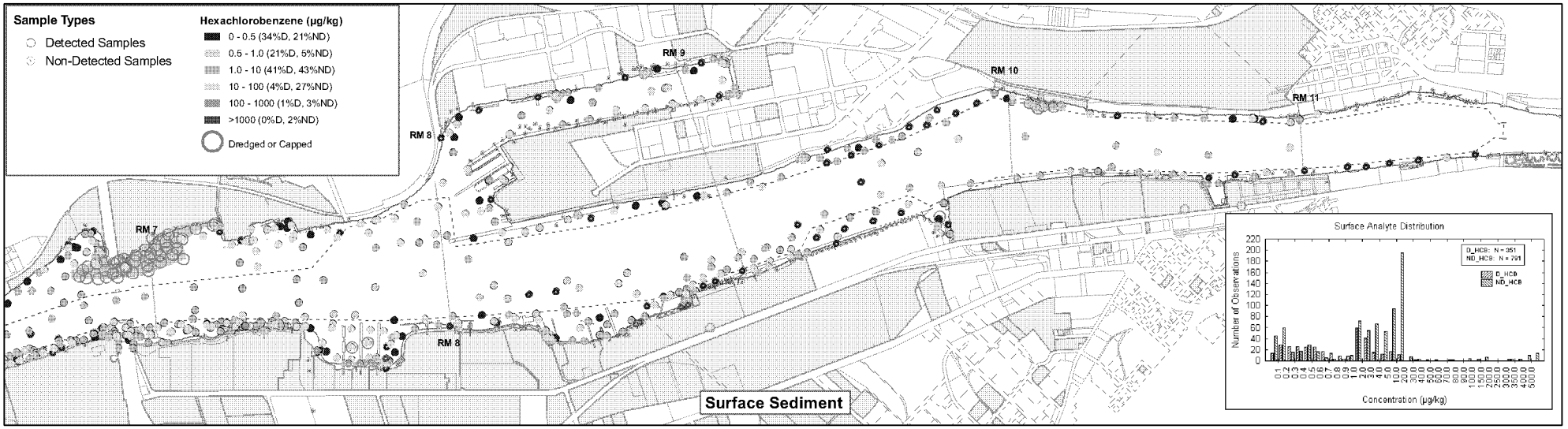
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is ≤40 cm.
Subsurface sample defined as sample top is >= 40 cm.

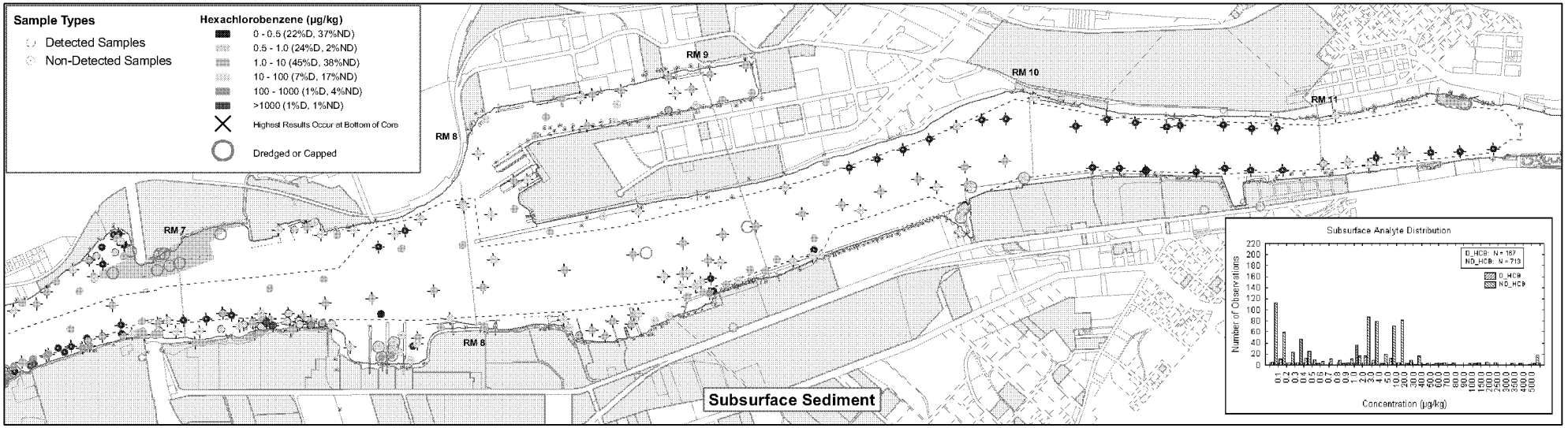
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-21b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Bis(2-ethylhexyl) phthalate (µg/kg)**

BZTO104(e)032890




integral consulting inc.

LWG Lower Willamette Group

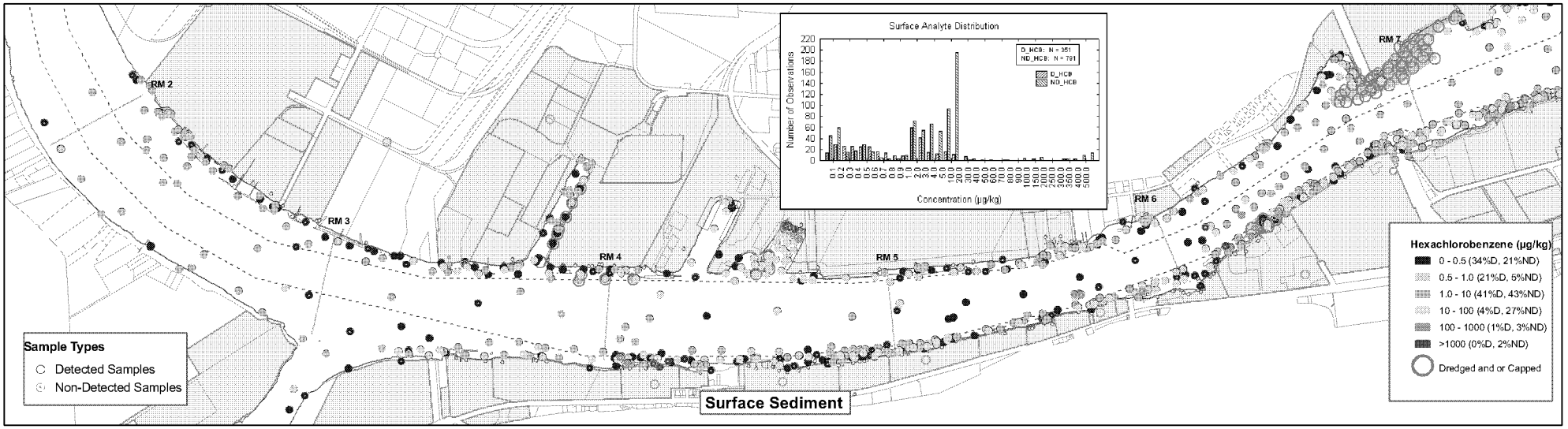
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

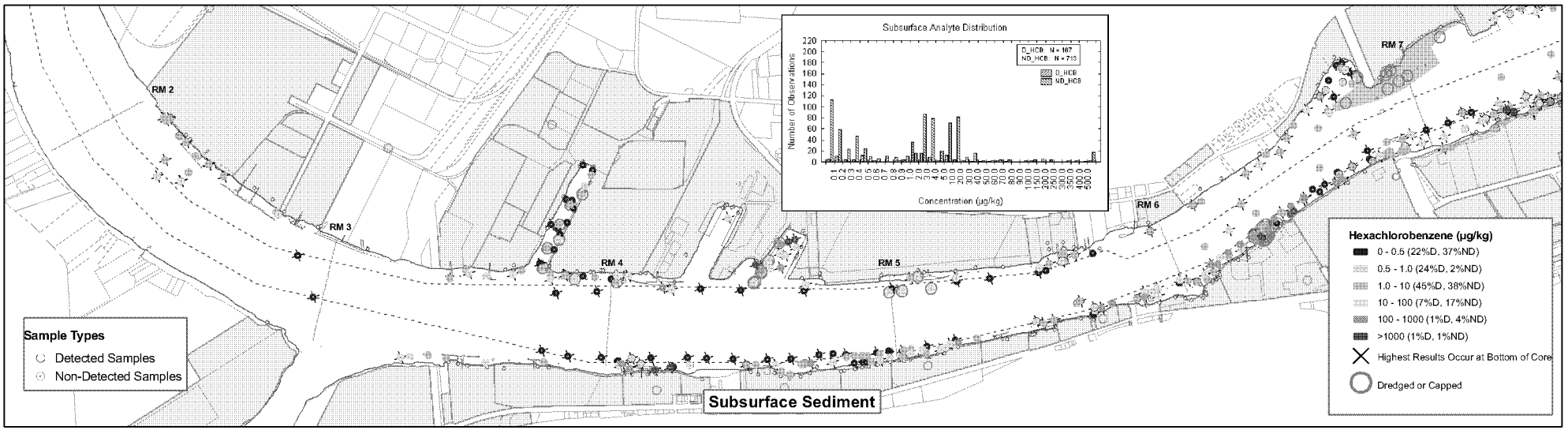
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-22a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Hexachlorobenzene (µg/kg)**

BZTO104(e)032891




integral consulting inc.

LWG Lower Willamette Group

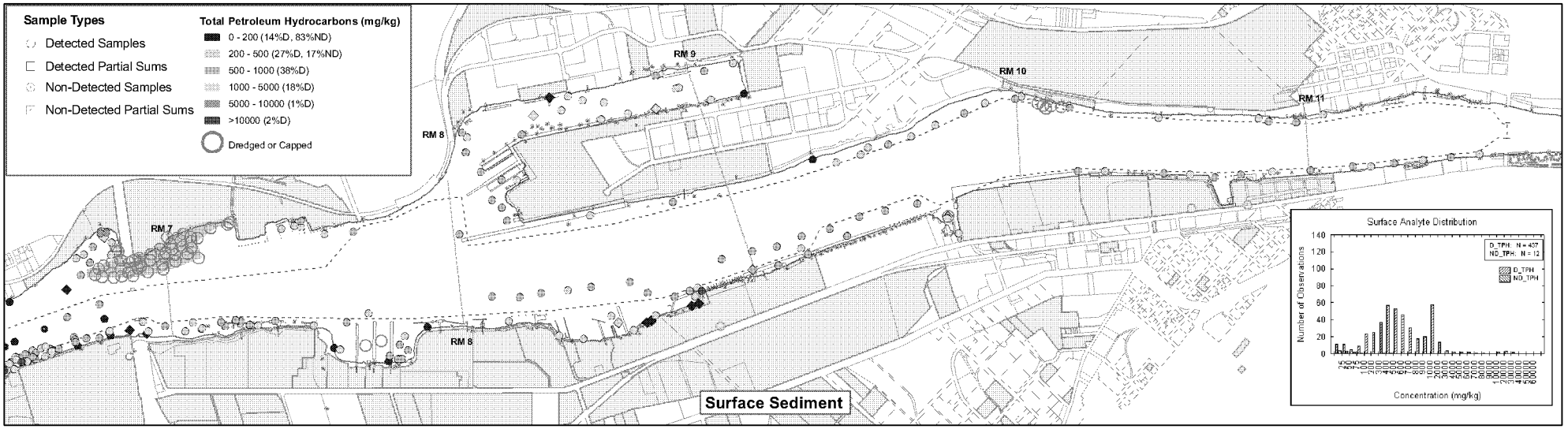
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

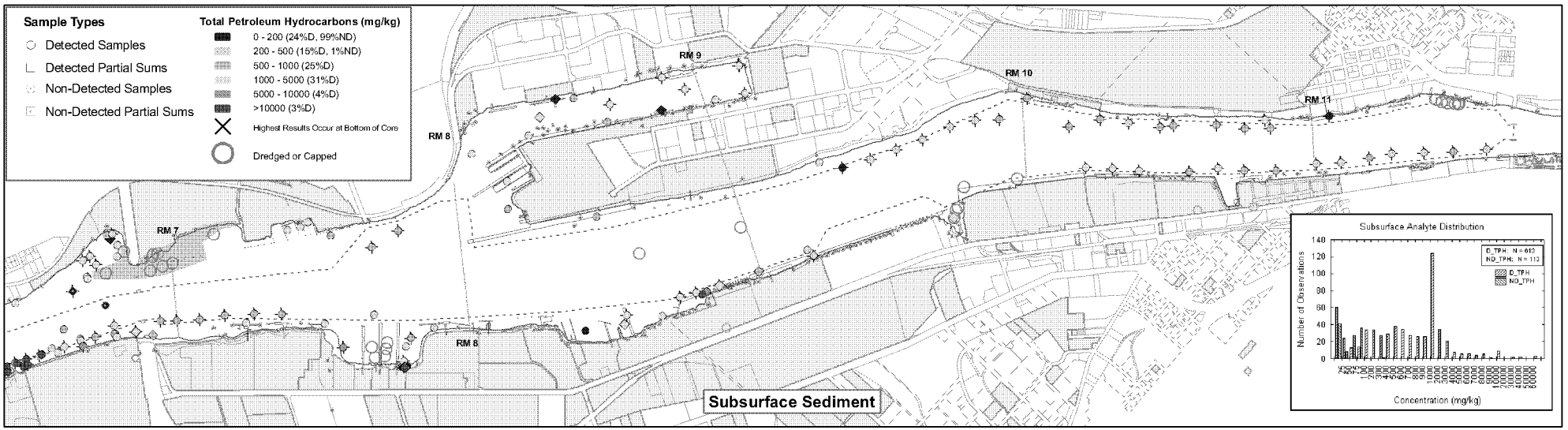
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-22b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Hexachlorobenzene (µg/kg)**

BZTO104(e)032892




integral consulting inc.

LWG Lower Willamette Group

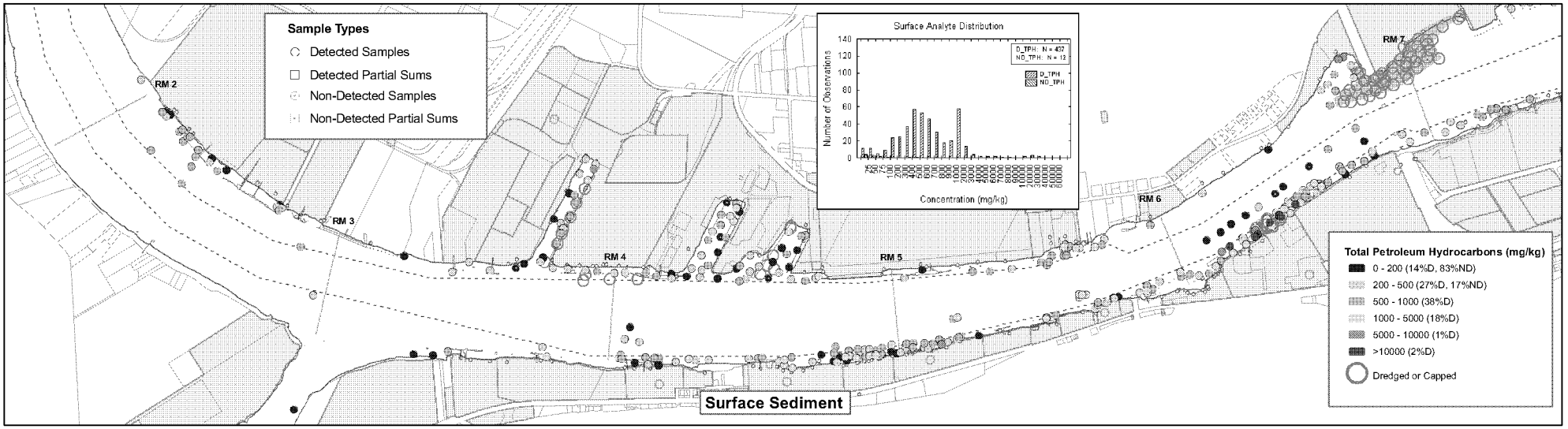
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

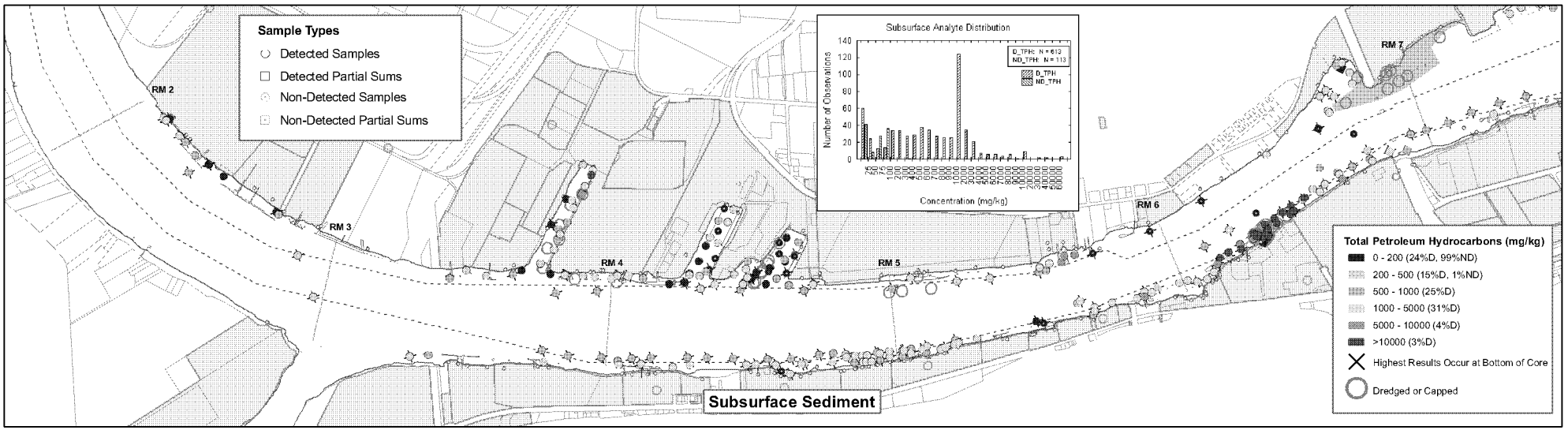
0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-23a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total Petroleum Hydrocarbons (mg/kg)**

BZTO104(e)032893




integral consulting inc.

LWG Lower Willamette Group

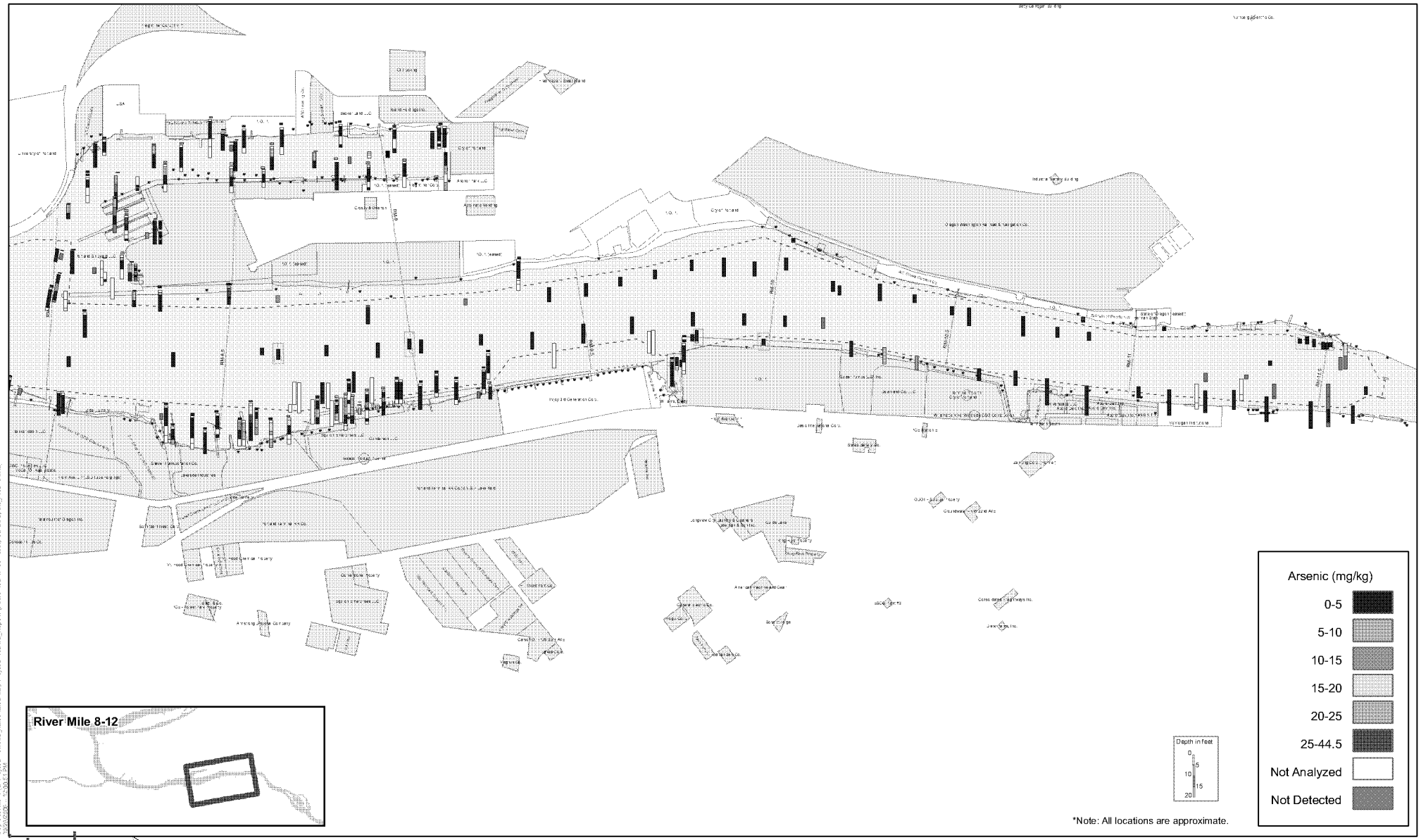
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
Surface defined as sample top = 0 and sample bottom is <40 cm.
Subsurface sample defined as sample top is >= 40 cm.

0 1,000 2,000 3,000 Feet

Outfalls
River miles
Navigation Channel
Docks and Structures
capping
Waterfront Taxlots
Upland Sites (2006)

**Map 6.1-23b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Maximum Concentrations in Surface and Subsurface Sediment**
**Total Petroleum Hydrocarbons (mg/kg)**

BZTO104(e)032894




*Note: All locations are approximate.

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

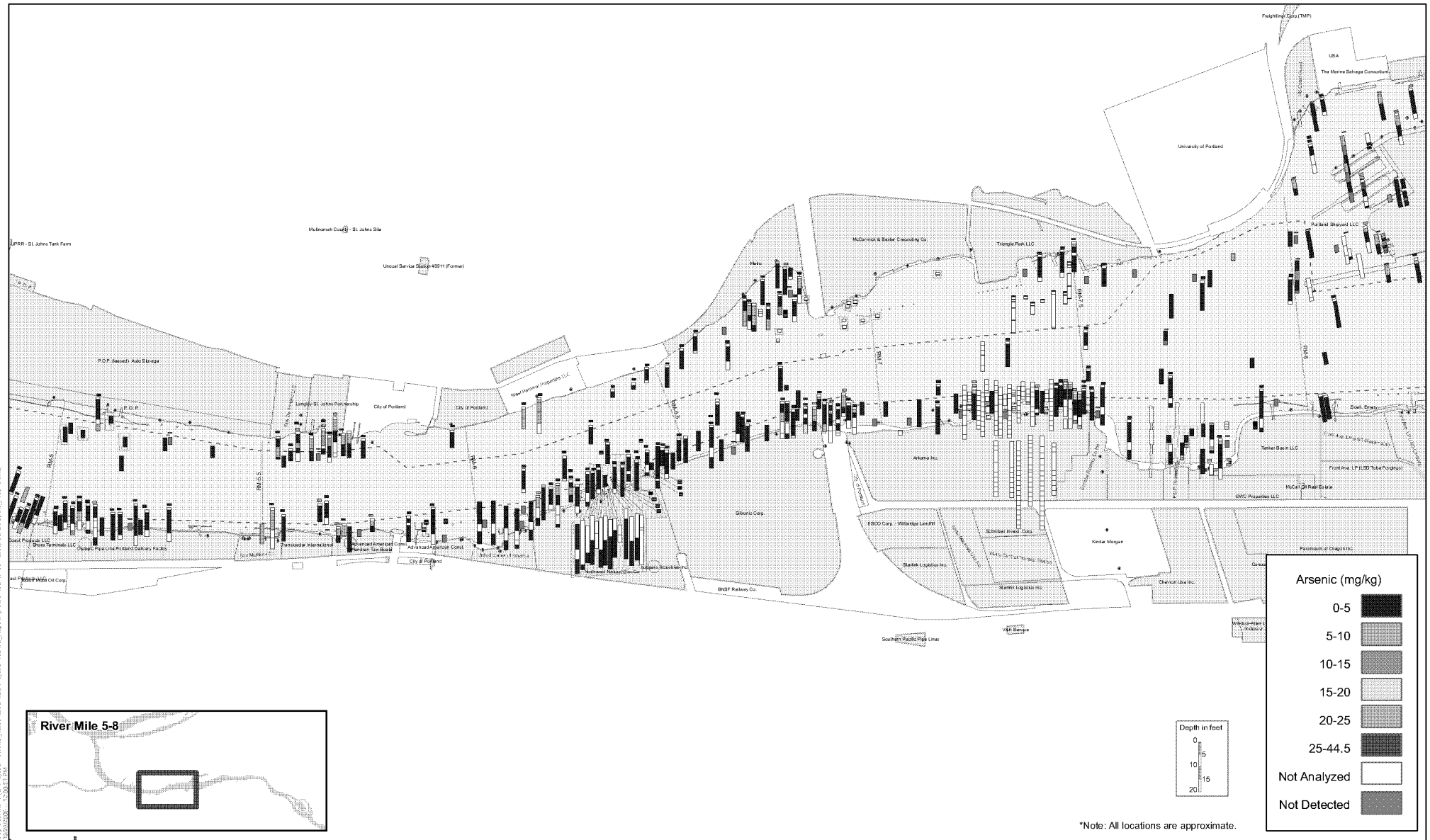
0 200 400 600 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

**Map 6.1-24a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Arsenic (mg/kg)**

BZTO104(e)032895




*Note: All locations are approximate.

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 600 800 Feet

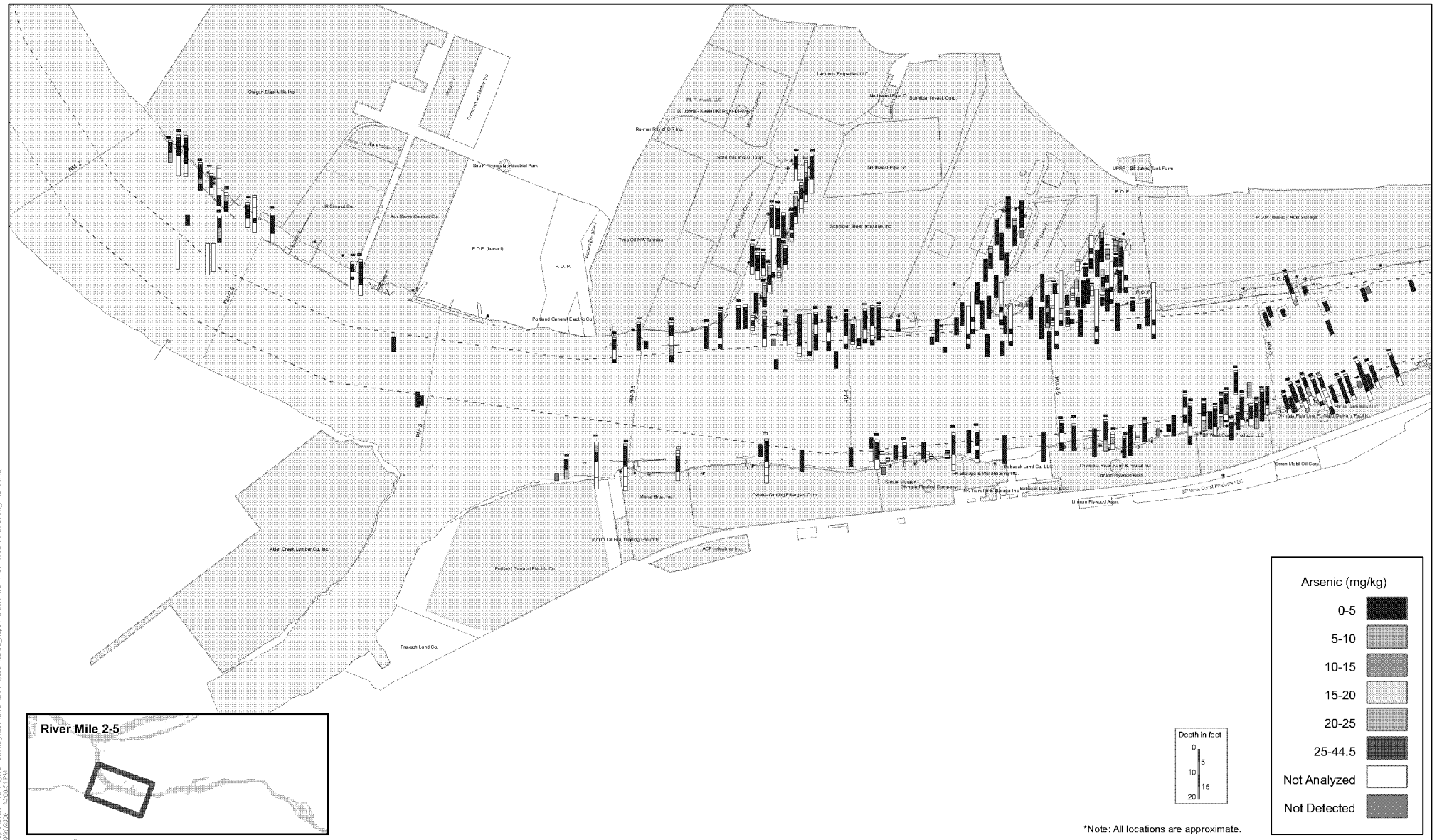
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

**Map 6.1-24b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Arsenic (mg/kg)**

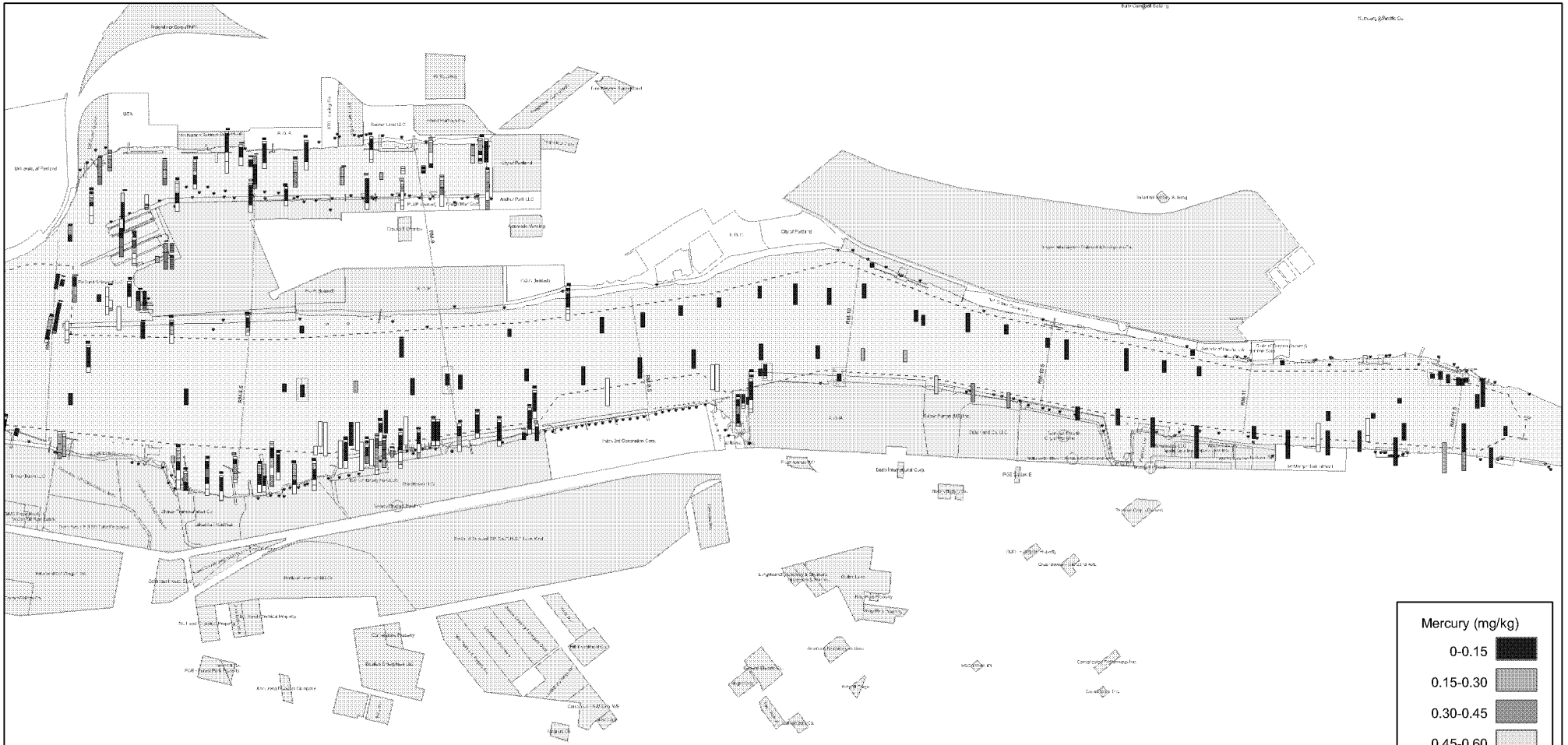
Map Document: (U:\Projects\Portland_Harbor\LWG-Maps-Projects\Round2_Report\LWG_Report_Figs\LWG_Figs\Arsenic\Overlapping_Arsenic.mxd)
10/29/2008 - 3:06:17 PM

BZTO104(e)032896




**Map 6.1-24c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Arsenic (mg/kg)**

BZTO104(e)032897




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-25a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Mercury (mg/kg)**

BZTO104(e)032898

**Map 6.1-25b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Mercury (mg/kg)**

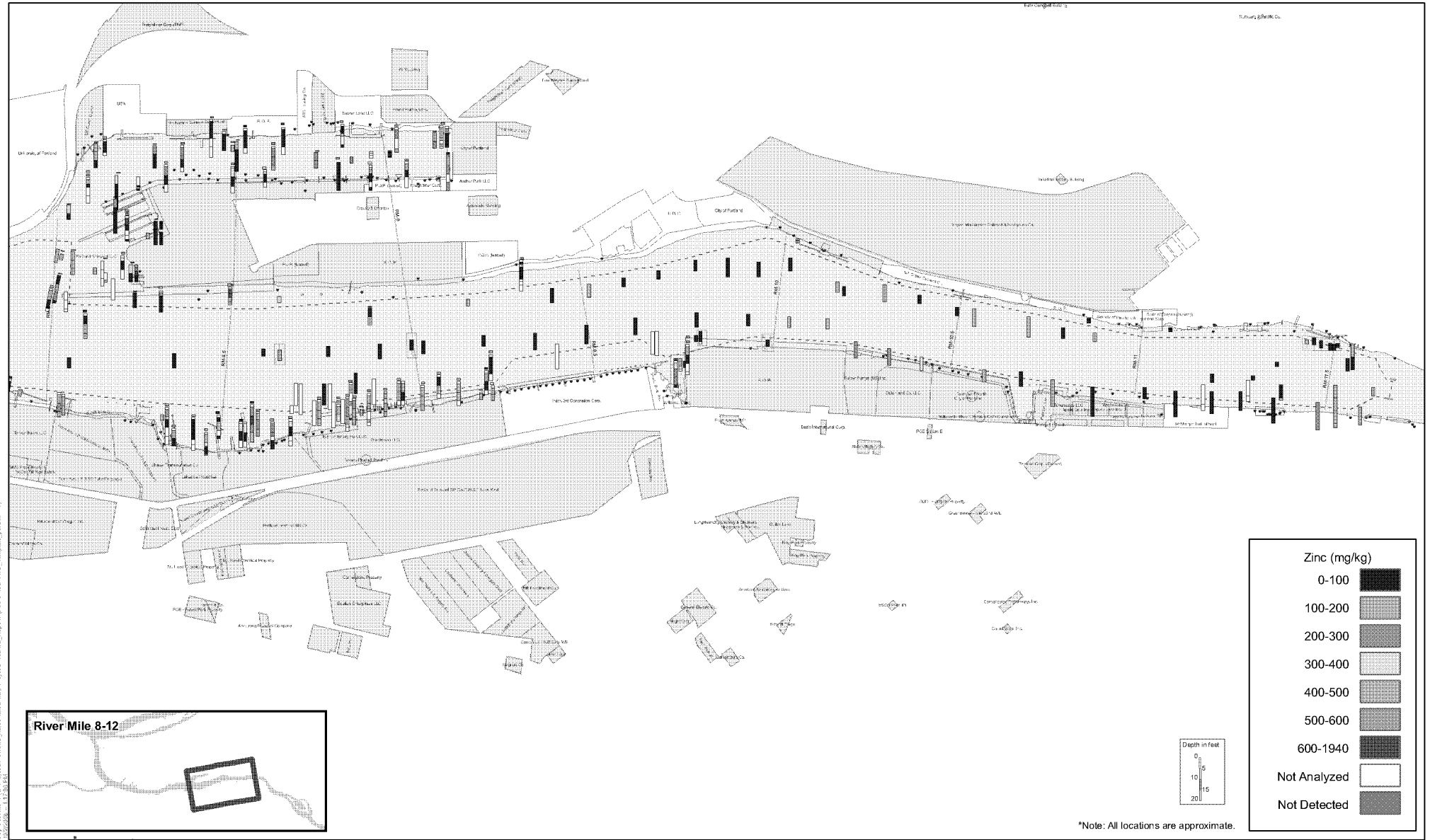
BZTO104(e)032899

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-25c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Mercury (mg/kg)**

BZTO104(e)032900




**Map 6.1-26a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Zinc (mg/kg)**

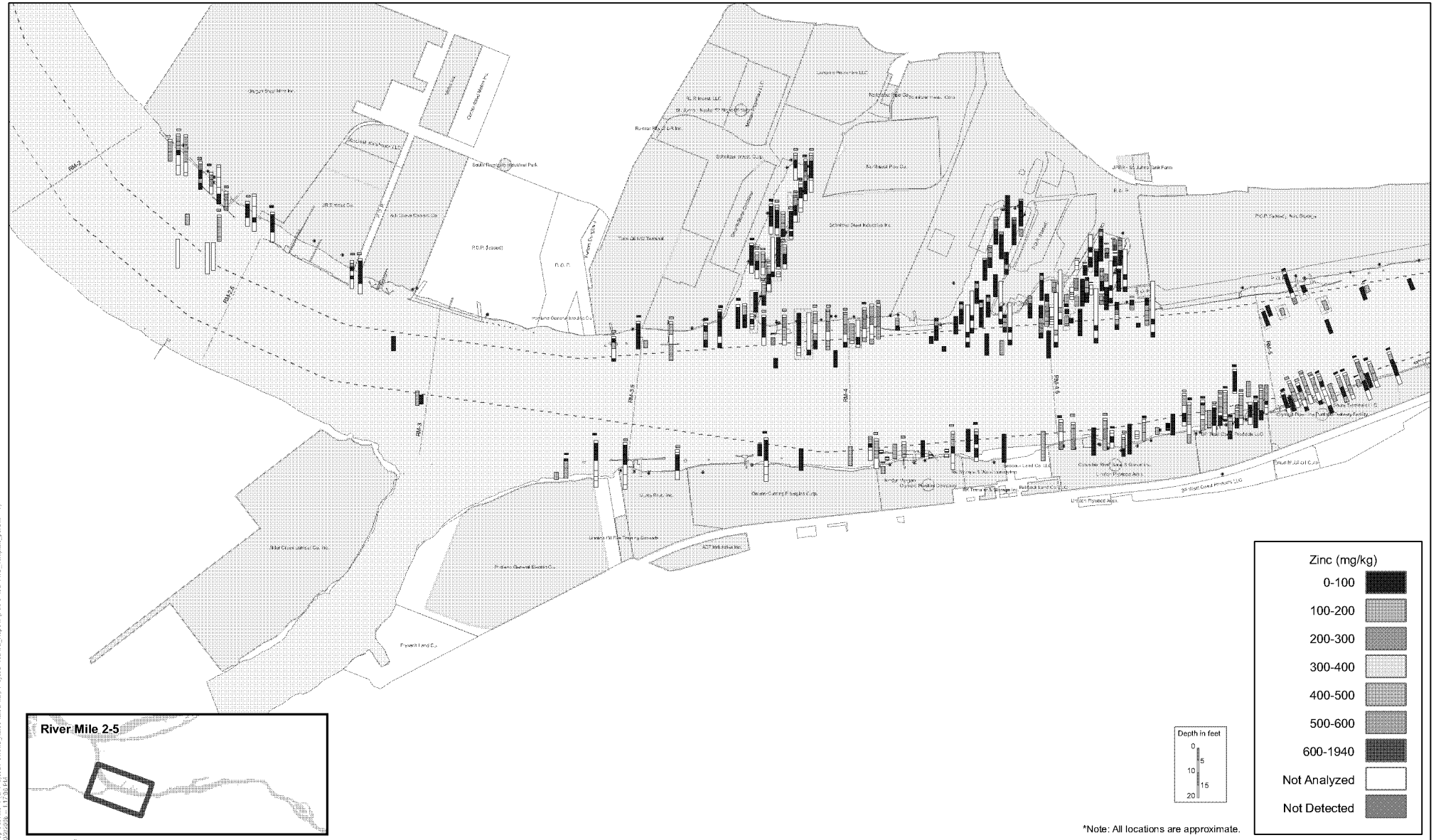
BZTO104(e)032901

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-26b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Zinc (mg/kg)**

BZTO104(e)032902




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

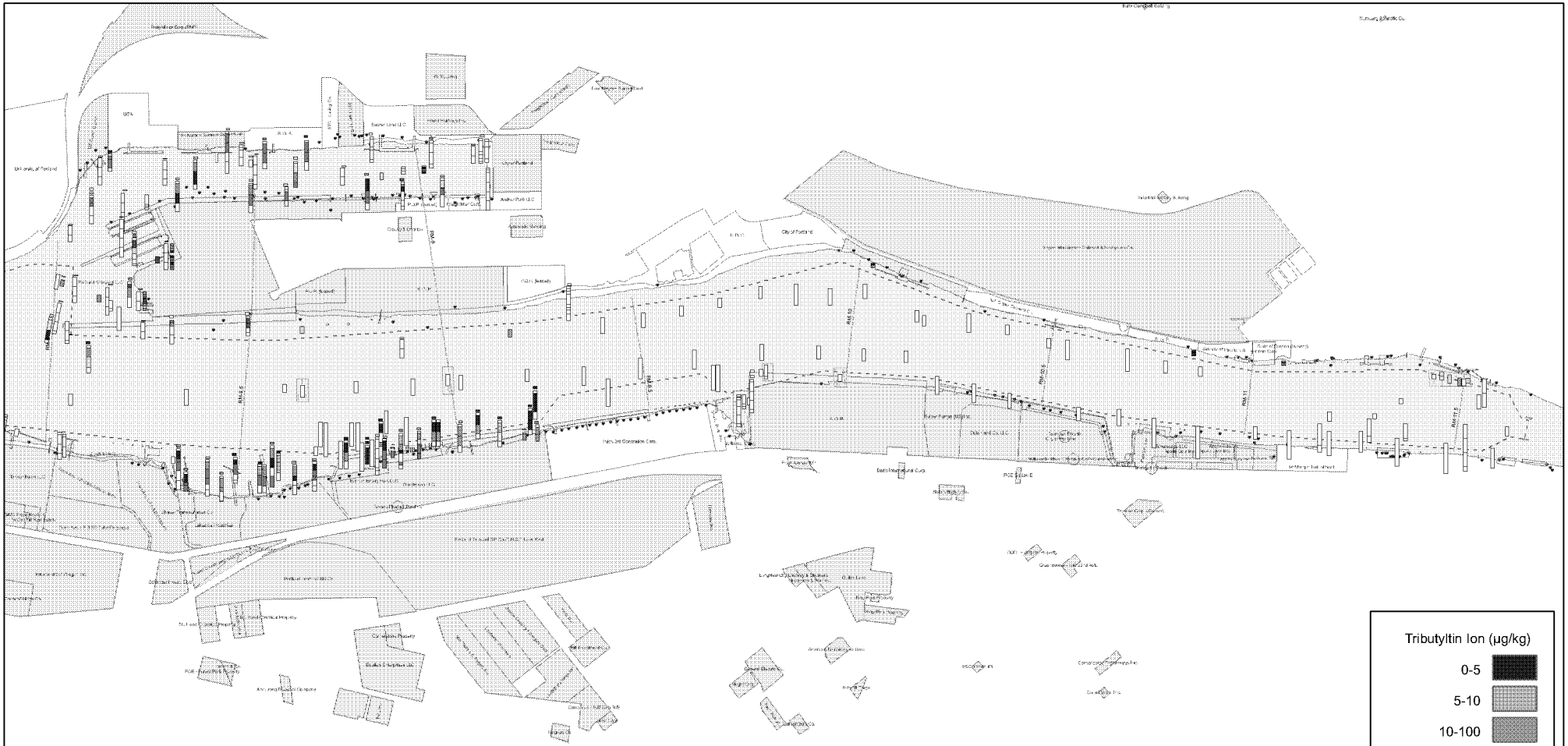
0 200 400 800 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

**Map 6.1-26c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Zinc (mg/kg)**

BZTO104(e)032903

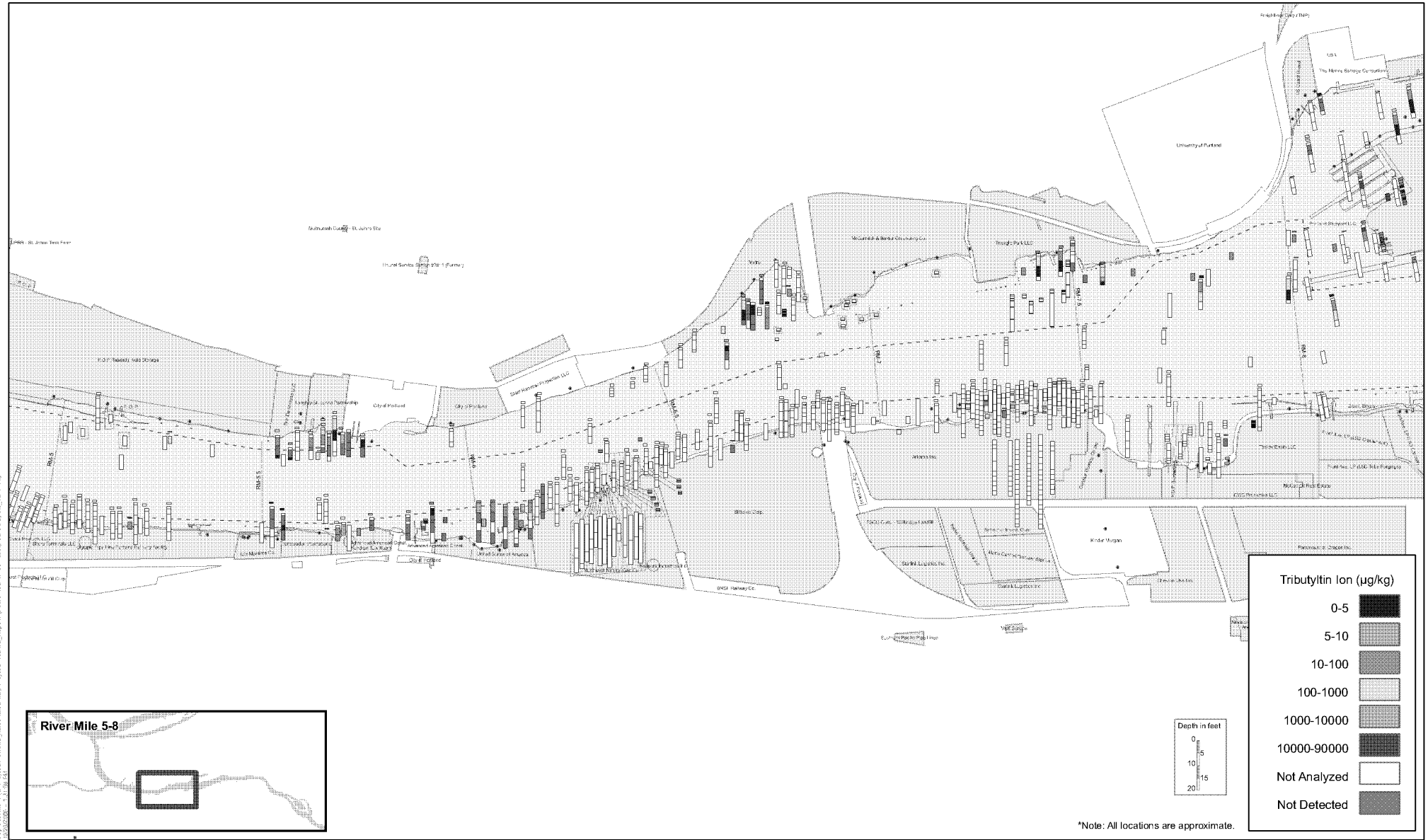



integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-27a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Tributyltin Ion (µg/kg)**

BZTO104(e)032904




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-27b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Tributyltin Ion (µg/kg)**

BZTO104(e)032905

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

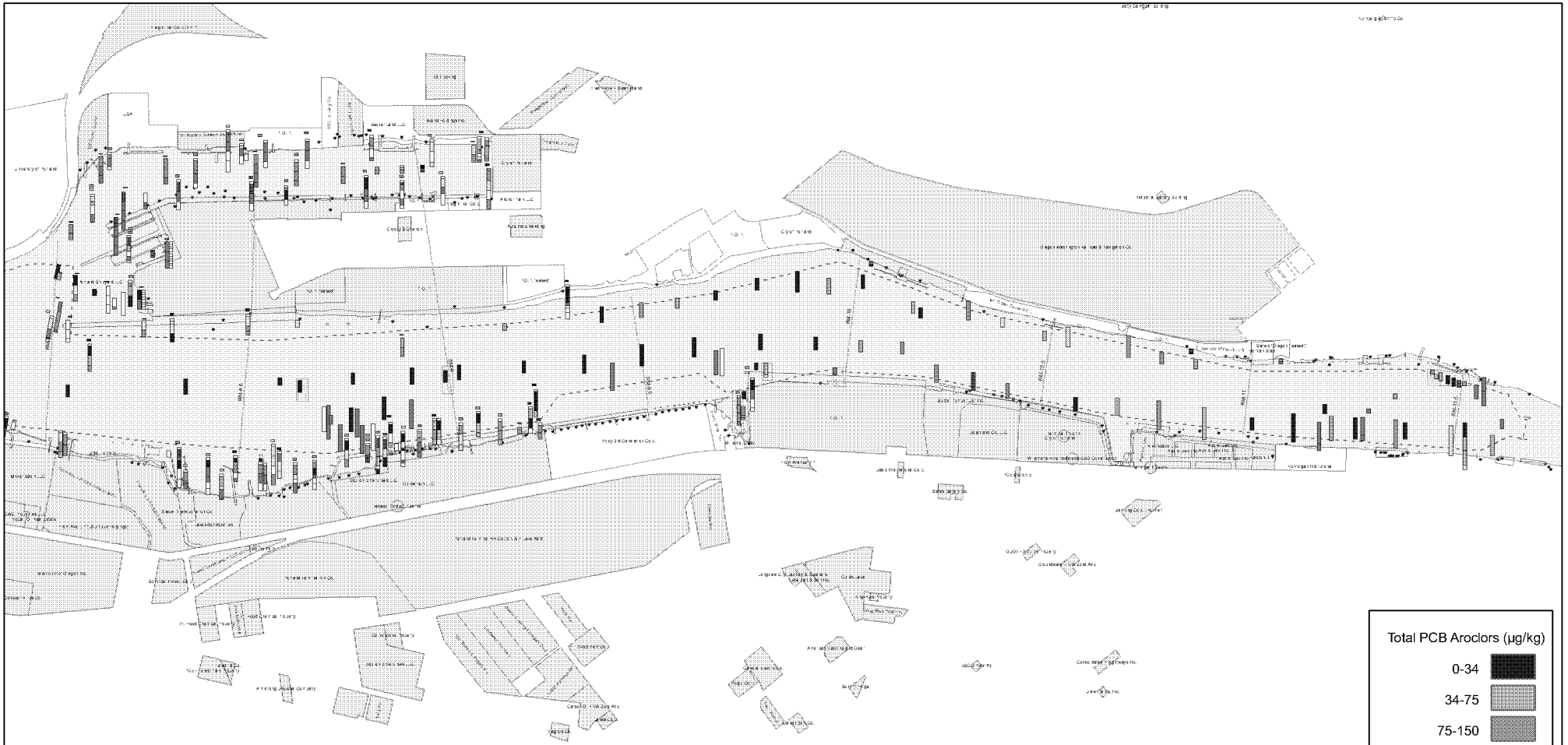
0 200 400 800 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

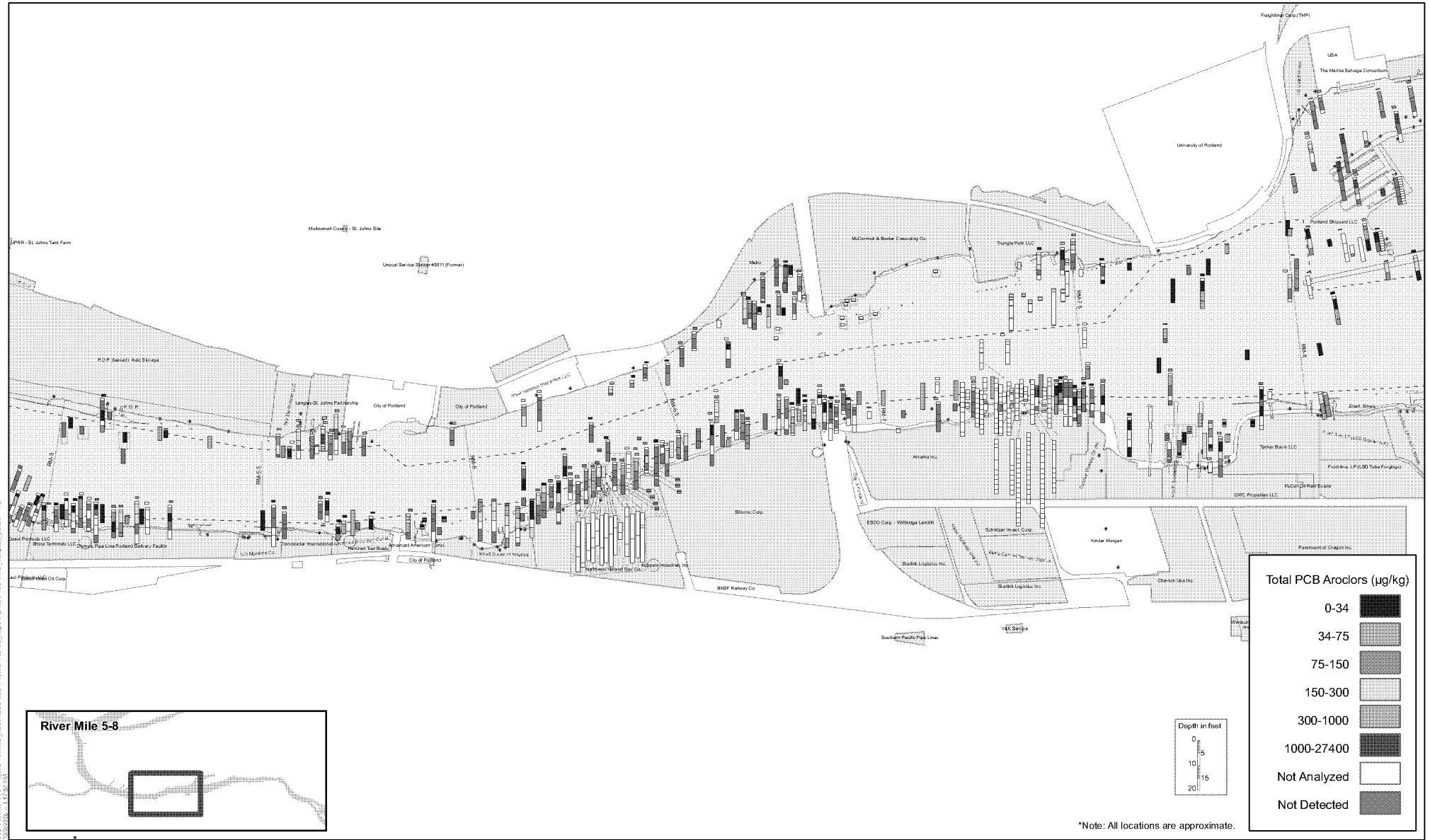
**Map 6.1-27c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Tributyltin Ion (µg/kg)**

BZTO104(e)032906




**Map 6.1-28a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total PCB Aroclors (µg/kg)**

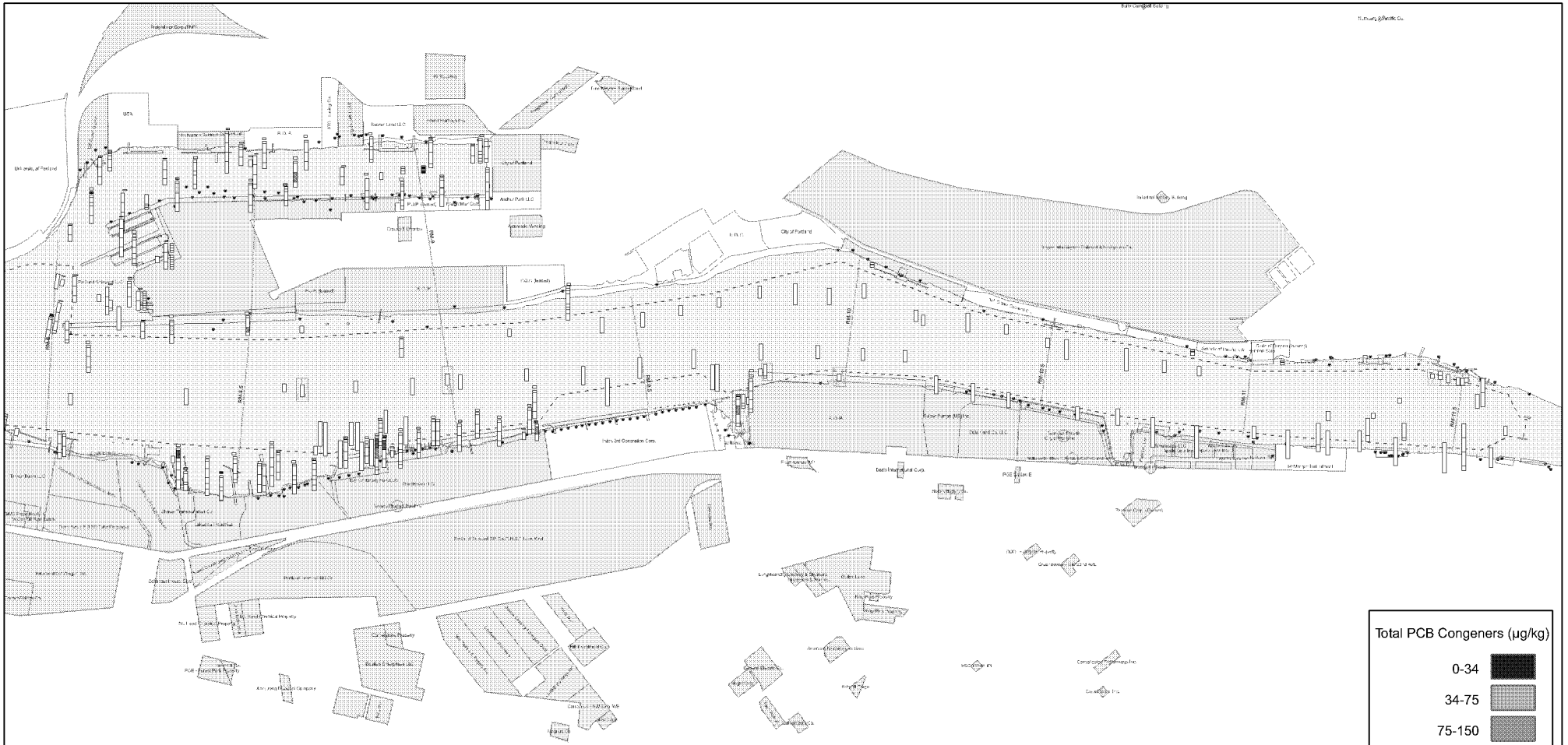
BZTO104(e)032907




**Map 6.1-28b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total PCB Aroclors (µg/kg)**

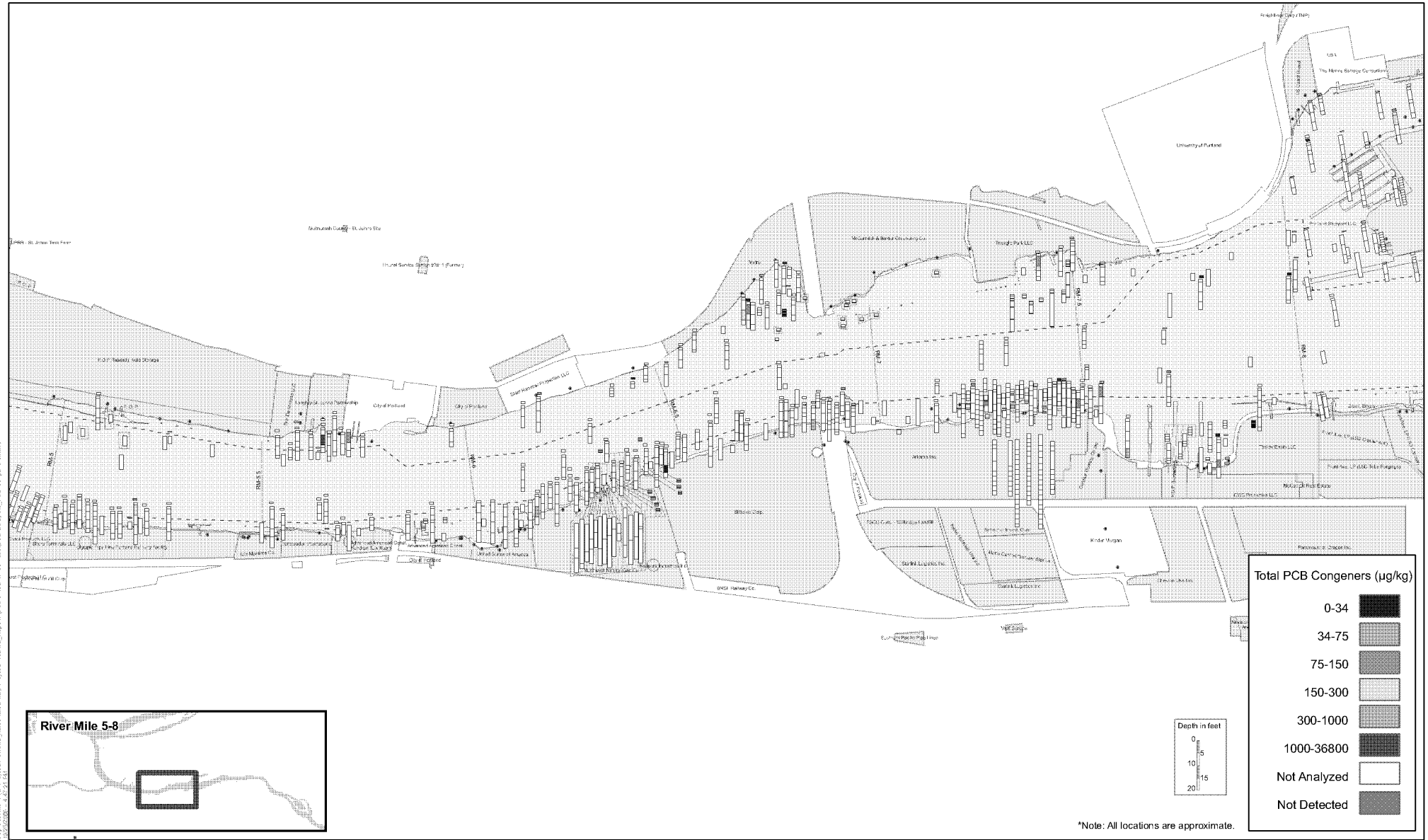
BZTO104(e)032908

BZTO104(e)032909




**Map 6.1-29a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total PCB Congeners (µg/kg)**

BZTO104(e)032910




integral consulting inc.

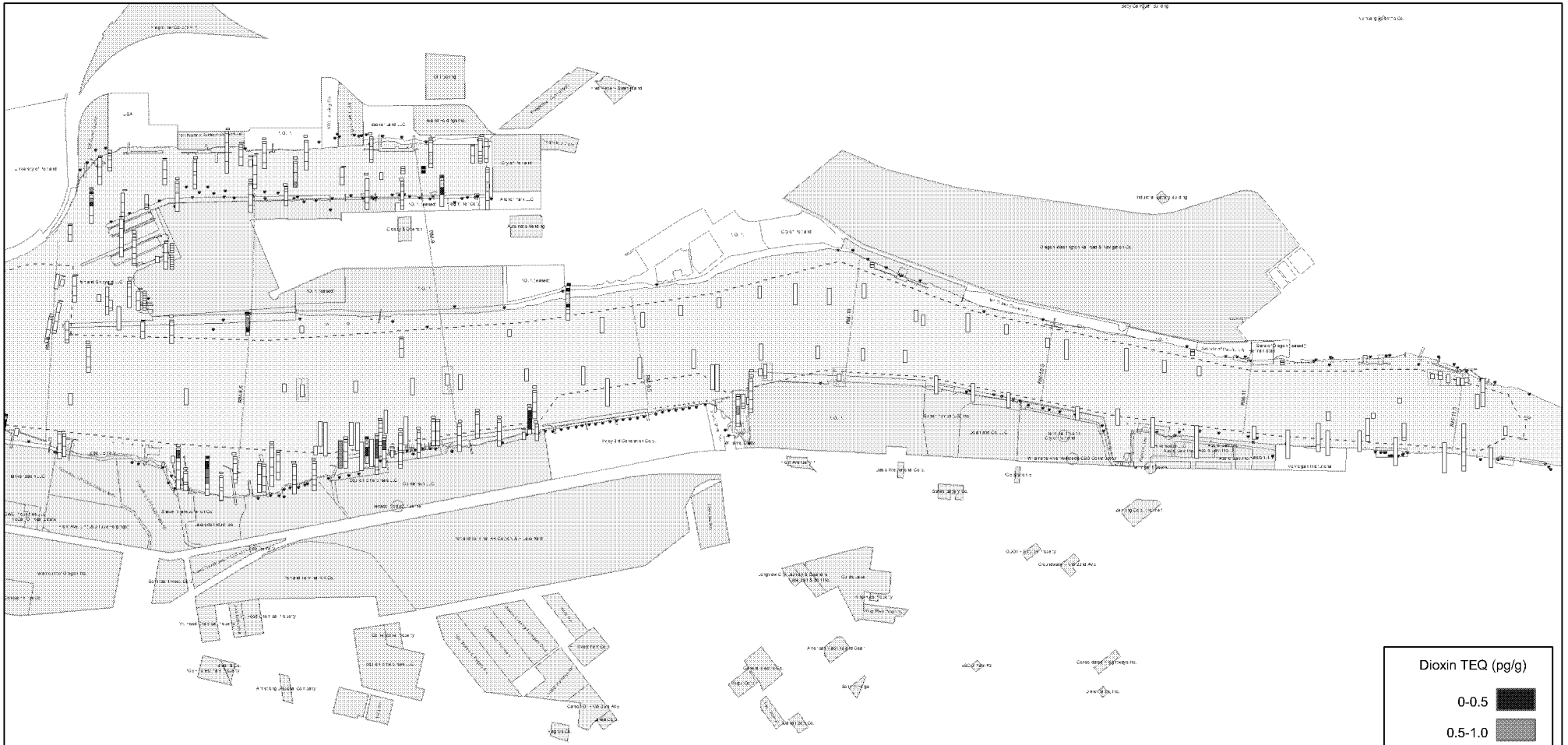
LWG LOWER WILLAMETTE GROUP

**Map 6.1-29b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total PCB Congeners (µg/kg)**

BZTO104(e)032911

**Map 6.1-29c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total PCB Congeners (µg/kg)**

BZTO104(e)032912

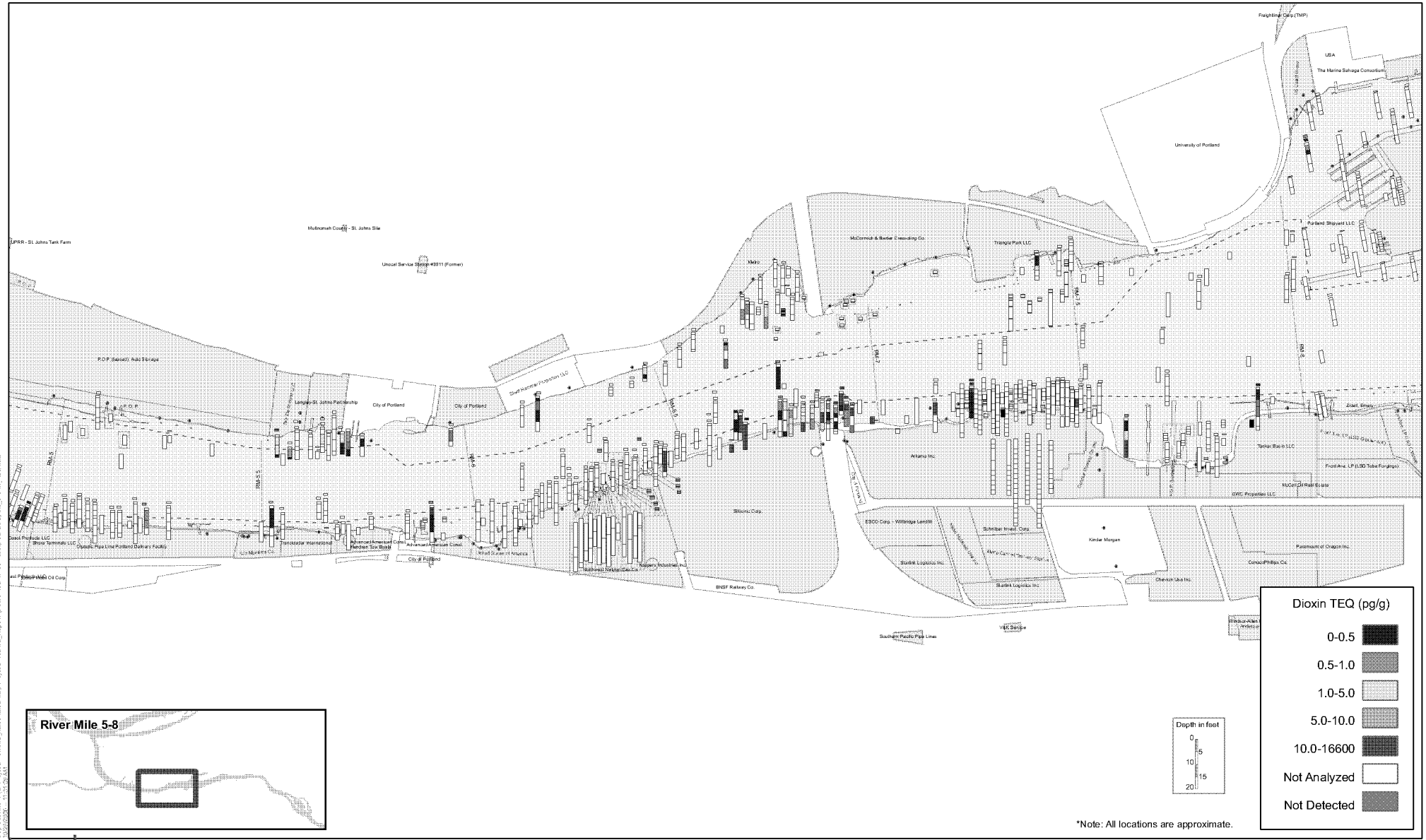



integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-30a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Dioxin 2,3,7,8-TCDD Toxicity Equivalence (pg/g)**

BZTO104(e)032913




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 600 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

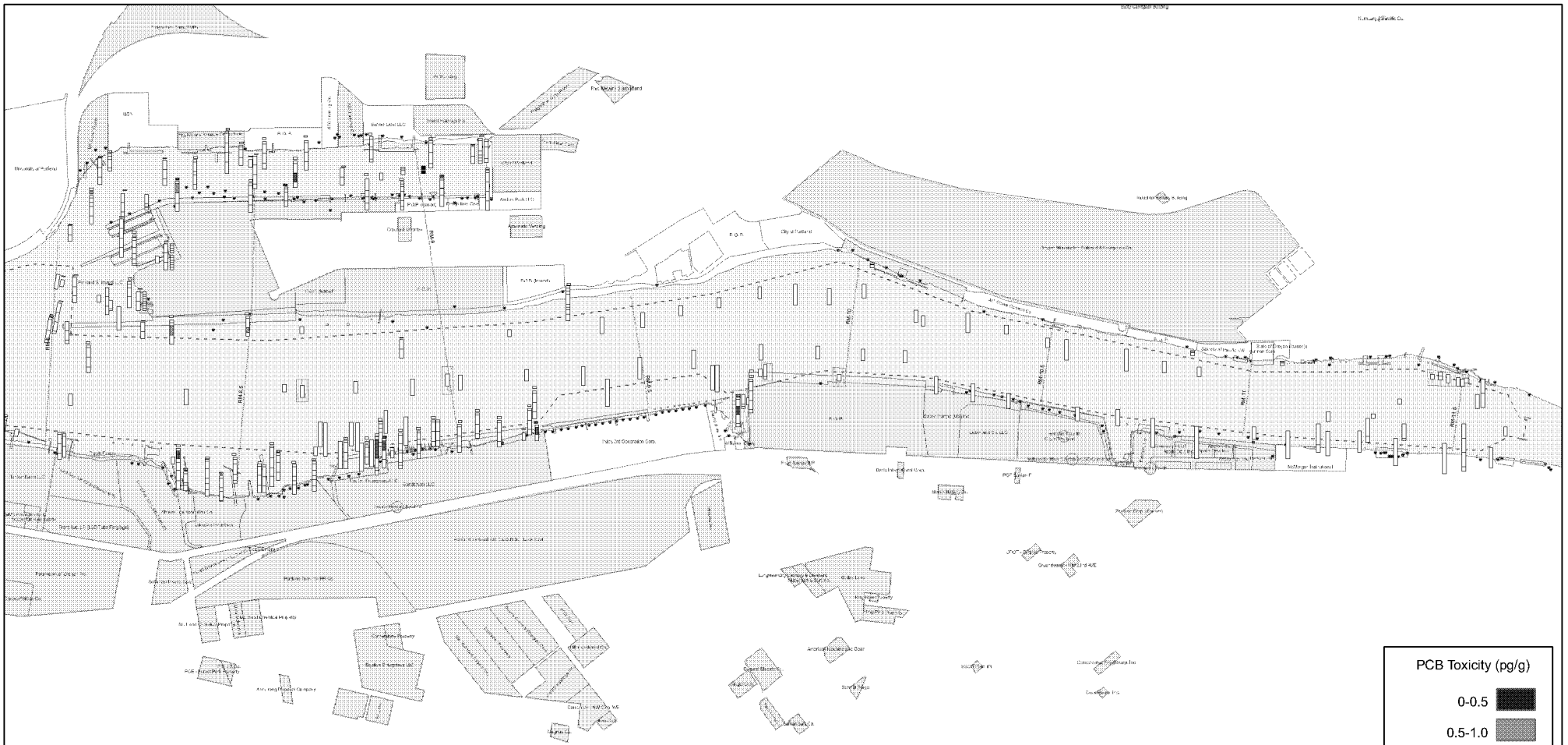
**Map 6.1-30b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Dioxin 2,3,7,8-TCDD Toxicity Equivalence (pg/g)**

Map Document: (U:\Projects\Portland_Harbor\LWG-Maps-Projects\Round2_Report\Figures\Data\MXDs - ecomodeler\Overlayers_Dioxin_TEQ.mxd)
10/29/2013 - 11:39:39 AM

BZTO104(e)032914

**Map 6.1-30c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Dioxin 2,3,7,8-TCDD Toxicity Equivalence (pg/g)**

BZTO104(e)032915




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-31a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total PCB 2,3,7,8-TCDD TEQ (pg/g)**

BZTO104(e)032916

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-31b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total PCB 2,3,7,8-TCDD TEQ (pg/g)**

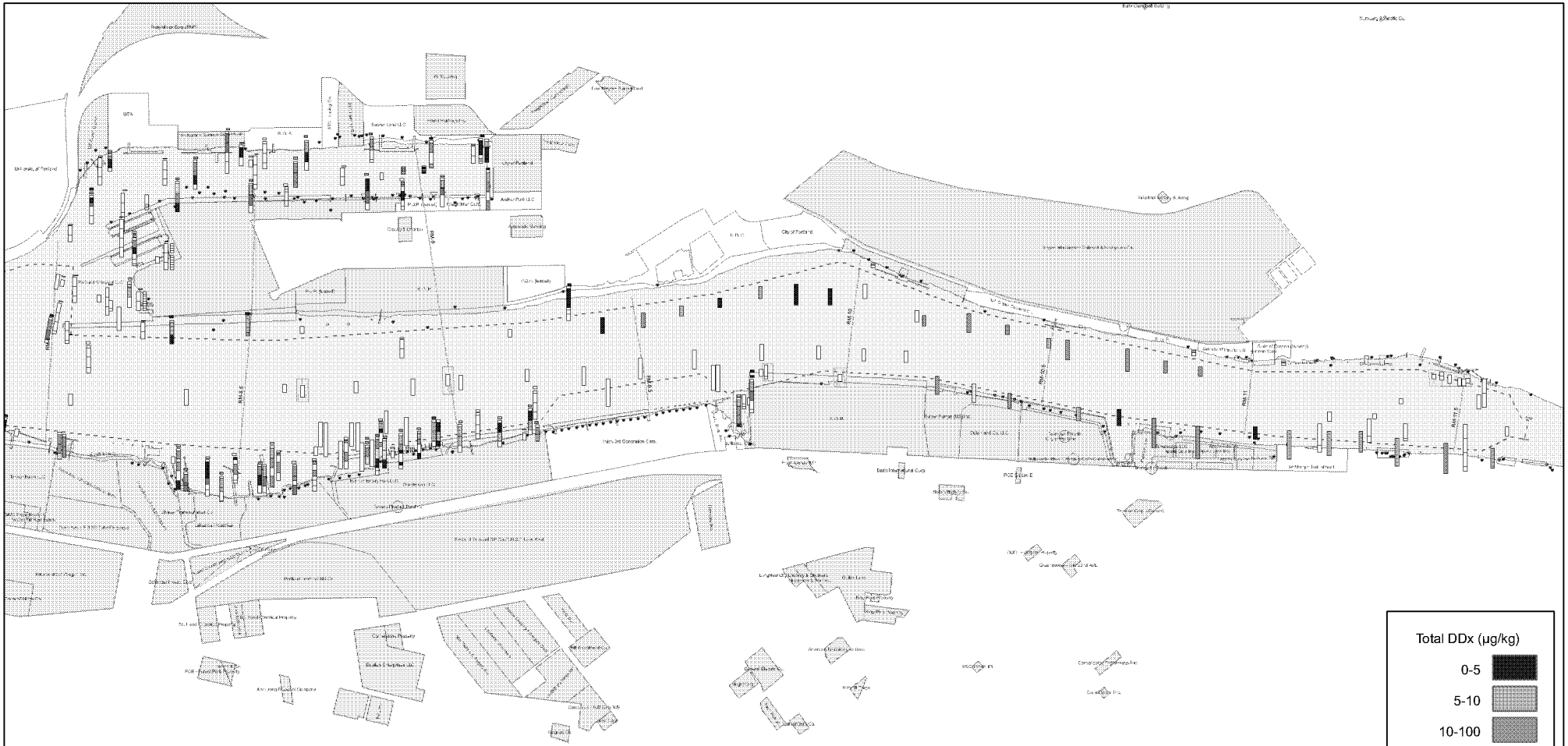
BZTO104(e)032917

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-31c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total PCB 2,3,7,8-TCDD TEQ (pg/g)**

BZTO104(e)032918




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-32a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total of 2,4'- and 4,4'- DDD, DDE, DDT (µg/kg)**

BZTO104(e)032919

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-32b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total of 2,4'- and 4,4'- DDD, DDE, DDT (µg/kg)**

BZTO104(e)032920

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

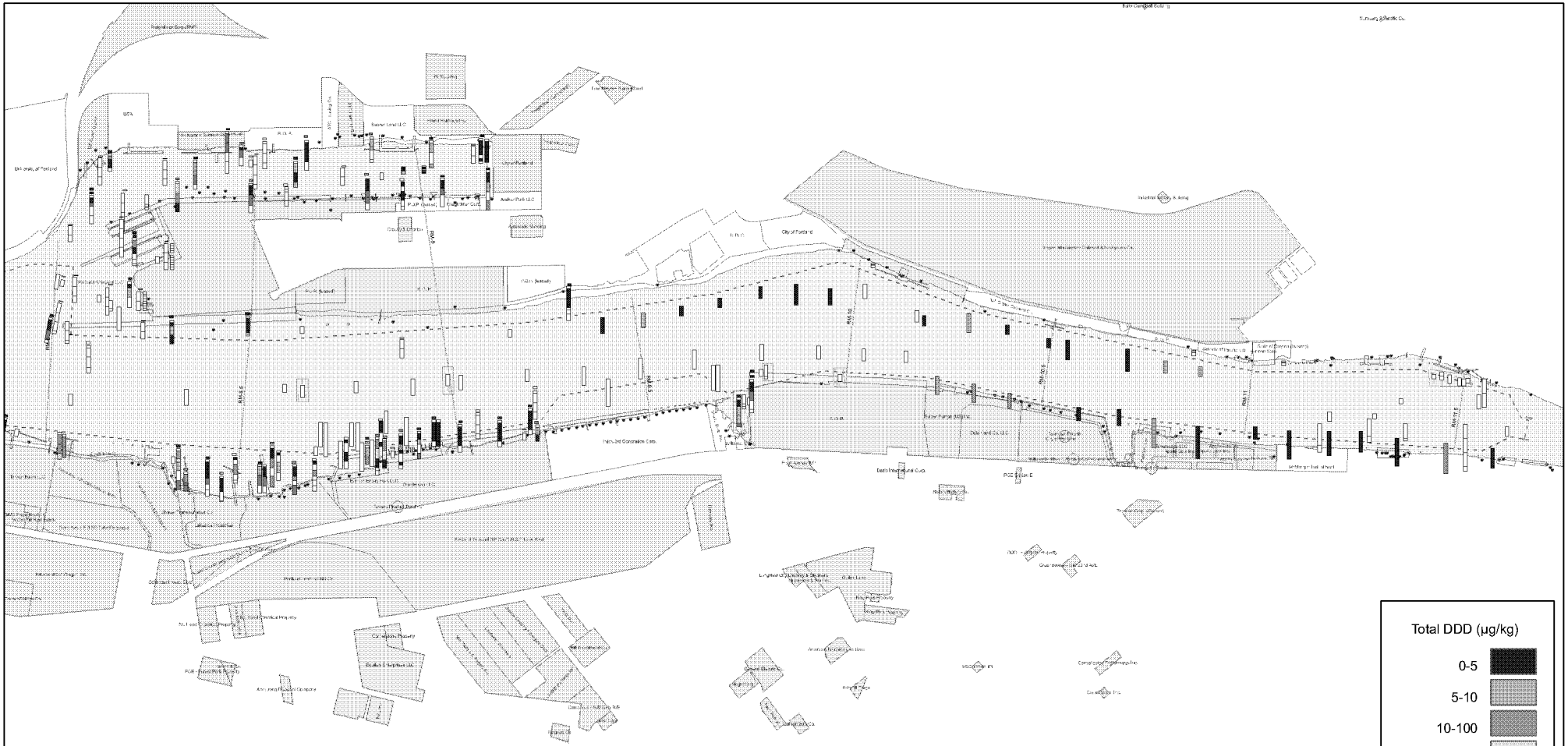
0 200 400 800 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

**Map 6.1-32c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total of 2,4'- and 4,4'- DDD, DDE, DDT (µg/kg)**

BZTO104(e)032921




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-33a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total of 2,4'- and 4,4'-DDD (µg/kg)**

BZTO104(e)032922

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 800 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

**Map 6.1-33b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total of 2,4'- and 4,4'-DDD (µg/kg)**

BZTO104(e)032923

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

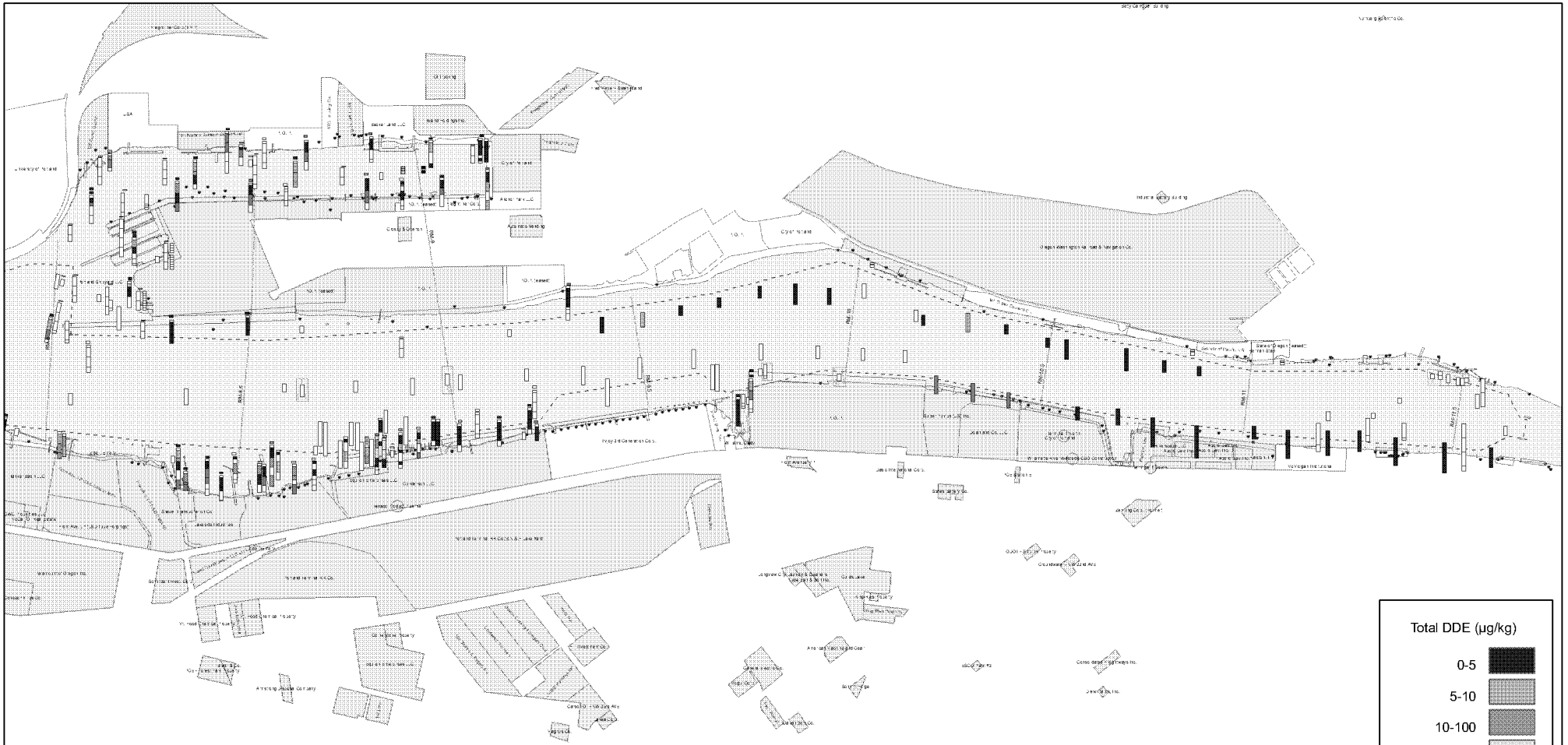
0 200 400 800 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

**Map 6.1-33c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total of 2,4'- and 4,4'-DDD (µg/kg)**

BZTO104(e)032924




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-34a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total of 2,4'- and 4,4'-DDE (µg/kg)**

BZTO104(e)032925

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 800 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

**Map 6.1-34b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total of 2,4'- and 4,4'-DDE (µg/kg)**

BZTO104(e)032926

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

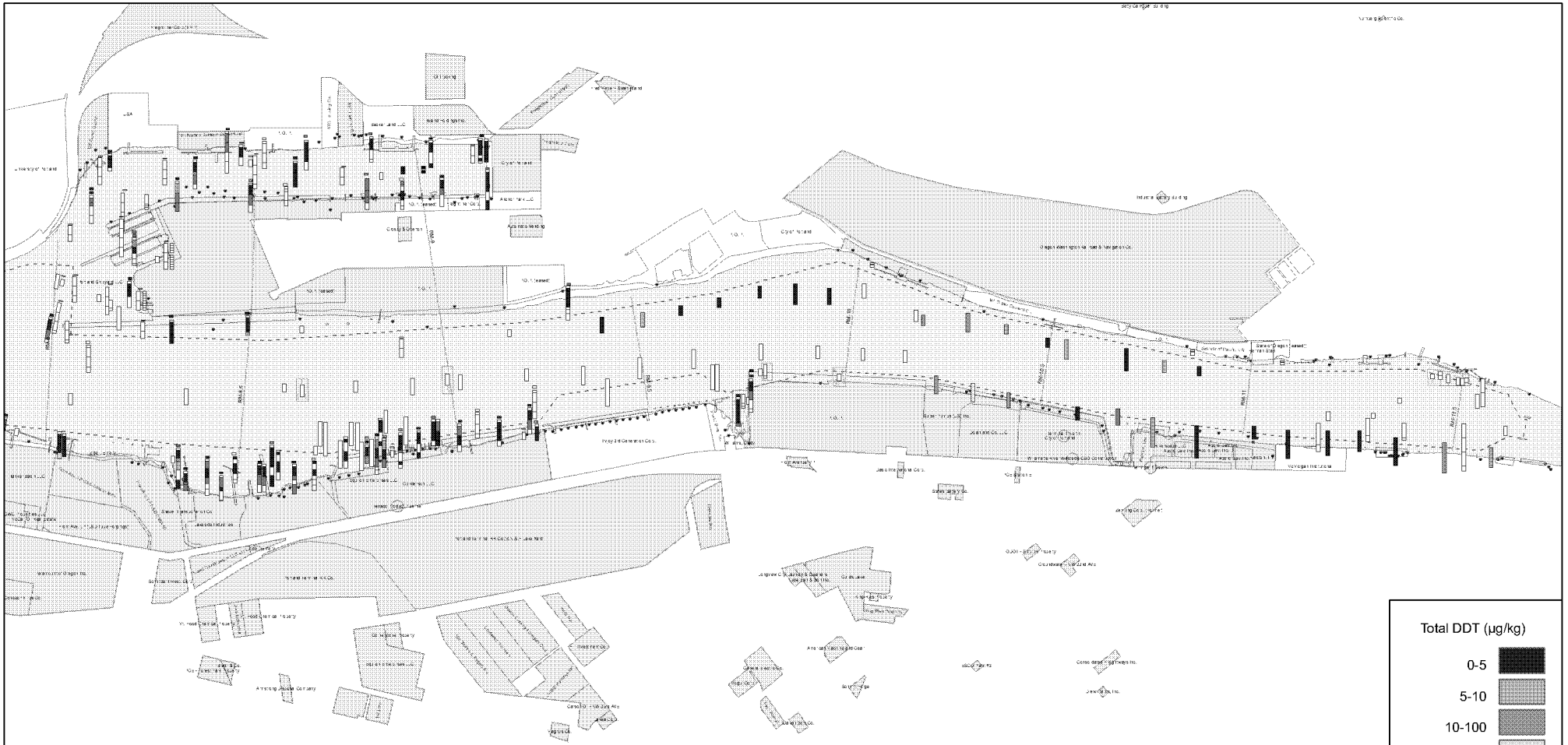
0 200 400 800 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

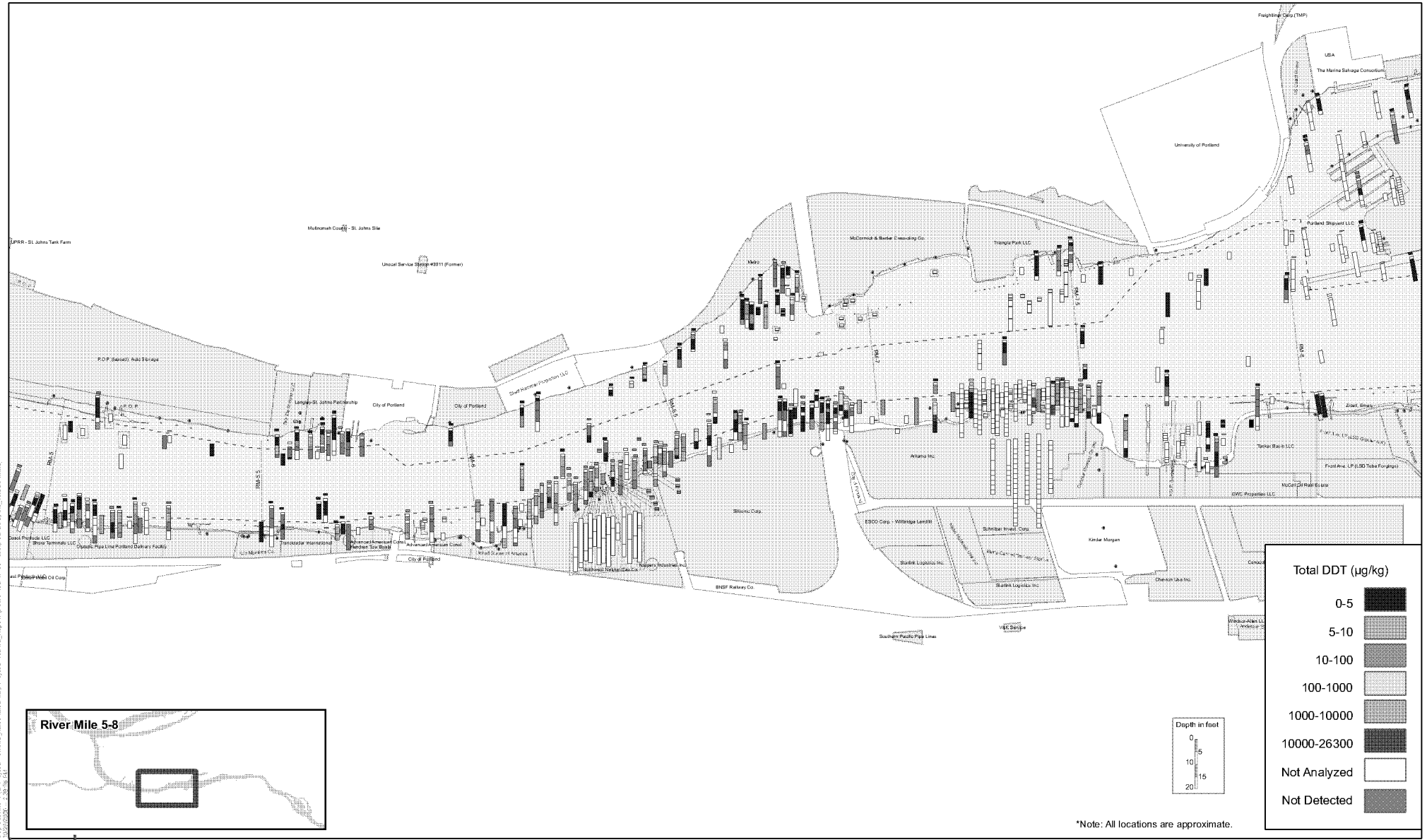
**Map 6.1-34c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total of 2,4'- and 4,4'-DDE (µg/kg)**

BZTO104(e)032927




**Map 6.1-35a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total of 2,4'- and 4,4'-DDT (µg/kg)**

BZTO104(e)032928




**Map 6.1-35b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total of 2,4'- and 4,4'-DDT (µg/kg)**

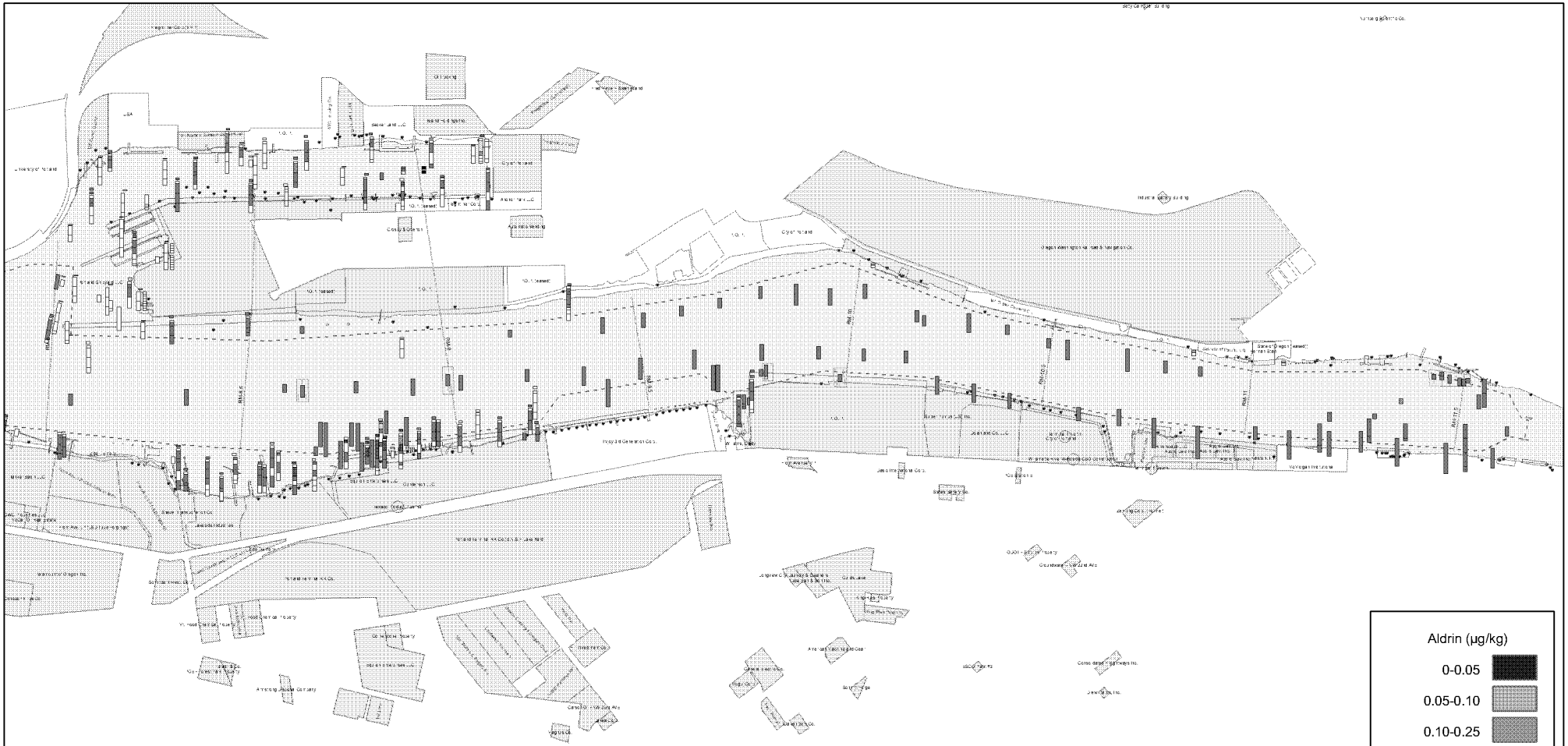
BZTO104(e)032929

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-35c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total of 2,4'- and 4,4'-DDT (µg/kg)**

BZTO104(e)032930




**Map 6.1-36a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Aldrin (µg/kg)**

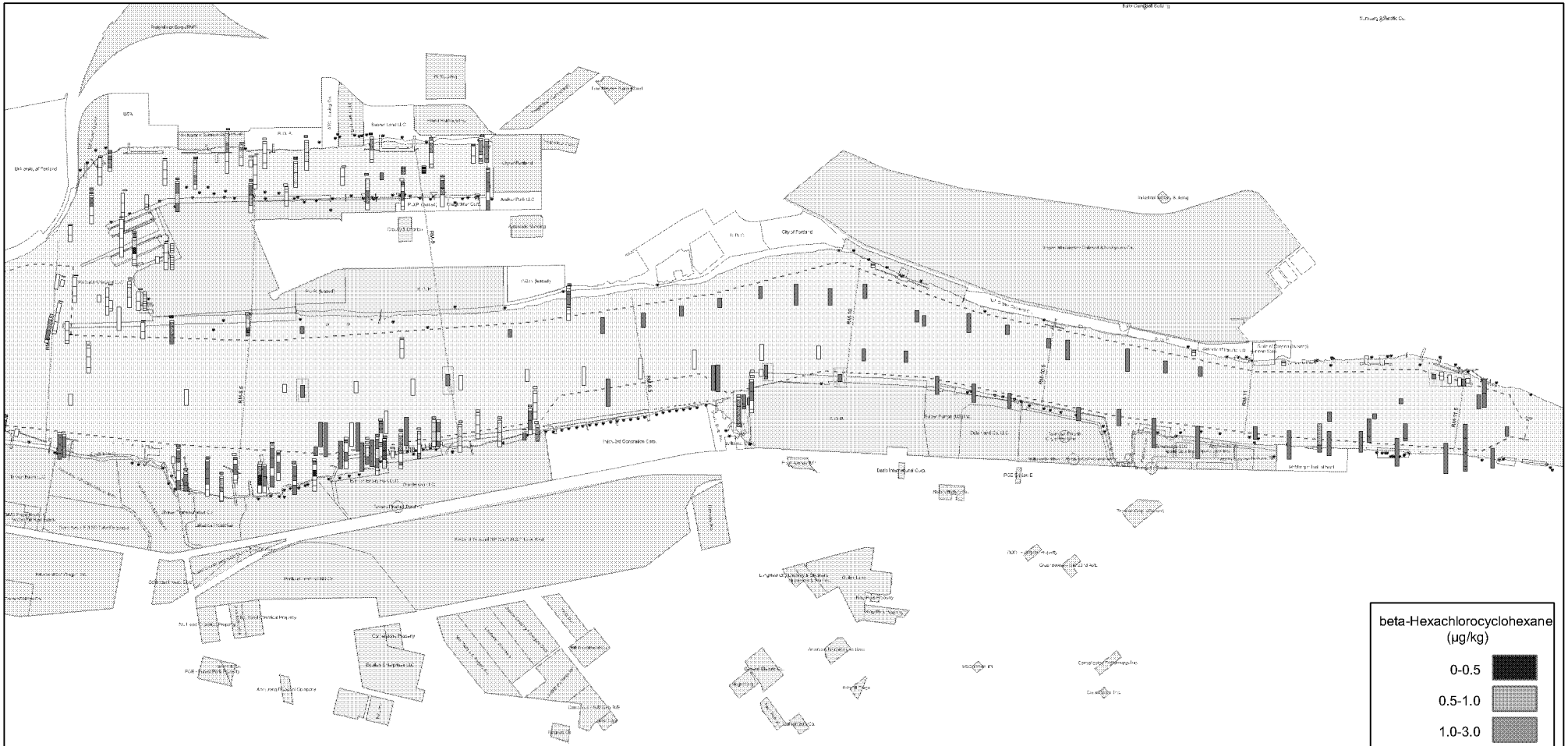
BZTO104(e)032931

**Map 6.1-36b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Aldrin (µg/kg)**

BZTO104(e)032932

**Map 6.1-36c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Aldrin (µg/kg)**

BZTO104(e)032933




**Map 6.1-37a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**beta-Hexachlorocyclohexane (µg/kg)**

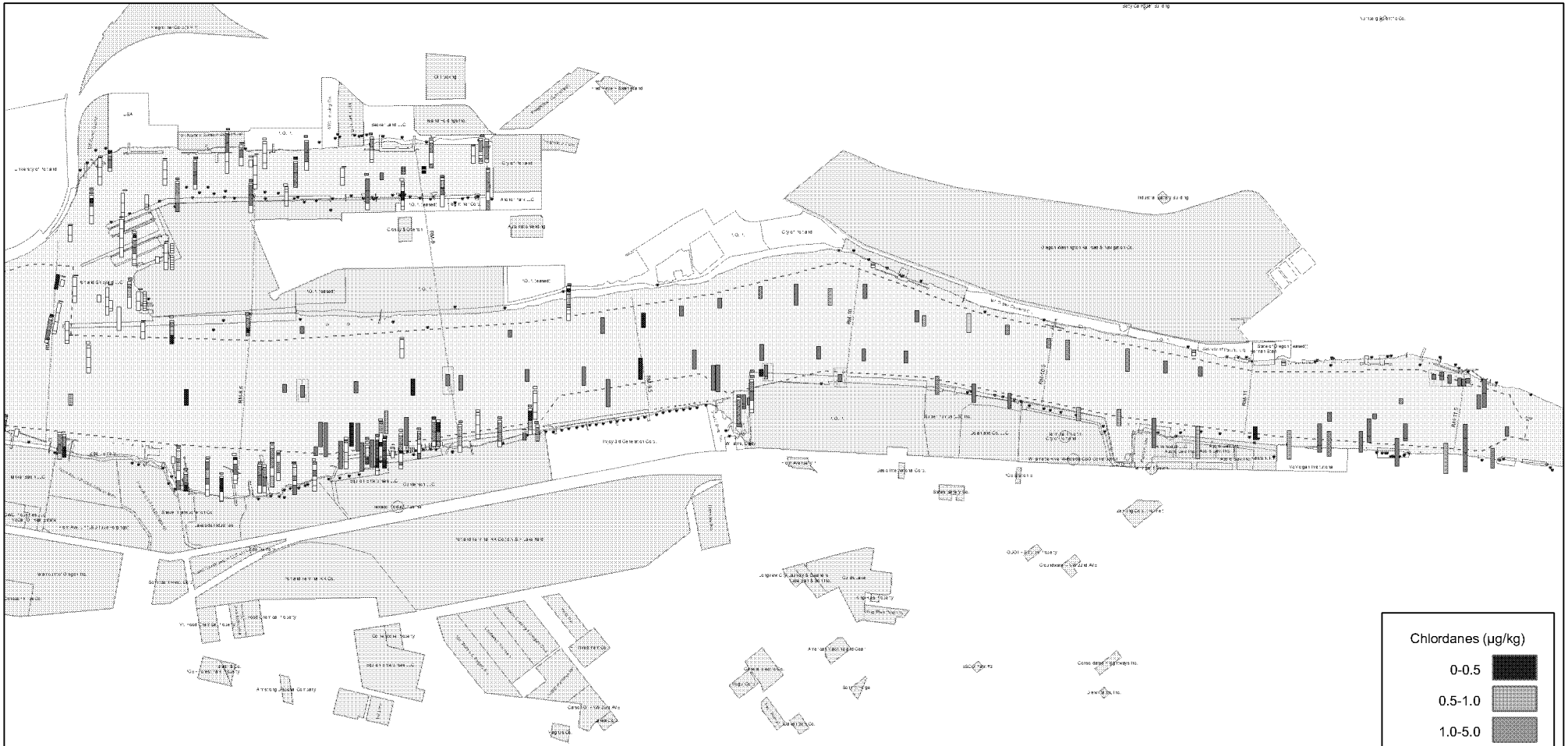
BZTO104(e)032934

**Map 6.1-37b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**beta-Hexachlorocyclohexane (µg/kg)**

BZTO104(e)032935

**Map 6.1-37c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**beta-Hexachlorocyclohexane (µg/kg)**

BZTO104(e)032936

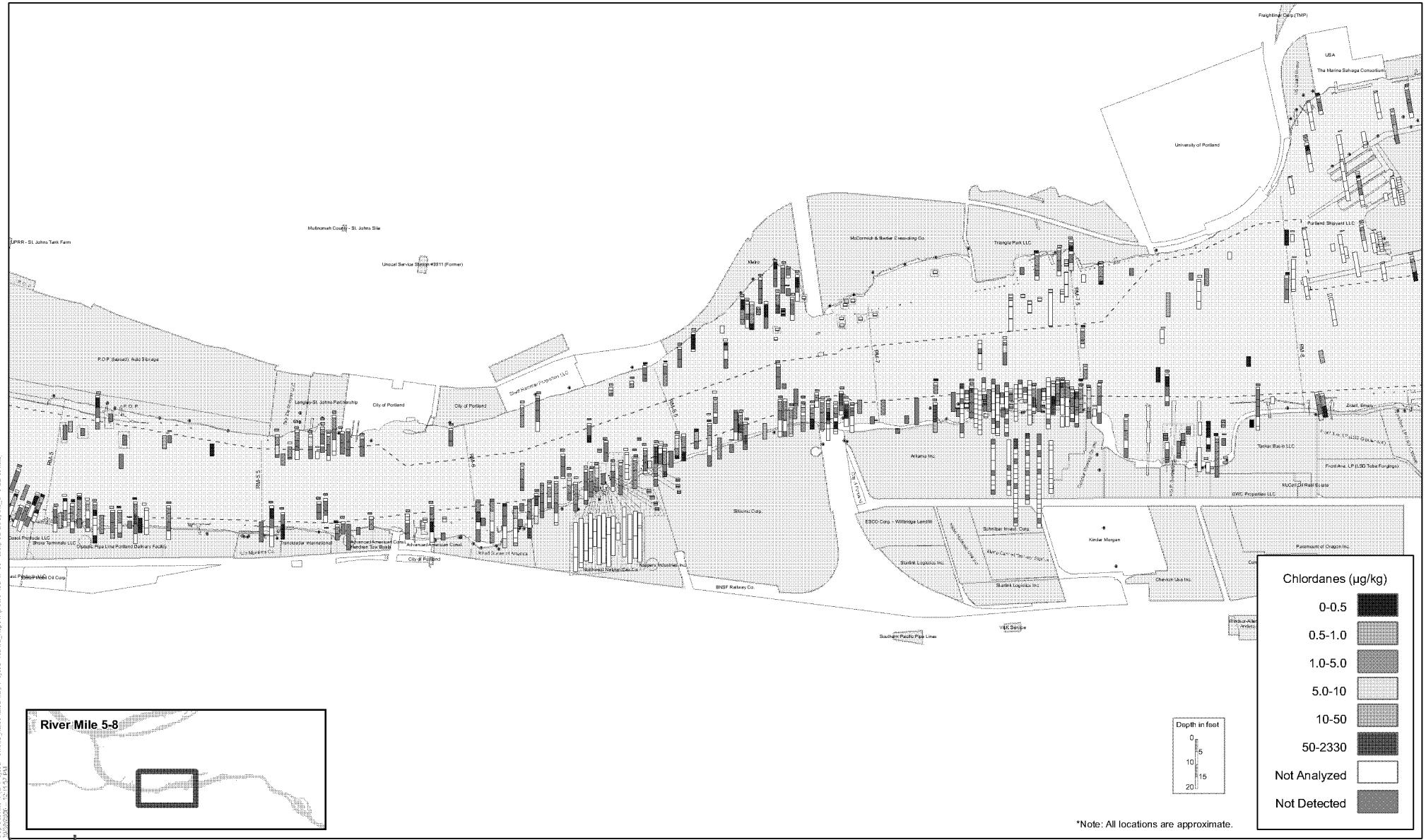



integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-38a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total Chlordanes (µg/kg)**

BZTO104(e)032937




*Note: All locations are approximate.

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 600 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

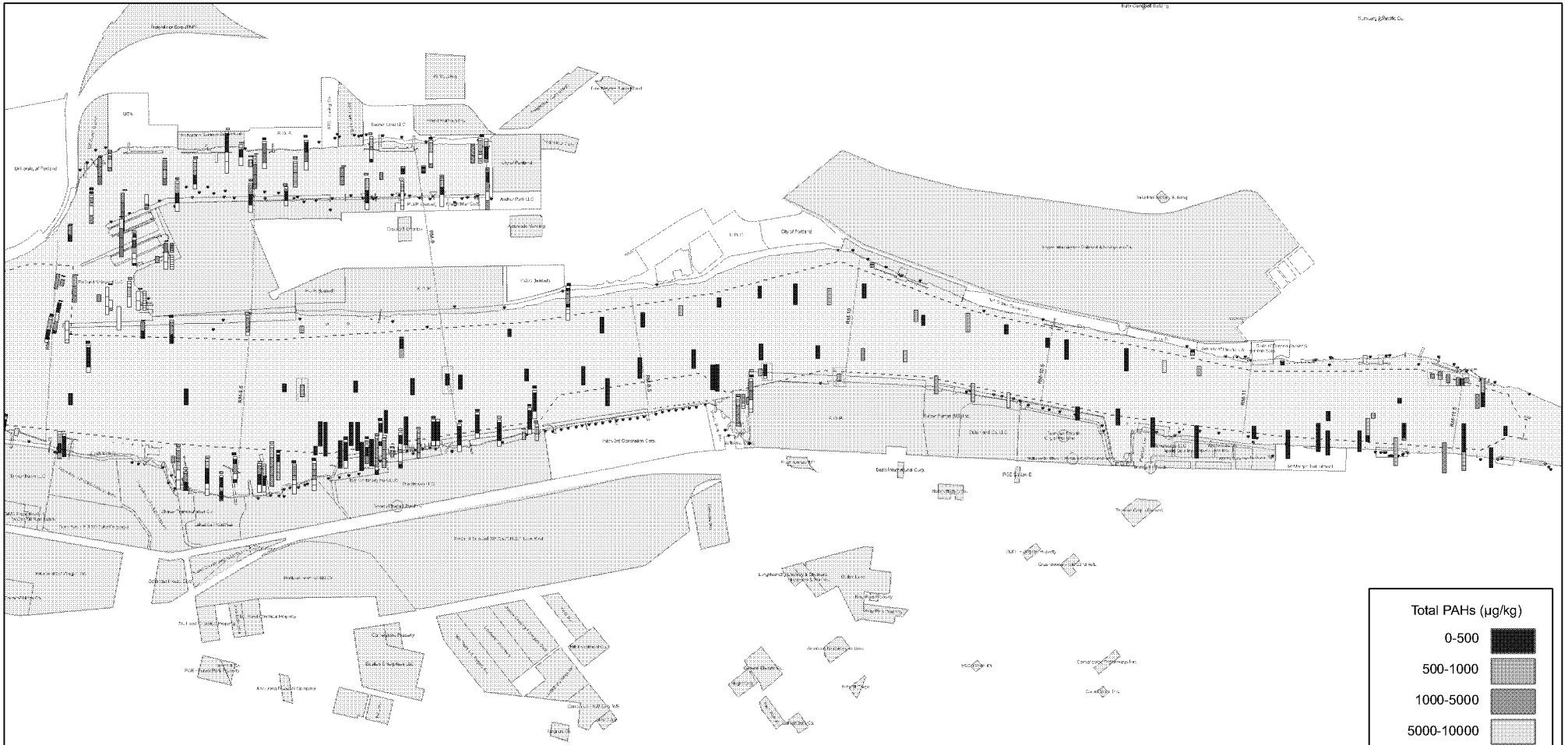
**Map 6.1-38b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total Chlordanes (µg/kg)**

Map Document: (U:\Projects\Portland_Harbor\LWG-Maps-Projects\Round2_Report\Figures\Data\MXDs - ecosystem\Sediment\Chemistry_Chlordanes.mxd)
2/5/2008 - 5:14:57 PM

BZTO104(e)032938

**Map 6.1-38c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total Chlordanes (µg/kg)**

BZTO104(e)032939




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-39a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Polycyclic Aromatic Hydrocarbons (µg/kg)**

BZTO104(e)032940

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 800 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Sampes

**Map 6.1-39b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Polycyclic Aromatic Hydrocarbons (µg/kg)**

BZTO104(e)032941

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

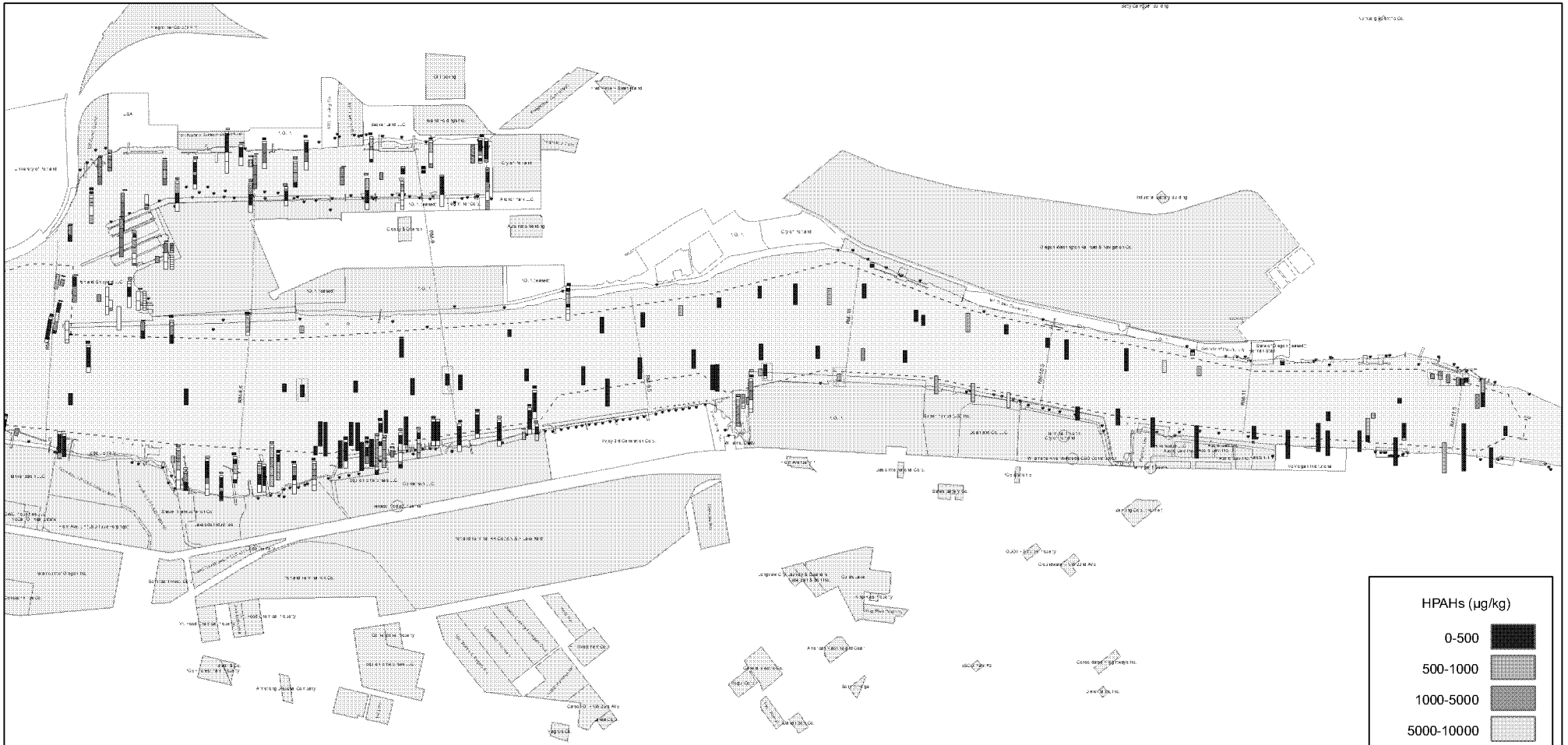
0 200 400 800 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Sampes

**Map 6.1-39c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Polycyclic Aromatic Hydrocarbons (µg/kg)**

BZTO104(e)032942




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-40a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**High Molecular Weight PAHs (µg/kg)**

BZTO104(e)032943

**Map 6.1-40b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**High Molecular Weight PAHs (µg/kg)**

BZTO104(e)032944

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

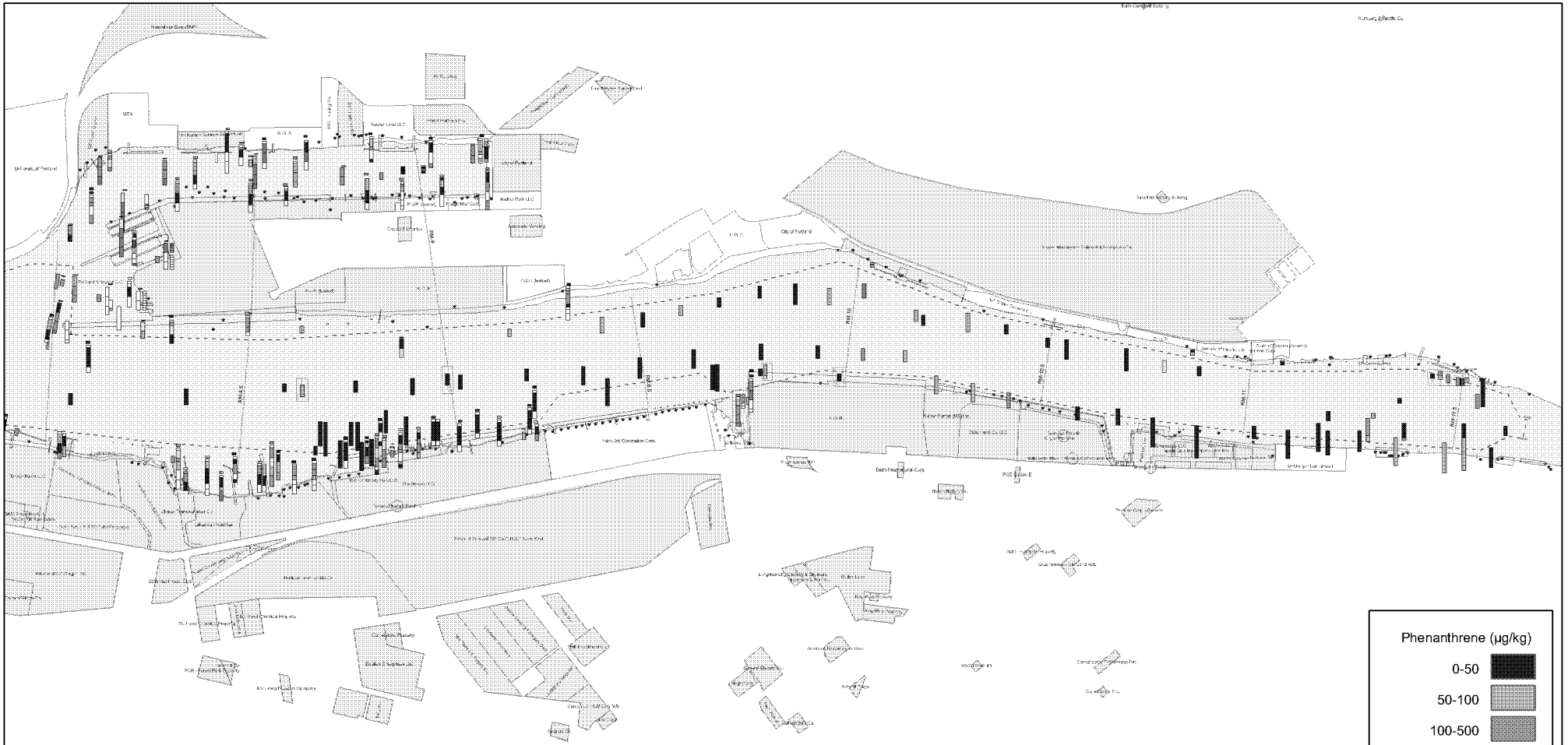
0 200 400 600 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

**Map 6.1-40c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**High Molecular Weight PAHs (µg/kg)**

BZTO104(e)032945




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-41a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Phenanthrene (µg/kg)**

BZTO104(e)032946

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-41b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Phenanthrene (µg/kg)**

BZTO104(e)032947

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

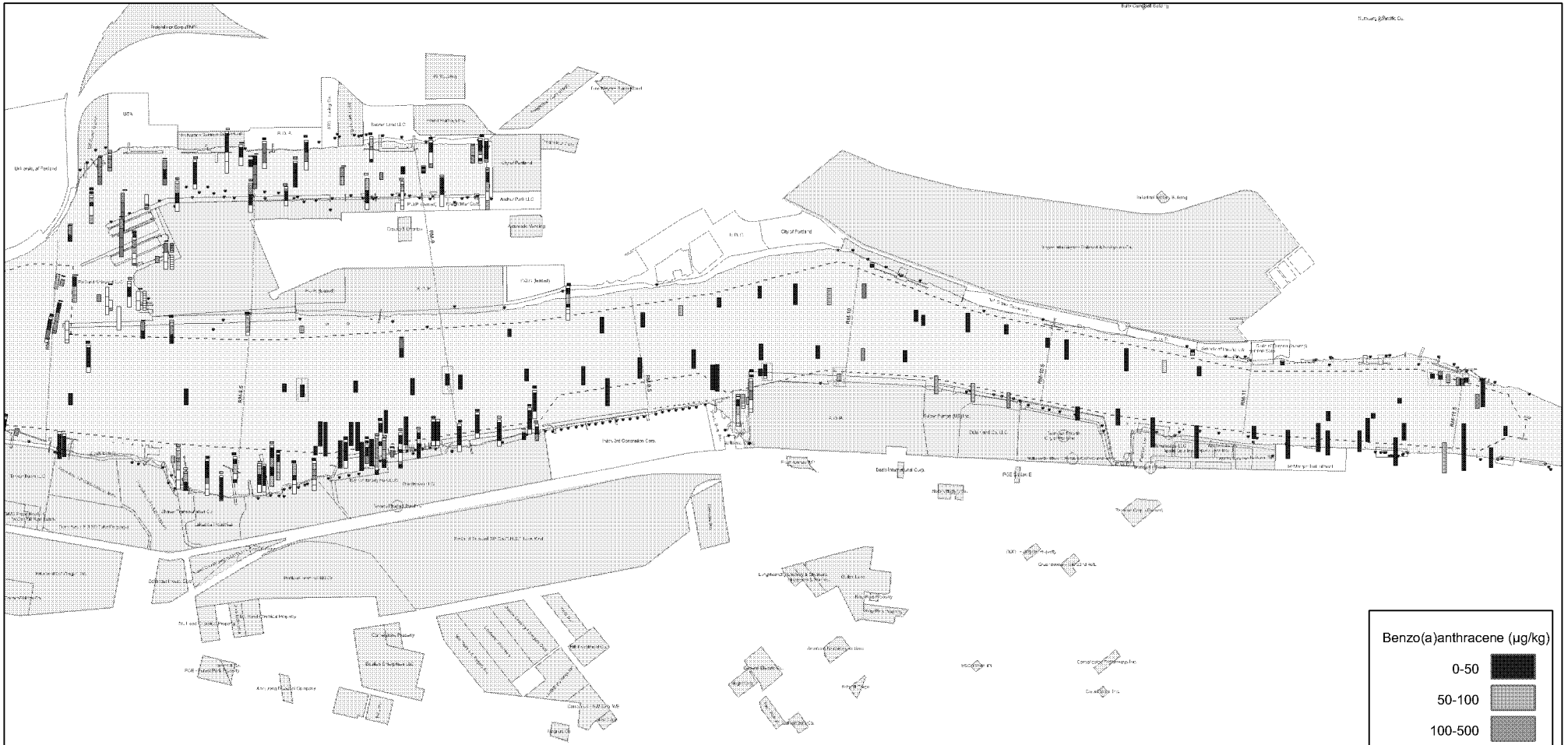
0 200 400 800 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

**Map 6.1-41c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Phenanthrene (µg/kg)**

BZTO104(e)032948




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 200 400 800 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

**Map 6.1-42a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Benzo(a)anthracene (µg/kg)**

BZTO104(e)032949

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 800 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

**Map 6.1-42b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Benzo(a)anthracene (µg/kg)**

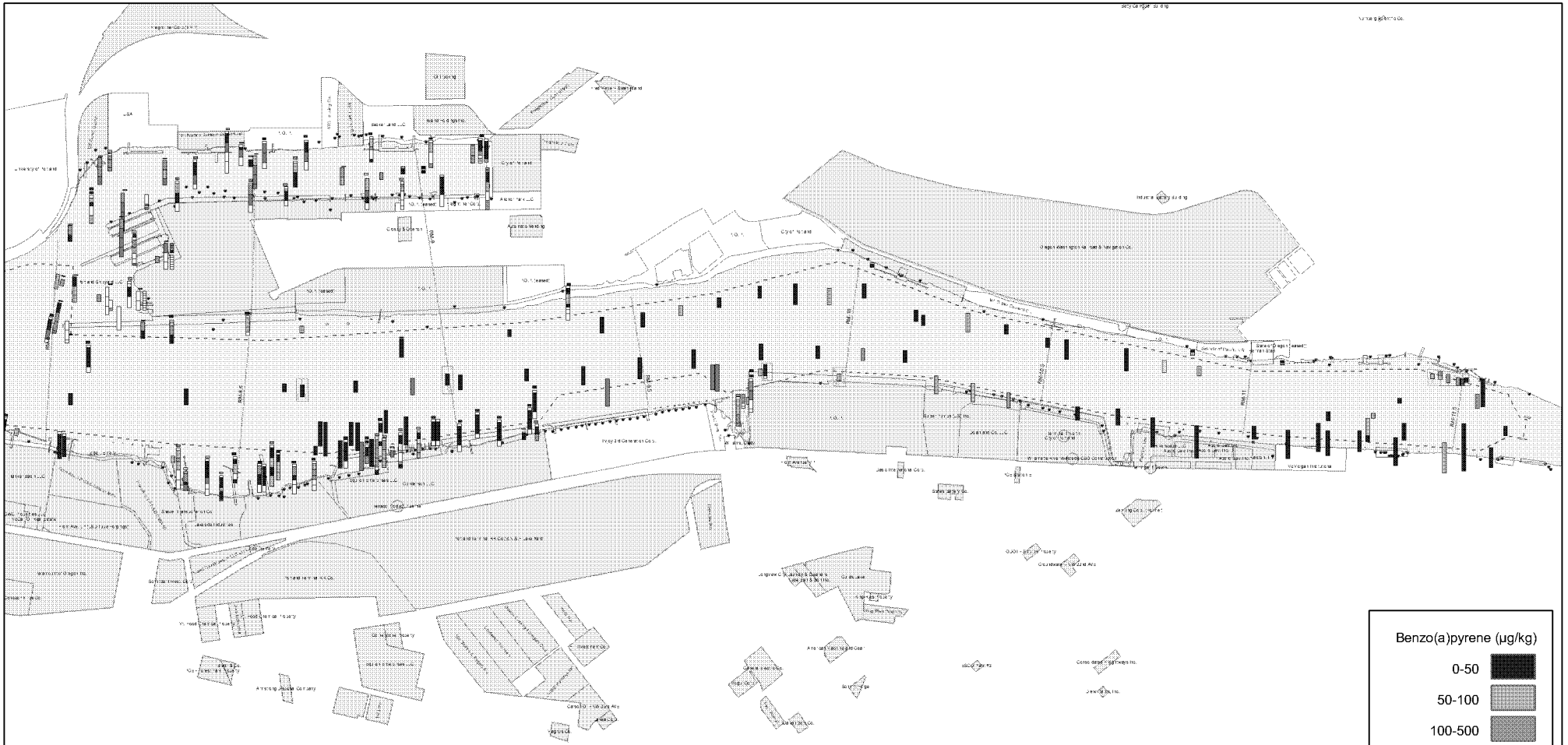
BZTO104(e)032950

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-42c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Benzo(a)anthracene (µg/kg)**

BZTO104(e)032951




**Map 6.1-43a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Benzo(a)pyrene (µg/kg)**

BZTO104(e)032952

**Map 6.1-43b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Benzo(a)pyrene (µg/kg)**

BZTO104(e)032953

*Note: All locations are approximate.

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

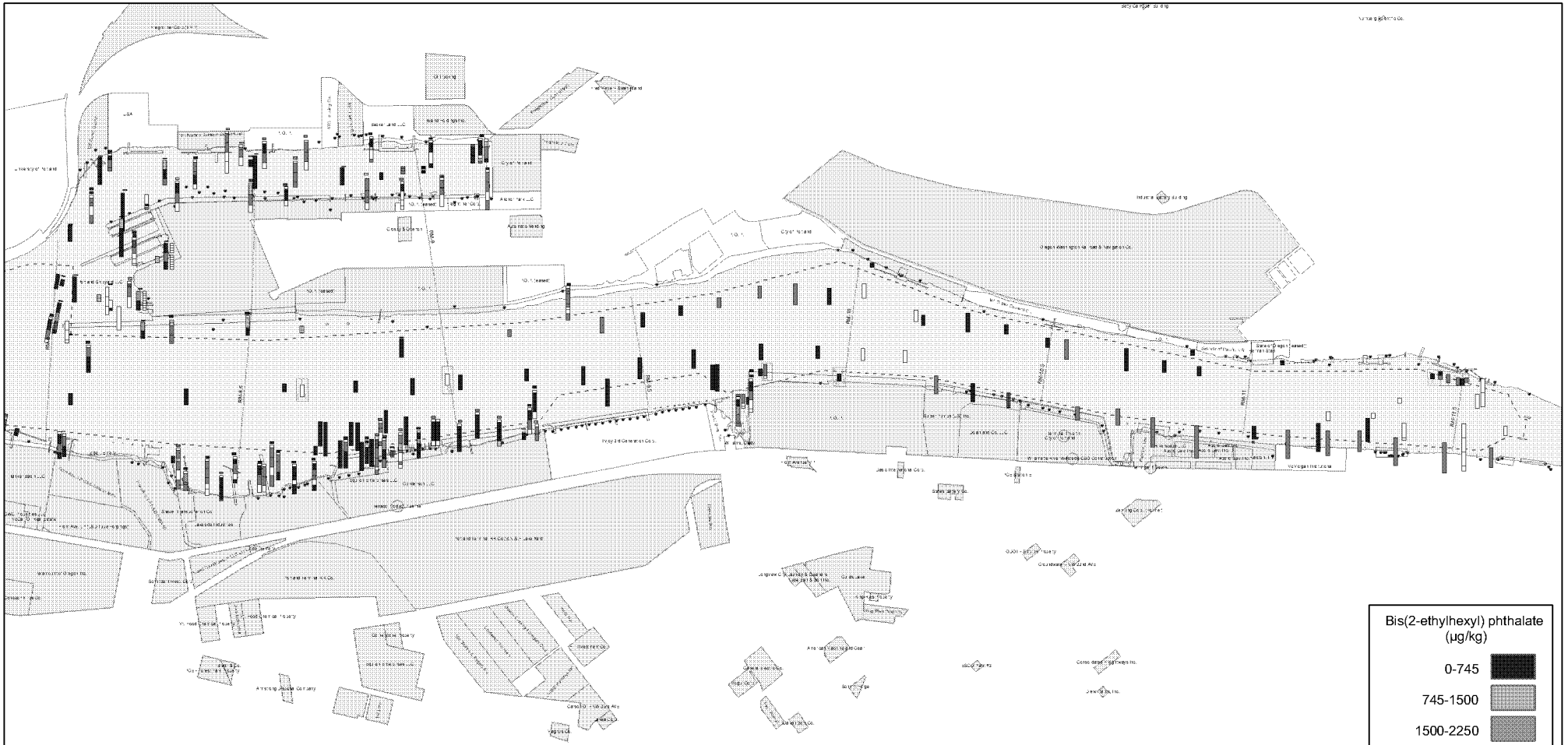
0 200 400 600 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

**Map 6.1-43c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Benzo(a)pyrene (µg/kg)**

BZTO104(e)032954




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 600 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

**Map 6.1-44a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Bis(2-ethylhexyl) phthalate (µg/kg)**

BZTO104(e)032955

integral consulting inc.

0 200 400 600 800 Feet

LWG
LOWER WILLAMETTE GROUP

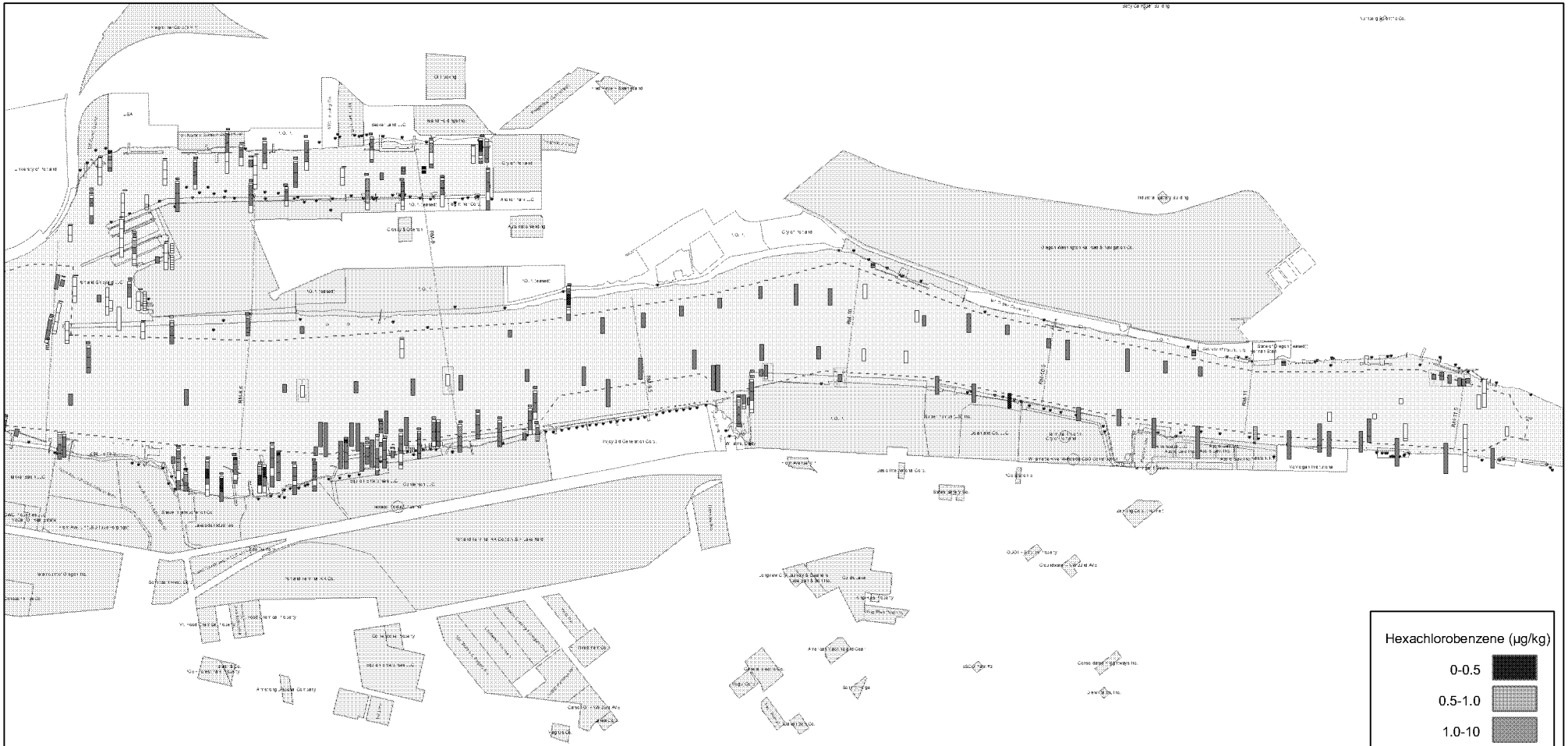
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

* Outfalls
Docks and Structures
Navigation Channel
Dredged/Capped Samples

**Map 6.1-44b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Bis(2-ethylhexyl) phthalate (µg/kg)**

**Map 6.1-44c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Bis(2-ethylhexyl) phthalate (µg/kg)**

BZTO104(e)032957




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 200 400 600 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Sampes

**Map 6.1-45a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Hexachlorobenzene (µg/kg)**

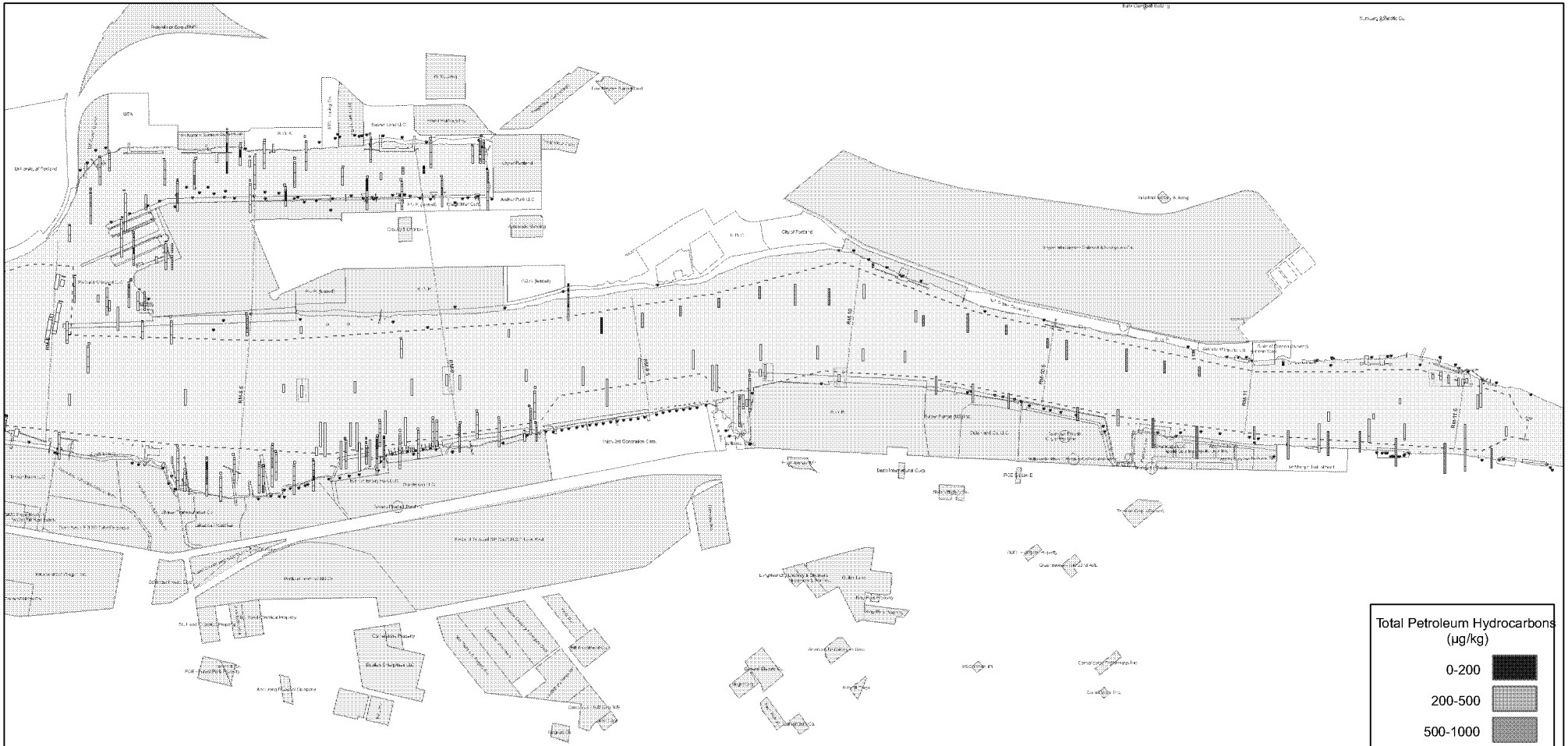
BZTO104(e)032958

**Map 6.1-45b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Hexachlorobenzene (µg/kg)**

BZTO104(e)032959

**Map 6.1-45c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Hexachlorobenzene (µg/kg)**

BZTO104(e)032960




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-46a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total Petroleum Hydrocarbons (µg/kg)**

BZTO104(e)032961

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.1-46b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total Petroleum Hydrocarbons (µg/kg)**

BZTO104(e)032962

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

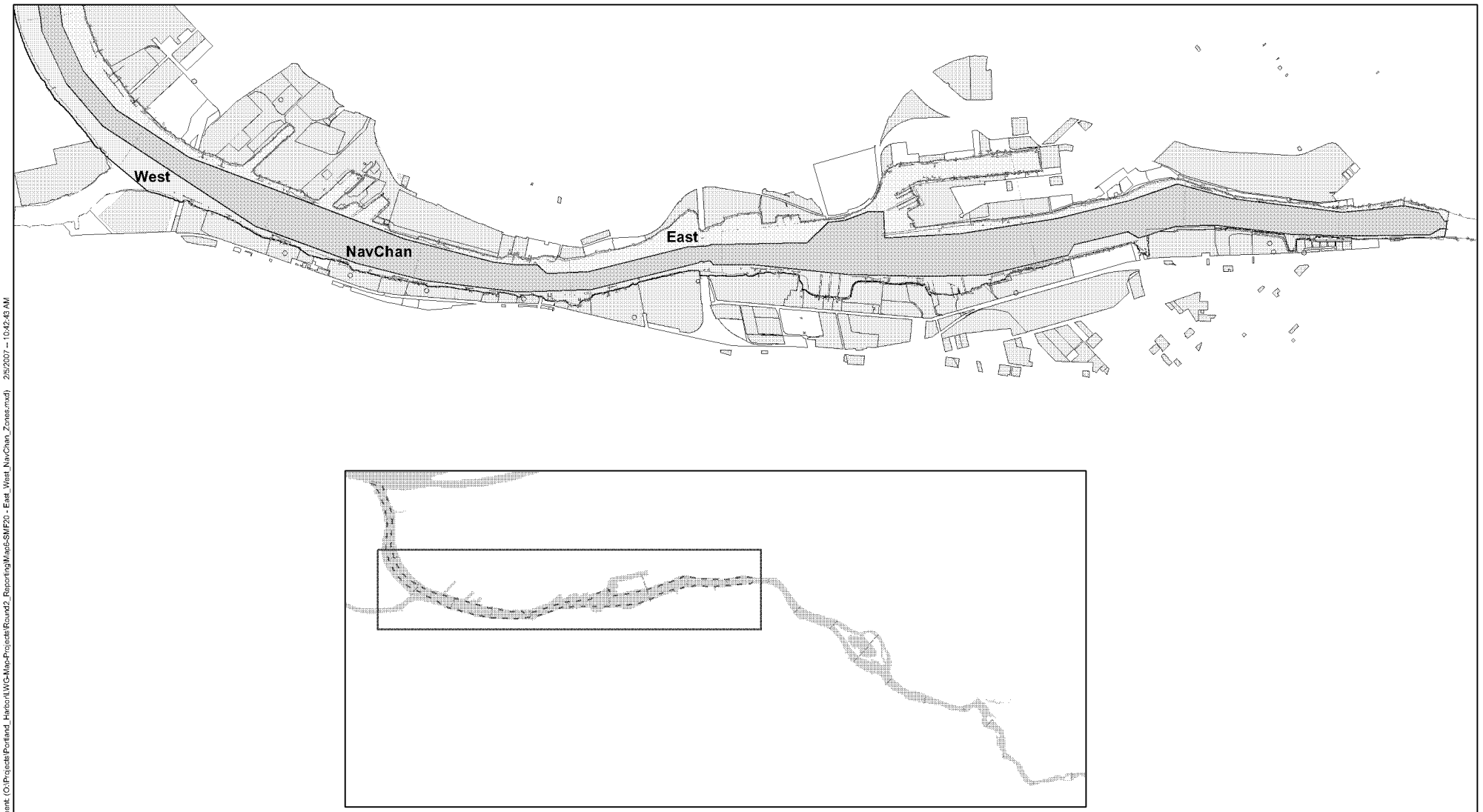
0 200 400 800 800 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- Docks and Structures
- Navigation Channel
- Dredged/Capped Samples

**Map 6.1-46c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Sediment with Depth**
**Total Petroleum Hydrocarbons (µg/kg)**

BZTO104(e)032963






Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Map5-SMP20 - East_West_NavChan_Zones.mxd) 2/5/2007 -- 10:42:43 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 300 600 900 1200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- Outfalls
- River miles
- Navigation Channel
- Docks and Structures
- Upland Sites
- Assessors Tax Lot Owner Name

**Map 6.1-47**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Schematic of Willamette River Eastern Nearshore, Navigation Channel, and Western Nearshore Areas (River Mile 2-11)**

BZTO104(e)032964

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_wls_12212006_Surface.mxd)
2/6/2007 -- 7:36:37 AM

Map 6.1-48a
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Surface Sediment
River Mile 11 to 12

BZTO104(e)032965

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_wls_12212006_Surface.mxd)
2/6/2007 -- 7:36:37 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-48b
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Surface Sediment
River Mile 10 to 11

BZTO104(e)032966

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_wls_12212006_Surface.mxd)
2/6/2007 -- 7:36:37 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-48c
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Surface Sediment
River Mile 09 to 10

BZTO104(e)032967

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_wls_12212006_Surface.mxd)
2/6/2007 -- 7:36:37 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map 6.1-48d
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Surface Sediment
River Mile 08 to 09

BZTO104(e)032968

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_wls_12212006_Surface.mxd)
2/6/2007 -- 7:36:37 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map 6.1-48e
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Surface Sediment
River Mile 07 to 08

BZTO104(e)032969

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_wls_12212006_Surface.mxd)
2/6/2007 -- 7:36:37 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

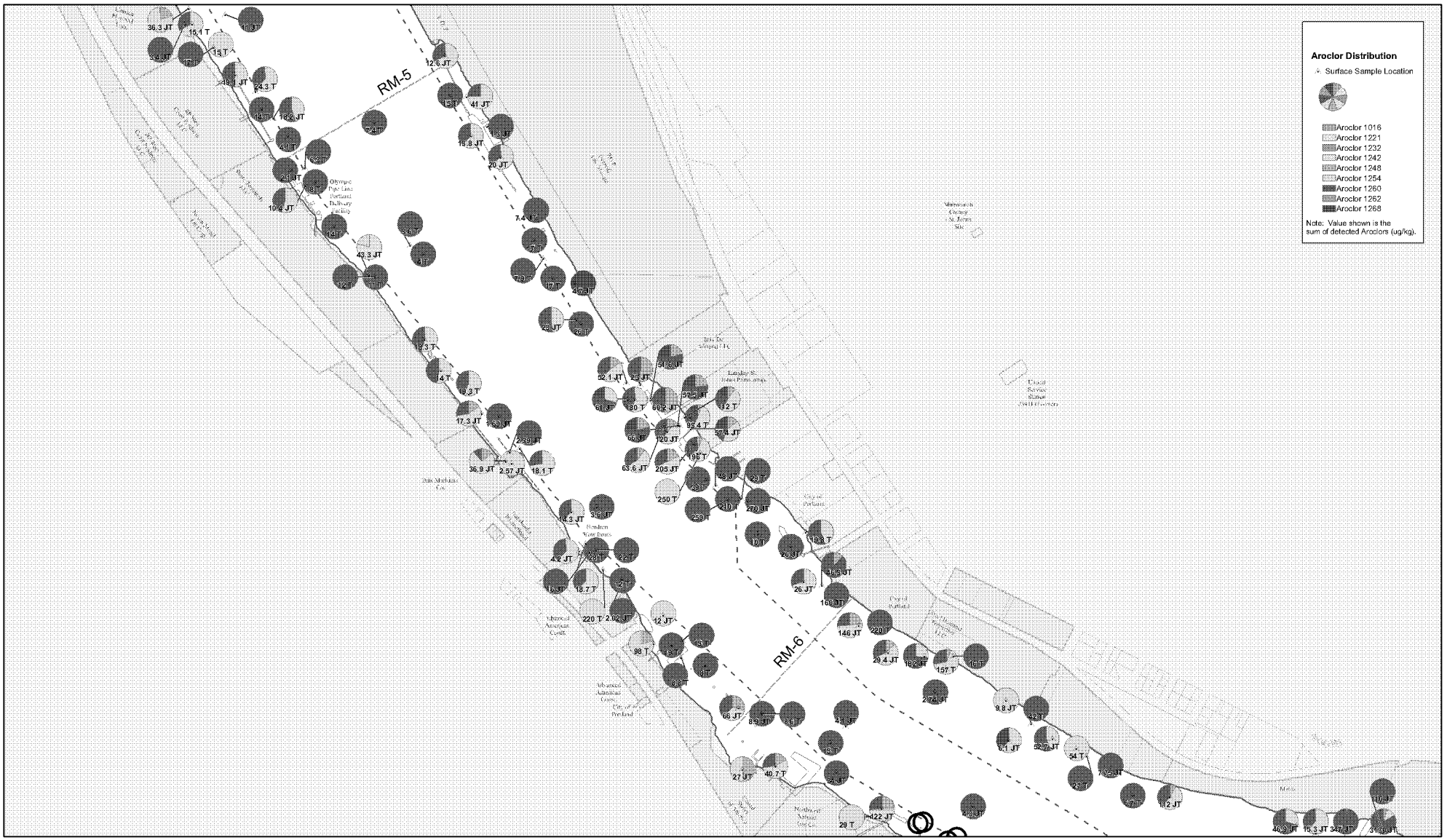
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-48 f
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Surface Sediment
River Mile 06 to 07

BZTO104(e)032970




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_wls_12212006_Surface.mxd)
2/6/2007 -- 7:36:37 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-48g
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Surface Sediment
River Mile 05 to 06

BZTO104(e)032971

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_wls_12212006_Surface.mxd)
2/6/2007 -- 7:36:37 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

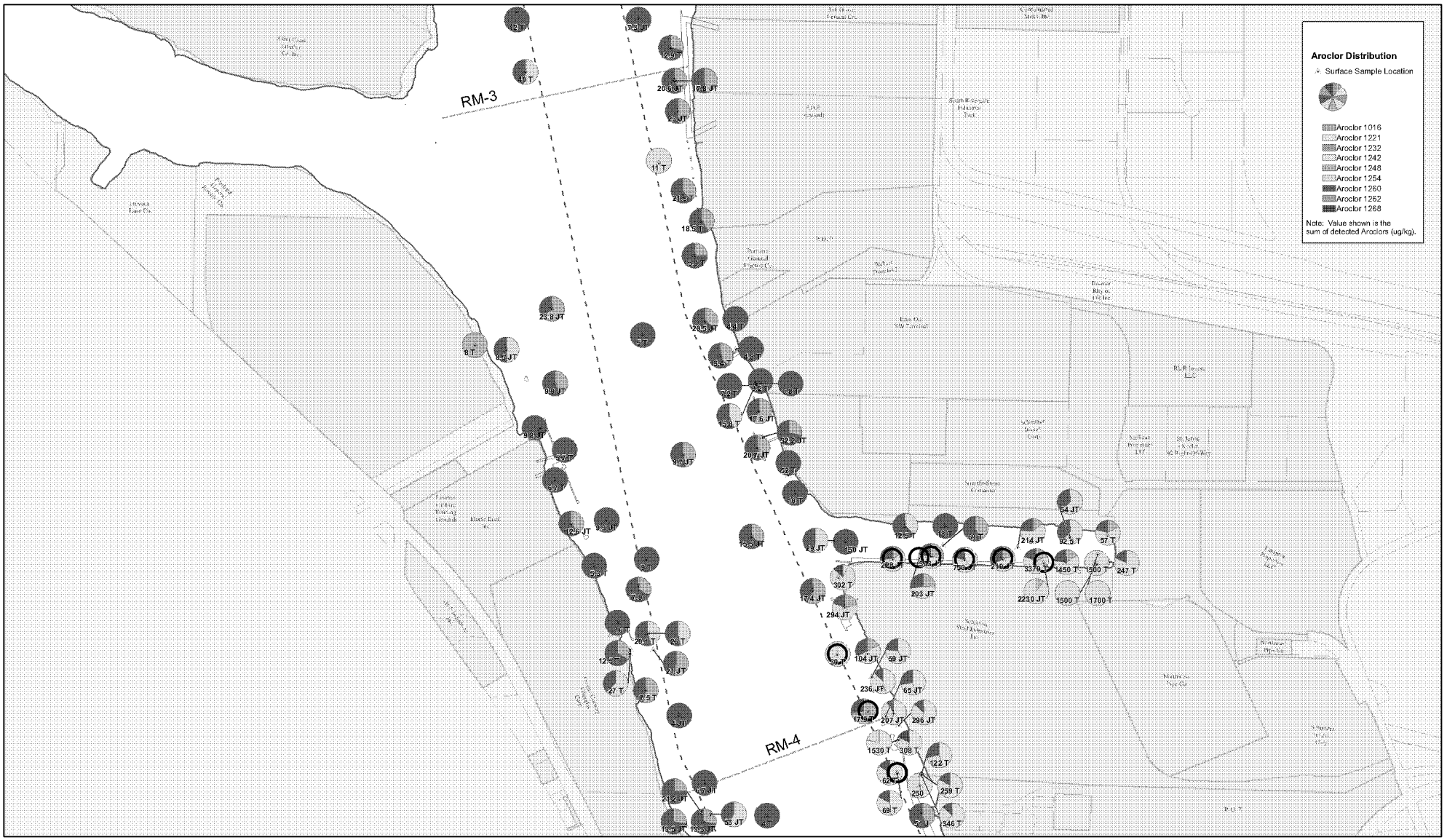
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-48h
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Surface Sediment
River Mile 04 to 05

BZTO104(e)032972




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_wls_12212006_Surface.mxd)
2/6/2007 -- 7:36:37 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-48 i
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Surface Sediment
River Mile 03 to 04

BZTO104(e)032973

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_vals_12212006_Surface.mxd)
2/6/2007 -- 7:36:37 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-48 j
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Surface Sediment
River Mile 02 to 03

BZTO104(e)032974

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_wals_12212006_Sub_Surface.mxd)
2/6/2007 -- 8:24:28 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map 6.1-49a
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Subsurface
Sediment at Depth of Maximum Concentration
River Mile 10 to 11

BZTO104(e)032975

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_wls_12212006_Sub_Surface.mxd)
2/6/2007 -- 8:24:28 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-49b
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Subsurface
Sediment at Depth of Maximum Concentration
River Mile 09 to 10

BZTO104(e)032976

Map Document: (P:\Projects\Portland_Harbor\LWG-Mxd-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_wls_12212006_Sub_Surface.mxd)
2/6/2007 -- 8:24:28 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

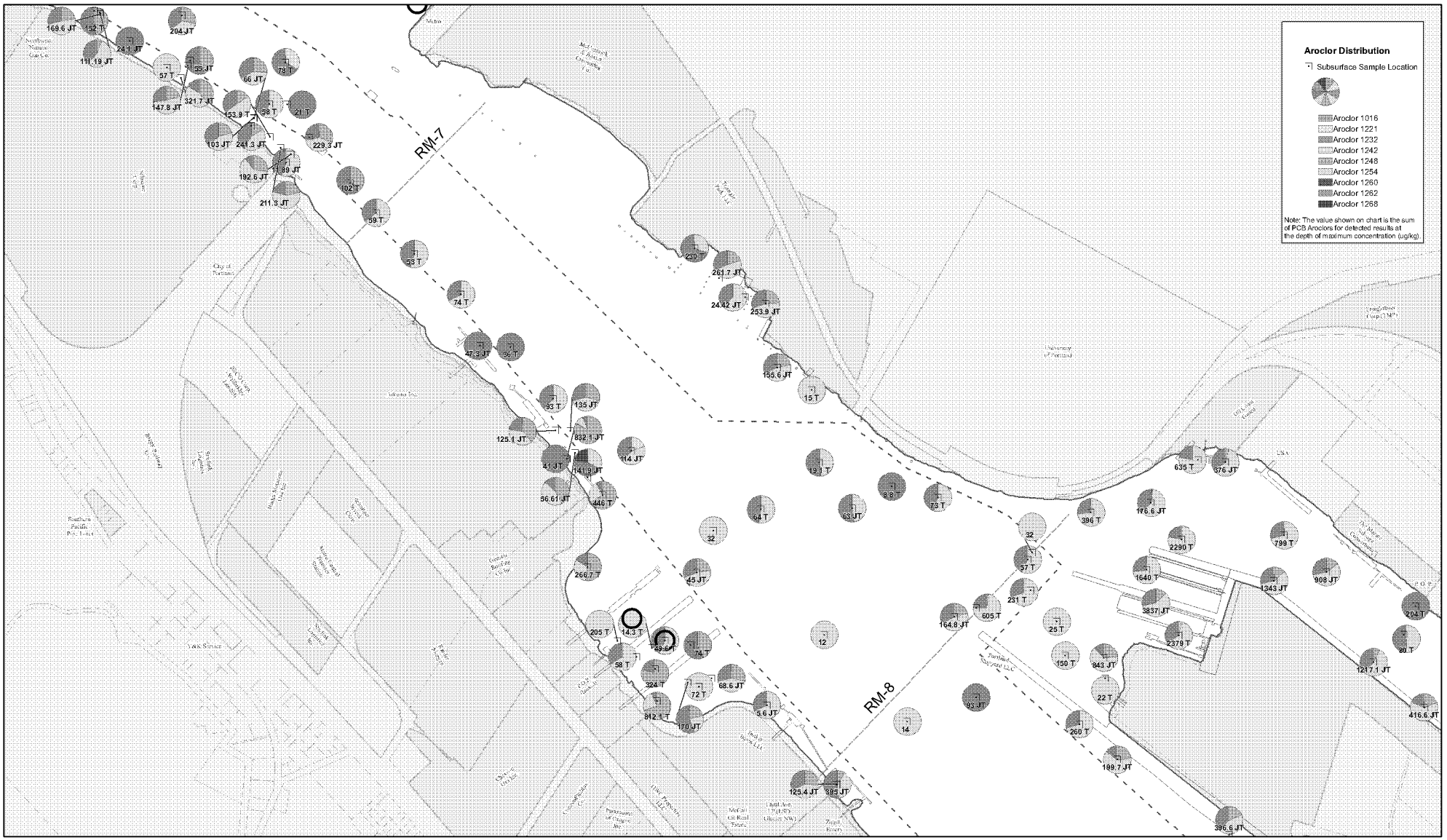
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-49c
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Subsurface
Sediment at Depth of Maximum Concentration
River Mile 08 to 09

BZTO104(e)032977




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_wls_12212006_Sub_Surface.mxd)
2/6/2007 -- 8:24:28 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-49d
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Subsurface
Sediment at Depth of Maximum Concentration
River Mile 07 to 08

BZTO104(e)032978

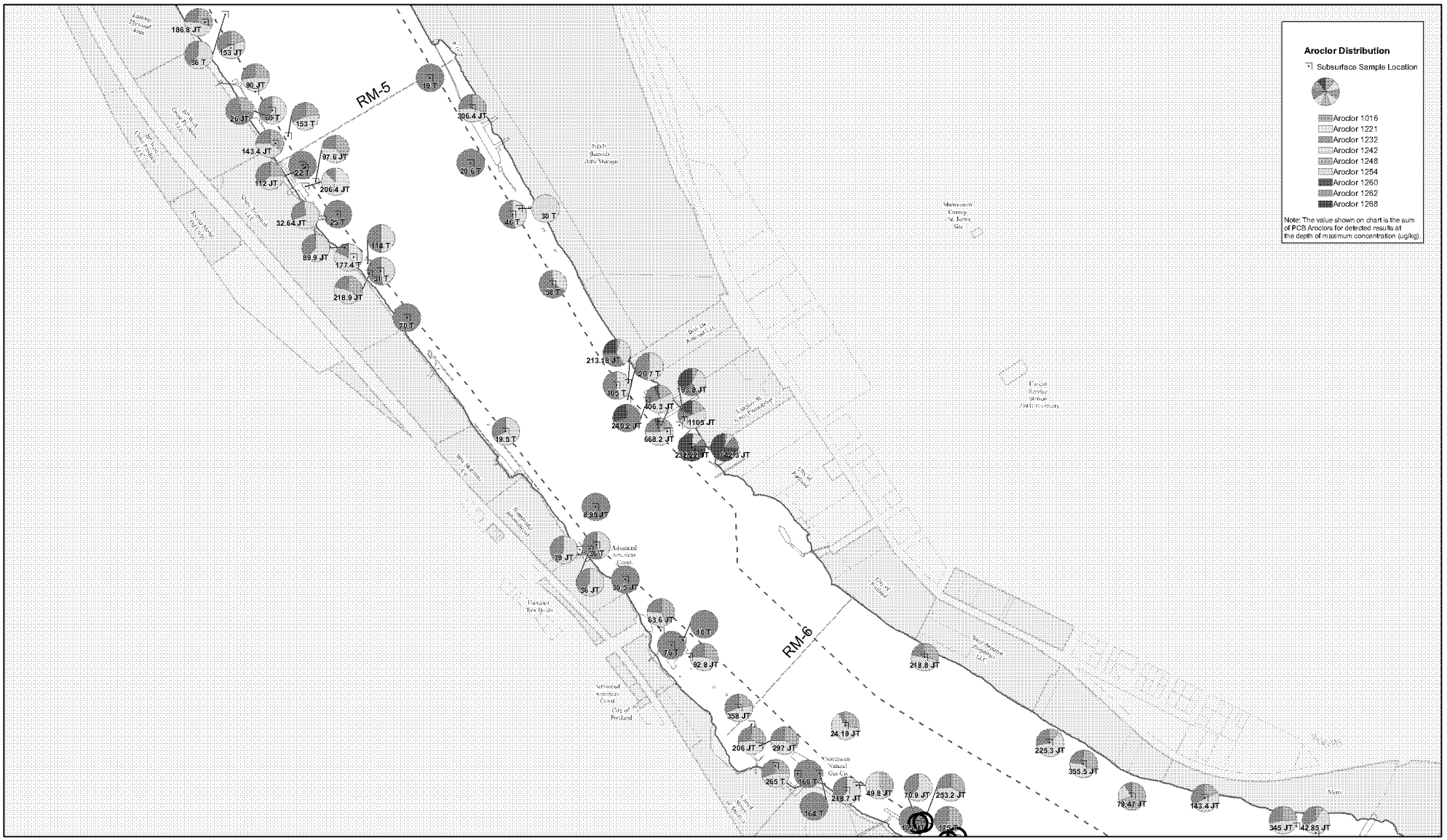
integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map 6.1-49e
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Subsurface
Sediment at Depth of Maximum Concentration
River Mile 06 to 07

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_wls_12212006_Sub_Surface.mxd)
2/6/2007 -- 8:24:28 AM

BZTO104(e)032979




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_wls_12212006_Sub_Surface.mxd)
2/6/2007 -- 8:24:28 AM

integral consulting inc.

LWG Lower Willamette Group

Map 6.1-49 f
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Subsurface
Sediment at Depth of Maximum Concentration
River Mile 05 to 06

BZTO104(e)032980

Map Document: (P:\Projects\Portland_Harbor\LWG-Misc-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_wls_12212006_Sub_Surface.mxd)
2/6/2007 -- 8:24:28 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-49g
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Subsurface
Sediment at Depth of Maximum Concentration
River Mile 04 to 05

BZTO104(e)032981

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_vals_12212006_Sub_Surface.mxd)
2/6/2007 -- 8:24:28 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-49h
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Subsurface
Sediment at Depth of Maximum Concentration
River Mile 03 to 04

BZTO104(e)032982

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_Pie_Charts_all_ND_vals_12212006_Sub_Surface.mxd)
2/6/2007 -- 8:24:28 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

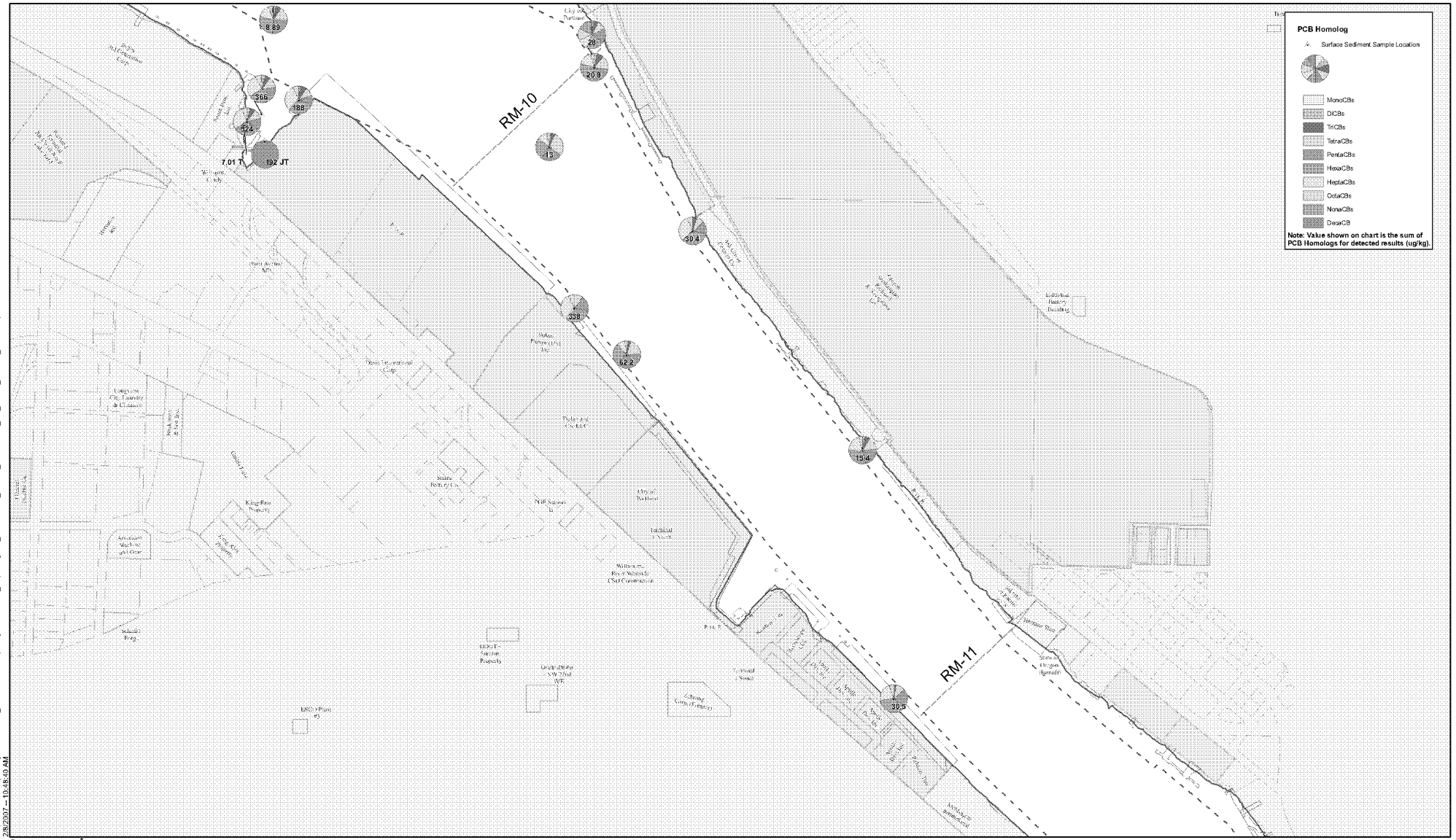
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-49 i
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Aroclor Composition in Subsurface
Sediment at Depth of Maximum Concentration
River Mile 02 to 03

BZTO104(e)032983




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_HOMOLOG_Pie_Charts_Surface_ERS.mxd)
2/8/2007 - 10:48:40 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

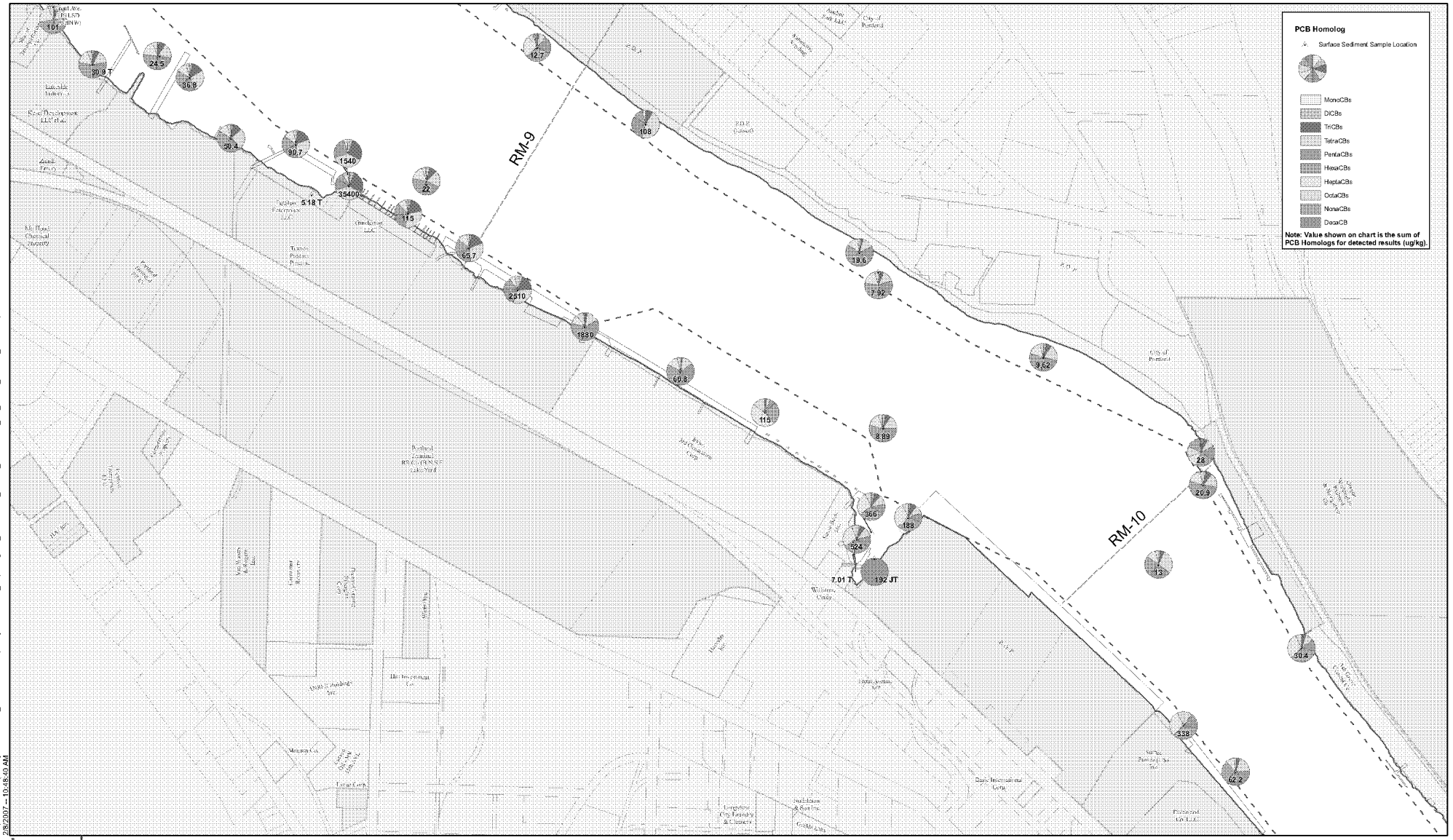
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-50a
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Homolog Composition in Surface Sediment
River Mile 10 to 11

BZTO104(e)032984




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_HOMOLOG_Pie_Charts_Surface_ERS.mxd)
2/8/2007 - 10:48:40 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-50b
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Homolog Composition in Surface Sediment
River Mile 09 to 10

BZTO104(e)032985

Map 6.1-50c
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Homolog Composition in Surface Sediment
River Mile 08 to 09

BZTO104(e)032986

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_HOMOLOG_Pie_Charts_Surface_ERS.mxd)
2/8/2007 – 10:48:40 AM

Map 6.1-50d
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Homolog Composition in Surface Sediment
River Mile 07 to 08

BZTO104(e)032987

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_HOMOLOG_Pie_Charts_Surface_ERS.mxd)
2/8/2007 - 10:48:40 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map 6.1-50e
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Homolog Composition in Surface Sediment
River Mile 06 to 07

BZTO104(e)032988

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_HOMOLOG_Pie_Charts_Surface_ERS.mxd)
2/8/2007 – 10:48:40 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-50 f
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Homolog Composition in Surface Sediment
River Mile 05 to 06

BZTO104(e)032989

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_HOMOLOG_Pie_Charts_Surface_ERS.mxd)
2/8/2007 - 10:48:40 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-50g
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Homolog Composition in Surface Sediment
River Mile 04 to 05

BZTO104(e)032990

Map 6.1-50h
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Homolog Composition in Surface Sediment
River Mile 03 to 04

BZTO104(e)032991

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_HOMOLOG_Pie_Charts_Surface_ERS.mxd)
2/8/2007 - 10:48:40 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

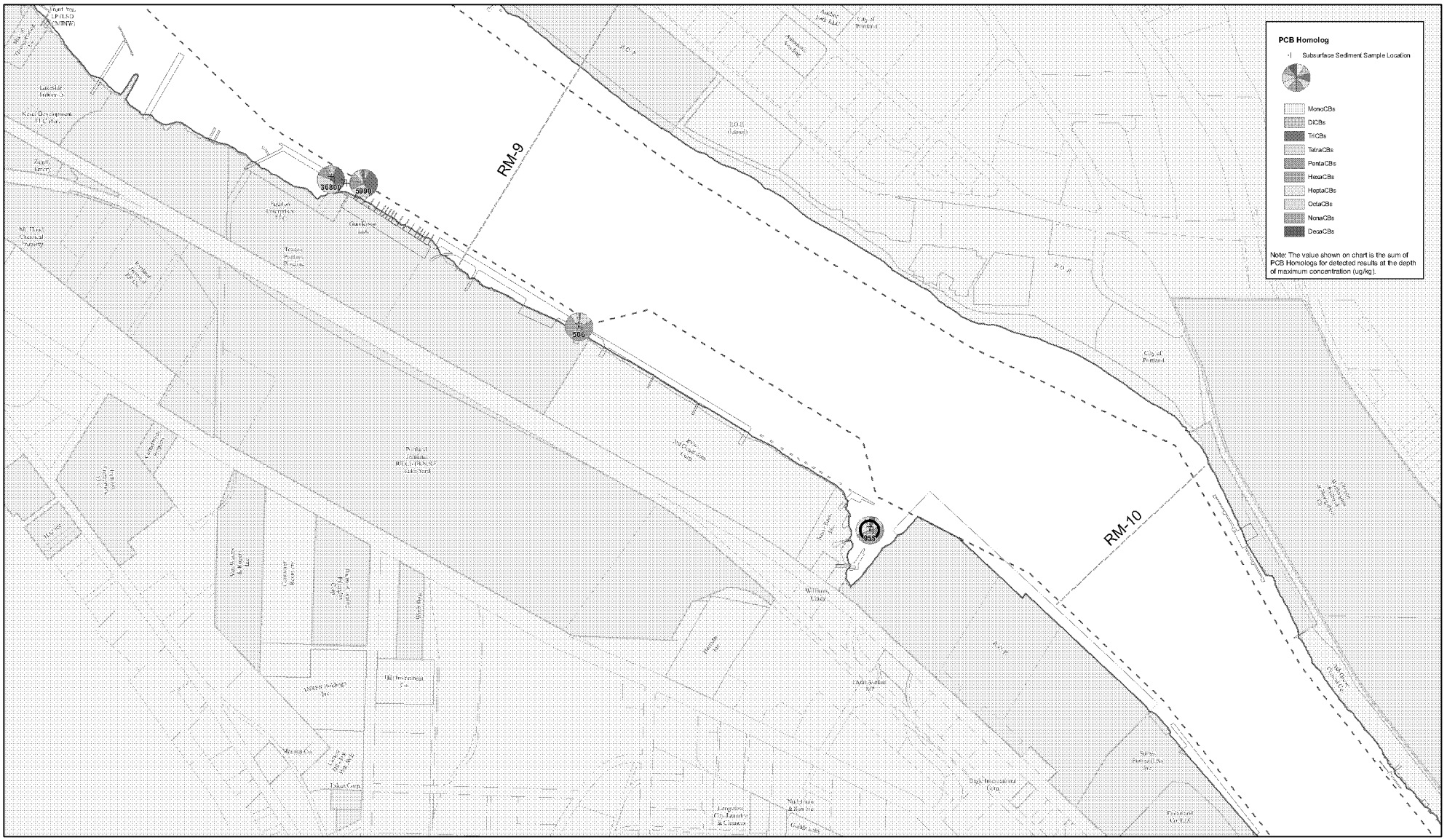
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-50 i
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Homolog Composition in Surface Sediment
River Mile 02 to 03

BZTO104(e)032992




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_HOMOLOG_Pie_Charts_SubSurface_ERS.mxd)
2/6/2007 -- 10:55:12 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

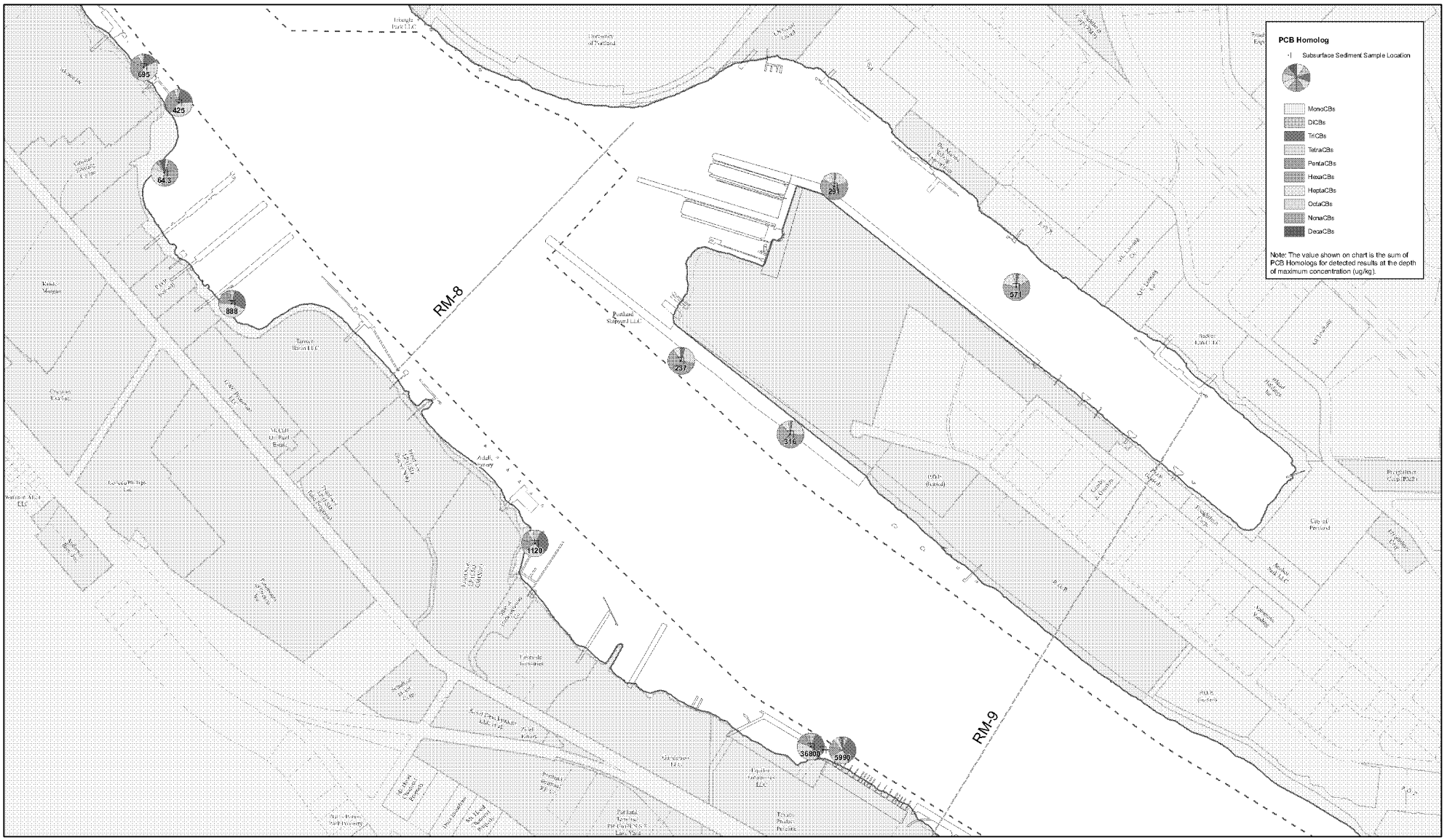
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-51a
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Homolog Composition in Subsurface Sediment
at Depth of Maximum Concentration
River Mile 08 to 09

BZTO104(e)032993




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_HOMOLOG_Pie_Charts_SubSurface_ERS.mxd)
2/6/2007 -- 10:58:12 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-51b
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Homolog Composition in Subsurface Sediment
at Depth of Maximum Concentration
River Mile 08 to 09

BZTO104(e)032994

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_HOMOLOG_Pie_Charts_SubSurface_ERS.mxd)
2/6/2007 -- 10:58:12 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-51c
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Homolog Composition in Subsurface Sediment
at Depth of Maximum Concentration
River Mile 07 to 08

BZTO104(e)032995

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_HOMOLOG_Pie_Charts_SubSurface_ERS.mxd)
2/6/2007 -- 10:58:12 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-51d
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Homolog Composition in Subsurface Sediment
at Depth of Maximum Concentration
River Mile 06 to 07

BZTO104(e)032996

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_HOMOLOG_Pie_Charts_SubSurface_ERS.mxd)
2/6/2007 -- 10:55:12 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

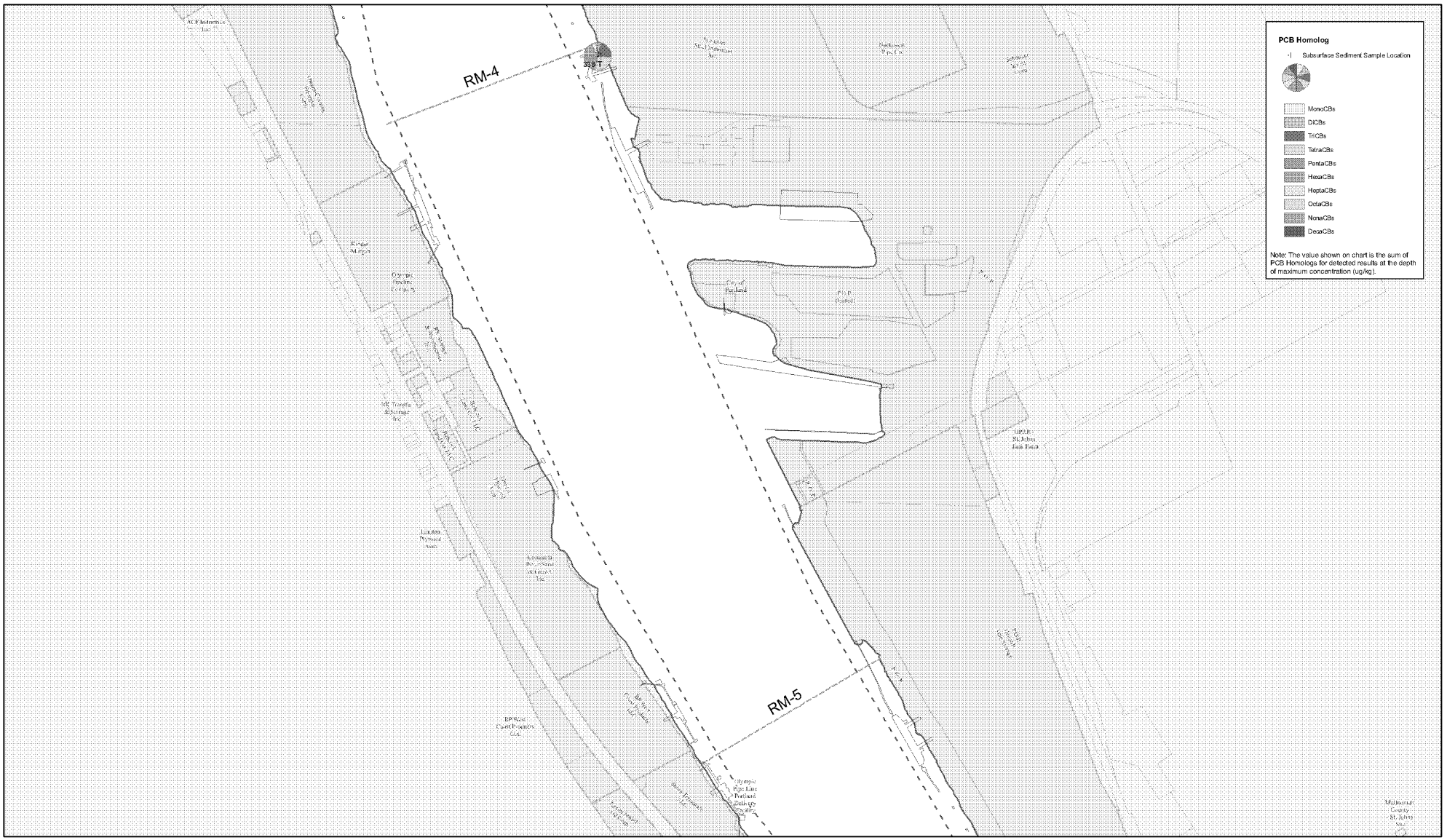
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-51e
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Homolog Composition in Subsurface Sediment
at Depth of Maximum Concentration
River Mile 05 to 06

BZTO104(e)032997




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_HOMOLOG_Pie_Charts_SubSurface_ERS.mxd)
2/6/2007 -- 10:58:12 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

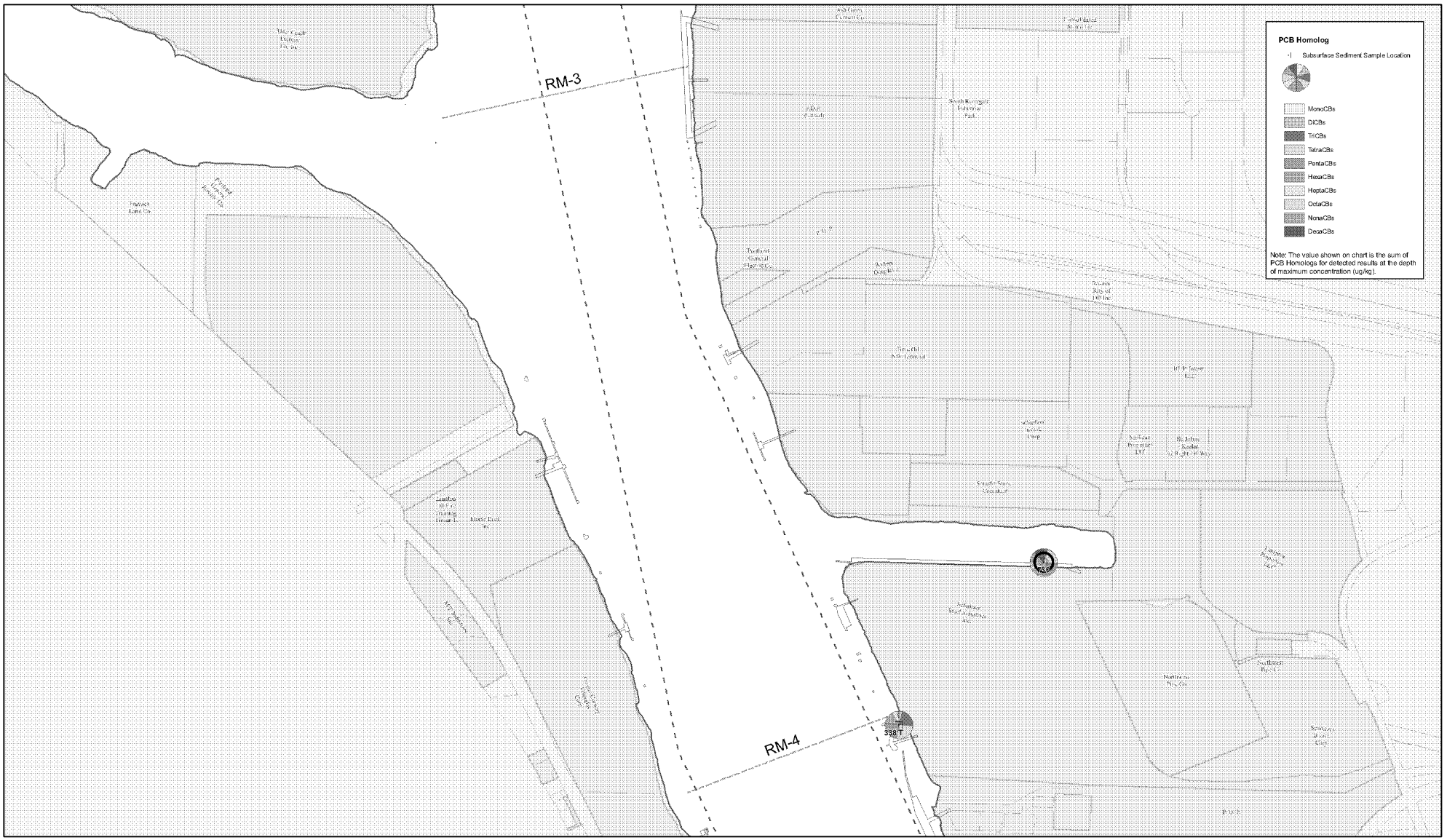
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-51f
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Homolog Composition in Subsurface Sediment
at Depth of Maximum Concentration
River Mile 04 to 05

BZTO104(e)032998




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_HOMOLOG_Pie_Charts_SubSurface_ERS.mxd)
2/6/2007 -- 10:55:12 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-51g
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Homolog Composition in Subsurface Sediment
at Depth of Maximum Concentration
River Mile 03 to 04

BZTO104(e)032999

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Aroclor_HOMOLOG_Pie_Charts_SubSurface_ERS.mxd)
2/6/2007 -- 10:58:12 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

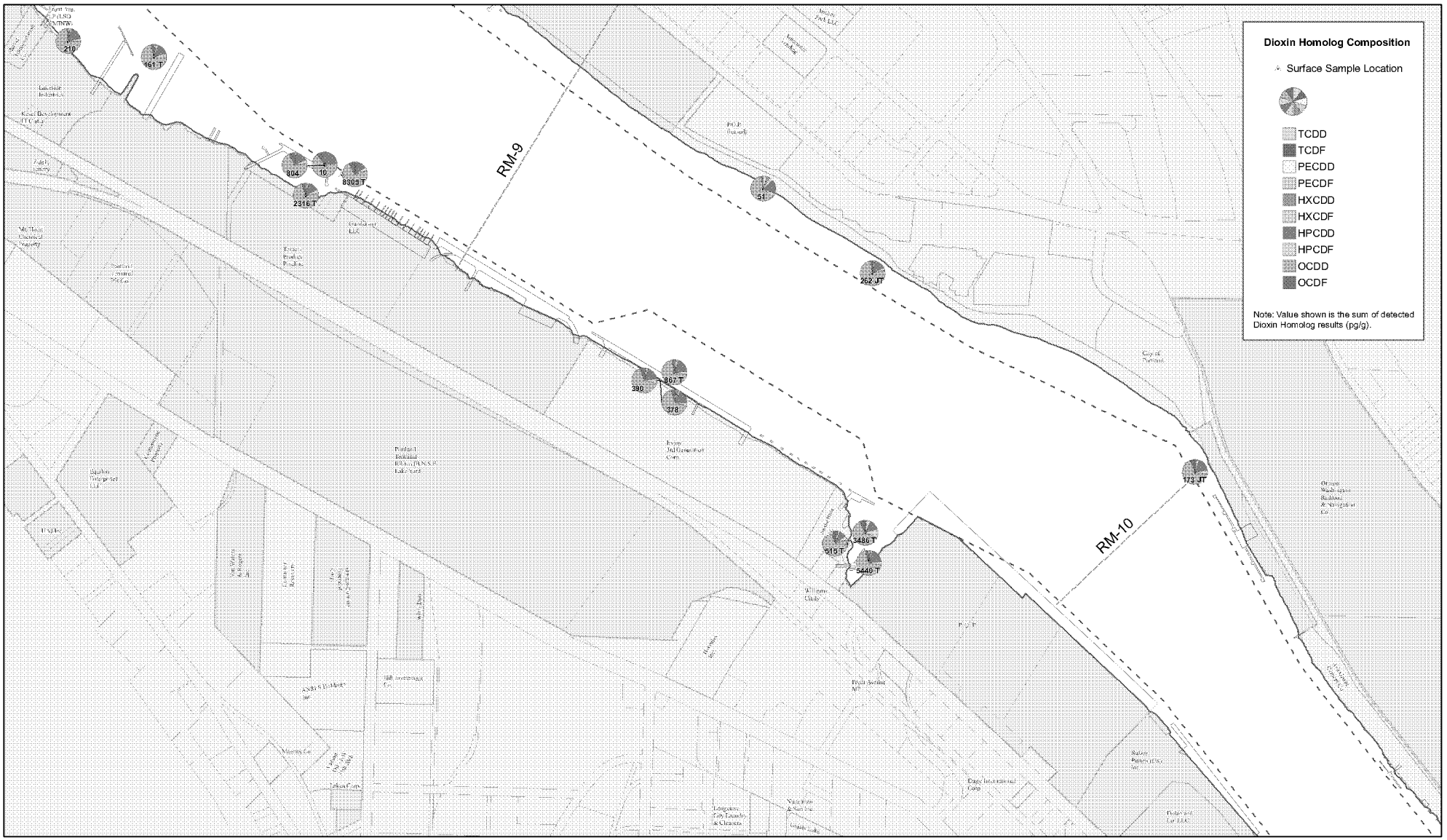
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-51h
Portland Harbor RI/FS
Comprehensive Round 2 Report
PCB Homolog Composition in Subsurface Sediment
at Depth of Maximum Concentration
River Mile 02 to 03

BZTO104(e)033000




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Dioxin_HOMOLOG_Pie_Charts_v1_Surface2.mxd)
2/6/2007 -- 12:45:57 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River Edge
Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-52a
Portland Harbor RI/FS
Comprehensive Round 2 Report
Dioxin Homolog Composition in Surface Sediment (pg/g)
River Mile 09 to 10

BZTO104(e)033001

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Dioxin_HOMOLOG_Pie_Charts_v1_Surface2.mxd)
2/6/2007 -- 12:45:57 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River Edge
Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-52b
Portland Harbor RI/FS
Comprehensive Round 2 Report
Dioxin Homolog Composition in Surface Sediment (pg/g)
River Mile 08 to 09

BZTO104(e)033002

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Dioxin_HOMOLOG_Pie_Charts_v1_Surface2.mxd)
2/6/2007 -- 12:45:57 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River Edge
Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-52c
Portland Harbor RI/FS
Comprehensive Round 2 Report
Dioxin Homolog Composition in Surface Sediment (pg/g)
River Mile 07 to 08

BZTO104(e)033003

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Dioxin_HOMOLOG_Pie_Charts_v1_Surface3.mxd)
2/6/2007 -- 12:45:57 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River Edge
Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-52d
Portland Harbor RI/FS
Comprehensive Round 2 Report
Dioxin Homolog Composition in Surface Sediment (pg/g)
River Mile 06 to 07

BZTO104(e)033004

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Dioxin_HOMOLOG_Pie_Charts_v1_Surface2.mxd)
2/6/2007 -- 12:45:57 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River Edge
Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-52e
Portland Harbor RI/FS
Comprehensive Round 2 Report
Dioxin Homolog Composition in Surface Sediment (pg/g)
River Mile 05 to 06

BZTO104(e)033005

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Dioxin_HOMOLOG_Pie_Charts_v1_Surface2.mxd)
2/6/2007 -- 12:45:57 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River Edge
Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-52 f
Portland Harbor RI/FS
Comprehensive Round 2 Report
Dioxin Homolog Composition in Surface Sediment (pg/g)
River Mile 04 to 05

BZTO104(e)033006

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Dioxin_HOMOLOG_Pie_Charts_v1_Surface2.mxd)
2/6/2007 -- 12:45:57 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

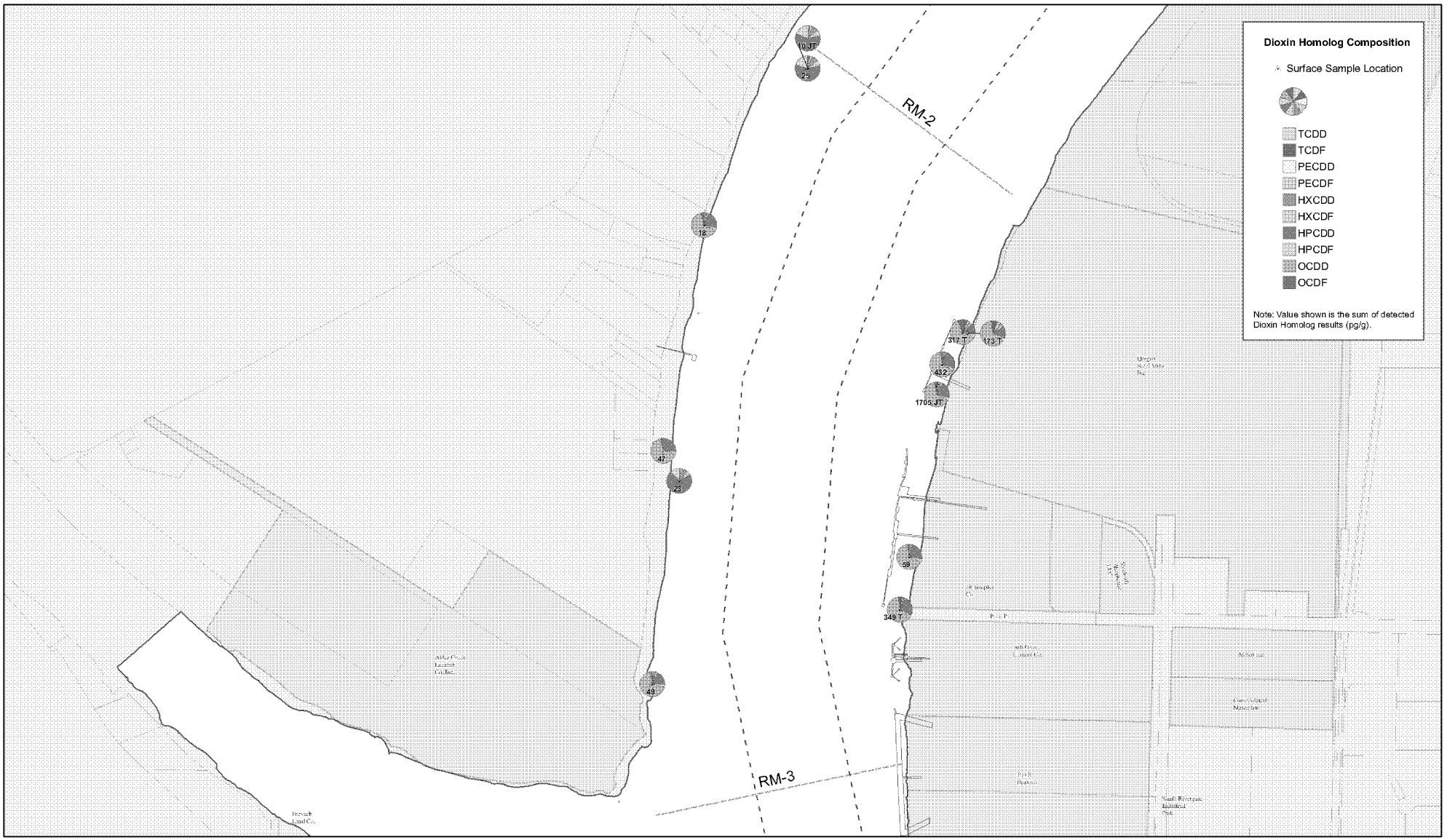
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River Edge
Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-52g
Portland Harbor RI/FS
Comprehensive Round 2 Report
Dioxin Homolog Composition in Surface Sediment (pg/g)
River Mile 03 to 04

BZTO104(e)033007




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Dioxin_HOMOLOG_Pie_Charts_v1_Surface2.mxd)
2/6/2007 -- 12:45:57 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River Edge
Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-52h
Portland Harbor RI/FS
Comprehensive Round 2 Report
Dioxin Homolog Composition in Surface Sediment (pg/g)
River Mile 02 to 03

BZTO104(e)033008

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Dioxin_HOMOLOG_Pie_Charts_v1_SubSurface_Q.mxd)
2/6/2007 -- 12:55:28 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River Edge
Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-53a
Portland Harbor RI/FS
Comprehensive Round 2 Report
Dioxin Homolog Composition in
All Subsurface Sediment Samples (pg/g)
River Mile 09 to 10

BZTO104(e)033009

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Dioxin_HOMOLOG_Pie_Charts_v1_SubSurface_Q.mxd)
2/6/2007 -- 12:55:28 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River Edge
Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-53b
Portland Harbor RI/FS
Comprehensive Round 2 Report
Dioxin Homolog Composition in
All Subsurface Sediment Samples (pg/g)
River Mile 08 to 09

BZTO104(e)033010

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Dioxin_HOMOLOG_Pie_Charts_v1_SubSurface_Q.mxd)
2/6/2007 -- 12:55:28 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River Edge
Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-53 c
Portland Harbor RI/FS
Comprehensive Round 2 Report
Dioxin Homolog Composition in
All Subsurface Sediment Samples (pg/g)
River Mile 07 to 08

BZTO104(e)033011

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Dioxin_HOMOLOG_Pie_Charts_v1_SubSurface_Q.mxd)
2/6/2007 -- 12:55:28 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map 6.1-53d
Portland Harbor RI/FS
Comprehensive Round 2 Report
Dioxin Homolog Composition in
All Subsurface Sediment Samples (pg/g)
River Mile 06 to 07

BZTO104(e)033012

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Dioxin_HOMOLOG_Pie_Charts_v1_SubSurface_Q.mxd)
2/6/2007 -- 12:55:28 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

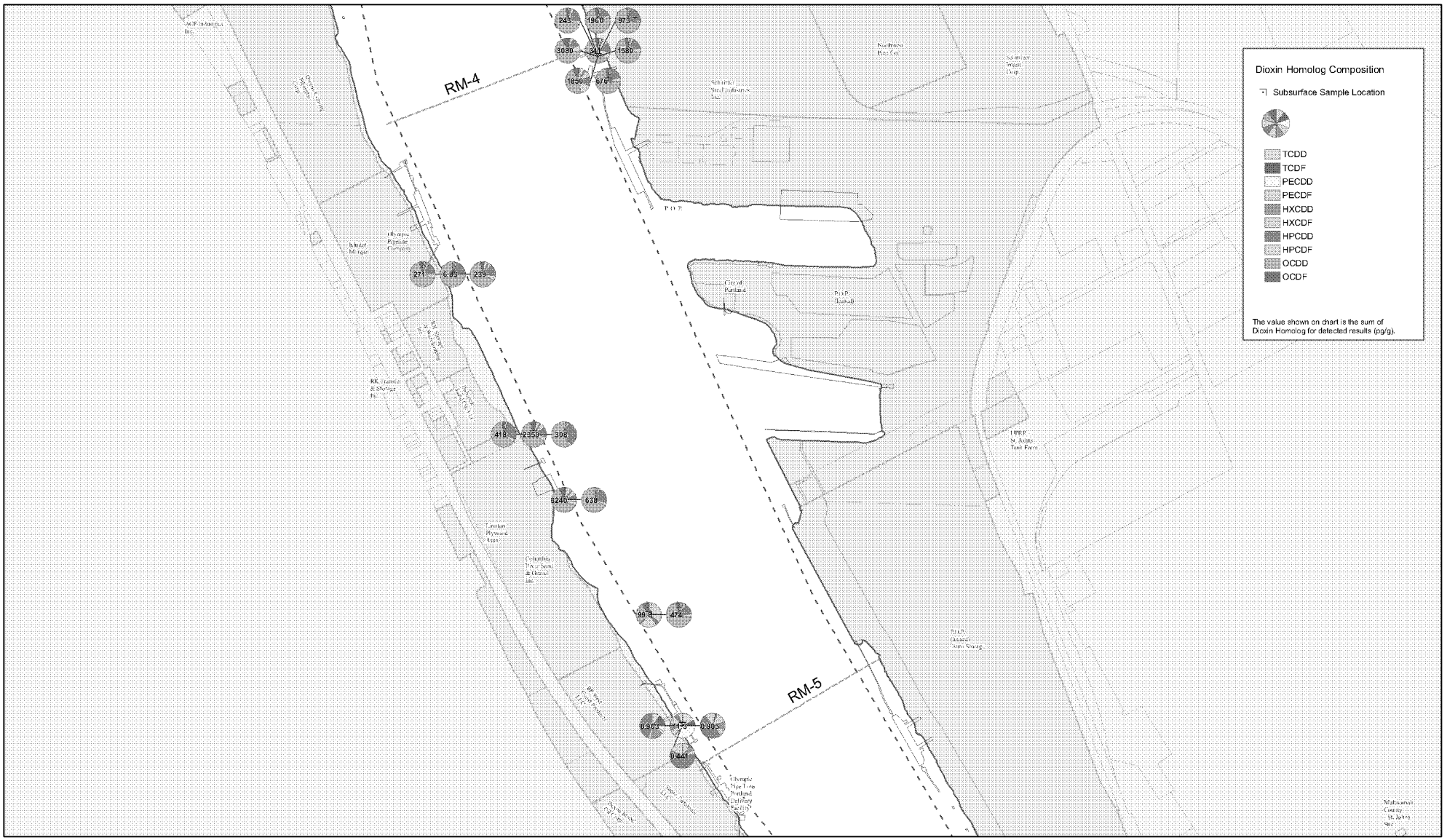
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River Edge
Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-53e
Portland Harbor RI/FS
Comprehensive Round 2 Report
Dioxin Homolog Composition in
All Subsurface Sediment Samples (pg/g)
River Mile 05 to 06

BZTO104(e)033013




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_ReportingPie_Charts\PCB_Dioxin_HOMOLOG_Pie_Charts_v1_SubSurface_Q.mxd)
2/6/2007 -- 12:55:28 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

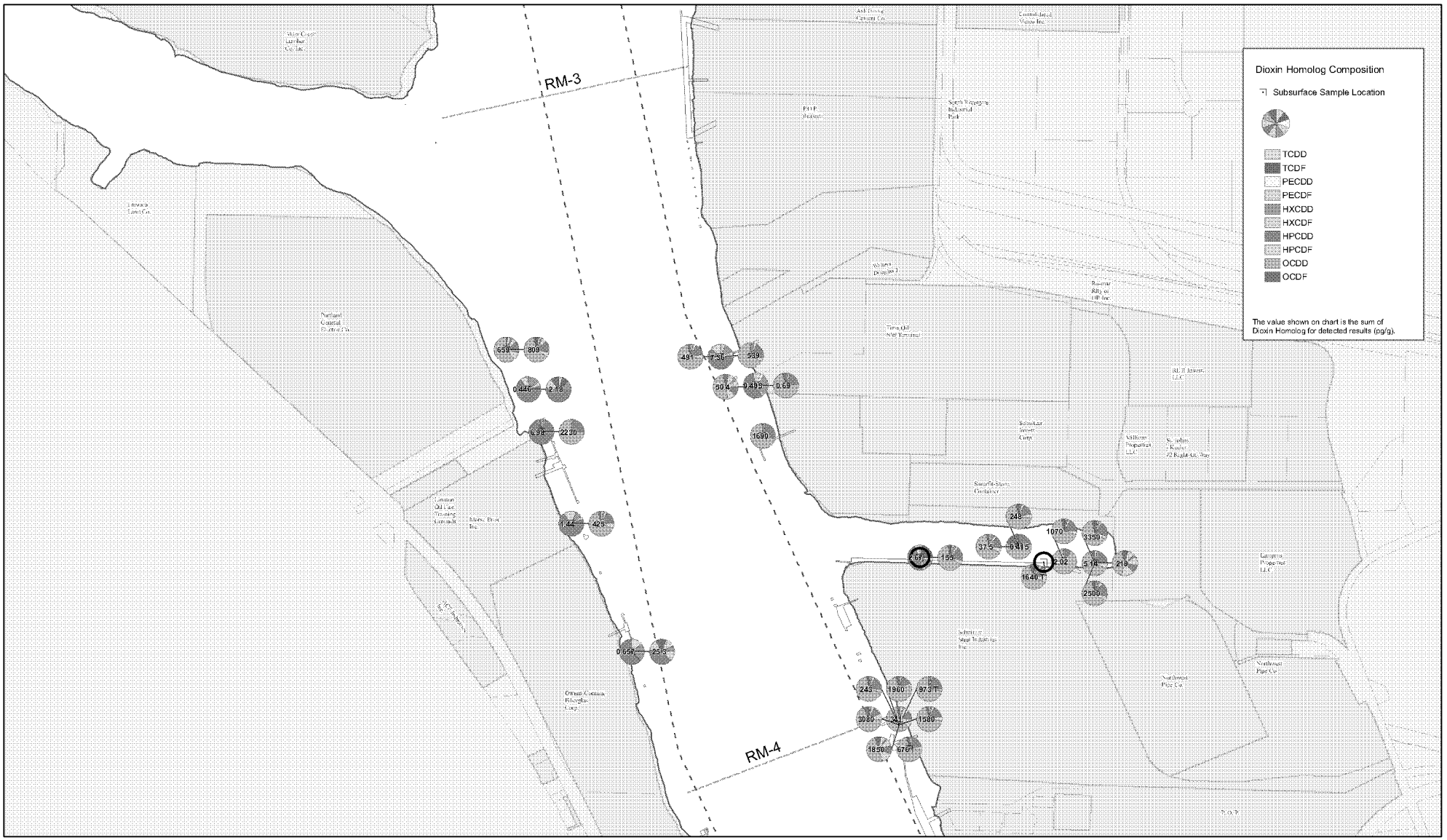
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River Edge
Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-53 f
Portland Harbor RI/FS
Comprehensive Round 2 Report
Dioxin Homolog Composition in
All Subsurface Sediment Samples (pg/g)
River Mile 04 to 05

BZTO104(e)033014




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Dioxin_HOMOLOG_Pie_Charts_v1_SubSurface_Q.mxd)
2/6/2007 -- 12:55:28 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River Edge
Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-53g
Portland Harbor RI/FS
Comprehensive Round 2 Report
Dioxin Homolog Composition in
All Subsurface Sediment Samples (pg/g)
River Mile 03 to 04

BZTO104(e)033015

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PCB_Dioxin_HOMOLOG_Pie_Charts_v1_SubSurface_Q.mxd)
2/6/2007 -- 12:55:28 PM

integral consulting inc.

LWG Lower Willamette Group

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

River Edge
Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-53h
Portland Harbor RI/FS
Comprehensive Round 2 Report
Dioxin Homolog Composition in
All Subsurface Sediment Samples (pg/g)
River Mile 02 to 03

BZTO104(e)033016

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

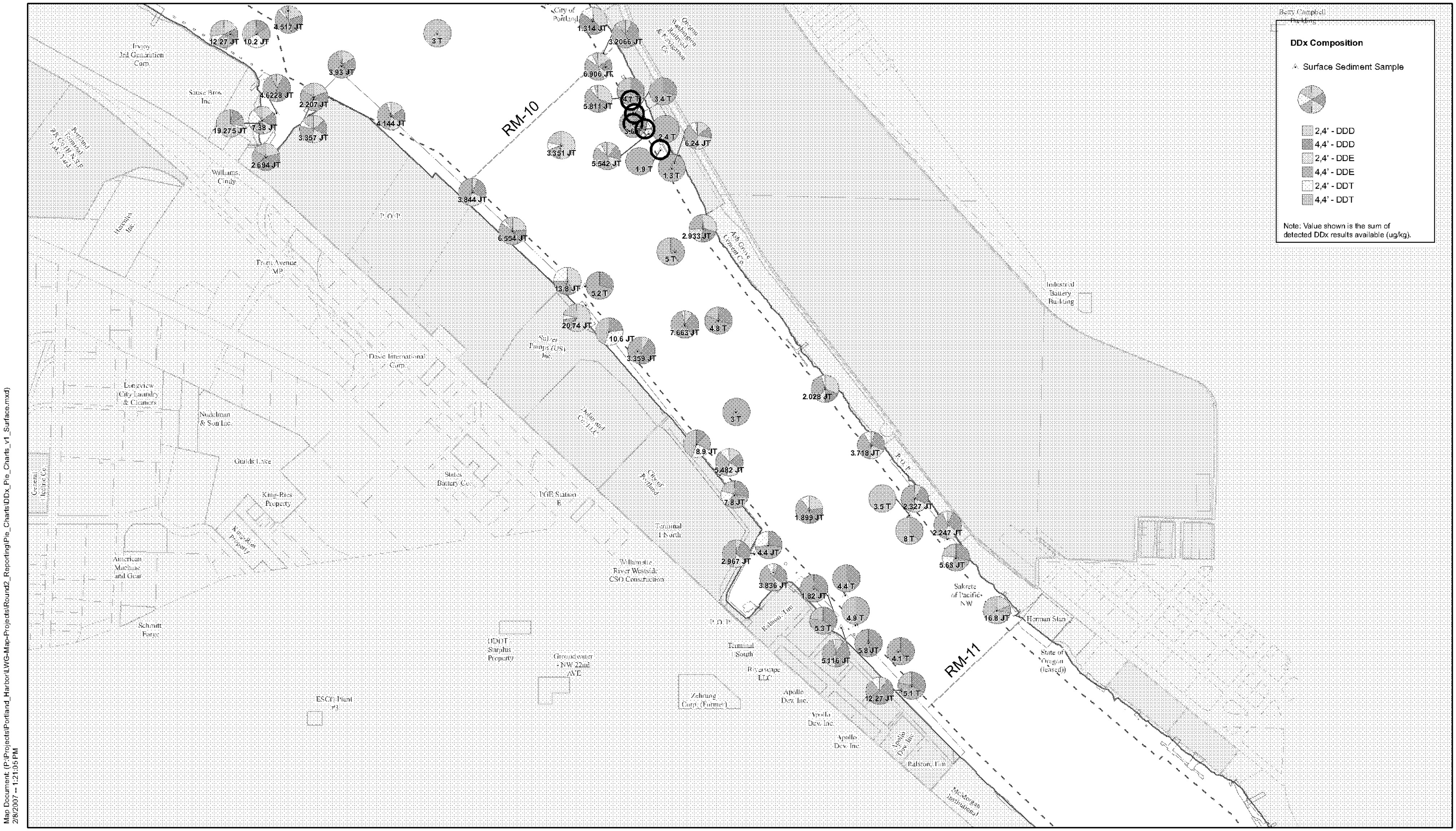
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-54a
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Surface Sediment (ug/kg)
River Mile 11 to 12

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\DDx_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:21:05 PM

BZTO104(e)033017




FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 300 600 900 1,200 Feet

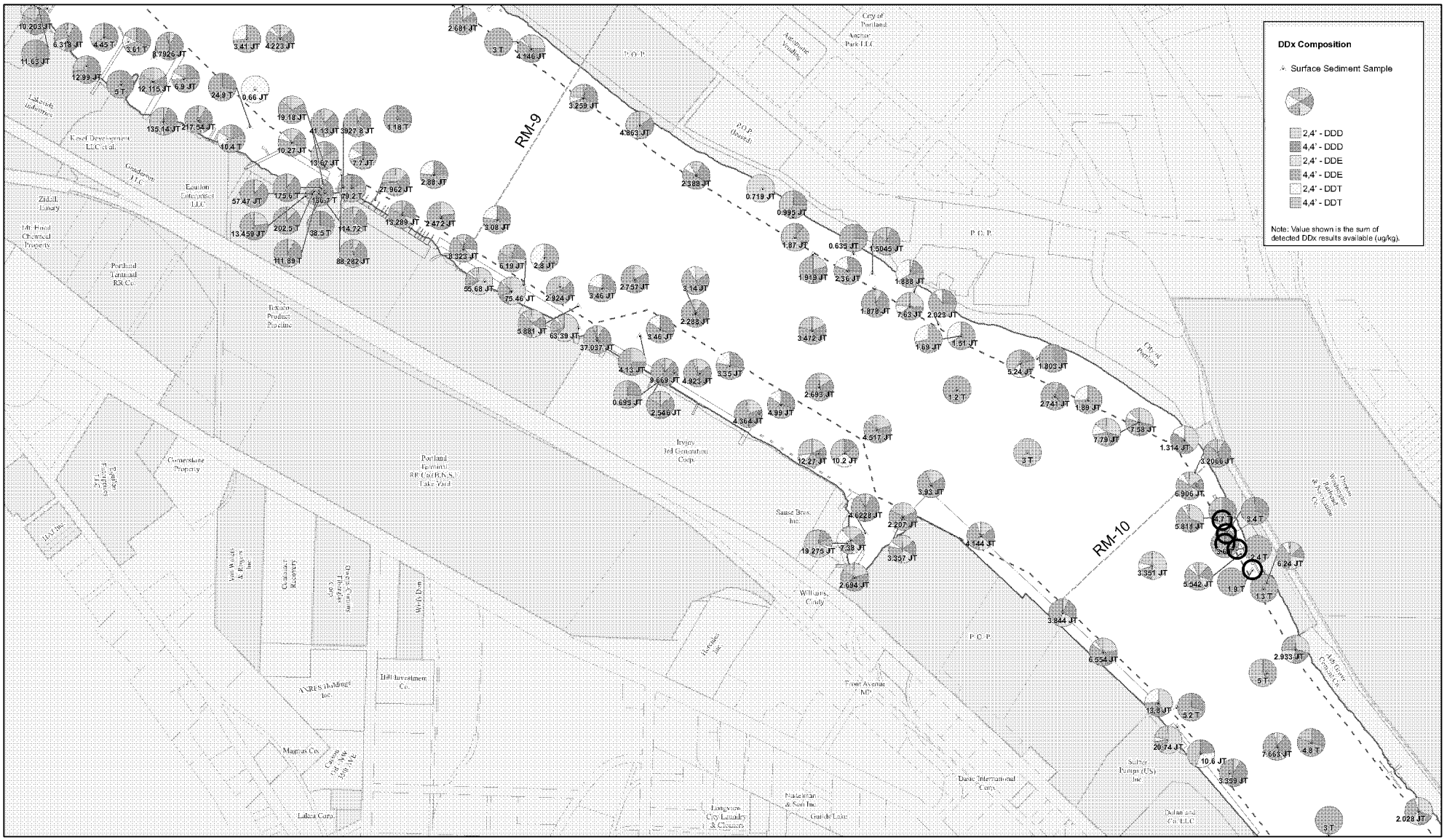
- Docks and Structures
- Navigation Channel
- River Mile
- Station is Dredged or Capped
- Site/Vicinity Tax Lot Owners
- Waterfront Taxlots
- Upland Sites

integral consulting inc.

LWG Lower Willamette Group

Map 6.1-54b
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Surface Sediment (ug/kg)
River Mile 10 to 11

BZTO104(e)033018



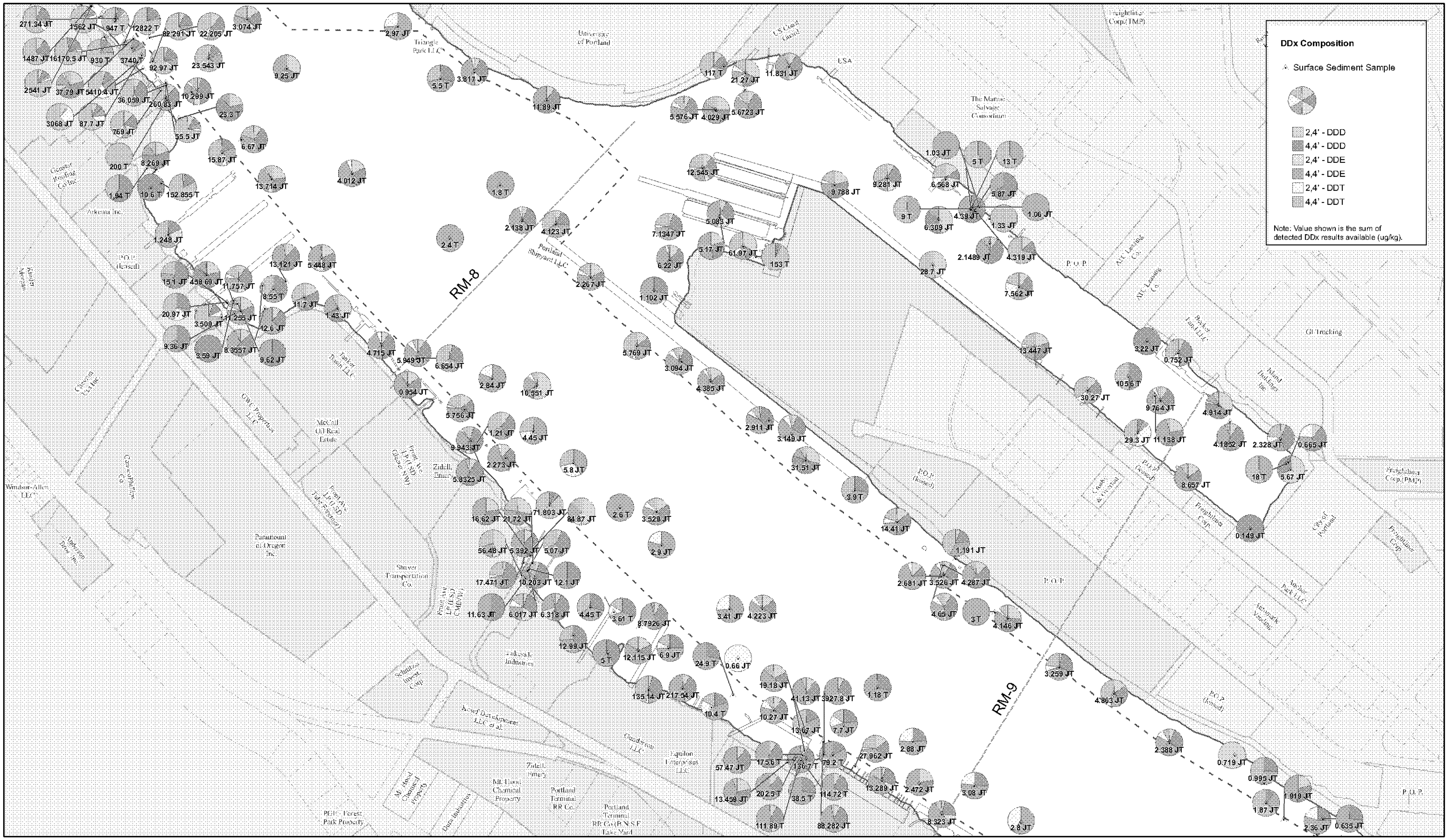

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map 6.1-54c
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Surface Sediment (ug/kg)
River Mile 09 to 10

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\DDx_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:21:05 PM

BZTO104(e)033019




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\DDx_Pie_Charts_v1_Surface.mxd)
2/8/2007 -- 1:21:05 PM

integral consulting inc.

LWG Lower Willamette Group

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-54d
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Surface Sediment (ug/kg)
River Mile 08 to 09

BZTO104(e)033020

integral consulting inc.

LWG Lower Willamette Group

Map 6.1-54e
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Surface Sediment (ug/kg)
River Mile 07 to 08

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_ReportingPie_Charts\DDx_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:21:05 PM

BZTO104(e)033021

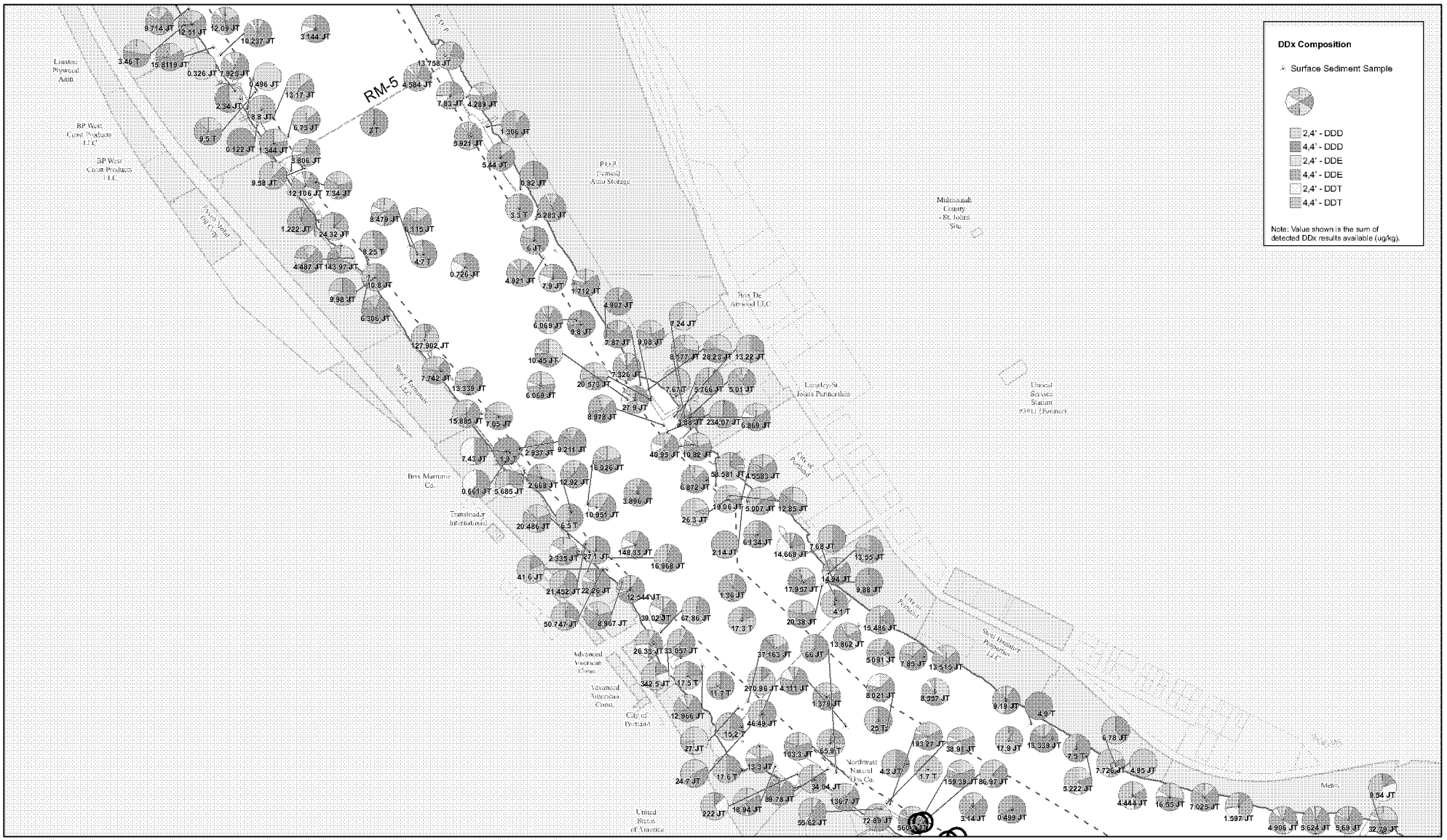
Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_ReportingPie_Charts\DDx_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:21:05 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map 6.1-54 f
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Surface Sediment (ug/kg)
River Mile 06 to 07

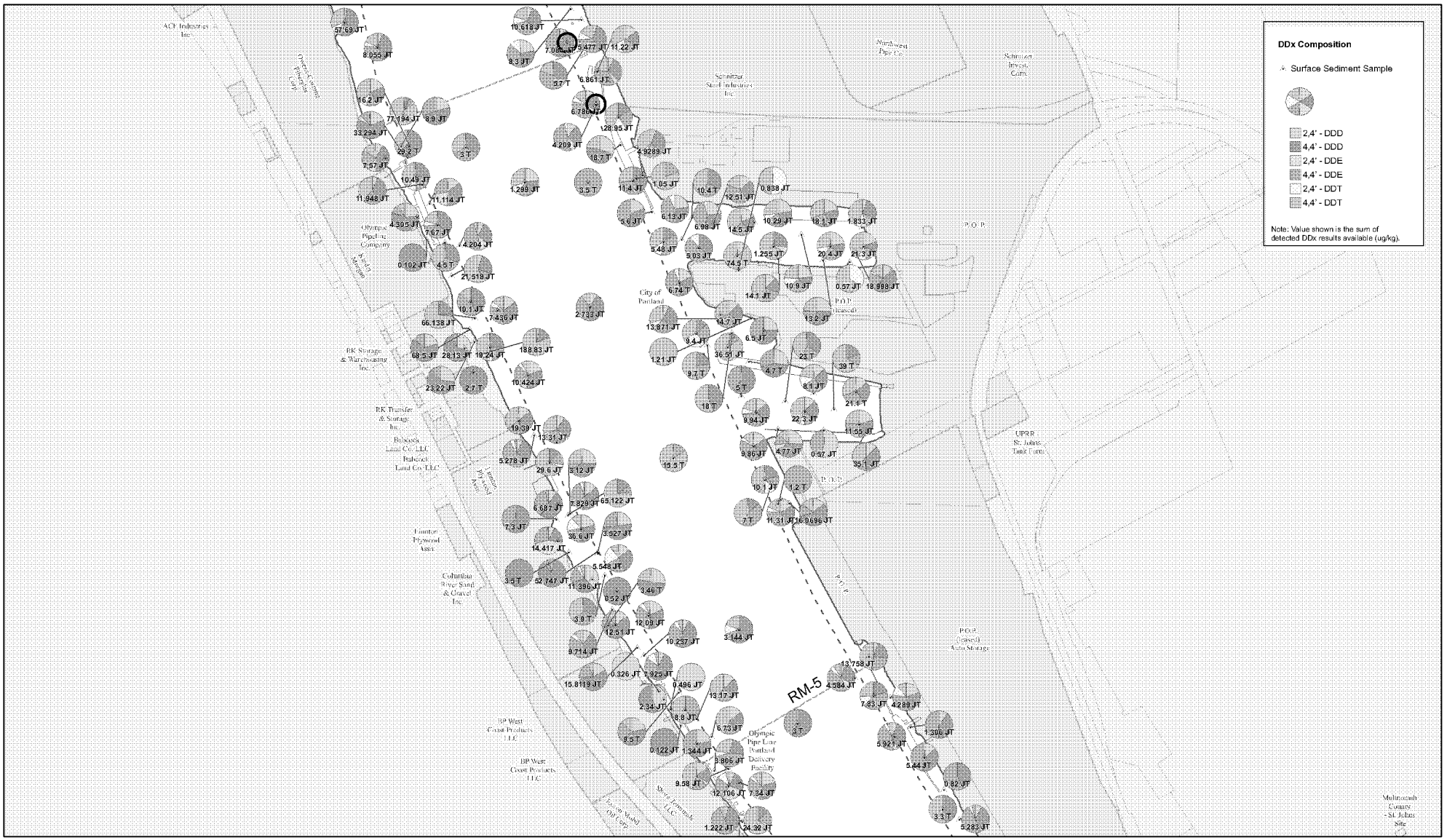
BZTO104(e)033022




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\DDx_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:21:05 PM

Map 6.1-54g
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Surface Sediment (ug/kg)
River Mile 05 to 06

BZTO104(e)033023




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

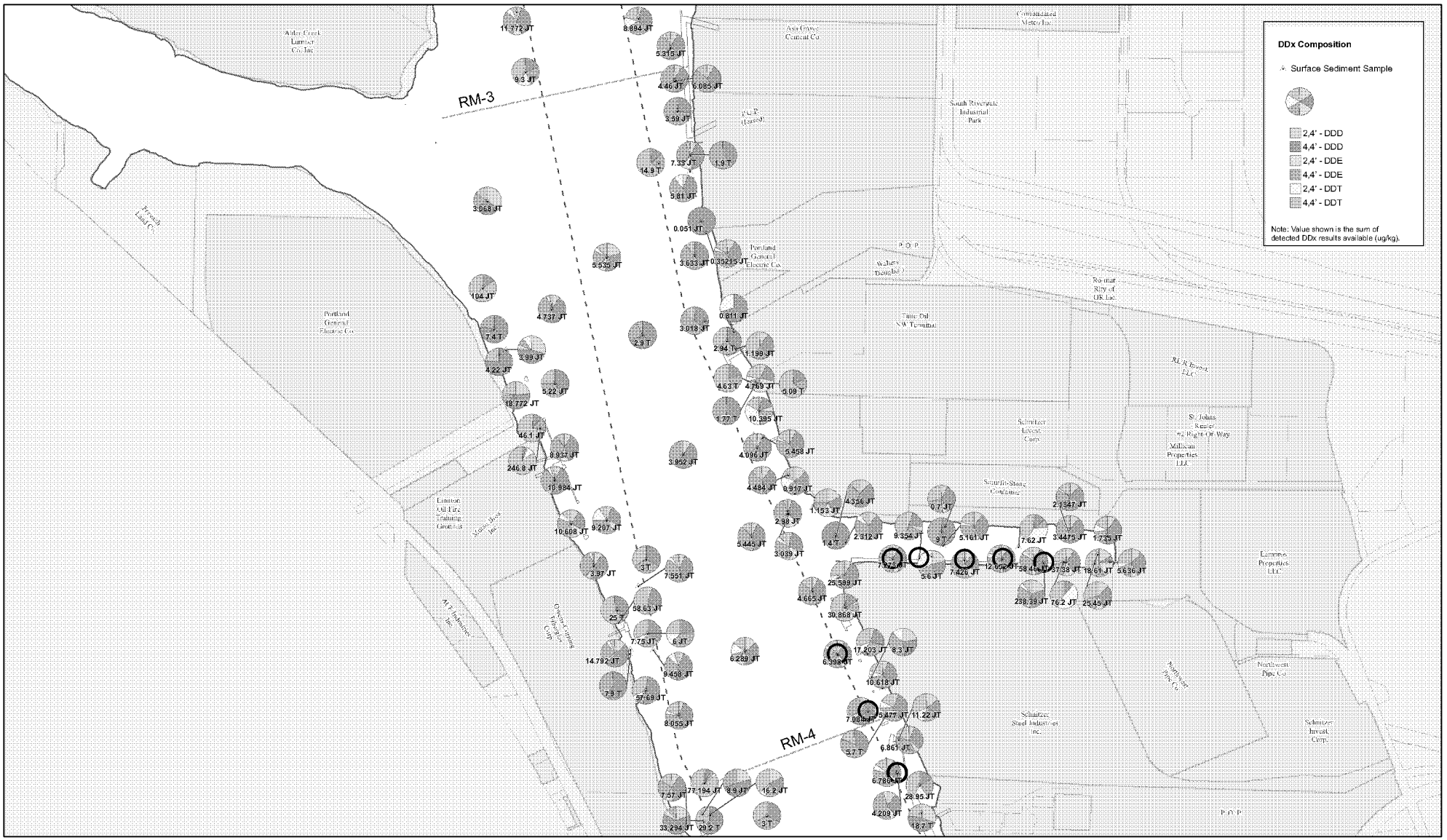
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-54h
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Surface Sediment (ug/kg)
River Mile 04 to 05

Map Document: (P:\Projects\Portland_Harbor\LWG-Maps-Projects\Round2_Reporting\Pie_Charts\DDx_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:21:05 PM

BZTO104(e)033024




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\DDx_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:21:05 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

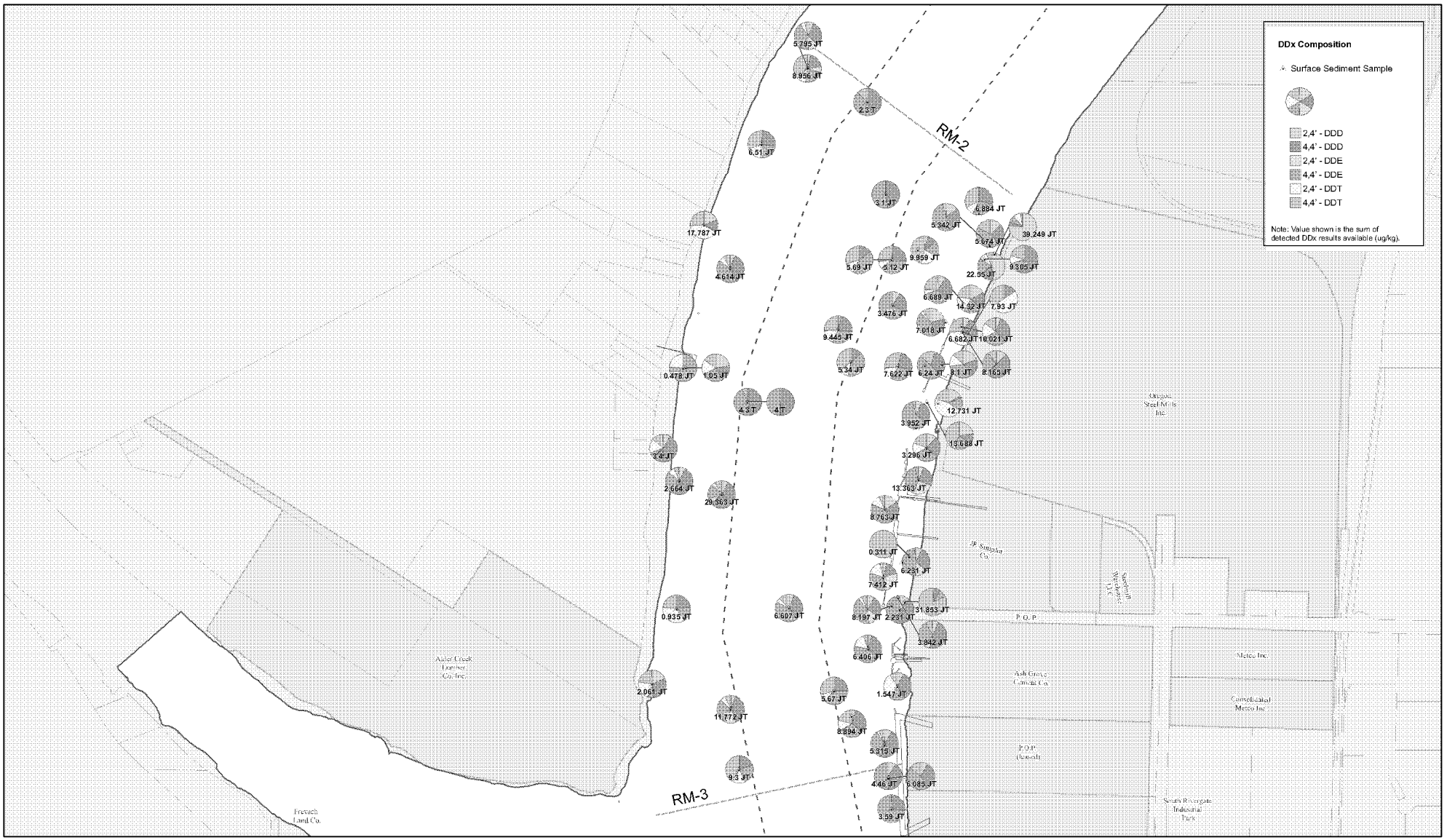
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-54 i
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Surface Sediment (ug/kg)
River Mile 03 to 04

BZTO104(e)033025




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\DDx_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:21:05 PM

integral consulting inc.

LWG Lower Willamette Group

N

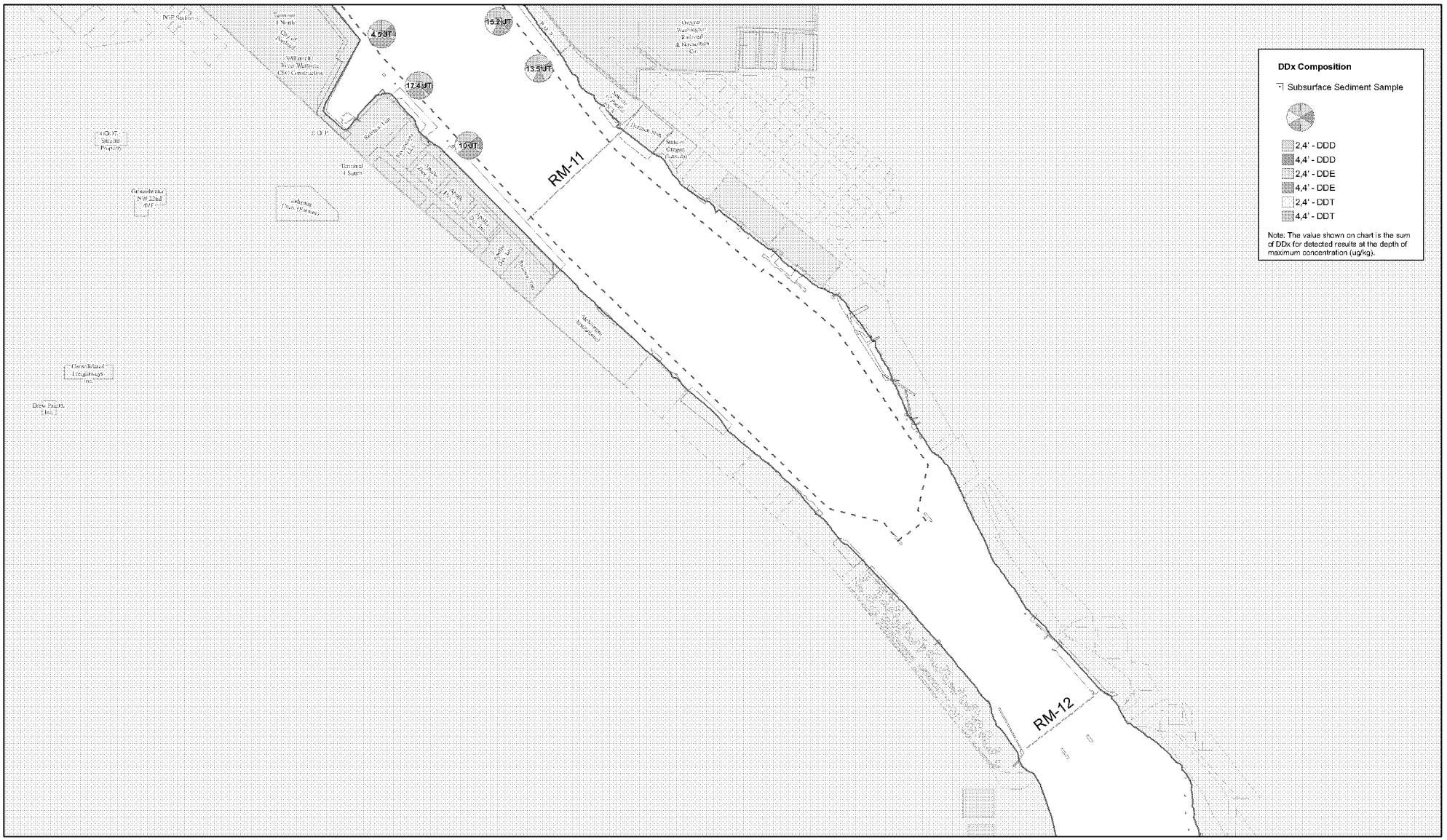
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-54 j
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Surface Sediment (ug/kg)
River Mile 02 to 03

BZTO104(e)033026




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\DDx_Pie_Charts_v1_SubSurface.mxd)
2/6/2007 -- 1:27:51 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Station is Dredged or Capped
Docks and Structures
Navigation Channel
River Mile

Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-55a
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 11 to 12

BZTO104(e)033027

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\DDx_Pie_Charts_v1_SubSurface.mxd)
2/6/2007 -- 1:27:51 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Station is Dredged or Capped
Docks and Structures
Navigation Channel
River Mile

Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-55b
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 10 to 11

BZTO104(e)033028

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\DDx_Pie_Charts_v1_SubSurface.mxd)
2/6/2007 -- 1:27:51 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Station is Dredged or Capped
Docks and Structures
Navigation Channel
River Mile
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-55c
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 09 to 10

BZTO104(e)033029

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\DDx_Pie_Charts_v1_SubSurface.mxd)
2/6/2007 -- 1:27:51 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

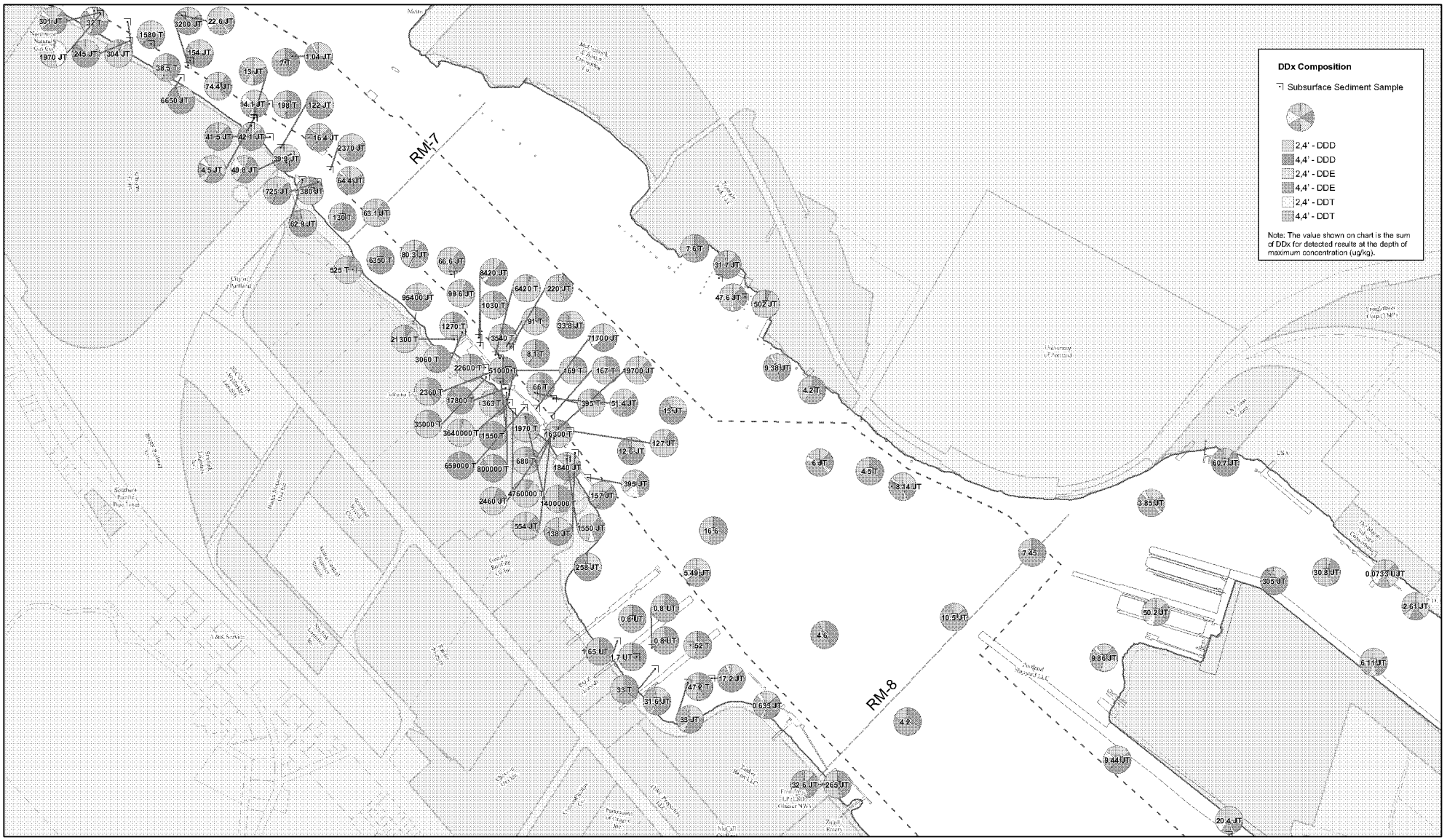
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Station is Dredged or Capped
Docks and Structures
Navigation Channel
River Mile

Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-55d
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 08 to 09

BZTO104(e)033030




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\DDx_Pie_Charts_v1_SubSurface.mxd)
2/6/2007 -- 1:27:51 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Station is Dredged or Capped
Docks and Structures
Navigation Channel
River Mile

Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-55e
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 07 to 08

BZTO104(e)033031

Map Document: (P:\Projects\Portland_Harbor\LWG-Misc-Projects\Round2_Reporting\Pie_Charts\DDx_Pie_Charts_v1_SubSurface.mxd)
2/6/2007 -- 1:27:51 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

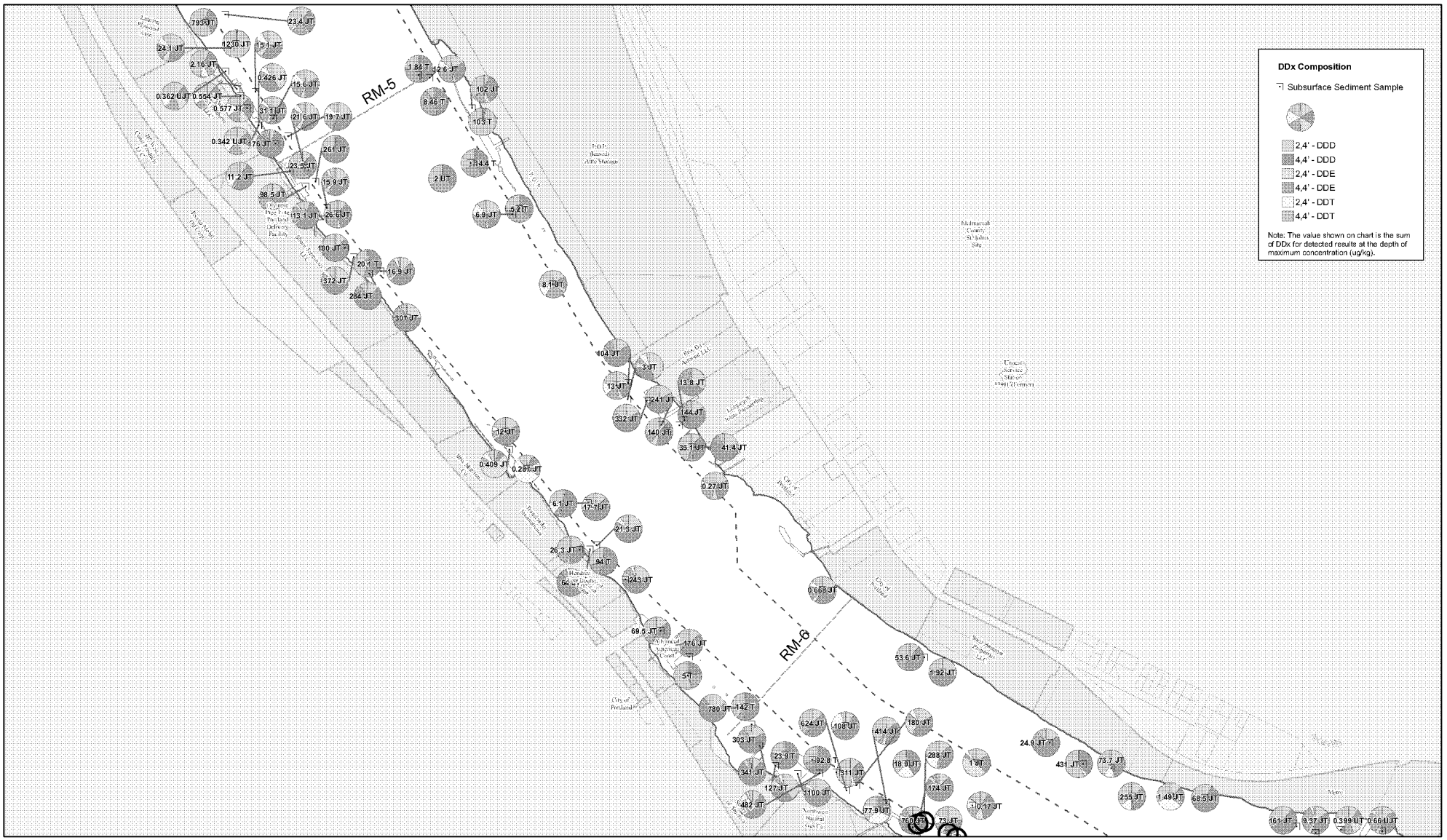
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Station is Dredged or Capped
Docks and Structures
Navigation Channel
River Mile

Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-55 f
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 06 to 07

BZTO104(e)033032




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_ReportingPie_Charts\DDx_Pie_Charts_v1_SubSurface.mxd)
2/6/2007 -- 1:27:51 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Station is Dredged or Capped
Docks and Structures
Navigation Channel
River Mile
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-55g
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 05 to 06

BZTO104(e)033033

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\DDx_Pie_Charts_v1_SubSurface.mxd)
2/6/2007 -- 1:27:51 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

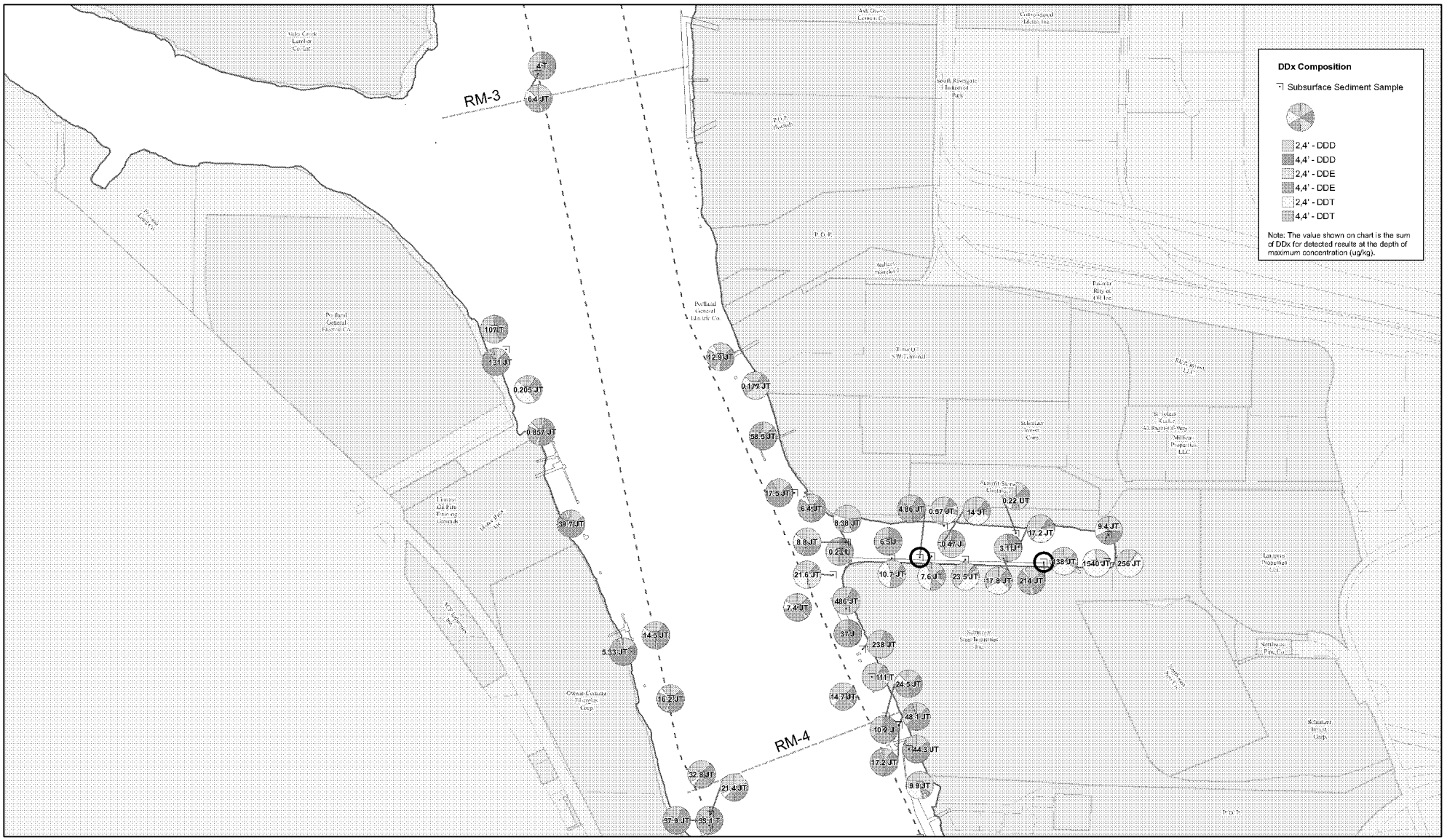
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Station is Dredged or Capped
Docks and Structures
Navigation Channel
River Mile

Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-55h
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 04 to 05

BZTO104(e)033034




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\DDx_Pie_Charts_v1_SubSurface.mxd)
2/6/2007 -- 1:27:51 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Station is Dredged or Capped
Docks and Structures
Navigation Channel
River Mile

Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-55 i
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 03 to 04

BZTO104(e)033035

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\DDx_Pie_Charts_v1_SubSurface.mxd)
2/6/2007 -- 1:27:51 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Station is Dredged or Capped
Docks and Structures
Navigation Channel
River Mile
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-55 j
Portland Harbor RI/FS
Comprehensive Round 2 Report
DDx Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 02 to 03

BZTO104(e)033036

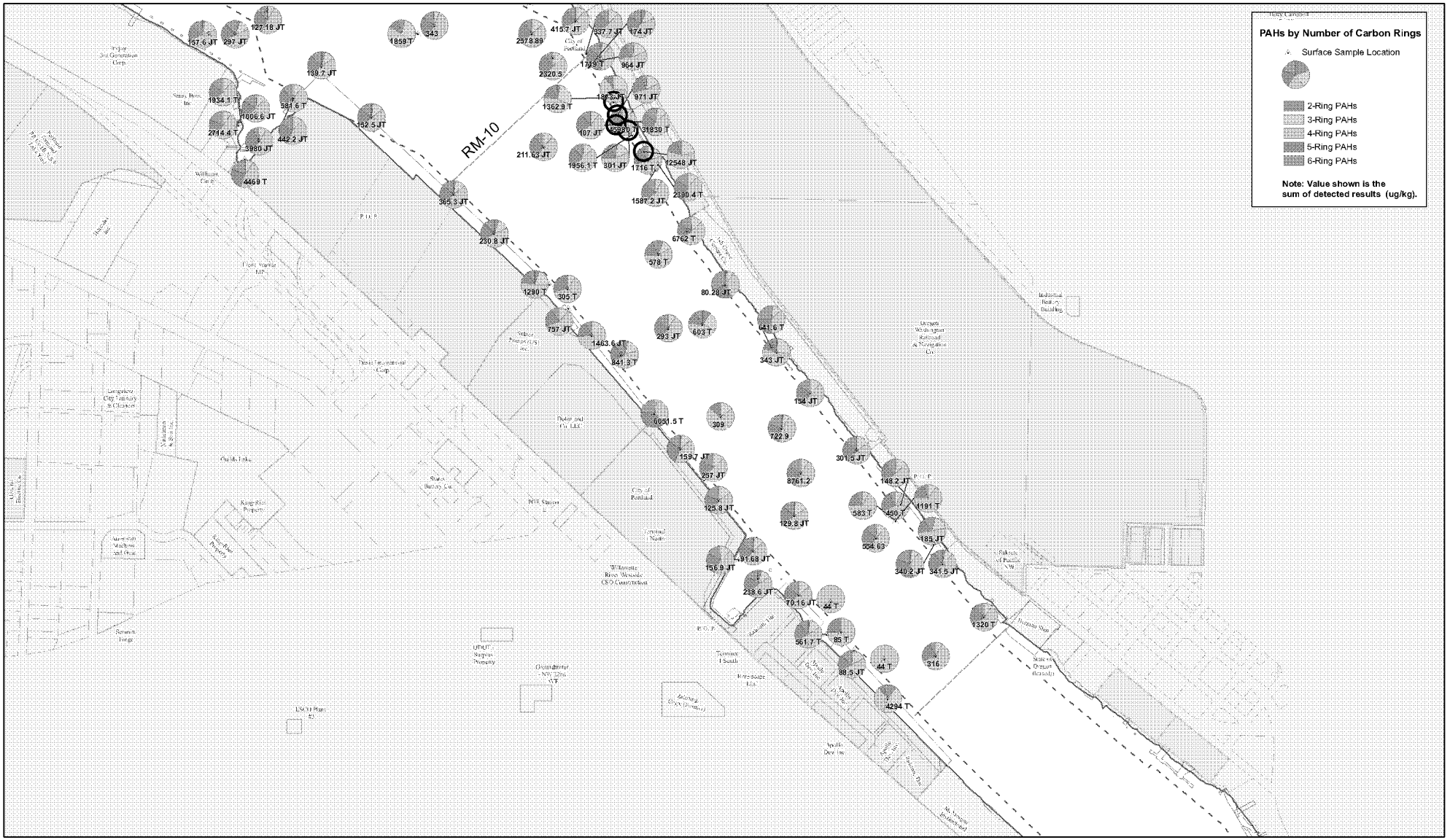
Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PAHs_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:45:07 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map 6.1-56 a
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Surface Sediment (ug/kg)
River Mile 11 to 12

BZTO104(e)033037




Map Document: (P:\Projects\Portland_Harbor\LWG-Maps-Projects\Round2_ReportingPie_Charts\PAHs_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:45:07 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map 6.1-56 b
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Surface Sediment (ug/kg)
River Mile 10 to 11

BZTO104(e)033038

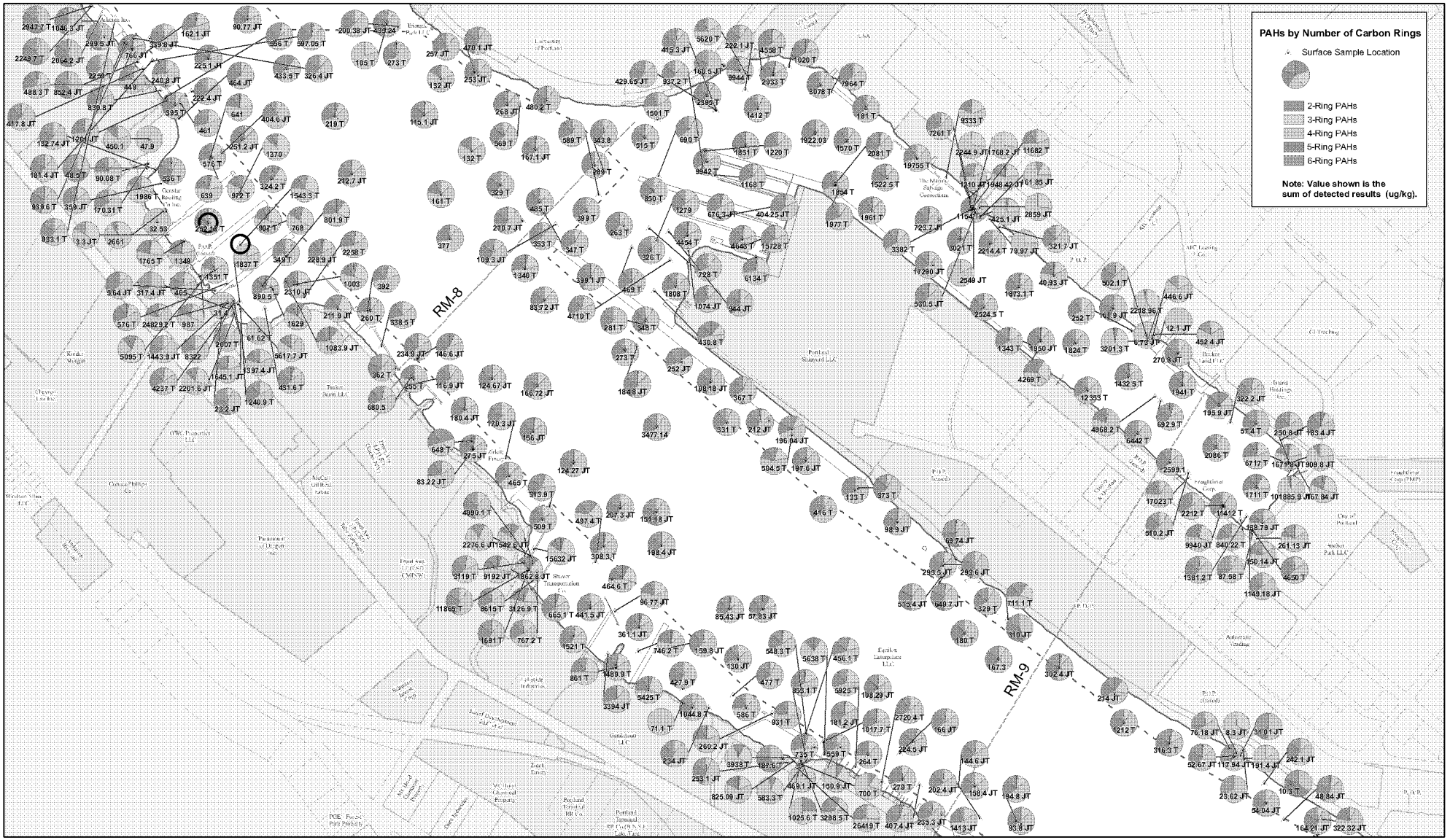
Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PAHs_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:45:07 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map 6.1-56 c
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Surface Sediment (ug/kg)
River Mile 09 to 10

BZTO104(e)033039




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PAHs_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:45:07 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

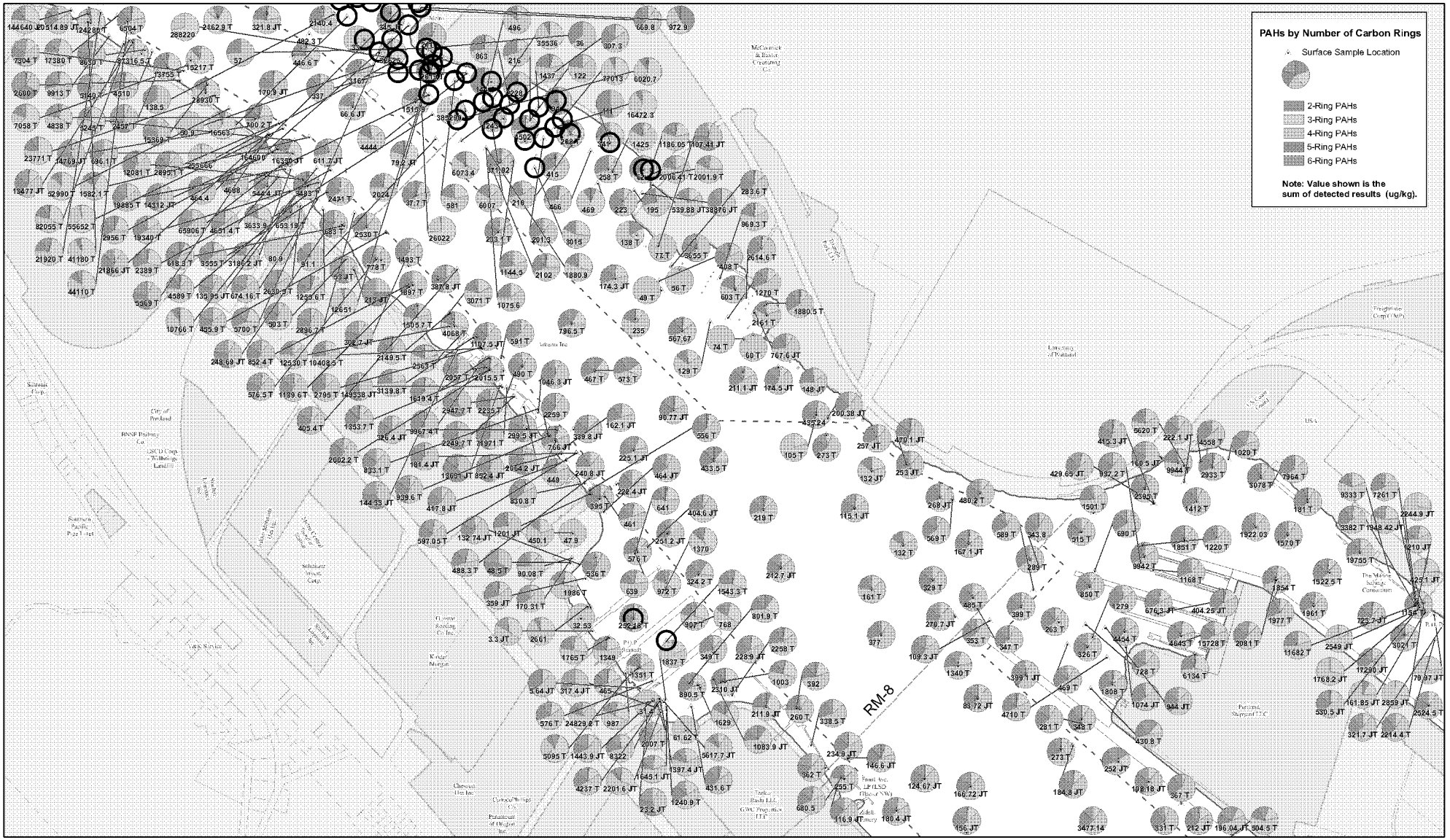
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-56 d
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Surface Sediment (ug/kg)
River Mile 08 to 09

BZTO104(e)033040




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PAHs_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:45:07 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

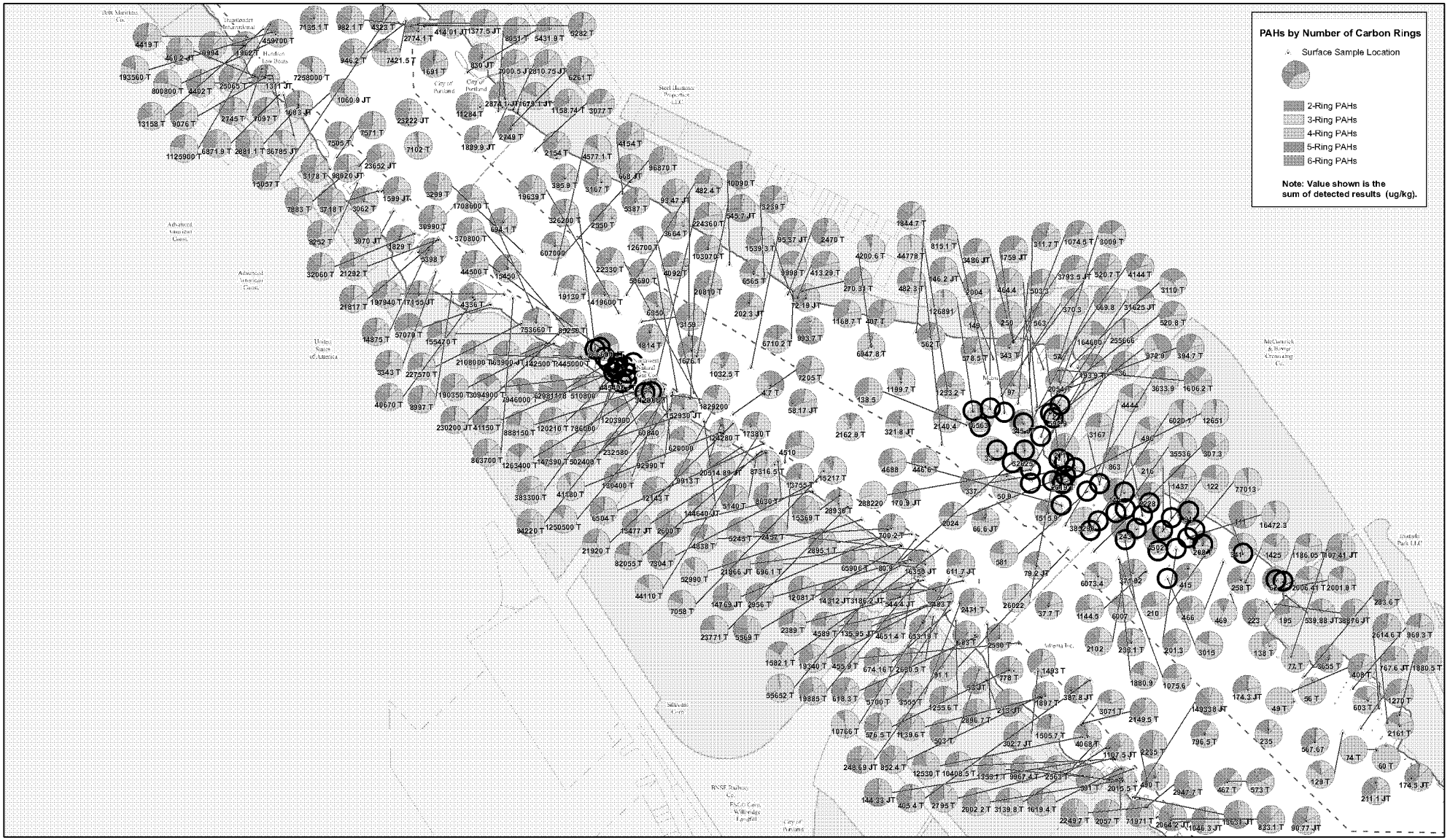
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped

Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-56 e
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Surface Sediment (ug/kg)
River Mile 07 to 08

BZTO104(e)033041




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PAHs_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:45:07 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

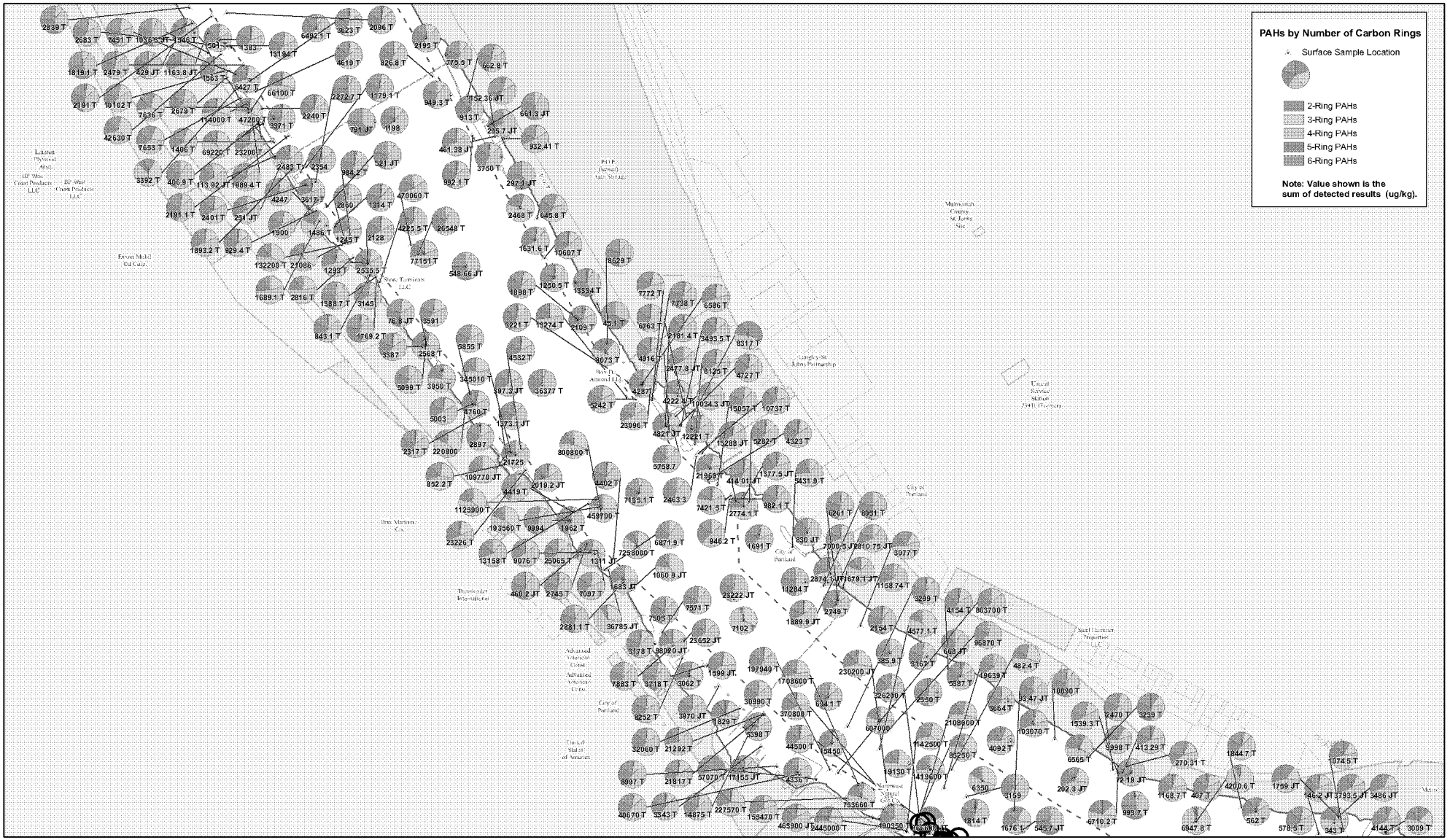
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-56 f
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Surface Sediment (ug/kg)
River Mile 06 to 07

BZTO104(e)033042




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PAHs_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:45:07 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

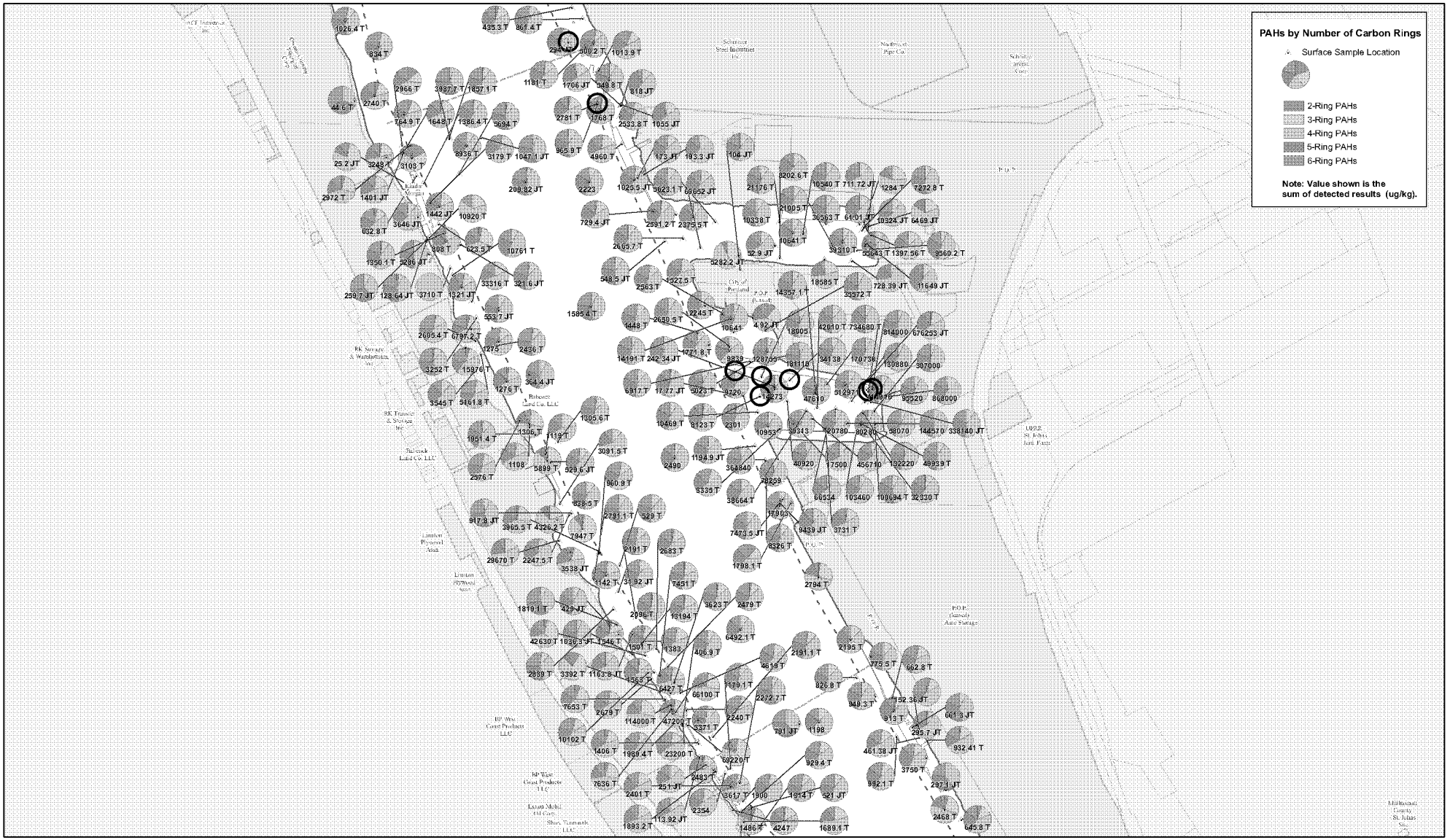
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-56 g
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Surface Sediment (ug/kg)
River Mile 05 to 06

BZTO104(e)033043




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PAHs_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:45:07 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

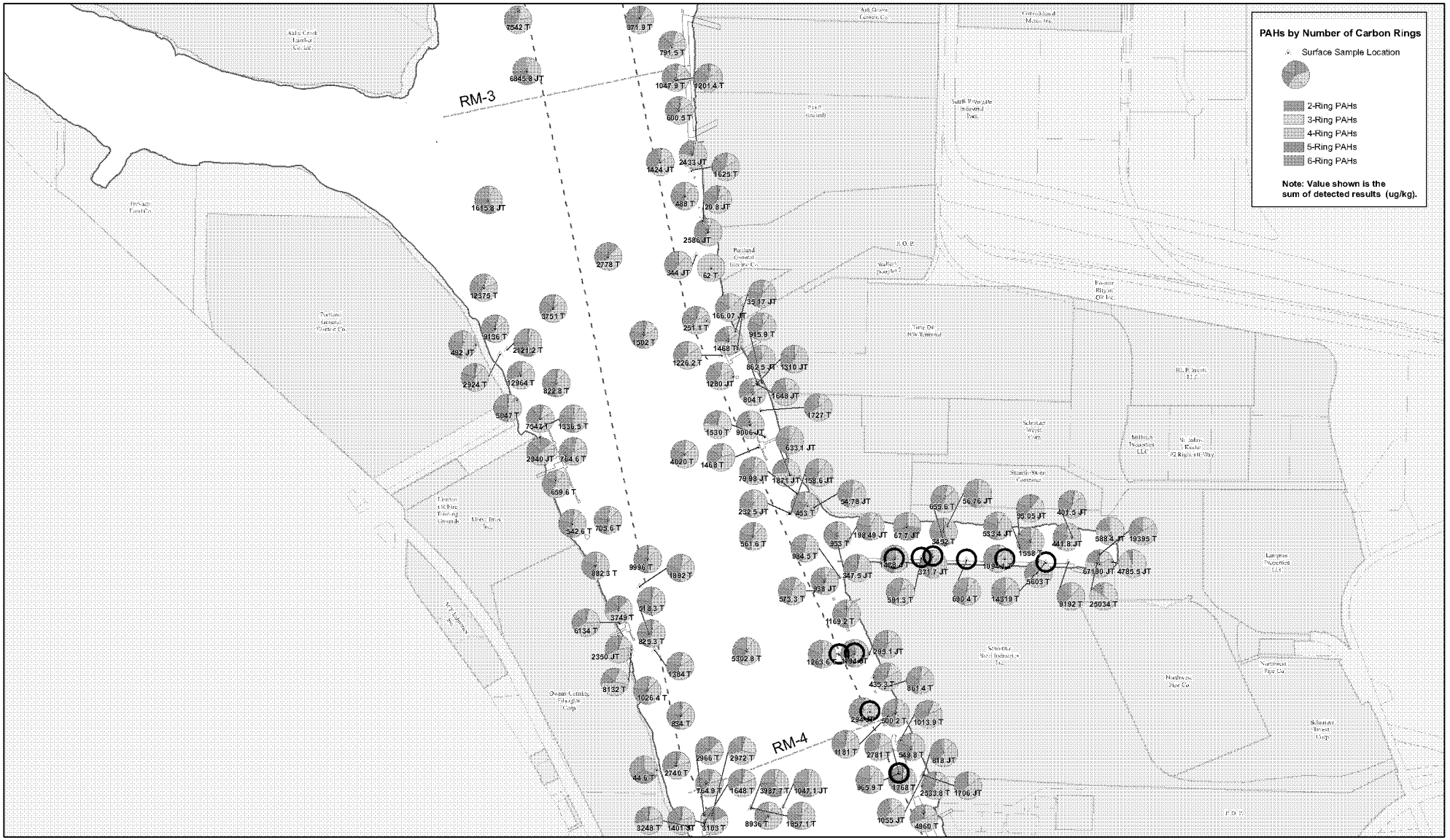
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-56 h
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Surface Sediment (ug/kg)
River Mile 04 to 05

BZTO104(e)033044



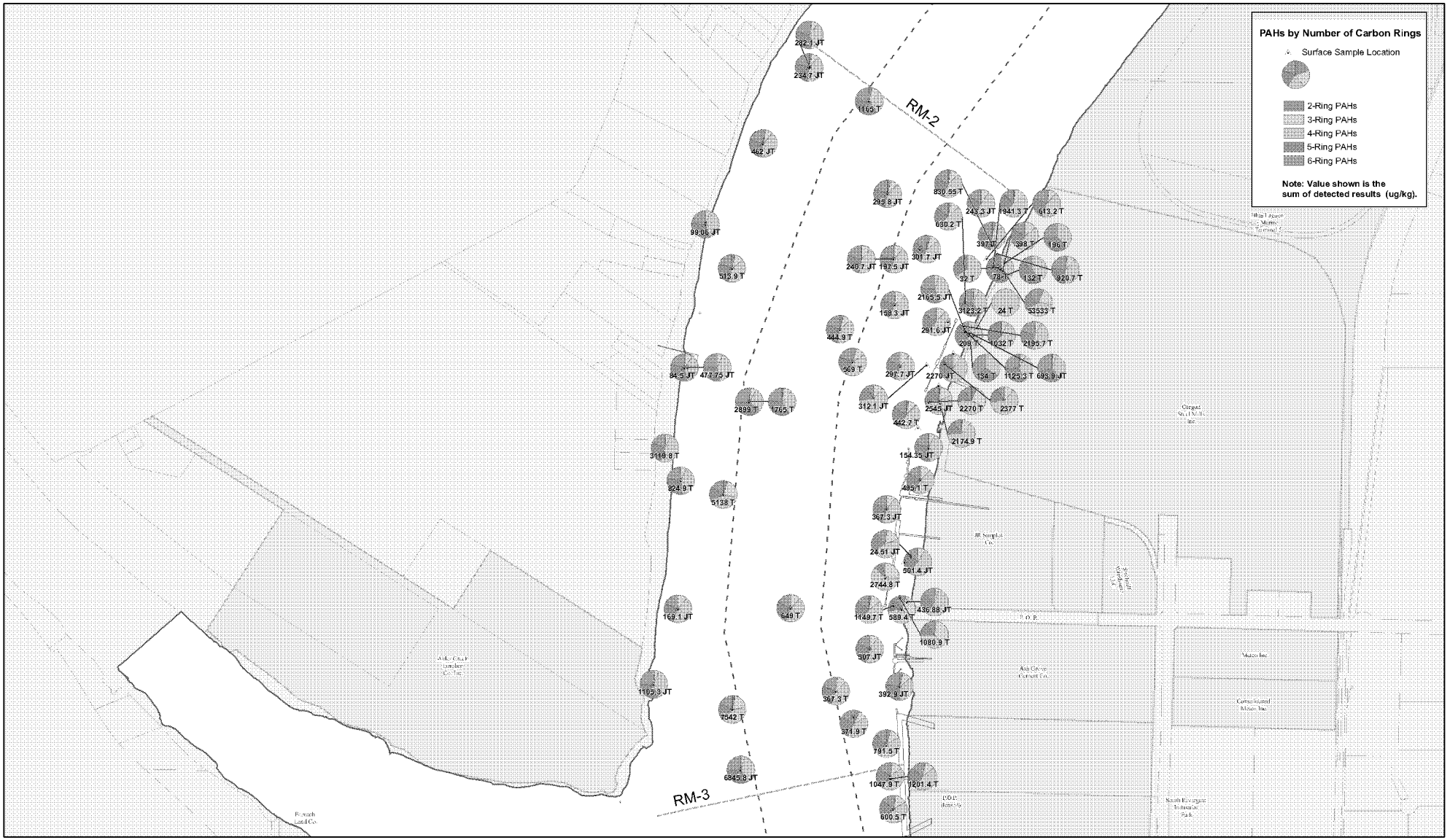

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PAHs_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:45:07 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map 6.1-56 i
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Surface Sediment (ug/kg)
River Mile 03 to 04

BZTO104(e)033045




Map Document (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PAHs_Pie_Charts_v1_Surface.mxd)
2/6/2007 -- 1:45:07 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

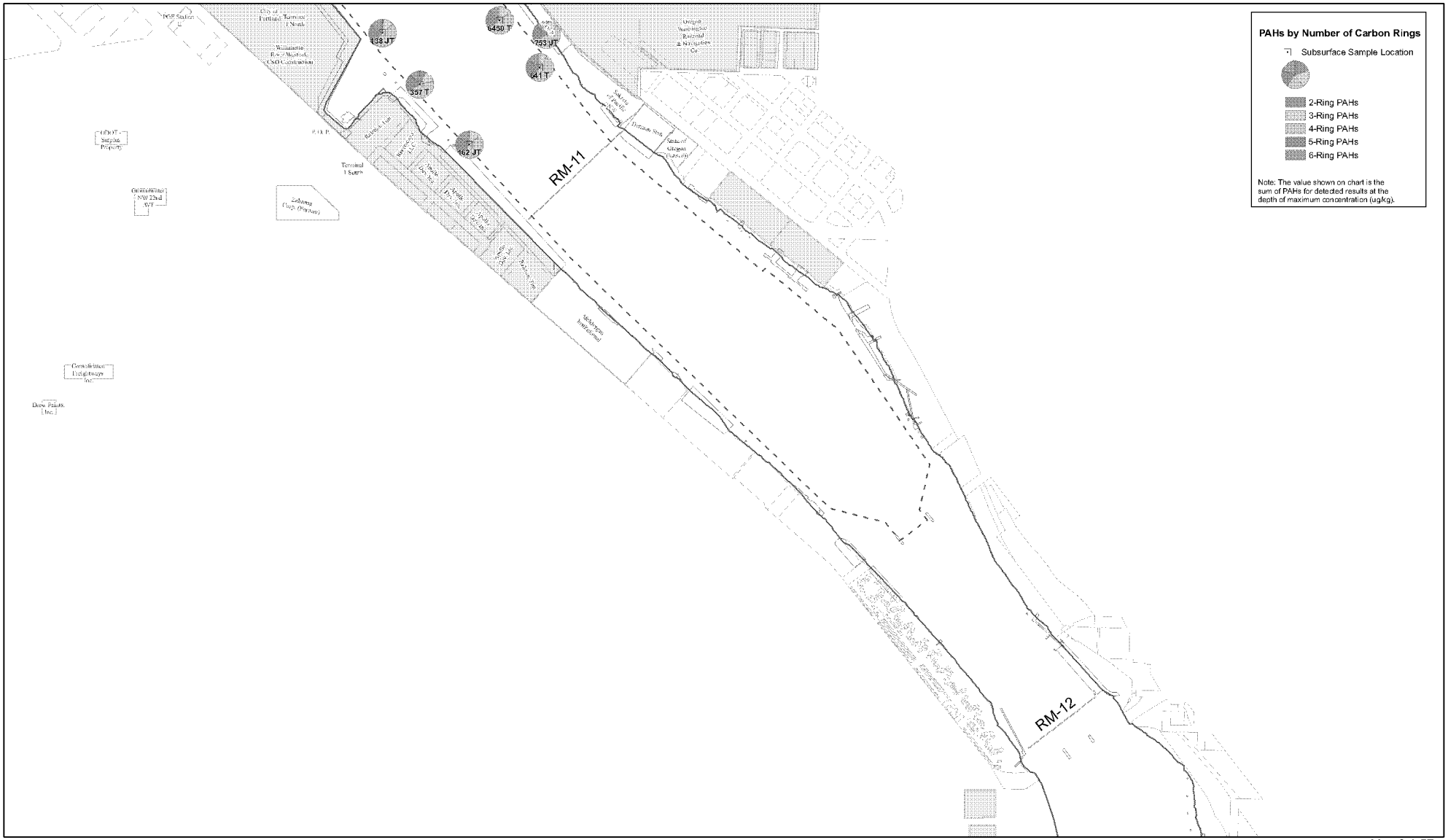
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-56 j
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Surface Sediment (ug/kg)
River Mile 02 to 03

BZTO104(e)033046




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PAHs_Pie_Charts_v1_SubSurface.mxd)
2/6/2007 -- 1:56:14 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

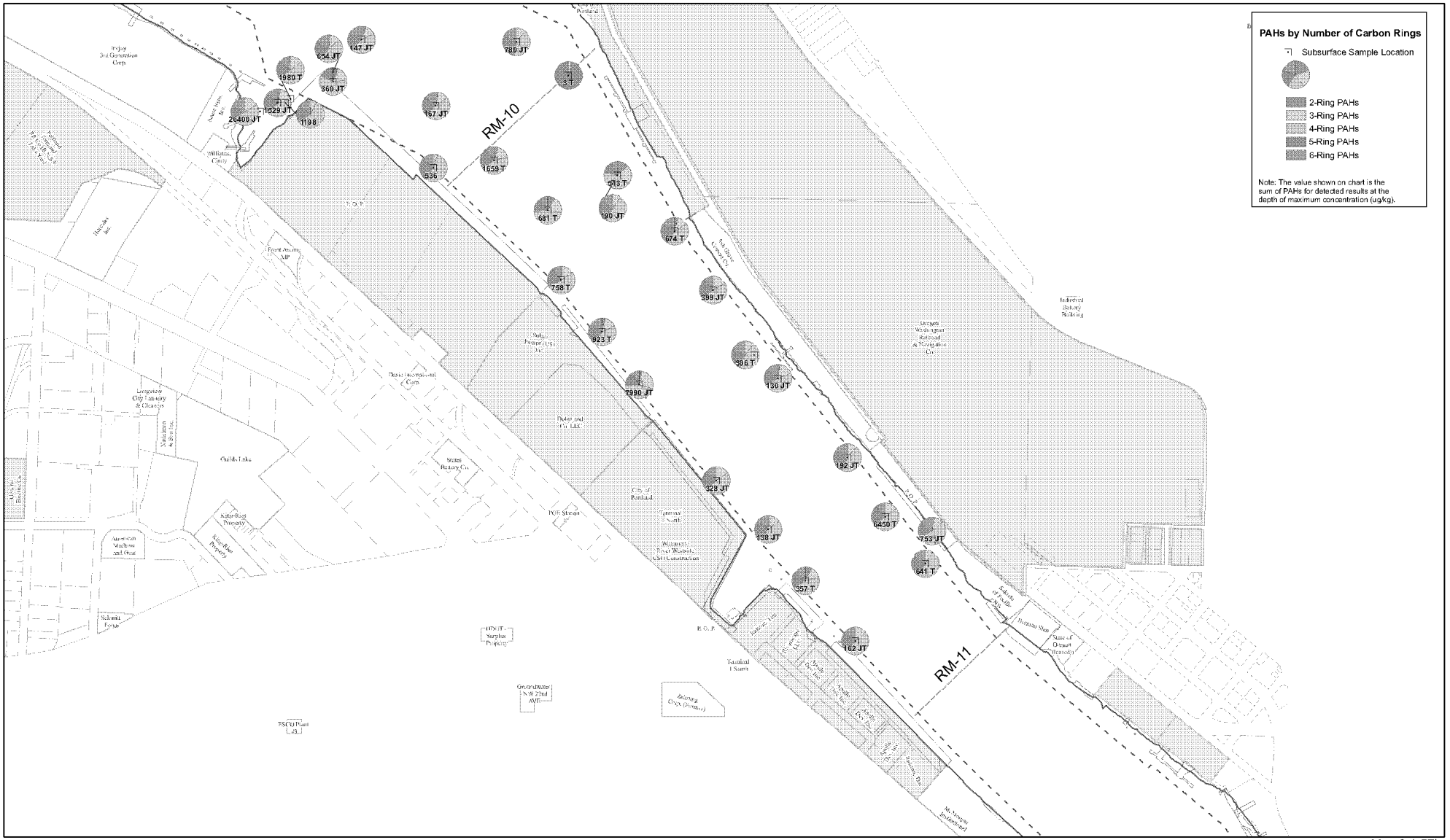
0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Note: No Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-57a
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 11 to 12

BZTO104(e)033047




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PAHs_Pie_Charts_v1_SubSurface.mxd)
2/6/2007 -- 1:56:14 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map 6.1-57b
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 08 to 09

BZTO104(e)033048

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PAHs_Pie_Charts_v1_SubSurface.mxd)
2/6/2007 -- 1:56:14 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Note: No Station is Dredged or Capped

Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-57c
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 08 to 09

BZTO104(e)033049

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PAHs_Pie_Charts_v1_SubSurface.mxd)
2/6/2007 -- 1:56:14 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map 6.1-57d
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 08 to 09

BZTO104(e)033050

integral consulting inc.

LWG Lower Willamette Group

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Note: No Station is Dredged or Capped

Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

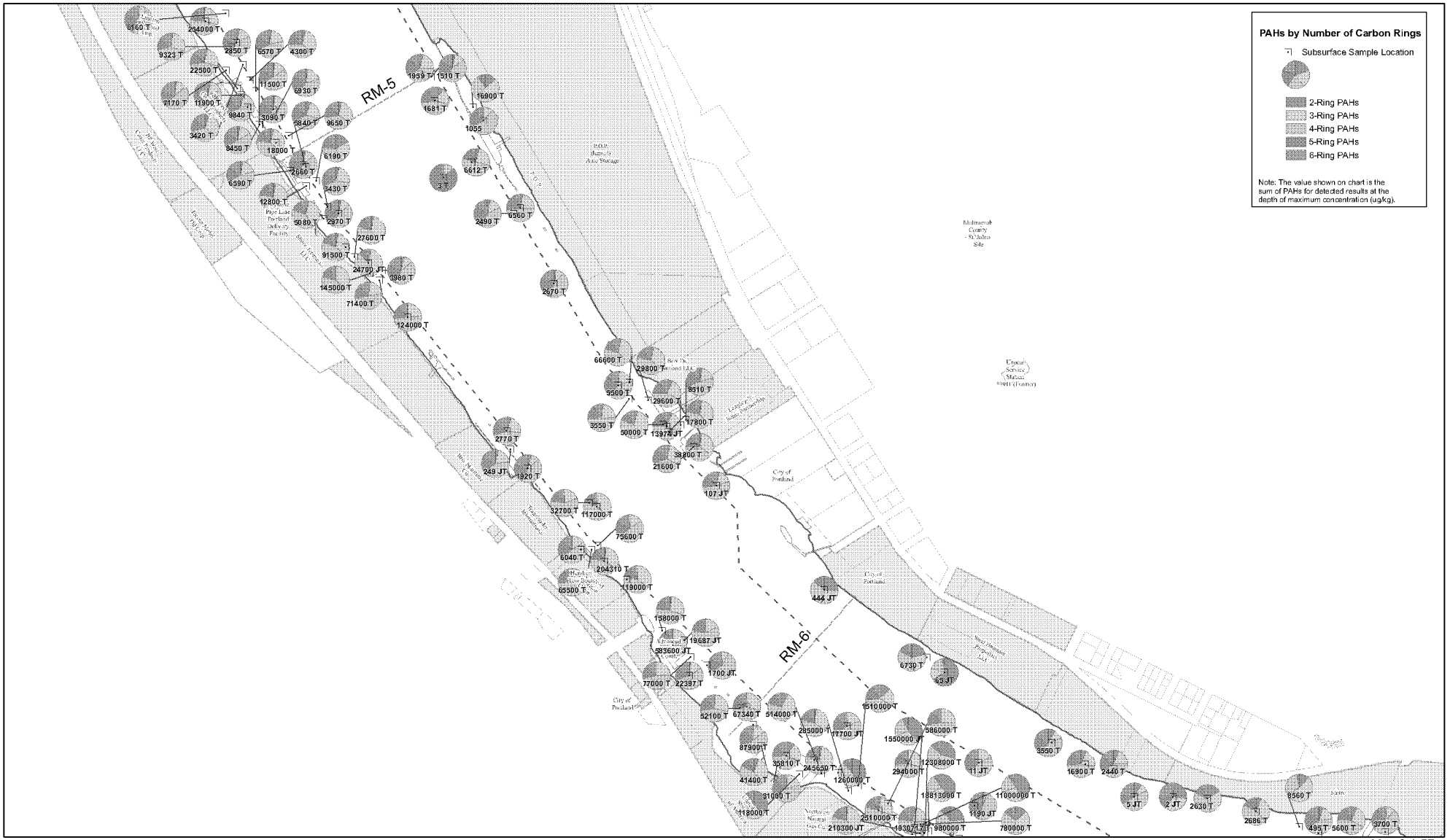
Map 6.1-57e
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 07 to 08

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PAHs_Pie_Charts_v1_SubSurface.mxd)
2/6/2007 -- 1:56:14 PM

BZTO104(e)033051

Map 6.1-57 f
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 06 to 07

BZTO104(e)033052




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Note: No Station is Dredged or Capped

Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-57g
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 05 to 06

BZTO104(e)033053

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Note: No Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-57h
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 04 to 05

BZTO104(e)033054

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PAHs_Pie_Charts_v1_SubSurface.mxd)
2/6/2007 -- 1:56:14 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Docks and Structures
Navigation Channel
River Mile
Note: No Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-57 i
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 03 to 04

BZTO104(e)033055

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Pie_Charts\PAHs_Pie_Charts_v1_SubSurface.mxd)
2/6/2007 -- 1:56:14 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 300 600 900 1,200 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

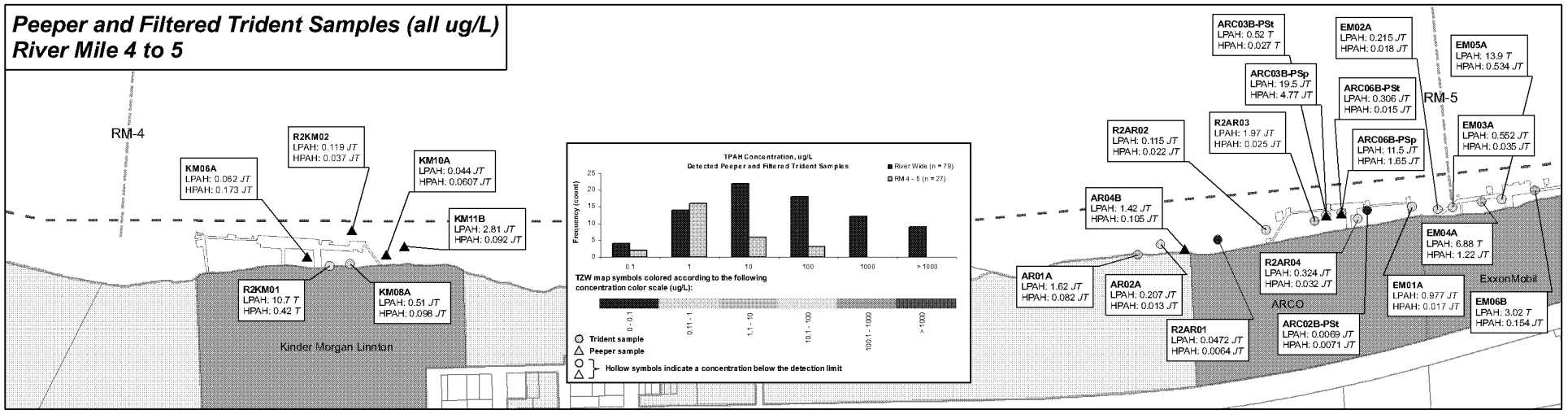
Docks and Structures
Navigation Channel
River Mile
Note: No Station is Dredged or Capped
Site/Vicinity Tax Lot Owners
Waterfront Taxlots
Upland Sites

Map 6.1-57 j
Portland Harbor RI/FS
Comprehensive Round 2 Report
PAH Composition in Subsurface Sediment (ug/kg)
At Depth of Maximum Concentration
River Mile 02 to 03

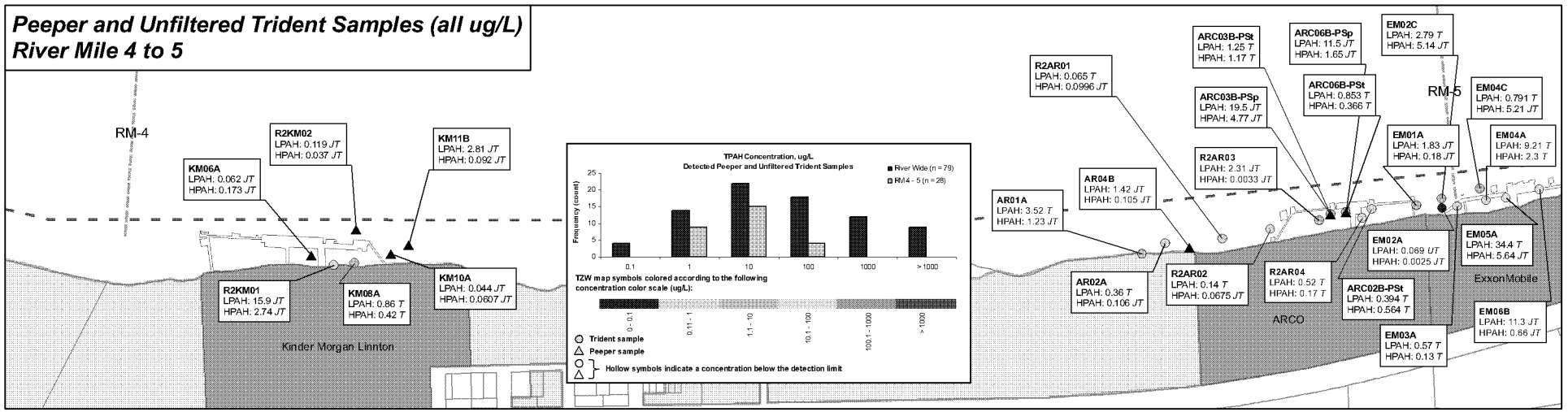
BZTO104(e)033056

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\1ZW\Analyte Maps\1ZW_PAH_Mile_4_to_5_20070208.mxd - 2/8/2007 @ 11:16:18 AM

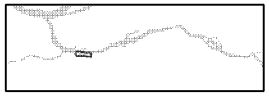
# Peeper and Filtered Trident Samples (all ug/L)
## River Mile 4 to 5




# Peeper and Unfiltered Trident Samples (all ug/L)
## River Mile 4 to 5




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

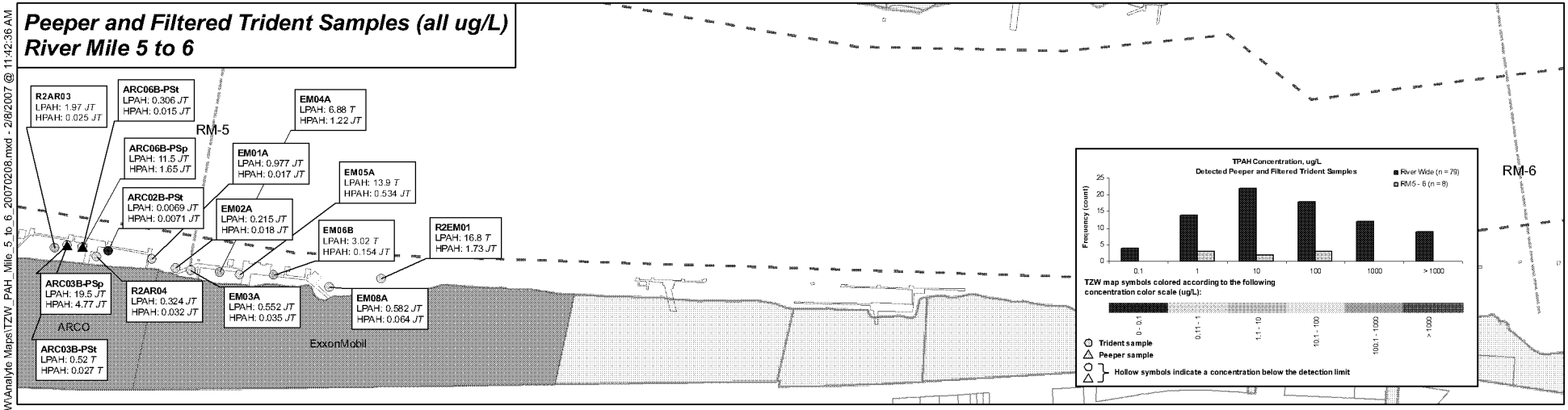
LWG Lower Willamette Group

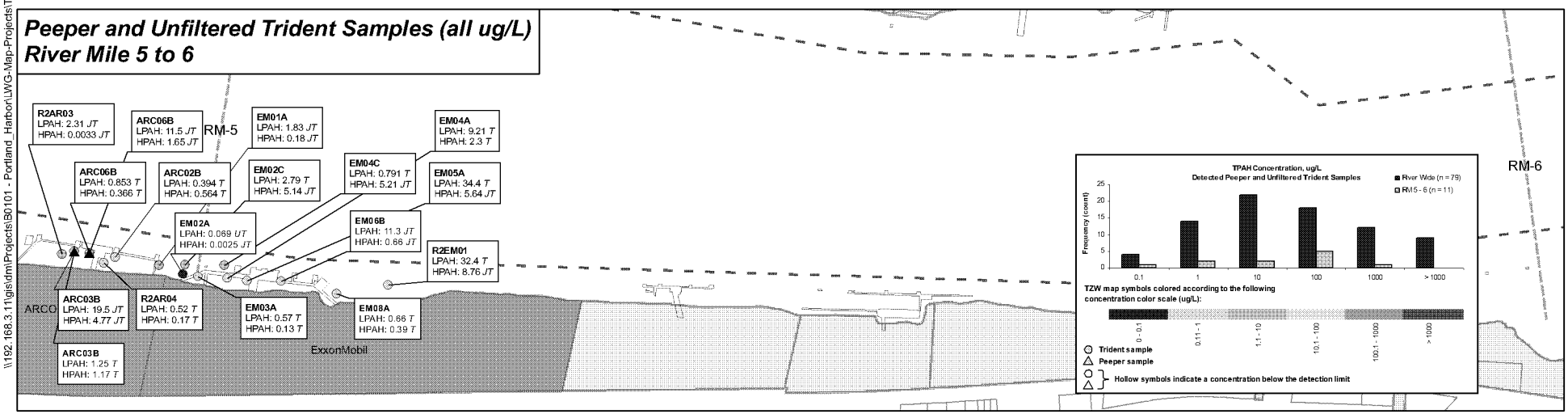
Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

0 250 500 750 1,000 Feet

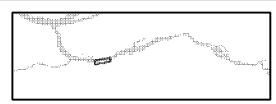
**Map 6.2-1a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 4 to 5 - Total PAH (ug/L)**

BZTO104(e)033057




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

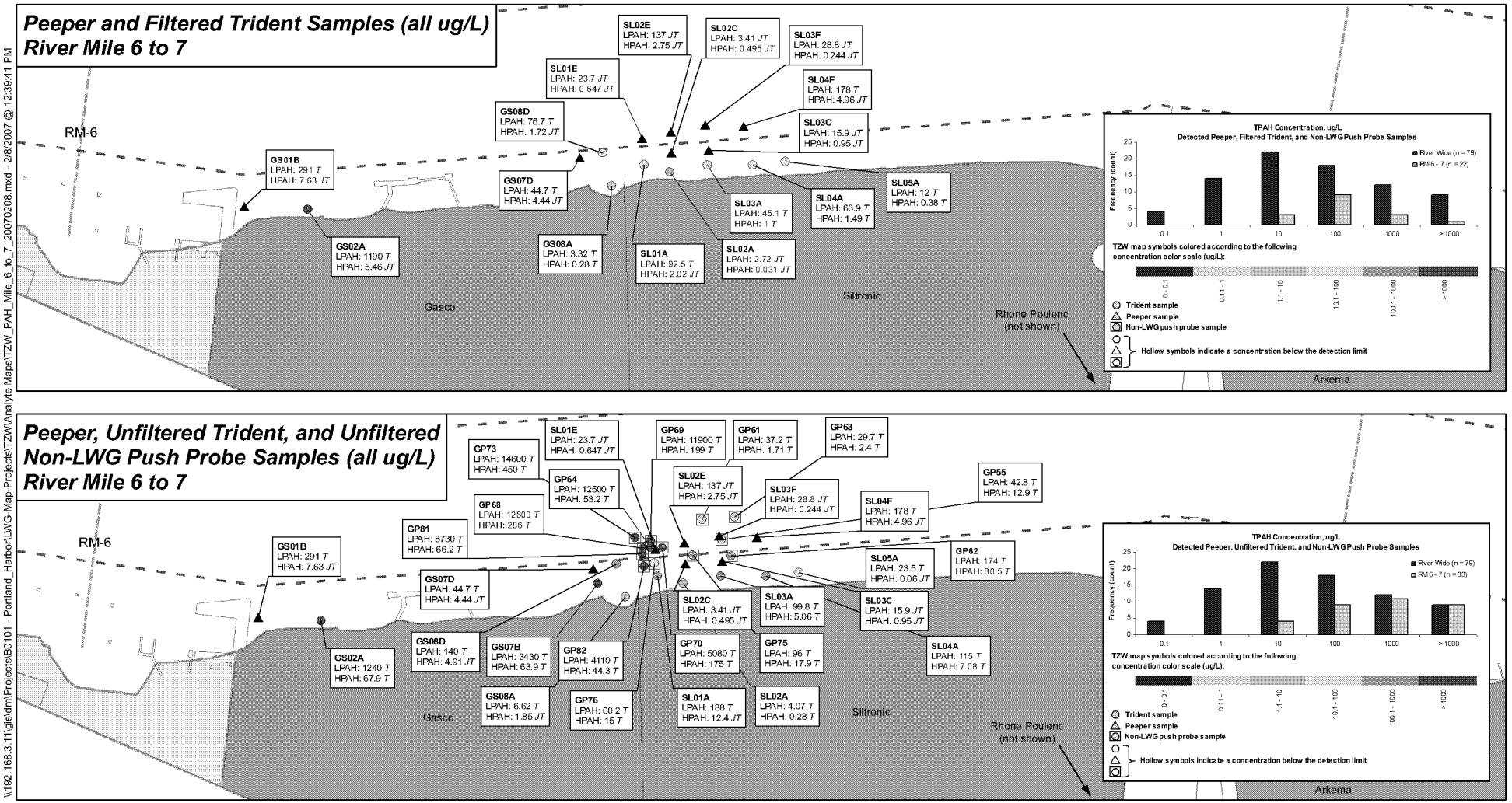
Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

0 250 500 750 1,000 Feet

**Map 6.2-1b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 5 to 6 - Total PAH (ug/L)**

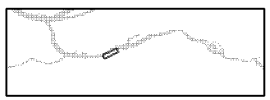
\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_PAH_Mile_5_to_6_20070208.mxd - 2/8/2007 @ 11:42:36 AM

BZTO104(e)033058




\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_PAH_Mile_6_to_7_20070208.mxd - 2/8/2007 @ 12:39:41 PM

FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

LWG Lower Willamette Group

Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

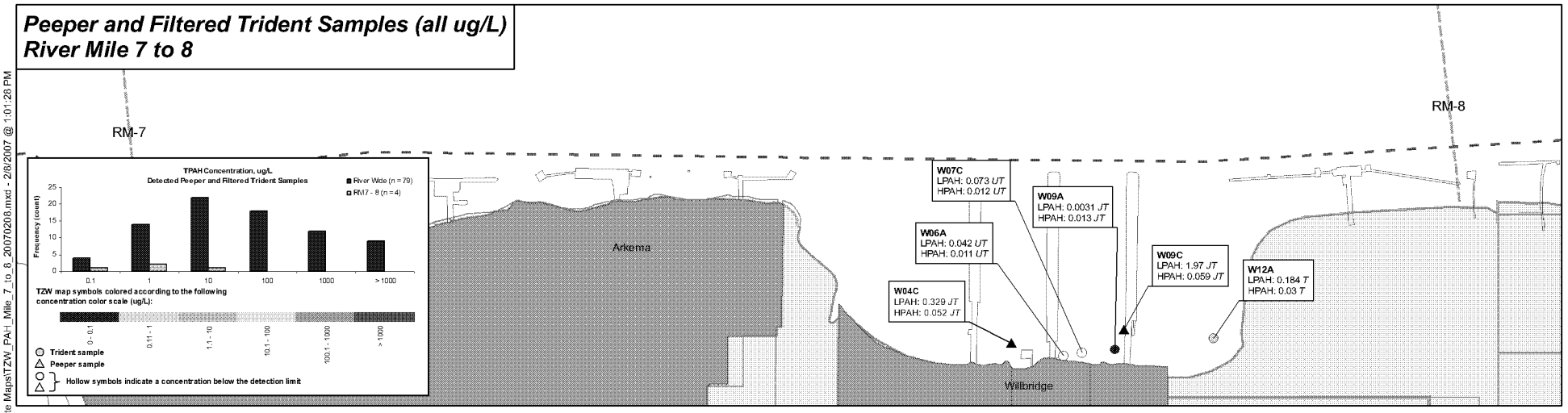
N

0 250 500 750 1,000 Feet

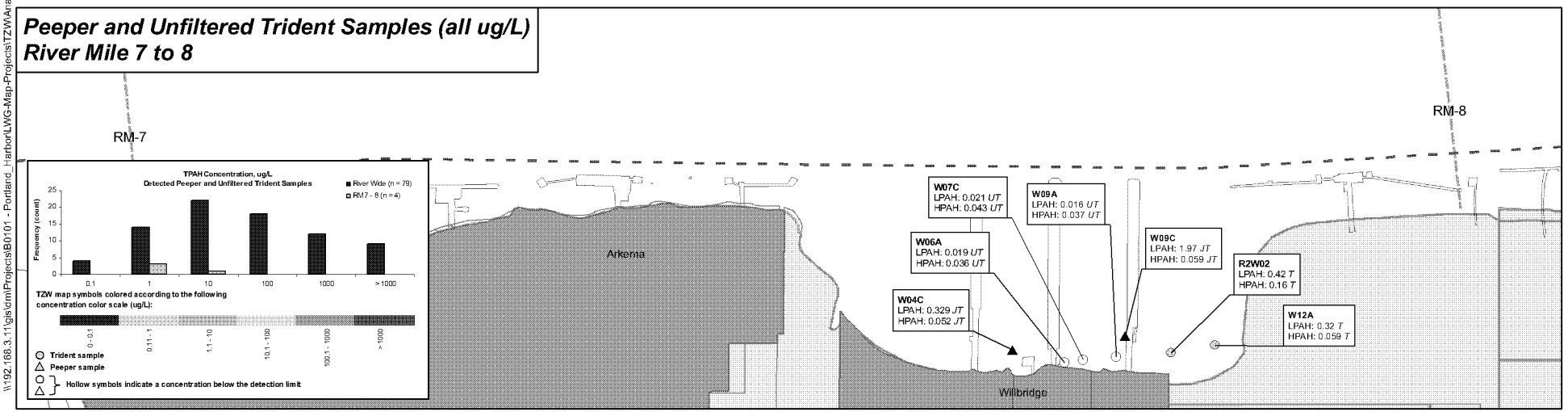
**Map 6.2-1c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 6 to 7 - Total PAH (ug/L)**

BZTO104(e)033059

## Peeper and Filtered Trident Samples (all ug/L)
## River Mile 7 to 8

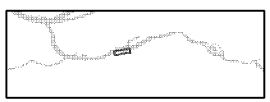



## Peeper and Unfiltered Trident Samples (all ug/L)
## River Mile 7 to 8




\\192.168.3.11\gis\rm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_PAH_Mile_7_to_8_20070208.mxd - 2/8/2007 @ 1:01:28 PM

FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

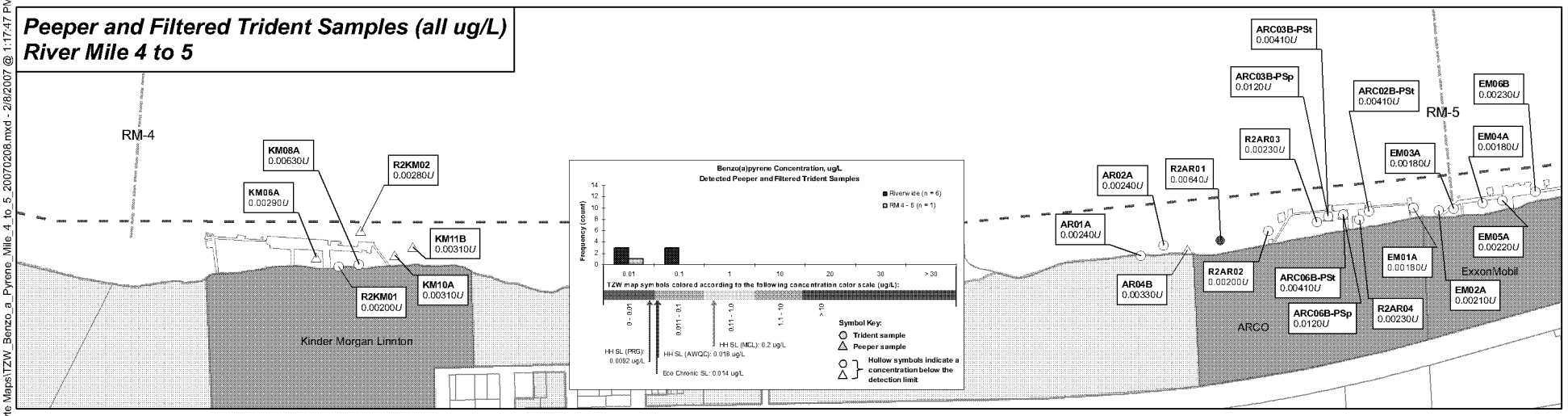
0 250 500 750 1,000 Feet

Tabular Results Notes:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

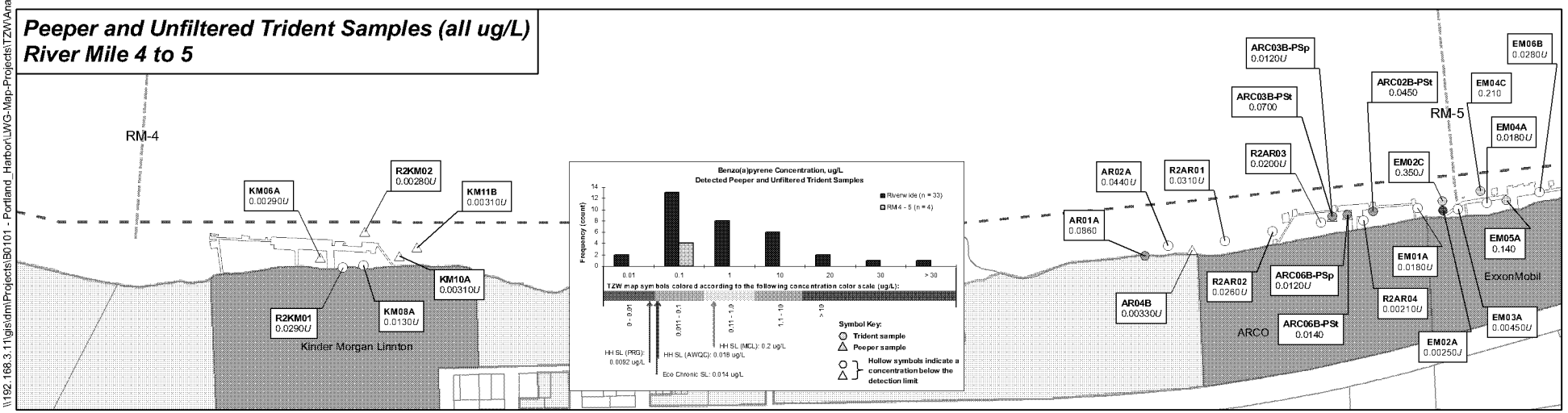
**Map 6.2-1d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 7 to 8 - Total PAH (ug/L)**

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_Benzo_a_Pyrene_Mile_4_to_5_20070208.mxd - 2/8/2007 @ 1:17:47 PM

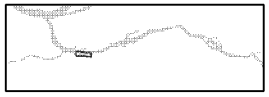
## Peeper and Filtered Trident Samples (all ug/L)
## River Mile 4 to 5




## Peeper and Unfiltered Trident Samples (all ug/L)
## River Mile 4 to 5




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

LWG Lower Willamette Group

Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

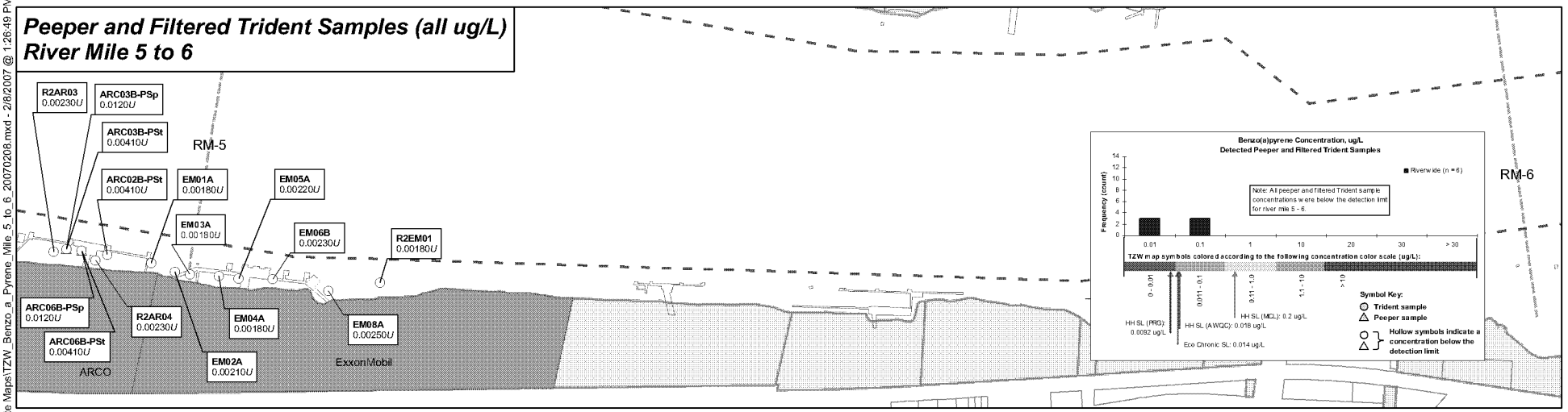
0 250 500 750 1,000 Feet

**Map 6.2-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 4 to 5 - Benzo(a)pyrene (ug/L)**

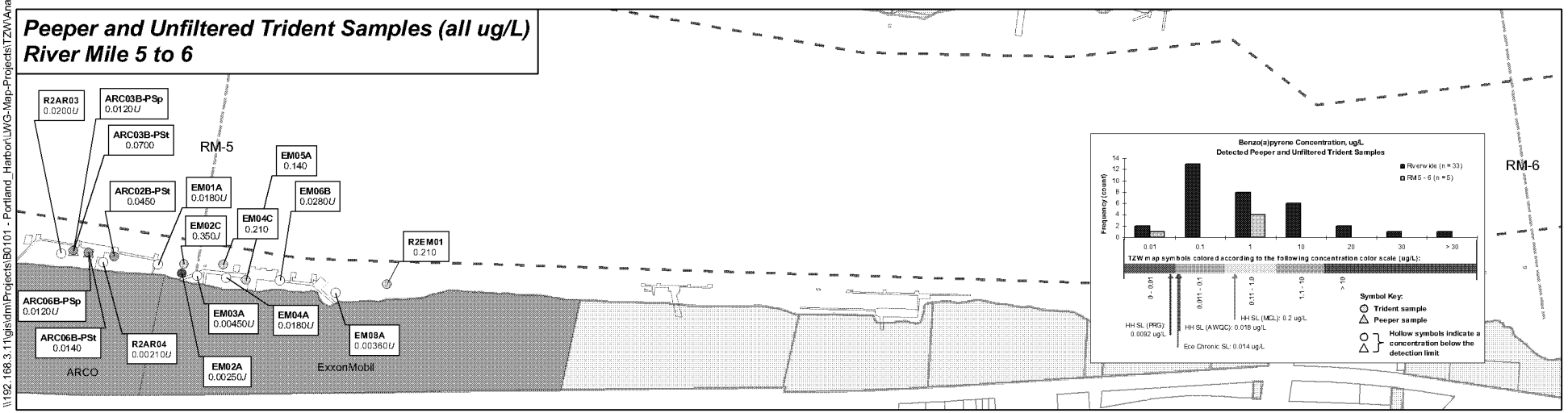
BZTO104(e)033061

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_Benzo_a_Pyrene_Mile_5_to_6_20070208.mxd - 2/8/2007 @ 1:26:49 PM

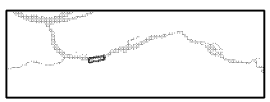
## Peeper and Filtered Trident Samples (all ug/L)
## River Mile 5 to 6




## Peeper and Unfiltered Trident Samples (all ug/L)
## River Mile 5 to 6




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

LWG Lower Willamette Group

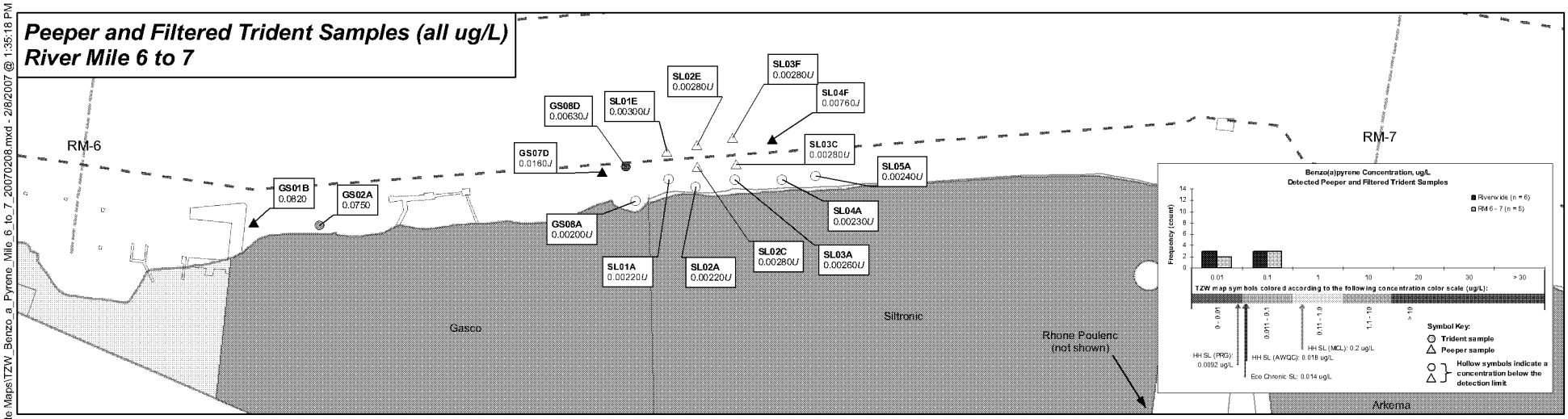
Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

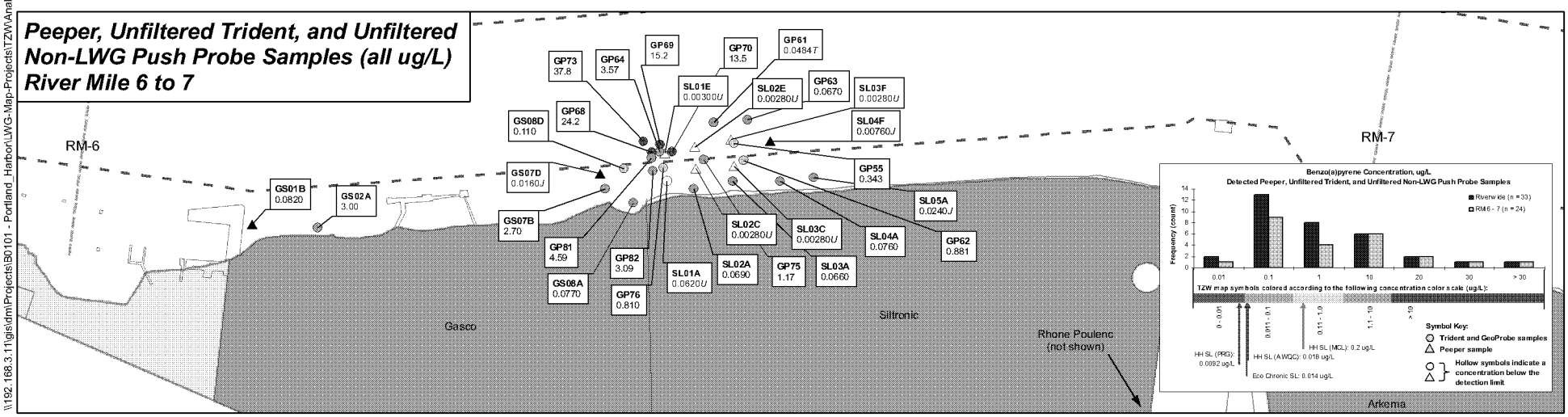
N

0 250 500 750 1,000 Feet

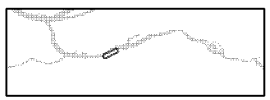
**Map 6.2-2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 5 to 6 - Benzo(a)pyrene (ug/L)**

BZTO104(e)033062




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map Features:
Upland Sites (2006)
Waterfront Taxlots
River Miles
Navigation Channel
Docks and Structures
R2 GWPA Study Site

N

0 250 500 750 1,000 Feet

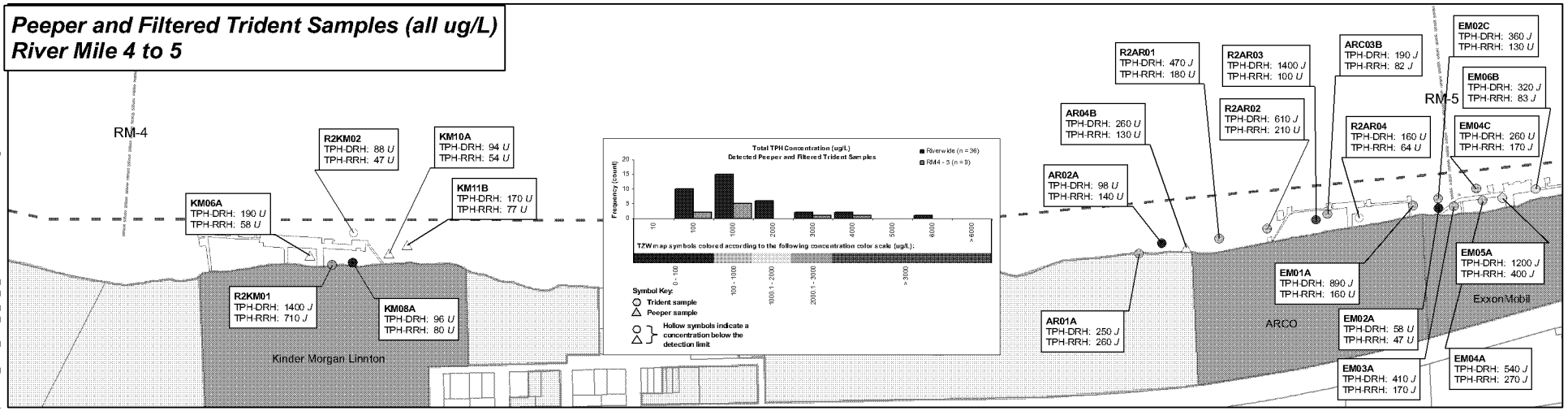
**Map 6.2-2c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 6 to 7 - Benzo(a)pyrene (ug/L)**

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_Benzo_a_Pyrene_Mile_6_to_7_20070208.mxd - 2/8/2007 @ 1:35:18 PM

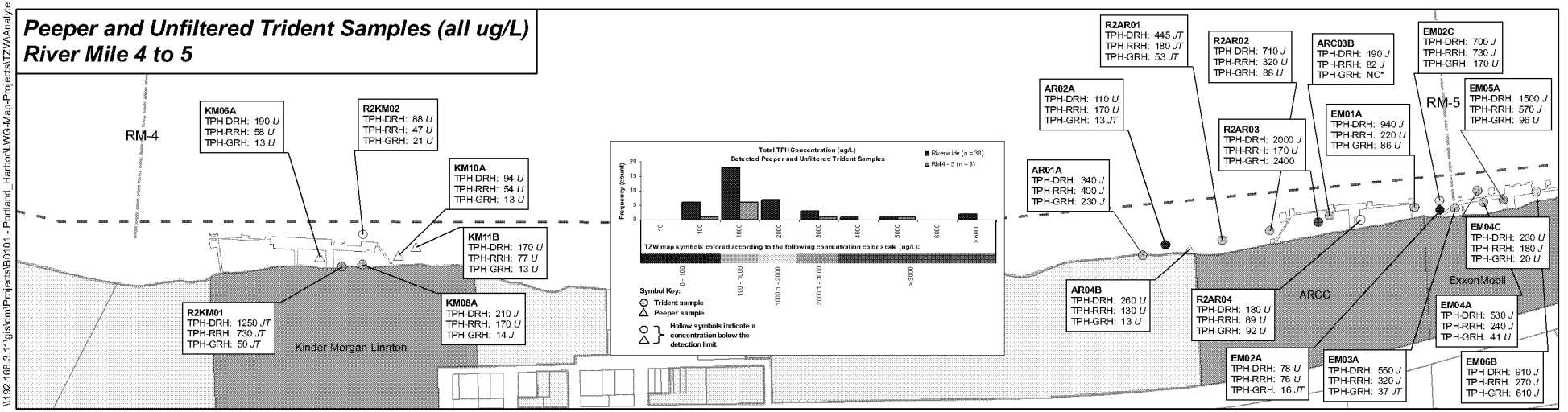
BZTO104(e)033063

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_TPH_Mile_4_to_5_20070208.mxd - 2/9/2007 @ 12:24:13 PM

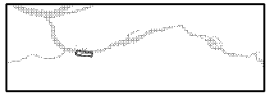
# Peeper and Filtered Trident Samples (all ug/L)
## River Mile 4 to 5




# Peeper and Unfiltered Trident Samples (all ug/L)
## River Mile 4 to 5




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by smelt-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit, however, the reported quantitation limit was approximated by the analytical laboratory.

NC Not collected

integral consulting inc.

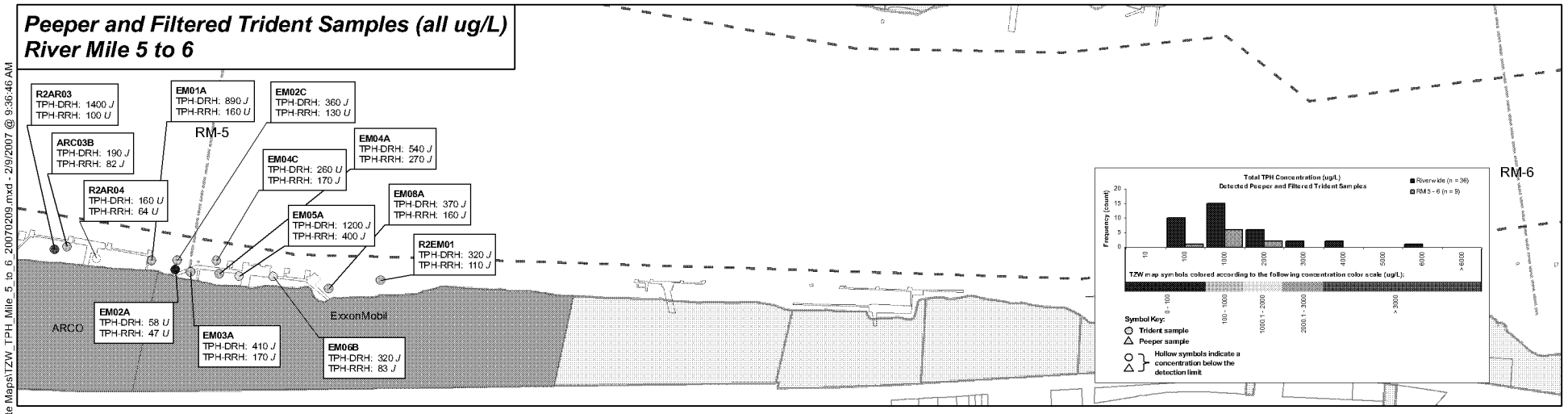
LWG Lower Willamette Group

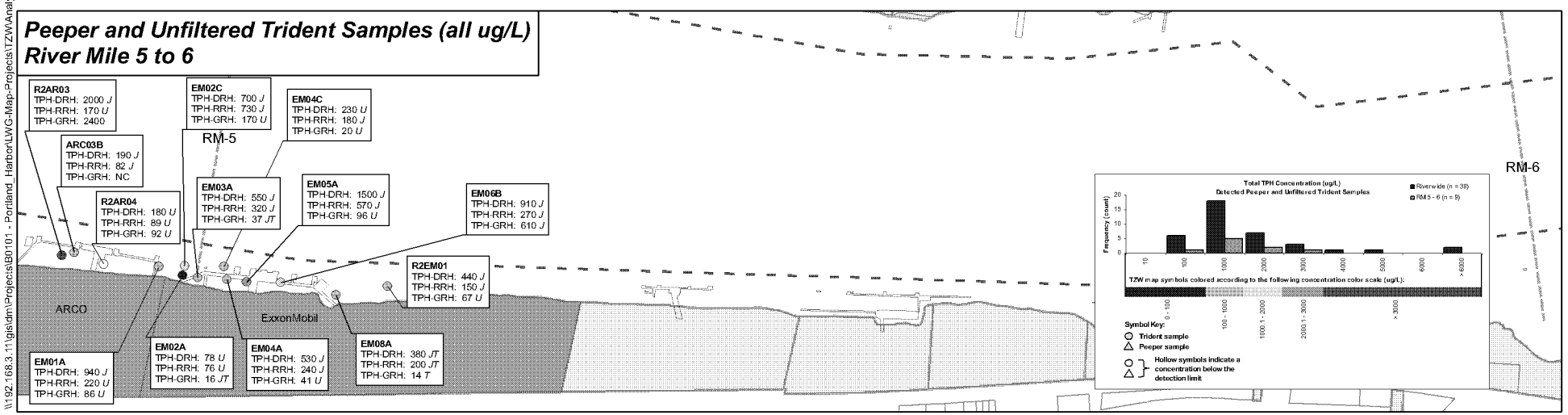
Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

0 250 500 750 1,000 Feet

**Map 6.2-3a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 4 to 5 - Total Petroleum Hydrocarbons (ug/L)**

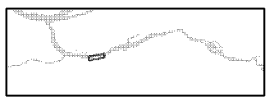
BZTO104(e)033064




\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_TPH_Mile_5_to_6_20070209.mxd - 2/9/2007 @ 9:36:46 AM

FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

NC Not collected

integral consulting inc.

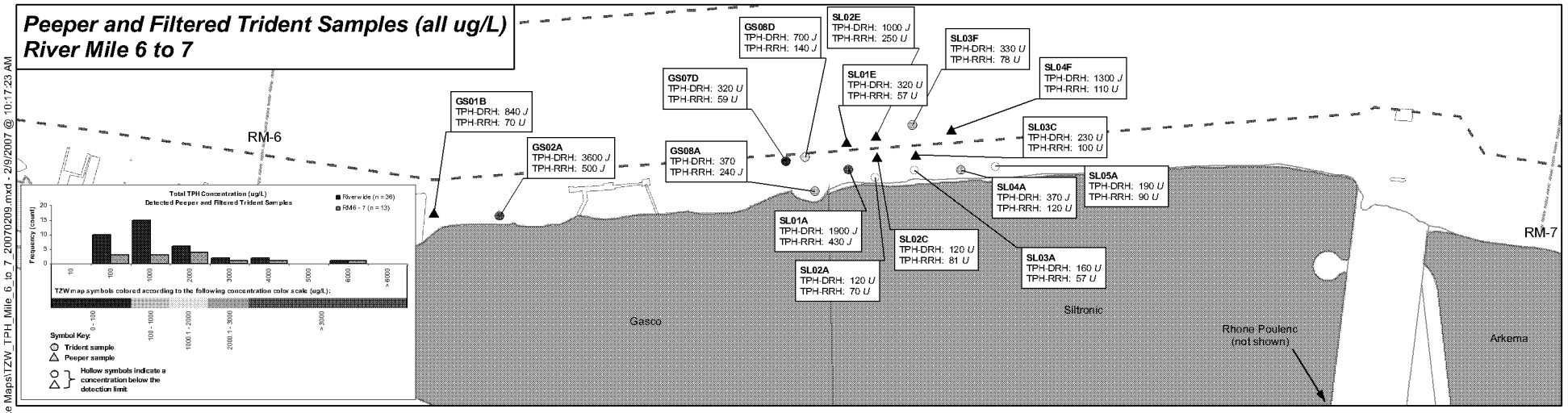
LWG LOWER WILLAMETTE GROUP

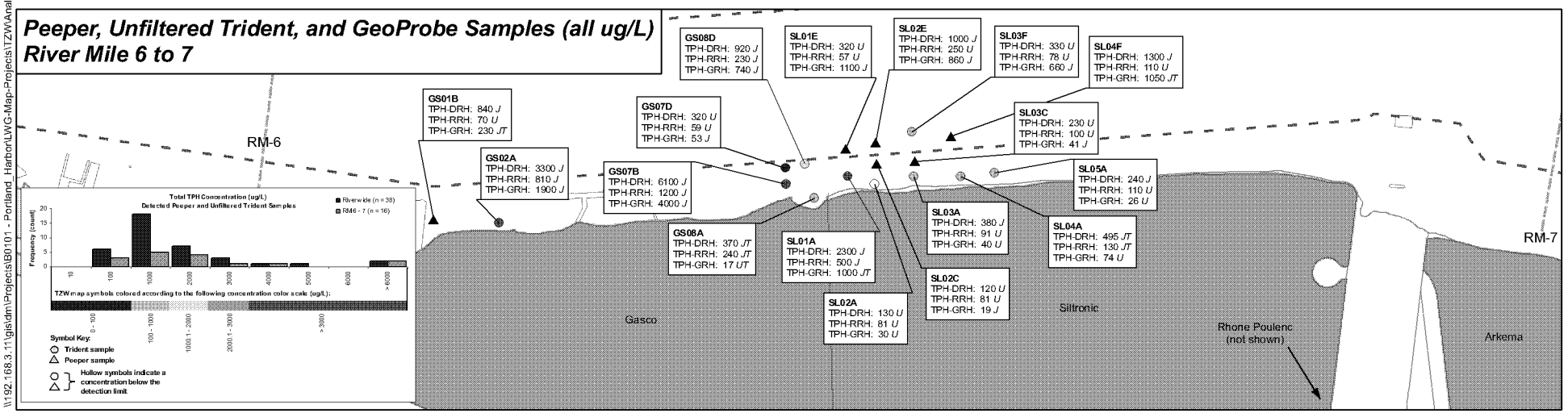
Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

0 250 500 750 1,000 Feet

**Map 6.2-3b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 5 to 6 - Total Petroleum Hydrocarbons (ug/L)**

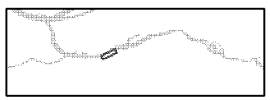
BZTO104(e)033065




\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_TPH_Mile_6_to_7_20070209.mxd - 2/9/2007 @ 10:17:23 AM

FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map Features:
- Upland Sites (2006)
- Waterfront Taxlots
- River Miles
- Navigation Channel
- Docks and Structures
- R2 GWPA Study Site

N

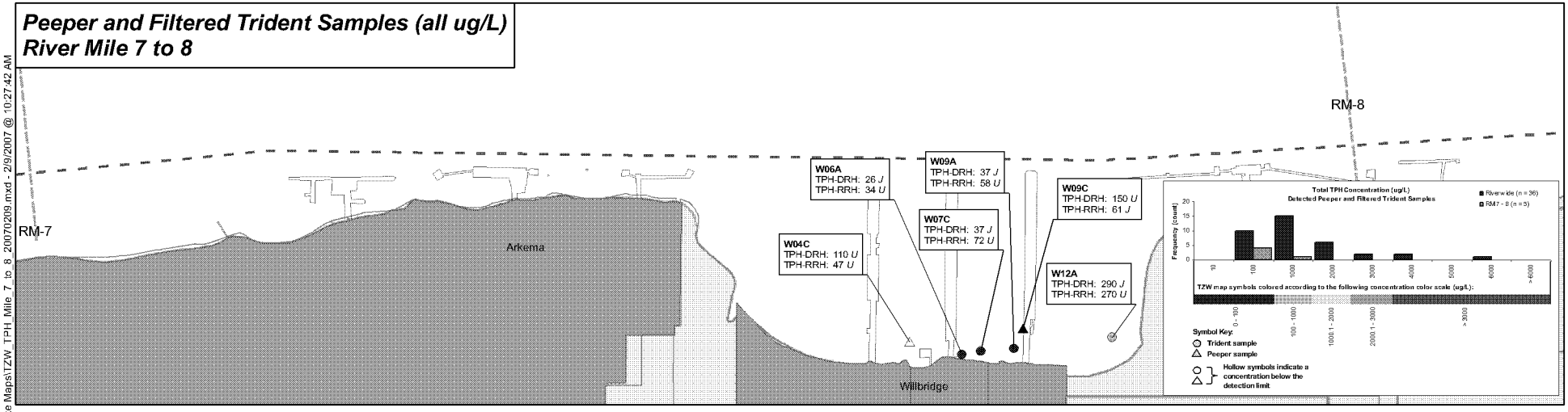
0 250 500 750 1,000 Feet

**Map 6.2-3c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 6 to 7 - Total Petroleum Hydrocarbons (ug/L)**

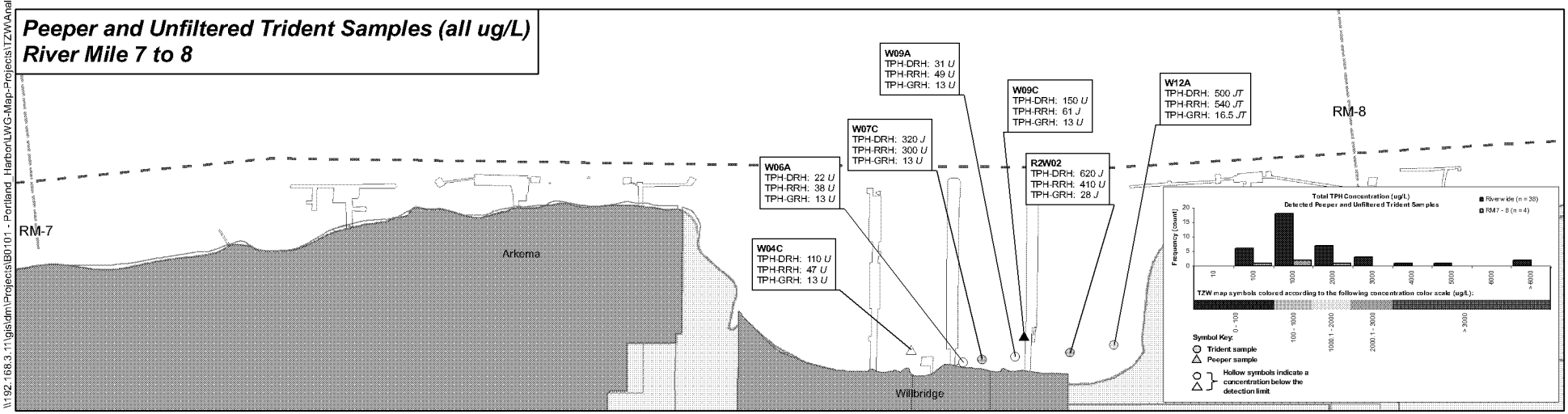
BZTO104(e)033066

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_TPH_Mile_7_to_8_20070209.mxd - 2/9/2007 @ 10:27:42 AM

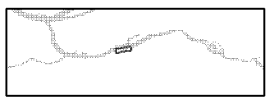
## Peeper and Filtered Trident Samples (all ug/L)
## River Mile 7 to 8




## Peeper and Unfiltered Trident Samples (all ug/L)
## River Mile 7 to 8




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit, however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

LWG Lower Willamette Group

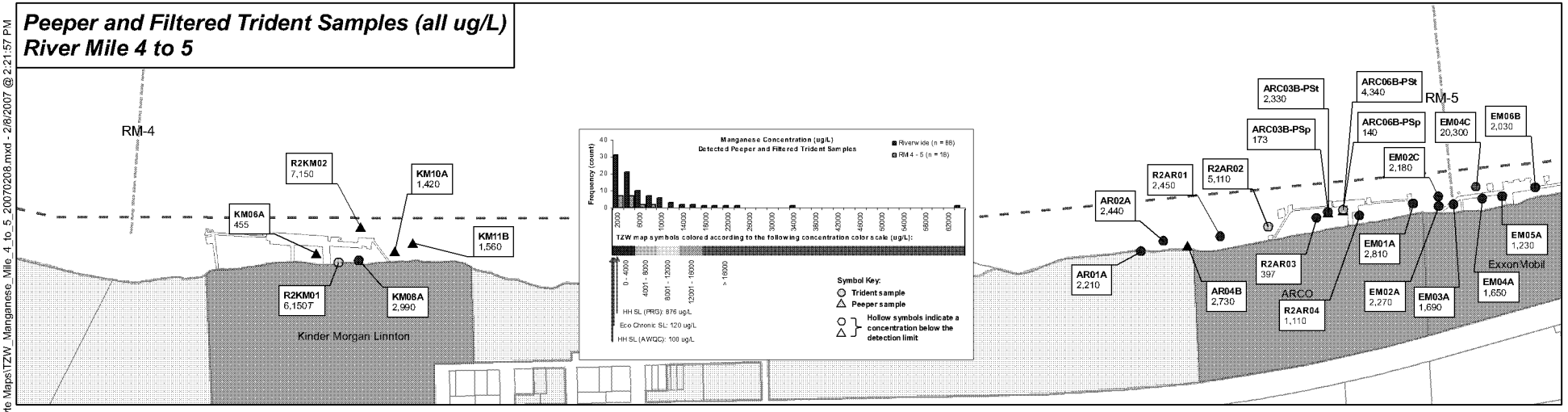
Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

0 250 500 750 1,000 Feet

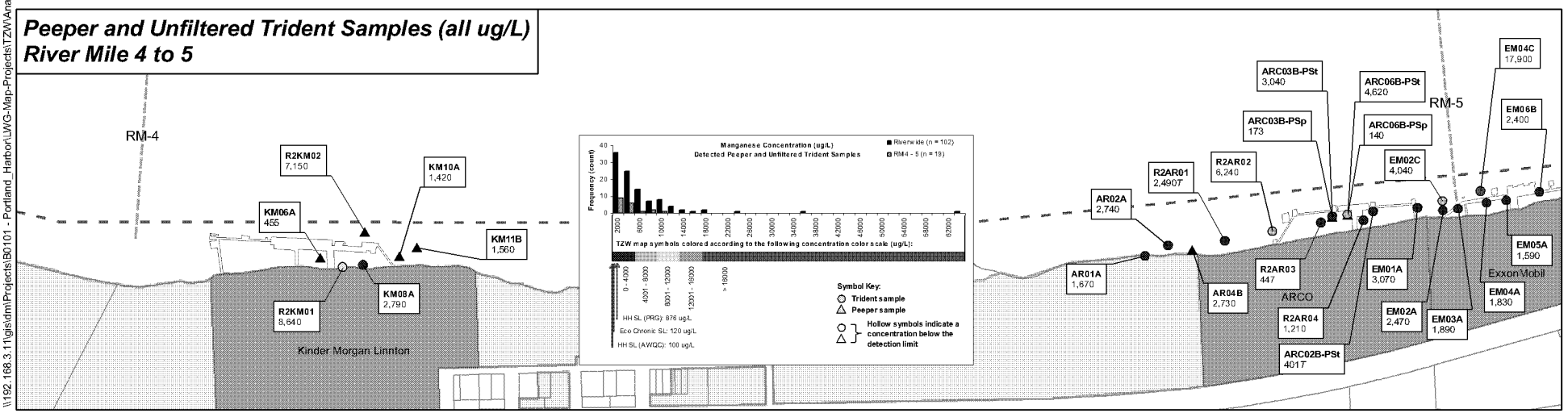
**Map 6.2-3d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 7 to 8 - Total Petroleum Hydrocarbons (ug/L)**

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_Manganese_Mile_4_to_5_20070208.mxd - 2/8/2007 @ 2:21:57 PM

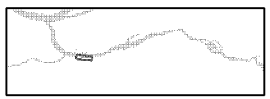
## Peeper and Filtered Trident Samples (all ug/L)
## River Mile 4 to 5




## Peeper and Unfiltered Trident Samples (all ug/L)
## River Mile 4 to 5




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

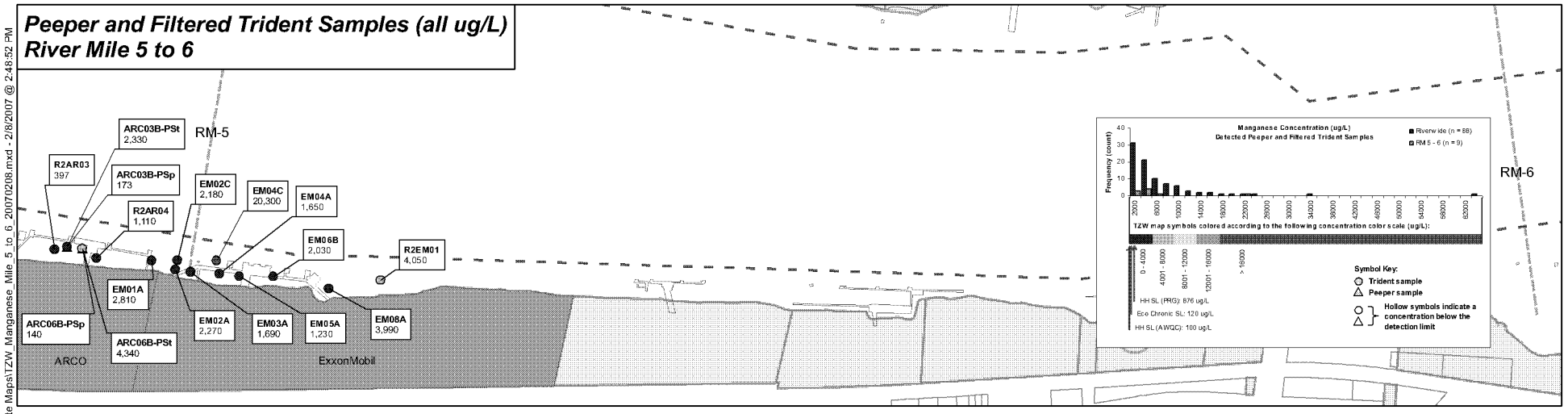
LWG Lower Willamette Group

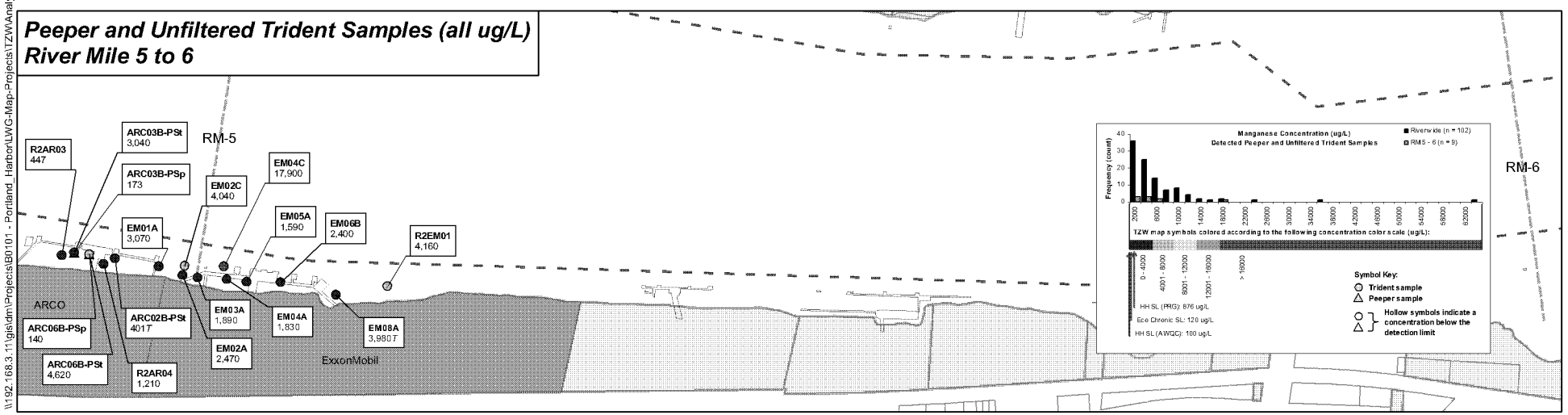
Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

0 250 500 750 1,000 Feet

**Map 6.2-4a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 4 to 5 - Manganese (ug/L)**

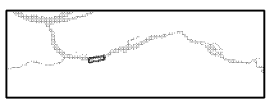
BZTO104(e)033068




\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_Manganese_Mile_5_to_6_20070208.mxd - 2/8/2007 @ 2:48:52 PM

FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

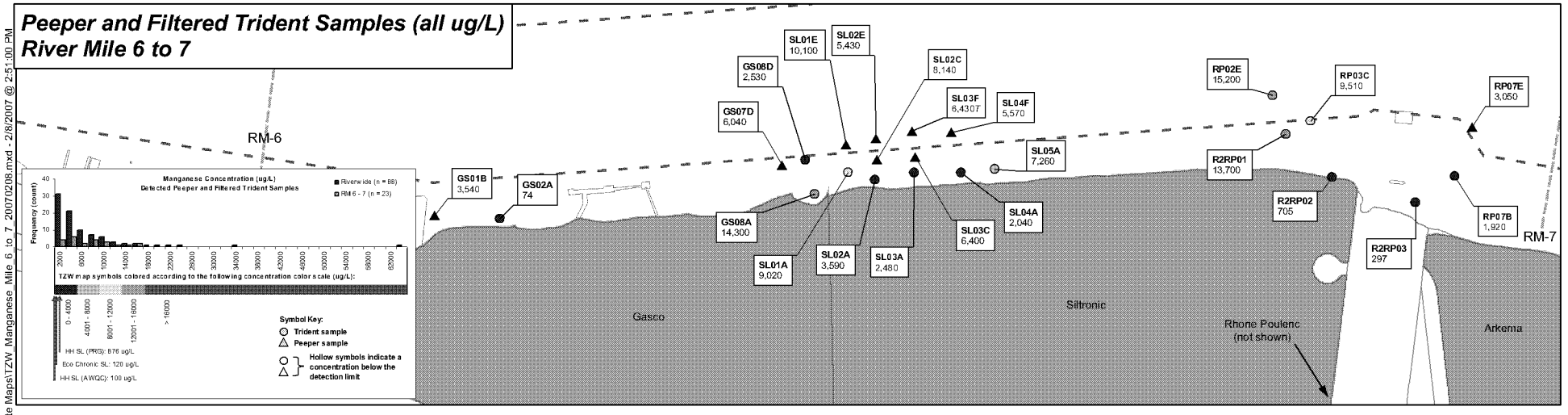
LWG LOWER WILLAMETTE GROUP

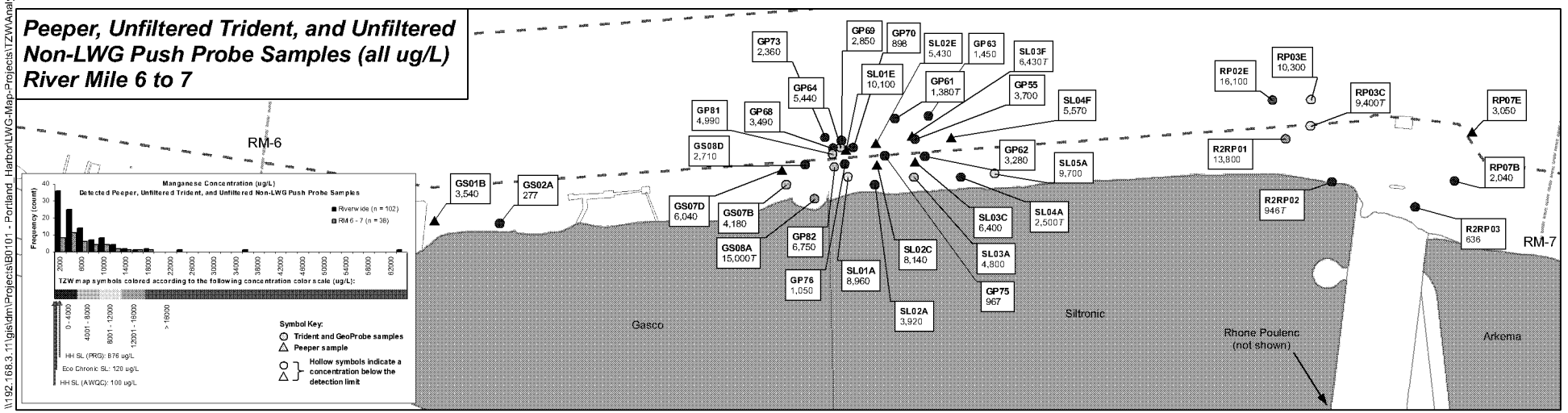
Map Features:
Docks and Structures
River Miles
Navigation Channel
Upland Sites (2006)
Waterfront Taxlots
R2 GWPA Study Site

0 250 500 750 1,000 Feet

**Map 6.2-4b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 5 to 6 - Manganese (ug/L)**

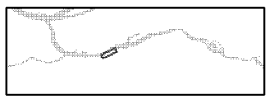
BZTO104(e)033069




\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_Manganese_Mile_6_to_7_20070208.mxd - 2/8/2007 @ 2:51:00 PM

FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



PSt Indicates sample collected during the GWPA Pilot Study by Trident sampler.
PSp Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

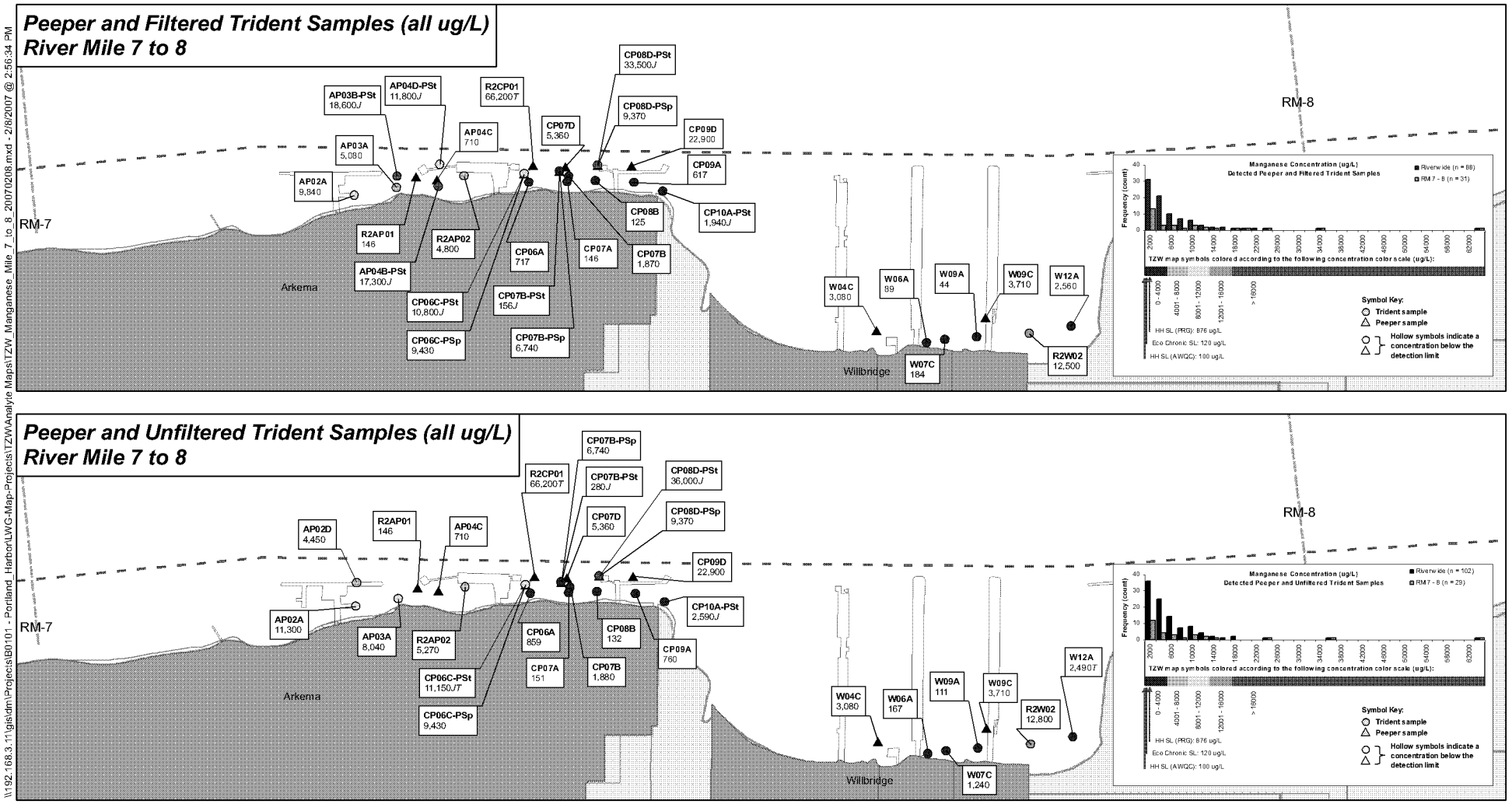
integral consulting inc.

LWG Lower Willamette Group

Map Features:
Docks and Structures
River Miles
Navigation Channel
Upland Sites (2006)
Waterfront Taxlots
R2 GWPA Study Site

0 250 500 750 1,000 Feet

**Map 6.2-4c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 6 to 7 - Manganese (ug/L)**

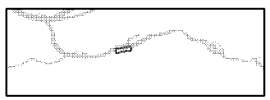






\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_Manganese_Mile_7_to_8_20070208.mxd - 2/8/2007 @ 2:56:34 PM

FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

LWG Lower Willamette Group

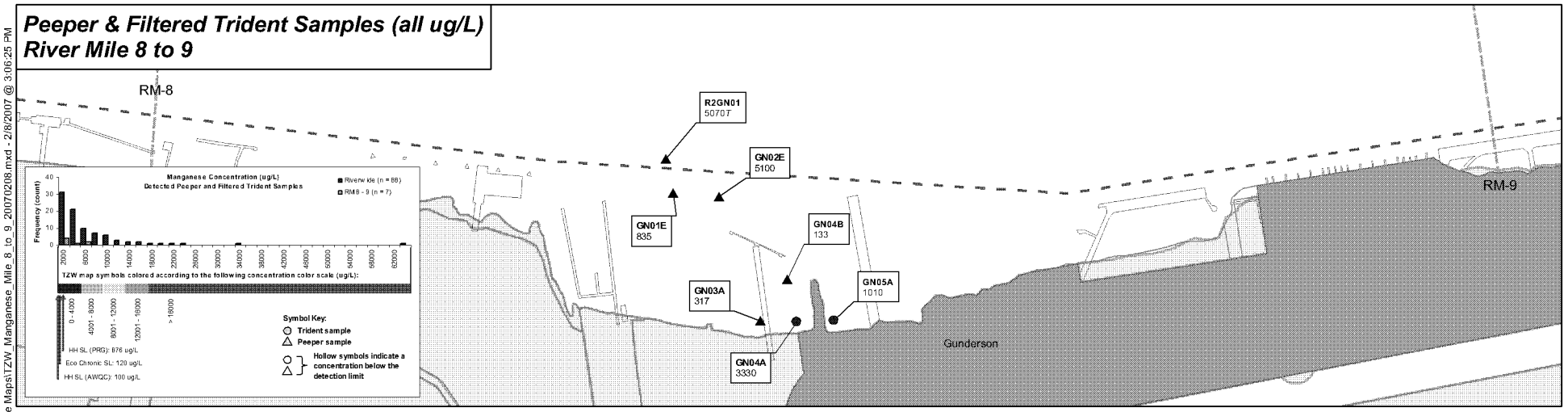
Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

0 250 500 750 1,000 Feet

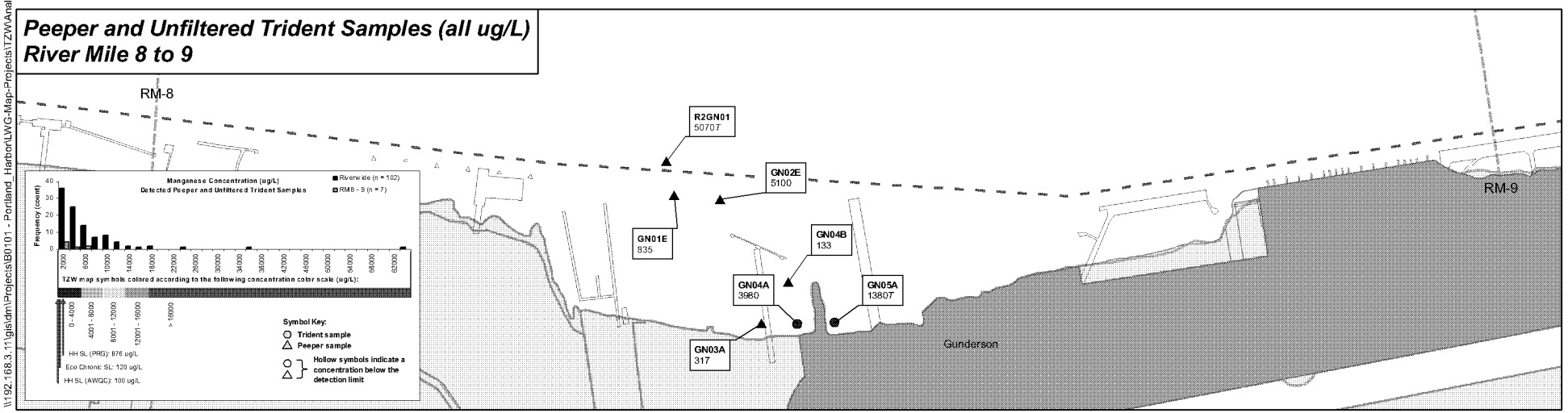
**Map 6.2-4d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 7 to 8 - Manganese (ug/L)**

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_Manganese_Mile_8_to_9_20070208.mxd - 2/8/2007 @ 3:06:25 PM

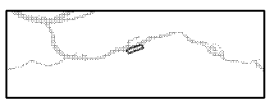
## Peeper & Filtered Trident Samples (all ug/L)
## River Mile 8 to 9




## Peeper and Unfiltered Trident Samples (all ug/L)
## River Mile 8 to 9




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

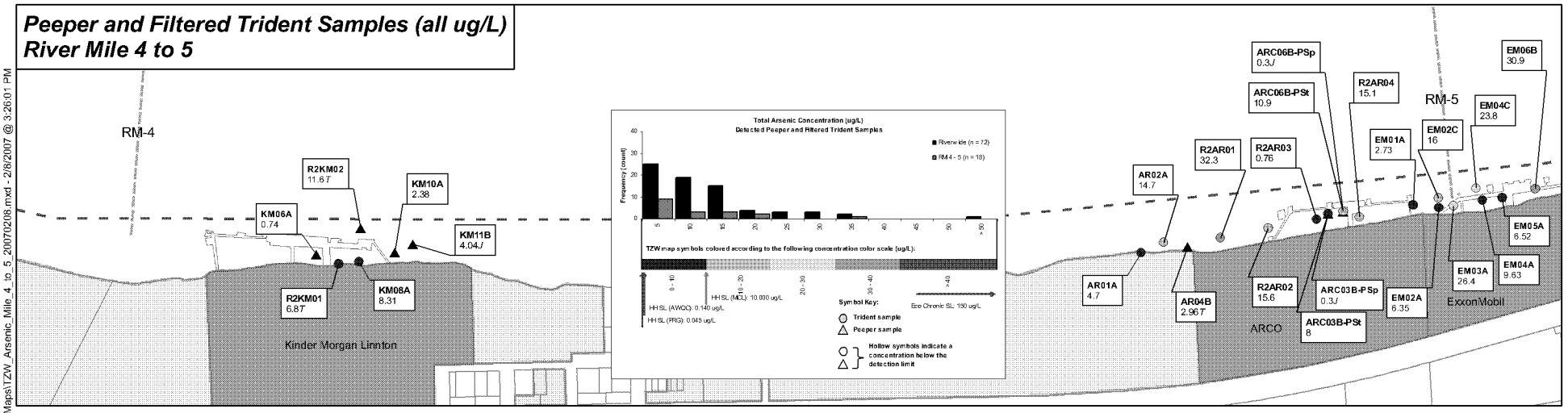
N

0 250 500 750 1,000 Feet

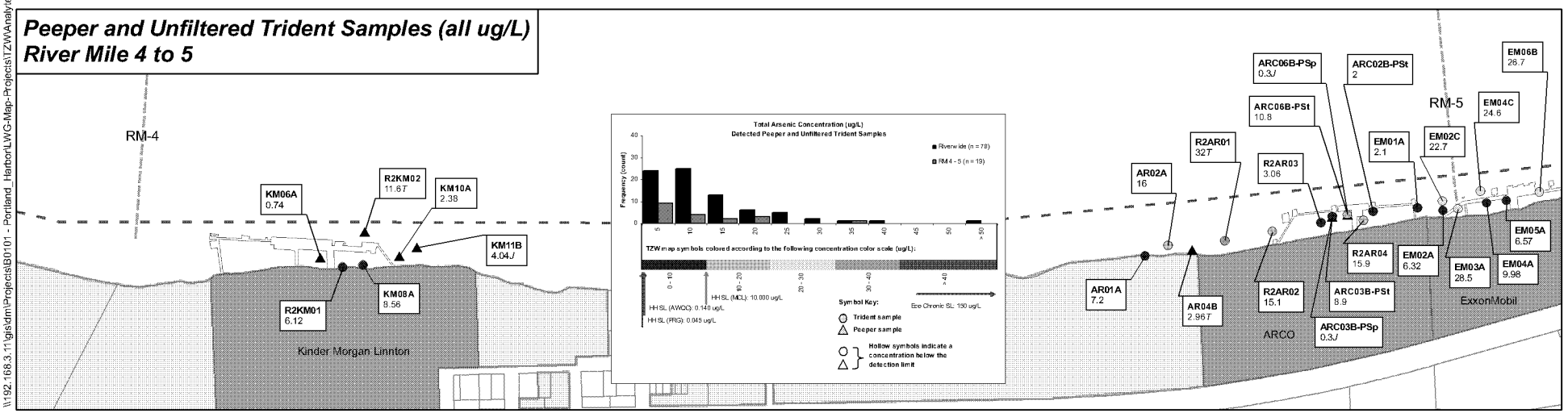
Tabular Results Notes:
T Methematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

**Map 6.2-4e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 8 to 9 - Manganese (ug/L)**

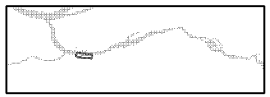
## Peeper and Filtered Trident Samples (all ug/L)
## River Mile 4 to 5




## Peeper and Unfiltered Trident Samples (all ug/L)
## River Mile 4 to 5




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

LWG Lower Willamette Group

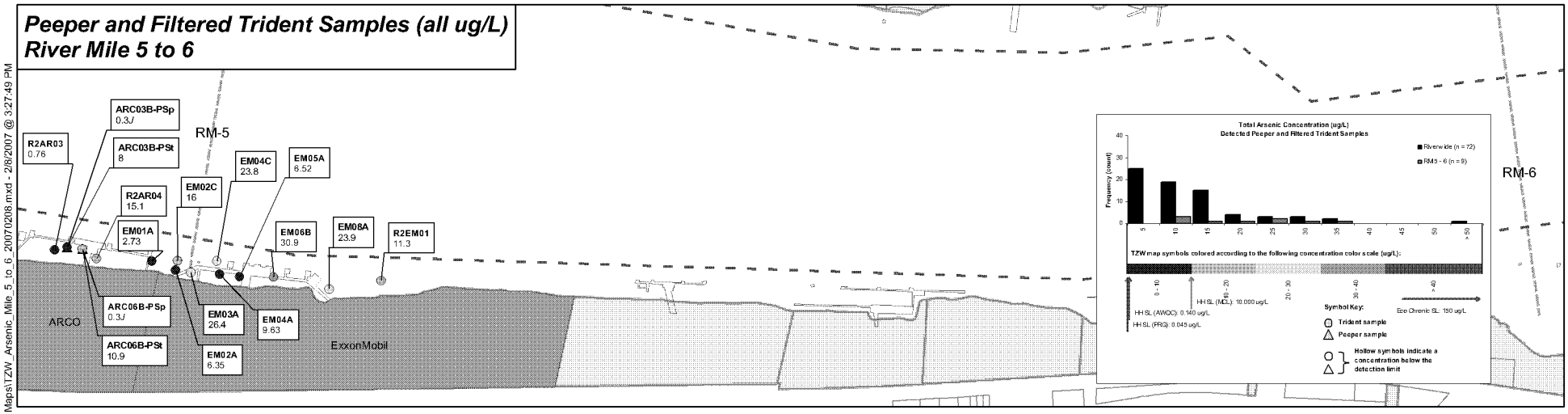
Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

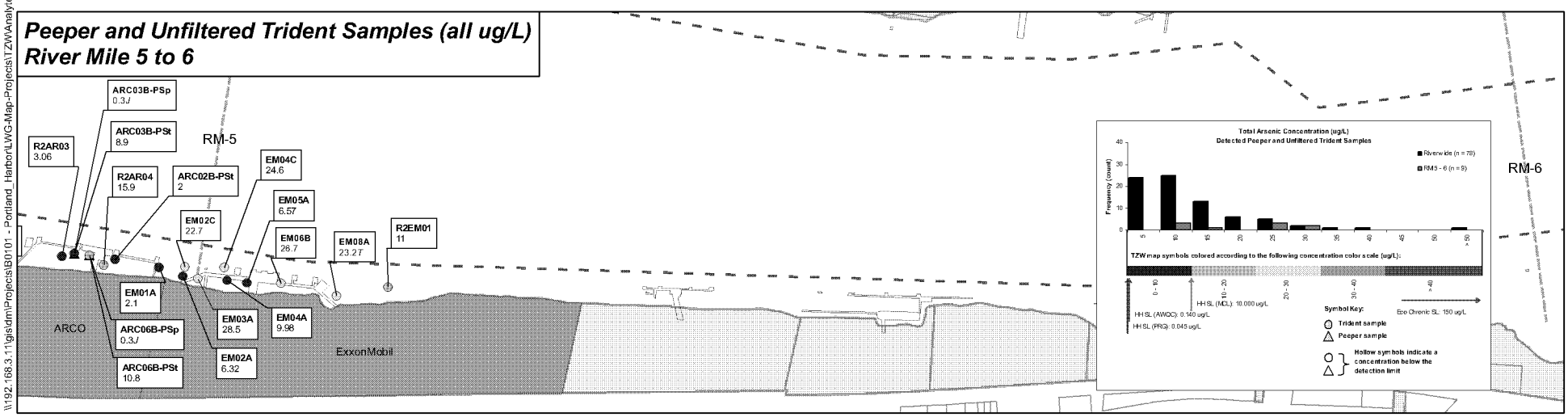
0 250 500 750 1,000 Feet

**Map 6.2-5a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 4 to 5 - Arsenic (ug/L)**

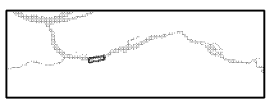
\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_Arsenic_Mile_4_to_5_20070208.mxd - 2/8/2007 @ 3:26:01 PM

BZTO104(e)033073




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map Features:
Docks and Structures
River Miles
Navigation Channel
Upland Sites (2006)
Waterfront Taxlots
R2 GWPA Study Site

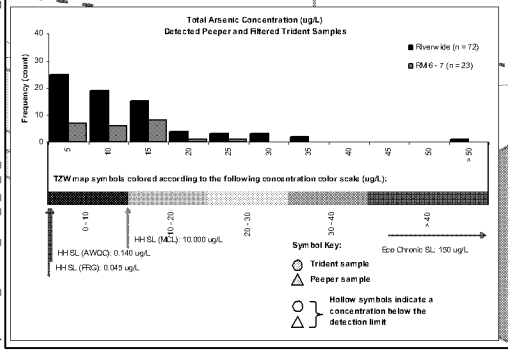
0 250 500 750 1,000 Feet

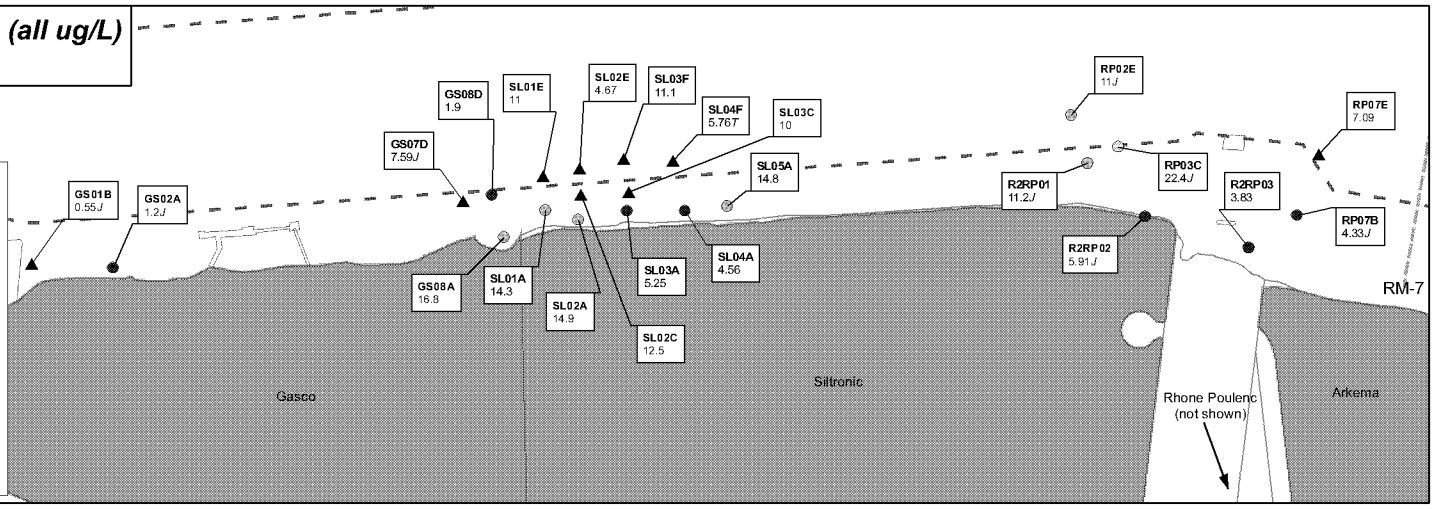
**Map 6.2-5b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 5 to 6 - Arsenic (ug/L)**

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_Arsenic_Mile_5_to_6_20070208.mxd - 2/8/2007 @ 3:27:49 PM

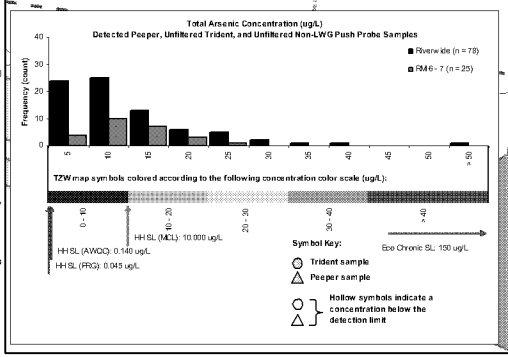
BZTO104(e)033074

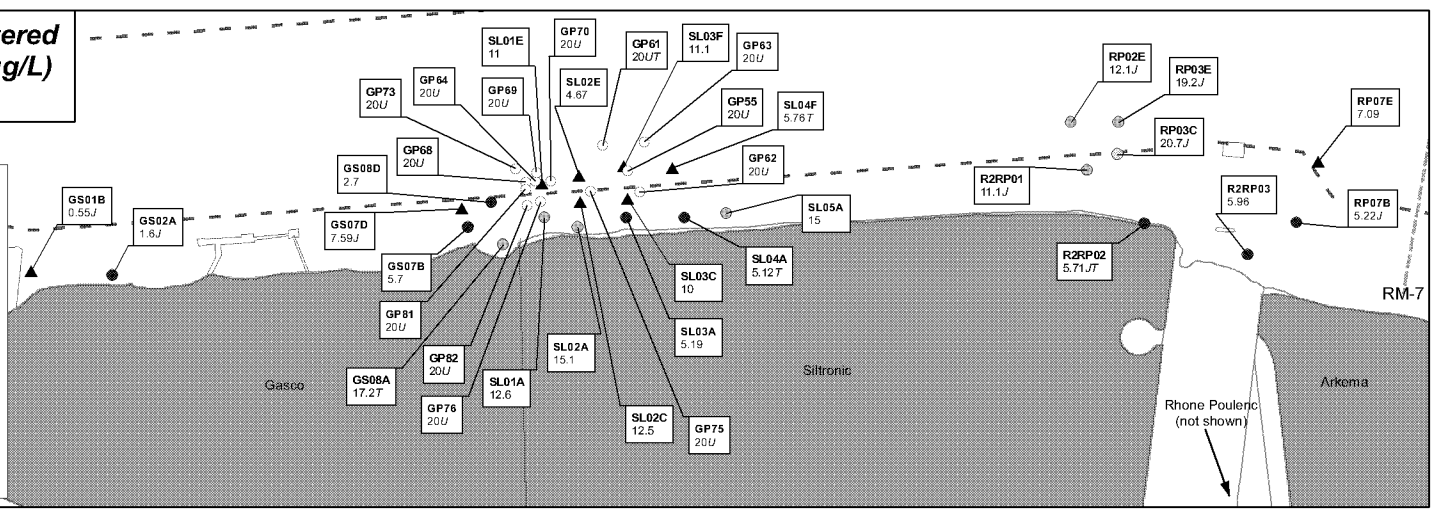
## Peeper and Filtered Trident Samples (all ug/L)
## River Mile 6 to 7



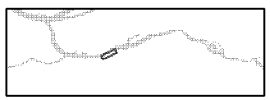




## Peeper, Unfiltered Trident, and Unfiltered Non-LWG Push Probe Samples (all ug/L)
## River Mile 6 to 7




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T The associated numerical value was approximated by the analytical laboratory.
J The analyte was not detected above the reported sample quantitation limit.
U The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

LWG Lower Willamette Group

Map Features:
- Upland Sites (2006)
- Waterfront Taxlots
- River Miles
- Navigation Channel
- Docks and Structures
- R2 GWPA Study Site

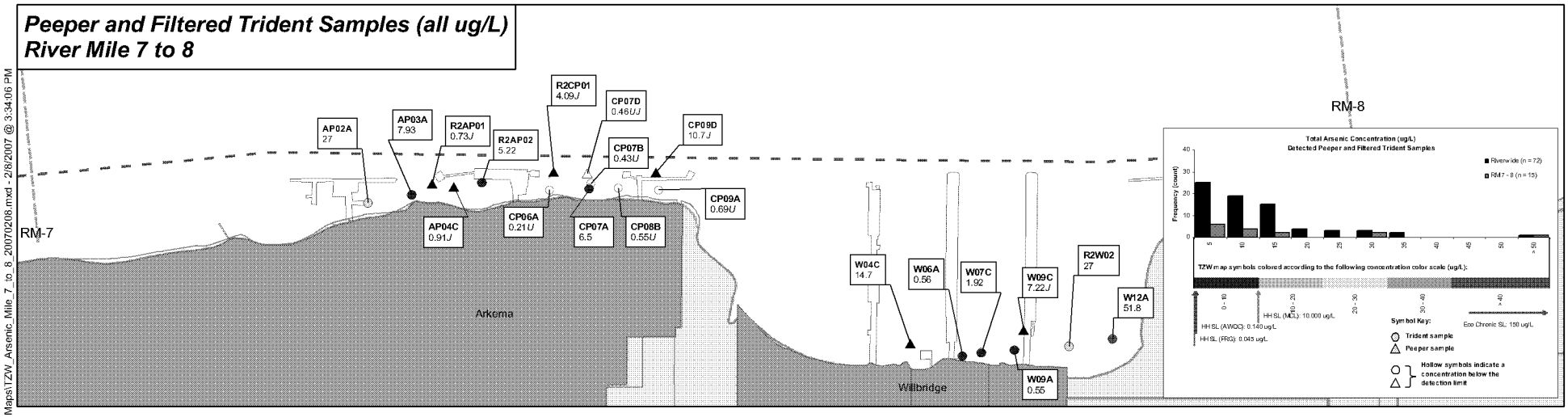
N

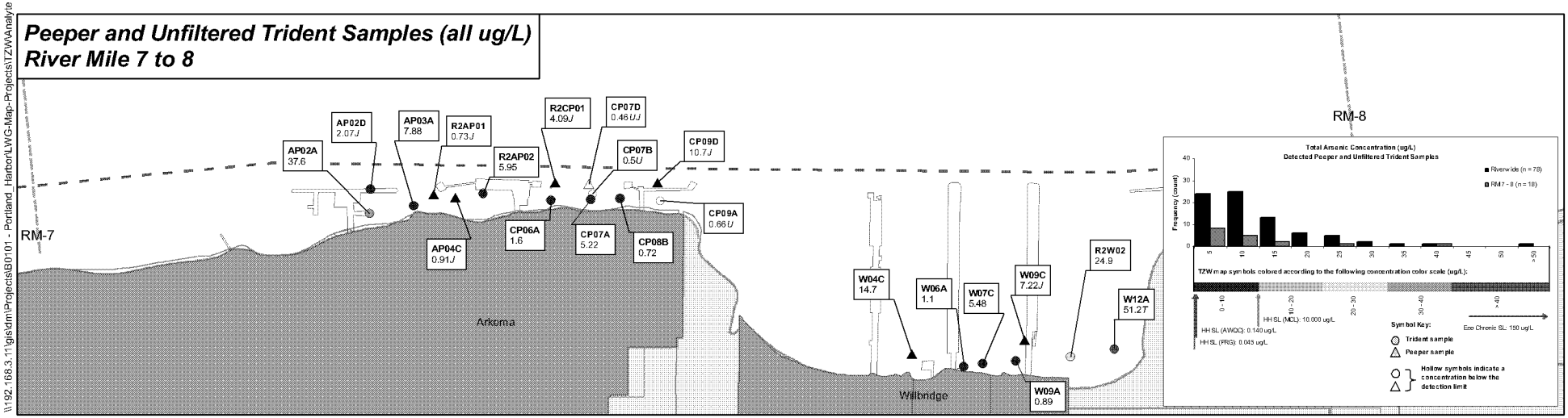
0 250 500 750 1,000 Feet

**Map 6.2-5c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 6 to 7 - Arsenic (ug/L)**

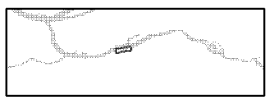
\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_Arsenic_Mile_6_to_7_20070208.mxd - 2/8/2007 @ 3:30:42 PM

BZTO104(e)033075




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map Features:
Docks and Structures
River Miles
Navigation Channel
Upland Sites (2006)
Waterfront Taxlots
R2 GWPA Study Site

0 250 500 750 1,000 Feet

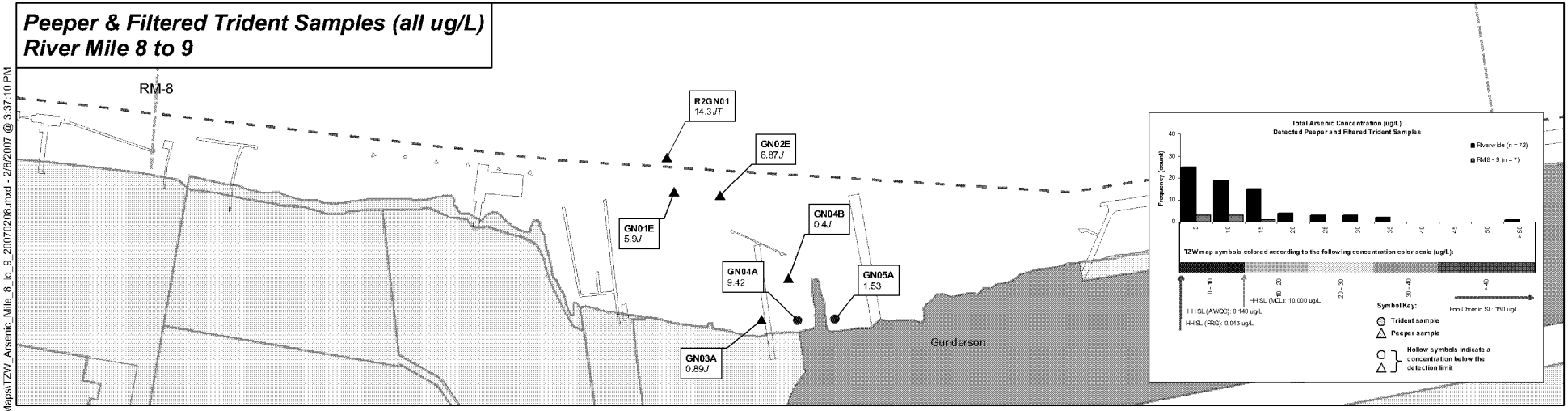
**Map 6.2-5d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 7 to 8 - Arsenic (ug/L)**

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_Arsenic_Mile_7_to_8_20070208.mxd - 2/8/2007 @ 3:34:06 PM

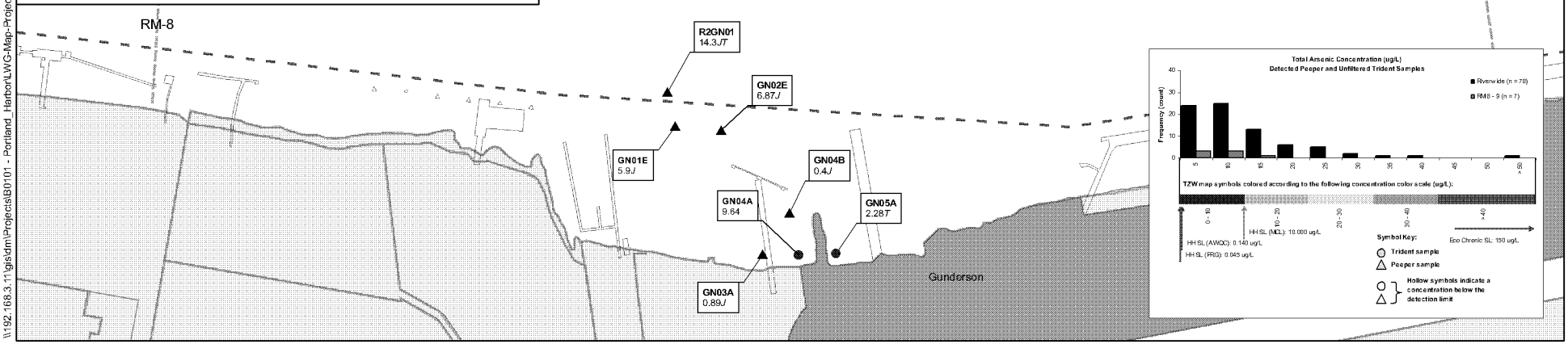
BZTO104(e)033076

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_Arsenic_Mile_8_to_9_20070208.mxd - 2/8/2007 @ 3:37:10 PM

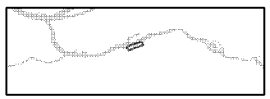
## Peeper & Filtered Trident Samples (all ug/L)
## River Mile 8 to 9




## Peeper and Unfiltered Trident Samples (all ug/L)
## River Mile 8 to 9




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

N

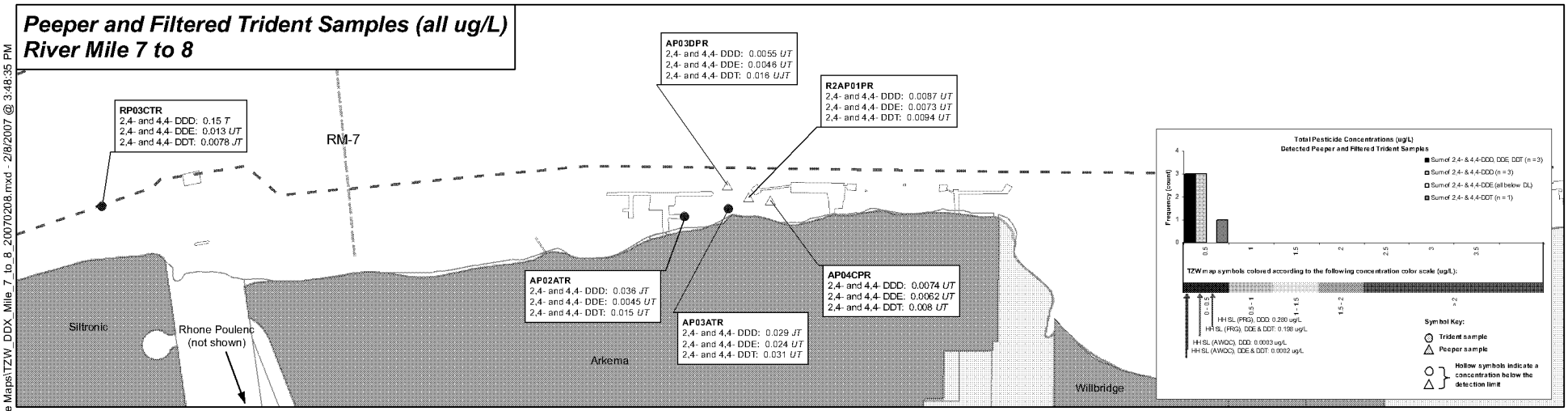
0 250 500 750 1,000 Feet

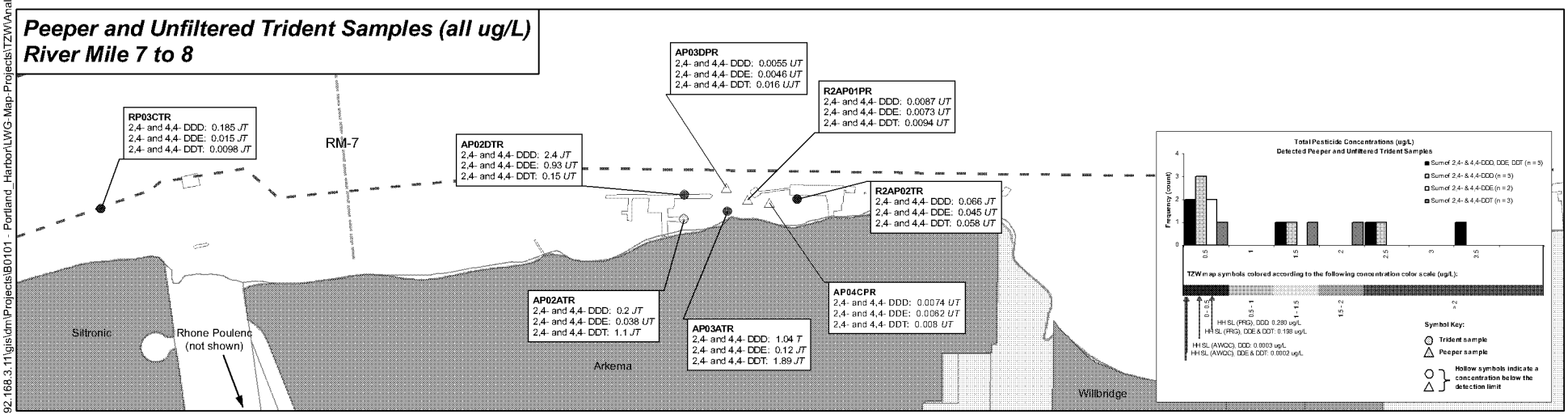
Tabular Results Notes:
T Methematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

**Map 6.2-5e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 8 to 9 - Arsenic (ug/L)**

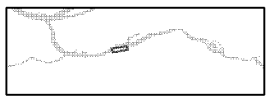
BZTO104(e)033077

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_DDX_Mile_7_to_8_20070208.mxd - 2/8/2007 @ 3:48:35 PM




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit, however, the reported quantitation limit was approximated by the analytical laboratory.

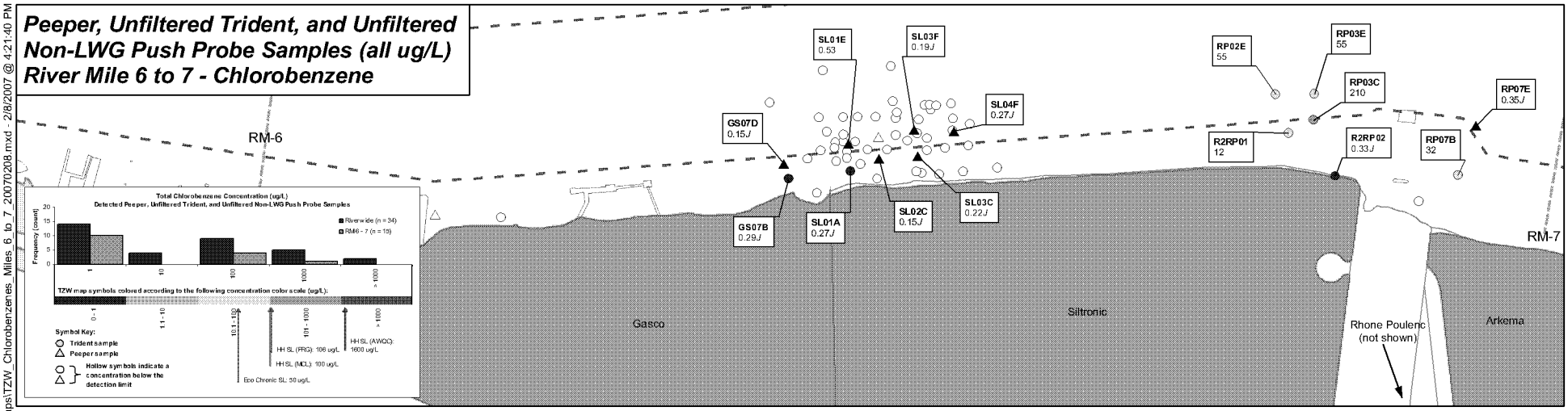
integral consulting inc.
LWG Lower Willamette Group

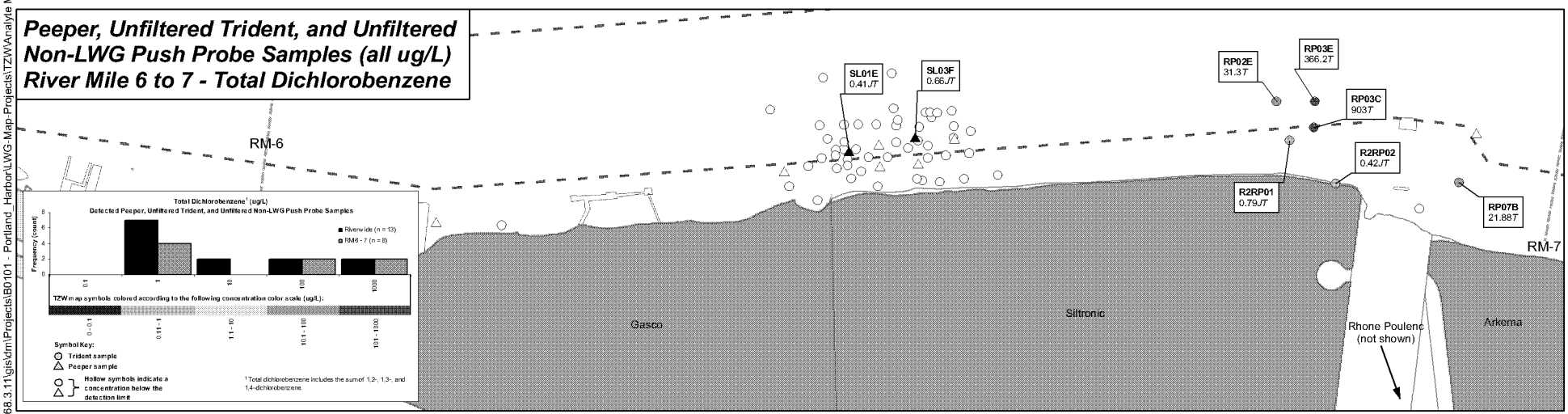
Map Features:
Docks and Structures
River miles
Navigation Channel
Upland Sites (2006)
Waterfront Taxlots
R2 GWPA Study Site

0 250 500 750 1,000 Feet

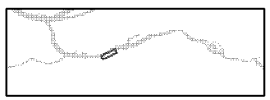
**Map 6.2-6**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 7 to 8 - DDX (ug/L)**

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_Chlorobenzenes_Miles_6_to_7_20070208.mxd - 2/8/2007 @ 4:21:40 PM




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map Features:
- Upland Sites (2006)
- Waterfront Taxlots
- River Miles
- Navigation Channel
- Docks and Structures
- R2 GWPA Study Site

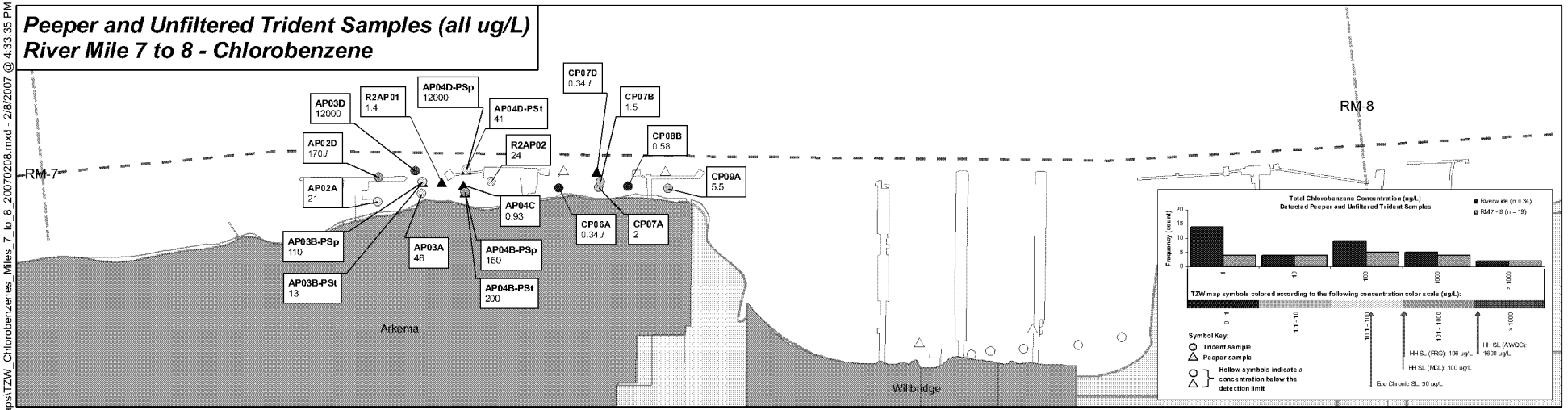
N

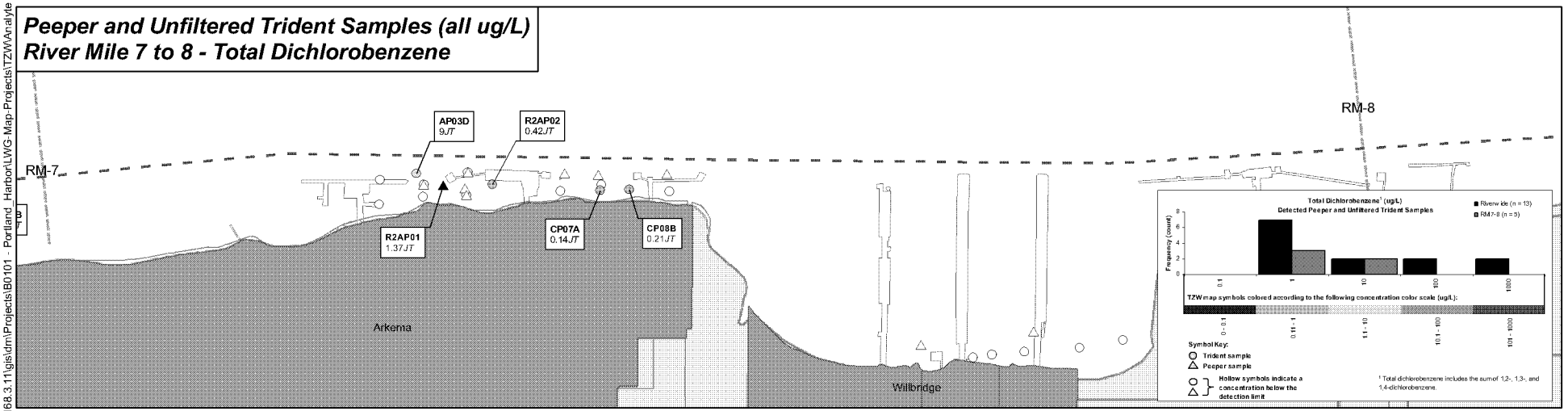
0 250 500 750 1,000 Feet

**Map 6.2-7a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 6 to 7 - MCB and Total DCB (ug/L)**

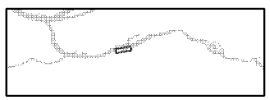
BZTO104(e)033079

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_Chlorobenzenes_Miles_7_to_8_20070208.mxd - 2/8/2007 @ 4:33:35 PM




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

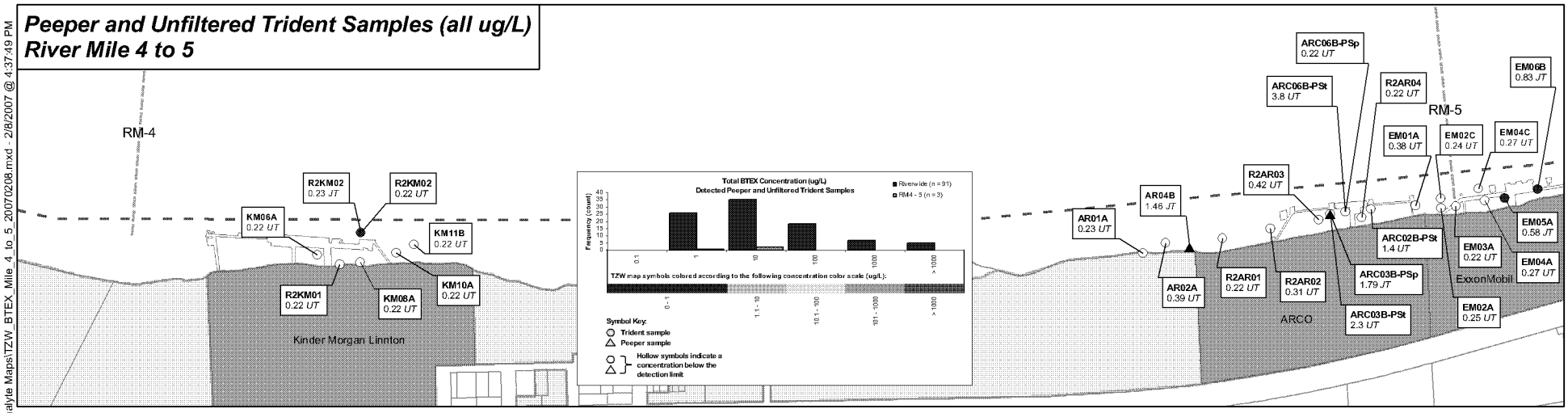
integral consulting inc.

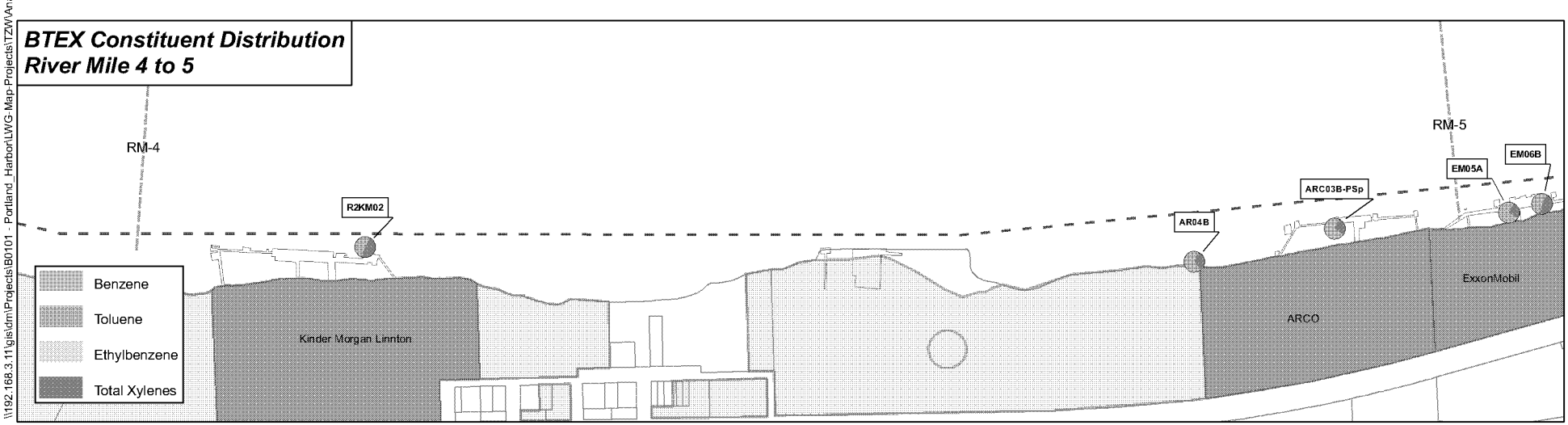
LWG LOWER WILLAMETTE GROUP

Map Features:
- Upland Sites (2006)
- Waterfront Taxlots
- River Miles
- Navigation Channel
- Docks and Structures
- R2 GWPA Study Site

0 250 500 750 1,000 Feet

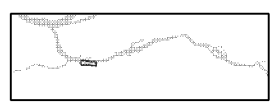
**Map 6.2-7b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 7 to 8 - MCB and Total DCB (ug/L)**




\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_BTEX_Mile_4_to_5_20070208.mxd - 2/8/2007 @ 4:37:49 PM

FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map Features:
Docks and Structures
River Miles
Navigation Channel
Upland Sites (2006)
Waterfront Taxlots
R2 GWPA Study Site

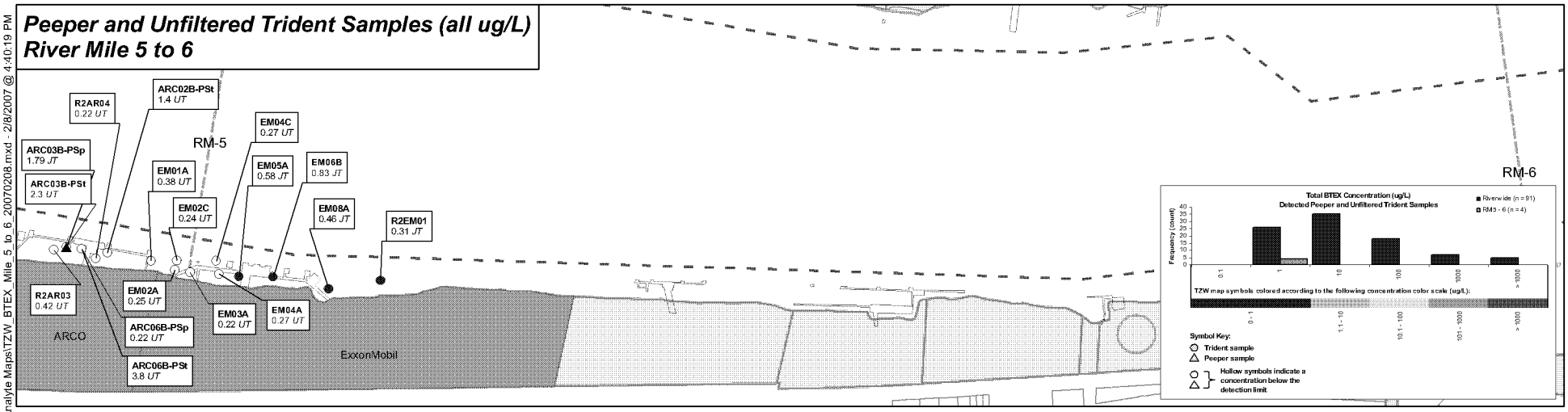
0 250 500 750 1,000 Feet

**Map 6.2-8a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 4 to 5 - Total BTEX (ug/L)**

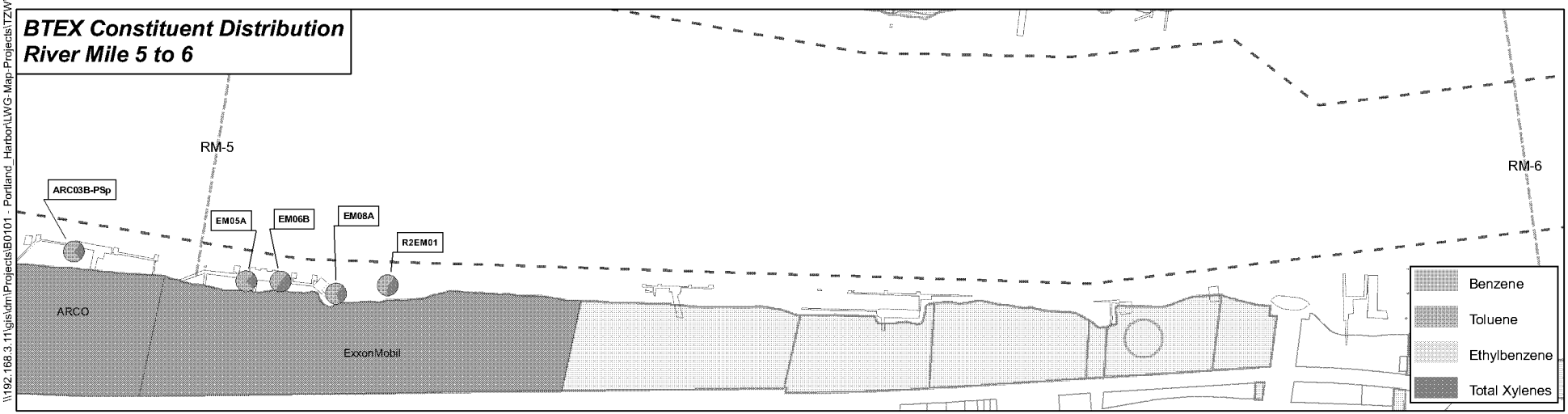
BZTO104(e)033081

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_BTEX_Mile_5_to_6_20070208.mxd - 2/8/2007 @ 4:40:19 PM

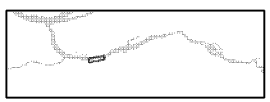
## Peeper and Unfiltered Trident Samples (all ug/L)
## River Mile 5 to 6




## BTEX Constituent Distribution
## River Mile 5 to 6




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

LWG Lower Willamette Group

Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

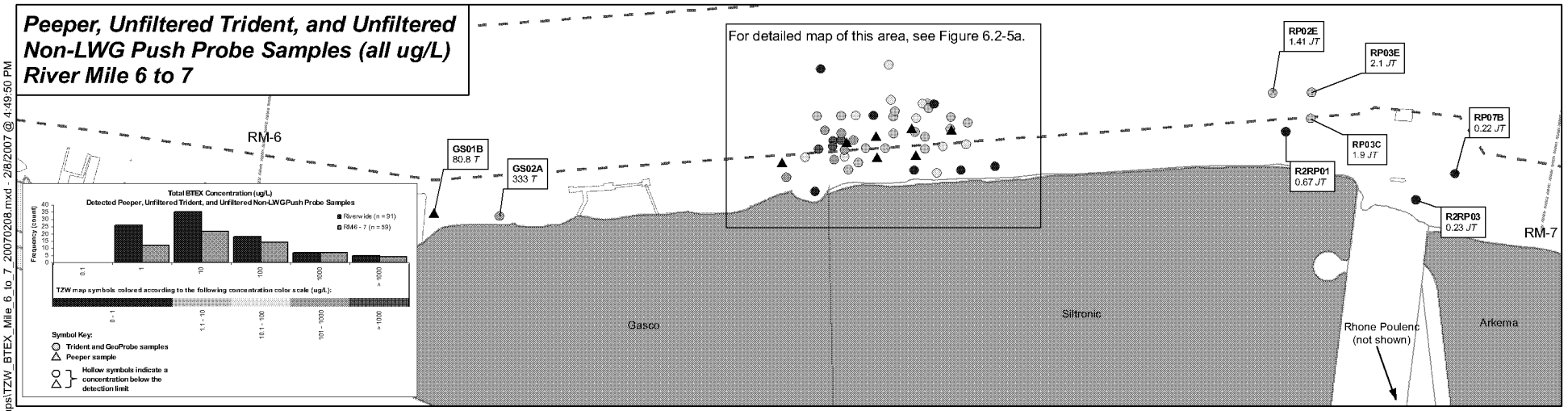
0 250 500 750 1,000 Feet

**Map 6.2-8b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 5 to 6 - Total BTEX (ug/L)**

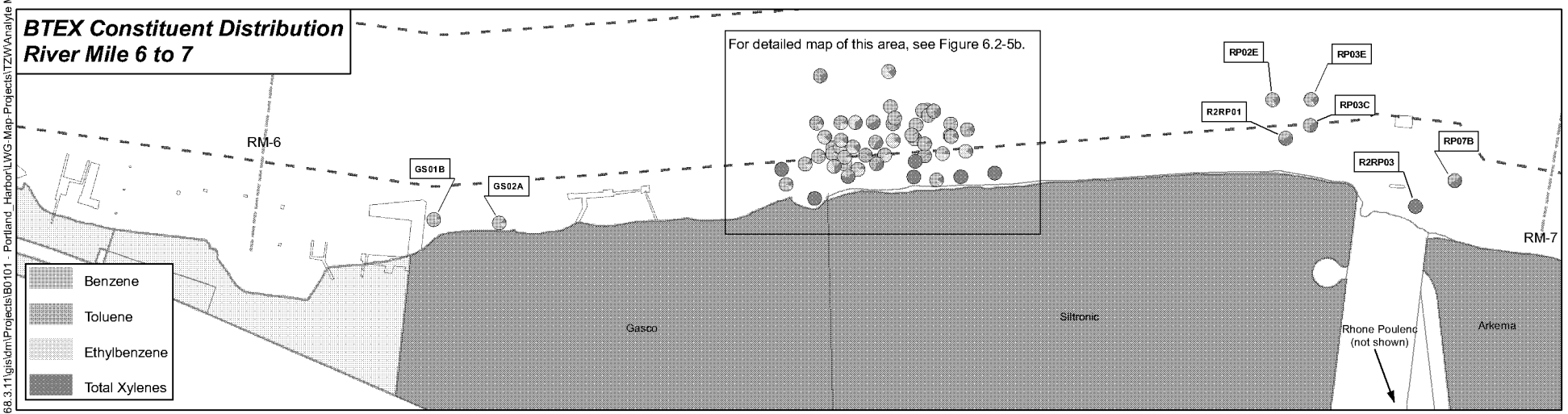
BZTO104(e)033082

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_BTEX_Mile_6_to_7_20070208.mxd - 2/8/2007 @ 4:49:50 PM

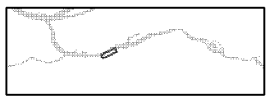
## Peeper, Unfiltered Trident, and Unfiltered Non-LWG Push Probe Samples (all ug/L) River Mile 6 to 7




## BTEX Constituent Distribution River Mile 6 to 7




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

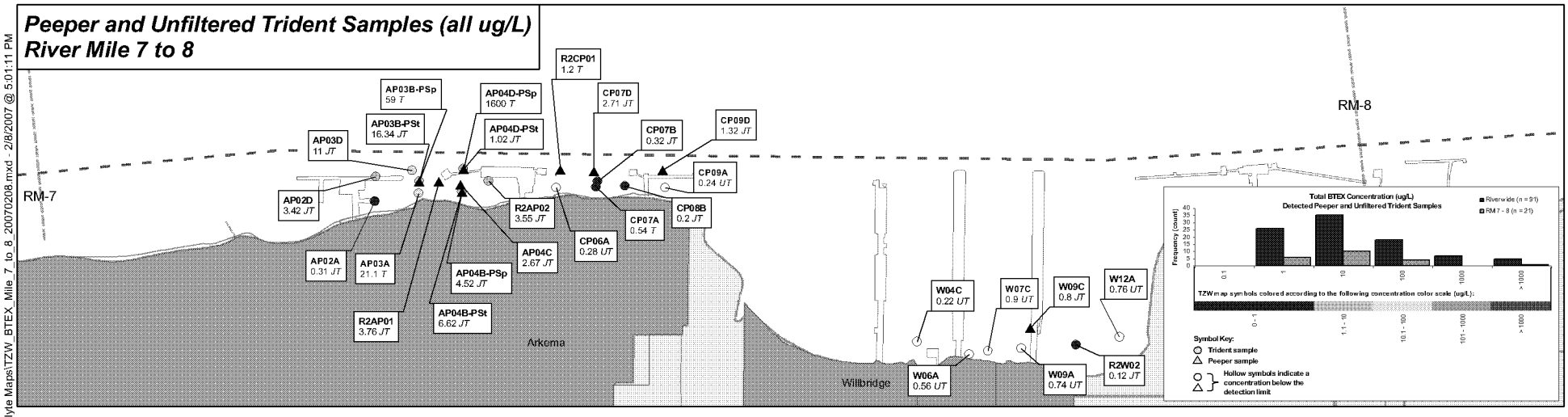
LWG Lower Willamette Group

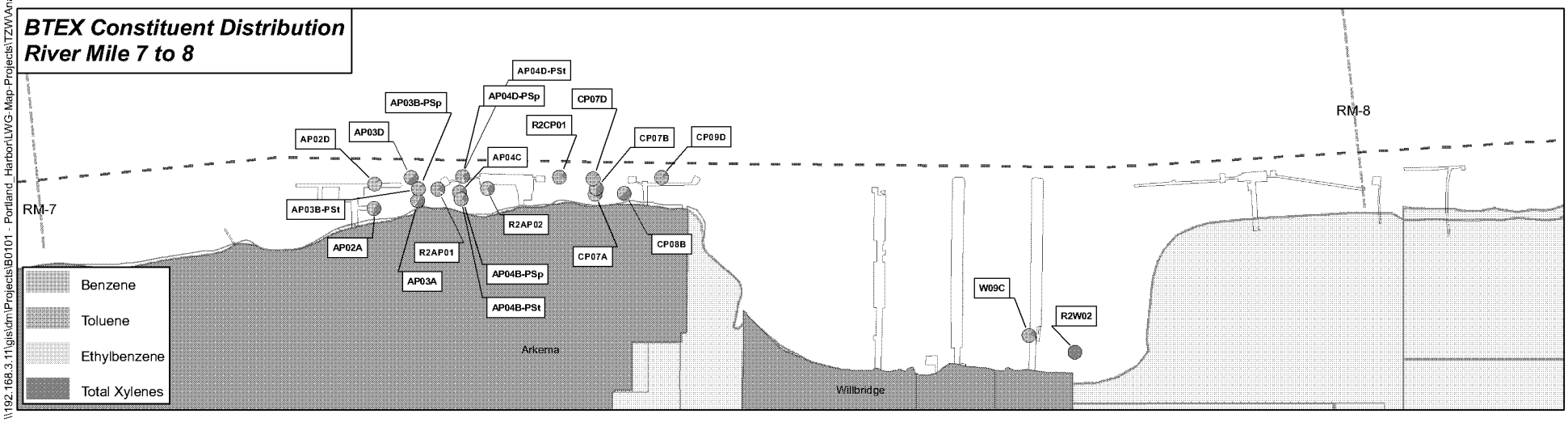
Map Features:
Upland Sites (2006)
Waterfront Taxlots
River Miles
Navigation Channel
Docks and Structures
R2 GWPA Study Site

N

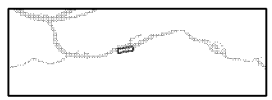
0 250 500 750 1,000 Feet

**Map 6.2-8c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 6 to 7 - Total BTEX (ug/L)**




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

0 250 500 750 1,000 Feet

Tabular Results Notes:
- T Mathematically derived value.
- J The associated numerical value was approximated by the analytical laboratory.
- U The analyte was not detected above the reported sample quantitation limit.
- UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

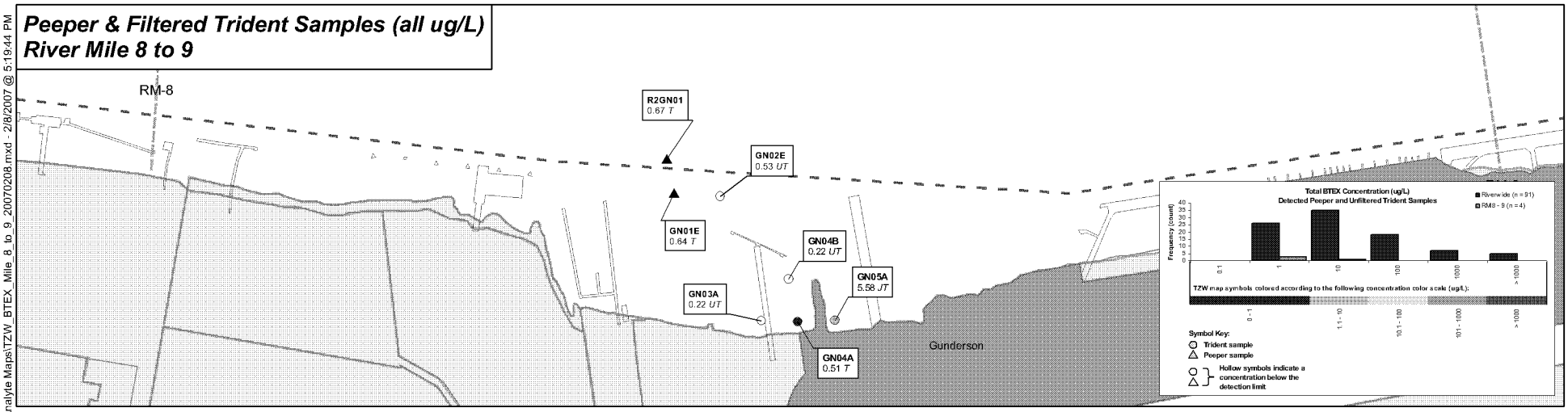
**Map 6.2-8d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 7 to 8 - Total BTEX (ug/L)**

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_BTEX_Mile_7_to_8_20070208.mxd - 2/8/2007 @ 5:01:11 PM

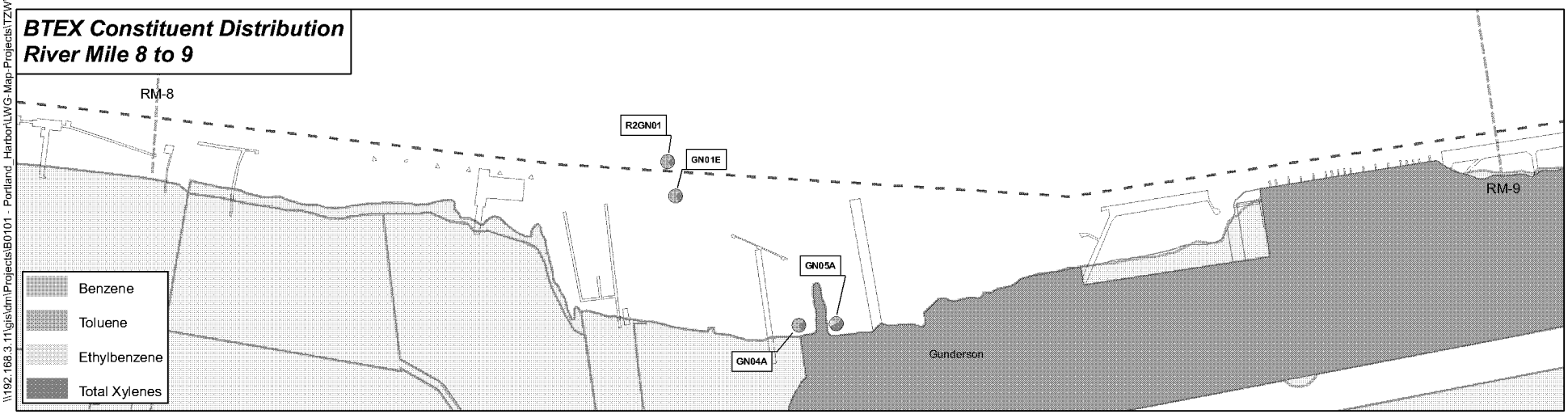
BZTO104(e)033084

\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_BTEX_Mile_8_to_9_20070208.mxd - 2/8/2007 @ 5:19:44 PM

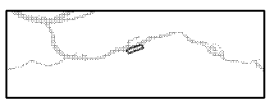
## Peeper & Filtered Trident Samples (all ug/L)
## River Mile 8 to 9




## BTEX Constituent Distribution
## River Mile 8 to 9




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**DRAFT**
DO NOT QUOTE OR CITE

Privileged and Confidential
Work Product Prepared in Anticipation of Litigation

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

N

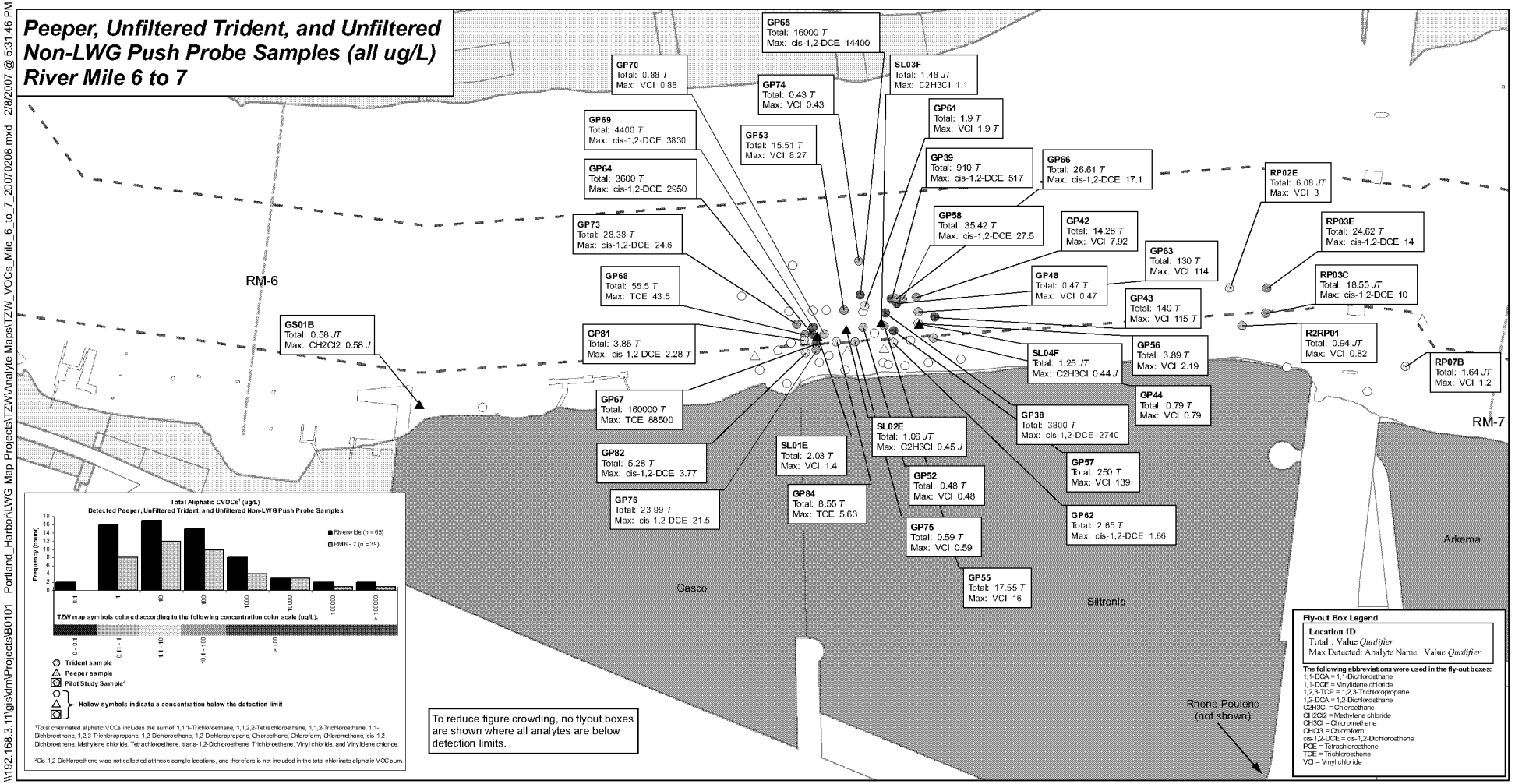
0 250 500 750 1,000 Feet

Tabular Results Notes:
T Methematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

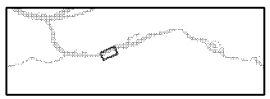
**Map 6.2-8e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 8 to 9 - Total BTEX (ug/L)**

\\192.168.3.11\gisdm\Projects\B0101 - Portland_Harbor\LWG Map Projects\TZW\Analyte Maps\TZW_VOCs_Mile_6_to_7_20070208.mxd - 2/8/2007 @ 5:31:46 PM

# Peeper, Unfiltered Trident, and Unfiltered Non-LWG Push Probe Samples (all ug/L)
# River Mile 6 to 7




FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos



**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

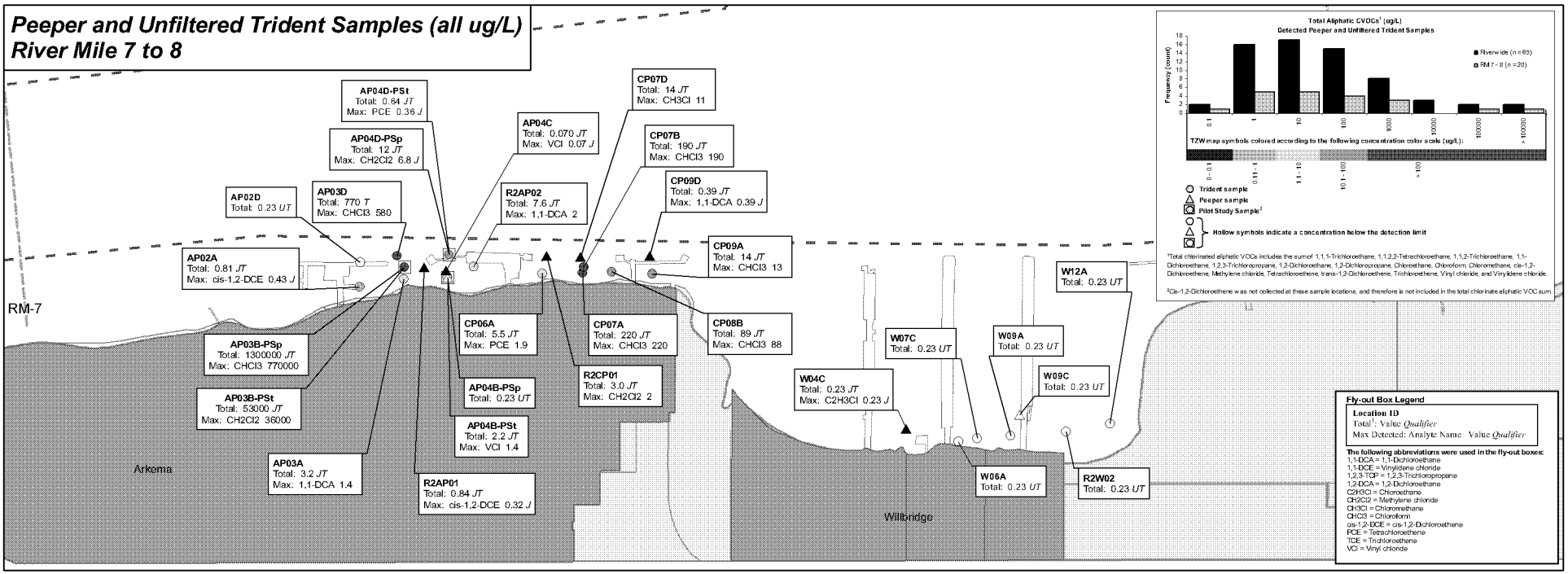
LWG Lower Willamette Group

Map Features:
- Upland Sites (2006)
- Waterfront Taxlots
- River Miles
- Navigation Channel
- Docks and Structures
- R2 GWPA Study Site

N

0 250 500 750 1,000 Feet

**Map 6.2-9a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 6 to 7 - Total Aliphatic CVOCs (ug/L)**




\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_VOCs_Mile_7_to_8_20070208.mxd - 2/8/2007 @ 5:34:13 PM

Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

0 250 500 750 1,000 Feet

FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos

**PSt** Indicates sample collected during the GWPA Pilot Study by Trident sampler.
**PSp** Indicates sample collected during the GWPA Pilot Study by small-volume peeper.

Qualifiers:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

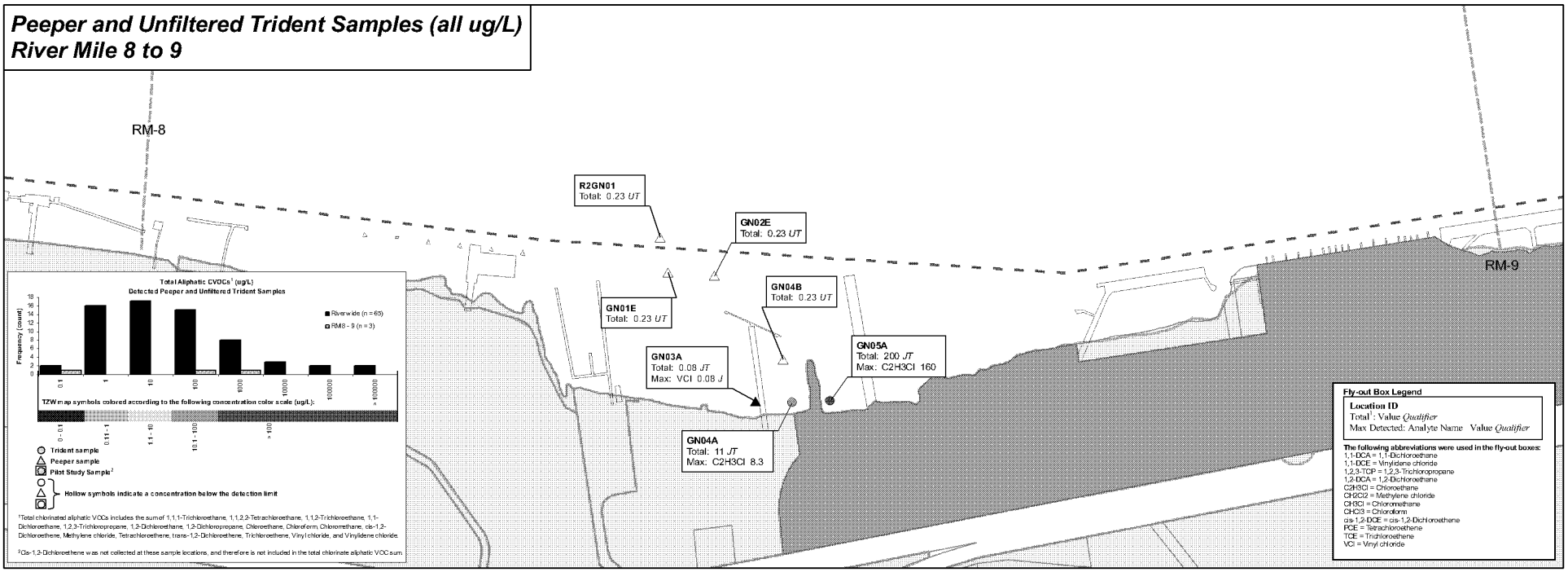
integral consulting inc.

LWG Lower Willamette Group

**Map 6.2-9b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 7 to 8 - Total Aliphatic CVOCs (ug/L)**

BZTO104(e)033087

# *Peeper and Unfiltered Trident Samples (all ug/L)*
# *River Mile 8 to 9*

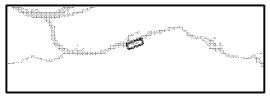



\\192.168.3.11\gis\dm\Projects\B0101 - Portland_Harbor\LWG-Map-Projects\TZW\Analyte Maps\TZW_VOCs_Mile_8_to_9_20070208.mxd - 2/8/2007 @ 5:36:38 PM

Map Features:
- Docks and Structures
- River Miles
- Navigation Channel
- Upland Sites (2006)
- Waterfront Taxlots
- R2 GWPA Study Site

0 250 500 750 1,000 Feet

FEATURE SOURCES:
Property and Taxlot Boundaries: Metro RLIS
Channel & River miles: US Army Corps of Engineers.
Docks & In-water Structures: digitized from October 2001 0.33 ft. resolution color orthophotos

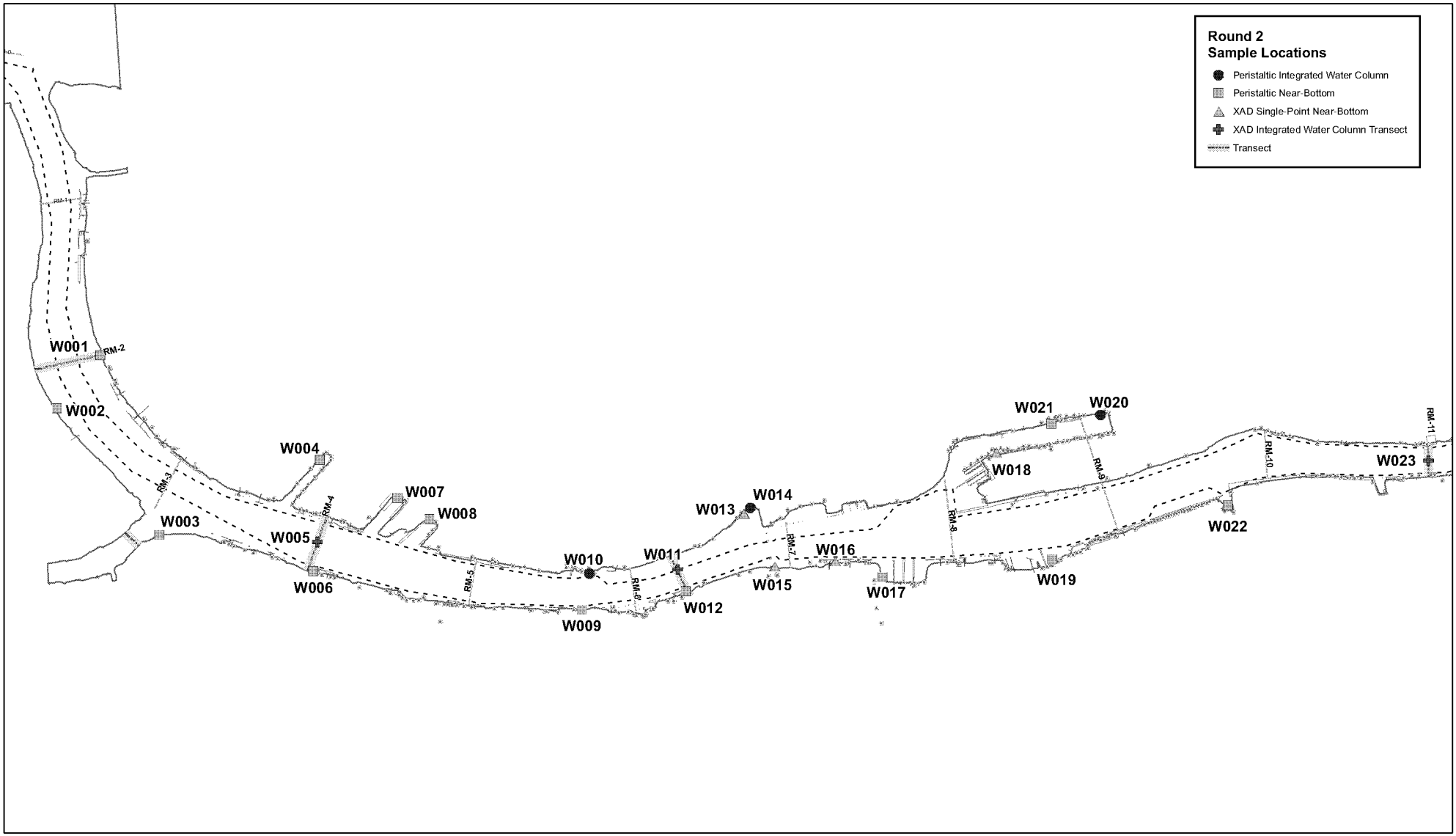


Tabular Results Notes:
T Mathematically derived value.
J The associated numerical value was approximated by the analytical laboratory.
U The analyte was not detected above the reported sample quantitation limit.
UJ The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit was approximated by the analytical laboratory.

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.2-9c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Concentrations in Transition Zone Water**
**River Mile 8 to 9 - Total Aliphatic CVOCs (ug/L)**




integral consulting inc.

LWG Lower Willamette Group

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 0.5 1 Miles

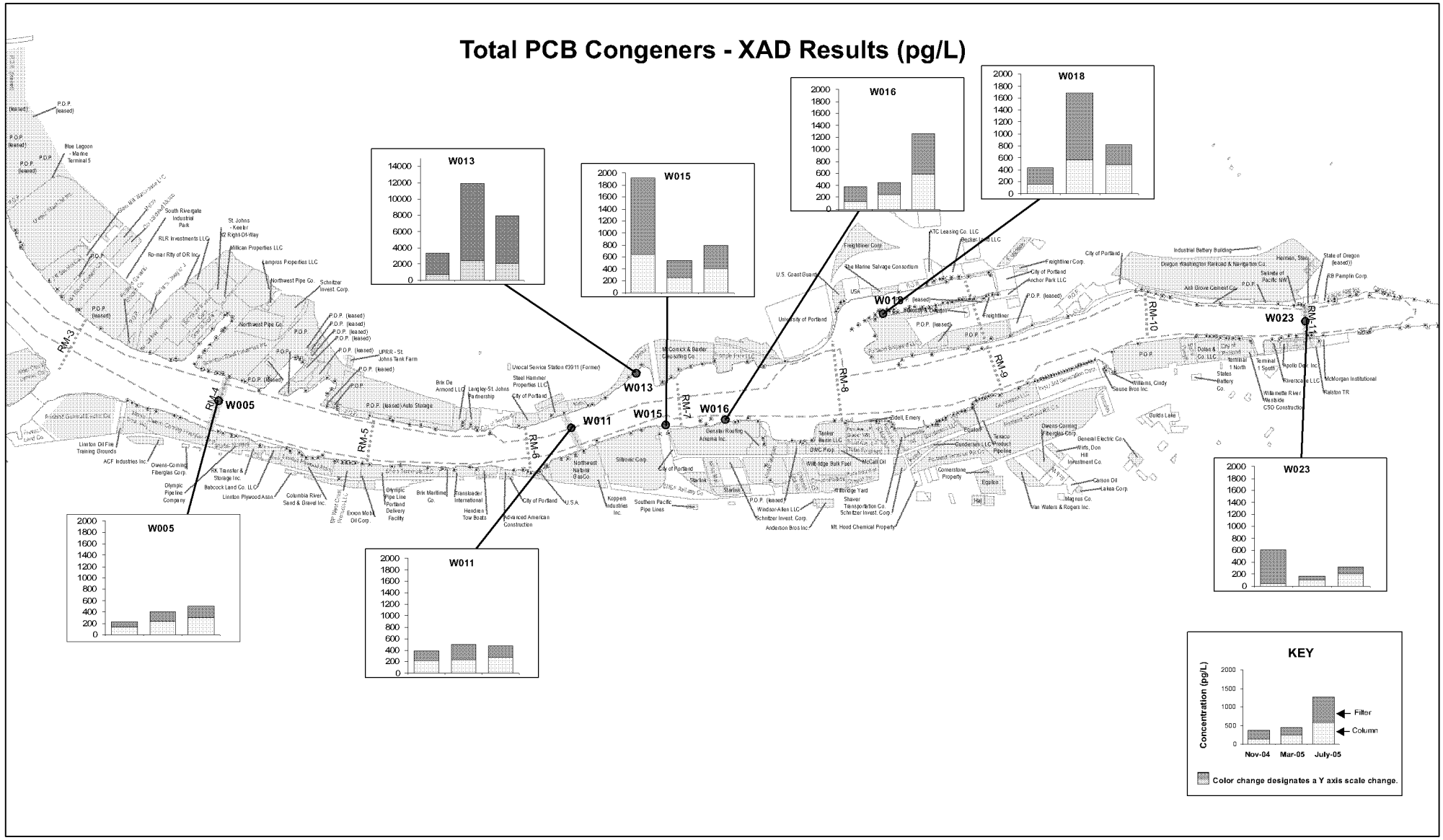
Docks and Structures
Waterfront Taxlots
Upland Sites (2006)
Outfalls
River Mile
Navigation Channel
2004 Bathymetry
High : 10.4101
Low : -90.584

**Map 6.3-1**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Surface Water Station Locations**

Map Document: (J:\Projects\Portland_Harbor\WQ\Maps\Projects\Round2_Reporting\Map_2-1-5_SurfaceWater_station_map.mxd) 2/6/2007 - 10:21:42 AM

BZTO104(e)033089

# Total PCB Congeners - XAD Results (pg/L)




FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 1,000 2,000 3,000 Feet

XAD Sample Locations
Outfalls
Rivermiles
Navigation Channel
Sample Transect
Site/Vicinity Tax Lot Owner
Upland Sites

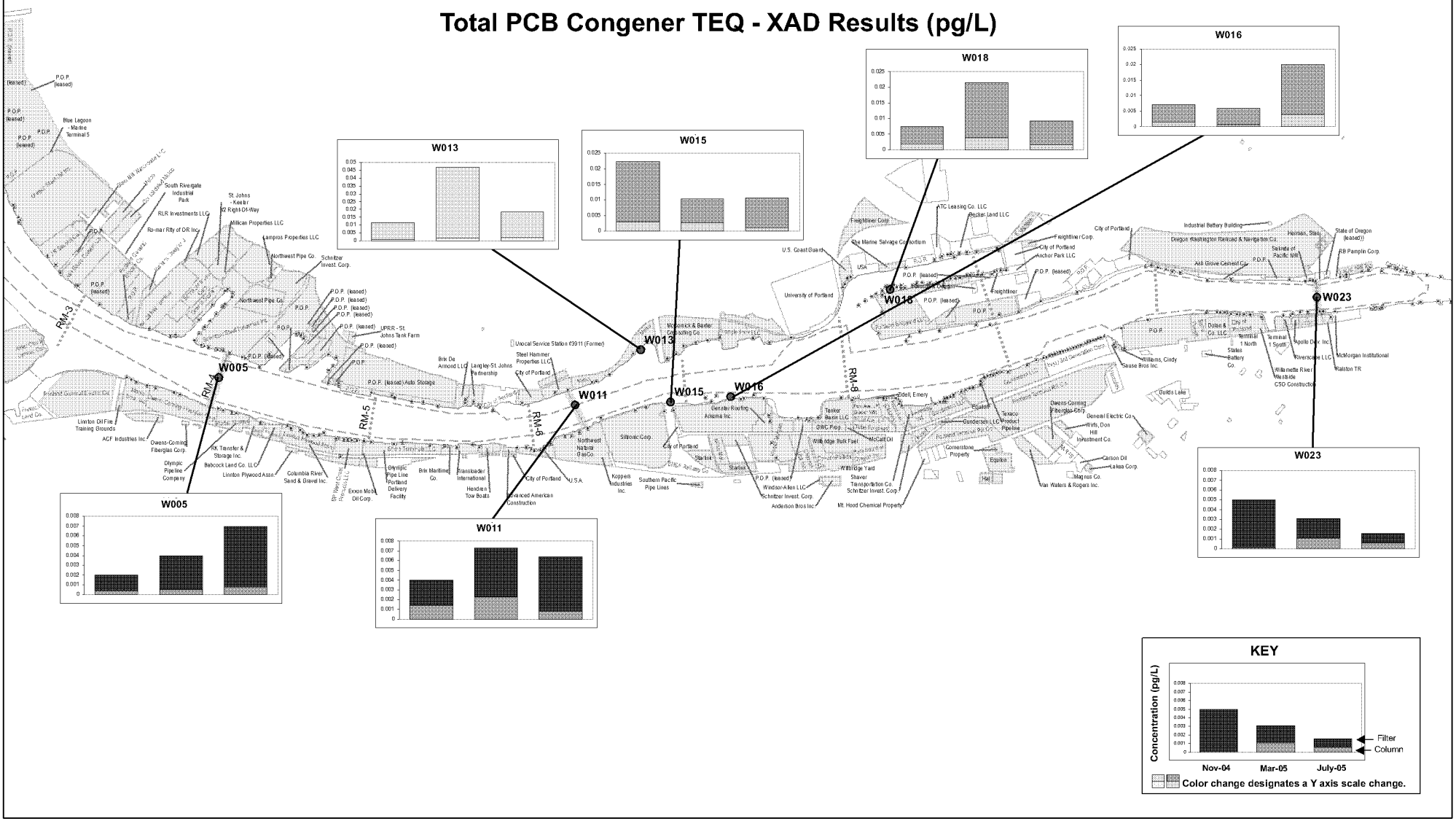
integral consulting inc.
LWG Lower Willamette Group

**Map 6.3-2**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Total PCB Congeners - XAD Results (pg/L)**
**Concentrations in Round 2 Surface Water**

Map Document: (P:\Projects\Portland_Harbor\LWG\Map-Projects\Surfacewater-2\MXDs\EPA_SW_PCB_XDC_CF_Total_Bars.mxd)
2/9/2007 -- 8:51:02 AM

BZTO104(e)033090

# Total PCB Congener TEQ - XAD Results (pg/L)




Map Document: (P:\Projects\Portland_Harbor\LWG\Map-Projects\Surfacewater-2\MXDs\SW_Total_PBC_TEQ_Congener_XAD_Bars.mxd)
2/9/2007 -- 9:33:02 AM

integral consulting inc.

LWG Lower Willamette Group

0 1,000 2,000 3,000 Feet

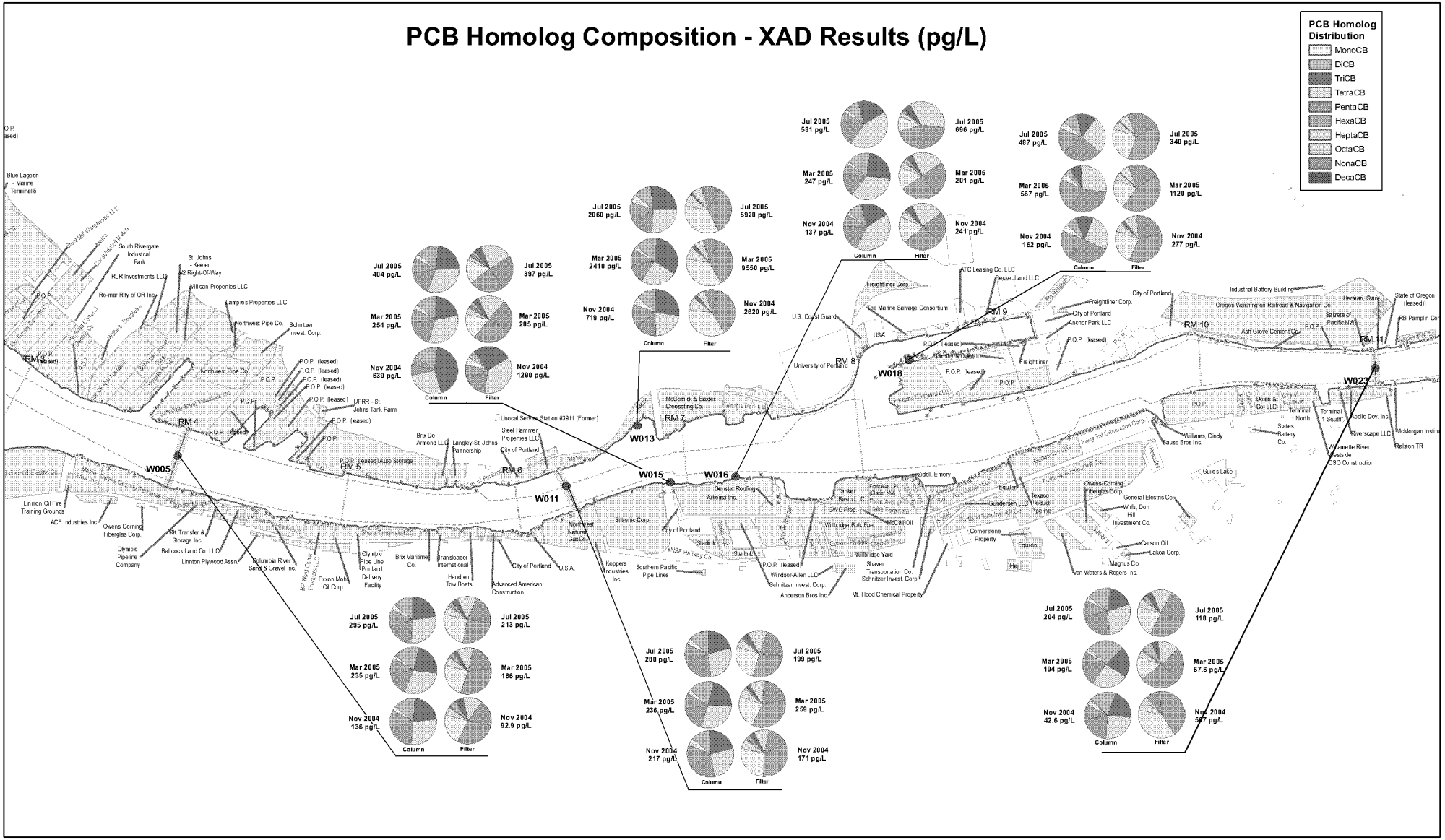
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
Sample Transect
Rivermiles
Navigation Channel
Upland Sites
Site/Vicinity Tax Lot Owner

**Map 6.3-3**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Total PCB Congener TEQ - XAD Results (pg/L)**
**Concentrations in Round 2 Surface Water**

BZTO104(e)033091

# PCB Homolog Composition - XAD Results (pg/L)




Map Document: (P:\Projects\Portland_Harbor\LWG\Map-Project\Surface\water-2\MXDs\SW_PCB_PieCharts_V3.mxd)
2/9/2007 -- 9:45:50 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 1,000 2,000 3,000 Feet

N

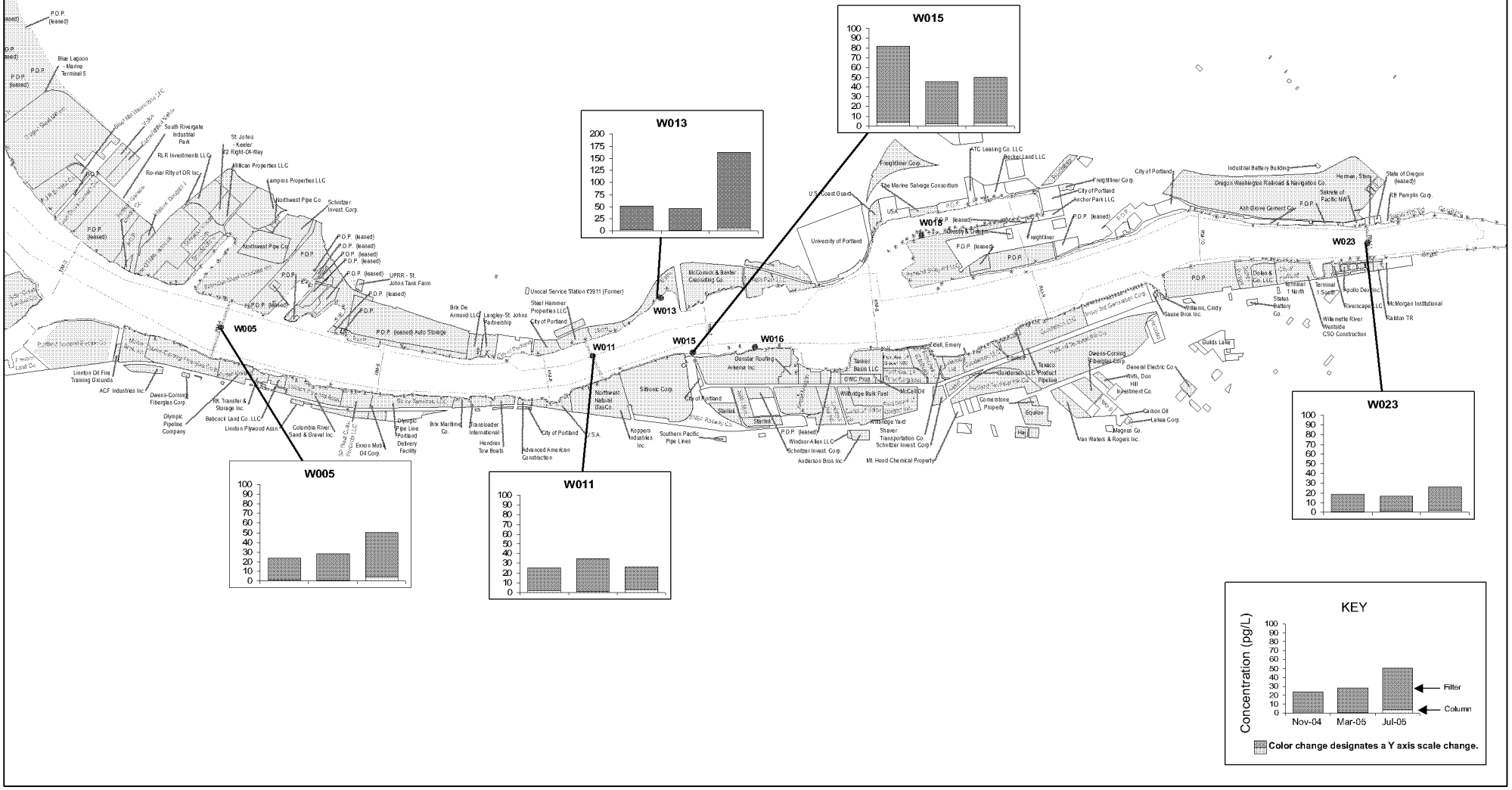
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Outfalls
Sample Transect
River miles
Navigation Channel
Site/Vicinity Tax Lot Owner
Upland Sites

**Map 6.3-4**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Homolog Composition - XAD Results (pg/L)**
**Concentrations in Round 2 Surface Water**

BZTO104(e)033092

# Total PCDD/Fs - XAD Results (pg/L)




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Surfacewater-2\MXDs\EPA_SW_PCDD_F_Total_Bars_.mxd)
2/9/2007 -- 9:39:14 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 1,000 2,000 3,000 Feet

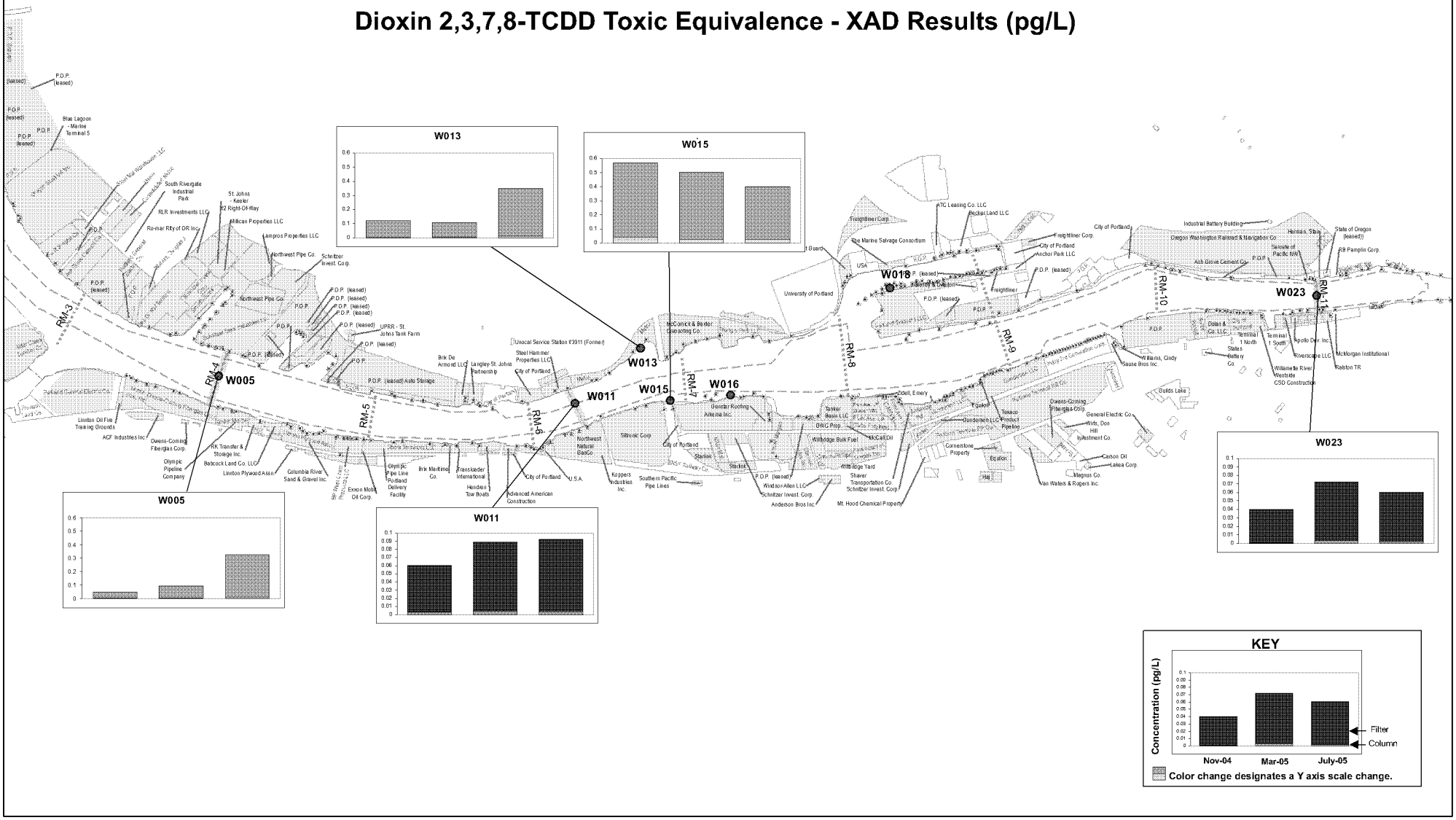
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- XAD Sample Location
- Sample Transect
- Outfalls
- Rivermiles
- Navigation Channel
- Site/Vicinity Tax Lot Owner
- Upland Sites

**Map 6.3-5**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Total PCDD/Fs - XAD Results (pg/L)**
**Concentrations in Round 2 Surface Water**

BZTO104(e)033093

# Dioxin 2,3,7,8-TCDD Toxic Equivalence - XAD Results (pg/L)




Map Document: (P:\Projects\Portland_Harbor\LWG\Map-Projects\Surfacewater+2MXDs\SW_2,3,7,8-TCDD TEQ_XAD_Bars.mxd)
2/7/2007 – 11:53:55 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 1,000 2,000 3,000 Feet

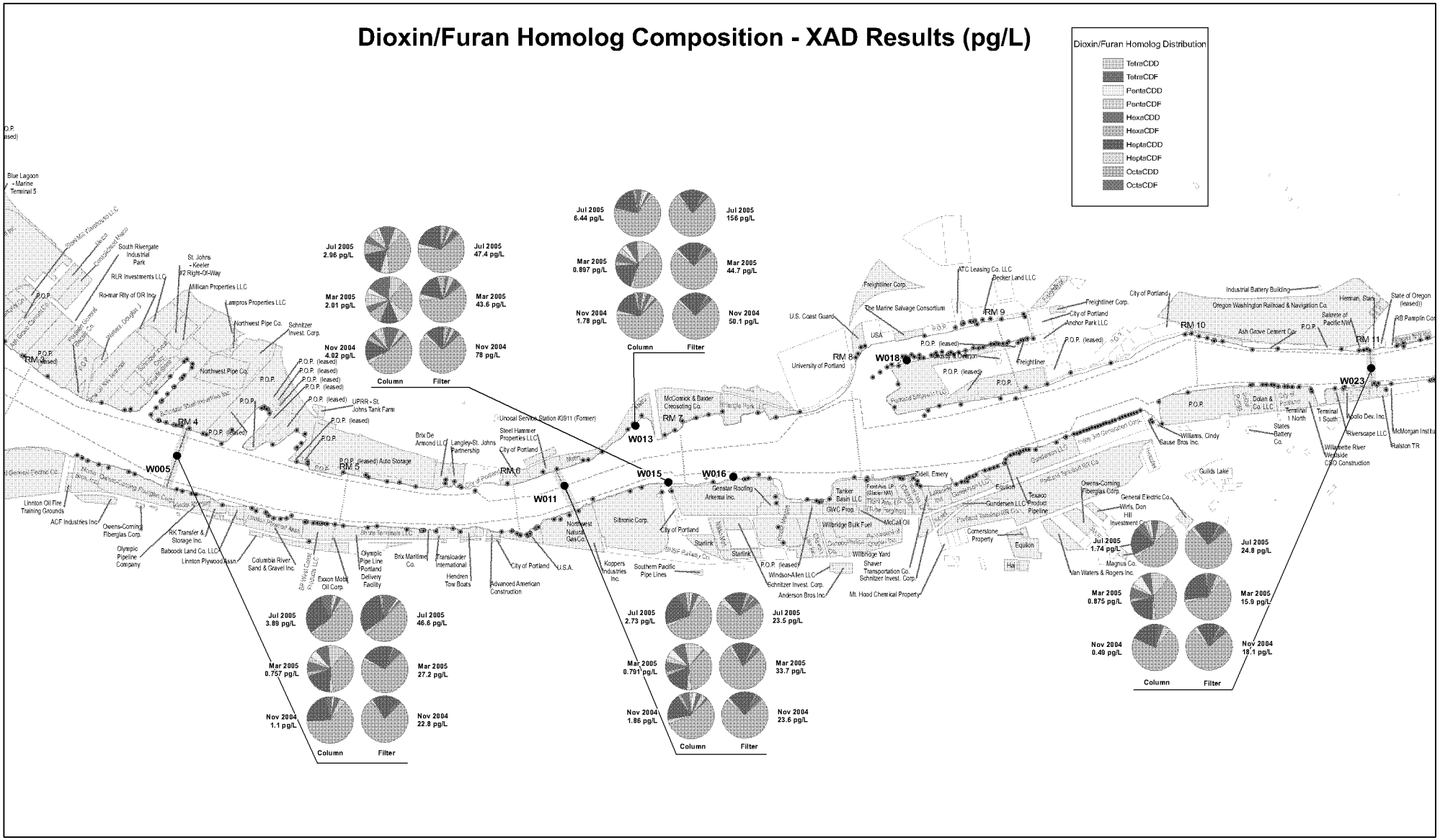
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- XAD Sample Locations
- Outfalls
- Sample Transect
- Rivermiles
- Navigation Channel
- Site/Vicinity Tax Lot Owner
- Upland Sites

**Map 6.3-6**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Dioxin 2,3,7,8-TCDD Toxic Equivalence - XAD Results (pg/L)**
**Concentrations in Round 2 Surface Water**

BZTO104(e)033094

# Dioxin/Furan Homolog Composition - XAD Results (pg/L)




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 1,000 2,000 3,000 Feet

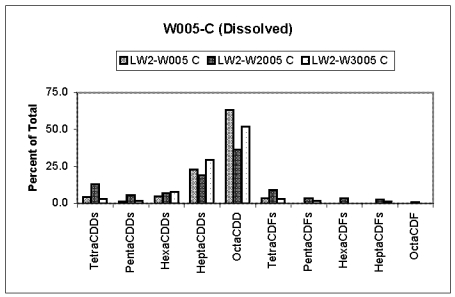
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

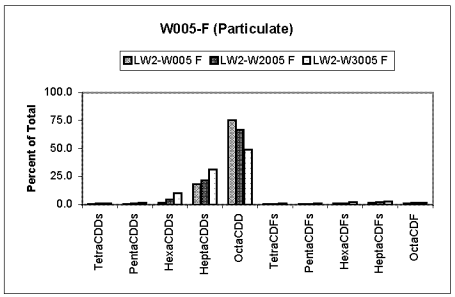
- Outfalls
- Sample Transect
- River miles
- Navigation Channel

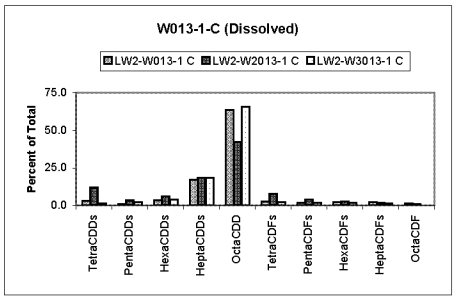
**Map 6.3-7**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Dioxin/Furan Homolog Composition - XAD Results (pg/L)**
**Concentrations in Round 2 Surface Water**

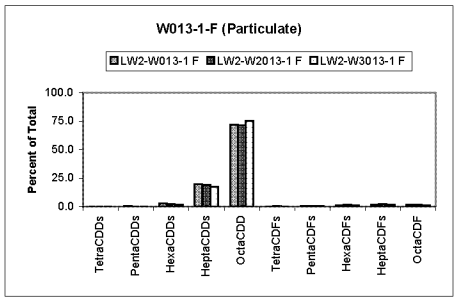
Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Surfacewater-2AMXDs\SW_PCDDF_PieCharts_V3.mxd)
2/7/2007 -- 11:42:13 AM

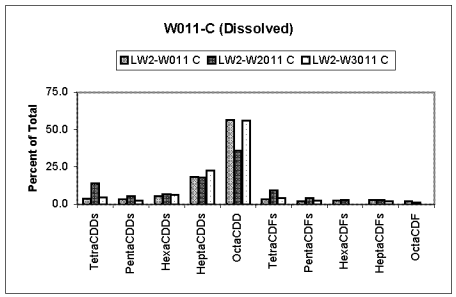
BZTO104(e)033095

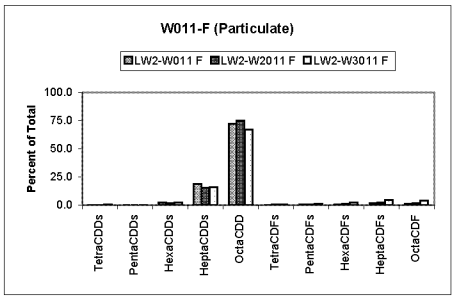


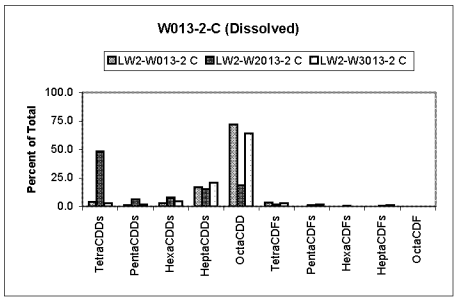



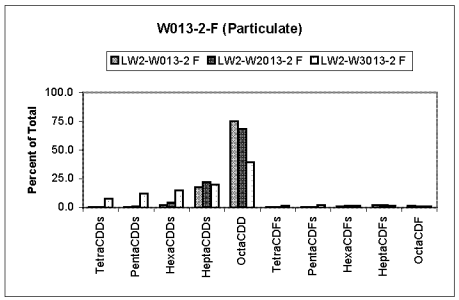



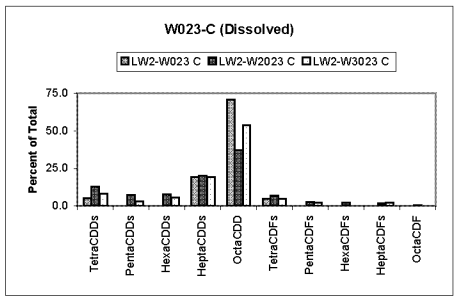



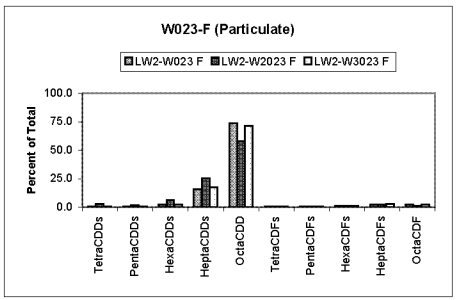



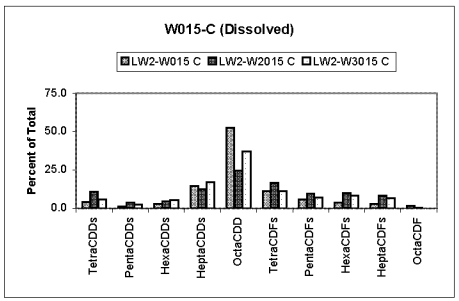



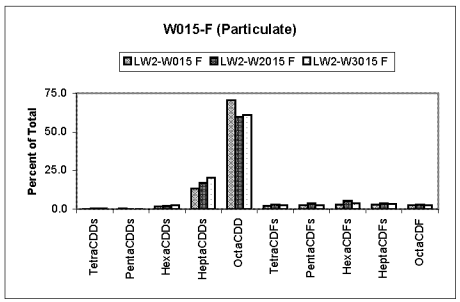



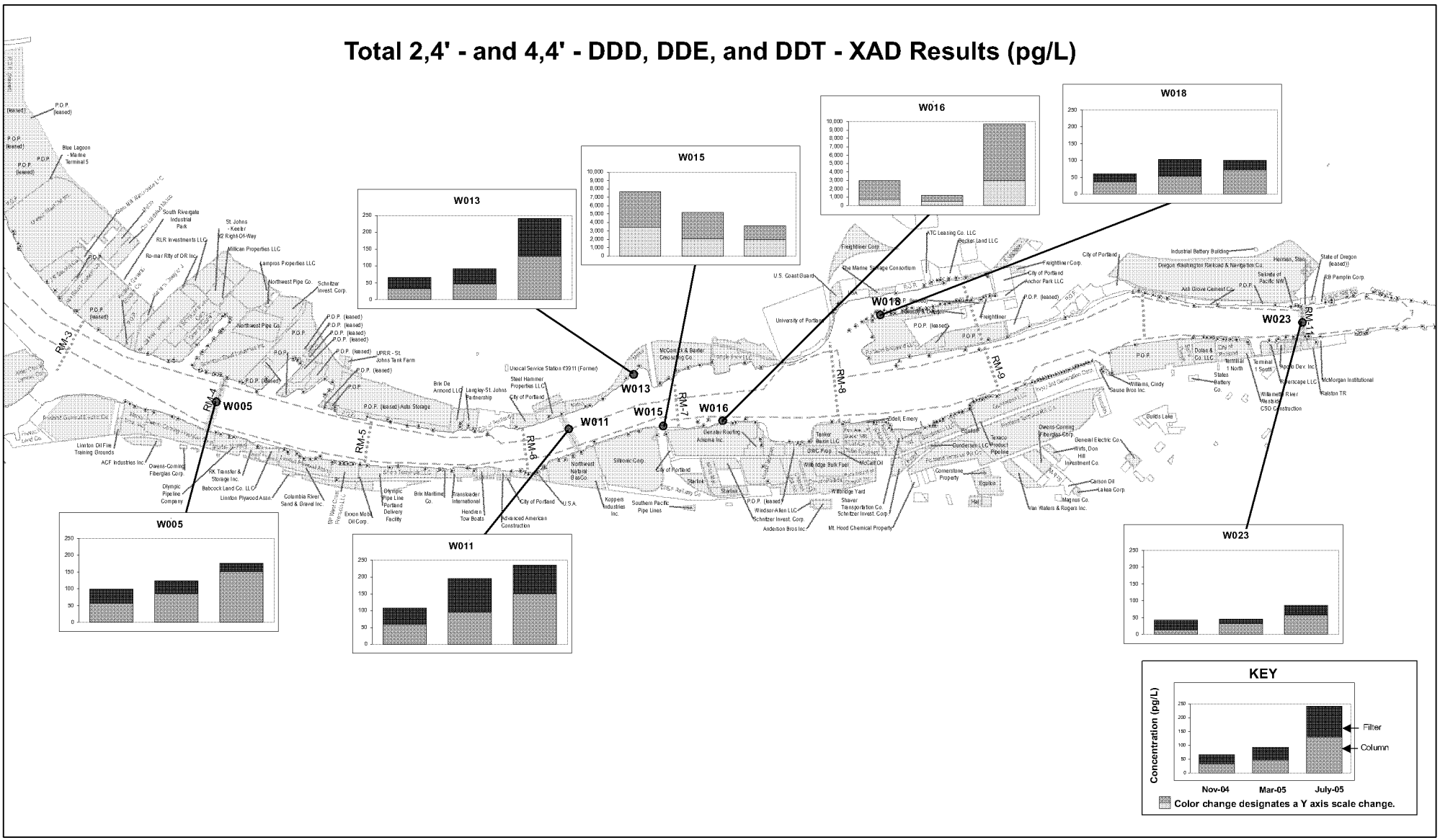

integral

LWG LOWER WILLAMETTE GROUP

**Map 6.3-8**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Dioxin/Furan Profiles in Round 2 Surface Water Samples**

BZTO104(e)033096

# Total 2,4' - and 4,4' - DDD, DDE, and DDT - XAD Results (pg/L)




FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 1,000 2,000 3,000 Feet

XAD Sample Locations
Outfalls
Sample Transect
Rivermiles
Navigation Channel
Upland Sites
Site/Vicinity Tax Lot Owner

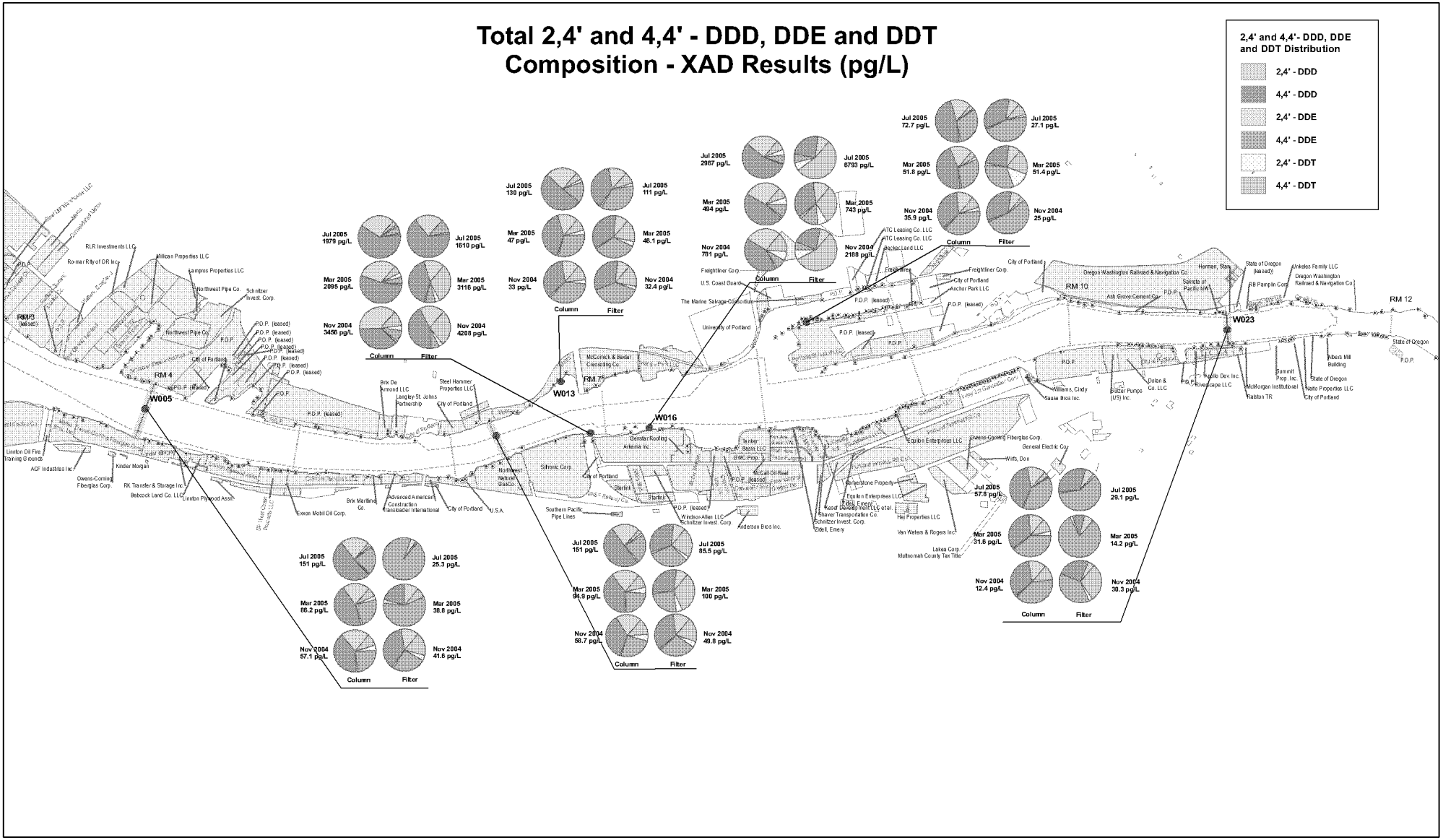
integral consulting inc.
LWG Lower Willamette Group

**Map 6.3-9**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Total 2,4' - and 4,4' - DDD, DDE, and DDT - XAD Results (pg/L)**
**Concentrations in Round 2 Surface Water**

Map Document: (P:\Projects\Portland_Harbor\LWG\Map-Projects\Surfacewater+2AMXDs\SW_Total DDTs-XAD_Bars.mxd)
2/9/2007 -- 9:54:56 AM

BZTO104(e)033097

# Total 2,4' and 4,4' - DDD, DDE and DDT Composition - XAD Results (pg/L)




Map Document: (P:\Projects\Portland_Harbor\LWG\Map-Projects\Surfacewater-2\MXDs\SW_DDT_PieCharts_V4.mxd)
2/9/2007 -- 11:40:40 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 1,000 2,000 3,000 Feet

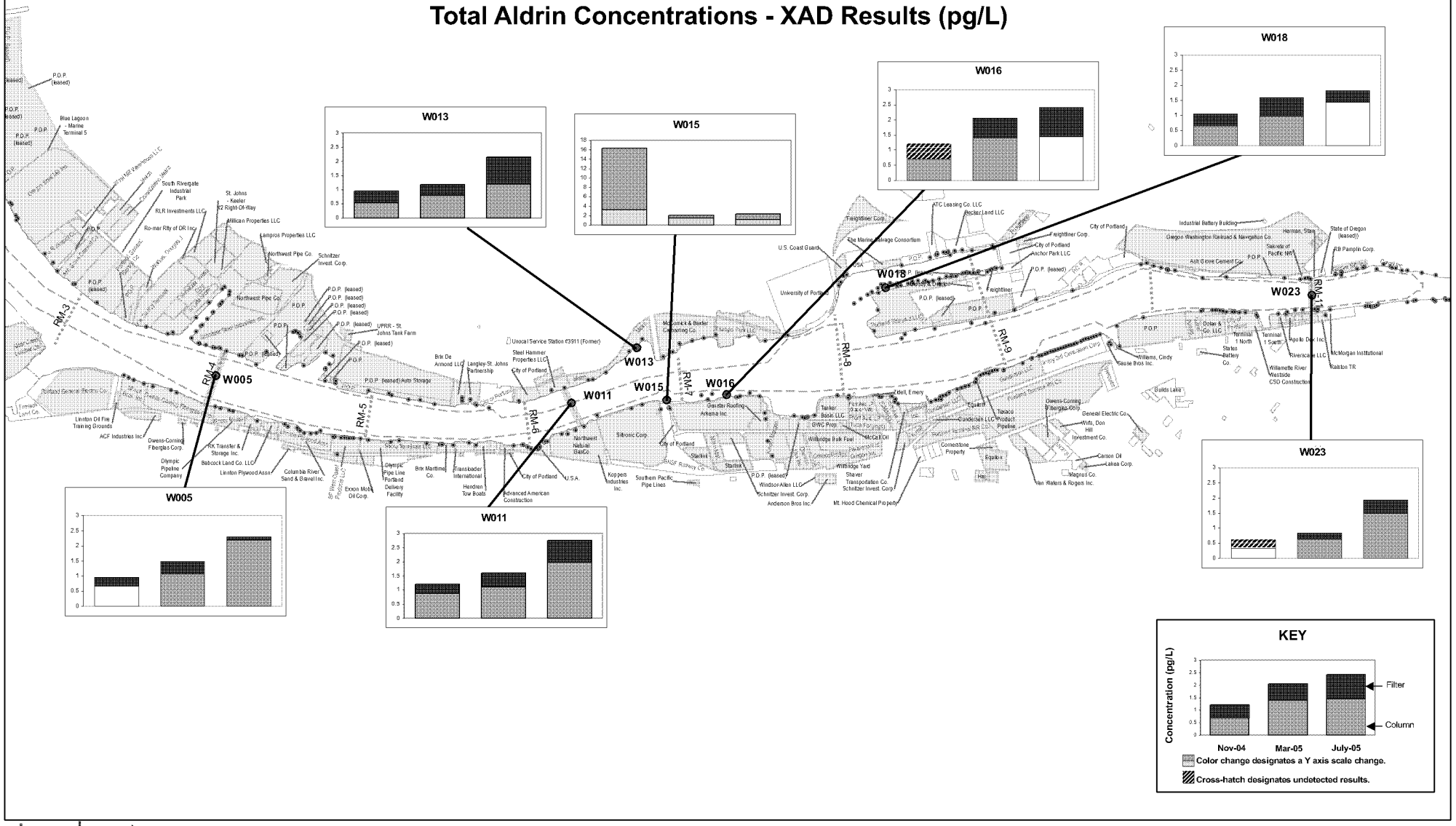
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- XAD Sample Locations
- Sample Transect
- Outfalls
- River miles
- Navigation Channel
- Upland Sites
- Site/Vicinity Tax Lot Owner

**Map 6.3-10**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Total 2,4' and 4,4' - DDD, DDE and DDT Composition - XAD Results (pg/L) Concentrations in Surface Water**

BZTO104(e)033098

# Total Aldrin Concentrations - XAD Results (pg/L)




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 1,000 2,000 3,000 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

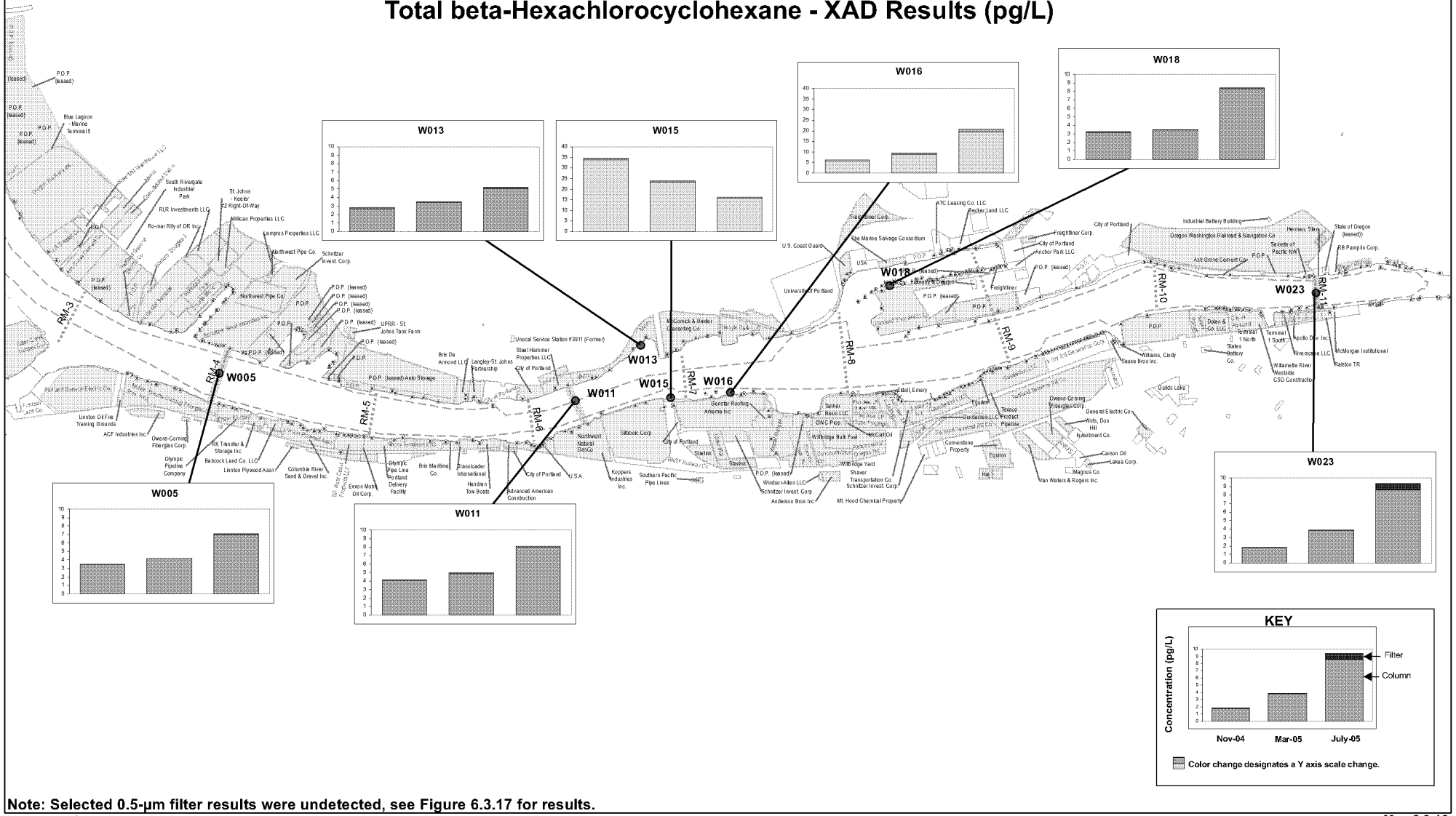
XAD Sample Locations
Outfalls
Sample Transect
Rivermiles
Navigation Channel
Upland Sites
Site/Vicinity Tax Lot Owner

**Map 6.3-11**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Total Aldrin Concentrations - XAD Results (pg/L)**
**Concentrations in Round 2 Surface Water**

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Surfacewater-2\MXD\SW_Total Aldrin_XAD_Bars.mxd)
2/9/2007 -- 10:18:20 AM

BZTO104(e)033099

# Total beta-Hexachlorocyclohexane - XAD Results (pg/L)




**Note: Selected 0.5-µm filter results were undetected, see Figure 6.3.17 for results.**

integral consulting inc.

LWG Lower Willamette Group

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 1,000 2,000 3,000 Feet

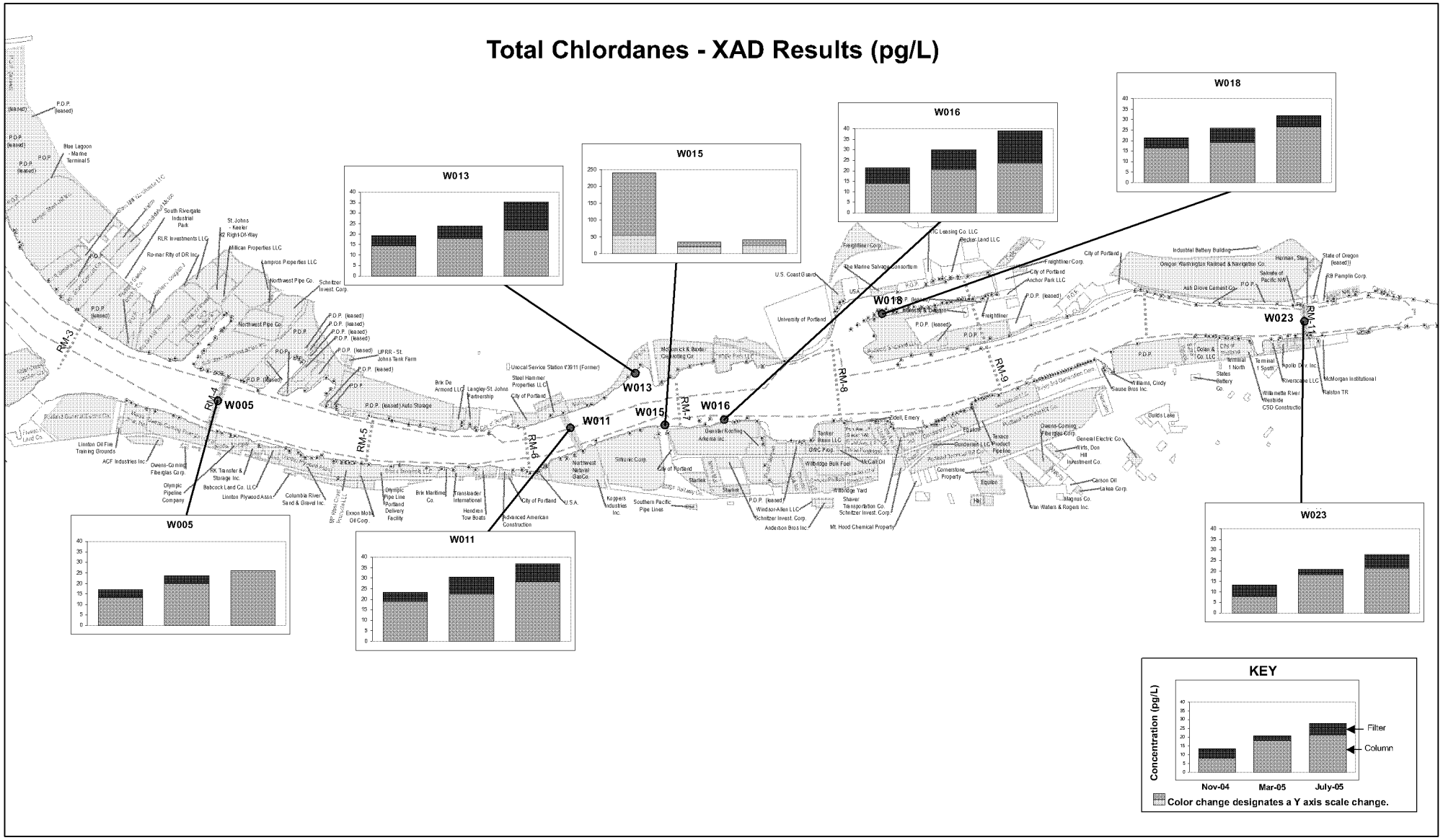
XAD Sample Locations
Outfalls
Sample Transect
Rivermiles
Navigation Channel
Upland Sites
Site/Vicinity Tax Lot Owner

**Map 6.3-12**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Total beta-Hexachlorocyclohexane - XAD Results (pg/L)**
**Concentrations in Round 2 Surface Water**

Map Document: (P:\Projects\Portland_Harbor\LWG\Map-Projects\Surfacewater-2\MXD\eSW_Total beta-Hexachlo-XAD_Bars.mxd)
2/9/2007 – 1:56:19 PM

BZTO104(e)033100

# Total Chlordanes - XAD Results (pg/L)




Map Document: (P:\Projects\Portland_Harbor\LWG\Map-Projects\Surfacewater-2\MXDs\SW_Total Chlordanes-XAD_Base.mxd)
2/9/2007 -- 10:38:37 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 1,000 2,000 3,000 Feet

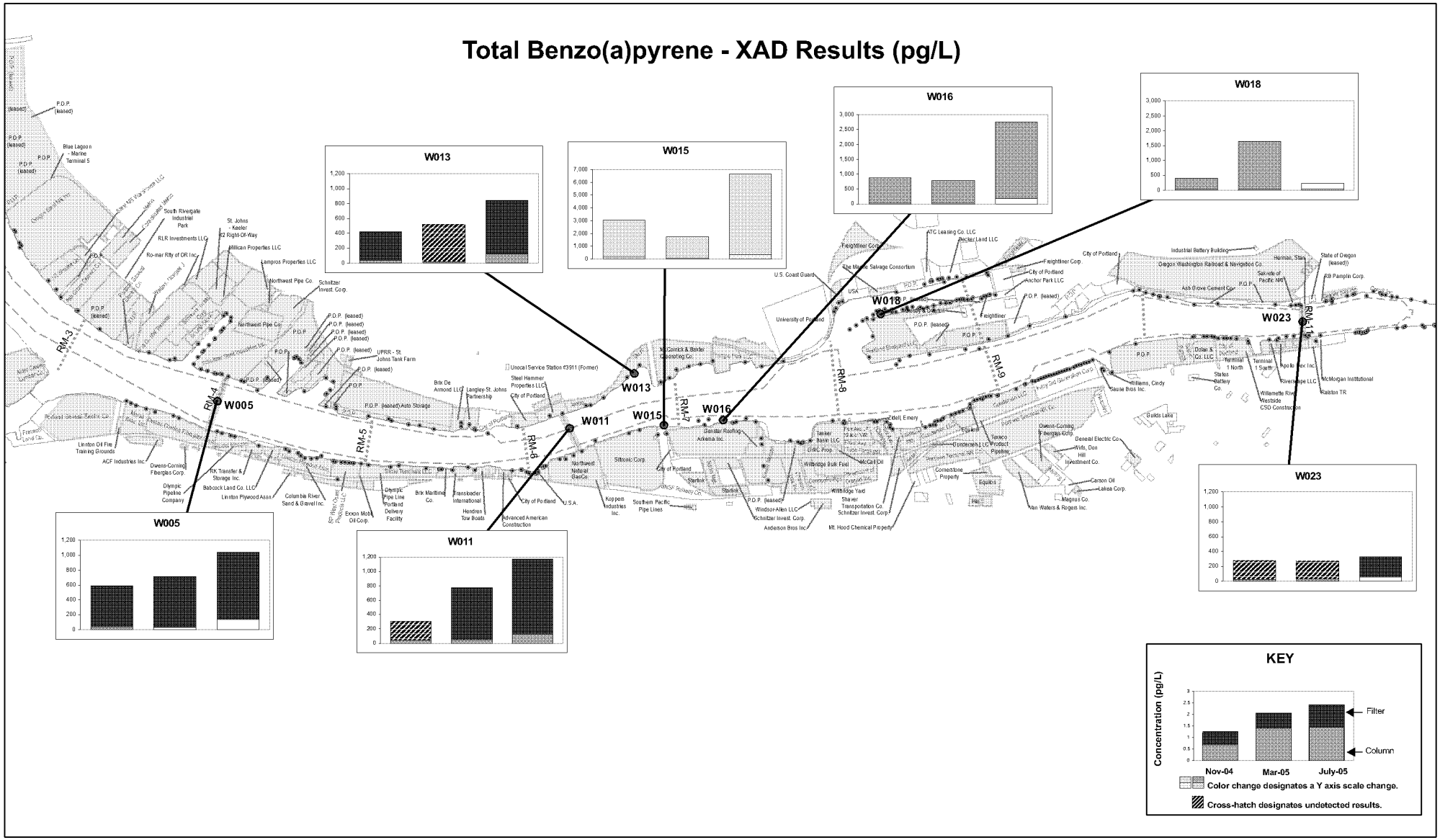
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- XAD Sample Locations
- Outfalls
- Sample Transect
- Rivermiles
- Navigation Channel
- Upland Sites
- Site/Vicinity Tax Lot Owner

**Map 6.3-13**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Total Chlordanes - XAD Results (pg/L)**
**Concentrations in Round 2 Surface Water**

BZTO104(e)033101

# Total Benzo(a)pyrene - XAD Results (pg/L)




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 1,000 2,000 3,000 Feet

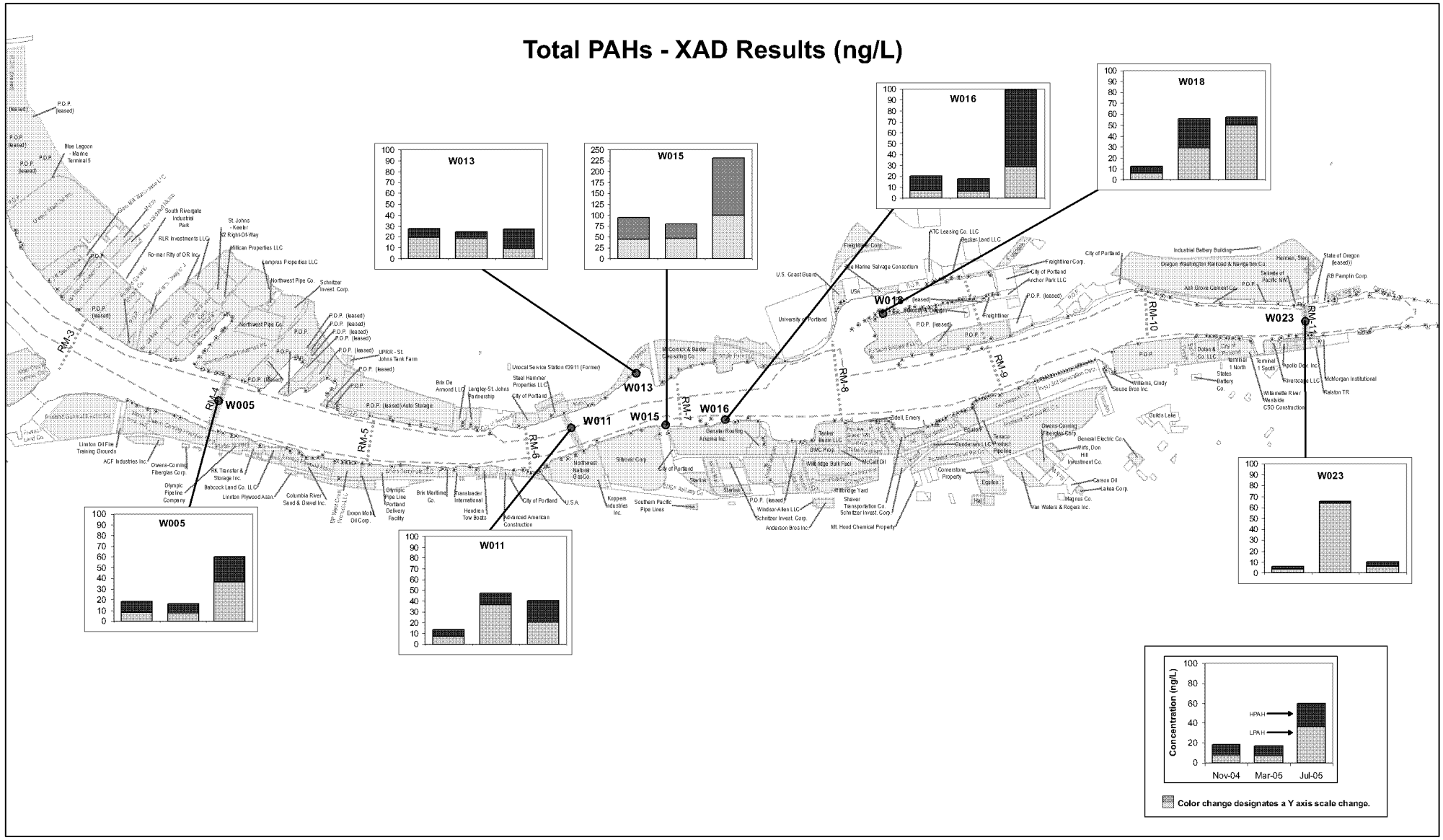
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

XAD Sample Locations
Outfalls
Sample Transect
Rivermiles
Navigation Channel
Upland Sites
Site/Vicinity Tax Lot Owner

**Map 6.3-14**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Total Benzo(a)pyrene - XAD Results (pg/L)**
**Concentrations in Round 2 Surface Water**

Map Document: (P:\Projects\Portland_Harbor\LWG-Map Projects\Surfacewater-2MXD\SW_Total Benzo(a)pyrene-XAD_Bars.mxd)
2/9/2007 -- 10:50:13 AM

BZTO104(e)033102




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Surfacewater-2\MXDs\SW_Total_PAH_XAD_Bars.mxd)
2/7/2007 -- 2:09:22 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

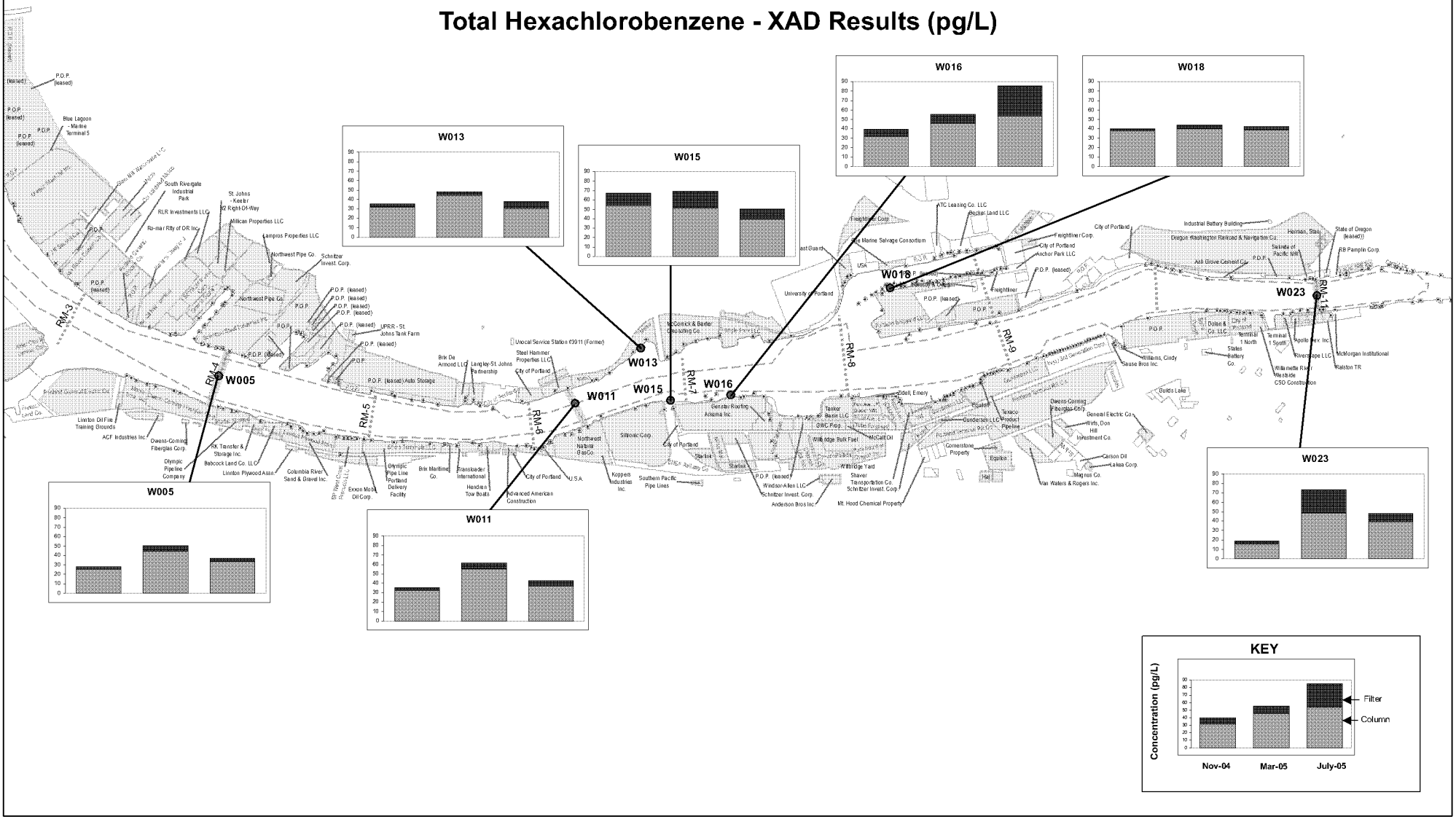
0 1,000 2,000 3,000 Feet

XAD Sample Locations
Outfalls
Sample Transect
Rivermiles
Navigation Channel
Upland Sites
Site/Vicinity Tax Lot Owner

**Map 6.3-15**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Total PAHs - XAD Results (ng/L)**
**Concentrations in Round 2 Surface Water**

BZTO104(e)033103

# Total Hexachlorobenzene - XAD Results (pg/L)




integral consulting inc.

LWG LOWER WILLAMETTE GROUP

0 1,000 2,000 3,000 Feet

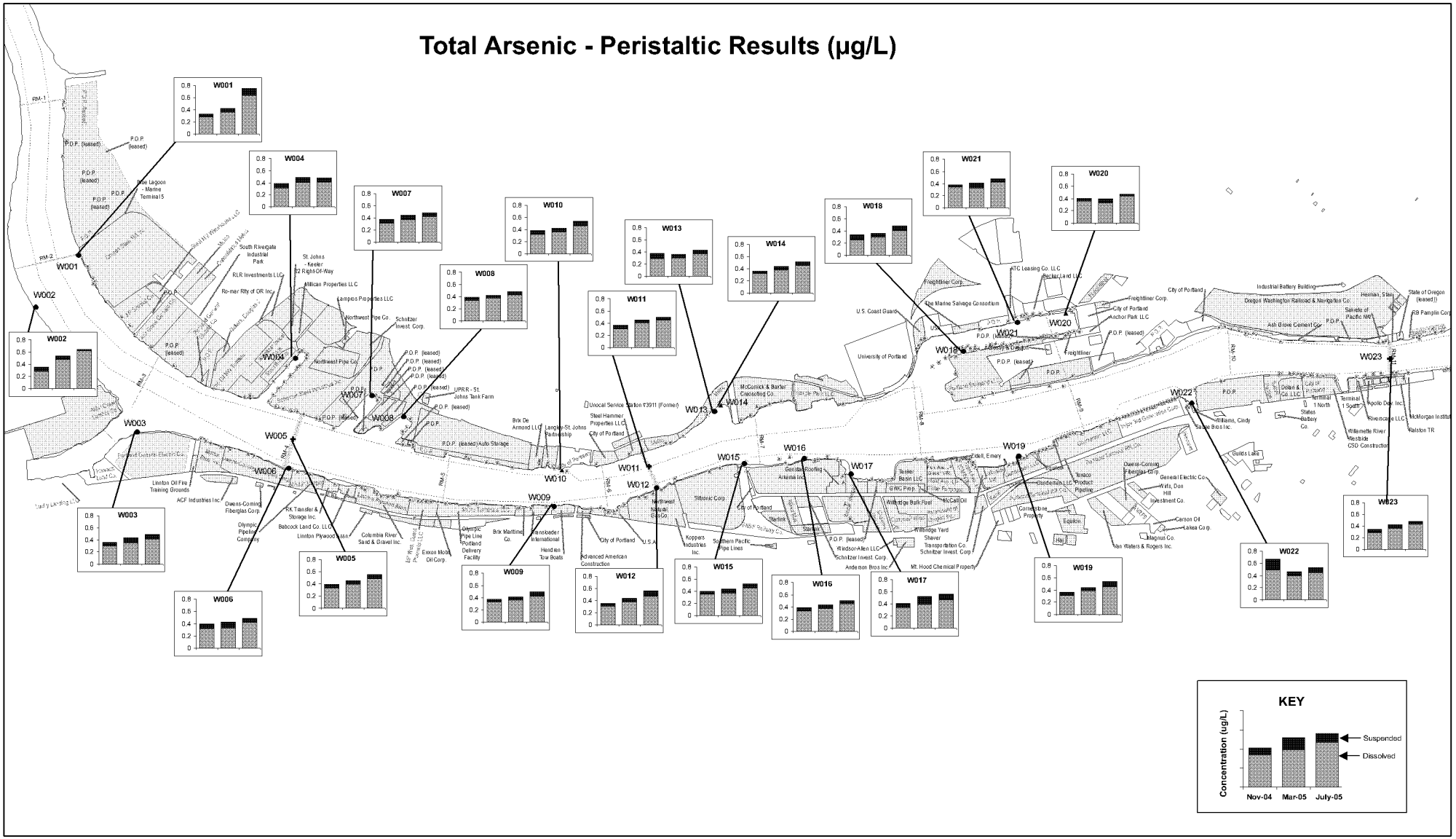
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

- XAD Sample Locations
- Outfalls
- Sample Transect
- Rivermiles
- Navigation Channel
- Upland Sites
- Site/Vicinity Tax Lot Owner

**Map 6.3-16**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Total Hexachlorobenzene - XAD Results (pg/L)**
**Concentrations in Round 2 Surface Water**

Map Document: (P:\Projects\Portland_Harbor\LWG\Map-Projects\Surfacewater-2\MXDs\SW_Total Hexachlorobenzene-XAD_Bars.mxd)
2/9/2007 - 11:30:52 AM

BZTO104(e)033104




Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Surfacewater-2\MXDs\EPA_SW_Arsenic_PP_mjj_found.mxd)
2/9/2007 -- 11:09:32 AM

integral consulting inc

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

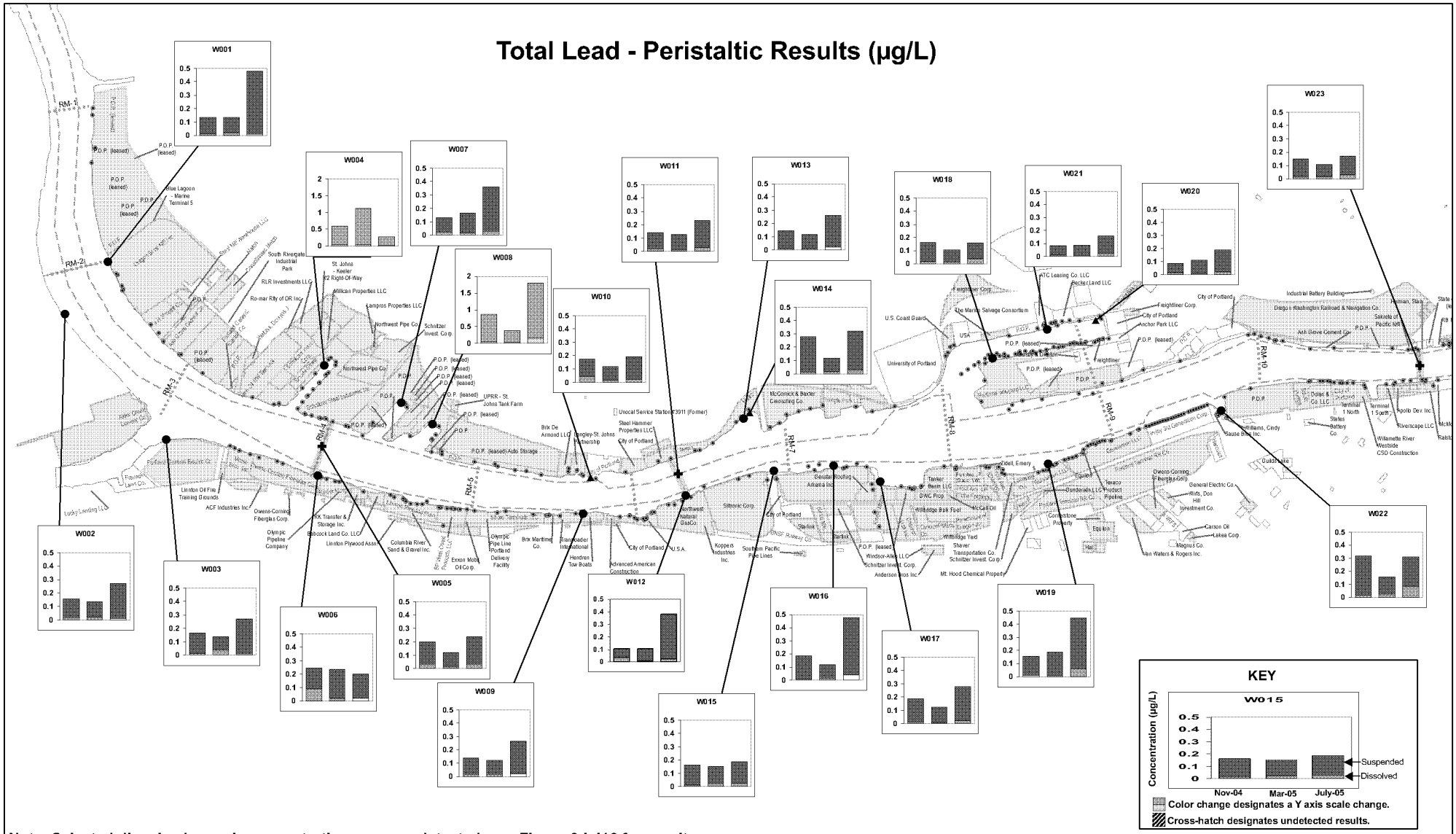
0 1,250 2,500 5,000 Feet

- Near Bottom
- Integrated Water Column
- Integrated Water ColumnTransect
- Sample Transect
- Outfalls
- Rivermiles
- Navigation Channel
- Site/Vicinity Tax Lot Owner
- Upland Sites

**Map 6.3-17**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Total Arsenic - Peristaltic Results (µg/L)**
**Concentrations in Round 2 Surface Water**

BZTO104(e)033105

# Total Lead - Peristaltic Results (µg/L)




**Note: Selected dissolved arsenic concentrations were undetected; see Figure 6-LJ16 for results.**

integral consulting

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

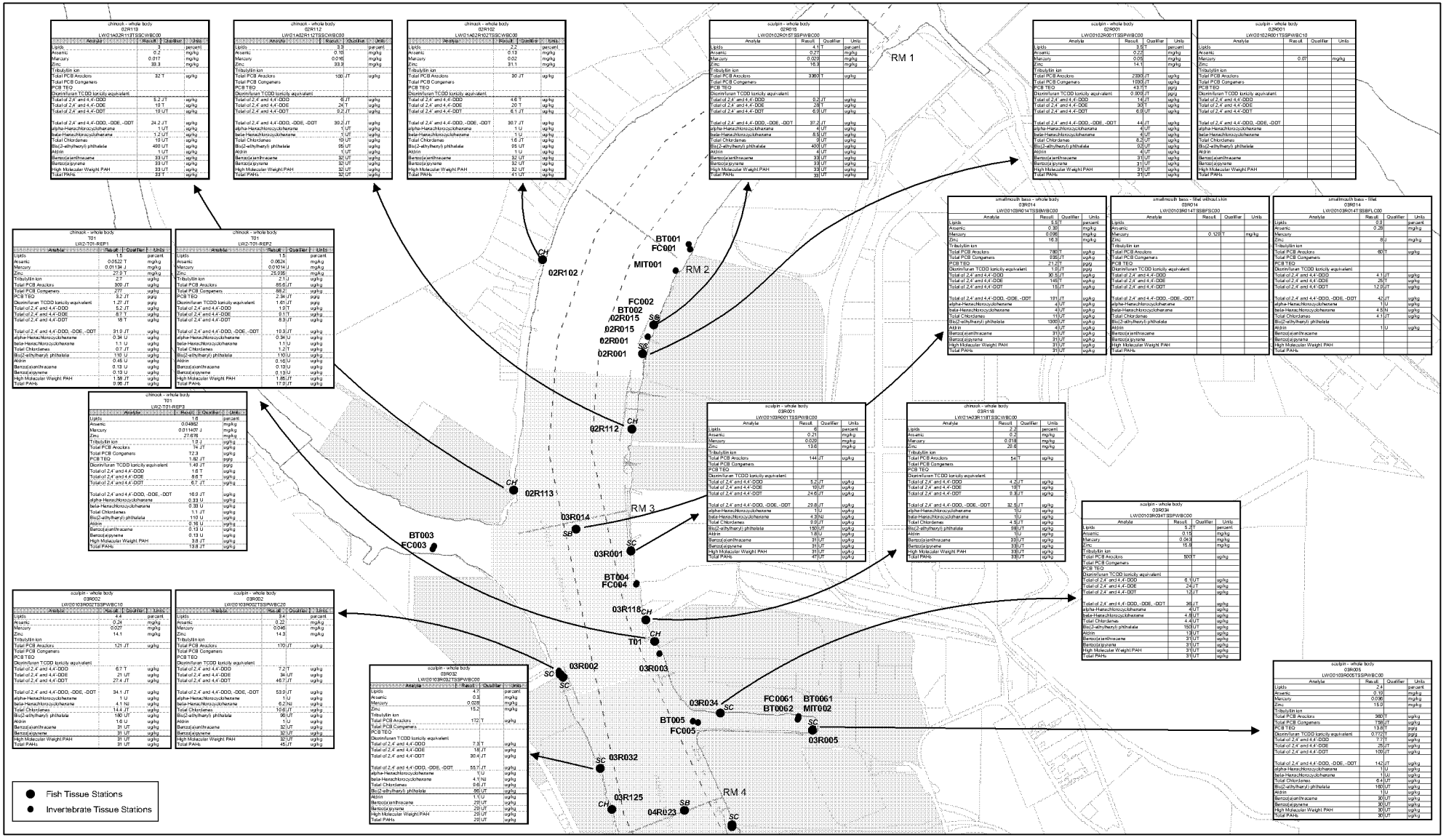
0 1,000 2,000 3,000 Feet

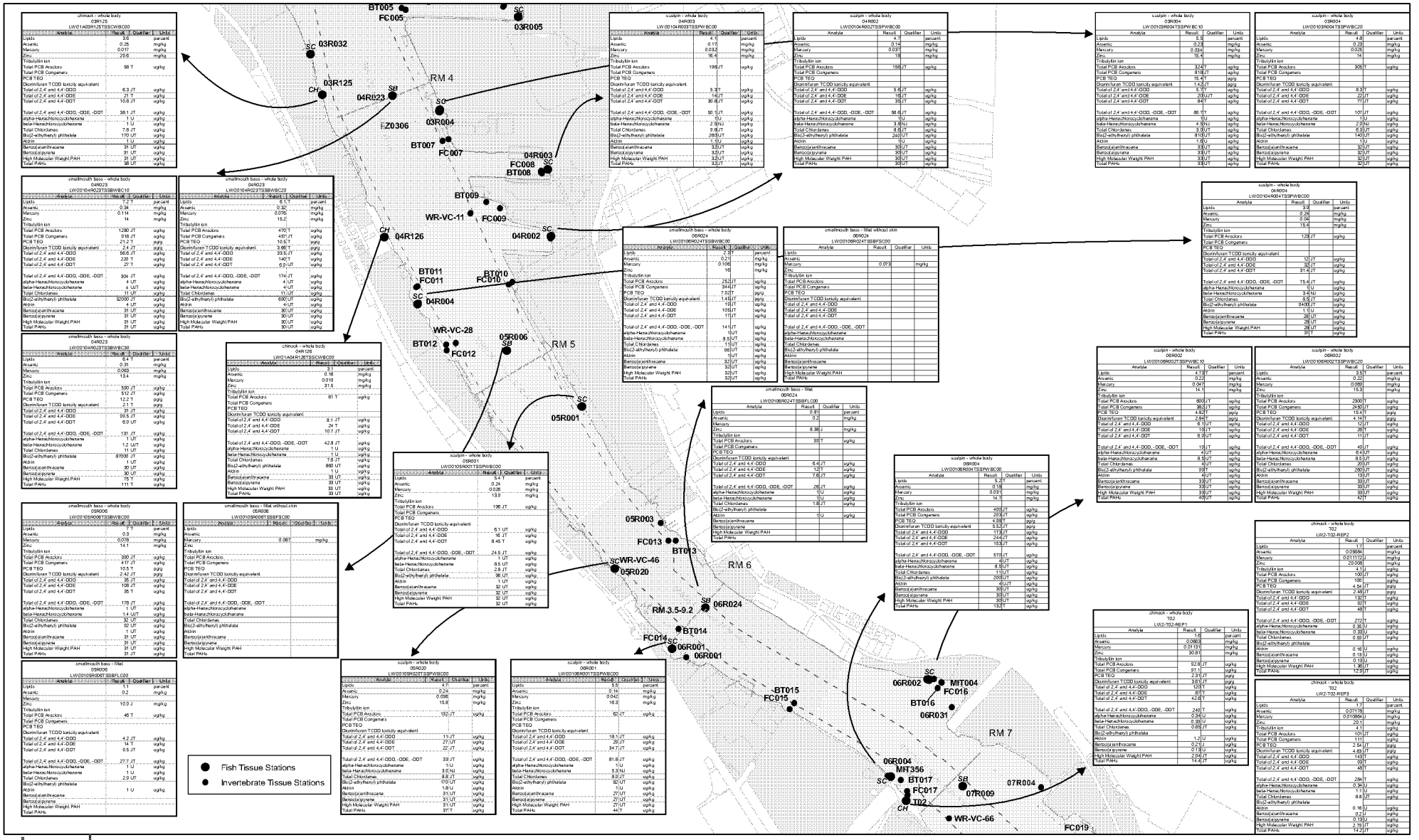
- Near Bottom
- Integrated Water Column
- Integrated Water Column Transect
- Outfalls
- Sample Transect
- Rivermiles
- Navigation Channel
- Upland Sites
- Site/Vicinity Tax Lot Owner

**Map 6.3-18**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Total Lead - Peristaltic Results (µg/L)**
**Concenarations in Round 2 Surface Water**

Map Document: (P:\Projects\Portland_Harbor\LWG-Map-Projects\Surfacewater\2MXD\SW_Total Lead-PP_Bars.mxd)
2/7/2007 -- 2:33:56 PM

BZTO104(e)033106


RM 1
RM 2
RM 3
RM 4
CH
SB
SC
T01
BT001
FC001
MIT001
FC002
BT002
02R015
02R001
02R102
02R112
02R113
03R014
BT003
FC003
03R001
BT004
FC004
03R118
03R002
03R003
03R034
FC0061
BT0062
BT0061
MIT002
03R005
BT005
FC005
03R032
03R125
04R023
Fish Tissue Stations
Invertebrate Tissue Stations
Navigation Channel
River Miles
Docks and Structures
Waterfront Taxlots
Upland Sites
0
1,000
2,000
3,000 Feet
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.
integral consulting inc.
LWG
LOWER WILLAMETTE GROUP
Map 6.4-1a
Portland Harbor RI/FS
Comprehensive Round 2 Report
Fish Tissue Result Tables
Excluding Chinook Stomach Contents
Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_fish_V4_a.mxd)
2/1/2007 -- 1:21:21 PM
BZTO104(e)033107

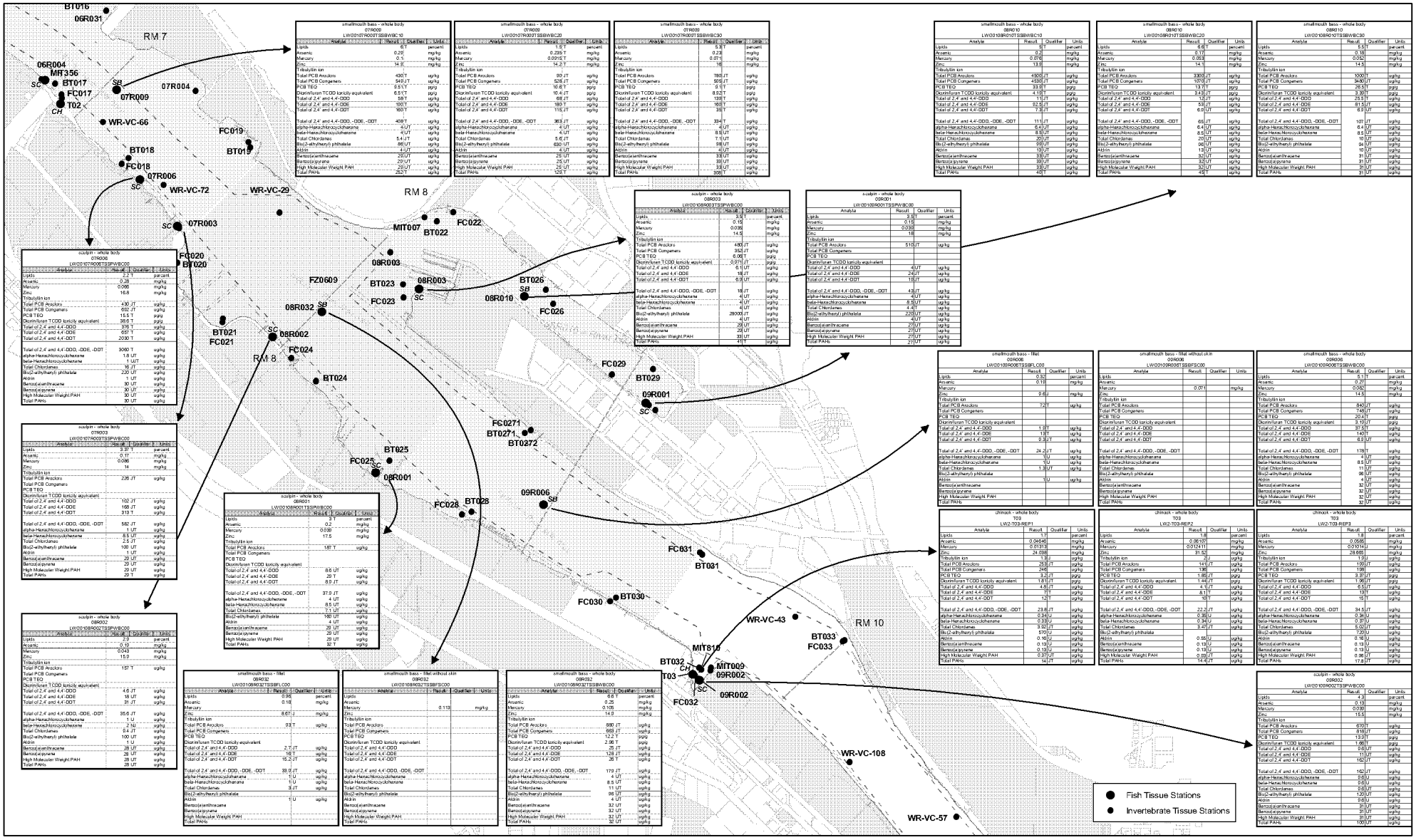



integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.4-1b**
**Portland Harbor RI/FS**
**Comprehesive Round 2 Report**
**Fish Tissue Result Tables**
**Excluding Chinook Stomach Contents**

BZTO104(e)033108



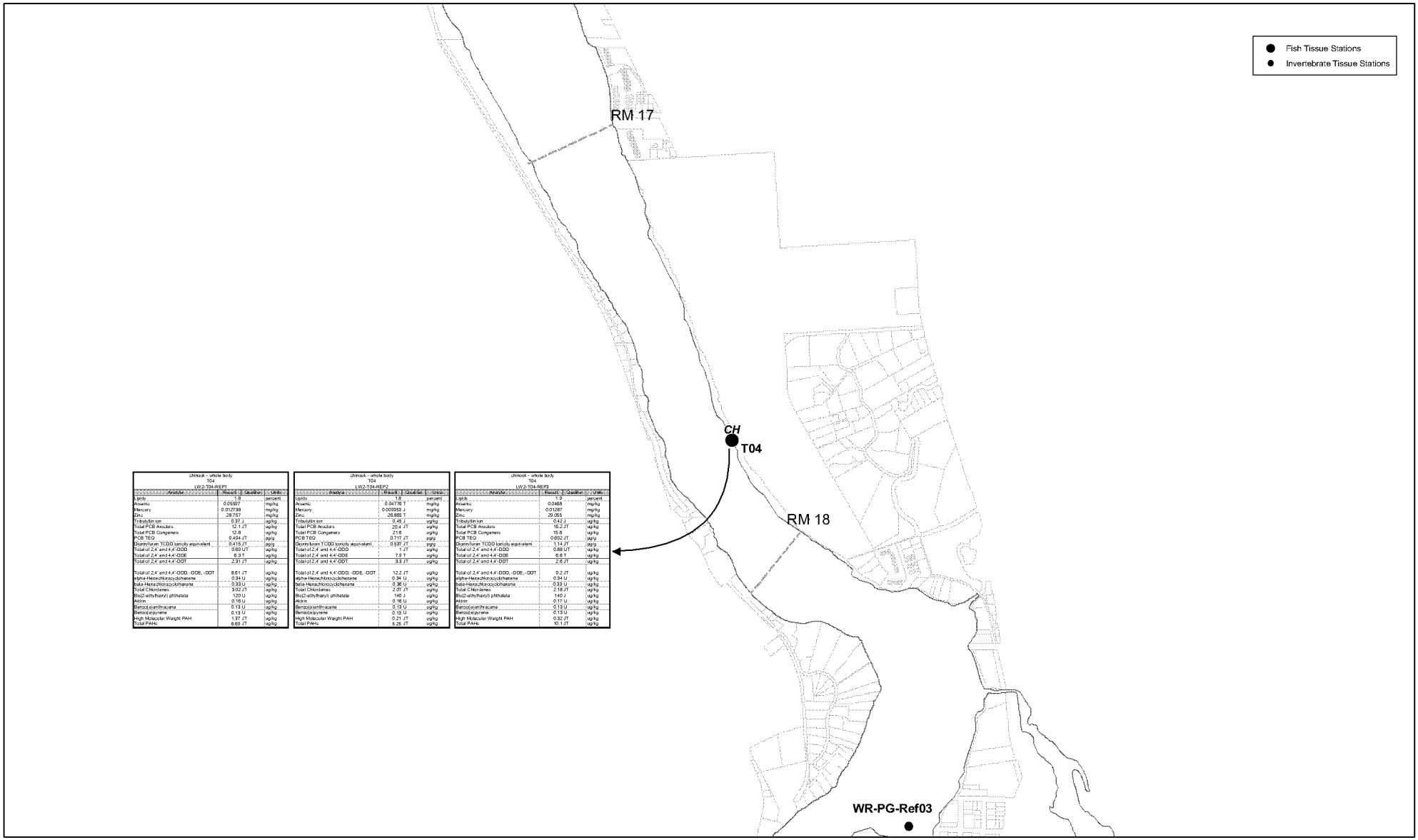

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_fish_V4_c.mxd)
2/1/2007 – 1:31:24 PM

**Map 6.4-1c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Fish Tissue Result Tables**
**Excluding Chinook Stomach Contents**

BZTO104(e)033109




chinook - whole body
T04
LW2-T04-REP1

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 1.9 | | percent |
| Arsenic | 0.05977 | | mg/kg |
| Mercury | 0.012739 | | mg/kg |
| Zinc | 28.757 | | mg/kg |
| Tributyltin ion | 0.37 J | | ug/kg |
| Total PCB Aroclors | 12.1 JT | | ug/kg |
| Total PCB Congeners | 12.8 | | ug/kg |
| PCB TEQ | 0.404 JT | | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.415 JT | | pg/g |
| Total of 2,4' and 4,4'-DDD | 0.69 UT | | ug/kg |
| Total of 2,4' and 4,4'-DDE | 6.3 T | | ug/kg |
| Total of 2,4' and 4,4'-DDT | 2.31 JT | | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 8.61 JT | | ug/kg |
| alpha-Hexachlorocyclohexane | 0.34 U | | ug/kg |
| beta-Hexachlorocyclohexane | 0.33 U | | ug/kg |
| Total Chlordanes | 3.02 JT | | ug/kg |
| Bis(2-ethylhexyl) phthalate | 120 U | | ug/kg |
| Aldrin | 0.16 U | | ug/kg |
| Benzo(a)anthracene | 0.13 U | | ug/kg |
| Benzo(a)pyrene | 0.13 U | | ug/kg |
| High Molecular Weight PAH | 1.37 JT | | ug/kg |
| Total PAHs | 6.69 JT | | ug/kg |

chinook - whole body
T04
LW2-T04-REP2

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 1.6 | | percent |
| Arsenic | 0.04776 T | | mg/kg |
| Mercury | 0.009353 J | | mg/kg |
| Zinc | 26.865 T | | mg/kg |
| Tributyltin ion | 0.48 J | | ug/kg |
| Total PCB Aroclors | 20.4 JT | | ug/kg |
| Total PCB Congeners | 21.6 | | ug/kg |
| PCB TEQ | 0.717 JT | | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.937 JT | | pg/g |
| Total of 2,4' and 4,4'-DDD | 1 JT | | ug/kg |
| Total of 2,4' and 4,4'-DDE | 7.9 T | | ug/kg |
| Total of 2,4' and 4,4'-DDT | 3.3 JT | | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 12.2 JT | | ug/kg |
| alpha-Hexachlorocyclohexane | 0.34 U | | ug/kg |
| beta-Hexachlorocyclohexane | 0.36 U | | ug/kg |
| Total Chlordanes | 2.07 JT | | ug/kg |
| Bis(2-ethylhexyl) phthalate | 140 J | | ug/kg |
| Aldrin | 0.16 U | | ug/kg |
| Benzo(a)anthracene | 0.13 U | | ug/kg |
| Benzo(a)pyrene | 0.13 U | | ug/kg |
| High Molecular Weight PAH | 0.21 JT | | ug/kg |
| Total PAHs | 5.25 JT | | ug/kg |

chinook - whole body
T04
LW2-T04-REP3

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 1.9 | | percent |
| Arsenic | 0.0468 | | mg/kg |
| Mercury | 0.01287 | | mg/kg |
| Zinc | 29.055 | | mg/kg |
| Tributyltin ion | 0.42 J | | ug/kg |
| Total PCB Aroclors | 15.2 JT | | ug/kg |
| Total PCB Congeners | 15.8 | | ug/kg |
| PCB TEQ | 0.652 JT | | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 1.14 JT | | pg/g |
| Total of 2,4' and 4,4'-DDD | 0.88 UT | | ug/kg |
| Total of 2,4' and 4,4'-DDE | 6.6 T | | ug/kg |
| Total of 2,4' and 4,4'-DDT | 2.6 JT | | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 9.2 JT | | ug/kg |
| alpha-Hexachlorocyclohexane | 0.34 U | | ug/kg |
| beta-Hexachlorocyclohexane | 0.33 U | | ug/kg |
| Total Chlordanes | 2.18 JT | | ug/kg |
| Bis(2-ethylhexyl) phthalate | 140 J | | ug/kg |
| Aldrin | 0.17 U | | ug/kg |
| Benzo(a)anthracene | 0.13 U | | ug/kg |
| Benzo(a)pyrene | 0.13 U | | ug/kg |
| High Molecular Weight PAH | 0.82 JT | | ug/kg |
| Total PAHs | 10.1 JT | | ug/kg |

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_fish_V4_d_upriver.mxd)
2/1/2007 – 1:35:02 PM

integral consulting inc.

LWG Lower Willamette Group

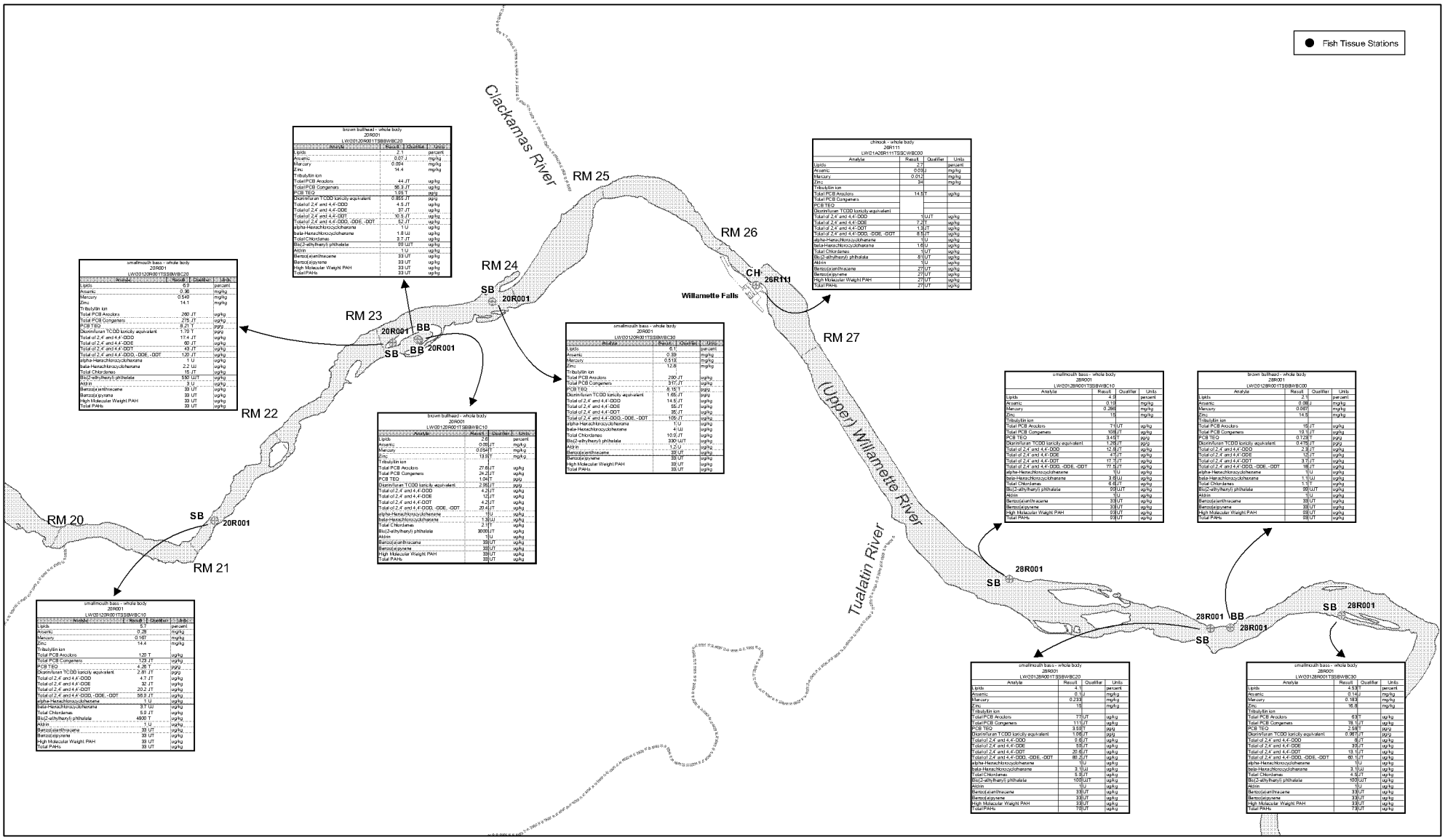
N

0 1,000 2,000 3,000 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

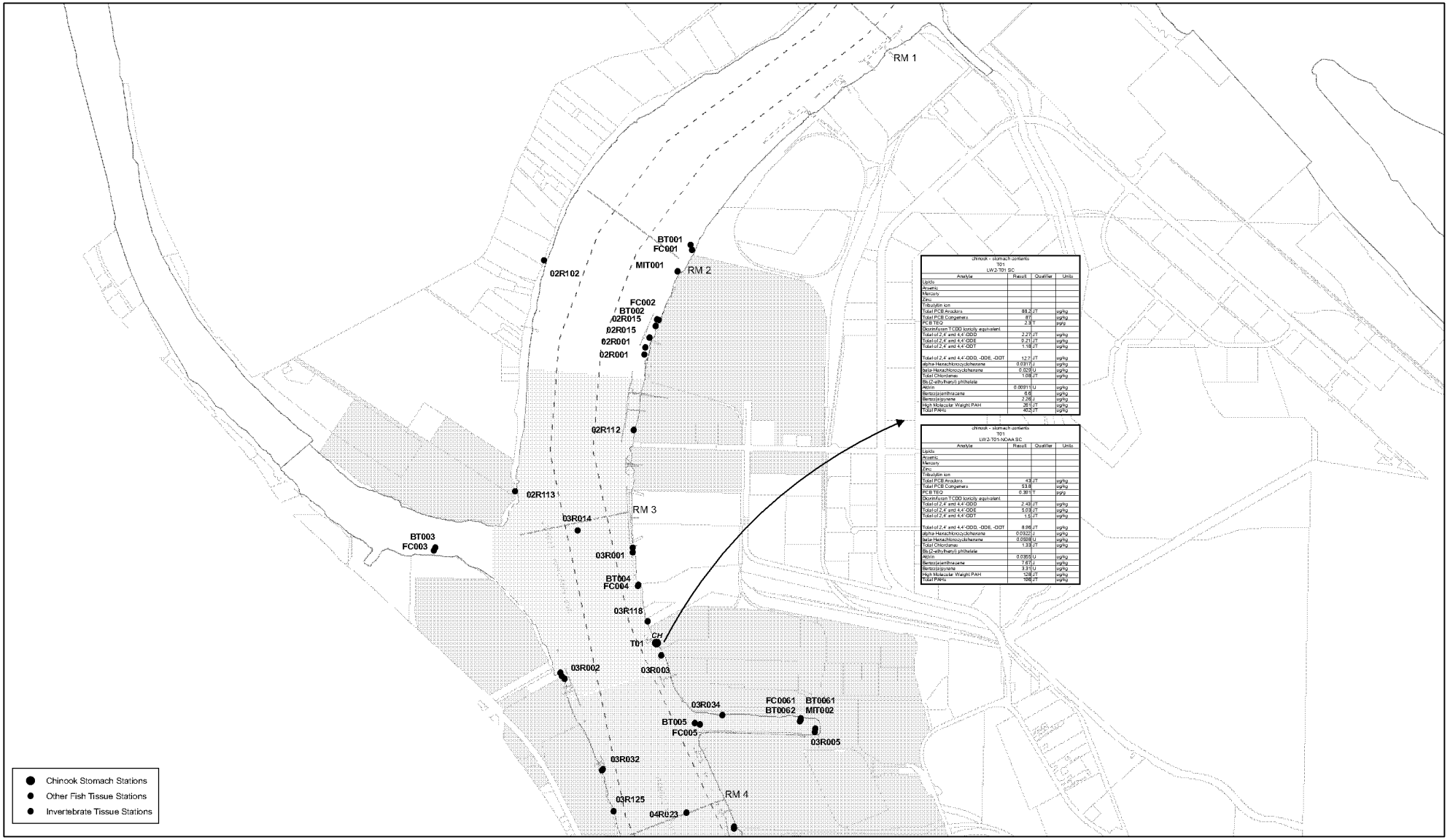
River Miles
Docks and Structures
Navigation Channel
Waterfront Taxlots

**Map 6.4-1d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Fish Tissue Result Tables**
**Excluding Chinook Stomach Contents**




**Map 6.4-1e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Fish Tissue Result Tables**
**Excluding Chinook Stomach Contents**

BZTO104(e)033111



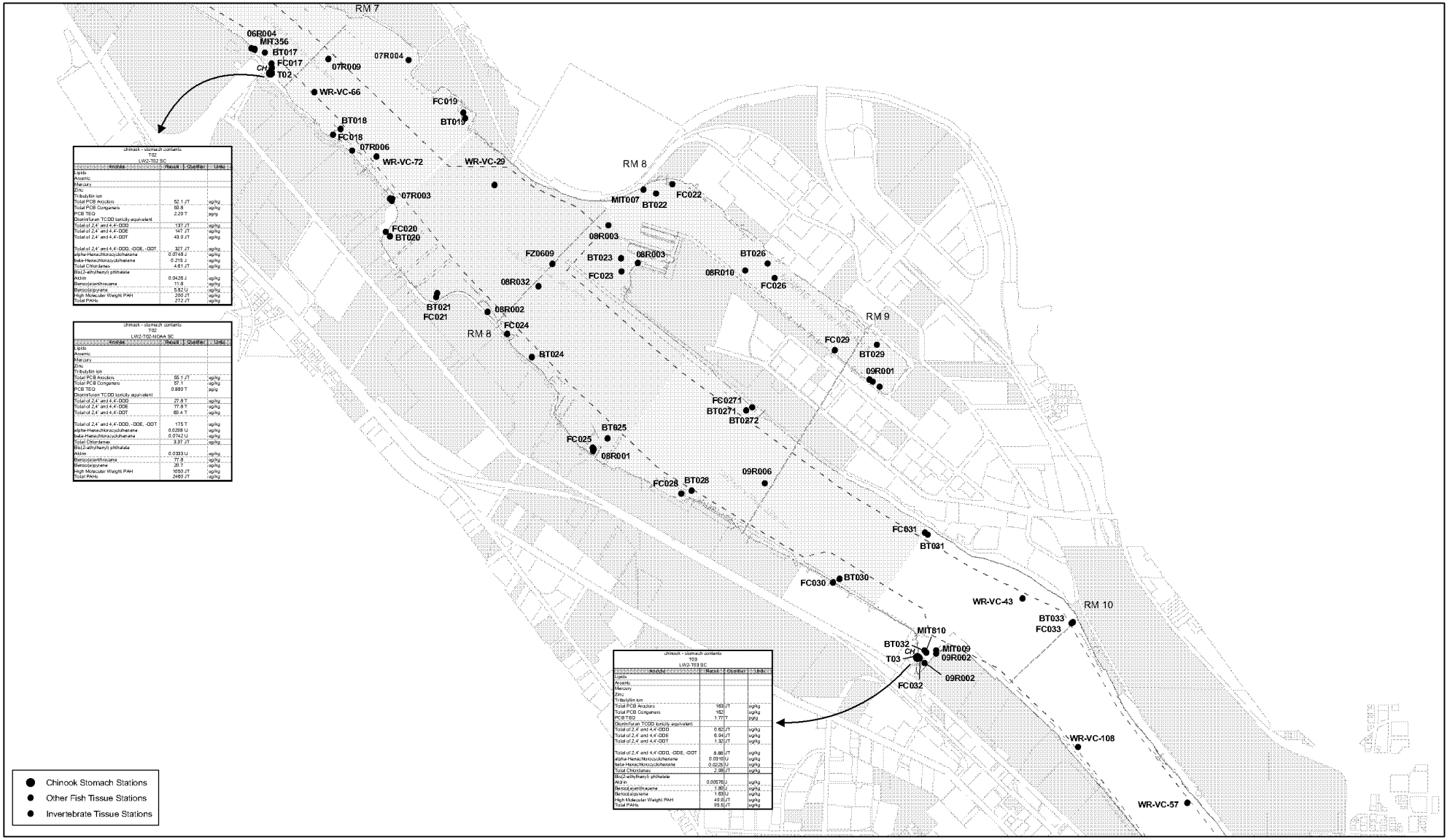

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_fish_V4_a_Chinook Stomachs_only.mxd)
2/1/2007 – 1:41:35 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.4-1f**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Fish Tissue Result Tables - Chinook**
**Stomach Contents Only**

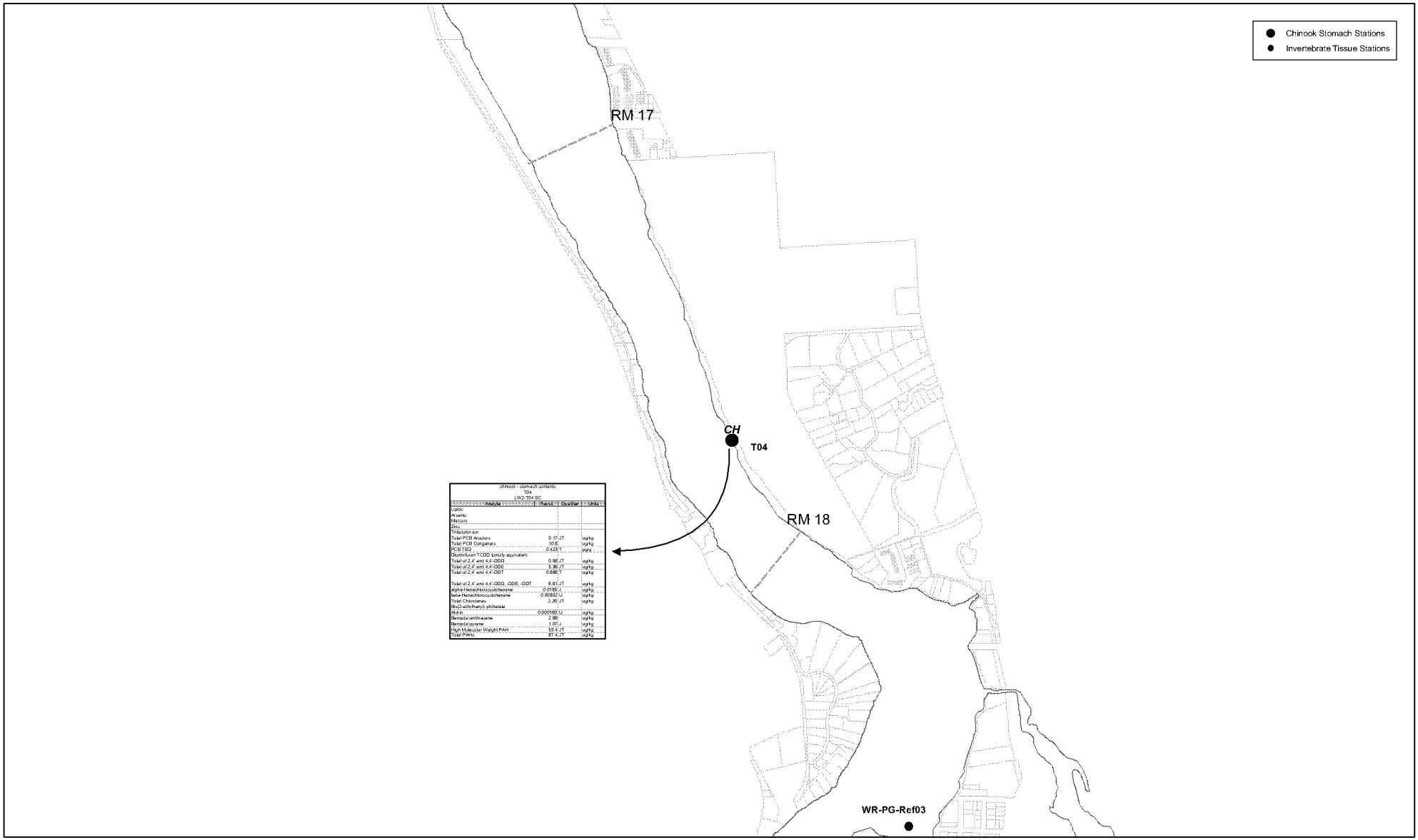
BZTO104(e)033112




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_fish_V4_c_Chinook Stomachs_only.mxd)
2/1/2007 -- 1:45:08 PM

**Map 6.4-1g**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Fish Tissue Result Tables - Chinook**
**Stomach Contents Only**

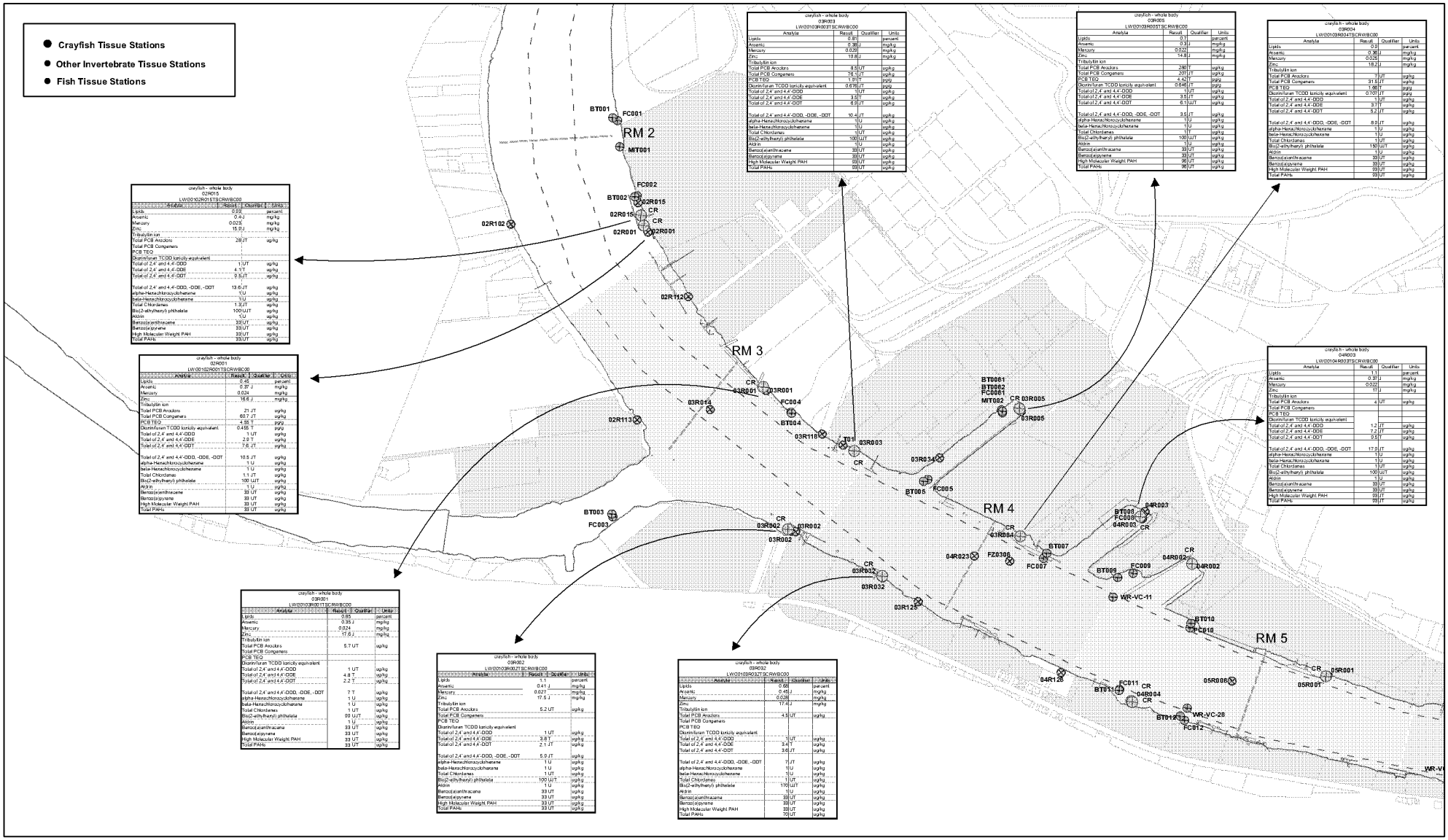
BZTO104(e)033113




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_fish_V4_d_Chinook Stomachs_only.mxd)
2/1/2007 – 1:46:46 PM

**Map 6.4-1h**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Fish Tissue Result Tables - Chinook Stomach Contents Only**

BZTO104(e)033114




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_invert_V2_CR_A.mxd)
2/1/2007 – 1:54:38 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

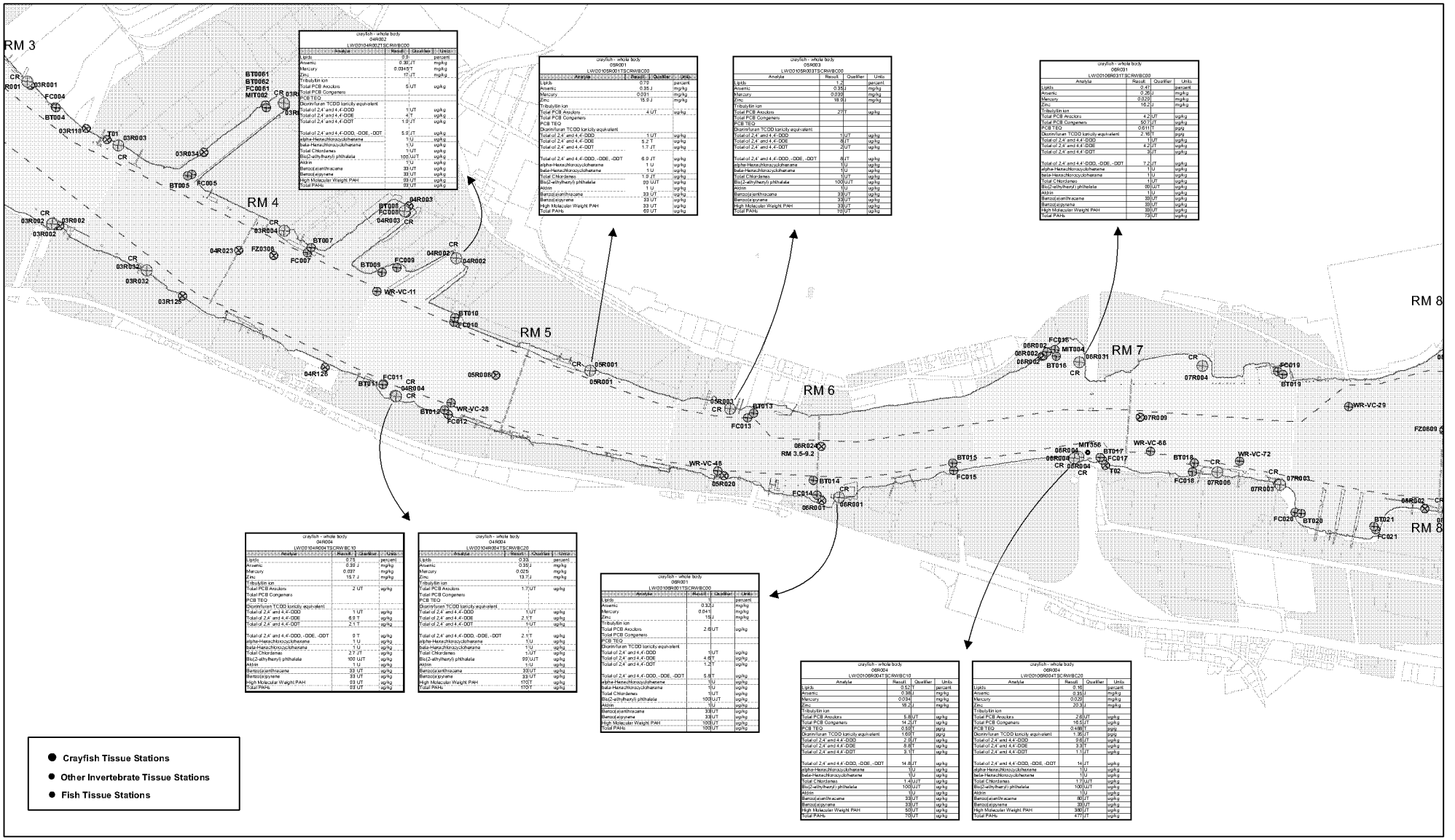
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 1,000 2,000 3,000 Feet

Navigation Channel
River Miles
Docks and Structures
Waterfront Taxlots
Upland Sites

**Map 6.4-2a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Crayfish Invertebrate Tissue Analysis**

BZTO104(e)033115




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_invert_V2_CR_B.mxd)
2/1/2007 – 3:02:59 PM

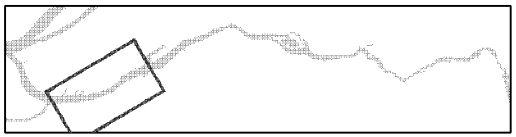
integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

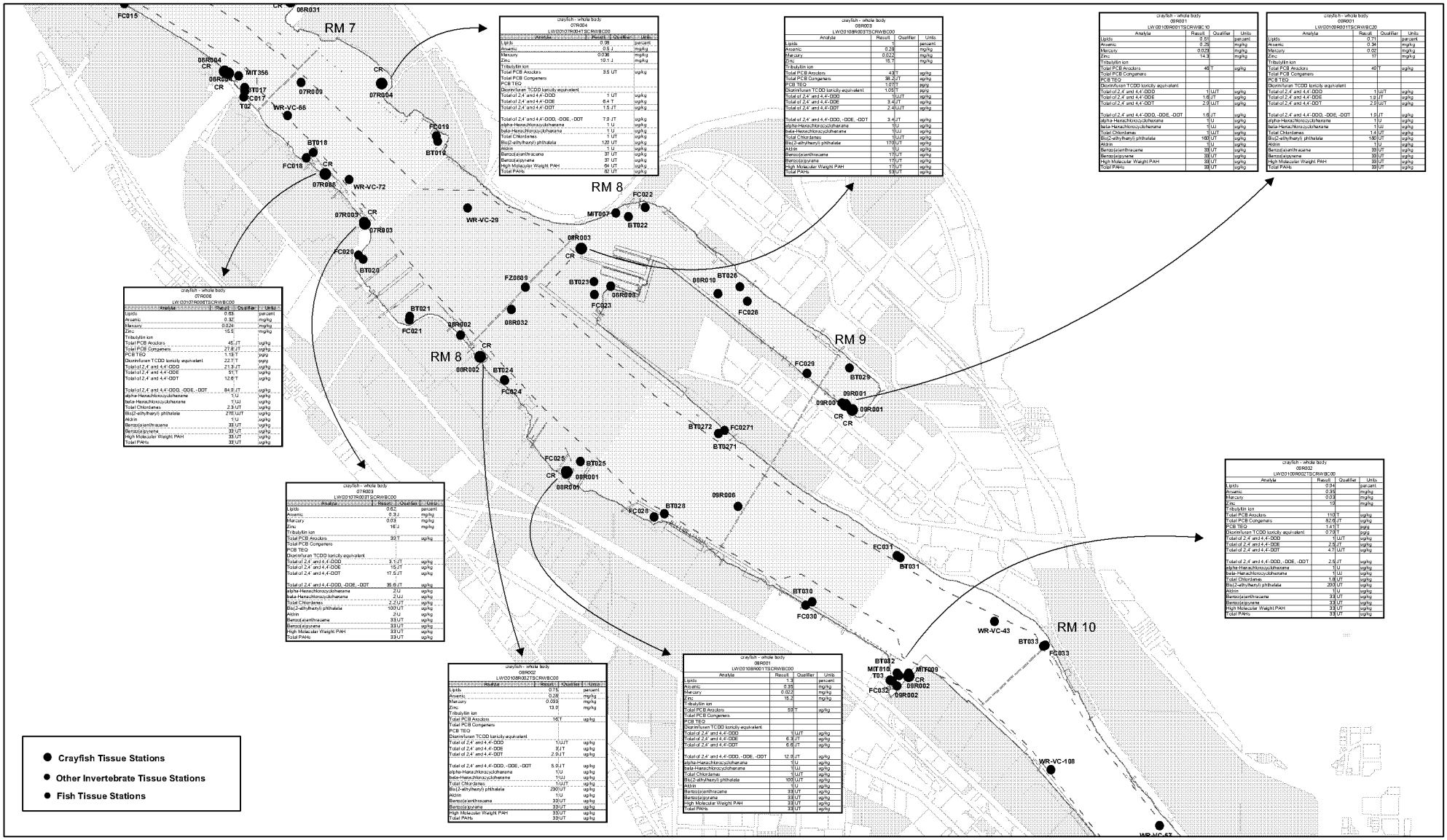
0 1,000 2,000 3,000 Feet

Navigation Channel
River Miles
Docks and Structures
Waterfront Taxlots
Upland Sites



**Map 6.4-2b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Crayfish Invertebrate Tissue Analysis**

BZTO104(e)033116




crayfish - whole body
07R004
LW010107R004TSCRWBC00

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 0.28 | | percent |
| Arsenic | 0.5 J | | mg/kg |
| Mercury | 0.036 | | mg/kg |
| Zinc | 10.1 J | | mg/kg |
| Tributyltin ion | | | |
| Total PCB Aroclors | 3.5 UT | | ug/kg |
| Total PCB Congeners | | | |
| PCB TEQ | | | |
| Dioxin/furan TCDD toxicity equivalent | | | |
| Total of 2,4' and 4,4'-DDD | 1 UT | | ug/kg |
| Total of 2,4' and 4,4'-DDE | 6.4 T | | ug/kg |
| Total of 2,4' and 4,4'-DDT | 1.5 JT | | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 7.9 JT | | ug/kg |
| alpha-Hexachlorocyclohexane | 1 U | | ug/kg |
| beta-Hexachlorocyclohexane | 1 U | | ug/kg |
| Total Chlordanes | 1 UT | | ug/kg |
| Bis(2-ethylhexyl) phthalate | 120 UT | | ug/kg |
| Aldrin | 1 U | | ug/kg |
| Benzo(a)anthracene | 37 UT | | ug/kg |
| Benzo(a)pyrene | 37 UT | | ug/kg |
| High Molecular Weight PAH | 84 UT | | ug/kg |
| Total PAHs | 92 UT | | ug/kg |

crayfish - whole body
08R003
LW010108R003TSCRWBC00

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 0.28 | | percent |
| Arsenic | 0.28 | | mg/kg |
| Mercury | 0.022 | | mg/kg |
| Zinc | 15.7 | | mg/kg |
| Tributyltin ion | | | |
| Total PCB Aroclors | 43 T | | ug/kg |
| Total PCB Congeners | 38.2 UT | | ug/kg |
| PCB TEQ | 1.07 T | | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 1.05 T | | pg/g |
| Total of 2,4' and 4,4'-DDD | 1 UT | | ug/kg |
| Total of 2,4' and 4,4'-DDE | 3.4 JT | | ug/kg |
| Total of 2,4' and 4,4'-DDT | 2.4 UJT | | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 3.4 JT | | ug/kg |
| alpha-Hexachlorocyclohexane | 1 U | | ug/kg |
| beta-Hexachlorocyclohexane | 1 UJ | | ug/kg |
| Total Chlordanes | 1 UT | | ug/kg |
| Bis(2-ethylhexyl) phthalate | 170 UT | | ug/kg |
| Aldrin | 1 U | | ug/kg |
| Benzo(a)anthracene | 33 UT | | ug/kg |
| Benzo(a)pyrene | 33 UT | | ug/kg |
| High Molecular Weight PAH | 33 UT | | ug/kg |
| Total PAHs | 33 UT | | ug/kg |

crayfish - whole body
08R001
LW010108R001TSCRWBC10

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 0.56 | | percent |
| Arsenic | 0.28 | | mg/kg |
| Mercury | 0.028 | | mg/kg |
| Zinc | 14.3 | | mg/kg |
| Tributyltin ion | | | |
| Total PCB Aroclors | 46 T | | ug/kg |
| Total PCB Congeners | | | |
| PCB TEQ | | | |
| Dioxin/furan TCDD toxicity equivalent | | | |
| Total of 2,4' and 4,4'-DDD | 1 UT | | ug/kg |
| Total of 2,4' and 4,4'-DDE | 1.6 JT | | ug/kg |
| Total of 2,4' and 4,4'-DDT | 2.9 UT | | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 1.6 JT | | ug/kg |
| alpha-Hexachlorocyclohexane | 1 U | | ug/kg |
| beta-Hexachlorocyclohexane | 1 UJ | | ug/kg |
| Total Chlordanes | 1 UT | | ug/kg |
| Bis(2-ethylhexyl) phthalate | 160 UT | | ug/kg |
| Aldrin | 1 U | | ug/kg |
| Benzo(a)anthracene | 33 UT | | ug/kg |
| Benzo(a)pyrene | 33 UT | | ug/kg |
| High Molecular Weight PAH | 33 UT | | ug/kg |
| Total PAHs | 33 UT | | ug/kg |

crayfish - whole body
08R001
LW010108R001TSCRWBC30

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 0.71 | | percent |
| Arsenic | 0.34 | | mg/kg |
| Mercury | 0.02 | | mg/kg |
| Zinc | 17 | | mg/kg |
| Tributyltin ion | | | |
| Total PCB Aroclors | 49 T | | ug/kg |
| Total PCB Congeners | | | |
| PCB TEQ | | | |
| Dioxin/furan TCDD toxicity equivalent | | | |
| Total of 2,4' and 4,4'-DDD | 1 UT | | ug/kg |
| Total of 2,4' and 4,4'-DDE | 1.9 JT | | ug/kg |
| Total of 2,4' and 4,4'-DDT | 2.9 UT | | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 1.9 JT | | ug/kg |
| alpha-Hexachlorocyclohexane | 1 U | | ug/kg |
| beta-Hexachlorocyclohexane | 1 UJ | | ug/kg |
| Total Chlordanes | 1.4 UT | | ug/kg |
| Bis(2-ethylhexyl) phthalate | 190 UT | | ug/kg |
| Aldrin | 1 U | | ug/kg |
| Benzo(a)anthracene | 33 UT | | ug/kg |
| Benzo(a)pyrene | 33 UT | | ug/kg |
| High Molecular Weight PAH | 33 UT | | ug/kg |
| Total PAHs | 33 UT | | ug/kg |

crayfish - whole body
07R006
LW010707R006TSCRWBC00

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 0.63 | | percent |
| Arsenic | 0.32 | | mg/kg |
| Mercury | 0.024 | | mg/kg |
| Zinc | 15.5 | | mg/kg |
| Tributyltin ion | | | |
| Total PCB Aroclors | 45 JT | | ug/kg |
| Total PCB Congeners | 27.8 JT | | ug/kg |
| PCB TEQ | 1.13 T | | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 22 T | | pg/g |
| Total of 2,4' and 4,4'-DDD | 21.3 JT | | ug/kg |
| Total of 2,4' and 4,4'-DDE | 51 T | | ug/kg |
| Total of 2,4' and 4,4'-DDT | 12.6 T | | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 84.9 JT | | ug/kg |
| alpha-Hexachlorocyclohexane | 1 U | | ug/kg |
| beta-Hexachlorocyclohexane | 1 UJ | | ug/kg |
| Total Chlordanes | 2.9 UT | | ug/kg |
| Bis(2-ethylhexyl) phthalate | 270 UJT | | ug/kg |
| Aldrin | 1 U | | ug/kg |
| Benzo(a)anthracene | 33 UT | | ug/kg |
| Benzo(a)pyrene | 33 UT | | ug/kg |
| High Molecular Weight PAH | 33 UT | | ug/kg |
| Total PAHs | 33 UT | | ug/kg |

crayfish - whole body
07R003
LW010707R003TSCRWBC00

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 0.62 | | percent |
| Arsenic | 0.3 J | | mg/kg |
| Mercury | 0.03 | | mg/kg |
| Zinc | 16 J | | mg/kg |
| Tributyltin ion | | | |
| Total PCB Aroclors | 33 T | | ug/kg |
| Total PCB Congeners | | | |
| PCB TEQ | | | |
| Dioxin/furan TCDD toxicity equivalent | | | |
| Total of 2,4' and 4,4'-DDD | 3.1 JT | | ug/kg |
| Total of 2,4' and 4,4'-DDE | 15 JT | | ug/kg |
| Total of 2,4' and 4,4'-DDT | 17.5 JT | | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 35.6 JT | | ug/kg |
| alpha-Hexachlorocyclohexane | 2 U | | ug/kg |
| beta-Hexachlorocyclohexane | 2 UJ | | ug/kg |
| Total Chlordanes | 2.2 UT | | ug/kg |
| Bis(2-ethylhexyl) phthalate | 100 UT | | ug/kg |
| Aldrin | 2 U | | ug/kg |
| Benzo(a)anthracene | 33 UT | | ug/kg |
| Benzo(a)pyrene | 33 UT | | ug/kg |
| High Molecular Weight PAH | 33 UT | | ug/kg |
| Total PAHs | 33 UT | | ug/kg |

crayfish - whole body
08R002
LW010108R002TSCRWBC00

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 0.75 | | percent |
| Arsenic | 0.28 | | mg/kg |
| Mercury | 0.033 | | mg/kg |
| Zinc | 13.9 | | mg/kg |
| Tributyltin ion | | | |
| Total PCB Aroclors | 16 T | | ug/kg |
| Total PCB Congeners | | | |
| PCB TEQ | | | |
| Dioxin/furan TCDD toxicity equivalent | | | |
| Total of 2,4' and 4,4'-DDD | 1 UJT | | ug/kg |
| Total of 2,4' and 4,4'-DDE | 2 JT | | ug/kg |
| Total of 2,4' and 4,4'-DDT | 2.6 JT | | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 5.6 JT | | ug/kg |
| alpha-Hexachlorocyclohexane | 1 U | | ug/kg |
| beta-Hexachlorocyclohexane | 1 UJ | | ug/kg |
| Total Chlordanes | 1 UJT | | ug/kg |
| Bis(2-ethylhexyl) phthalate | 290 UT | | ug/kg |
| Aldrin | 1 U | | ug/kg |
| Benzo(a)anthracene | 33 UT | | ug/kg |
| Benzo(a)pyrene | 33 UT | | ug/kg |
| High Molecular Weight PAH | 33 UT | | ug/kg |
| Total PAHs | 33 UT | | ug/kg |

crayfish - whole body
09R001
LW010108R001TSCRWBC00

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 1.3 | | percent |
| Arsenic | 0.35 | | mg/kg |
| Mercury | 0.022 | | mg/kg |
| Zinc | 15.2 | | mg/kg |
| Tributyltin ion | | | |
| Total PCB Aroclors | 55 T | | ug/kg |
| Total PCB Congeners | | | |
| PCB TEQ | | | |
| Dioxin/furan TCDD toxicity equivalent | | | |
| Total of 2,4' and 4,4'-DDD | 1 UJT | | ug/kg |
| Total of 2,4' and 4,4'-DDE | 6.3 JT | | ug/kg |
| Total of 2,4' and 4,4'-DDT | 6.6 JT | | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 12.9 JT | | ug/kg |
| alpha-Hexachlorocyclohexane | 1 U | | ug/kg |
| beta-Hexachlorocyclohexane | 1 UJ | | ug/kg |
| Total Chlordanes | 1 UJT | | ug/kg |
| Bis(2-ethylhexyl) phthalate | 100 UJT | | ug/kg |
| Aldrin | 1 U | | ug/kg |
| Benzo(a)anthracene | 33 UT | | ug/kg |
| Benzo(a)pyrene | 33 UT | | ug/kg |
| High Molecular Weight PAH | 33 UT | | ug/kg |
| Total PAHs | 33 UT | | ug/kg |

crayfish - whole body
09R002
LW010109R002TSCRWBC00

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 0.94 | | percent |
| Arsenic | 0.35 | | mg/kg |
| Mercury | 0.03 | | mg/kg |
| Zinc | 18 | | mg/kg |
| Tributyltin ion | | | |
| Total PCB Aroclors | 110 T | | ug/kg |
| Total PCB Congeners | 82.6 UT | | ug/kg |
| PCB TEQ | 1.41 T | | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.78 T | | pg/g |
| Total of 2,4' and 4,4'-DDD | 1 UJT | | ug/kg |
| Total of 2,4' and 4,4'-DDE | 2.5 JT | | ug/kg |
| Total of 2,4' and 4,4'-DDT | 4.7 UJT | | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 2.5 JT | | ug/kg |
| alpha-Hexachlorocyclohexane | 1 U | | ug/kg |
| beta-Hexachlorocyclohexane | 1 UJ | | ug/kg |
| Total Chlordanes | 1.6 UT | | ug/kg |
| Bis(2-ethylhexyl) phthalate | 200 UT | | ug/kg |
| Aldrin | 1 U | | ug/kg |
| Benzo(a)anthracene | 33 UT | | ug/kg |
| Benzo(a)pyrene | 33 UT | | ug/kg |
| High Molecular Weight PAH | 33 UT | | ug/kg |
| Total PAHs | 33 UT | | ug/kg |

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

0 1,000 2,000 3,000 Feet

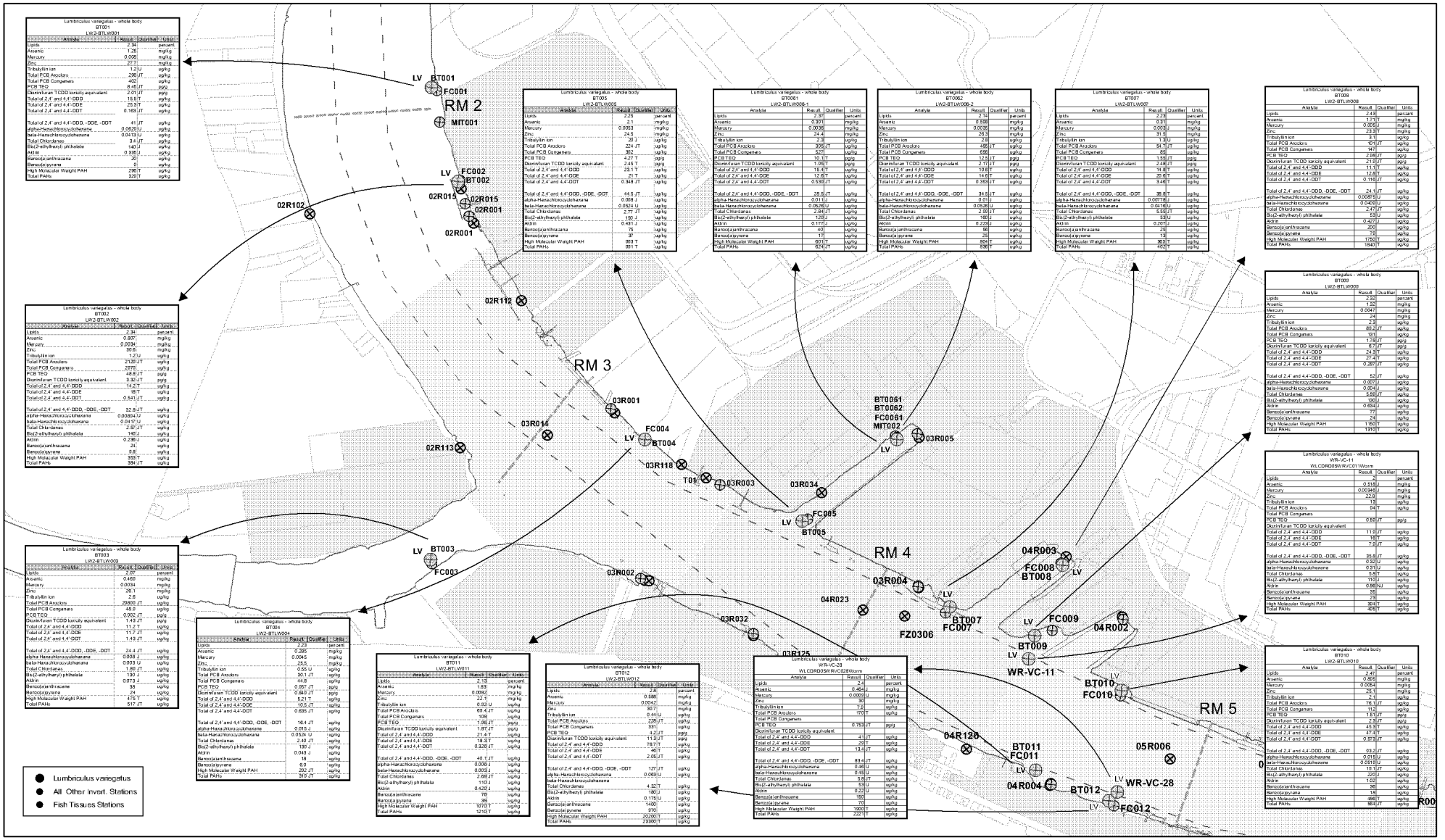
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Navigation Channel
River Miles
Docks and Structures
Waterfront Parks
Upland Sites

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_invert_V2_CR_C.mxd)
2/1/2007 – 3:04:38 PM

**Map 6.4-2c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Crayfish Invertebrate Tissue Analysis**

BZTO104(e)033117




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_invert_V2_LVs_Only_A.mxd)
2/1/2007 -- 3:07:22 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

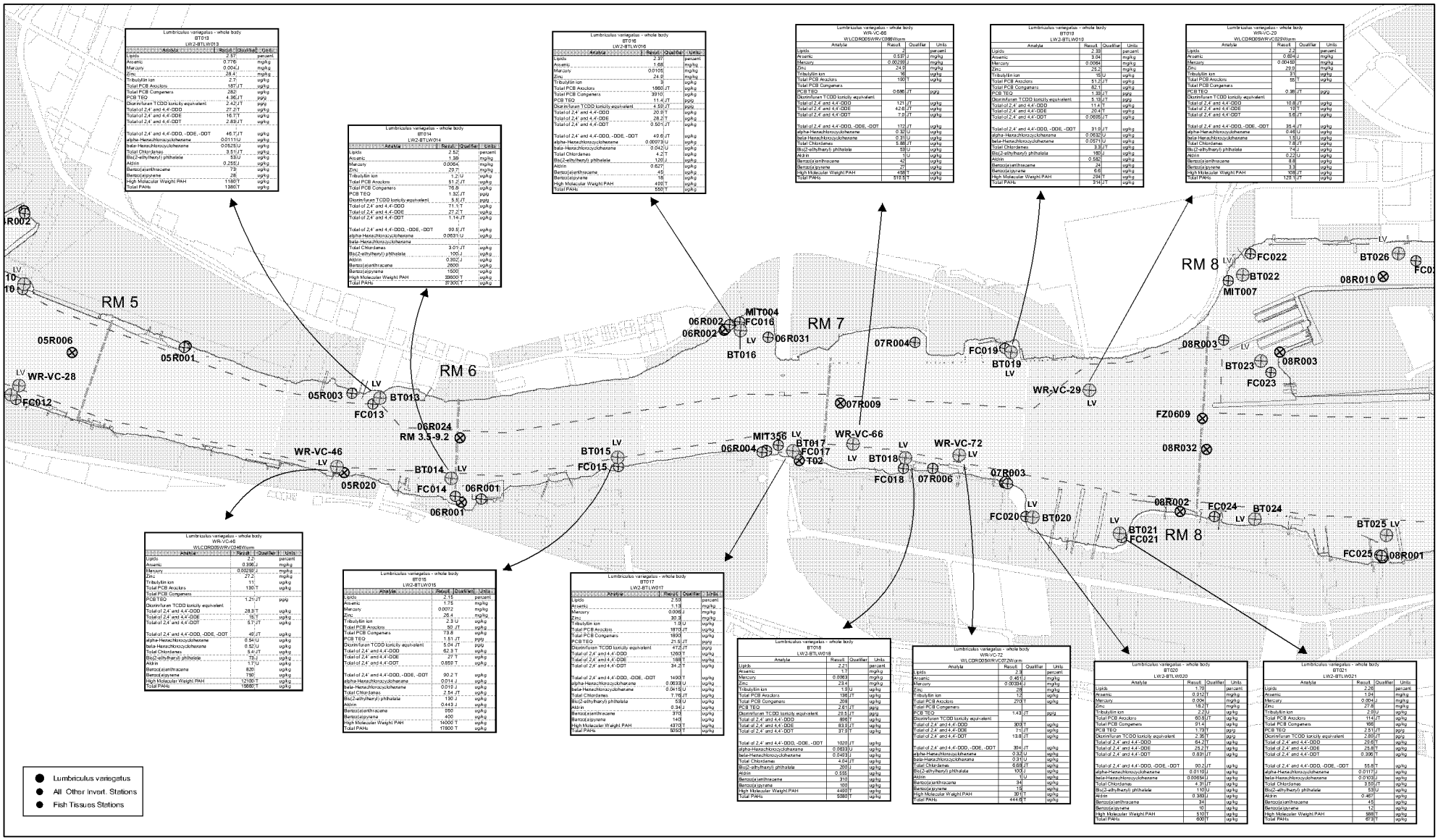
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 1,000 2,000 3,000 Feet

Navigation Channel
River Miles
Docks and Structures
Waterfront Tasklots
Upland Sites

**Map 6.4-3a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
***Lumbriculus variegatus* - Invertebrate Tissue Analysis**

BZTO104(e)033118




Lumbriculus variegatus - whole body
BT013
LW2-BTLW013

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.57 | | percent |
| Arsenic | 0.776 | | mg/kg |
| Mercury | 0.004 | J | mg/kg |
| Zinc | 29.4 | | mg/kg |
| Tributyltin ion | 2.7 | | ug/kg |
| Total PCB Aroclors | 187 | JT | ug/kg |
| Total PCB Congeners | 282 | | ug/kg |
| PCB TEQ | 4.96 | JT | ug/kg |
| Dioxin/furan TCDD toxicity equivalent | 2.42 | JT | ppq |
| Total of 2,4' and 4,4'-DDD | 27.2 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 15.7 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 2.83 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 46.7 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0111 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0525 | U | ug/kg |
| Total Chlordanes | 3.51 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.255 | U | ug/kg |
| Benzo(a)anthracene | 73 | | ug/kg |
| Benzo(a)pyrene | 28 | | ug/kg |
| High Molecular Weight PAH | 1180 | T | ug/kg |
| Total PAHs | 1380 | T | ug/kg |

Lumbriculus variegatus - whole body
BT016
LW2-BTLW016

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.33 | | percent |
| Arsenic | 1.68 | | mg/kg |
| Mercury | 0.0105 | | mg/kg |
| Zinc | 24.9 | | mg/kg |
| Tributyltin ion | 3 | | ug/kg |
| Total PCB Aroclors | 1860 | JT | ug/kg |
| Total PCB Congeners | 3910 | | ug/kg |
| PCB TEQ | 11.4 | JT | ppq |
| Dioxin/furan TCDD toxicity equivalent | 4.59 | JT | ppq |
| Total of 2,4' and 4,4'-DDD | 20.9 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 28.2 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.501 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 49.6 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.00973 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.042 | U | ug/kg |
| Total Chlordanes | 4.2 | T | ug/kg |
| Bis(2-ethylhexyl) phthalate | 120 | J | ug/kg |
| Aldrin | 0.627 | | ug/kg |
| Benzo(a)anthracene | 45 | | ug/kg |
| Benzo(a)pyrene | 18 | | ug/kg |
| High Molecular Weight PAH | 490 | T | ug/kg |
| Total PAHs | 550 | T | ug/kg |

Lumbriculus variegatus - whole body
BT014
LW2-BTLW014

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.52 | | percent |
| Arsenic | 1.38 | | mg/kg |
| Mercury | 0.0064 | | mg/kg |
| Zinc | 20.7 | | mg/kg |
| Tributyltin ion | 1.2 | U | ug/kg |
| Total PCB Aroclors | 51.2 | JT | ug/kg |
| Total PCB Congeners | 76.8 | | ug/kg |
| PCB TEQ | 1.32 | JT | ppq |
| Dioxin/furan TCDD toxicity equivalent | 5.5 | JT | ppq |
| Total of 2,4' and 4,4'-DDD | 71.1 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 27.2 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 1.14 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 99.5 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0531 | U | ug/kg |
| beta-Hexachlorocyclohexane | | | |
| Total Chlordanes | 3.01 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 100 | J | ug/kg |
| Aldrin | 0.302 | J | ug/kg |
| Benzo(a)anthracene | 2600 | | ug/kg |
| Benzo(a)pyrene | 1500 | | ug/kg |
| High Molecular Weight PAH | 39600 | T | ug/kg |
| Total PAHs | 97300 | T | ug/kg |

Lumbriculus variegatus - whole body
WR-VC-66
WLCDR005WRVC066Worm

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2 | | percent |
| Arsenic | 0.537 | J | mg/kg |
| Mercury | 0.00239 | J | mg/kg |
| Zinc | 24.9 | | mg/kg |
| Tributyltin ion | 16 | | mg/kg |
| Total PCB Aroclors | 190 | T | ug/kg |
| Total PCB Congeners | | | |
| PCB TEQ | 0.686 | JT | ppq |
| Dioxin/furan TCDD toxicity equivalent | | | |
| Total of 2,4' and 4,4'-DDD | 121 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDE | 42.6 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDT | 7.9 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 172 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.32 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.31 | U | ug/kg |
| Total Chlordanes | 5.88 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 1 | U | ug/kg |
| Benzo(a)anthracene | 42 | | ug/kg |
| Benzo(a)pyrene | 27 | | ug/kg |
| High Molecular Weight PAH | 458 | T | ug/kg |
| Benzo(a)pyrene | 18 | | ug/kg |
| High Molecular Weight PAH | 490 | T | ug/kg |
| Total PAHs | 515 | T | ug/kg |

Lumbriculus variegatus - whole body
BT019
LW2-BTLW019

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.33 | | percent |
| Arsenic | 3.04 | | mg/kg |
| Mercury | 0.0064 | | mg/kg |
| Zinc | 25.2 | | mg/kg |
| Tributyltin ion | 19 | U | ug/kg |
| Total PCB Aroclors | 51.2 | UT | ug/kg |
| Total PCB Congeners | 52.1 | | ug/kg |
| PCB TEQ | 0.36 | JT | ppq |
| Dioxin/furan TCDD toxicity equivalent | 5.19 | JT | ppq |
| Total of 2,4' and 4,4'-DDD | 11.4 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 20.4 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.0635 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 31.9 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0632 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0571 | U | ug/kg |
| Total Chlordanes | 3.3 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 160 | J | ug/kg |
| Aldrin | 0.562 | | ug/kg |
| Benzo(a)anthracene | 24 | | ug/kg |
| Benzo(a)pyrene | 6.6 | | ug/kg |
| High Molecular Weight PAH | 294 | T | ug/kg |
| Total PAHs | 314 | JT | ug/kg |

Lumbriculus variegatus - whole body
WR-VC-20
WLCDR005WRVC020Worm

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.2 | | percent |
| Arsenic | 0.604 | J | mg/kg |
| Mercury | 0.00459 | | mg/kg |
| Zinc | 29.6 | | mg/kg |
| Tributyltin ion | 31 | | ug/kg |
| Total PCB Aroclors | 66 | T | ug/kg |
| Total PCB Congeners | | | |
| PCB TEQ | 0.36 | JT | ppq |
| Dioxin/furan TCDD toxicity equivalent | | | |
| Total of 2,4' and 4,4'-DDD | 10.8 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDE | 19 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 5.6 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 35.4 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.46 | U | ug/kg |
| beta-Hexachlorocyclohexane | 1.5 | U | ug/kg |
| Total Chlordanes | 7.8 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 74 | J | ug/kg |
| Aldrin | 0.22 | U | ug/kg |
| Benzo(a)anthracene | 8.8 | | ug/kg |
| Benzo(a)pyrene | 3.8 | | ug/kg |
| High Molecular Weight PAH | 126 | JT | ug/kg |
| Total PAHs | 129 | JT | ug/kg |

Lumbriculus variegatus - whole body
WR-VC-46
WLCDR003WRVC046Worm

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.2 | | percent |
| Arsenic | 0.336 | J | mg/kg |
| Mercury | 0.00292 | J | mg/kg |
| Zinc | 27.2 | | mg/kg |
| Tributyltin ion | 11 | | ug/kg |
| Total PCB Aroclors | 130 | T | ug/kg |
| Total PCB Congeners | | | |
| PCB TEQ | 1.21 | JT | ppq |
| Dioxin/furan TCDD toxicity equivalent | | | |
| Total of 2,4' and 4,4'-DDD | 28.3 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 15.7 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 5.7 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 49 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.54 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.52 | U | ug/kg |
| Total Chlordanes | 9.4 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 79 | J | ug/kg |
| Aldrin | 1.71 | U | ug/kg |
| Benzo(a)anthracene | 820 | | ug/kg |
| Benzo(a)pyrene | 790 | | ug/kg |
| High Molecular Weight PAH | 12100 | T | ug/kg |
| Total PAHs | 19660 | T | ug/kg |

Lumbriculus variegatus - whole body
BT018
LW2-BTLW015

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.15 | | percent |
| Arsenic | 1.75 | | mg/kg |
| Mercury | 0.0072 | | mg/kg |
| Zinc | 26.4 | | mg/kg |
| Tributyltin ion | 2.9 | U | ug/kg |
| Total PCB Aroclors | 50 | JT | ug/kg |
| Total PCB Congeners | 73.8 | | ug/kg |
| PCB TEQ | 1.51 | JT | ppq |
| Dioxin/furan TCDD toxicity equivalent | 5.04 | JT | ppq |
| Total of 2,4' and 4,4'-DDD | 62.3 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 27.1 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.858 | T | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 90.2 | T | ug/kg |
| alpha-Hexachlorocyclohexane | 0.014 | J | ug/kg |
| beta-Hexachlorocyclohexane | 0.019 | J | ug/kg |
| Total Chlordanes | 2.54 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 130 | J | ug/kg |
| Aldrin | 0.449 | J | ug/kg |
| Benzo(a)anthracene | 950 | | ug/kg |
| Benzo(a)pyrene | 400 | | ug/kg |
| High Molecular Weight PAH | 14000 | T | ug/kg |
| Total PAHs | 17800 | T | ug/kg |

Lumbriculus variegatus - whole body
BT017
LW2-BTLW017

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.58 | | percent |
| Arsenic | 1.18 | | mg/kg |
| Mercury | 0.0068 | J | mg/kg |
| Zinc | 30.3 | | mg/kg |
| Tributyltin ion | 1.4 | U | ug/kg |
| Total PCB Aroclors | 1870 | JT | ug/kg |
| Total PCB Congeners | 1690 | | ug/kg |
| PCB TEQ | 21.5 | JT | ppq |
| Dioxin/furan TCDD toxicity equivalent | 472 | JT | ppq |
| Total of 2,4' and 4,4'-DDD | 1260 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 188 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 34.2 | T | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 1630 | T | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0638 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0415 | U | ug/kg |
| Total Chlordanes | 7.76 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.34 | U | ug/kg |
| Benzo(a)anthracene | 370 | | ug/kg |
| Benzo(a)pyrene | 140 | | ug/kg |
| High Molecular Weight PAH | 4370 | T | ug/kg |
| Total PAHs | 5050 | T | ug/kg |

Lumbriculus variegatus - whole body
BT018
LW2-BTLW018

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.21 | | percent |
| Arsenic | 1.7 | | mg/kg |
| Mercury | 0.0063 | | mg/kg |
| Zinc | 23.4 | | mg/kg |
| Tributyltin ion | 1.9 | U | ug/kg |
| Total PCB Aroclors | 190 | JT | ug/kg |
| Total PCB Congeners | 208 | | ug/kg |
| PCB TEQ | 2.61 | JT | ppq |
| Dioxin/furan TCDD toxicity equivalent | 23.5 | JT | ppq |
| Total of 2,4' and 4,4'-DDD | 886 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 83.9 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDT | 37.9 | T | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 1020 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0633 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0403 | U | ug/kg |
| Total Chlordanes | 4.04 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 200 | J | ug/kg |
| Aldrin | 0.556 | | ug/kg |
| Benzo(a)anthracene | 310 | | ug/kg |
| Benzo(a)pyrene | 100 | | ug/kg |
| High Molecular Weight PAH | 4400 | T | ug/kg |
| Total PAHs | 5080 | T | ug/kg |

Lumbriculus variegatus - whole body
WR-VC-72
WLCDR005WRVC072Worm

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.8 | | percent |
| Arsenic | 0.461 | J | mg/kg |
| Mercury | 0.00394 | J | mg/kg |
| Zinc | 28 | | mg/kg |
| Tributyltin ion | 1.2 | | ug/kg |
| Total PCB Aroclors | 270 | T | ug/kg |
| Total PCB Congeners | | | |
| PCB TEQ | 1.43 | JT | ppq |
| Dioxin/furan TCDD toxicity equivalent | | | |
| Total of 2,4' and 4,4'-DDD | 301 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 71 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDT | 13.6 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 394 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.32 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.31 | U | ug/kg |
| Total Chlordanes | 6.68 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 100 | J | ug/kg |
| Aldrin | 1 | U | ug/kg |
| Benzo(a)anthracene | 34 | | ug/kg |
| Benzo(a)pyrene | 13 | | ug/kg |
| High Molecular Weight PAH | 391 | T | ug/kg |
| Total PAHs | 444 | T | ug/kg |

Lumbriculus variegatus - whole body
BT020
LW2-BTLW020

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 1.79 | | percent |
| Arsenic | 0.312 | JT | mg/kg |
| Mercury | 0.004 | J | mg/kg |
| Zinc | 18.2 | T | mg/kg |
| Tributyltin ion | 2.2 | U | ug/kg |
| Total PCB Aroclors | 603 | JT | ug/kg |
| Total PCB Congeners | 914 | | ug/kg |
| PCB TEQ | 1.73 | T | ppq |
| Dioxin/furan TCDD toxicity equivalent | 2.35 | T | ppq |
| Total of 2,4' and 4,4'-DDD | 84.2 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 28.2 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.831 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 90.2 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0119 | J | ug/kg |
| beta-Hexachlorocyclohexane | 0.00854 | J | ug/kg |
| Total Chlordanes | 4.31 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 110 | U | ug/kg |
| Aldrin | 0.385 | J | ug/kg |
| Benzo(a)anthracene | 94 | | ug/kg |
| Benzo(a)pyrene | 10 | | ug/kg |
| High Molecular Weight PAH | 510 | T | ug/kg |
| Total PAHs | 600 | T | ug/kg |

Lumbriculus variegatus - whole body
BT021
LW2-BTLW021

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.26 | | percent |
| Arsenic | 1.04 | | mg/kg |
| Mercury | 0.004 | J | mg/kg |
| Zinc | 27.8 | | mg/kg |
| Tributyltin ion | 2.2 | U | ug/kg |
| Total PCB Aroclors | 114 | JT | ug/kg |
| Total PCB Congeners | 166 | | ug/kg |
| PCB TEQ | 2.51 | JT | ppq |
| Dioxin/furan TCDD toxicity equivalent | 2.85 | JT | ppq |
| Total of 2,4' and 4,4'-DDD | 29.6 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 25.6 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.396 | T | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 55.6 | T | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0117 | J | ug/kg |
| beta-Hexachlorocyclohexane | 0.0103 | J | ug/kg |
| Total Chlordanes | 3.55 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 59 | U | ug/kg |
| Aldrin | 0.467 | | ug/kg |
| Benzo(a)anthracene | 45 | | ug/kg |
| Benzo(a)pyrene | 12 | | ug/kg |
| High Molecular Weight PAH | 586 | T | ug/kg |
| Total PAHs | 673 | T | ug/kg |

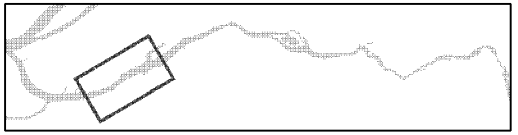
integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 1,000 2,000 3,000 Feet

Navigation Channel
River Miles
Docks and Structures
Waterfront Taxlots
Upland Sites



**Map 6.4-3b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
***Lumbriculus variegatus* - Invertebrate Tissue Analysis**

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_invert_V2_LV's_Only_B.mxd)
2/1/2007 -- 3:13:14 PM

BZTO104(e)033119

Lumbriculus variegatus - whole body
BT023
LW2-BTLW023

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 3.46 | | percent |
| Arsenic | 0.659 | | mg/kg |
| Mercury | 0.0041 | | mg/kg |
| Zinc | 29.4 | | mg/kg |
| Tributyltin ion | 1700 | | ug/kg |
| Total PCB Aroclors | 394 | JT | ug/kg |
| Total PCB Congeners | 475 | | ug/kg |
| PCB TEQ | 7.44 | JT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 3.85 | JT | pg/g |
| Total of 2,4' and 4,4'-DDD | 14.3 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 28.7 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.109 | UT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 42.9 | T | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0633 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0772 | U | ug/kg |
| Total Chlordanes | 5.92 | T | ug/kg |
| Bis(2-ethylhexyl) phthalate | 220 | J | ug/kg |
| Aldrin | 0.659 | | ug/kg |
| Benzo(a)anthracene | 170 | | ug/kg |
| Benzo(a)pyrene | 43 | | ug/kg |
| High Molecular Weight PAH | 1900 | T | ug/kg |
| Total PAHs | 2250 | T | ug/kg |

Lumbriculus variegatus - whole body
BT022
LW2-BTLW022

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.39 | | percent |
| Arsenic | 0.985 | | mg/kg |
| Mercury | 0.004 | J | mg/kg |
| Zinc | 25.1 | | mg/kg |
| Tributyltin ion | 49 | | ug/kg |
| Total PCB Aroclors | 312 | JT | ug/kg |
| Total PCB Congeners | 449 | | ug/kg |
| PCB TEQ | 5.91 | JT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 3.34 | JT | pg/g |
| Total of 2,4' and 4,4'-DDD | 17.6 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 23 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.102 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 40.7 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0105 | J | ug/kg |
| beta-Hexachlorocyclohexane | 0.0417 | U | ug/kg |
| Total Chlordanes | 3.82 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.451 | J | ug/kg |
| Benzo(a)anthracene | 31 | | ug/kg |
| Benzo(a)pyrene | 16 | | ug/kg |
| High Molecular Weight PAH | 418 | T | ug/kg |
| Total PAHs | 458 | T | ug/kg |

Lumbriculus variegatus - whole body
BT026
LW2-BTLW026

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.05 | | percent |
| Arsenic | 0.803 | | mg/kg |
| Mercury | 0.004 | J | mg/kg |
| Zinc | 29.8 | | mg/kg |
| Tributyltin ion | 22 | | ug/kg |
| Total PCB Aroclors | 413 | JT | ug/kg |
| Total PCB Congeners | 730 | | ug/kg |
| PCB TEQ | 6.51 | JT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 3.55 | JT | pg/g |
| Total of 2,4' and 4,4'-DDD | 10.7 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 12.2 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.271 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 23.1 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0102 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0417 | U | ug/kg |
| Total Chlordanes | 3.29 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 69 | J | ug/kg |
| Aldrin | 0.332 | J | ug/kg |
| Benzo(a)anthracene | 33 | | ug/kg |
| Benzo(a)pyrene | 9.7 | | ug/kg |
| High Molecular Weight PAH | 451 | T | ug/kg |
| Total PAHs | 502 | T | ug/kg |

Lumbriculus variegatus - whole body
BT029
LW2-BTLW029

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.34 | | percent |
| Arsenic | 0.77 | | mg/kg |
| Mercury | 0.004 | J | mg/kg |
| Zinc | 25 | | mg/kg |
| Tributyltin ion | 9.3 | | ug/kg |
| Total PCB Aroclors | 102 | JT | ug/kg |
| Total PCB Congeners | 168 | | ug/kg |
| PCB TEQ | 3.74 | JT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 1.08 | JT | pg/g |
| Total of 2,4' and 4,4'-DDD | 9.25 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 11.1 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.056 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 20.4 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0136 | J | ug/kg |
| beta-Hexachlorocyclohexane | 0.0417 | U | ug/kg |
| Total Chlordanes | 6.35 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.463 | | ug/kg |
| Benzo(a)anthracene | 14 | | ug/kg |
| Benzo(a)pyrene | 6.2 | | ug/kg |
| High Molecular Weight PAH | 240 | T | ug/kg |
| Total PAHs | 262 | T | ug/kg |

Lumbriculus variegatus - whole body
BT0271
LW2-BTLW027-1

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.84 | | percent |
| Arsenic | 1.2 | | mg/kg |
| Mercury | 0.007 | J | mg/kg |
| Zinc | 24.3 | | mg/kg |
| Tributyltin ion | 7.3 | | ug/kg |
| Total PCB Aroclors | 68.9 | JT | ug/kg |
| Total PCB Congeners | 117 | | ug/kg |
| PCB TEQ | 0.604 | JT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 1.22 | JT | pg/g |
| Total of 2,4' and 4,4'-DDD | 8.81 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 14.2 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.149 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 23.1 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.00714 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.00389 | J | ug/kg |
| Total Chlordanes | 2.9 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.448 | J | ug/kg |
| Benzo(a)anthracene | 11 | | ug/kg |
| Benzo(a)pyrene | 3.5 | | ug/kg |
| High Molecular Weight PAH | 146 | T | ug/kg |
| Total PAHs | 173 | T | ug/kg |

Lumbriculus variegatus - whole body
BT0272
LW2-BTLW027-2

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 1.35 | | percent |
| Arsenic | 1.39 | | mg/kg |
| Mercury | | | |
| Zinc | 23.5 | | mg/kg |
| Tributyltin ion | 5.7 | | ug/kg |
| Total PCB Aroclors | 59.4 | JT | ug/kg |
| Total PCB Congeners | 101 | | ug/kg |
| PCB TEQ | 1.25 | T | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.947 | T | pg/g |
| Total of 2,4' and 4,4'-DDD | 7.79 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 11.7 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.153 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 19.7 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.00769 | J | ug/kg |
| beta-Hexachlorocyclohexane | 0.00359 | U | ug/kg |
| Total Chlordanes | 2.43 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 110 | U | ug/kg |
| Aldrin | 0.38 | J | ug/kg |
| Benzo(a)anthracene | 11 | | ug/kg |
| Benzo(a)pyrene | 3.5 | | ug/kg |
| High Molecular Weight PAH | 136 | T | ug/kg |
| Total PAHs | 161 | JT | ug/kg |

Lumbriculus variegatus - whole body
WR-VC-43
WLCDRD05WRVC043Worm

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 1.8 | | percent |
| Arsenic | 0.759 | J | mg/kg |
| Mercury | 0.00345 | J | mg/kg |
| Zinc | 26.4 | | mg/kg |
| Tributyltin ion | 0.89 | J | ug/kg |
| Total PCB Aroclors | 61 | T | ug/kg |
| Total PCB Congeners | | | |
| PCB TEQ | 0.325 | JT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | | | |
| Total of 2,4' and 4,4'-DDD | 7.5 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 13 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 6.2 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 26.7 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.32 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.31 | U | ug/kg |
| Total Chlordanes | 5 | T | ug/kg |
| Bis(2-ethylhexyl) phthalate | 78 | J | ug/kg |
| Aldrin | 0.81 | U | ug/kg |
| Benzo(a)anthracene | 6.8 | | ug/kg |
| Benzo(a)pyrene | 4 | | ug/kg |
| High Molecular Weight PAH | 82.8 | JT | ug/kg |
| Total PAHs | 96.6 | JT | ug/kg |

Lumbriculus variegatus - whole body
BT033
LW2-BTLW033

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.05 | | percent |
| Arsenic | 1.81 | | mg/kg |
| Mercury | 0.0091 | | mg/kg |
| Zinc | 23.1 | | mg/kg |
| Tributyltin ion | 0.98 | U | ug/kg |
| Total PCB Aroclors | 48.2 | JT | ug/kg |
| Total PCB Congeners | 73.7 | | ug/kg |
| PCB TEQ | 0.919 | JT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 1.47 | JT | pg/g |
| Total of 2,4' and 4,4'-DDD | 4.78 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 9.66 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.0456 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 14.5 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.00569 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0416 | U | ug/kg |
| Total Chlordanes | 2.94 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 120 | J | ug/kg |
| Aldrin | 0.407 | J | ug/kg |
| Benzo(a)anthracene | 9.7 | | ug/kg |
| Benzo(a)pyrene | 3.7 | | ug/kg |
| High Molecular Weight PAH | 129 | T | ug/kg |
| Total PAHs | 147 | JT | ug/kg |

Lumbriculus variegatus - whole body
WR-VC-57
WLCDRD05WRVC057Worm

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.1 | | percent |
| Arsenic | 0.475 | J | mg/kg |
| Mercury | 0.00206 | J | mg/kg |
| Zinc | 25.3 | | mg/kg |
| Tributyltin ion | 1.2 | | ug/kg |
| Total PCB Aroclors | 250 | T | ug/kg |
| Total PCB Congeners | | | |
| PCB TEQ | 1.18 | JT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | | | |
| Total of 2,4' and 4,4'-DDD | 10.5 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDE | 11 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 15.3 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 36.8 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.32 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.31 | U | ug/kg |
| Total Chlordanes | 7 | T | ug/kg |
| Bis(2-ethylhexyl) phthalate | 120 | J | ug/kg |
| Aldrin | 0.15 | U | ug/kg |
| Benzo(a)anthracene | 12 | | ug/kg |
| Benzo(a)pyrene | 6.9 | | ug/kg |
| High Molecular Weight PAH | 139 | T | ug/kg |
| Total PAHs | 161.5 | T | ug/kg |

Lumbriculus variegatus - whole body
WR-VC-118
WLCDRD05WRVC118Worm

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2 | | percent |
| Arsenic | 0.41 | J | mg/kg |
| Mercury | 0.00273 | J | mg/kg |
| Zinc | 25.6 | | mg/kg |
| Tributyltin ion | 1.1 | | ug/kg |
| Total PCB Aroclors | 72 | T | ug/kg |
| Total PCB Congeners | | | |
| PCB TEQ | 0.31 | T | pg/g |
| Dioxin/furan TCDD toxicity equivalent | | | |
| Total of 2,4' and 4,4'-DDD | 7.7 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDE | 13 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 6.6 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 27.3 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.32 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.31 | U | ug/kg |
| Total Chlordanes | 5.4 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 83 | J | ug/kg |
| Aldrin | 0.15 | U | ug/kg |
| Benzo(a)anthracene | 9.3 | | ug/kg |
| Benzo(a)pyrene | 3.6 | | ug/kg |
| High Molecular Weight PAH | 108 | T | ug/kg |
| Total PAHs | 124.7 | JT | ug/kg |

Lumbriculus variegatus - whole body
BT024
LW2-BTLW024

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.54 | | percent |
| Arsenic | 1.02 | | mg/kg |
| Mercury | 0.003 | J | mg/kg |
| Zinc | 27.3 | | mg/kg |
| Tributyltin ion | 2 | U | ug/kg |
| Total PCB Aroclors | 392 | JT | ug/kg |
| Total PCB Congeners | 488 | | ug/kg |
| PCB TEQ | 7.2 | JT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 2.09 | JT | pg/g |
| Total of 2,4' and 4,4'-DDD | 21.6 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 31.7 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.258 | T | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 53.6 | T | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0151 | J | ug/kg |
| beta-Hexachlorocyclohexane | 0.0415 | U | ug/kg |
| Total Chlordanes | 5.79 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.54 | | ug/kg |
| Benzo(a)anthracene | 71 | | ug/kg |
| Benzo(a)pyrene | 34 | | ug/kg |
| High Molecular Weight PAH | 972 | T | ug/kg |
| Total PAHs | 1000 | T | ug/kg |

Lumbriculus variegatus - whole body
BT025
LW2-BTLW025

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.49 | | percent |
| Arsenic | 1.23 | | mg/kg |
| Mercury | 0.006 | J | mg/kg |
| Zinc | 26.6 | | mg/kg |
| Tributyltin ion | 1.5 | U | ug/kg |
| Total PCB Aroclors | 114 | JT | ug/kg |
| Total PCB Congeners | 161 | | ug/kg |
| PCB TEQ | 2.18 | JT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 1.98 | JT | pg/g |
| Total of 2,4' and 4,4'-DDD | 23 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 40 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.144 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 63.1 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0129 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.31 | U | ug/kg |
| Total Chlordanes | 9.7 | T | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.889 | | ug/kg |
| Benzo(a)anthracene | 19 | | ug/kg |
| Benzo(a)pyrene | 4.9 | | ug/kg |
| High Molecular Weight PAH | 266 | T | ug/kg |
| Total PAHs | 337 | T | ug/kg |

Lumbriculus variegatus - whole body
BT028
LW2-BTLW028

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.45 | | percent |
| Arsenic | 1.59 | | mg/kg |
| Mercury | 0.01 | J | mg/kg |
| Zinc | 26.3 | | mg/kg |
| Tributyltin ion | 1.8 | U | ug/kg |
| Total PCB Aroclors | 3230 | JT | ug/kg |
| Total PCB Congeners | 4310 | | ug/kg |
| PCB TEQ | 33.9 | JT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 10.1 | JT | pg/g |
| Total of 2,4' and 4,4'-DDD | 131 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 153 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.0873 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 284 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0149 | J | ug/kg |
| beta-Hexachlorocyclohexane | 0.293 | UJ | ug/kg |
| Total Chlordanes | 71.9 | T | ug/kg |
| Bis(2-ethylhexyl) phthalate | 100 | J | ug/kg |
| Aldrin | 37 | | ug/kg |
| Benzo(a)anthracene | 52 | | ug/kg |
| Benzo(a)pyrene | 13 | | ug/kg |
| High Molecular Weight PAH | 788 | T | ug/kg |
| Total PAHs | 1140 | T | ug/kg |

Lumbriculus variegatus - whole body
BT030
LW2-BTLW030

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 1.79 | | percent |
| Arsenic | 0.842 | | mg/kg |
| Mercury | 0.006 | | mg/kg |
| Zinc | 26.7 | | mg/kg |
| Tributyltin ion | 0.74 | U | ug/kg |
| Total PCB Aroclors | 110 | JT | ug/kg |
| Total PCB Congeners | 171 | | ug/kg |
| PCB TEQ | 1 | T | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 1.42 | T | pg/g |
| Total of 2,4' and 4,4'-DDD | 12.8 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 15.5 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 1.63 | T | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 29.9 | T | ug/kg |
| alpha-Hexachlorocyclohexane | 0.013 | J | ug/kg |
| beta-Hexachlorocyclohexane | 0.0436 | U | ug/kg |
| Total Chlordanes | 4.73 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 110 | U | ug/kg |
| Aldrin | 0.378 | J | ug/kg |
| Benzo(a)anthracene | 49 | | ug/kg |
| Benzo(a)pyrene | 17 | | ug/kg |
| High Molecular Weight PAH | 836 | T | ug/kg |
| Total PAHs | 1100 | T | ug/kg |

Lumbriculus variegatus - whole body
BT031
LW2-BTLW031

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.09 | | percent |
| Arsenic | 1.35 | | mg/kg |
| Mercury | 0.005 | J | mg/kg |
| Zinc | 24 | | mg/kg |
| Tributyltin ion | 1.5 | U | ug/kg |
| Total PCB Aroclors | 40.6 | JT | ug/kg |
| Total PCB Congeners | 67.6 | | ug/kg |
| PCB TEQ | 1.04 | JT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.876 | JT | pg/g |
| Total of 2,4' and 4,4'-DDD | 5.98 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 14.1 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.132 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 20.2 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.00784 | J | ug/kg |
| beta-Hexachlorocyclohexane | 0.0098 | J | ug/kg |
| Total Chlordanes | 2.85 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.424 | J | ug/kg |
| Benzo(a)anthracene | 5.9 | | ug/kg |
| Benzo(a)pyrene | 2.2 | | ug/kg |
| High Molecular Weight PAH | 70.7 | T | ug/kg |
| Total PAHs | 83 | T | ug/kg |

Lumbriculus variegatus - whole body
BT032
LW2-BTLW032

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.92 | | percent |
| Arsenic | 0.969 | | mg/kg |
| Mercury | 0.004 | J | mg/kg |
| Zinc | 31.1 | | mg/kg |
| Tributyltin ion | 2.5 | U | ug/kg |
| Total PCB Aroclors | 930 | JT | ug/kg |
| Total PCB Congeners | 1450 | | ug/kg |
| PCB TEQ | 9.69 | JT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 3.57 | JT | pg/g |
| Total of 2,4' and 4,4'-DDD | 12.1 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 11.6 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.231 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 23.9 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0133 | J | ug/kg |
| beta-Hexachlorocyclohexane | 0.00732 | J | ug/kg |
| Total Chlordanes | 10.2 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.51 | | ug/kg |
| Benzo(a)anthracene | 16 | | ug/kg |
| Benzo(a)pyrene | 4.4 | | ug/kg |
| High Molecular Weight PAH | 265 | T | ug/kg |
| Total PAHs | 320 | T | ug/kg |

Lumbriculus variegatus - whole body
WR-VC-108
WLCDRD05WRVC108Worm

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.2 | | percent |
| Arsenic | 0.246 | J | mg/kg |
| Mercury | 0.00317 | J | mg/kg |
| Zinc | 28.4 | | mg/kg |
| Tributyltin ion | 3.1 | | ug/kg |
| Total PCB Aroclors | 470 | T | ug/kg |
| Total PCB Congeners | | | |
| PCB TEQ | 4.27 | JT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | | | |
| Total of 2,4' and 4,4'-DDD | 11 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 17 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 30 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 58 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.97 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.94 | U | ug/kg |
| Total Chlordanes | 10 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 530 | U | ug/kg |
| Aldrin | 0.46 | U | ug/kg |
| Benzo(a)anthracene | 53 | | ug/kg |
| Benzo(a)pyrene | 17 | | ug/kg |
| High Molecular Weight PAH | 566 | T | ug/kg |
| Total PAHs | 825 | T | ug/kg |

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_Invert_V2_LVs_Only_C.mxd)
2/1/2007 – 3:19:11 PM

integral consulting inc.

LWG Lower Willamette Group

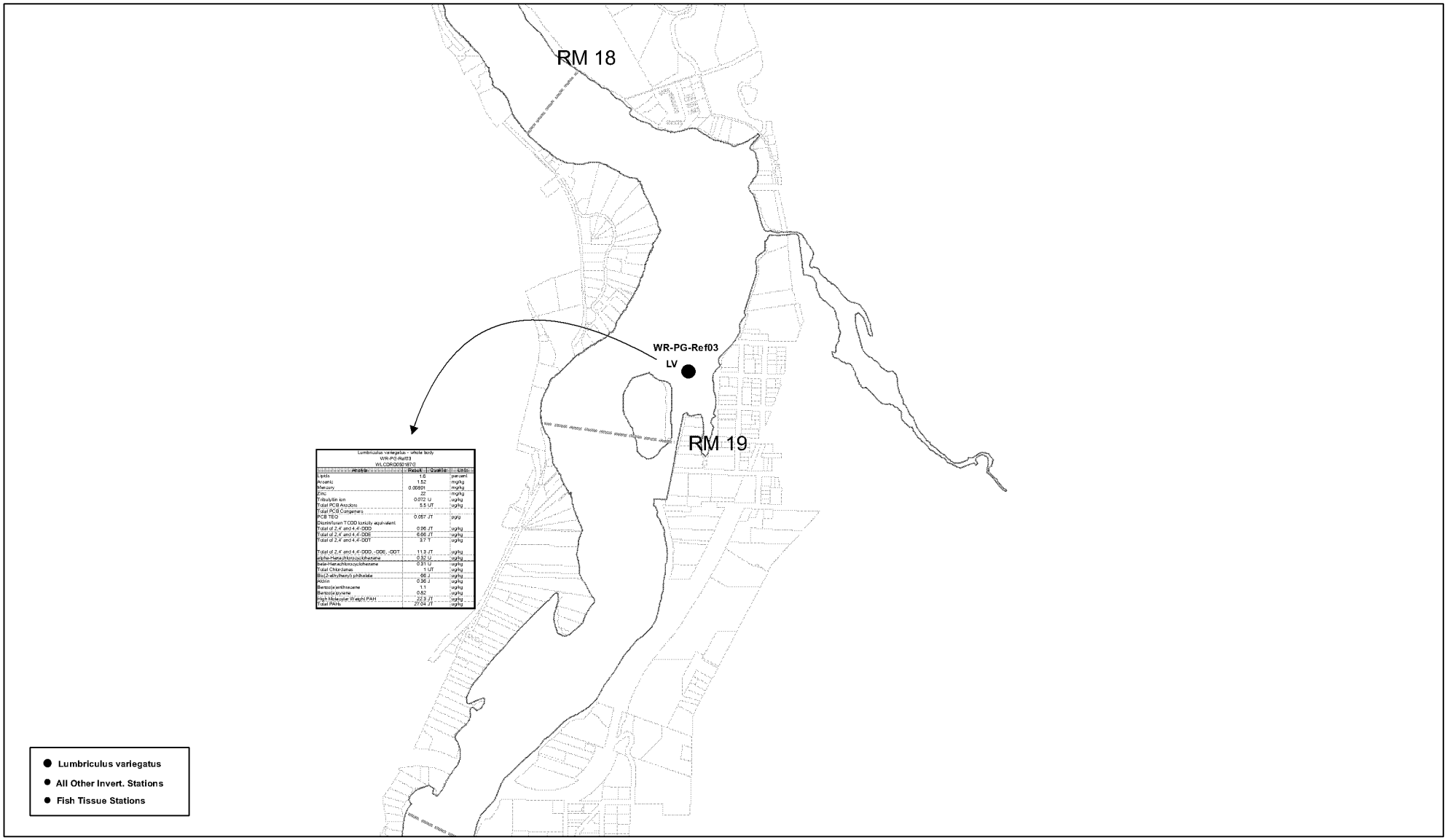
0 1,000 2,000 3,000 Feet

N

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Navigation Channel
River Miles
Docks and Structures
Waterfront Taxlots
Upland Sites

**Map 6.4-3c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
***Lumbriculus variegatus* - Invertebrate Tissue Analysis**



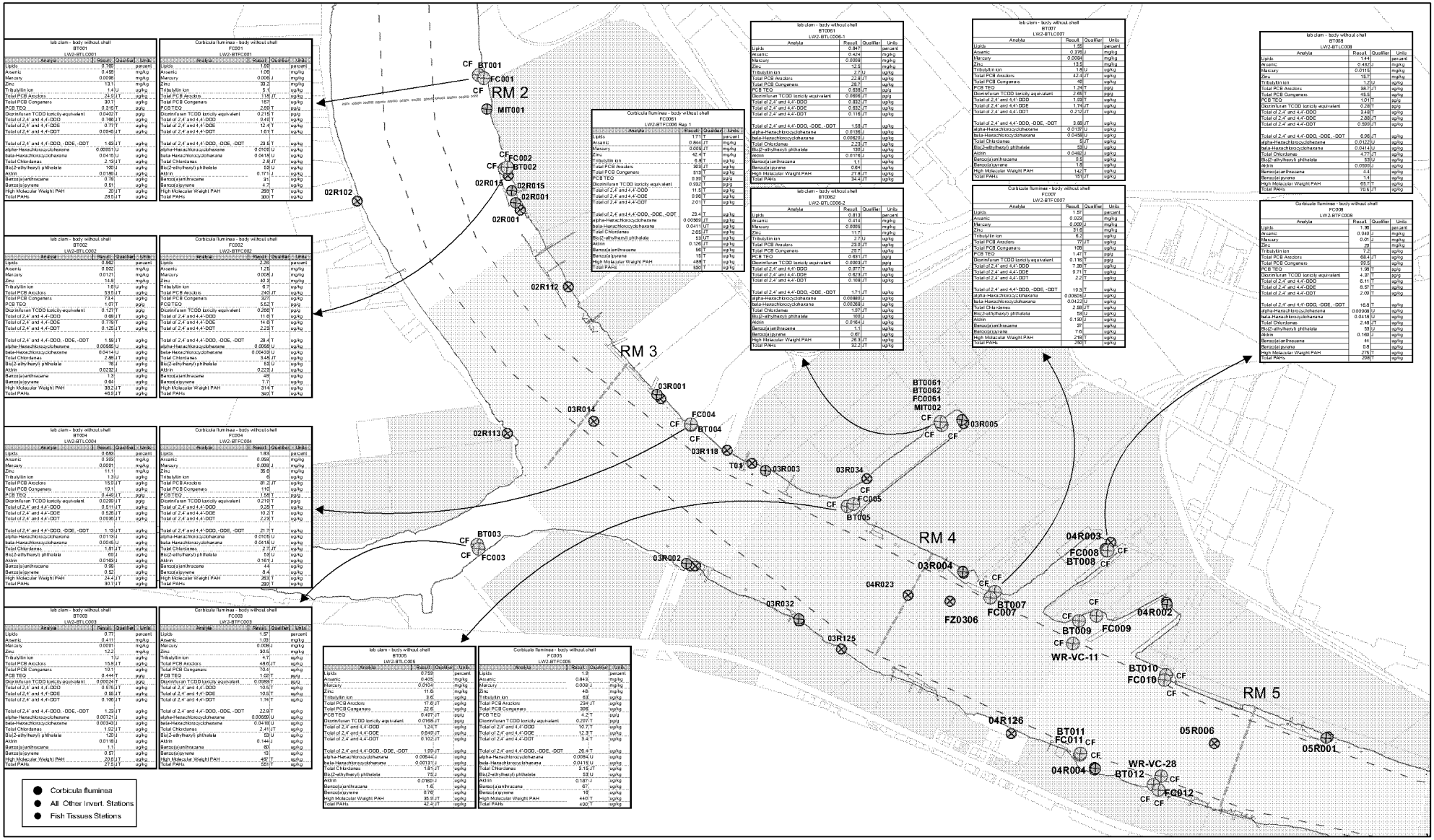

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_invert_V2_LV's_Only_D.mxd)
2/1/2007 -- 3:27:45 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.4-3d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
***Lumbriculus variegatus* - Invertebrate Tissue Analysis**

BZTO104(e)033121




lab clam - body without shell
BT001
LW2-BTLC001

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 0.769 | | percent |
| Arsenic | 0.458 | | mg/kg |
| Mercury | 0.0036 | | mg/kg |
| Zinc | 13.1 | | mg/kg |
| Tributyltin ion | 1.4 | U | ug/kg |
| Total PCB Aroclors | 24.9 | JT | ug/kg |
| Total PCB Congeners | 30.7 | | ug/kg |
| PCB TEQ | 0.315 | T | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.0402 | T | pg/g |
| Total of 2,4' and 4,4'-DDD | 0.766 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDE | 0.77 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.0945 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 1.69 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.00551 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0415 | U | ug/kg |
| Total Chlordanes | 2.13 | UT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 100 | J | ug/kg |
| Aldrin | 0.0180 | J | ug/kg |
| Benzo(e)anthracene | 0.78 | | ug/kg |
| Benzo(a)pyrene | 0.51 | | ug/kg |
| High Molecular Weight PAH | 20 | UT | ug/kg |
| Total PAHs | 28.5 | UT | ug/kg |

Corbicula fluminea - body without shell
FC001
LW2-BTFC001

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 1.86 | | percent |
| Arsenic | 1.06 | | mg/kg |
| Mercury | 0.006 | J | mg/kg |
| Zinc | 99.2 | | mg/kg |
| Tributyltin ion | 5.1 | | ug/kg |
| Total PCB Aroclors | 116 | JT | ug/kg |
| Total PCB Congeners | 157 | | ug/kg |
| PCB TEQ | 2.69 | T | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.215 | T | pg/g |
| Total of 2,4' and 4,4'-DDD | 0.47 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 12.4 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 1.61 | T | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 29.5 | T | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0109 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0418 | U | ug/kg |
| Total Chlordanes | 2.8 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.171 | J | ug/kg |
| Benzo(e)anthracene | 31 | | ug/kg |
| Benzo(a)pyrene | 4.7 | | ug/kg |
| High Molecular Weight PAH | 268 | T | ug/kg |
| Total PAHs | 300 | T | ug/kg |

Corbicula fluminea - body without shell
FC001 Rep 1
LW2-BTFC006 Rep 1

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 1.71 | T | percent |
| Arsenic | 0.844 | JT | mg/kg |
| Mercury | 0.005 | JT | mg/kg |
| Zinc | 42.4 | T | mg/kg |
| Tributyltin ion | 6.8 | T | ug/kg |
| Total PCB Aroclors | 303 | JT | ug/kg |
| Total PCB Congeners | 513 | T | ug/kg |
| PCB TEQ | 0.39 | T | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.092 | T | pg/g |
| Total of 2,4' and 4,4'-DDD | 11.5 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 9.96 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 2.01 | T | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 23.4 | T | ug/kg |
| alpha-Hexachlorocyclohexane | 0.00969 | JT | ug/kg |
| beta-Hexachlorocyclohexane | 0.0411 | UT | ug/kg |
| Total Chlordanes | 2.65 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | UT | ug/kg |
| Aldrin | 0.126 | JT | ug/kg |
| Benzo(e)anthracene | 56 | T | ug/kg |
| Benzo(a)pyrene | 15 | T | ug/kg |
| High Molecular Weight PAH | 488 | T | ug/kg |
| Total PAHs | 590 | T | ug/kg |

lab clam - body without shell
BT002
LW2-BTLC002

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 0.902 | | percent |
| Arsenic | 0.502 | | mg/kg |
| Mercury | 0.0121 | | mg/kg |
| Zinc | 14.8 | | mg/kg |
| Tributyltin ion | 1.6 | U | ug/kg |
| Total PCB Aroclors | 53.5 | UT | ug/kg |
| Total PCB Congeners | 79.4 | | ug/kg |
| PCB TEQ | 1.07 | T | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.127 | T | pg/g |
| Total of 2,4' and 4,4'-DDD | 0.99 | UT | ug/kg |
| Total of 2,4' and 4,4'-DDE | 0.778 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.125 | UT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 1.58 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.00885 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0414 | U | ug/kg |
| Total Chlordanes | 2.86 | UT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 76 | U | ug/kg |
| Aldrin | 0.0232 | U | ug/kg |
| Benzo(e)anthracene | 1.3 | | ug/kg |
| Benzo(a)pyrene | 0.94 | | ug/kg |
| High Molecular Weight PAH | 39.2 | UT | ug/kg |
| Total PAHs | 46.9 | UT | ug/kg |

Corbicula fluminea - body without shell
FC002
LW2-BTFC002

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 2.26 | | percent |
| Arsenic | 1.25 | | mg/kg |
| Mercury | 0.008 | J | mg/kg |
| Zinc | 40.9 | | mg/kg |
| Tributyltin ion | 6.7 | | ug/kg |
| Total PCB Aroclors | 240 | UT | ug/kg |
| Total PCB Congeners | 327 | | ug/kg |
| PCB TEQ | 5.527 | | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.266 | T | pg/g |
| Total of 2,4' and 4,4'-DDD | 11.6 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 14.6 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 2.23 | T | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 28.4 | T | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0098 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0493 | U | ug/kg |
| Total Chlordanes | 3.48 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.223 | J | ug/kg |
| Benzo(e)anthracene | 48 | | ug/kg |
| Benzo(a)pyrene | 7.7 | | ug/kg |
| High Molecular Weight PAH | 314 | T | ug/kg |
| Total PAHs | 348 | T | ug/kg |

lab clam - body without shell
BT0061
LW2-BTLC006-1

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 0.847 | | percent |
| Arsenic | 0.424 | | mg/kg |
| Mercury | 0.0056 | | mg/kg |
| Zinc | 12.5 | | mg/kg |
| Tributyltin ion | 2.7 | U | ug/kg |
| Total PCB Aroclors | 22.8 | JT | ug/kg |
| Total PCB Congeners | 28.7 | | ug/kg |
| PCB TEQ | 0.698 | JT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.0696 | JT | pg/g |
| Total of 2,4' and 4,4'-DDD | 0.832 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDE | 0.652 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.116 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 1.58 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0136 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.00625 | U | ug/kg |
| Total Chlordanes | 2.23 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 190 | U | ug/kg |
| Aldrin | 0.0176 | U | ug/kg |
| Benzo(e)anthracene | 1.1 | | ug/kg |
| Benzo(a)pyrene | 0.64 | | ug/kg |
| High Molecular Weight PAH | 27.8 | UT | ug/kg |
| Total PAHs | 34.4 | UT | ug/kg |

lab clam - body without shell
BT0062
LW2-BTLC006-2

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 0.813 | | percent |
| Arsenic | 0.414 | | mg/kg |
| Mercury | 0.0055 | | mg/kg |
| Zinc | 11.7 | | mg/kg |
| Tributyltin ion | 2.7 | U | ug/kg |
| Total PCB Aroclors | 23.9 | UT | ug/kg |
| Total PCB Congeners | 29.7 | | ug/kg |
| PCB TEQ | 0.651 | UT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.0903 | UT | pg/g |
| Total of 2,4' and 4,4'-DDD | 0.877 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 0.623 | UT | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.108 | UT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 1.71 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.00889 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.00268 | J | ug/kg |
| Total Chlordanes | 1.97 | UT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 100 | J | ug/kg |
| Aldrin | 0.0164 | U | ug/kg |
| Benzo(e)anthracene | 1.1 | | ug/kg |
| Benzo(a)pyrene | 0.67 | | ug/kg |
| High Molecular Weight PAH | 26.9 | UT | ug/kg |
| Total PAHs | 32.2 | UT | ug/kg |

lab clam - body without shell
BT007
LW2-BTLC007

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 1.55 | | percent |
| Arsenic | 0.376 | J | mg/kg |
| Mercury | 0.0084 | | mg/kg |
| Zinc | 13.5 | | mg/kg |
| Tributyltin ion | 1.6 | U | ug/kg |
| Total PCB Aroclors | 42.4 | JT | ug/kg |
| Total PCB Congeners | 48 | | ug/kg |
| PCB TEQ | 1.24 | T | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 2.65 | T | pg/g |
| Total of 2,4' and 4,4'-DDD | 1.69 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 1.74 | UT | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.212 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 3.88 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0137 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0458 | U | ug/kg |
| Total Chlordanes | 5 | UT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.0482 | J | ug/kg |
| Benzo(e)anthracene | 5.6 | | ug/kg |
| Benzo(a)pyrene | 1.8 | | ug/kg |
| High Molecular Weight PAH | 142 | T | ug/kg |
| Total PAHs | 151 | JT | ug/kg |

Corbicula fluminea - body without shell
FC007
LW2-BTFC007

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 1.57 | | percent |
| Arsenic | 0.023 | | mg/kg |
| Mercury | 0.000 | U | mg/kg |
| Zinc | 31.6 | | mg/kg |
| Tributyltin ion | 6.2 | | ug/kg |
| Total PCB Aroclors | 77 | UT | ug/kg |
| Total PCB Congeners | 108 | | ug/kg |
| PCB TEQ | 1.47 | T | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.116 | T | pg/g |
| Total of 2,4' and 4,4'-DDD | 7.36 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 0.71 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 2.2 | T | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 10.3 | T | ug/kg |
| alpha-Hexachlorocyclohexane | 0.00605 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0422 | U | ug/kg |
| Total Chlordanes | 2.58 | UT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.130 | J | ug/kg |
| Benzo(e)anthracene | 37 | | ug/kg |
| Benzo(a)pyrene | 7.6 | | ug/kg |
| High Molecular Weight PAH | 218 | T | ug/kg |
| Total PAHs | 290 | T | ug/kg |

lab clam - body without shell
BT008
LW2-BTLC008

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 1.44 | | percent |
| Arsenic | 0.432 | J | mg/kg |
| Mercury | 0.0115 | | mg/kg |
| Zinc | 15.7 | | mg/kg |
| Tributyltin ion | 1.2 | U | ug/kg |
| Total PCB Aroclors | 38.7 | JT | ug/kg |
| Total PCB Congeners | 45.5 | | ug/kg |
| PCB TEQ | 1.01 | T | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.28 | T | pg/g |
| Total of 2,4' and 4,4'-DDD | 3.48 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 2.88 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.399 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 6.96 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0122 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0414 | U | ug/kg |
| Total Chlordanes | 4.77 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.0595 | J | ug/kg |
| Benzo(e)anthracene | 4.4 | | ug/kg |
| Benzo(a)pyrene | 1.4 | | ug/kg |
| High Molecular Weight PAH | 65.7 | T | ug/kg |
| Total PAHs | 76.5 | UT | ug/kg |

Corbicula fluminea - body without shell
FC008
LW2-BTFC008

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 1.36 | | percent |
| Arsenic | 0.040 | J | mg/kg |
| Mercury | 0.01 | J | mg/kg |
| Zinc | 29 | | mg/kg |
| Tributyltin ion | 7.2 | | ug/kg |
| Total PCB Aroclors | 68.4 | JT | ug/kg |
| Total PCB Congeners | 99.5 | | ug/kg |
| PCB TEQ | 1.08 | T | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 4.37 | T | pg/g |
| Total of 2,4' and 4,4'-DDD | 6.11 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 8.57 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 2.09 | T | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 16.8 | T | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0098 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0418 | U | ug/kg |
| Total Chlordanes | 2.48 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.160 | J | ug/kg |
| Benzo(e)anthracene | 44 | | ug/kg |
| Benzo(a)pyrene | 9.8 | | ug/kg |
| High Molecular Weight PAH | 275 | T | ug/kg |
| Total PAHs | 298 | T | ug/kg |

lab clam - body without shell
BT004
LW2-BTLC004

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 0.668 | | percent |
| Arsenic | 0.309 | | mg/kg |
| Mercury | 0.0091 | | mg/kg |
| Zinc | 11.1 | | mg/kg |
| Tributyltin ion | 1.3 | U | ug/kg |
| Total PCB Aroclors | 15.9 | JT | ug/kg |
| Total PCB Congeners | 19.1 | | ug/kg |
| PCB TEQ | 0.449 | UT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.0208 | JT | pg/g |
| Total of 2,4' and 4,4'-DDD | 0.511 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDE | 0.536 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.0935 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 1.13 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0113 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0345 | U | ug/kg |
| Total Chlordanes | 1.81 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 69 | U | ug/kg |
| Aldrin | 0.0163 | U | ug/kg |
| Benzo(e)anthracene | 0.98 | | ug/kg |
| Benzo(a)pyrene | 0.52 | | ug/kg |
| High Molecular Weight PAH | 24.4 | JT | ug/kg |
| Total PAHs | 30.7 | UT | ug/kg |

Corbicula fluminea - body without shell
FC004
LW2-BTFC004

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 1.83 | | percent |
| Arsenic | 0.958 | | mg/kg |
| Mercury | 0.008 | J | mg/kg |
| Zinc | 85.6 | | mg/kg |
| Tributyltin ion | 6 | | ug/kg |
| Total PCB Aroclors | 81.2 | JT | ug/kg |
| Total PCB Congeners | 110 | | ug/kg |
| PCB TEQ | 1.58 | T | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.218 | T | pg/g |
| Total of 2,4' and 4,4'-DDD | 0.28 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 10.2 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 2.23 | T | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 21.7 | T | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0105 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0418 | U | ug/kg |
| Total Chlordanes | 2.7 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.161 | J | ug/kg |
| Benzo(e)anthracene | 44 | | ug/kg |
| Benzo(a)pyrene | 8.4 | | ug/kg |
| High Molecular Weight PAH | 263 | T | ug/kg |
| Total PAHs | 293 | T | ug/kg |

lab clam - body without shell
BT003
LW2-BTLC003

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 0.77 | | percent |
| Arsenic | 0.411 | | mg/kg |
| Mercury | 0.0091 | | mg/kg |
| Zinc | 12.2 | | mg/kg |
| Tributyltin ion | 1.5 | U | ug/kg |
| Total PCB Aroclors | 15.8 | JT | ug/kg |
| Total PCB Congeners | 19.1 | | ug/kg |
| PCB TEQ | 0.444 | T | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.00924 | T | pg/g |
| Total of 2,4' and 4,4'-DDD | 0.576 | UT | ug/kg |
| Total of 2,4' and 4,4'-DDE | 0.55 | UT | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.106 | UT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 1.28 | UT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0172 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0343 | U | ug/kg |
| Total Chlordanes | 1.92 | UT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 120 | U | ug/kg |
| Aldrin | 0.0118 | U | ug/kg |
| Benzo(e)anthracene | 1.1 | | ug/kg |
| Benzo(a)pyrene | 0.57 | | ug/kg |
| High Molecular Weight PAH | 20.6 | UT | ug/kg |
| Total PAHs | 27.5 | UT | ug/kg |

Corbicula fluminea - body without shell
FC003
LW2-BTFC003

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 1.57 | | percent |
| Arsenic | 1.03 | | mg/kg |
| Mercury | 0.008 | J | mg/kg |
| Zinc | 80.5 | | mg/kg |
| Tributyltin ion | 4.1 | | ug/kg |
| Total PCB Aroclors | 48.6 | JT | ug/kg |
| Total PCB Congeners | 70.4 | | ug/kg |
| PCB TEQ | 1.08 | T | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.0989 | T | pg/g |
| Total of 2,4' and 4,4'-DDD | 10.5 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 10.5 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 1.74 | T | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 22.9 | T | ug/kg |
| alpha-Hexachlorocyclohexane | 0.00908 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0418 | U | ug/kg |
| Total Chlordanes | 2.41 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.144 | J | ug/kg |
| Benzo(a)anthracene | 60 | | ug/kg |
| Benzo(a)pyrene | 13 | | ug/kg |
| High Molecular Weight PAH | 467 | T | ug/kg |
| Total PAHs | 551 | T | ug/kg |

lab clam - body without shell
BT005
LW2-BTLC005

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 0.759 | | percent |
| Arsenic | 0.405 | | mg/kg |
| Mercury | 0.0104 | | mg/kg |
| Zinc | 11.6 | | mg/kg |
| Tributyltin ion | 3.6 | | ug/kg |
| Total PCB Aroclors | 17.6 | JT | ug/kg |
| Total PCB Congeners | 22.6 | | ug/kg |
| PCB TEQ | 0.497 | JT | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.0168 | JT | pg/g |
| Total of 2,4' and 4,4'-DDD | 1.24 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 0.649 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDT | 0.102 | JT | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 1.99 | JT | ug/kg |
| alpha-Hexachlorocyclohexane | 0.00844 | J | ug/kg |
| beta-Hexachlorocyclohexane | 0.00131 | J | ug/kg |
| Total Chlordanes | 1.81 | JT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 75 | J | ug/kg |
| Aldrin | 0.0169 | J | ug/kg |
| Benzo(a)anthracene | 1.6 | | ug/kg |
| Benzo(a)pyrene | 0.76 | | ug/kg |
| High Molecular Weight PAH | 35.5 | JT | ug/kg |
| Total PAHs | 42.4 | JT | ug/kg |

Corbicula fluminea - body without shell
FC005
LW2-BTFC005

| Analyte | Result | Qualifier | Units |
|---|---|---|---|
| Lipids | 1.9 | | percent |
| Arsenic | 0.843 | | mg/kg |
| Mercury | 0.008 | J | mg/kg |
| Zinc | 48 | | mg/kg |
| Tributyltin ion | 63 | | ug/kg |
| Total PCB Aroclors | 234 | JT | ug/kg |
| Total PCB Congeners | 306 | | ug/kg |
| PCB TEQ | 4.2 | T | pg/g |
| Dioxin/furan TCDD toxicity equivalent | 0.297 | T | pg/g |
| Total of 2,4' and 4,4'-DDD | 10.7 | T | ug/kg |
| Total of 2,4' and 4,4'-DDE | 12.3 | T | ug/kg |
| Total of 2,4' and 4,4'-DDT | 3.4 | T | ug/kg |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 26.4 | T | ug/kg |
| alpha-Hexachlorocyclohexane | 0.0084 | U | ug/kg |
| beta-Hexachlorocyclohexane | 0.0418 | U | ug/kg |
| Total Chlordanes | 5.15 | UT | ug/kg |
| Bis(2-ethylhexyl) phthalate | 53 | U | ug/kg |
| Aldrin | 0.187 | J | ug/kg |
| Benzo(a)anthracene | 67 | | ug/kg |
| Benzo(a)pyrene | 16 | | ug/kg |
| High Molecular Weight PAH | 440 | T | ug/kg |
| Total PAHs | 490 | T | ug/kg |

- Corbicula fluminea
- All Other Invert. Stations
- Fish Tissues Stations

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_invert_V2_CFs_Only_A.mxd)
2/1/2007 -- 3:30:09 PM

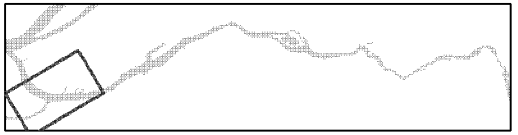
integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

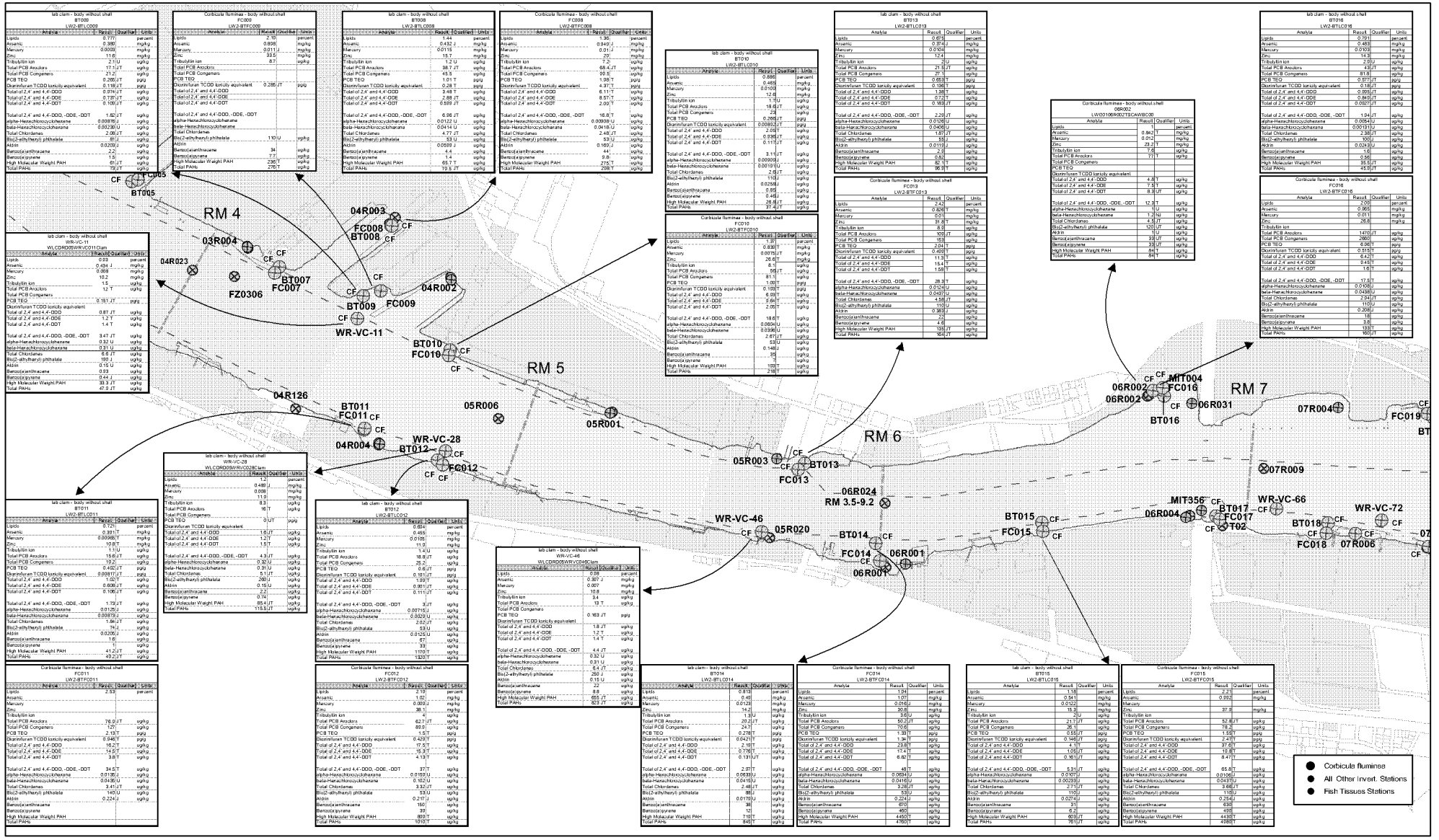
0 1,000 2,000 3,000 Feet

- Navigation Channel
- River Miles
- Docks and Structures
- Waterfront Taxlots
- Upland Sites



**Map 6.4-4a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
***Corbicula fluminea* - Invertebrate Tissue Analysis**

BZTO104(e)033122




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_invert_V2_CFs_Only_B.mxd)
2/1/2007 -- 3:45:35 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

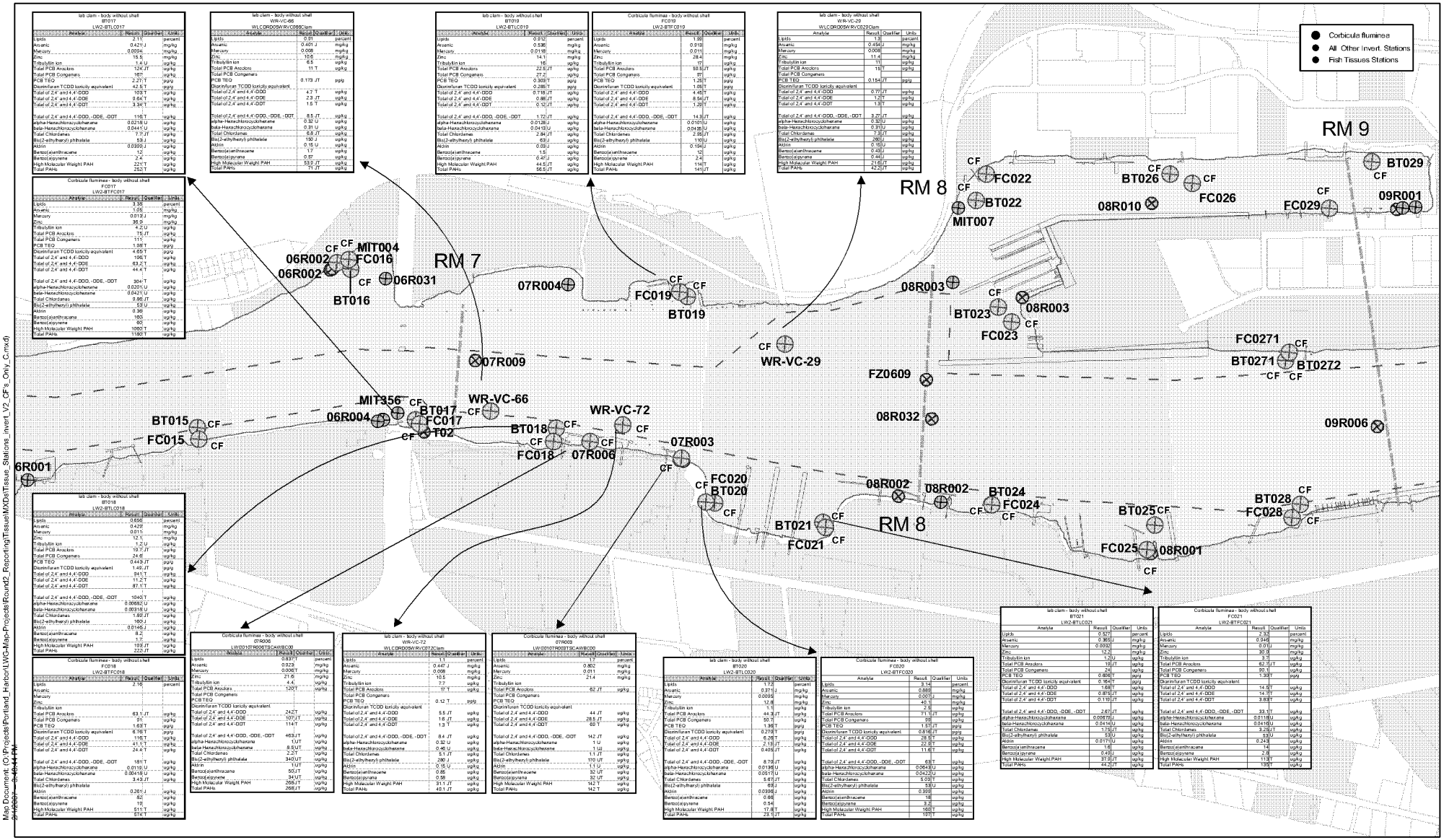
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS.
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 1,000 2,000 3,000 Feet

Navigation Channel
River Miles
Docks and Structures
Waterfront Tasklots
Upland Sites

**Map 6.4-4b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
***Corbicula fluminea* - Invertebrate Tissue Analysis**

BZTO104(e)033123




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_invert_V2_CF's_Only_C.mxd)
2/18/2007 -- 3:40:44 PM

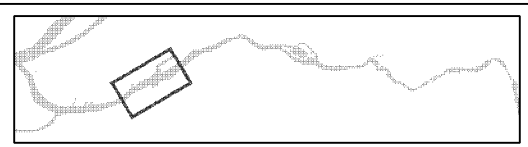
integral consulting inc.

LWG LOWER WILLAMETTE GROUP

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

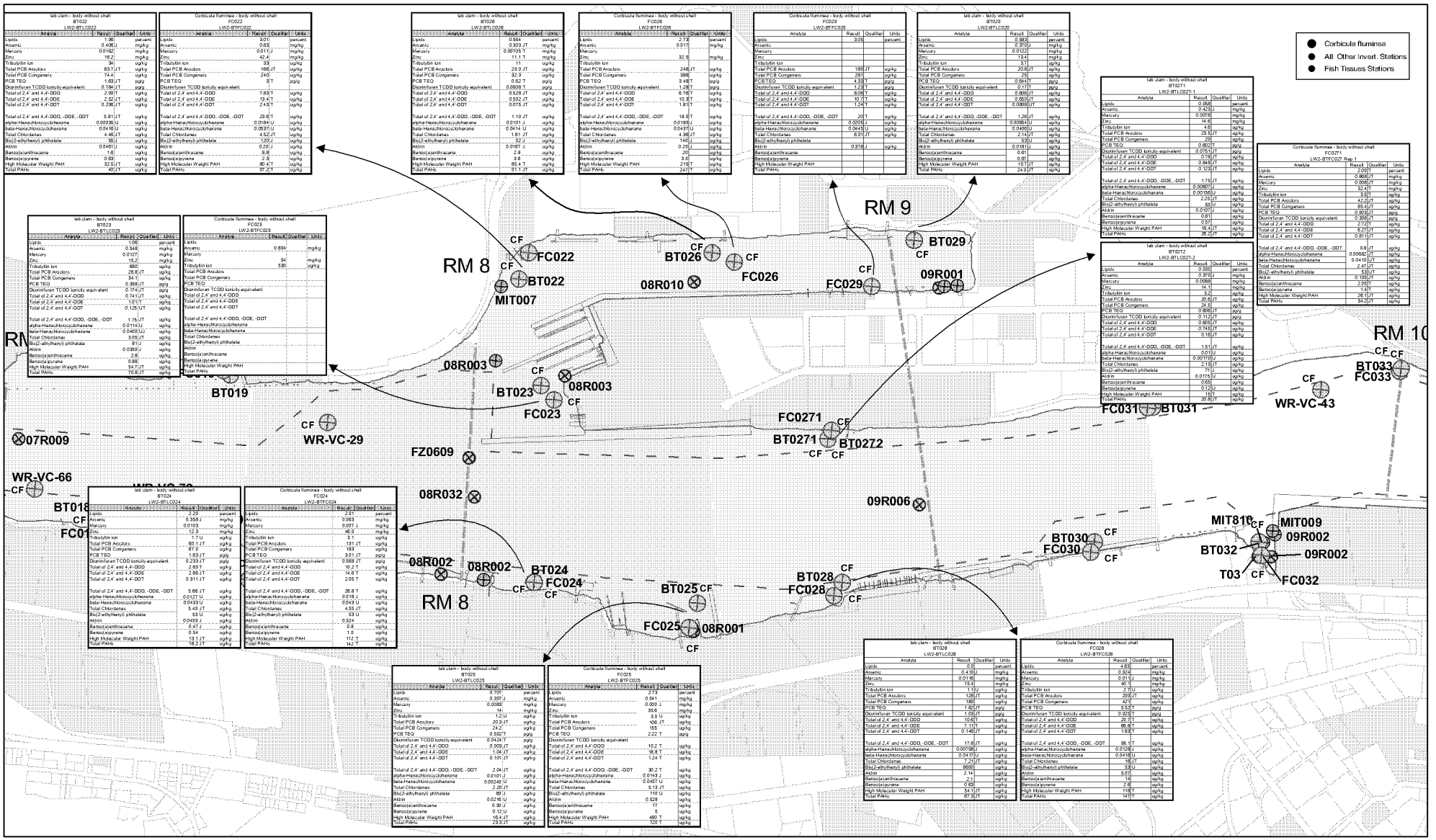
0 1,000 2,000 3,000 Feet

Navigation Channel
River Miles
Docks and Structures
Waterfront Taxlots
Upland Sites



**Map 6.4-4c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
***Corbicula fluminea* - Invertebrate Tissue Analysis**

BZTO104(e)033124




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue MXDs\Tissue_Stations_invert_V2_CFs_Only_D.mxd)
2/1/2007 -- 3:55:55 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

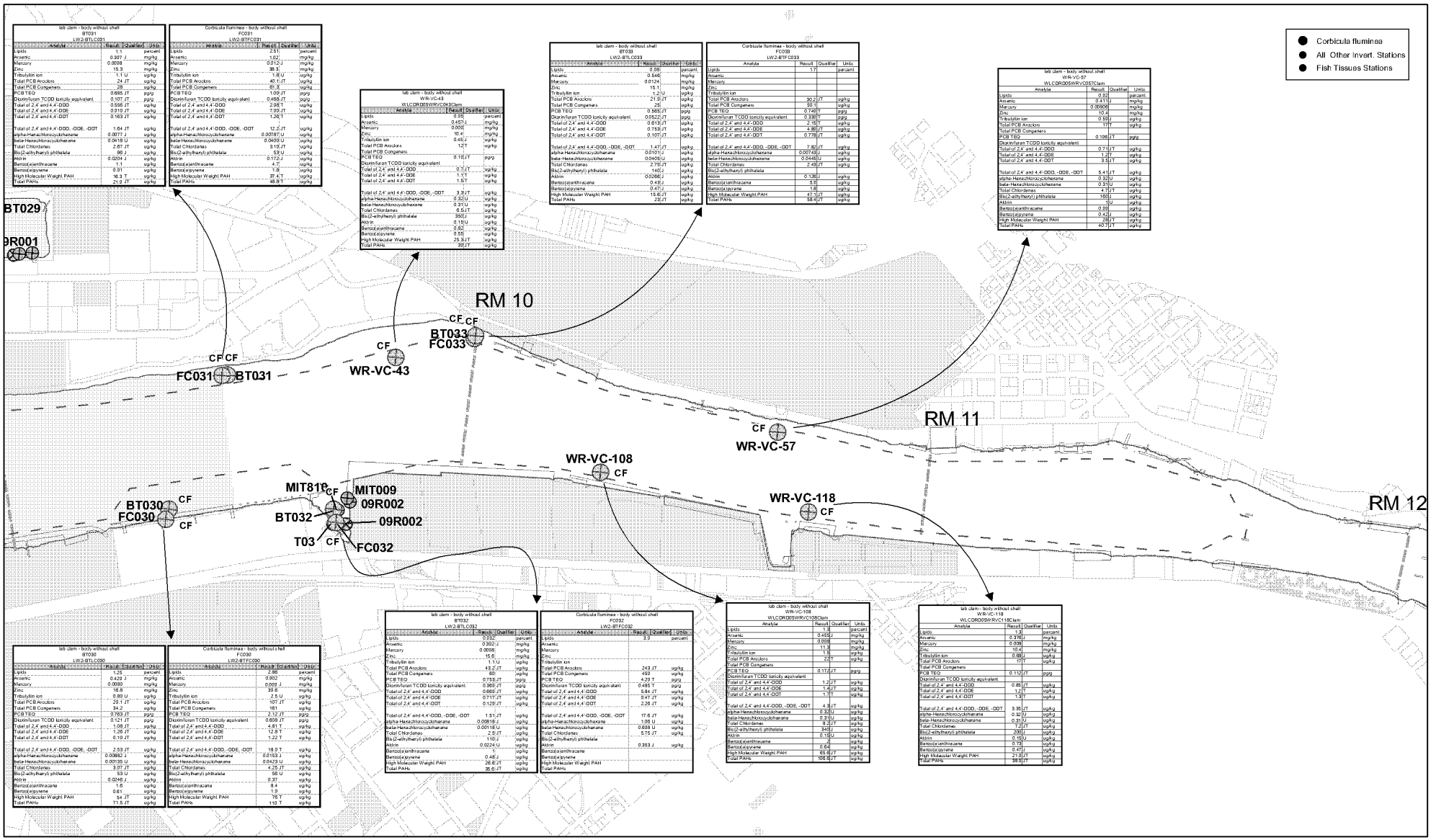
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 1,000 2,000 3,000 Feet

Navigation Channel
River Miles
Docks and Structures
Waterfront Toxlots
Upland Sites

**Map 6.4-4d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
***Corbicula fluminea*- Invertebrate Tissue Analysis**

BZTO104(e)033125




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_invert_V2_CFs_Only_E.mxd)
2/1/2007 -- 4:21:34 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

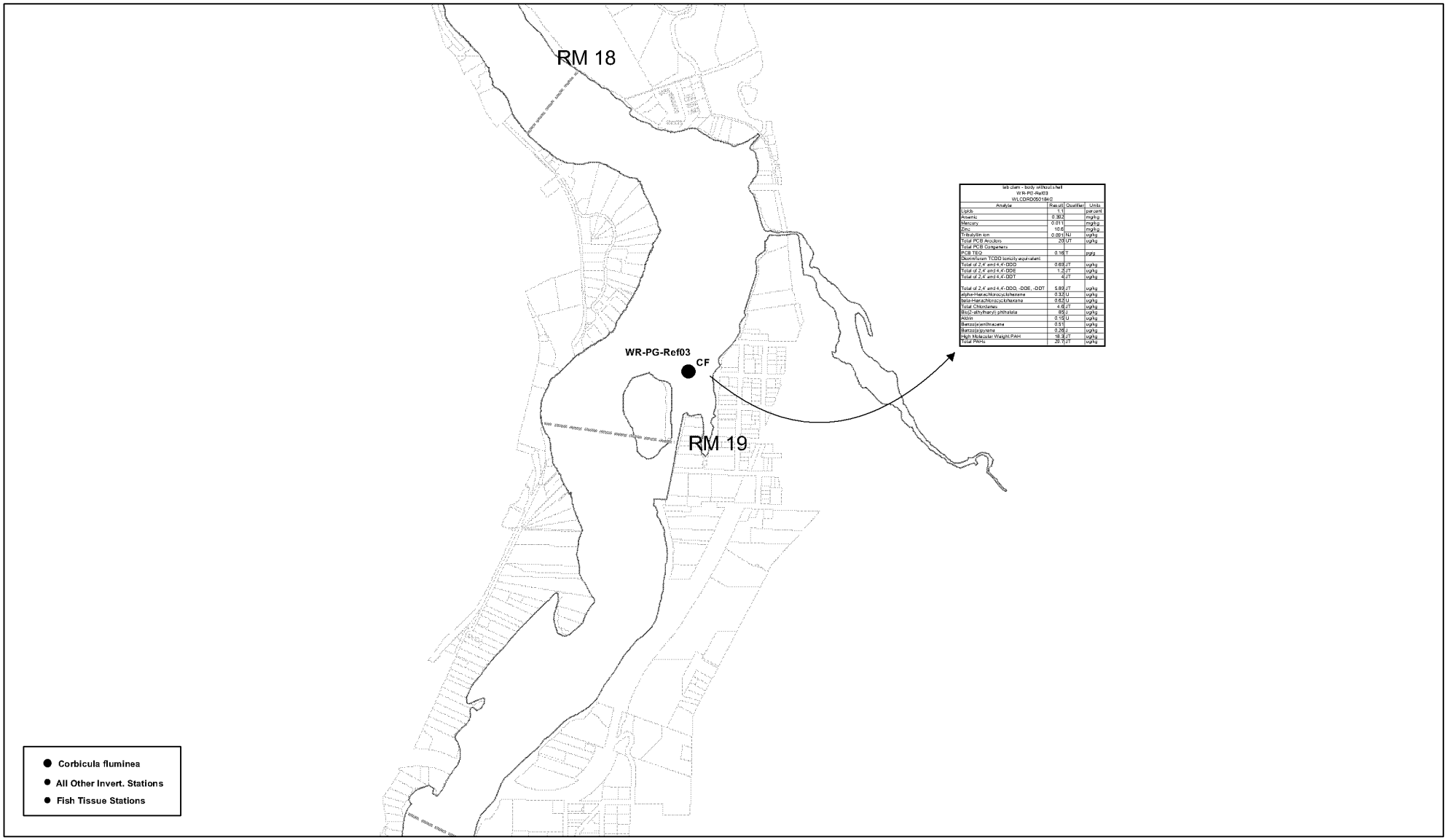
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 1,000 2,000 3,000 Feet

Navigation Channel
River Miles
Decks and Structures
Waterfront Taxlots
Upland Sites

**Map 6.4-4e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
***Corbicula fluminea* - Invertebrate Tissue Analysis**

BZTO104(e)033126



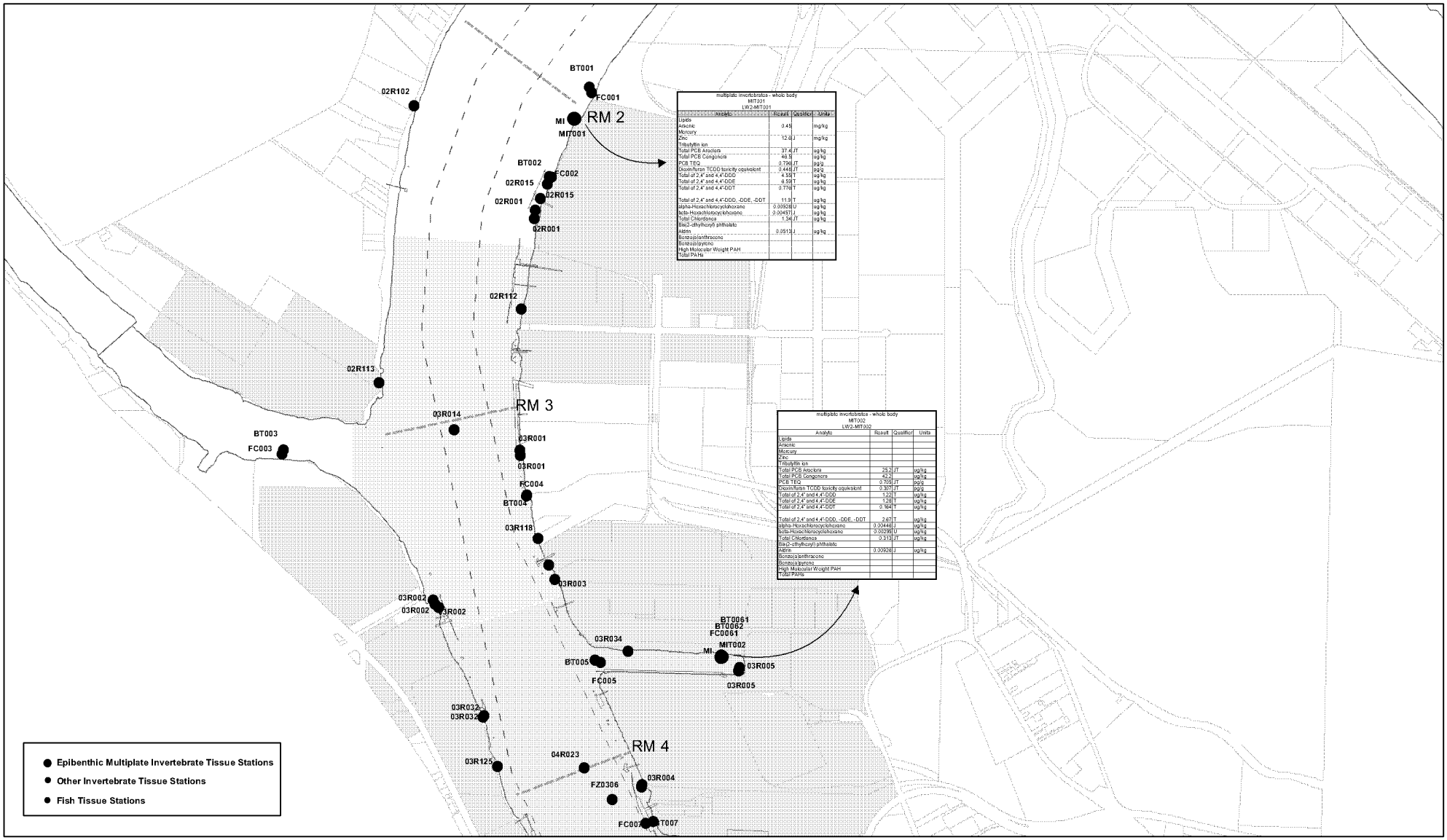

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_invert_V2_CFs_Only_F.mxd)
2/1/2007 -- 4:35:29 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.4-4f**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
***Corbicula fluminea* - Invertebrate Tissue Analysis**

BZTO104(e)033127




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_invert_V2_A_MultiplateOnly.mxd)
2/1/2007 – 5:12:22 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

N

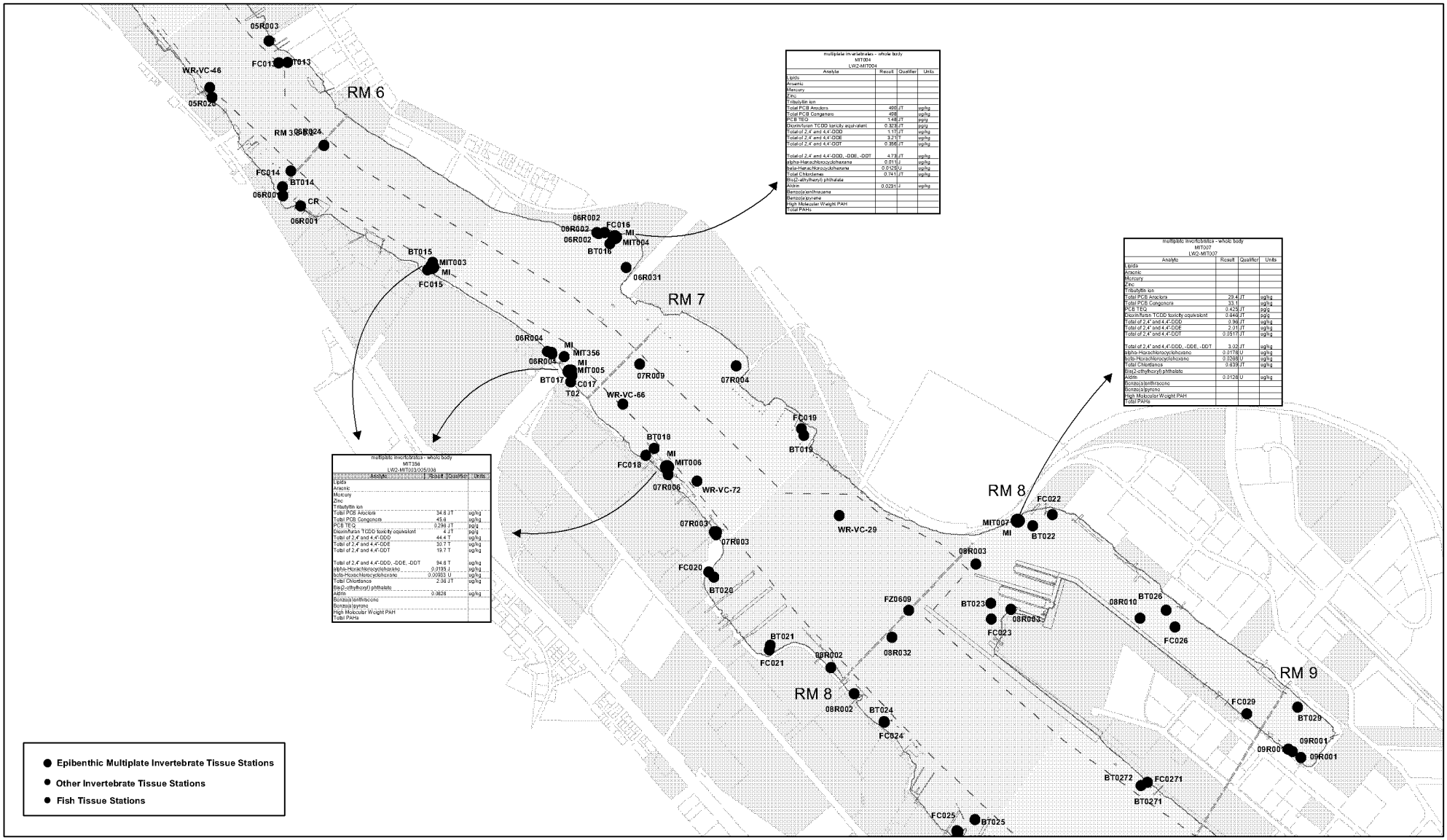
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

0 1,000 2,000 3,000 Feet

Navigation Channel
River Miles
Docks and Structures
Waterfront Taxlots
Upland Sites

**Map 6.4-5a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Epibenthic Multiplate Invertebrate Tissue Analysis**

BZTO104(e)033128



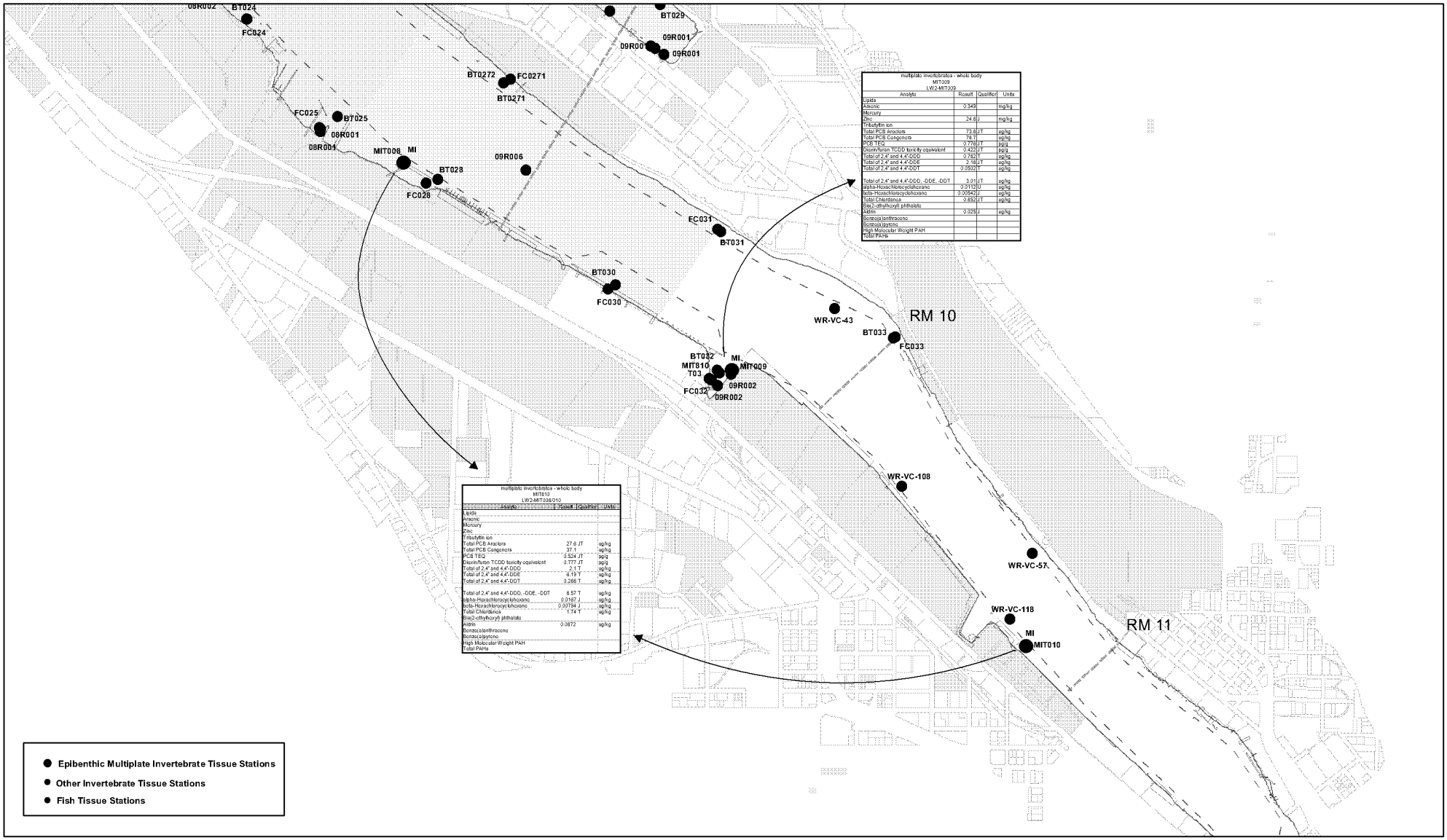

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_invert_V2_B_MultiplateOnly.mxd)
2/5/2007 -- 10:14:02 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.4-5b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Epibenthic Multiplate Invertebrate Tissue Analysis**

BZTO104(e)033129




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Tissue_Stations_invert_V2_C_MultiplateOnly.mxd)
2/5/2007 -- 10:34:39 AM

integral consulting inc.

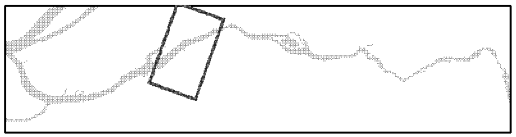
LWG LOWER WILLAMETTE GROUP

N

0 1,000 2,000 3,000 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Navigation Channel
River Miles
Docks and Structures
Waterfront Taxlots
Upland Sites



**Map 6.4-5c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Epibenthic Multiplate Invertebrate Tissue Analysis**

BZTO104(e)033130

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\PCB_Aroclors_Pie_Charts_FishTissue_A.mxd)
2/5/2007 -- 10:38:27 AM

integral consulting inc.

LWG Lower Willamette Group

N

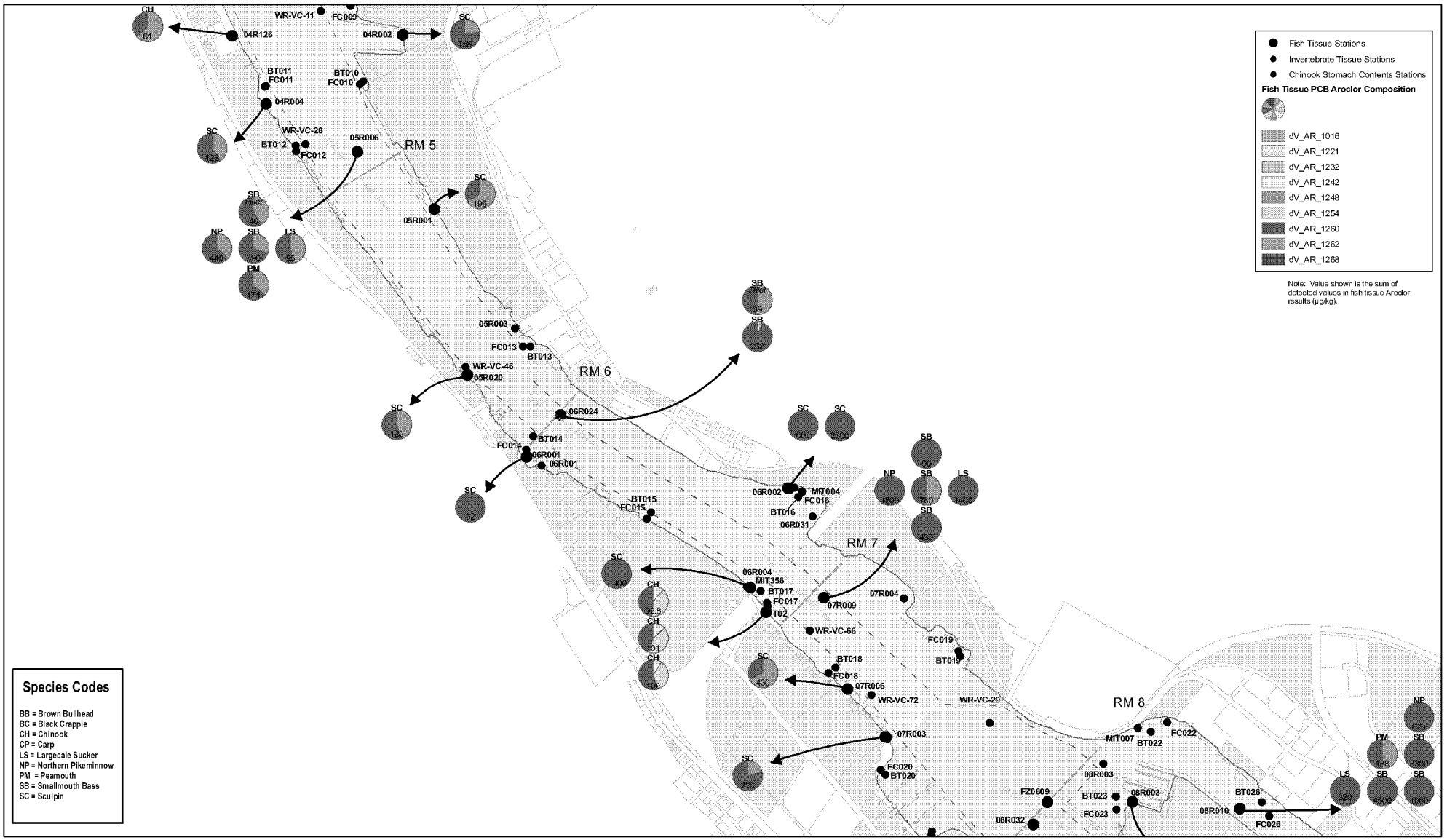
0 1,000 2,000 3,000 Feet

FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Navigation Channel
River Miles
Docks and Structures
Waterfront Taxlots
Upland Sites

**Map 6.4-6a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Aroclor Composition in Fish Tissue**

BZTO104(e)033131

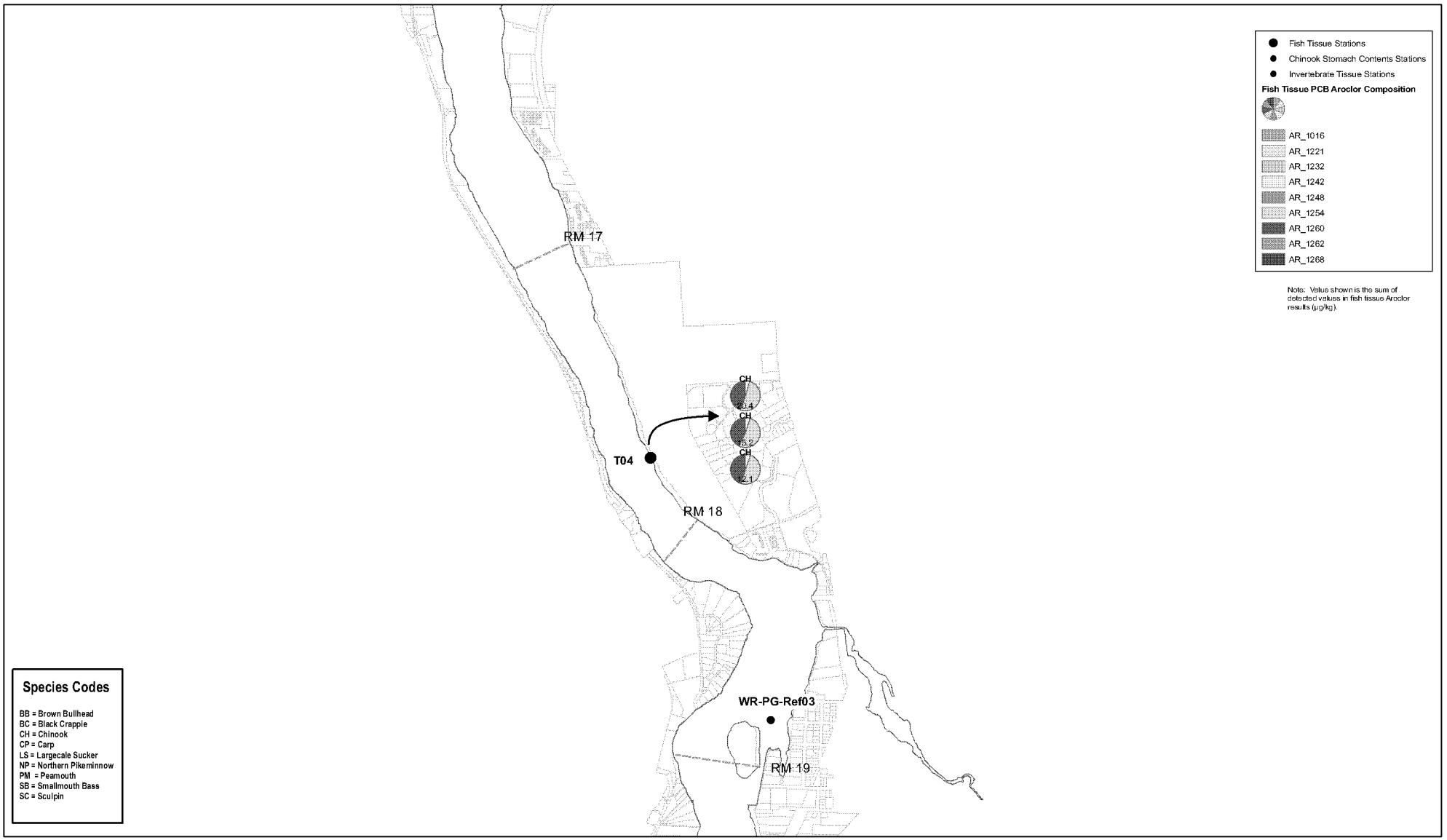



**Map 6.4-6b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Aroclor Composition in Fish Tissue**

BZTO104(e)033132

**Map 6.4-6c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Aroclor Composition in Fish Tissue**

BZTO104(e)033133



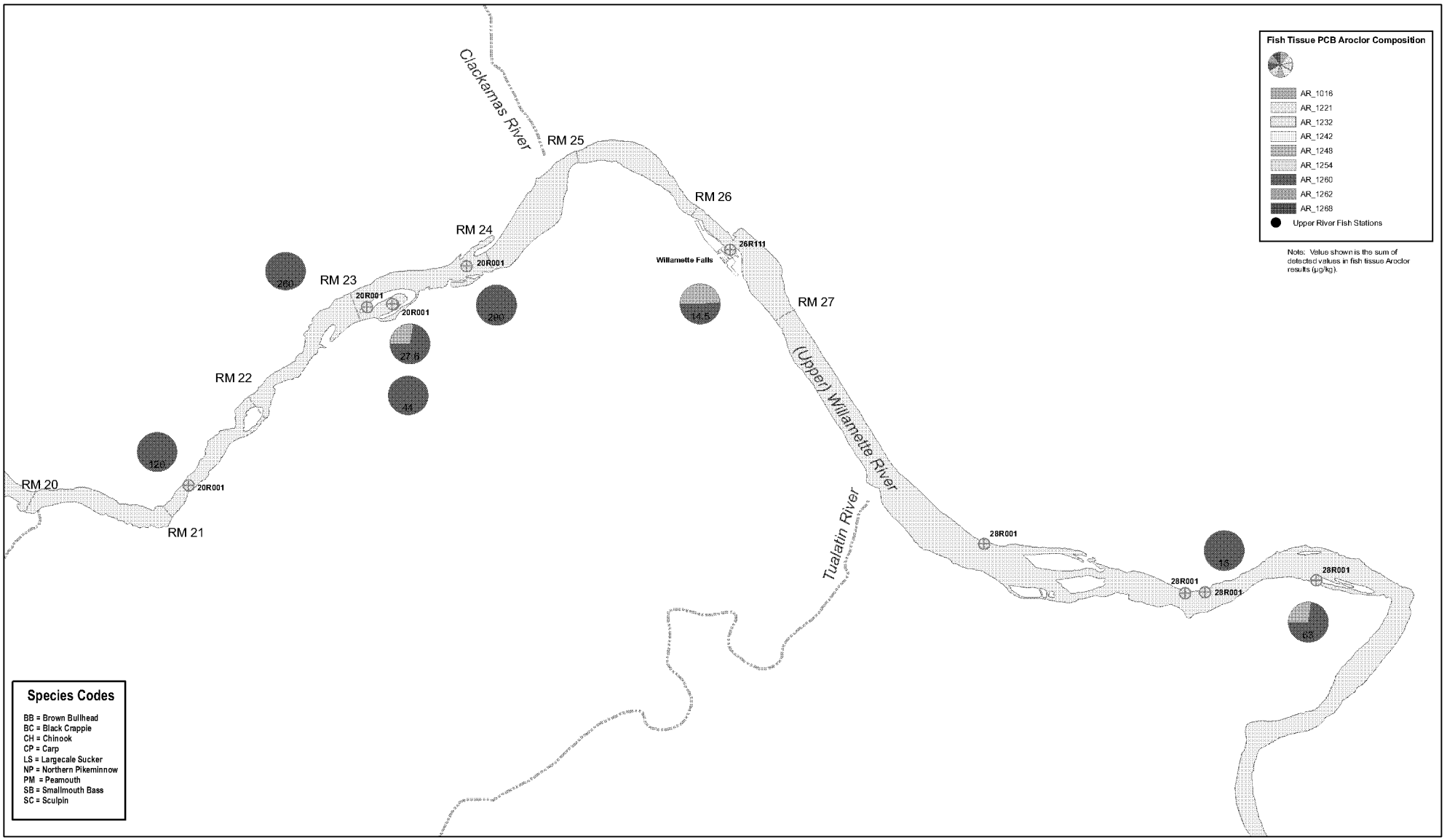

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\PCB_Aroclors_Pie_Charts_FishTissue_D.mxd)
2/5/2007 -- 10:49:11 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.4-6d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Aroclor Composition in Fish Tissue**

BZTO104(e)033134




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Upriver_PCB_Aroclor_Pie_Charts_FishTissue_.mxd)
2/5/2007 -- 10:54:15 AM

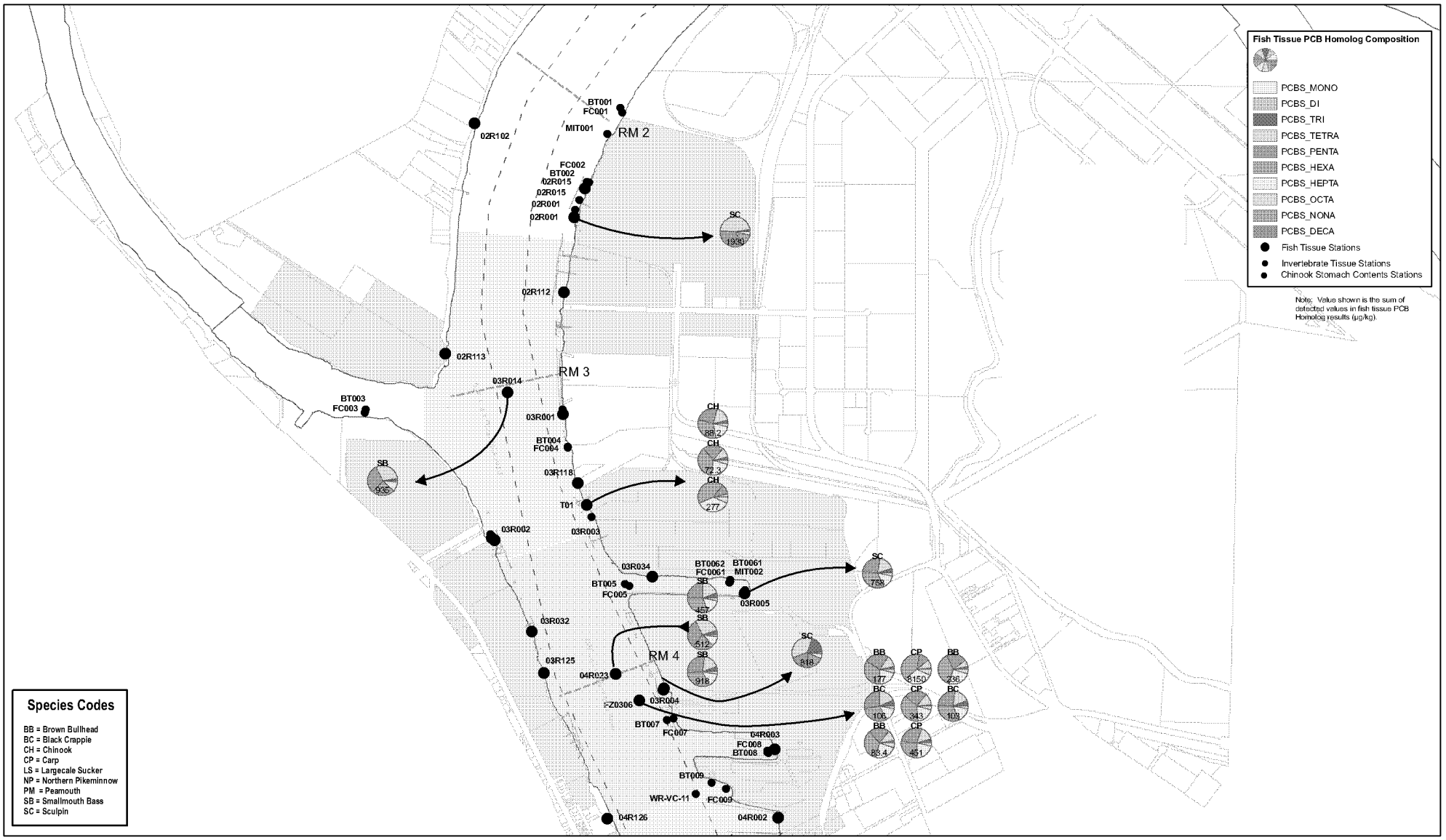
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.4-6e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Aroclor Composition in Fish Tissue**

BZTO104(e)033135



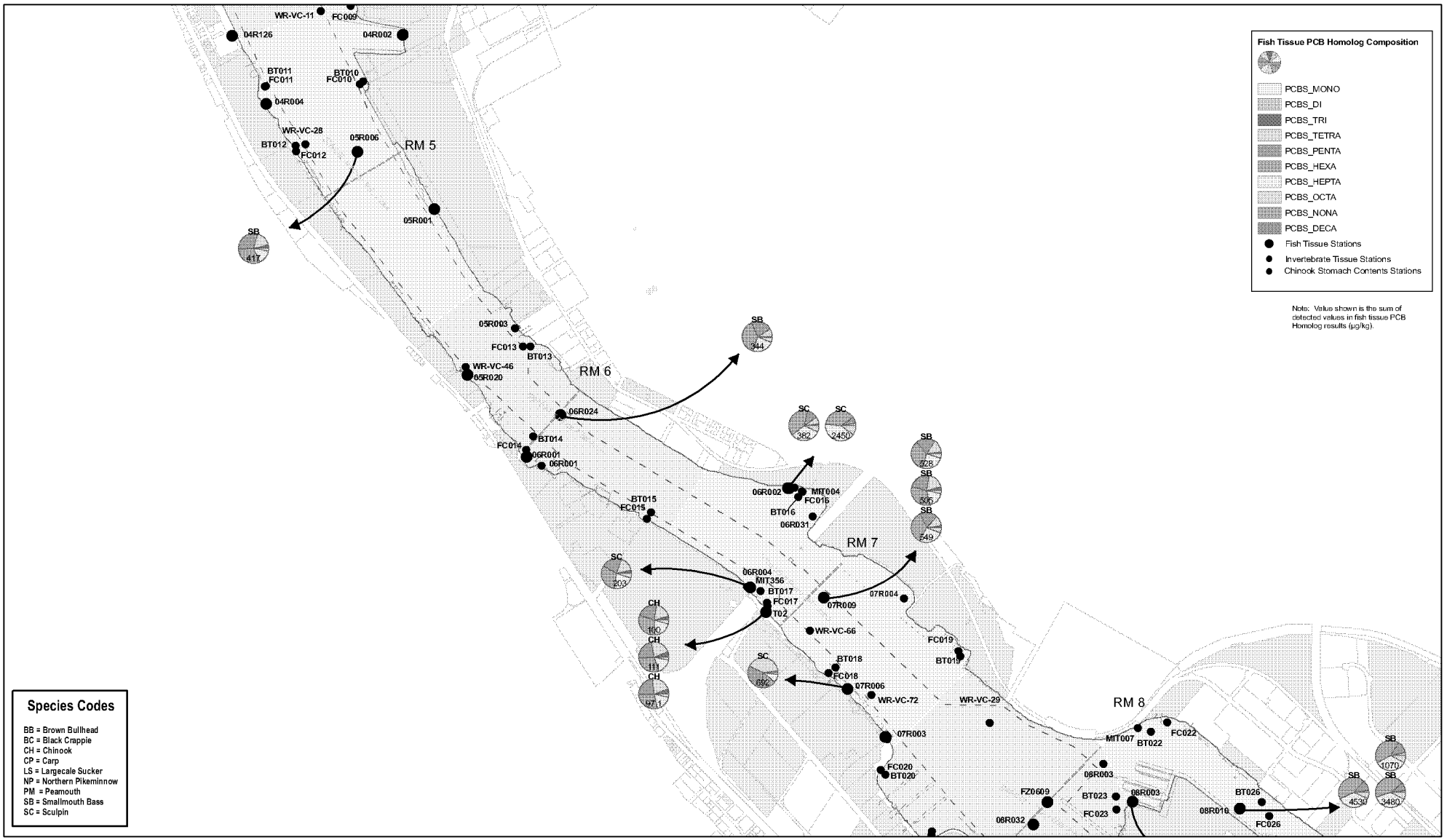

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\PCB_Homologs_Pie_Charts_FishTissue_A.mxd)
2/5/2007 – 10:57:34 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.4-7a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Homolog Composition in Fish Tissue**

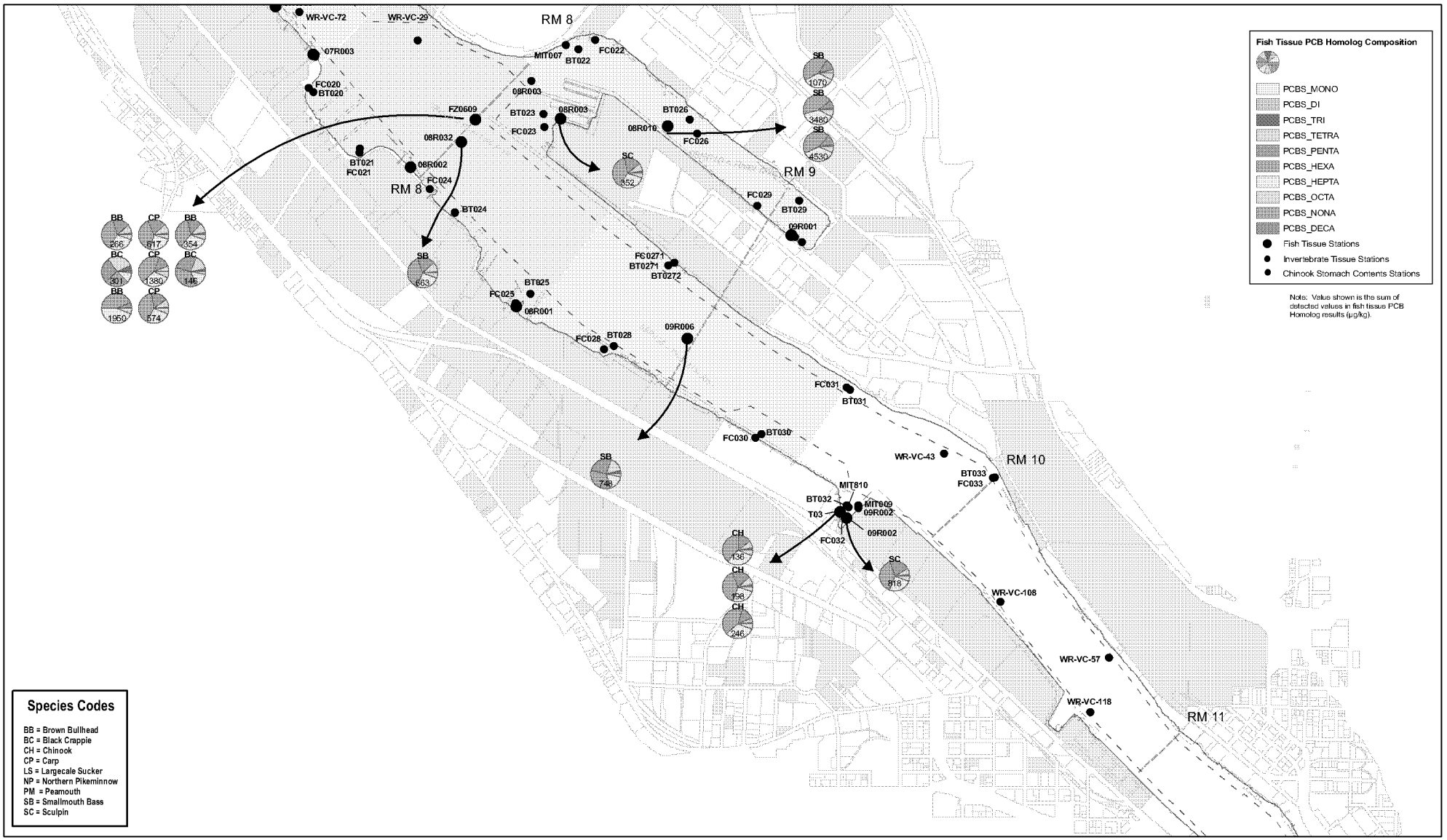
BZTO104(e)033136




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\PCB_Homologs_Pie_Charts_FishTissue_B.mxd)
2/5/2007 -- 10:59:33 AM

**Map 6.4-7b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Homolog Composition in Fish Tissue**

BZTO104(e)033137



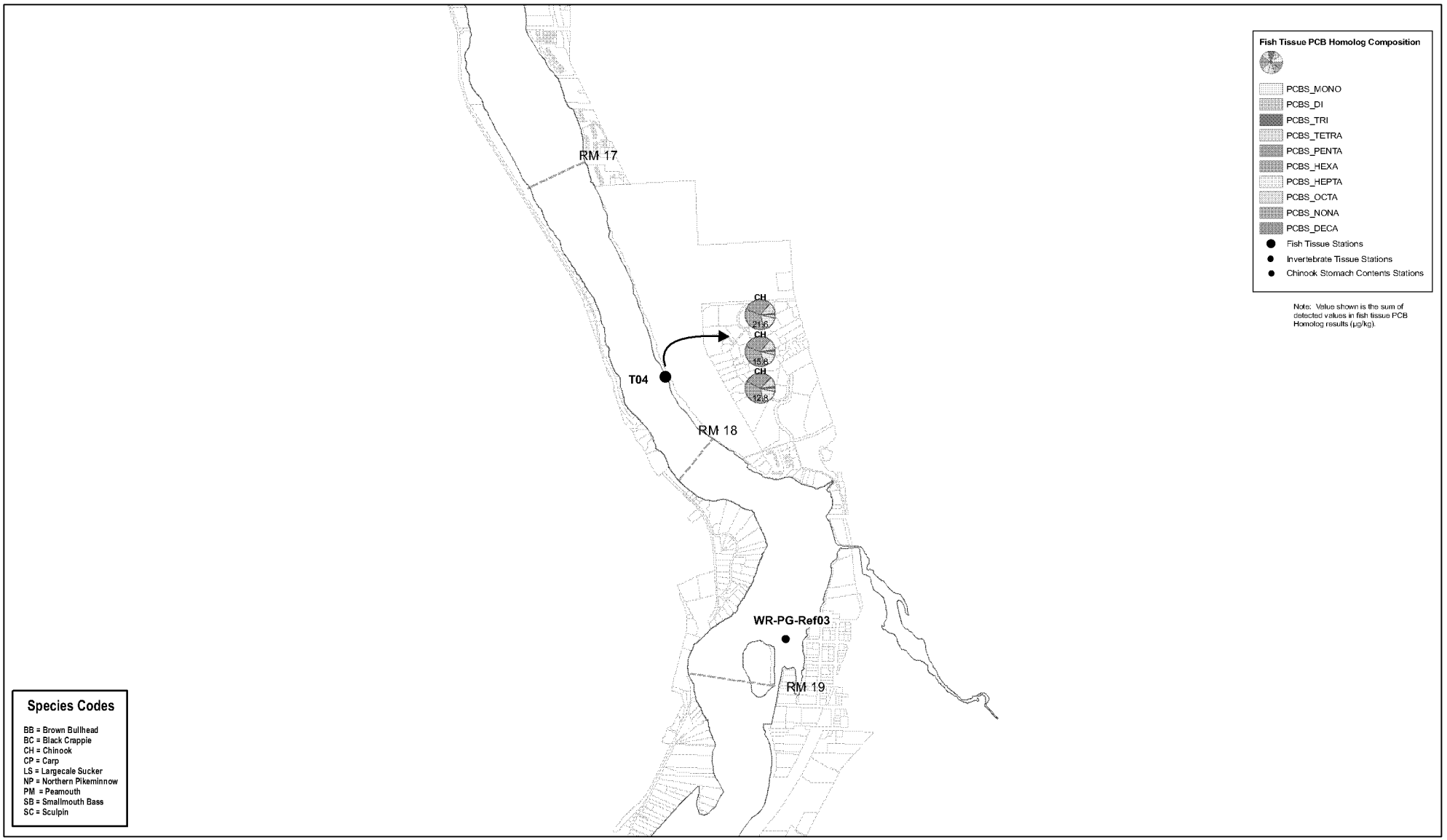

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\PCB_Homologs_Pie_Charts_FishTissue_C.mxd)
2/5/2007 – 11:01:04 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.4-7c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Homolog Composition in Fish Tissue**

BZTO104(e)033138



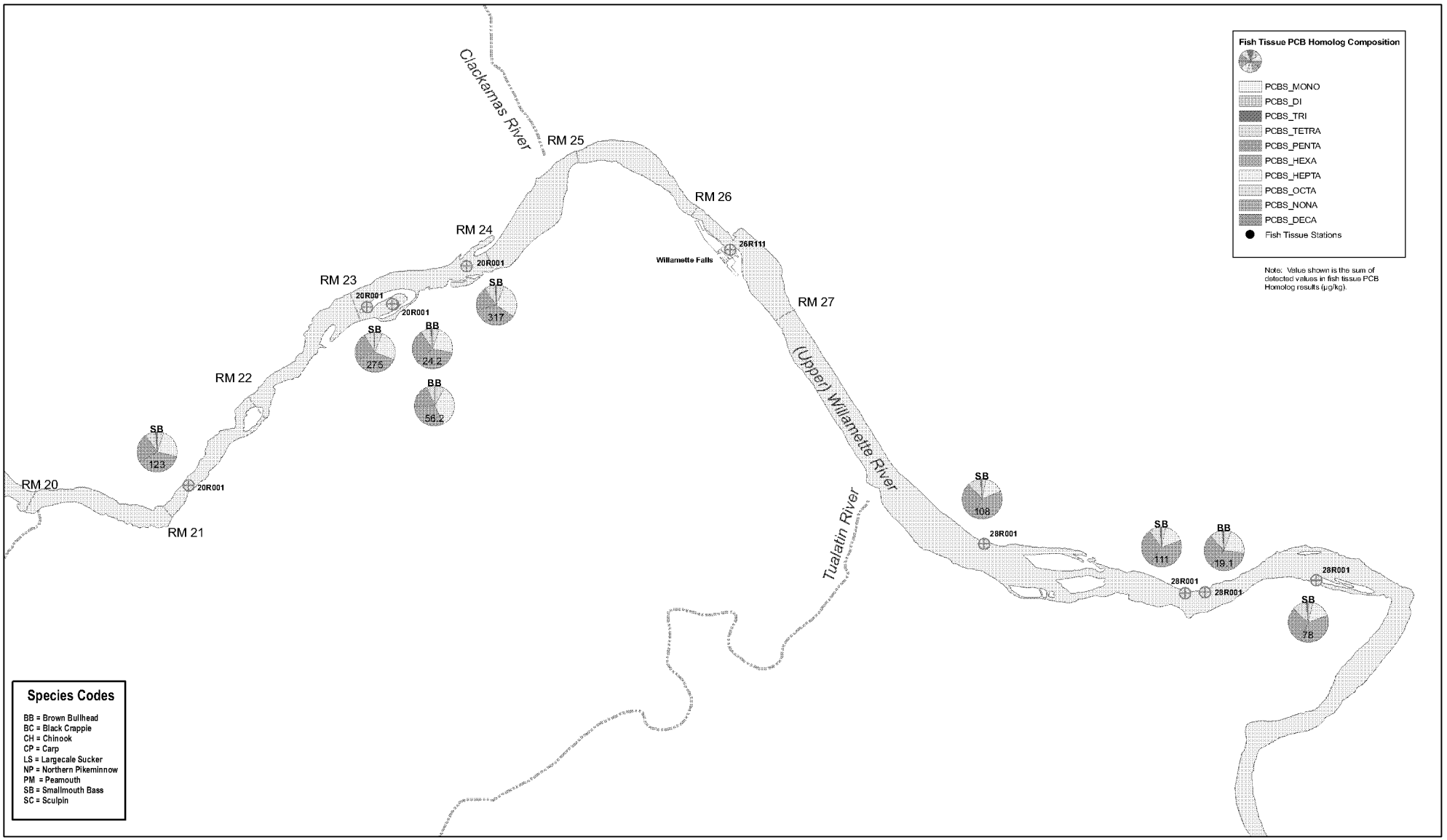

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\PCB_Homologs_Pie_Charts_FishTissue_D.mxd)
2/5/2007 -- 11:02:43 AM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.4-7d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Homolog Composition in Fish Tissue**

BZTO104(e)033139



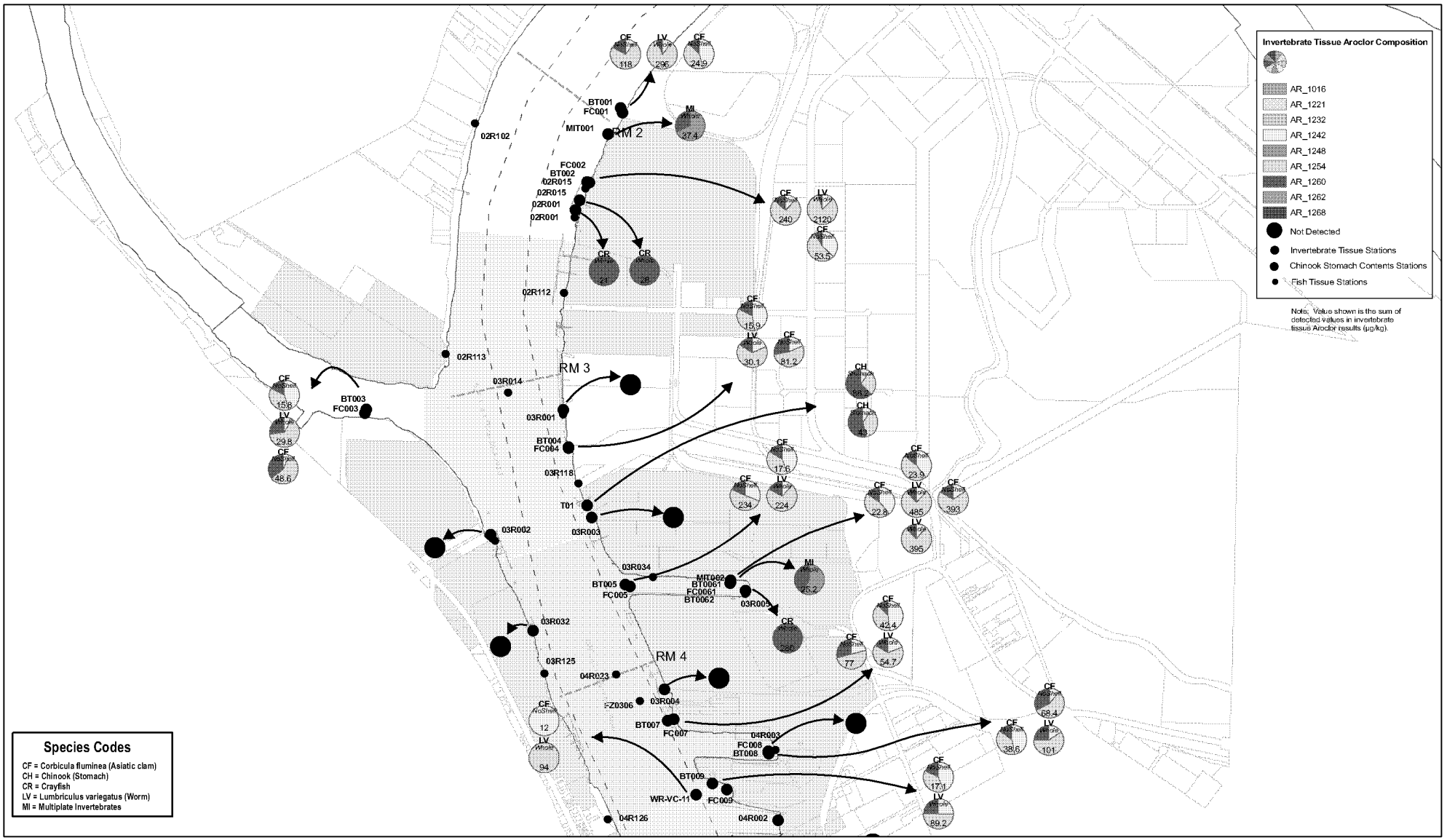

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Up-river_PCB_Homolog_Pie_Charts_FishTissue_.mxd)
2/5/2007 – 11:03:59 AM

integral consulting inc.

LWG Lower Willamette Group

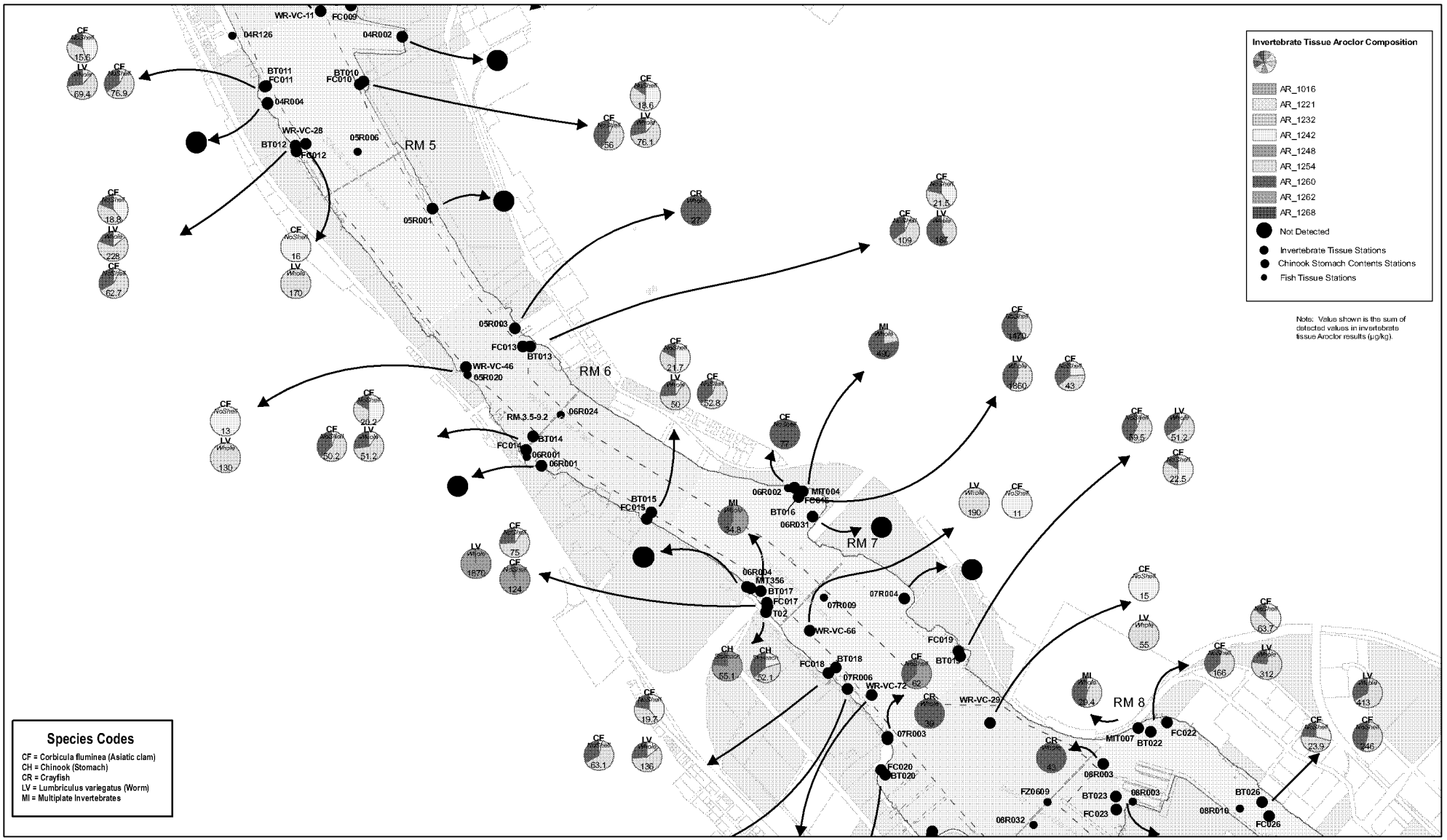
**Map 6.4-7e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Homolog Composition in Fish Tissue**

BZTO104(e)033140



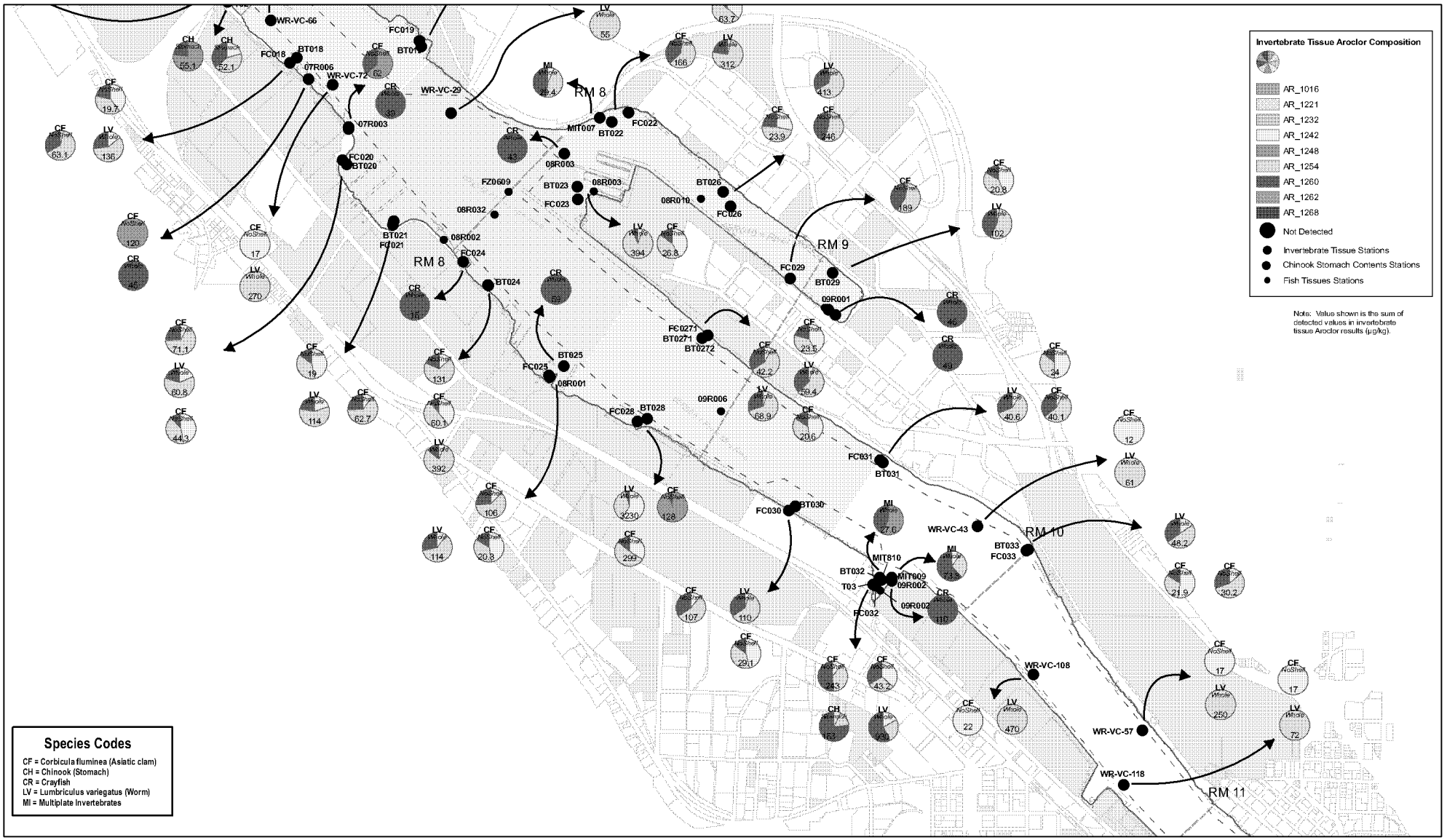

**Map 6.4-8a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Aroclor in Invertebrate Tissue**

BZTO104(e)033141




**Map 6.4-8b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Aroclor in Invertebrate Tissue**

BZTO104(e)033142




**Map 6.4-8c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Aroclor in Invertebrate Tissue**

BZTO104(e)033143

integral consulting inc.

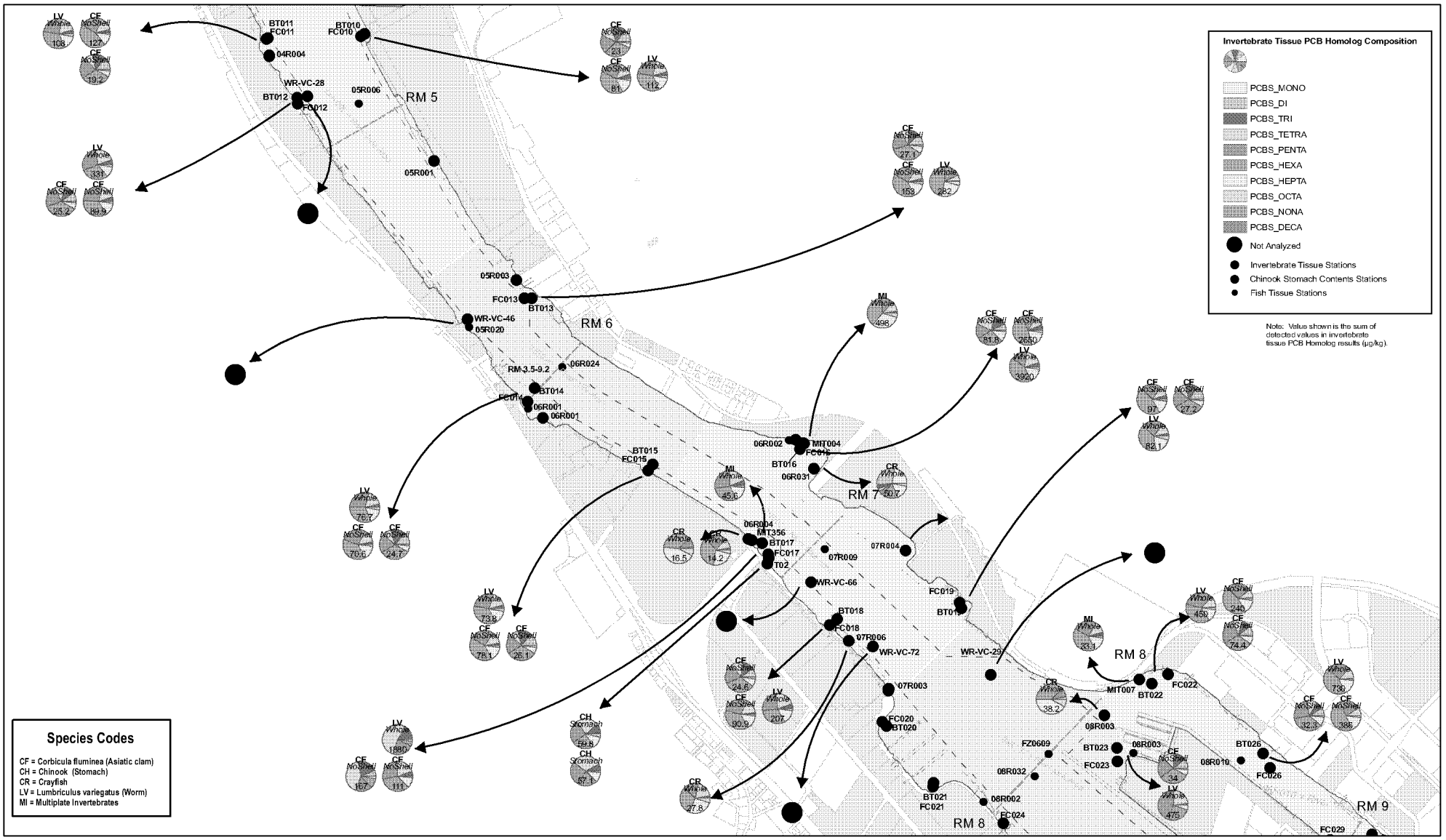
LWG LOWER WILLAMETTE GROUP

**Map 6.4-8d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Aroclor in Invertebrate Tissue**

BZTO104(e)033144

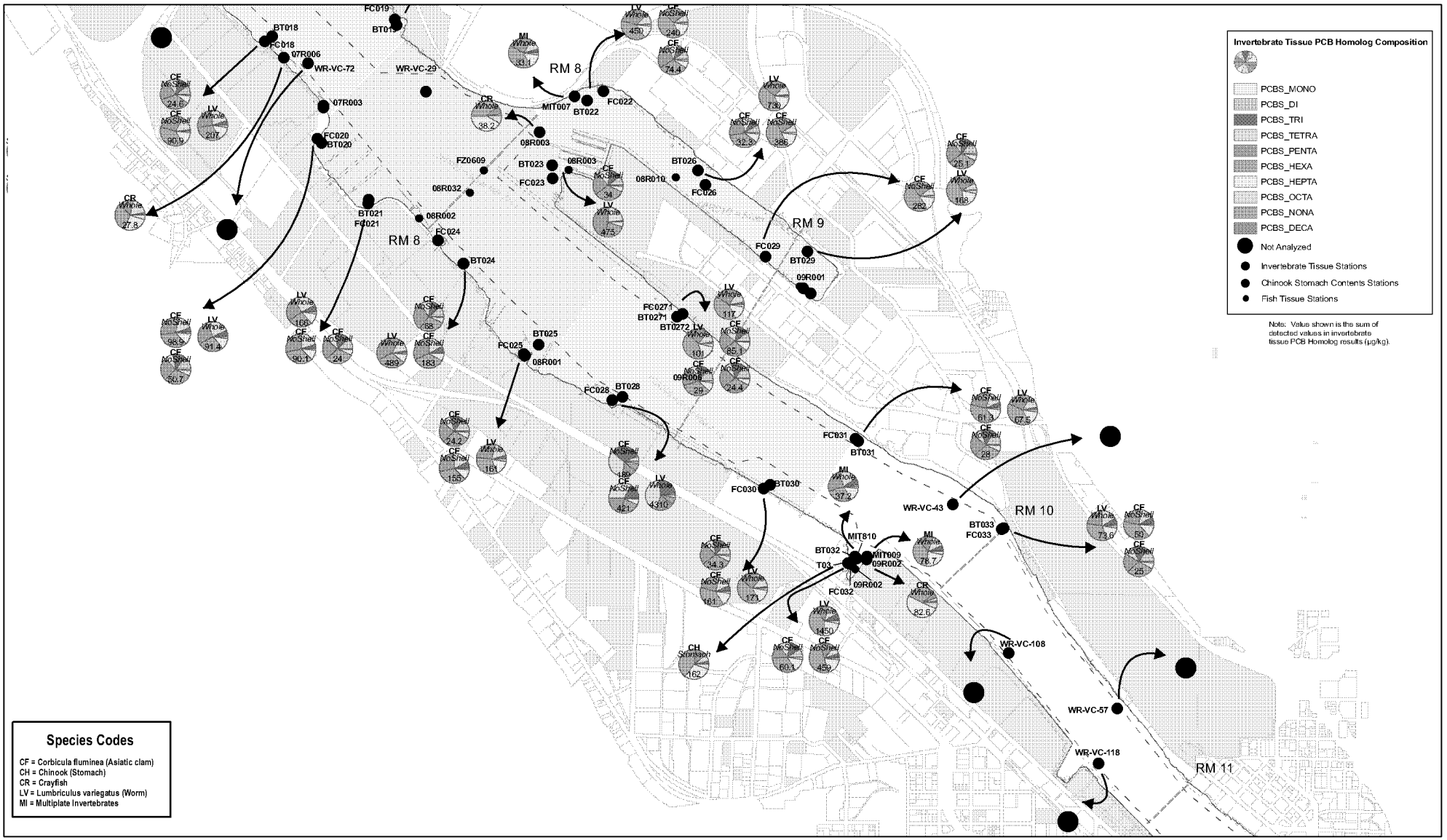
**Map 6.4-9a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Homolog Composition in Invertebrate Tissue**

BZTO104(e)033145




**Map 6.4-9b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Homolog Composition in Invertebrate Tissue**

BZTO104(e)033146

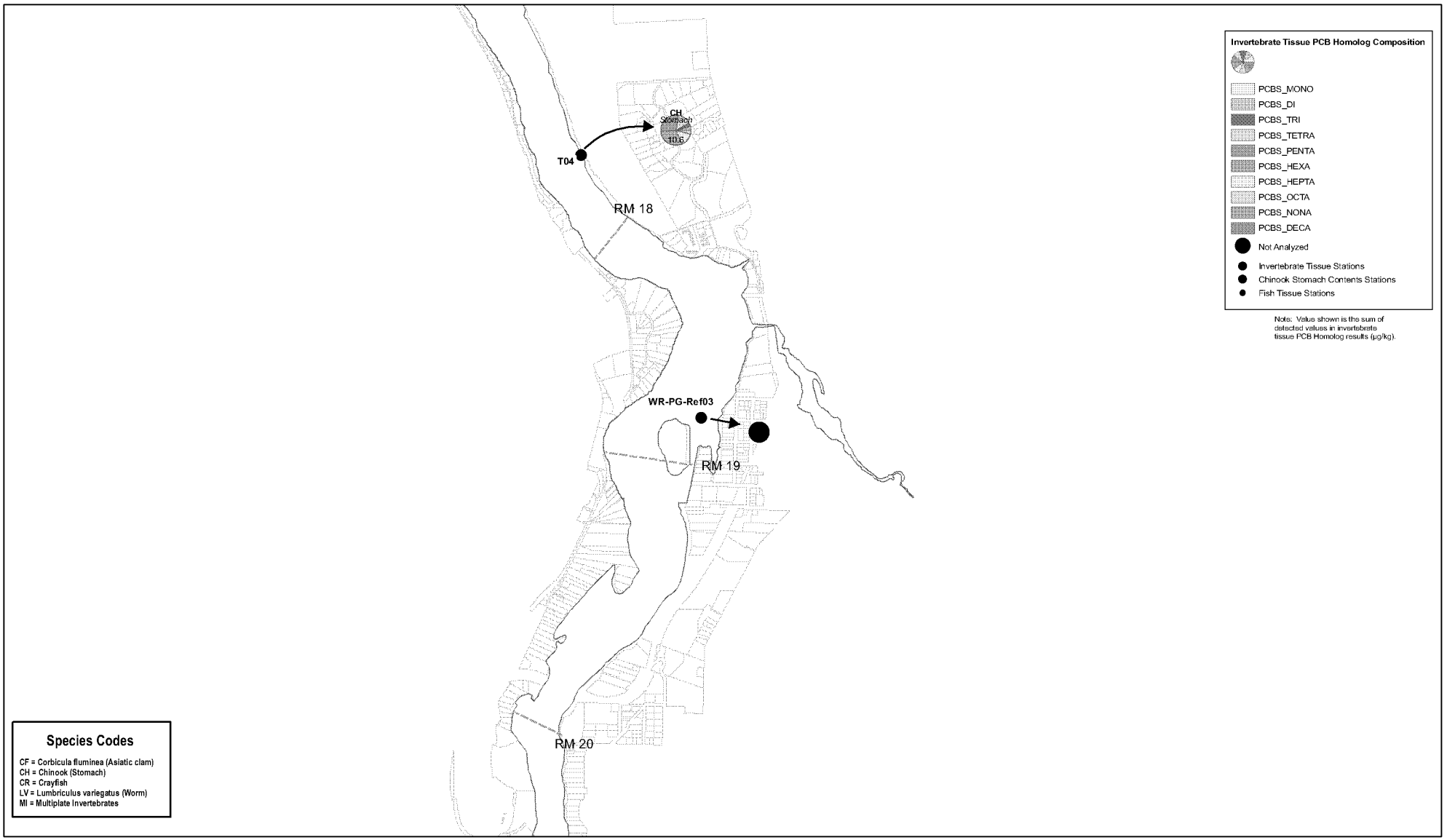



integral consulting inc.

LWG LOWER WILLAMETTE GROUP

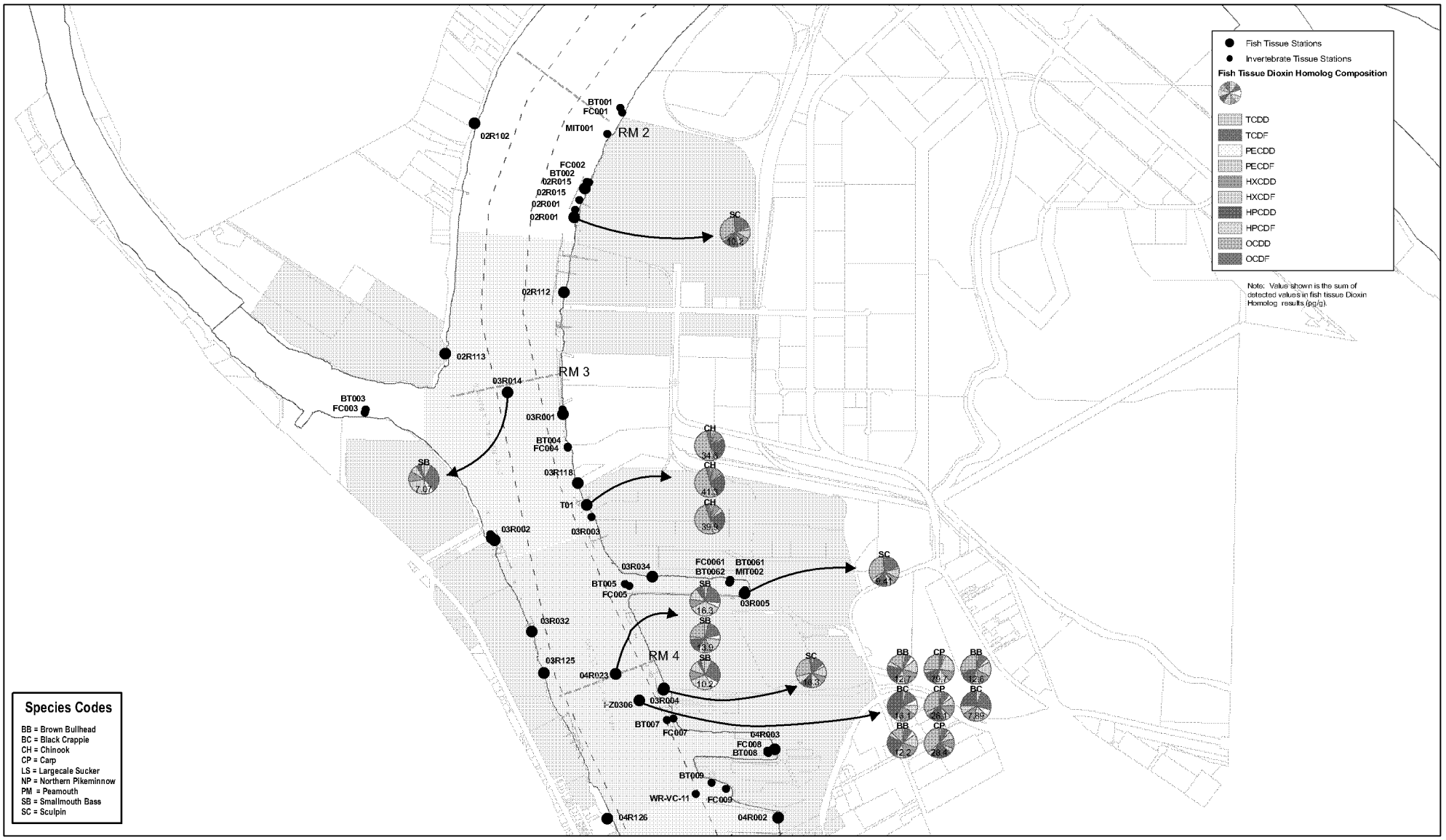
**Map 6.4-9c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Homolog Composition in Invertebrate Tissue**

BZTO104(e)033147




**Map 6.4-9d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PCB Homolog Composition in Invertebrate Tissue**

BZTO104(e)033148




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Dioxin_Homologe_Pie_Charts_FishTissue_A.mxd)
2/5/2007 – 12:09:23 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

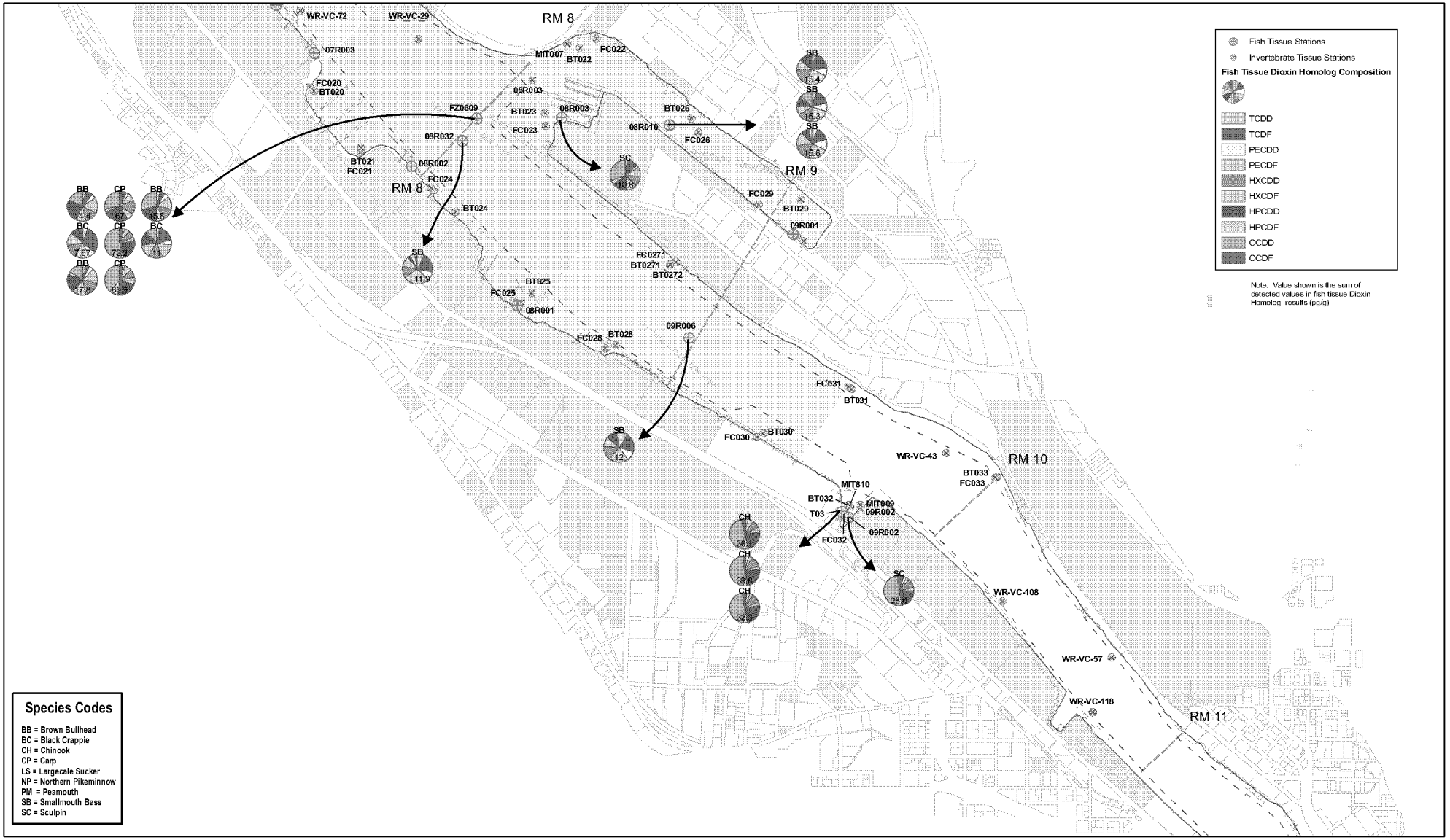
**Map 6.4-10a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Dioxin Homolog Composition in Fish Tissue**

BZTO104(e)033149

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Dioxin_Homologe_Pie_Charts_FishTissue_B.mxd)
2/5/2007 – 1:03:19 PM

**Map 6.4-10b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Dioxin Homolog Composition in Fish Tissue**

BZTO104(e)033150




**Species Codes**

BB = Brown Bullhead
BC = Black Crappie
CH = Chinook
CP = Carp
LS = Largecale Sucker
NP = Northern Pikeminnow
PM = Peamouth
SB = Smallmouth Bass
SC = Sculpin

integral consulting inc.

LWG Lower Willamette Group

N

0 1,000 2,000 3,000 Feet

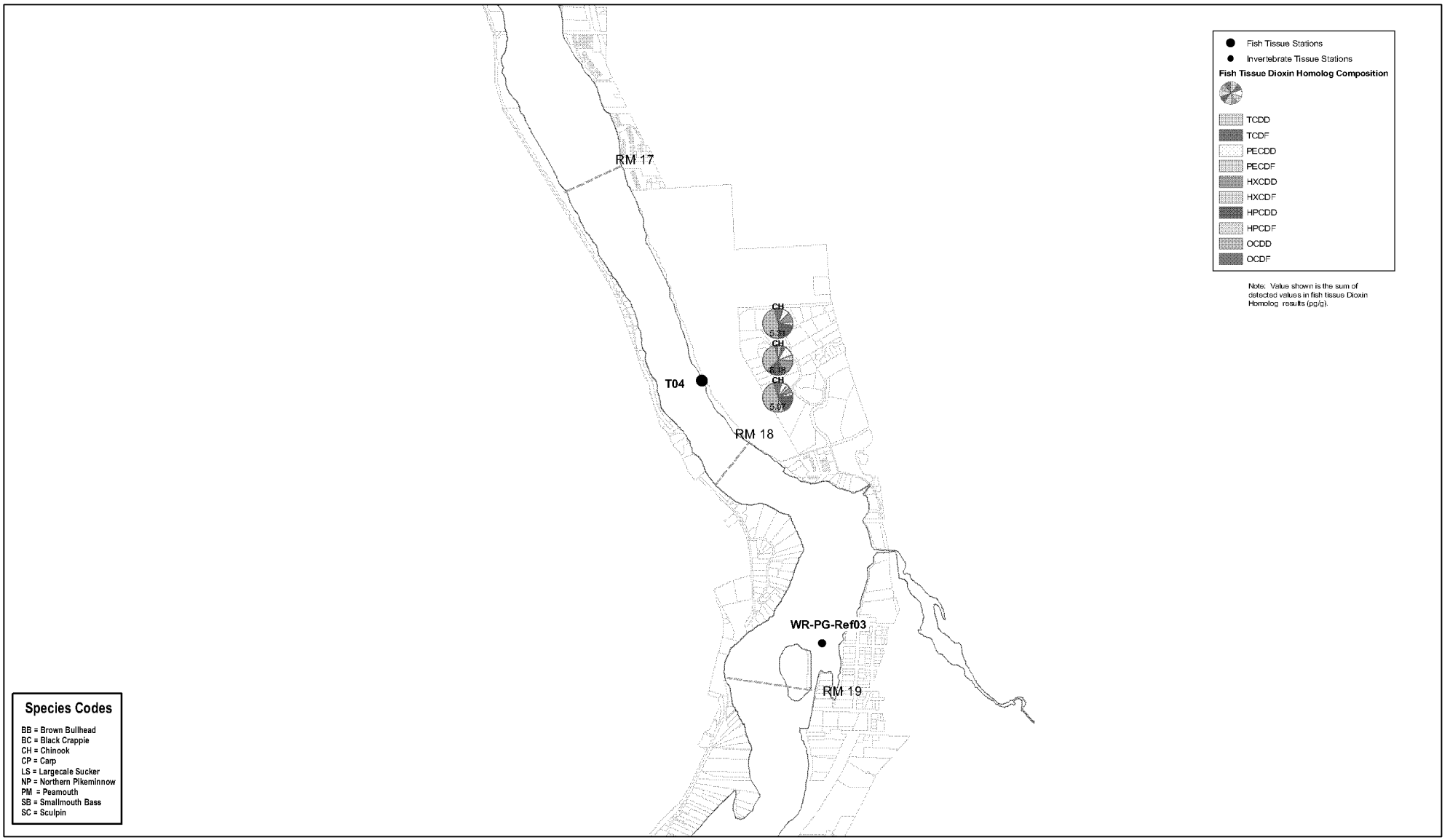
FEATURE SOURCES:
Transportation, Property, or Boundaries: Metro RLIS .
Channel & River miles: US Army Corps of Engineers.
Bathymetric Information: David Evans and Associates, Inc.

Navigation Channel
River Miles
Docks and Structures
Waterfront Taxlots
Upland Sites

**Map 6.4-10c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Dioxin Homolog Composition in Fish Tissue**

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Dioxin_Homologe_Pie_Charts_FishTissue_C.mxd)
2/5/2007 – 2:29:49 PM

BZTO104(e)033151



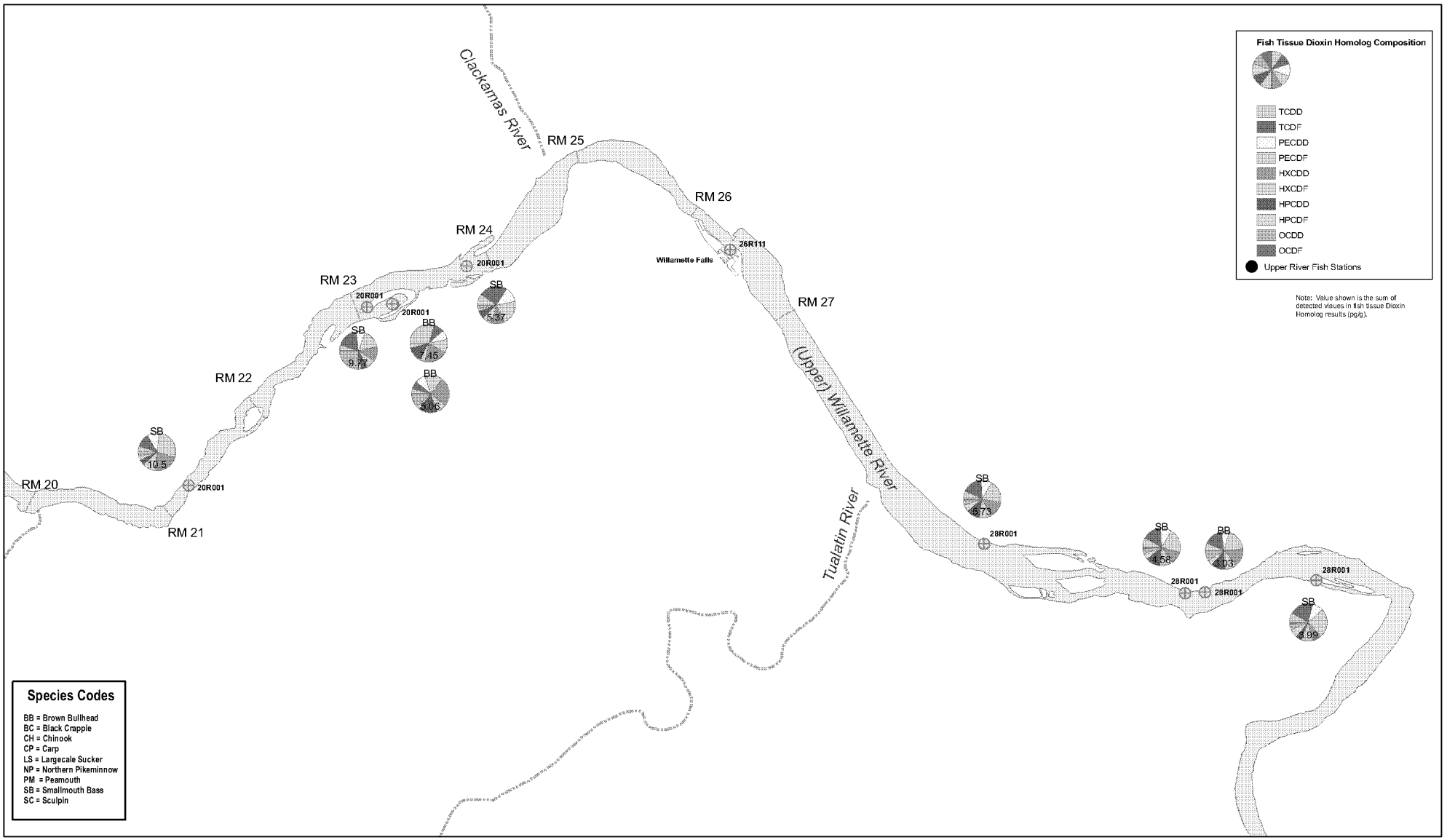

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Dioxin_Homologe_Pie_Charts_FishTissue_D.mxd)
2/5/2007 – 1:59:53 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.4-10d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Dioxin Homolog Composition in Fish Tissue**

BZTO104(e)033152



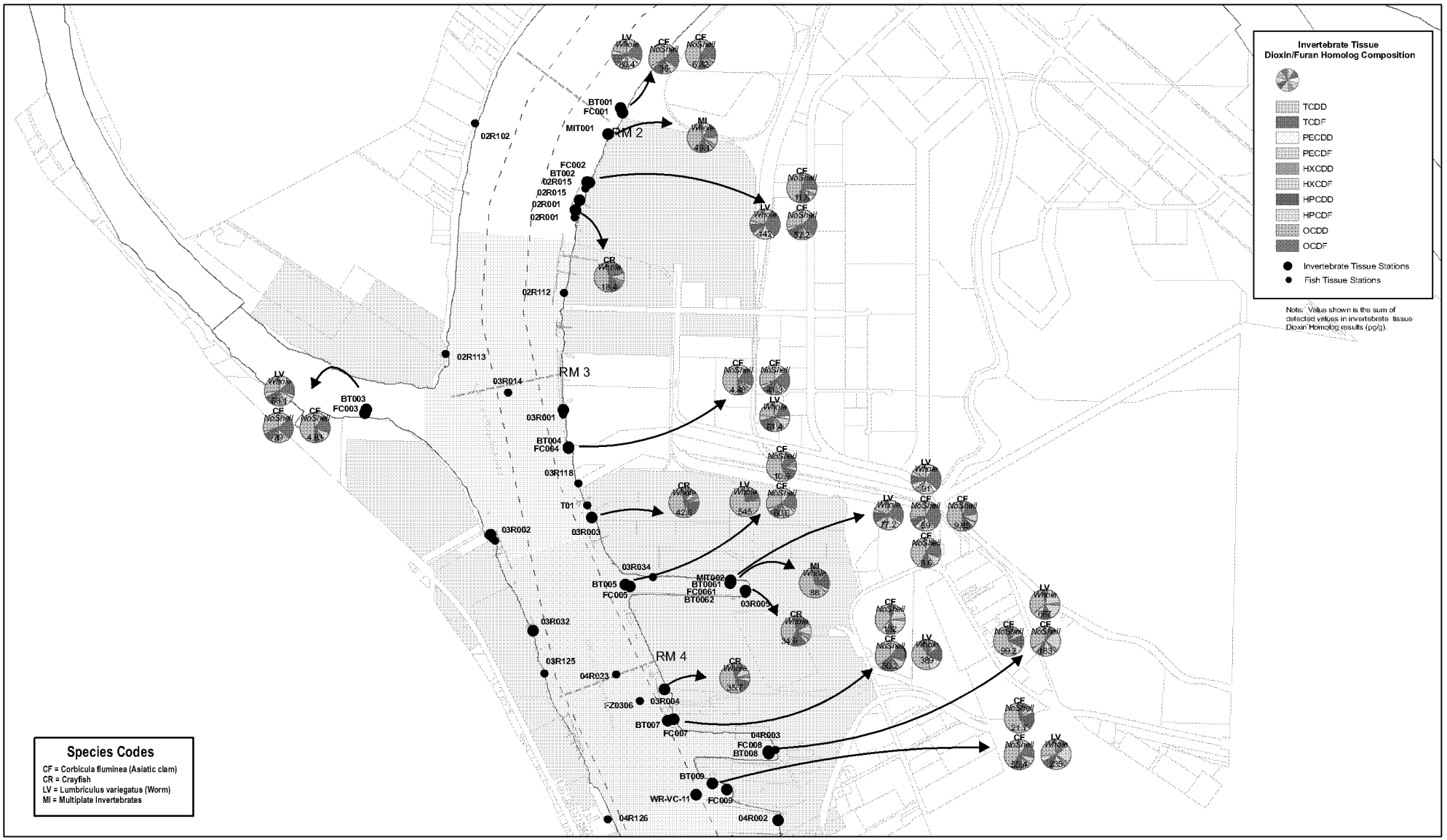

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Dioxin_Homolog_Up-river_Pie_Charts_FishTissue_.mxd)
2/5/2007 – 2:05:10 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.4-10e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Dioxin Homolog Composition in Fish Tissue**

BZTO104(e)033153

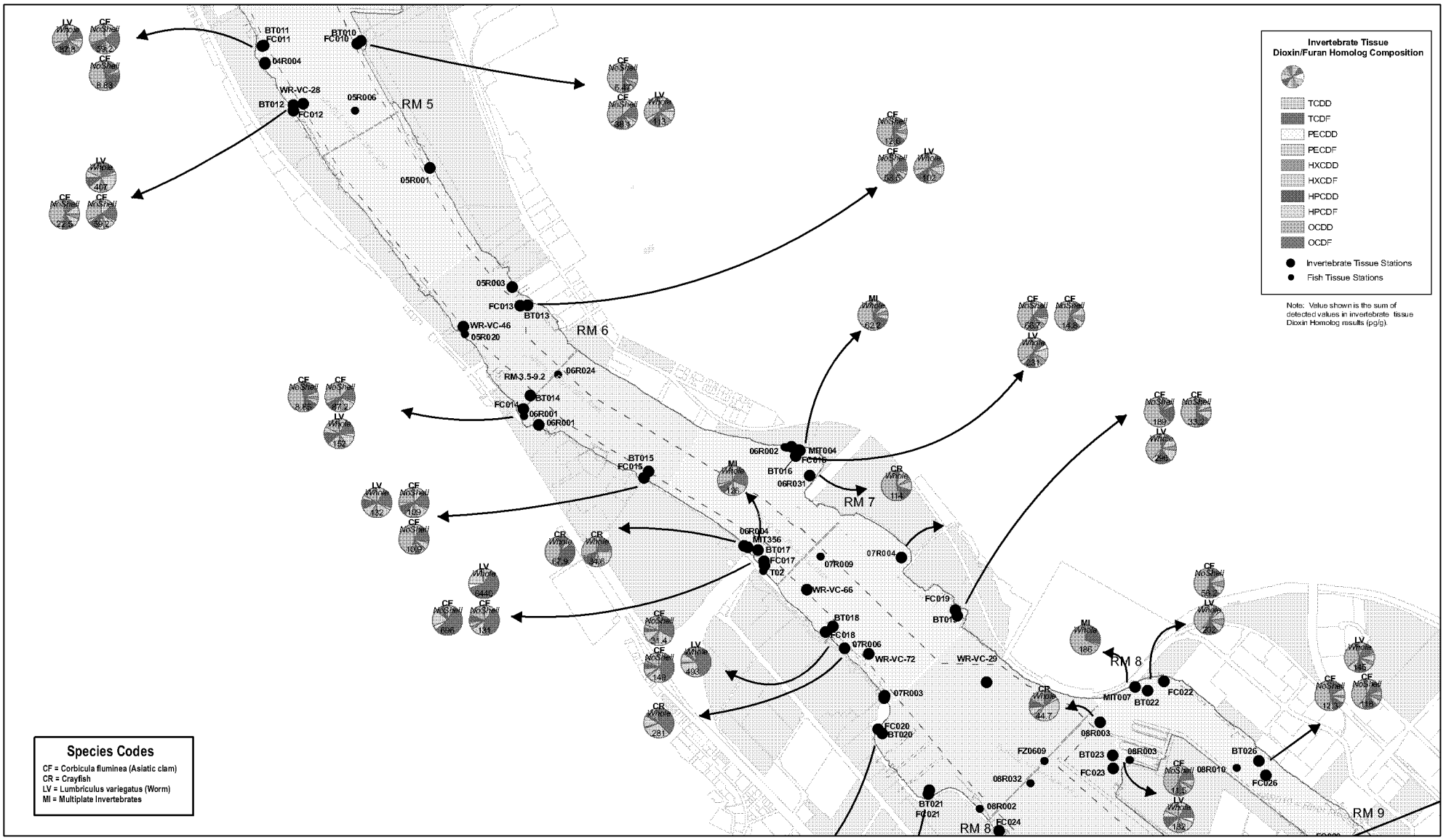



integral consulting inc.

LWG LOWER WILLAMETTE GROUP

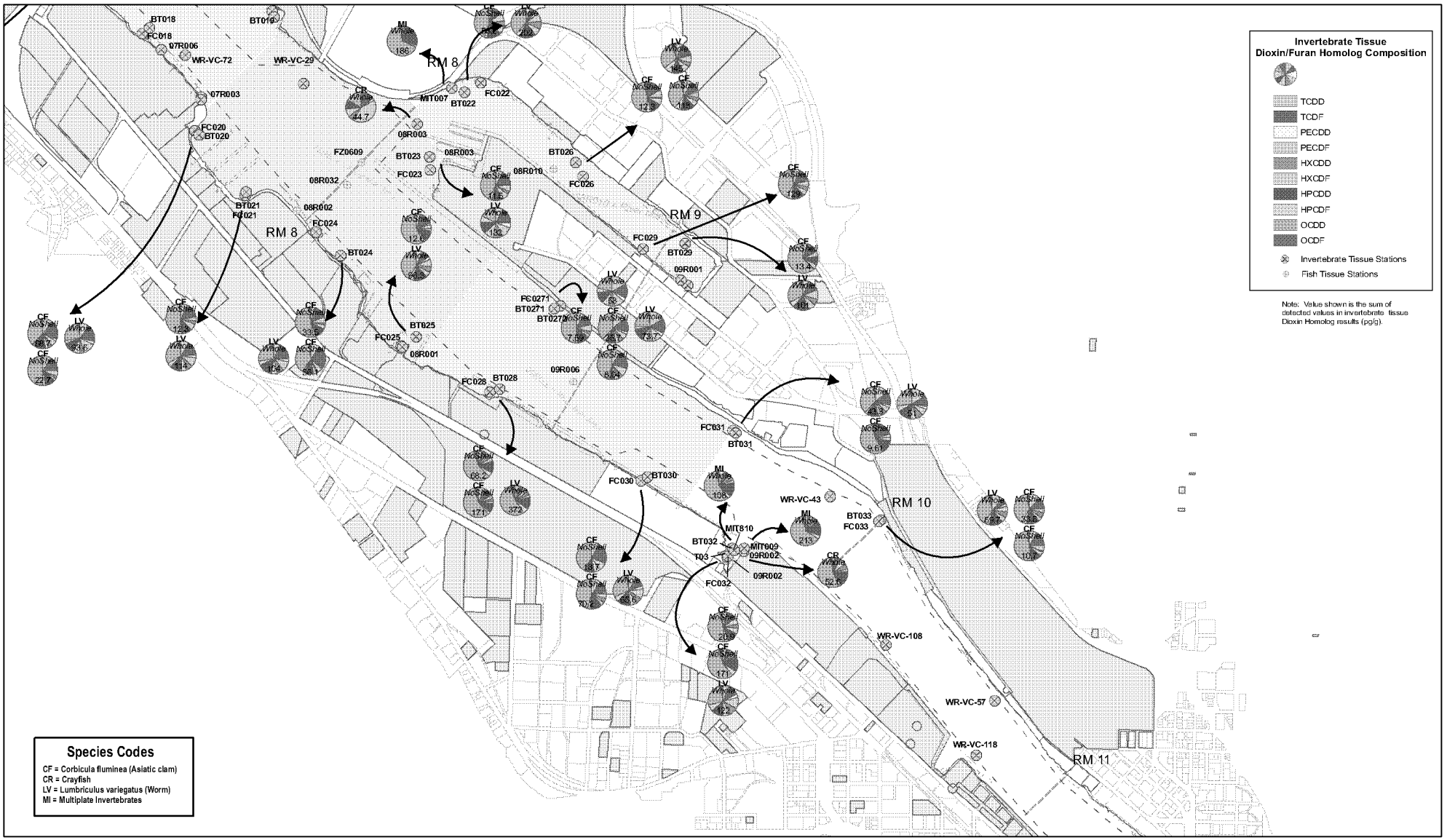
**Map 6.4-11a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Dioxin/Furan Homolog Composition in Invertebrate Tissue**

BZTO104(e)033154




**Map 6.4-11b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Dioxin/Furan Homolog Composition in Invertebrate Tissue**

BZTO104(e)033155

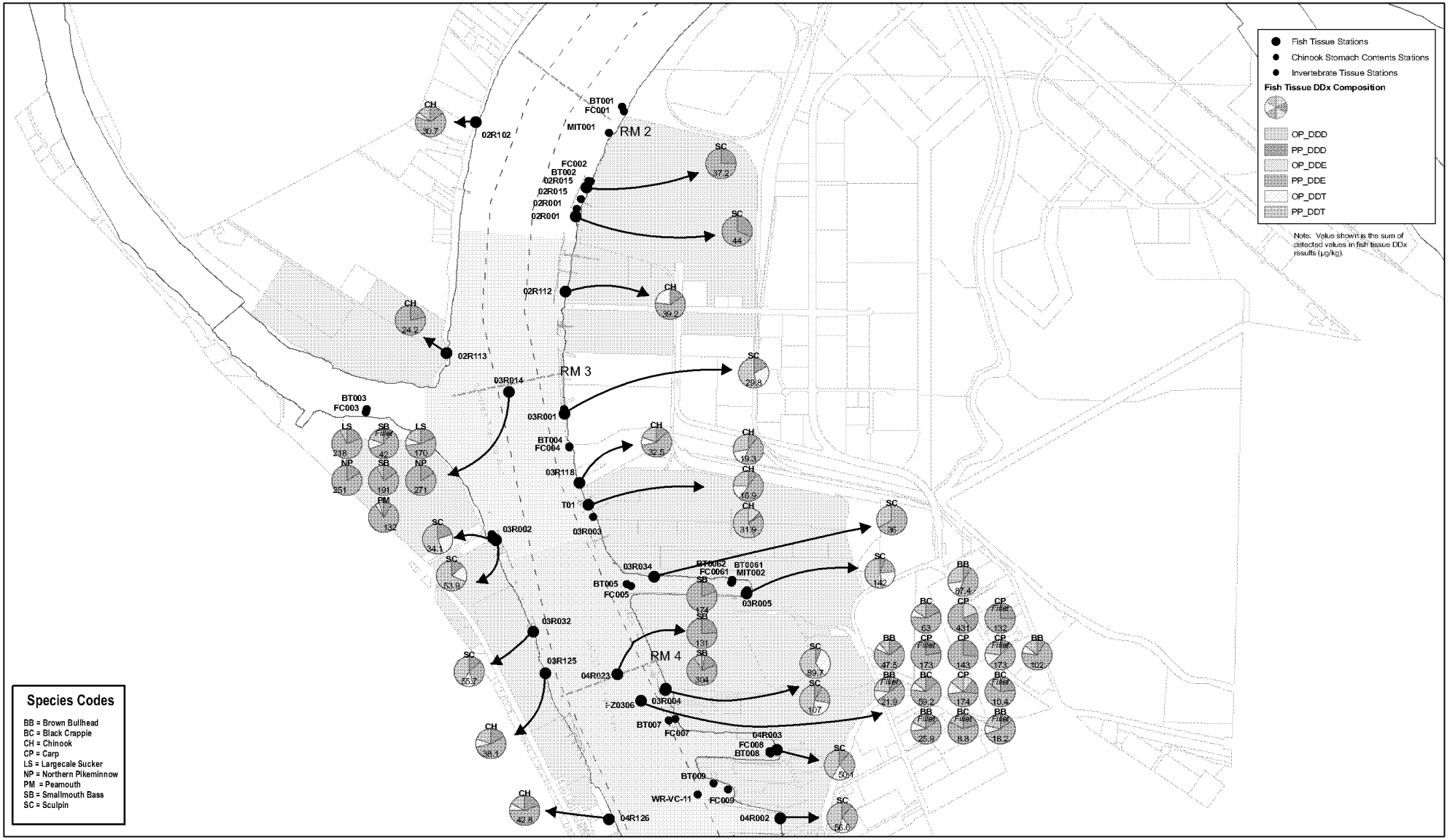



integral consulting inc.

LWG Lower Willamette Group

**Map 6.4-11c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**Dioxin/Furan Homolog Composition in Invertebrate Tissue**

BZTO104(e)033156



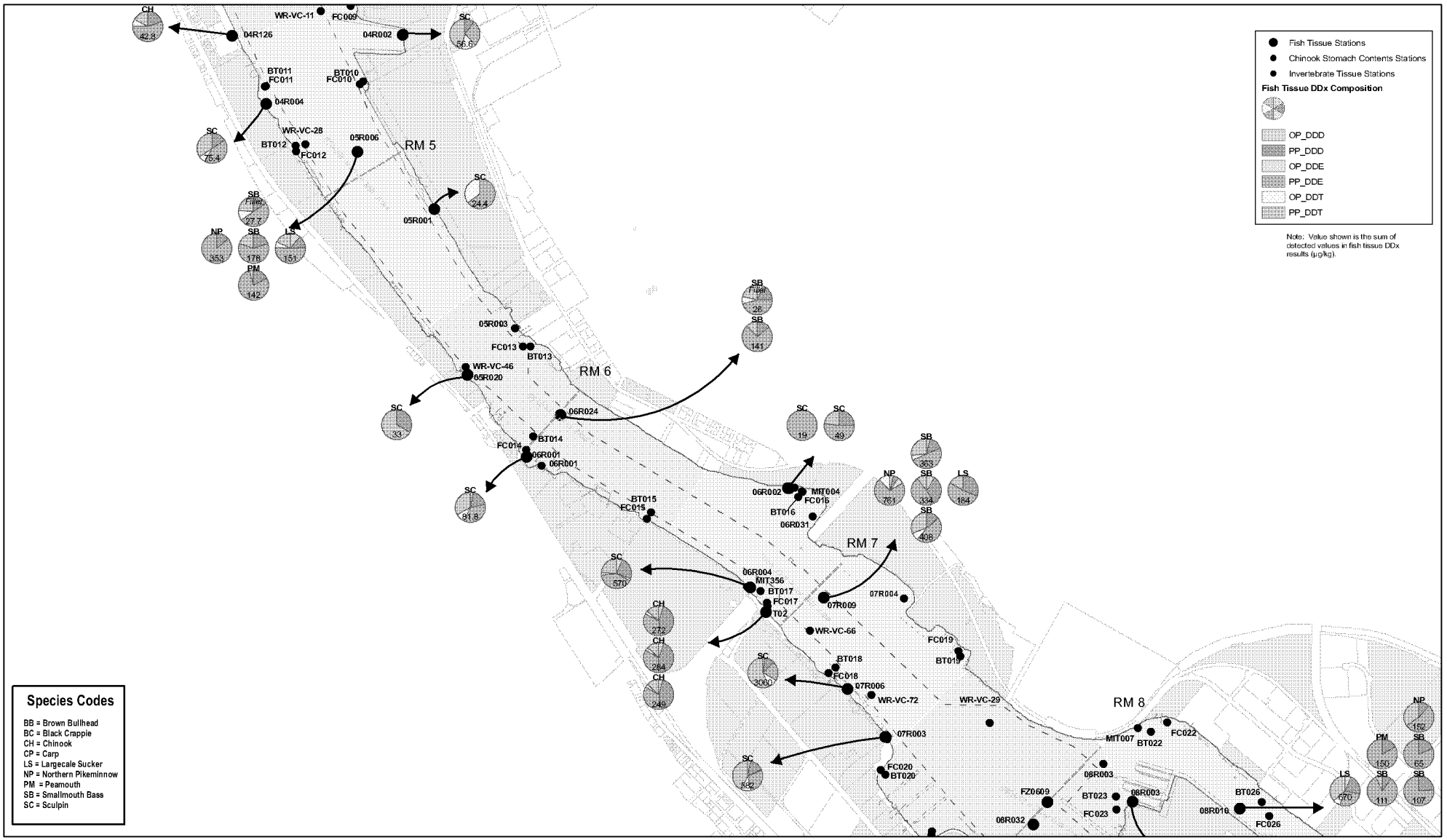

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\DDT_Pie_Charts_FishTissue_A.mxd)
2/5/2007 – 2:49:22 PM

integral consulting inc.

LWG Lower Willamette Group

**Map 6.4-12a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**DDx Composition in Fish Tissue**

BZTO104(e)033157



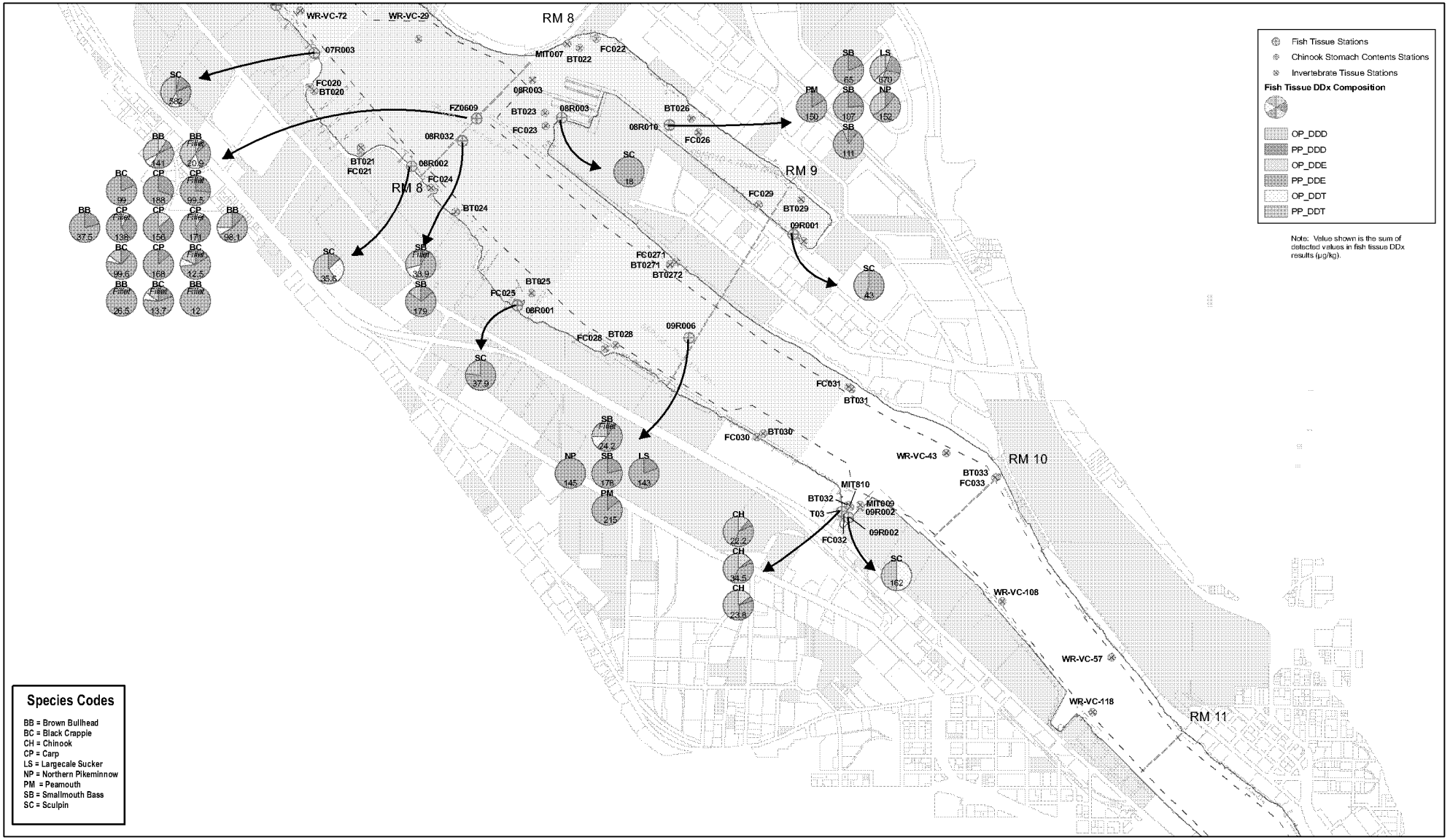

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\DDT_Pie_Charts_FishTissue_B.mxd)
2/5/2007 – 2:54:54 PM

integral consulting inc.

LWG Lower Willamette Group

**Map 6.4-12b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**DDx Composition in Fish Tissue**

BZTO104(e)033158




integral consulting inc.

LWG Lower Willamette Group

**Map 6.4-12c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**DDx Composition in Fish Tissue**

BZTO104(e)033159

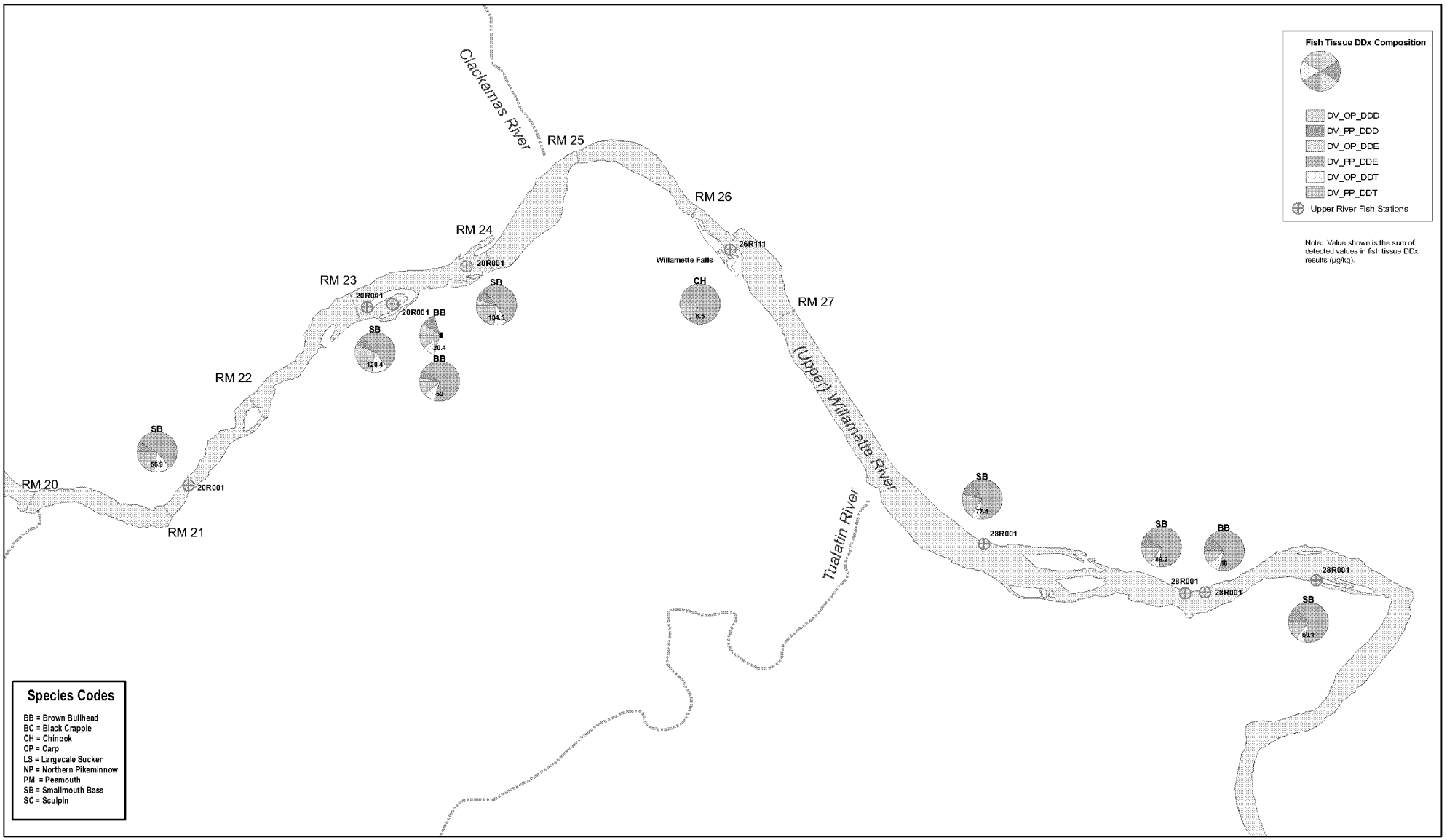
Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\DDT_Pie_Charts_FishTissue_D.mxd)
1/29/2007 – 12:42:05 PM

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.4-12d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**DDx Composition in Fish Tissue**

BZTO104(e)033160




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\Upriver_Pie_Charts_FishTissue_.mxd)
1/5/2007 -- 11:23:13 AM

integral consulting inc.

LWG Lower Willamette Group

**Map 6.4-12e**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**DDx Composition in Fish Tissue**

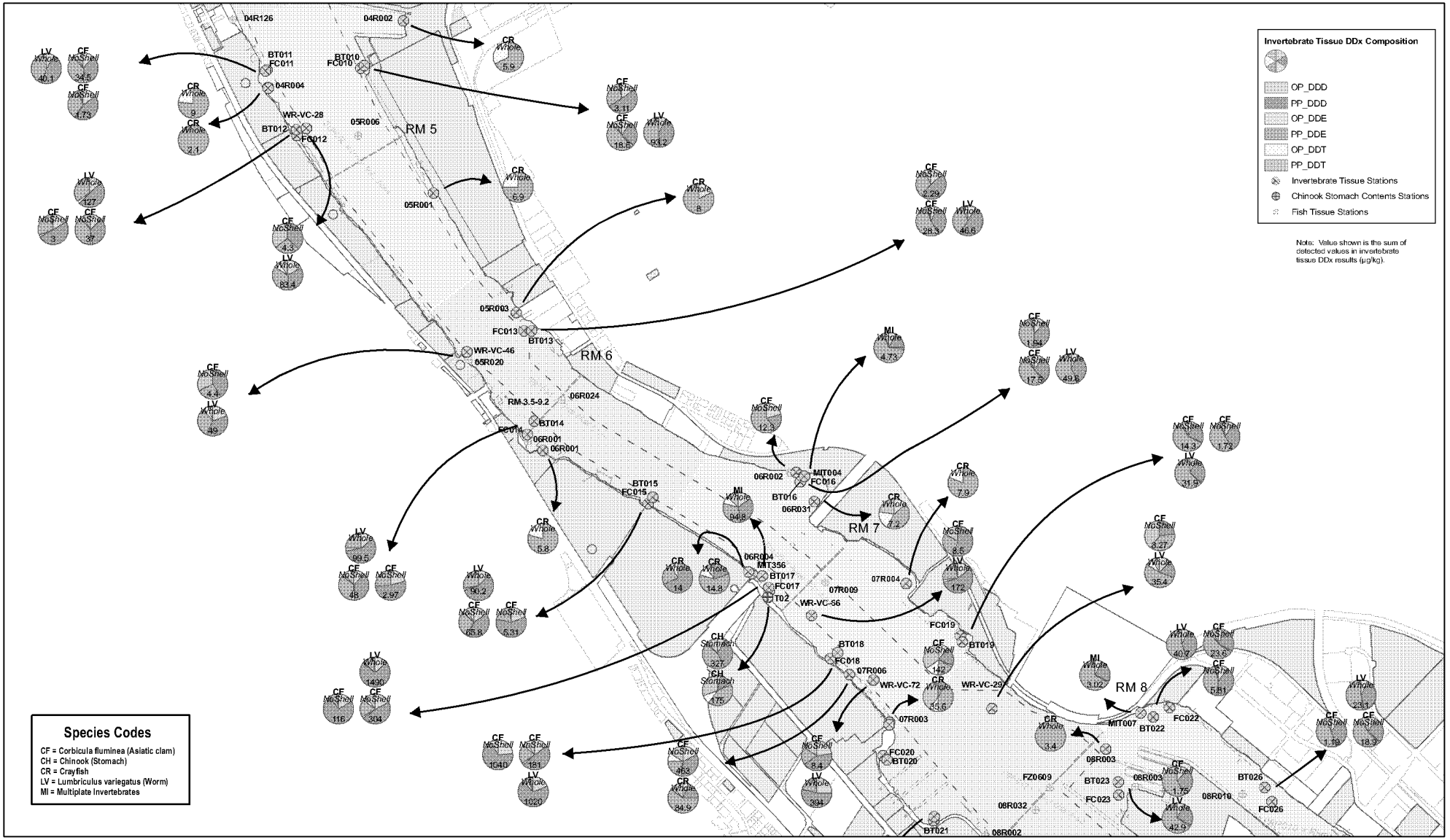
BZTO104(e)033161

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

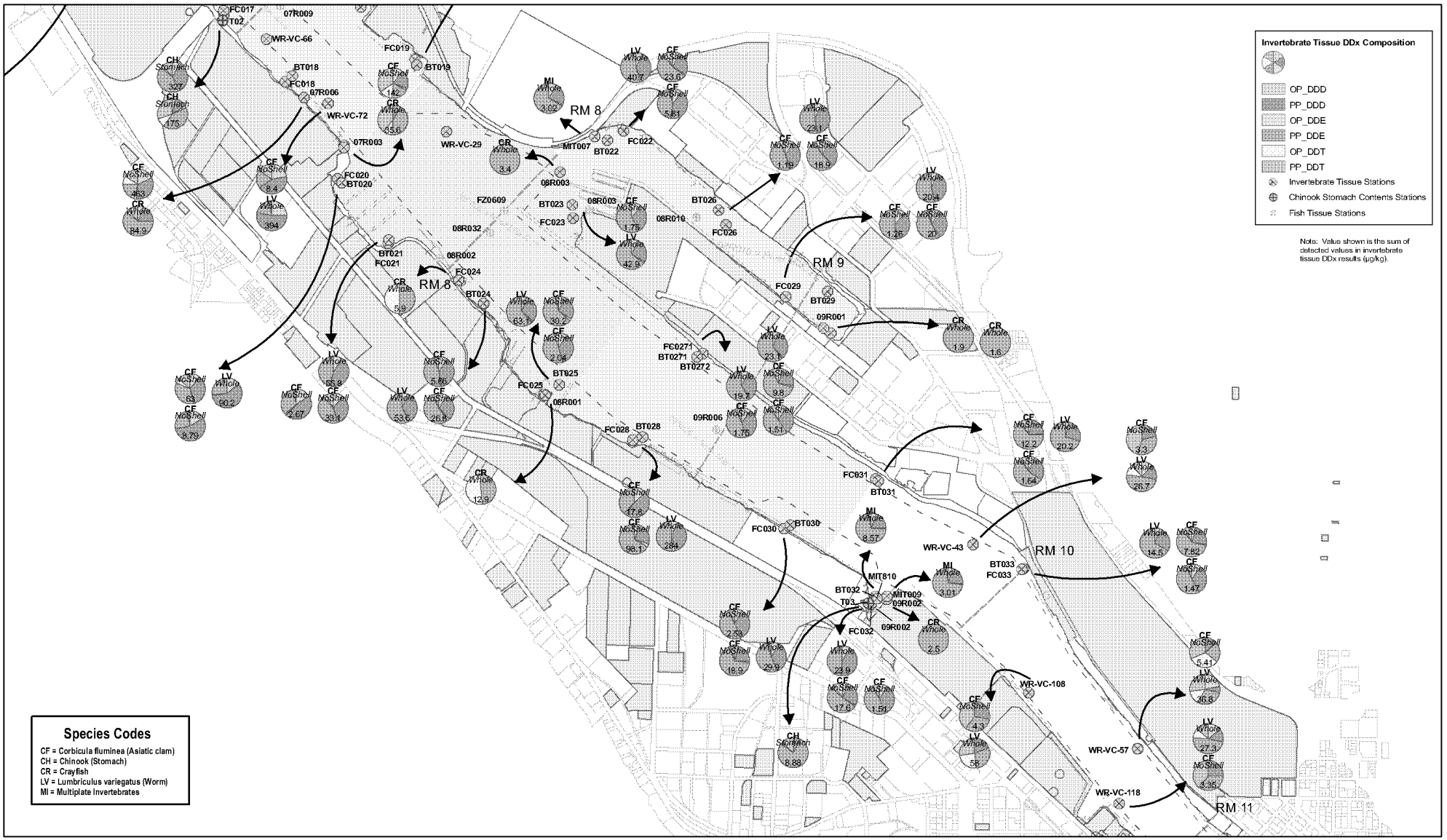
**Map 6.4-13a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**DDx Composition in Invertebrate Tissue**

BZTO104(e)033162




**Map 6.4-13b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**DDx Composition in Invertebrate Tissue**

BZTO104(e)033163




**Map 6.4-13c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**DDx Composition in Invertebrate Tissue**

BZTO104(e)033164

integral consulting inc.

LWG LOWER WILLAMETTE GROUP

**Map 6.4-13d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**DDx Composition in Invertebrate Tissue**

BZTO104(e)033165

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\PAH_Pie_Charts_FishTissue_A.mxd)
1/29/2007 – 12:07:47 PM

integral consulting inc.

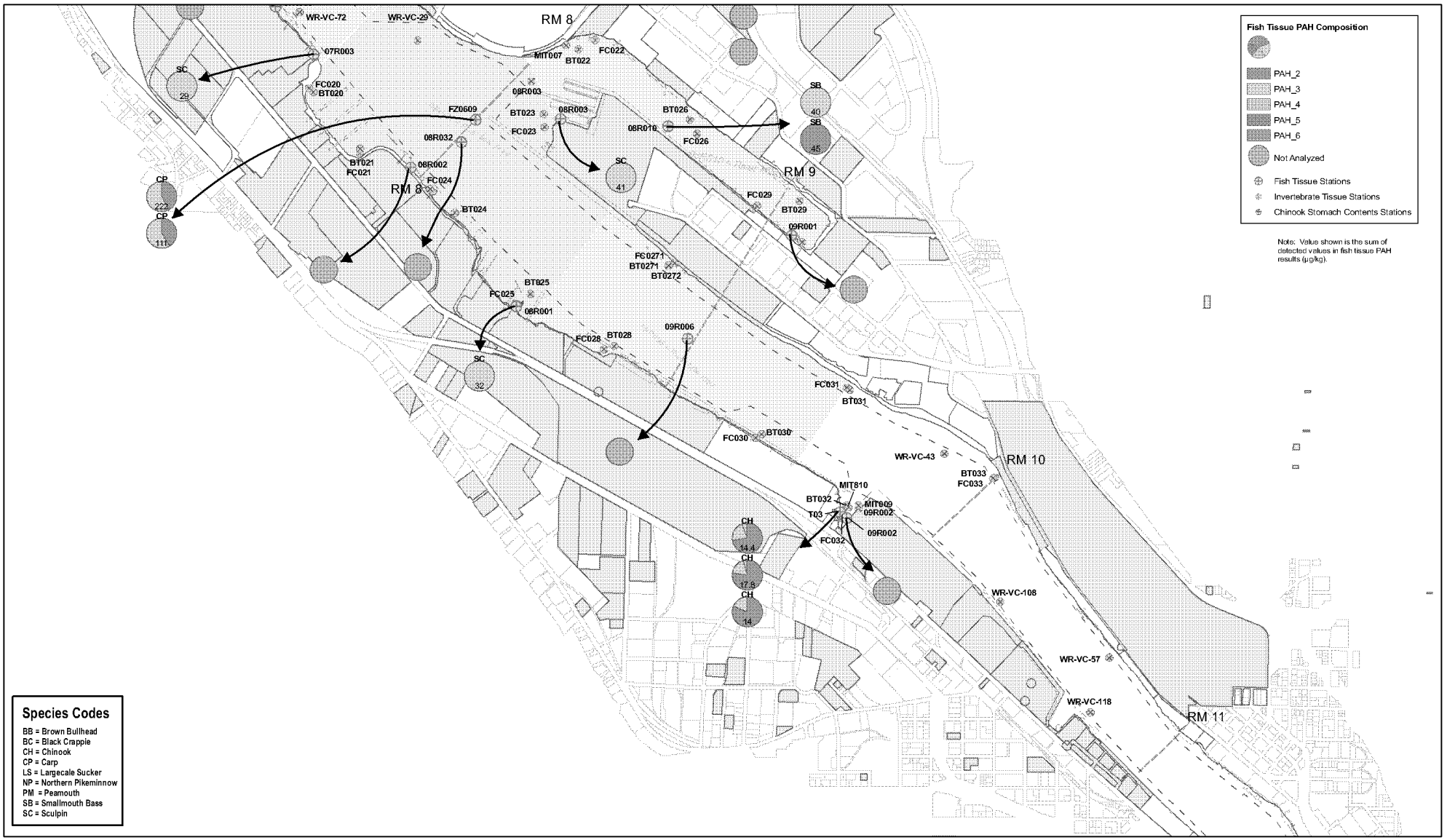
LWG Lower Willamette Group

**Map 6.4-14a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PAH Composition in Fish Tissue**

BZTO104(e)033166

**Map 6.4-14b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PAH Composition in Fish Tissue**

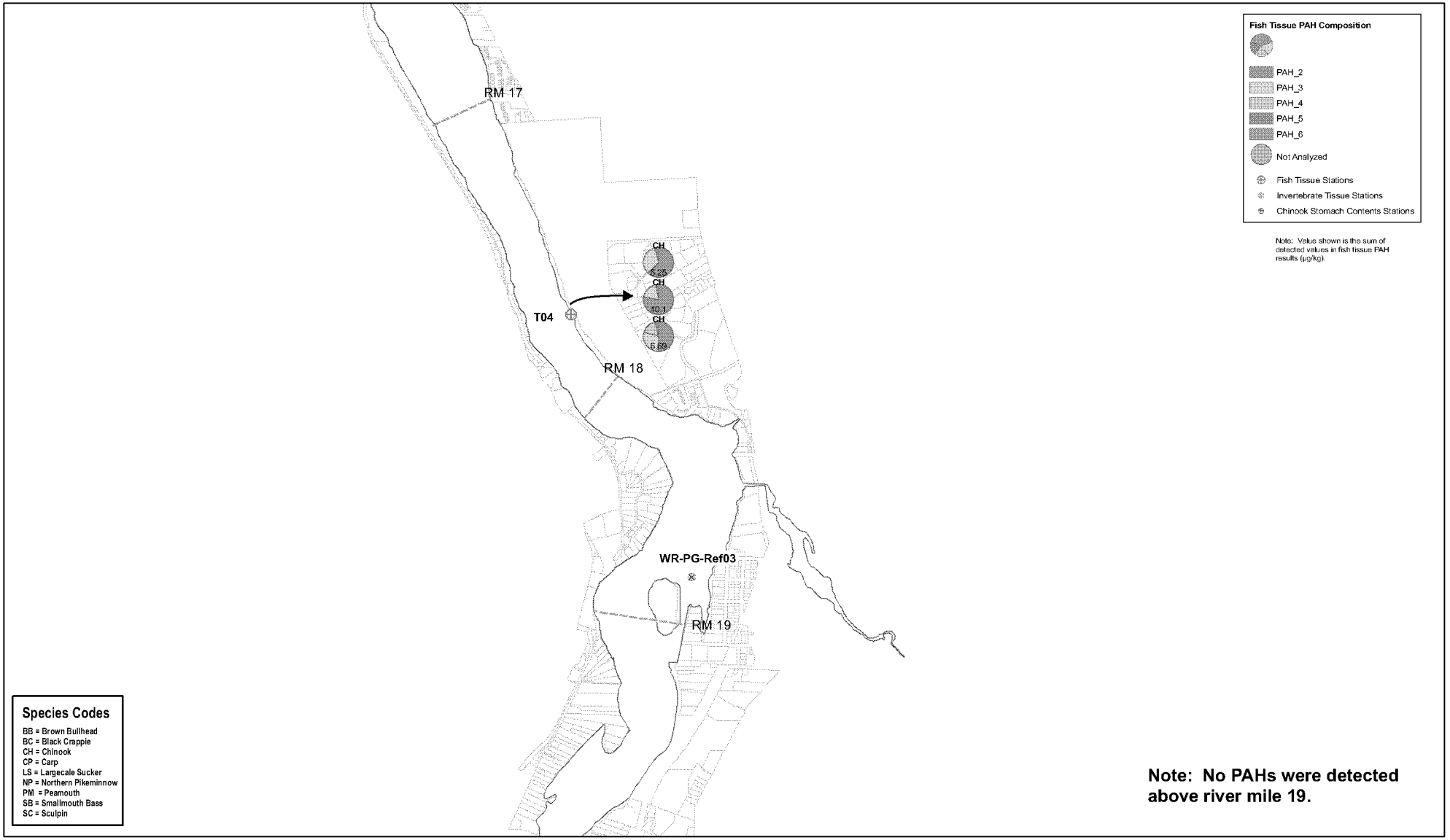
BZTO104(e)033167




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\PAH_Pie_Charts_FishTissue_C.mxd)
1/29/2007 – 12:18:47 PM

**Map 6.4-14c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PAH Composition in Fish Tissue**

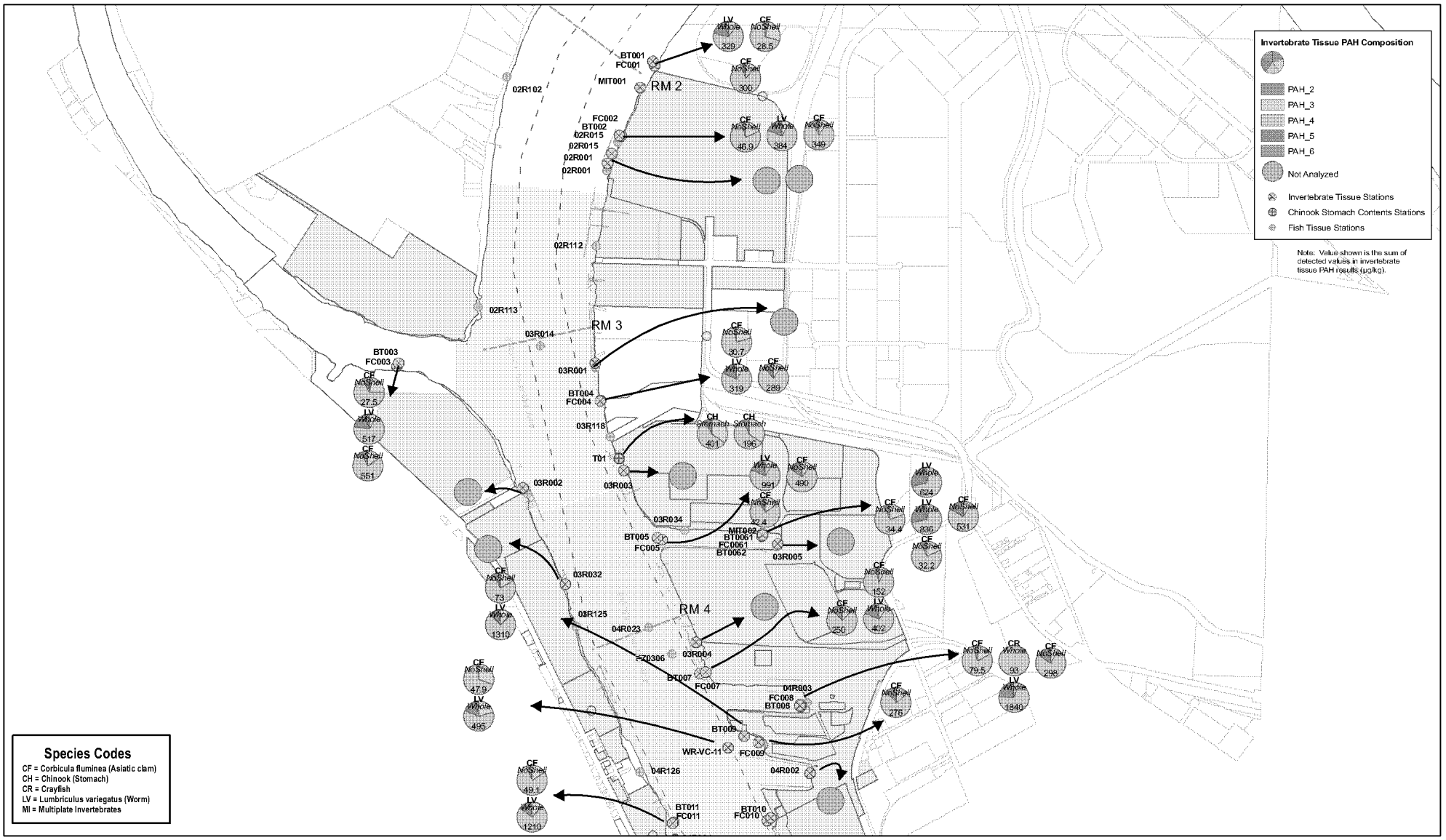
BZTO104(e)033168




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\PAH_Pie_Charts_FishTissue_D.mxd)
1/29/2007 – 12:21:47 PM

**Map 6.4-14d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PAH Composition in Fish Tissue**

BZTO104(e)033169



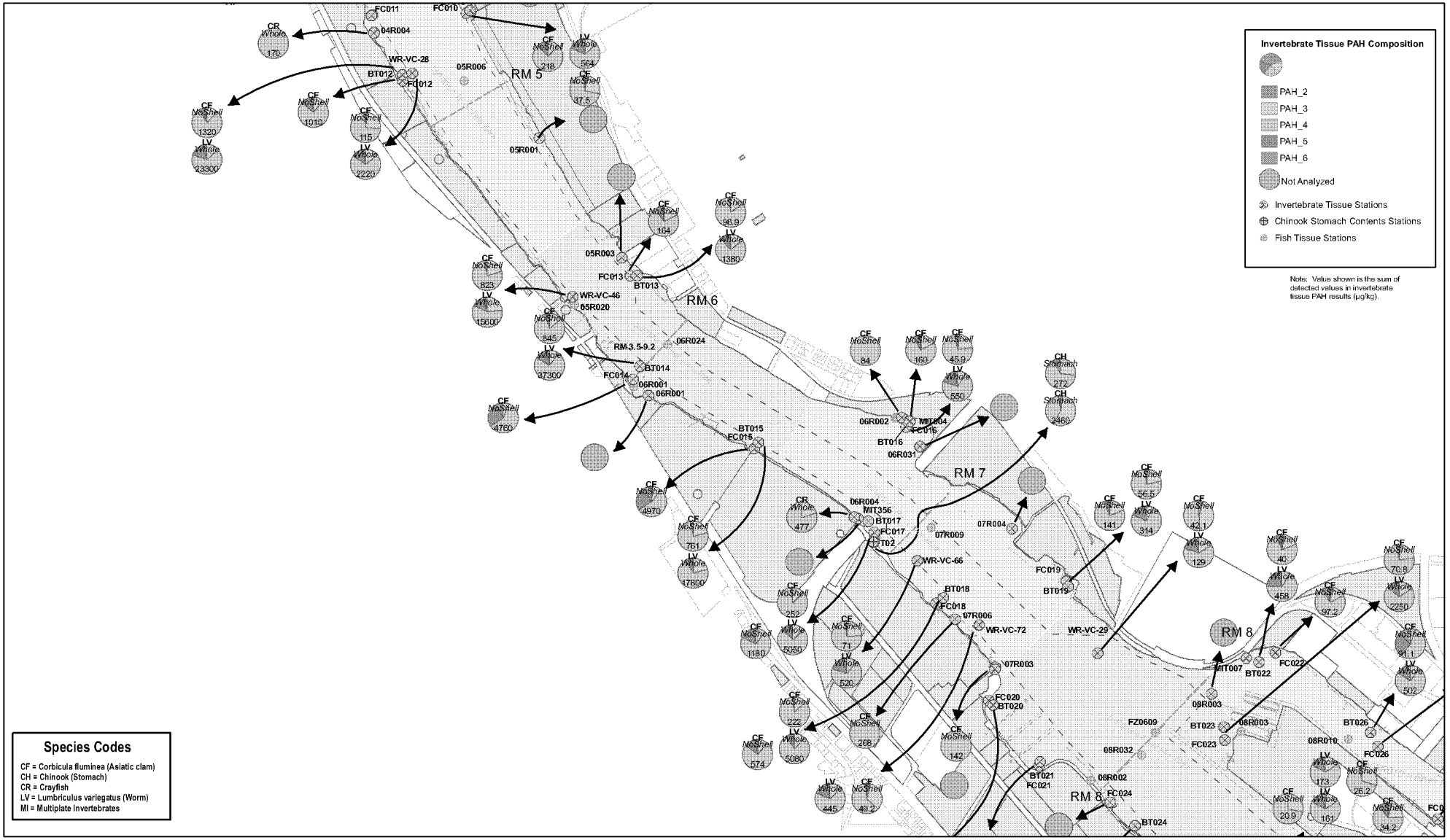

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\PAH_Pie_Charts_InvertebrateTissue_A.mxd)
1/29/2007 – 12:51:12 PM

integral consulting inc.

LWG Lower Willamette Group

**Map 6.4-15a**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PAH Composition in Invertebrate Tissue**

BZTO104(e)033170



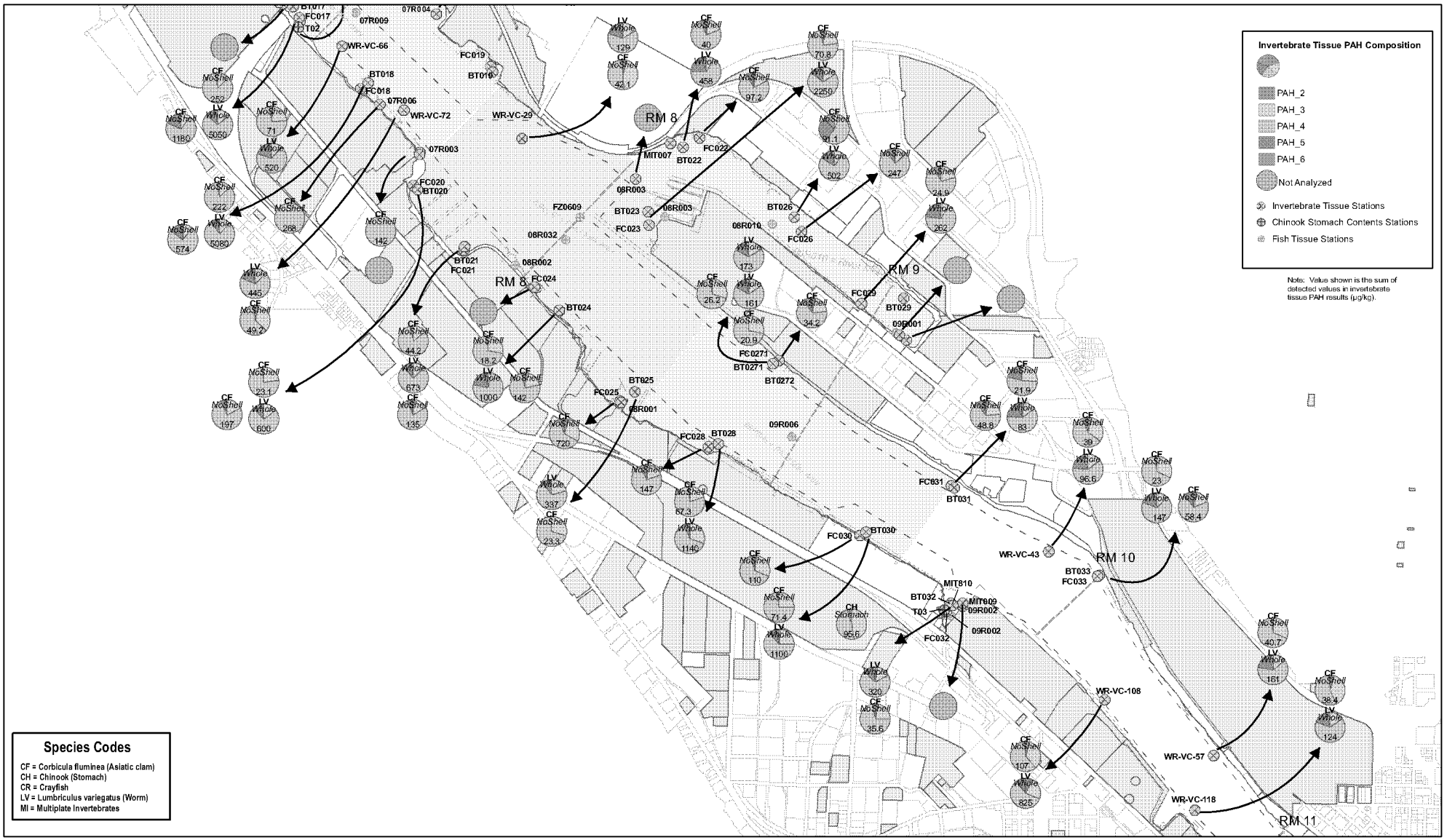

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\PAH_Pie_Charts_InvertebrateTissue_B.mxd)
1/29/2007 – 1:00:12 PM

integral consulting inc.

LWG Lower Willamette Group

**Map 6.4-15b**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PAH Composition in Invertebrate Tissue**

BZTO104(e)033171




Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\PAH_Pie_Charts_InvertebrateTissue_B.mxd)
1/29/2007 – 1:03:12 PM

**Map 6.4-15c**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PAH Composition in Invertebrate Tissue**

BZTO104(e)033172

Map Document: (O:\Projects\Portland_Harbor\LWG-Map-Projects\Round2_Reporting\Tissue\MXDs\PAH_Pie_Charts_InvertebrateTissue_D.mxd)
1/29/2007 -- 1:12:12 PM

**Map 6.4-15d**
**Portland Harbor RI/FS**
**Comprehensive Round 2 Report**
**PAH Composition in Invertebrate Tissue**

BZTO104(e)033173

Table 2.0-1. Summary of Non-LWG Investigations Included in the Comprehensive Round 2 Data Set.

| Survey Name | Used for Risk Evaluation (Y/N) | Survey ID | Study Objective | River Mile(s) | Begin Date | End Date | Number of Samples | Sample Intervals (cm) | Composite (Y/N) | Dredged (Y/N) | Capped (Y/N) | QA Category | Conv. | Metals | Butyltins | SVOCs | PCBs | Pest. | PCB Cong. | Dioxin/Furan | VOCs | Other | Comment | Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SEDIMENTS** | | | | | | | | | | | | | | | | | | | | | | | | |
| Gasco EE/CA | N | WLCGSG04 | Early action characterization | 6.5 | 7/19/2004 | 9/8/2005 | 16 subsurface sediment | up to 610 cm | N | N | Y - RAA-02-20 | Category 1 QA2 | X | X | | X | | X | | | X | X | TPH - diesel, residual range; cyanide | Anchor, 2006 |
| 2005 Portland District O&M Sediment Characterization | Y | WLCDRD05 | Dredged material characterization | 2 - 11.7 | 4/28/2005 | 5/27/2005 | 82 surface, 72 subsurface | 0-30 cm, up to 421 cm | N | N | Y - WR-PG-50, WR-VC-50 | Category 1 QA2 | X | X | X | X | X | X | | | | X | TPH - gasoline, #2 diesel, motor oil | Terra Tech, 2006 |
| ExxonMobil Beach Sediment Sheen Samples | N | WLCEMH04 | Oily sheen investigation | 5.16 | 10/6/2003 | 8/13/2004 | 4 surface sediment | 0-15 cm | N | N | N | Category 1 QA1 | | | | | | | | | | X | petroleum analyzed | Kleinfelder, 2004a |
| Terminal 4 Early Action EE/CA Report | Y | WLCT4C04 | Early action characterization | 4.5 | 3/3/2003 | 5/20/2004 | 5 sediment trap, 43 subsurface sediment | up to 671 cm | Y | N | N | Category 1 QA2 | X | X | | X | X | X | | | | X | TPH - gasoline, diesel, residual range | BBL, 2005 |
| Corps Dredged Material O&M Characterization | N | WLCDR103 | Dredged material characterization | 3, 8-10,15,23 | 9/10/2003 | 9/25/2003 | 19 subsurface composites, 2 surface reference | up to 305 cm | Y | N | N | Category 1 QA2 | X | X | X | X | X | X | | | | | | Hart Crowser, 2004 |
| Gunderson Area 2 Sandy Beach | N | WLCGNG03 | Gunderson, Inc. Area 2 - Sandy Beach Area Upland Source Evaluation | 9 | 7/8/2003 | 7/8/2003 | 4 surface sediment | 0-15 cm | N | N | N | Category 1 QA1 | X | X | X | X | X | | | | X | X | petroleum analyzed | Kleinfelder, 2004c |
| International Terminal Sediment Data Report | N | WLCTIC03 | Dredged material characterization | 4, 5 | 3/11/2003 | 3/13/2003 | 20 subsurface sediment | up to 518 cm | N | Y | N | Category 1 QA1 | X | X | X | X | X | X | | | | | | Floyd Snider McCarthy, 2003 |
| ATOFINA Phase2 Stage1/2 In-River Investigation | N | WLCEA102 | Phase 2 Stage 1 & 2 in-river groundwater and sediment investigation | 8 | 6/3/2002 | 3/10/2003 | 211 subsurface sediment | up to 1305 cm | N | N | N | Category 1 QA2 | X | | | | | X | | | | | 174 samples field screened for 4,4'-DDT, 40 samples lab tested for pesticides | Integral Consulting, 2003 |
| City Outfall Source Control Investigation | Y | WLCOFJ02 | Source Control Investigation | 5-10 | 10/14/2002 | 10/23/2002 | 84 surface sediment | 0-15 cm | N | N | Y - Station 4 | Category 1 QA2 | X | X | | X | | X | X | | | X | diesel, fuel oil | City of Portland, 2004 |
| Surface Water, Sediment, and Groundwater Sampling Report | N | WLCMB02 | Surface water, sediment, and groundwater sampling, McCormick & Baxter | 7, 8 | 9/5/2002 | 9/26/2002 | 41 water grabs, 19 water SPMD, 11 subsurface sediment | 30-35 cm | N | N | Y - 14 samples | Category 1 QA2, petrokam Category 2 | | X | | X | | | | | | | | Geology & Environment, 2003 |
| US Moorings RI Sediment Investigation | Y | WLCMR02 | US Moorings RI | 6.7 | 9/10/2002 | 9/11/2002 | 2 surface, 3 subsurface sediment | 0-30, 0-90 cm | Y | N | N | Category 1 QA2 | X | X | X | X | X | X | | | | | TPH - diesel, motor oil | URS, 2003a |
| City Outfall Pilot Project | Y | WLCOFH02 | Sediment quality study off Outfalls M1 and 38 (9 sediment grabs taken at each outfall) | 9 | 8/21/2002 | 8/23/2002 | 18 surface sediment | 0-15 cm | N | N | N | Category 1 QA2 | X | X | | X | X | X | | | | X | herbicides and petroleum also analyzed | CH2M Hill, 2002 |
| MarCom Expanded Preliminary Assessment | N | WLCMCB02 | Expanded Preliminary Assessment of MarCom property | 6 | 2/8/2002 | 2/8/2002 | 3 surface sediment | 0-15 cm | N | N | N | Category 1 QA1 | | X | X | X | | | | | | | SVOCs limited to PAHs | Parametrix, 2002 |
| GATX Linnton Terminal R1 | N | WLCGX802 | Kinder Morgan Linnton Facility Remedial Investigation | 5 | 2/5/2002 | 2/7/2002 | 2 surface sediment | 0-15 cm | N | N | N | Category 1 QA1 | X | | | X | | | | | X | X | petroleum analyzed | KHM Environmental Management, 2002a |
| T4 Ship 3, Berth 410 Dredge Material | N | WLCT4L01 | Marine Terminal 4 Ship3 Dredge Material Characterization Study | 5 | 12/11/2001 | 12/13/2001 | 9 subsurface sediment | up to 213 cm | Y | Y | N | Category 1 QA1 | X | X | | X | X | X | | | | | | Hart Crowser, 2002a |
| Willamette Reference Area Phase 2 | N | WLLRS01 | Phase II reference area reconnaissance study | 16, 19, 23, 24 | 9/17/2001 | 9/17/2001 | 8 surface sediment | 0-10 cm or 0-30 cm | N | N | N | Category 1 QA1 | X | X | X | X | X | X | | | | | five samples analyzed for conventionals only; porewater analyzed for butyltins | Hart Crowser, 2002e |
| Willamette Reference Area Phase 1 | N | WLLRSH01 | Phase I reference area reconnaissance study | 16, 17, 18, 19, 24 | 8/29/2001 | 8/29/2001 | 9 surface sediment | 0-10 cm | N | N | N | Category 1 QA1, grainsize Category 2 | X | | | | | X | X | | | X | Petroleum also analyzed | Hart Crowser, 2001a |
| Cargill Irving Elevator Permit Applications | N | WLCCIP01 | Dredged material characterization | 12 | 6/29/2001 | 6/29/2001 | 5 subsurface, 1 subsurface porewater | up to 109 cm | Y - 1 sample | Y | N | Category 1 QA1 | X | X | X | X | X | X | | | | | porewater analyzed for butyltins | Harding ESE, 2001 |
| T2/15 2001 Dredge Characterization Study | N | WLCT0P01 | Dredged material characterization | 2, 10 | 6/27/2001 | 6/29/2001 | 4 subsurface porewater, 7 subsurface sediment | up to 182 cm | Y | Y | N | Category 1 QA1 | X | X | X | X | X | X | | | | | porewater analyzed for butyltins | Hart Crowser, 2001b |
| Chevron Dredging Permit Application | N | WLCCPP01 | Dredged material characterization | 8 | 6/6/2001 | 6/7/2001 | 15 subsurface sediment | up to 244 cm | N | Y | N | Category 1 QA1 | X | X | X | X | X | X | | | X | X | petroleum analyzed | PNG Environmental, 2001 |
| Gasco Source Control Evaluation | Y | WLCGSD01 | Characterization of nearshore conditions to validate groundwater modeling predictions | 7 | 4/10/2001 | 4/11/2001 | 18 subsurface sediment, 9 surface sediment | surface 0-10 cm, subsurface up to 40 cm | N | Y | Y - AN-2-1 to 2-4 | Category 1 QA2 | X | X | | X | | | | | X | | SVOCs limited to PAHs | Anchor, 2001 |
| McCormick & Baxter RI Phase 4 | N | WLCMBA01 | Phase IV remedial investigation of McCormick & Baxter Creosoting Co. | 8 | 1/5/2001 | 2/5/2001 | 32 subsurface sediment, 1 upriver reference surface sediment | 0-30 cm | N | N | Y - 13 samples | Category 1 QA1 | X | | | X | | | | | | | SVOCs limited to PAHs and phenols | Geology & Environment, 2001 |
| Goldendale Aluminum Phase 2 | N | WLCGAL00 | Post - dredge residual check | 11 | 12/21/2000 | 12/21/2000 | 4 surface sediment | 0-30 cm | N | N | N | Category 1 QA1 | X | | | X | | | | | | | | CH2M Hill, 2001a |
| Oregon Steel Mills Pre-Remedial Investigation Field Activities Data Report | N | WLCOS800 | Pre-remedial investigation; sediments collected off outfalls to investigate storm water as potential pathway | 2, 3 | 10/10/2000 | 10/11/2000 | 1 subsurface sediment, 15 surface sediment | surface 0-10 or 0-30 cm, subsurface 0-60 | N | N | N | Category 1 QA1 | X | X | | X | X | | | | | X | petroleum analyzed | Exponent, 2001 |
| Willbridge 60-in outfall | N | WLCWT100 | Remedial investigation of sediments at 60-inch outfall location, Willbridge Terminal | 8 | 9/21/2000 | 9/22/2000 | 13 subsurface sediment | up to 229 cm | N | N | N | Category 1 QA1 | X | X | | X | | | | | X | X | Only one sample analyzed for metals, SVOCs, and VOCs, petroleum analyzed | KHM Environmental Management, 2002b |
| UP RR Albina Yard Expanded Preliminary Assessment Data Report | N | WLCAYH00 | Expanded Preliminary Assessment of UPRR's Albina Yard | 11, 12 | 8/9/2000 | 8/17/2000 | 3 subsurface sediment, 6 surface sediment | surface 0-20 cm; subsurface to 69 cm | N | N | N | Category 1 QA1 | X | X | X | X | X | | | | | X | petroleum analyzed | Jacobs Engineering, 2000a |
| Marine Finance Expanded Preliminary Assessment Data Report | N | WLCMFH00 | Expanded Preliminary Assessment of Marine Finance Site | 6 | 8/8/2000 | 8/9/2000 | 3 subsurface sediment, 6 surface sediment | surface 0-20 cm; subsurface to 66 cm | N | N | N | Category 1 QA1 | X | X | X | X | X | | | | | X | petroleum analyzed | Jacobs Engineering, 2000b |
| T1 South Sediment Study | N | WLCT1T00 | Baseline sediment investigation associated with potential lease arrangement | 11, 12 | 6/22/2000 | 6/22/2000 | 9 surface porewater, 9 surface sediment | 0-10 cm | N | N | N | Category 1 QA1 | X | X | X | X | X | X | | | X | | porewater analyzed for butyltins | SEA, 2000 |
| Goldendale Aluminum Phase 1 | N | WLCGAH00 | Dredged material characterization | 11 | 6/12/2000 | 6/12/2000 | 5 surface sediment, 1 reference surface sediment | 0-30 cm | N | Y | N | Category 1 QA1 | X | X | X | X | X | X | | | X | | | CH2M Hill, 2001b |
| Ross Island Phase 1 (Pier) | N | WLCRIL99 | Phase I remedial investigation of Ross Island Lagoon | 15, 16 | 11/2/1999 | 4/28/2000 | 6 subsurface porewater, 20 subsurface sediment, 38 surface porewater, 41 surface sediment, 4 surface reference sediment | surface 0-10 cm, subsurface up to 1798 cm | Y - 1 sample | N | N | Category 1 QA1 | X | X | X | X | X | X | | | X | X | porewater analyzed for butyltins, petroleum analyzed | Hart Crowser, 2000a |
| Willamette November Sediment Quality Evaluation | N | WLR1199 | Dredged material characterization | 9, 10, 12 | 11/29/1999 | 11/29/1999 | 9 subsurface sediment, 7 subsurface porewater, 1 surface sediment | surface 0-15 cm, subsurface up to 386 cm | N | N | N | Category 1 QA1, metals & conventionals Category 2 | X | X | X | X | X | X | | | | | porewater analyzed for butyltins | USACE, 2000 |
| T5 1999 Berths 501-503 Sediment Characterization Study | N | WLCT5K99 | Dredged material characterization | 1, 2 | 11/22/1999 | 11/22/1999 | 5 subsurface sediment and 5 subsurface porewater | up to 182 cm | Y - 2 samples | Y | N | Category 1 QA1, grainsize Category 2 | X | X | X | X | X | X | | | | | porewater analyzed for butyltins | Hart Crowser, 1999a |
| Ross Island Lagoon Baseline | N | WLCRI199 | Baseline sediments investigation of Ross Island Lagoon | 16 | 10/26/1999 | 10/28/1999 | 4 surface porewater, 12 surface sediment | 0-10 cm | Y - 1 sample | N | N | Category 1 QA1 | X | X | X | X | X | X | | | | | porewater analyzed for butyltins | Landau Associates, 2000a |
| Ross Island Phase 1 (Ross Island Sand & Gravel) | N | WLCRIV99 | Phase I remedial investigation of Ross Island Lagoon | 15, 16 | 10/7/1999 | 10/28/1999 | 4 surface sediment, 41 subsurface sediment | surface 0-10cm, subsurface up to 79 cm | N | N | N | Category 1 QA2 | X | X | X | X | X | X | | | X | X | petroleum analyzed in subsurface only | Landau Associates, 2000b |
| GATX Linnton Terminal USA | N | WLCGXV99 | Environmental site assessment | 5 | 10/8/1999 | 10/8/1999 | 4 surface sediment, 4 subsurface sediment | surface 0-10 cm, subsurface to 40 cm | N | N | N | Category 1 QA1 | X | X | | X | X | X | | | X | | VOCs not analyzed in all samples | KHM Environmental Management, 1999 |
| McCormick & Baxter RI Phase 3 | Y | WLCMB99 | Phase III remedial investigation of McCormick & Baxter Creosoting Co. | 8 | 10/1/1999 | 10/1/1999 | 44 site and 4 upriver reference surface sediment | 0-15 cm | N | N | Y - 30 samples | Category 1 QA2 | X | X | | X | | | | X | | | SVOCs limited to PAHs and phenols; dioxins/furans not analyzed in all samples | Geology & Environment, 2001 |



BZTO104(e)033174

Table 2.0-1. Summary of Non-LWG Investigations Included in the Comprehensive Round 2 Data Set.

| Survey Name | Used for Risk Evaluation (Y/N) | Survey ID | Study Objective | River Mile(s) | Begin Date | End Date | Number of Samples | Sample Intervals (cm) | Composite (Y/N) | Dredged (Y/N) | Capped (Y/N) | QA Category | Conv. | Metals | Butyltins | SVOCs | PCBs | Pest. | PCB Cong. | Dioxin/Furan | VOCs | Other | Comment | Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Willamette April Sediment Quality Evaluation | N | WLR0499 | Dredged material characterization | 3, 9, 10 | 4/29/1999 | 4/29/1999 | 11 subsurface sediment and 3 porewater | up to 434 cm | N | N | N | Category 1 QA1, metals & conventionals Category 2 | X | X | X | X | X | X | | X | | X | all samples also analyzed for herbicides; 2 samples analyzed for dioxins/furans; porewater analyzed for butyltins | OSACL, 1999a |
| Portland Harbor Sediment Investigation | Y | WR-WSI98 | EPA's sediment inspection | 4 - 10 | 9/17/1997 | 2/2/1999 | 158 surface sediment, 28 surface porewater, 39 subsurface sediment | surface 0-10 cm, subsurface 0-90 cm | Y - 12 samples | Y - SD029, SD032 | Y - SD76, 79, 82, 64, 65 | Category 1 QA2 | X | X | X | X | X | X | X | X | | X | some samples analyzed for herbicides, dioxin/furans, PCB congeners, butyltins; porewater analyzed for butyltins and metals | Roy F. Weston, 1998 |
| TOSCO 1999 Sediment Sampling Results | Y | TOSCO99 | Dredged material characterization | 8 | 1/20/1999 | 1/22/1999 | 4 subsurface sediment, 1 surface reference | up to 304 cm | Y | N | N | Category 1 QA2 | X | X | | X | X | X | | | | | | Exponent, 1999a |
| Elf Autochem 1999 Willamette River | N | WLRELF99 | Sediment investigation of Ausfina shoreline | 8 | 11/23/1998 | 1/20/1999 | 15 subsurface sediment, 13 surface sediment | surface 0-10 cm, up to 90 cm | N | N | N | Category 1 QA1 | X | | | X | | X | | | X | | | Exponent, 1999b |
| Willbridge Terminal Facility RI | N | WLRWT398 | Remedial investigation of Willbridge Terminal | 8 | 12/17/1998 | 12/18/1998 | 15 surface sediment | 0-12.7 cm | N | N | N | Category 1 QA1 | X | X | | X | | X | | | X | | SVOCs sometimes limited to PAHs | KHM Environmental Management, 2000 |
| T2/T4 Sediment Study | N | PPTLDT24 | Dredged material characterization | 6, 10 | 9/15/1998 | 10/15/1998 | 3 subsurface porewater, 3 subsurface sediment | 0-91 cm | Y | Y | N | Category 1 QA1, grainsize Category 2 | X | X | X | X | X | X | | | | | | Hart Crowser, 1999c |
| Port of Portland T4 RI | N | WLCT4J98 | Remedial investigation of Terminal 4 | 5 | 10/12/1998 | 10/15/1998 | 18 subsurface sediment, 44 surface sediment, 2 surface reference sediment | surface 0-10 cm, subsurface up to 128 cm | N | N | N | Category 1 QA1 | X | X | | X | | X | | | X | X | not all samples analyzed for metals or VOCs, petroleum analyzed | Hart Crowser, 2000c |
| Sediment Characterization Local Sponsors' Berths (conducted with Corps) | N | WLCT0J98 | Dredged material characterization of Port of Portland berths | 2, 5-8, 10-12 | 9/14/1998 | 9/14/1998 | 7 subsurface porewater, 7 subsurface sediment, 12 surface porewater, 12 surface sediment | surface 0-10 cm, subsurface up to 152 cm | Y - 6 subsurface | N | N | Category 1 QA1 | X | X | X | X | X | X | | | | | porewater analyzed for butyltins | Hart Crowser, 1999b |
| International Terminals Sediment Sampling Event | N | WLCTTH98 | International Terminals Sediment Sampling Event | 4 | 8/18/1998 | 8/18/1998 | 5 surface sediment | 0-15 cm | N | N | N | Category 1 QA1 | X | X | X | X | | X | | | | | | Schnitzer Steel Industries, 1998 |
| Portland Shipyard Sed. Inv. | Y | PSYSEA98 | Sediment investigation to characterize distribution of chemicals in surface and subsurface sediments, supporting property transfer | 8, 9, 10, 11 | 3/31/1998 | 4/16/1998 | 65 surface sediment, 60 surface sediment, 61 surface porewater, 3 surface reference | surface 0-10 cm, subsurface to 490 cm | N | N | N | Category 1 QA2, conventionals QA1 | X | X | X | X | X | X | | | X | | butyltins, pesticides, VOCs not analyzed in all samples; porewater analyzed for butyltins | SLEA, 1998 |
| Portland Shipyard Inv. Audit | Y | PSYD&M97 | Sediment investigation to identify chemicals in the vicinity of the shipyard and their distribution | 9 | 11/26/1997 | 1/22/1998 | 4 subsurface sediment, 8 surface | surface 0-10 cm; subsurface up to 304 cm | N | N | N | Category 1 QA2 | X | X | X | X | X | | | | X | | butyltins and VOCs not analyzed in all samples; SVOCs sometimes limited to PAHs and phthalates | Dames & Moore, 1998 |
| Willamette River 1998 Data | Y | WRD&M98 | Sediment investigation to identify chemicals in the vicinity of the shipyard and their distribution | 7, 8, 9, 10, 11 | 1/19/1998 | 1/21/1998 | 12 surface sediment | 0-10 cm | N | N | N | Category 1 QA2 | X | X | X | X | X | | | | | | SVOCs limited to PAHs and phthalates, butyltins analyzed in 7 samples | Dames & Moore, 1998 |
| T4 Berth 416 1997 Sediment Characterization Study | N | WLCT4J97 | Dredged material characterization | 5, 6 | 10/23/1997 | 10/24/1997 | 4 subsurface sediment and 4 subsurface porewater | up to 182 cm | Y - 1 sample | Y | N | Category 1 QA1 | X | X | X | X | X | X | | | | | porewater analyzed for butyltins | Hart Crowser, 1998 |
| Baseline Sediment Riedel | N | RIEDBL97 | Baseline sediment assessment off Riedel's Portland Yard Site | 8 | 8/12/1997 | 8/13/1997 | 19 subsurface sediment, 8 surface sediment | surface 0-15 cm, subsurface to 460 cm | N | N | N | Category 1 QA1 | X | X | X | X | | | | | | | limited SVOCs analyses | MFA, 1997 |
| CRCD - Willamette River Channel Deepening | N | WLR0797 | Dredged material characterization supporting proposed channel deepening project | 1-9, 11, 12 | 7/22/1997 | 7/25/1997 | 18 surface sediment, 17 surface porewater, 50 subsurface sediment, and 1 subsurface porewater | surface up to 25 cm, subsurface up to 609 cm | Y- 3 samples | Y - WRGC30, WRGC31 | N | Category 1 QA1, grainsize & conventionals Category 2 | X | X | X | X | X | X | | | | | porewater analyzed for butyltins | OSACL, 1999b |
| PAH in surface sediments | Y | WLCASF97 | Assessment of the nature of PAH in surface sediments along the southwestern shore of Portland Harbor Superfund Site | 5, 6, 7, 8, 9 | 6/10/1997 | 6/12/1997 | 37 surface sediment | 0-10 cm | N | N | Y - Sta 1 | Category 1 QA2 | X | | | X | | | | | | | | Battelle, 2002 |
| T4 Berths 410,411 Maintenance Dredging | N | WLCT4L97 | Marine Terminal 4 Berths 410, 411 Maintenance Dredging | 5 | 5/6/1997 | 5/6/1997 | 3 subsurface sediment | up to 152 cm | N | Y | N | Category 1 QA1 | X | X | X | X | X | X | | | | | porewater analyzed for butyltins | Hart Crowser, 1997 |
| **TISSUE** | | | | | | | | | | | | | | | | | | | | | | | | |
| ATSDR/EPA/ODHS Fish Contaminant Study | Y** | WLTAS103 | Fish tissue investigation | lamprey - RM26, sturgeon - RM3.5-9.2, chinook - Clackamas Hatchery | lamprey - 5/22/03, chinook - 6/20/03, sturgeon - 8/11/03 | lamprey - 5/22/03, chinook - 6/20/03, sturgeon - 8/28/03 | 4 lamprey, up to 6 chinook fillet - skin on, up to 5 chinook whole body, up to 6 sturgeon fillet - skin off | -- | Y - lamprey | -- | -- | Category 1 QA2 | | X | | X | X | X | X | X | | X | PBDEs | ODHS, USEPA and ASTDR, 2003 |
| **TRANSITION ZONE WATER** | | | | | | | | | | | | | | | | | | | | | | | | |
| Siltcoos Supplemental In-River Transition Zone Water | Y | WLCSLH01 | Transition zone water study | 6.4 - 6.8 | 8/2/2001 | 6/1/2005 | 76 TZW samples | up to 87 ft below mudline | N | -- | -- | Category 1 QA2 | X | X | | X | | | | | X | X | herbicides, field measurements, lube oil, diesel range hydrocarbons | MFA, 2005 |
| **SURFACE WATER** | | | | | | | | | | | | | | | | | | | | | | | | |
| City of Portland TSS Data* | N | none | Surface water monitoring | 1.1 - 20 | 2/92 | 3/06 | 2520 composited surface water grabs | 10 ft from surface | Y | -- | -- | none | X | | | | | | | | | | TSS | |
| **STORMWATER/SEEPS** | | | | | | | | | | | | | | | | | | | | | | | | |
| Rhone-Poulenc Outfalls 22B and 22C Stormwater | Y | WLCRP104 | Outfall monitoring | 6.8, 6.9 | 10/1/93 | 9/23/04 | 9 samples on 7 dates | -- | N | N | N | Category 1 QA2 | X | X | | X | X | X | | X | X | X | herbicides, petroleum hydrocarbons | AMEC Earth & Environmental, Inc., 2003, 2004, 2005 |

Notes:
* The City of Portland total suspended solids (TSS) data are not included in the project database; however, these data are used for purposes of comparison in Section 6.3.
** The Round 2 HHRA included the ATSDR/EPA/ODHS tissue data.
For risk evaluation and nature and extent discussions, only data collected from May 1997 are used. Sediment samples collected from dredged or capped areas are removed for risk evaluations.
Risk evaluations use data with a Category 1 QA2 level of validation, and sediment samples must be collected from within the top 30 cm of the sediment horizon.
Nature and extent discussions use data with a Category 1 QA1 or QA2 level of validation.
Section 6.1.2 upstream datasets are both Category 1 and Category 2.
See Table 2.2-1 for riparian data sets.



BZTO104(e)033175

Table 2.1-1. Summary of LWG and Non-LWG Nature and Extent Data.

| Sum of Sample Count | LWG | | NonLWG | | |
|---|---|---|---|---|---|
| **Media** | **normal** | **replicate** | **normal** | **replicate** | **Grand Total** |
| black crappie (fillet without skin) | 2 | 2 | | | 4 |
| black crappie (fillet) | 2 | 2 | | | 4 |
| black crappie (whole body) | 2 | 2 | | | 4 |
| brown bullhead (fillet without skin) | 4 | 8 | | | 12 |
| brown bullhead (whole body) | 4 | 5 | | | 9 |
| carp (fillet without skin) | 2 | 4 | | | 6 |
| carp (fillet) | 2 | 4 | | | 6 |
| carp (whole body) | 3 | 4 | | | 7 |
| chinook (fillet) | | | 3 | | 3 |
| chinook (stomach contents) | 6 | | | | 6 |
| chinook (whole body) | 10 | 8 | 7 | | 25 |
| clam (body without shell) | 36 | | | | 36 |
| crayfish (whole body) | 24 | 3 | | | 27 |
| lab clam (body without shell) | 33 | 2 | 11 | | 46 |
| largescale sucker (whole body) | 5 | 1 | | | 6 |
| Lumbriculus variegatus (whole body) | 33 | 2 | 11 | | 46 |
| multiplate invertebrates (whole body) | 7 | | | | 7 |
| northern pikeminnow (whole body) | 5 | 1 | | | 6 |
| Pacific lamprey (whole body) | | | 4 | | 4 |
| peamouth (whole body) | 4 | | | | 4 |
| sculpin (whole body) | 24 | 3 | | | 27 |
| sediment porewater | | | 397 | 19 | 416 |
| seep | | | 27 | | 27 |
| smallmouth bass (fillet without skin) | 5 | | | | 5 |
| smallmouth bass (fillet) | 5 | | | | 5 |
| smallmouth bass (whole body) | 10 | 10 | | | 20 |
| sturgeon (fillet without skin) | | | 5 | | 5 |
| subsurface sediment | 805 | 50 | 720 | 7 | 1582 |
| surface sediment | 766 | 64 | 821 | 32 | 1683 |
| surface water | 70 | 7 | 96 | 3 | 176 |
| surface water by XAD column | 21 | 3 | | | 24 |
| surface water by XAD filter | 21 | 3 | | | 24 |
| TZW | 201 | 45 | 209 | | 455 |
| Grand Total | 2108 | 228 | 2311 | 61 | 4708 |

BZTO104(e)033176

Table 2.1-2. Summary of LWG Rounds 1 and 2 and Non-LWG Sediment Sample Counts.

| Sum of Sample Count | | | Area | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Media | Group | Analyte | Downstream | Downtown Corridor | Multnomah Channel | Riparian Zone | Study Area | Upriver | Grand Total |
| subsurface sediment | Conventionals | Acid Volatile Sulfides | 9 | 13 | | | 12 | | 34 |
| | | Ammonia | 7 | 14 | | | 124 | | 145 |
| | | Cyanide | | | | 1 | 36 | | 37 |
| | | Moisture | | | | | 19 | | 19 |
| | | Specific Gravity | | | | | 749 | | 749 |
| | | Sulfide | 7 | 14 | | | 113 | | 134 |
| | | Total organic carbon | 16 | 27 | | 5 | 1234 | | 1282 |
| | | Total solids | 18 | 29 | | 10 | 1355 | | 1412 |
| | | Total volatile solids | 7 | 16 | | | 139 | | 162 |
| | Grainsize | < 0.075 mm | | | | | 173 | | 173 |
| | | > 0.075 mm | | | | | 19 | | 19 |
| | | >10 Phi clay | | | | | 5 | | 5 |
| | | >9 Phi clay | | | | | 748 | | 748 |
| | | 8-9 Phi clay | | | | | 753 | | 753 |
| | | 9-10 Phi clay | | | | | 5 | | 5 |
| | | Clay | 2 | 11 | | 5 | 231 | | 249 |
| | | Coarse sand | | 7 | | 1 | 840 | | 848 |
| | | Coarse silt | | | | | 753 | | 753 |
| | | Fine gravel | | 7 | | | 813 | | 820 |
| | | Fine sand | | 7 | | 1 | 840 | | 848 |
| | | Fine silt | | | | | 753 | | 753 |
| | | Fines | 2 | 11 | | 5 | 986 | | 1004 |
| | | Gravel | 2 | 1 | | 5 | 126 | | 134 |
| | | Mean grain size | 2 | 4 | | | 15 | | 21 |
| | | Median grain size | 2 | 4 | | | 15 | | 21 |
| | | Medium gravel | | 7 | | | 813 | | 820 |
| | | Medium sand | | 7 | | 1 | 840 | | 848 |
| | | Medium silt | | | | | 753 | | 753 |
| | | Sand | 2 | 4 | | 5 | 158 | | 169 |
| | | Sieve 10 | | | | | 159 | | 159 |
| | | Sieve 140 | | | | | 159 | | 159 |
| | | Sieve 20 | | | | | 159 | | 159 |
| | | Sieve 200 | | | | | 159 | | 159 |
| | | Sieve 230 | | | | | 5 | | 5 |
| | | Sieve 4 | | | | | 159 | | 159 |
| | | Sieve 40 | | | | | 159 | | 159 |
| | | Sieve 60 | | | | | 159 | | 159 |
| | | Silt | 2 | 11 | | 5 | 231 | | 249 |
| | | Very coarse sand | | 7 | | 1 | 837 | | 845 |
| | | Very fine sand | | 7 | | 1 | 837 | | 845 |
| | | Very fine silt | | | | | 753 | | 753 |
| | Metals | Antimony | 7 | 15 | | | 899 | | 921 |
| | | Arsenic | 16 | 28 | | 2 | 1200 | | 1246 |
| | | Cadmium | 16 | 28 | | 1 | 1156 | | 1201 |
| | | Copper | 16 | 28 | | 1 | 1200 | | 1245 |
| | | Lead | 16 | 28 | | 2 | 1200 | | 1246 |
| | | Mercury | 16 | 28 | | 1 | 1087 | | 1132 |
| | | Nickel | 16 | 28 | | 1 | 1180 | | 1225 |
| | | Silver | 16 | 28 | | 1 | 1153 | | 1198 |
| | | Zinc | 16 | 28 | | 1 | 1188 | | 1233 |
| | | Aluminum | | 7 | | | 769 | | 776 |
| | | Barium | | | | 1 | 42 | | 43 |
| | | Beryllium | | 1 | | | 46 | | 47 |
| | | Calcium | | | | | 37 | | 37 |
| | | Chromium | 16 | 28 | | 2 | 1154 | | 1200 |
| | | Chromium hexavalent | | | | | 45 | | 45 |
| | | Cobalt | | | | | 37 | | 37 |
| | | Iron | | | | | 40 | | 40 |
| | | Magnesium | | | | | 37 | | 37 |
| | | Manganese | | | | | 40 | | 40 |
| | | Potassium | | | | | 37 | | 37 |
| | | Selenium | | 8 | | 1 | 952 | | 961 |
| | | Sodium | | | | | 37 | | 37 |
| | | Thallium | | 1 | | | 46 | | 47 |
| | | Tin | | | | | 3 | | 3 |
| | | Titanium | | | | | 27 | | 27 |
| | | Vanadium | | | | | 37 | | 37 |
| | Butyltins | Butyltin ion | | 6 | | | 304 | | 310 |
| | | Dibutyltin ion | | 6 | | | 304 | | 310 |
| | | Tetrabutyltin | | 6 | | | 305 | | 311 |
| | | Tributyltin ion | | 6 | | | 322 | | 328 |
| | Aroclors | Aroclor 1016 | 16 | 32 | | | 1071 | | 1119 |
| | | Aroclor 1221 | 16 | 32 | | | 1071 | | 1119 |
| | | Aroclor 1232 | 16 | 32 | | | 1071 | | 1119 |
| | | Aroclor 1242 | 16 | 32 | | | 1071 | | 1119 |
| | | Aroclor 1248 | 16 | 32 | | | 1071 | | 1119 |
| | | Aroclor 1254 | 16 | 32 | | | 1071 | | 1119 |

BZTO104(e)033177

Table 2.1-2. Summary of LWG Rounds 1 and 2 and Non-LWG Sediment Sample Counts.

| Sum of Sample Count | | | Area | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Media | Group | Analyte | Downstream | Downtown Corridor | Multnomah Channel | Riparian Zone | Study Area | Upriver | Grand Total |
| subsurface sediment | Aroclors | Aroclor 1260 | 16 | 32 | | | 1071 | | 1119 |
| | | Aroclor 1262 | | 7 | | | 883 | | 890 |
| | | Aroclor 1268 | | 7 | | | 883 | | 890 |
| | | Total PCB Aroclors | 16 | 32 | | | 1071 | | 1119 |
| | Pesticides | Heptachlor epoxide | 11 | 26 | | 4 | 839 | | 880 |
| | | Endosulfan sulfate | 11 | 26 | | 4 | 833 | | 874 |
| | | Mirex | | 7 | | | 706 | | 713 |
| | | Oxychlordane | | 7 | | | 706 | | 713 |
| | | Aldrin | 16 | 31 | | 4 | 874 | | 925 |
| | | alpha-Hexachlorocyclohexane | 11 | 26 | | | 824 | | 861 |
| | | beta-Hexachlorocyclohexane | 11 | 26 | | 4 | 833 | | 874 |
| | | delta-Hexachlorocyclohexane | 11 | 26 | | 4 | 830 | | 871 |
| | | beta-Endosulfan | 11 | 26 | | 4 | 833 | | 874 |
| | | 2,4'-DDE | | 7 | | | 875 | | 882 |
| | | trans-Nonachlor | | 7 | | | 706 | | 713 |
| | | 4,4'-DDT | 16 | 31 | | 4 | 1042 | | 1093 |
| | | cis-Nonachlor | | 7 | | | 706 | | 713 |
| | | trans-Chlordane | 7 | 14 | | 4 | 827 | | 852 |
| | | 2,4'-DDD | | 7 | | | 875 | | 882 |
| | | Endrin ketone | 2 | 13 | | 4 | 821 | | 840 |
| | | gamma-Hexachlorocyclohexane | 16 | 31 | | 4 | 874 | | 925 |
| | | Dieldrin | 16 | 31 | | 4 | 874 | | 925 |
| | | Endrin | 11 | 26 | | 4 | 839 | | 880 |
| | | Methoxychlor | 11 | 26 | | 4 | 839 | | 880 |
| | | 4,4'-DDD | 16 | 31 | | 4 | 1043 | | 1094 |
| | | 4,4'-DDE | 16 | 31 | | 4 | 1043 | | 1094 |
| | | Endrin aldehyde | 11 | 26 | | 4 | 833 | | 874 |
| | | Heptachlor | 16 | 31 | | 4 | 874 | | 925 |
| | | 2,4'-DDT | | 7 | | | 875 | | 882 |
| | | alpha-Endosulfan | 11 | 26 | | 4 | 833 | | 874 |
| | | cis-Chlordane | 7 | 14 | | 4 | 847 | | 872 |
| | | Toxaphene | 11 | 26 | | 4 | 839 | | 880 |
| | | Chlordane (cis & trans) | 16 | 31 | | 4 | 213 | | 264 |
| | | Chlordane (technical) | | | | | 9 | | 9 |
| | | Endosulfan | | | | | 6 | | 6 |
| | | Hexachlorocyclohexanes | | | | 4 | 9 | | 13 |
| | | Total Chlordanes | | 7 | | | 706 | | 713 |
| | | Total Endosulfan | 11 | 26 | | 4 | 833 | | 874 |
| | | Total of 2,4' and 4,4'-DDD | | 7 | | | 875 | | 882 |
| | | Total of 2,4' and 4,4'-DDD, -DDE, -DDT | | 7 | | | 875 | | 882 |
| | | Total of 2,4' and 4,4'-DDE | | 7 | | | 875 | | 882 |
| | | Total of 2,4' and 4,4'-DDT | | 7 | | | 875 | | 882 |
| | | Total of 4,4'-DDD, -DDE, -DDT | 16 | 31 | | 4 | 1043 | | 1094 |
| | SVOCs | Hexachlorobenzene | 7 | 19 | | 4 | 940 | | 970 |
| | | Benzoic acid | 7 | 19 | | 4 | 918 | | 948 |
| | | Dibenzofuran | 16 | 32 | | 5 | 1010 | | 1063 |
| | | Hexachloroethane | 5 | 17 | | 4 | 912 | | 938 |
| | | Hexachlorobutadiene | 7 | 19 | | 5 | 943 | | 974 |
| | | 1,2,4-Trichlorobenzene | 5 | 17 | | 5 | 892 | | 919 |
| | | 1,2-Dichlorobenzene | 7 | 19 | | 5 | 919 | | 950 |
| | | 1,3-Dichlorobenzene | 7 | 19 | | 5 | 919 | | 950 |
| | | 1,4-Dichlorobenzene | 7 | 19 | | 5 | 961 | | 992 |
| | | 2,4-Dinitrotoluene | 2 | 8 | | 4 | 843 | | 857 |
| | | 2,6-Dinitrotoluene | 2 | 8 | | 4 | 843 | | 857 |
| | | 2-Chloronaphthalene | 2 | 8 | | 4 | 854 | | 868 |
| | | 2-Nitroaniline | 2 | 8 | | 4 | 843 | | 857 |
| | | 3,3'-Dichlorobenzidine | 2 | 8 | | 4 | 842 | | 856 |
| | | 3-Nitroaniline | 2 | 8 | | 4 | 843 | | 857 |
| | | 4-Bromophenyl phenyl ether | 2 | 8 | | 4 | 843 | | 857 |
| | | 4-Chloroaniline | 2 | 8 | | 4 | 843 | | 857 |
| | | 4-Chlorophenyl phenyl ether | 2 | 8 | | 4 | 843 | | 857 |
| | | 4-Nitroaniline | 2 | 8 | | 4 | 843 | | 857 |
| | | Aniline | | 7 | | | 761 | | 768 |
| | | Azobenzene | | 7 | | | 761 | | 768 |
| | | Benzyl alcohol | 7 | 19 | | 4 | 922 | | 952 |
| | | Bis(2-chloro-1-methylethyl) ether | | | | 4 | 57 | | 61 |
| | | Bis(2-chloroethoxy) methane | 2 | 8 | | 4 | 843 | | 857 |
| | | Bis(2-chloroethyl) ether | 2 | 8 | | 4 | 843 | | 857 |
| | | Bis(2-chloroisopropyl) ether | 2 | 8 | | | 786 | | 796 |
| | | Carbazole | | 8 | | 4 | 815 | | 827 |
| | | Diphenyl | | | | | 169 | | 169 |
| | | Hexachlorocyclopentadiene | 2 | 8 | | | 837 | | 847 |
| | | Isophorone | 2 | 8 | | 4 | 843 | | 857 |
| | | Nitrobenzene | 2 | 8 | | 4 | 843 | | 857 |
| | | N-Nitrosodimethylamine | | 7 | | | 761 | | 768 |
| | | N-Nitrosodiphenylamine | 7 | 19 | | 4 | 925 | | 955 |
| | | N-Nitrosodipropylamine | 2 | 8 | | 4 | 843 | | 857 |

BZTO104(e)033178

Table 2.1-2. Summary of LWG Rounds 1 and 2 and Non-LWG Sediment Sample Counts.

| Sum of Sample Count | | | Area | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Media | Group | Analyte | Downstream | Downtown Corridor | Multnomah Channel | Riparian Zone | Study Area | Upriver | Grand Total |
| subsurface sediment | SVOCs | Retene | | | | | 11 | | 11 |
| | Phenols | Phenol | 7 | 19 | | 4 | 967 | | 997 |
| | | 2-Methylphenol | 7 | 19 | | 4 | 967 | | 997 |
| | | 4-Methylphenol | 5 | 14 | | | 917 | | 936 |
| | | 2,3,4,5-Tetrachlorophenol | | 7 | | | 760 | | 767 |
| | | 2,3,4,6;2,3,5,6-Tetrachlorophenol coelution | | | | | 520 | | 520 |
| | | 2,3,5,6-Tetrachlorophenol | | 7 | | | 240 | | 247 |
| | | 2,4,5-Trichlorophenol | 2 | 8 | | 4 | 884 | | 898 |
| | | 2,4,6-Trichlorophenol | 2 | 8 | | 4 | 884 | | 898 |
| | | 2,4-Dichlorophenol | 2 | 8 | | 4 | 885 | | 899 |
| | | 2,4-Dimethylphenol | 7 | 19 | | 4 | 967 | | 997 |
| | | 2,4-Dinitrophenol | 2 | 8 | | | 880 | | 890 |
| | | 2-Chlorophenol | 2 | 8 | | 4 | 885 | | 899 |
| | | 2-Nitrophenol | 2 | 8 | | | 876 | | 886 |
| | | 3- and 4-Methylphenol Coelution | 2 | 5 | | | 47 | | 54 |
| | | 4,6-Dinitro-2-methylphenol | 2 | 8 | | 4 | 885 | | 899 |
| | | 4-Chloro-3-methylphenol | 2 | 8 | | 4 | 885 | | 899 |
| | | 4-Nitrophenol | 2 | 8 | | 4 | 883 | | 897 |
| | | Pentachlorophenol | 7 | 19 | | | 971 | | 997 |
| | Phthalates | Bis(2-ethylhexyl) phthalate | 7 | 19 | | 4 | 1139 | | 1169 |
| | | Butylbenzyl phthalate | 7 | 19 | | 4 | 1139 | | 1169 |
| | | Dibutyl phthalate | 7 | 19 | | 4 | 1139 | | 1169 |
| | | Diethyl phthalate | 7 | 19 | | 4 | 1139 | | 1169 |
| | | Dimethyl phthalate | 7 | 19 | | 4 | 1139 | | 1169 |
| | | Di-n-octyl phthalate | 7 | 19 | | 4 | 1139 | | 1169 |
| | PAHs | Naphthalene | 16 | 32 | | 6 | 1242 | | 1296 |
| | | Acenaphthene | 16 | 32 | | 5 | 1199 | | 1252 |
| | | Fluorene | 16 | 32 | | 5 | 1199 | | 1252 |
| | | Phenanthrene | 16 | 32 | | 5 | 1199 | | 1252 |
| | | Anthracene | 16 | 32 | | 5 | 1199 | | 1252 |
| | | Fluoranthene | 16 | 32 | | 5 | 1199 | | 1252 |
| | | Pyrene | 16 | 32 | | 5 | 1199 | | 1252 |
| | | Chrysene | 16 | 32 | | 5 | 1199 | | 1252 |
| | | 1,6,7-Trimethylnaphthalene | | | | | 169 | | 169 |
| | | 1-Methylnaphthalene | | | | | 193 | | 193 |
| | | 1-Methylphenanthrene | | | | | 169 | | 169 |
| | | 2,6-Dimethylnaphthalene | | | | | 169 | | 169 |
| | | 2-Methylnaphthalene | 14 | 30 | | 5 | 1155 | | 1204 |
| | | Acenaphthylene | 16 | 32 | | 5 | 1199 | | 1252 |
| | | Benzo(a)anthracene | 16 | 32 | | 5 | 1199 | | 1252 |
| | | Benzo(a)pyrene | 16 | 32 | | 5 | 1199 | | 1252 |
| | | Benzo(b)fluoranthene | 16 | 32 | | 5 | 1199 | | 1252 |
| | | Benzo(b+k)fluoranthene | 16 | 32 | | 5 | 478 | | 531 |
| | | Benzo(e)pyrene | | | | | 169 | | 169 |
| | | Benzo(g,h,i)perylene | 16 | 32 | | 5 | 1199 | | 1252 |
| | | Benzo(k)fluoranthene | 16 | 32 | | 5 | 1199 | | 1252 |
| | | Dibenzo(a,h)anthracene | 16 | 32 | | 5 | 1199 | | 1252 |
| | | High Molecular Weight PAH | 16 | 32 | | 5 | 1199 | | 1252 |
| | | Indeno(1,2,3-cd)pyrene | 16 | 32 | | 5 | 1199 | | 1252 |
| | | Low Molecular Weight PAH | 16 | 32 | | 5 | 1199 | | 1252 |
| | | Perylene | | | | | 169 | | 169 |
| | | Total PAHs | 16 | 32 | | 5 | 1199 | | 1252 |
| | Herbicides | 2,4,5-T | | | | | 184 | | 184 |
| | | 2,4-D | | | | | 184 | | 184 |
| | | 2,4-DB | | | | | 184 | | 184 |
| | | Dalapon | | | | | 184 | | 184 |
| | | Dicamba | | | | | 184 | | 184 |
| | | Dichloroprop | | | | | 184 | | 184 |
| | | Dinoseb | | | | | 184 | | 184 |
| | | MCPA | | | | | 184 | | 184 |
| | | MCPP | | | | | 184 | | 184 |
| | | Silvex | | | | | 184 | | 184 |
| | PCB Congeners | PCB001 | | | | | 29 | | 29 |
| | | PCB002 | | | | | 29 | | 29 |
| | | PCB003 | | | | | 29 | | 29 |
| | | PCB004 & 010 | | | | | 29 | | 29 |
| | | PCB005 & 008 | | | | | 29 | | 29 |
| | | PCB006 | | | | | 29 | | 29 |
| | | PCB007 & 009 | | | | | 29 | | 29 |
| | | PCB011 | | | | | 29 | | 29 |
| | | PCB012 & 013 | | | | | 29 | | 29 |
| | | PCB014 | | | | | 29 | | 29 |
| | | PCB015 | | | | | 29 | | 29 |
| | | PCB016 & 032 | | | | | 29 | | 29 |
| | | PCB017 | | | | | 29 | | 29 |
| | | PCB018 | | | | | 29 | | 29 |
| | | PCB019 | | | | | 29 | | 29 |

BZTO104(e)033179

Table 2.1-2. Summary of LWG Rounds 1 and 2 and Non-LWG Sediment Sample Counts.

| Sum of Sample Count | | | Area | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Media | Group | Analyte | Downstream | Downtown Corridor | Multnomah Channel | Riparian Zone | Study Area | Upriver | Grand Total |
| subsurface sediment | PCB Congeners | PCB020 & 021 & 033 | | | | | 29 | | 29 |
| | | PCB022 | | | | | 29 | | 29 |
| | | PCB023 | | | | | 29 | | 29 |
| | | PCB024 & 027 | | | | | 29 | | 29 |
| | | PCB025 | | | | | 29 | | 29 |
| | | PCB026 | | | | | 29 | | 29 |
| | | PCB028 | | | | | 29 | | 29 |
| | | PCB029 | | | | | 29 | | 29 |
| | | PCB030 | | | | | 29 | | 29 |
| | | PCB031 | | | | | 29 | | 29 |
| | | PCB034 | | | | | 29 | | 29 |
| | | PCB035 | | | | | 29 | | 29 |
| | | PCB036 | | | | | 29 | | 29 |
| | | PCB037 | | | | | 29 | | 29 |
| | | PCB038 | | | | | 29 | | 29 |
| | | PCB039 | | | | | 29 | | 29 |
| | | PCB040 | | | | | 29 | | 29 |
| | | PCB041 & 064 &071 &072 | | | | | 29 | | 29 |
| | | PCB042 & 059 | | | | | 29 | | 29 |
| | | PCB043 & 049 | | | | | 29 | | 29 |
| | | PCB044 | | | | | 29 | | 29 |
| | | PCB045 | | | | | 29 | | 29 |
| | | PCB046 | | | | | 29 | | 29 |
| | | PCB047 | | | | | 29 | | 29 |
| | | PCB048 & 075 | | | | | 29 | | 29 |
| | | PCB050 | | | | | 29 | | 29 |
| | | PCB051 | | | | | 29 | | 29 |
| | | PCB052 & 069 | | | | | 29 | | 29 |
| | | PCB053 | | | | | 29 | | 29 |
| | | PCB054 | | | | | 29 | | 29 |
| | | PCB055 | | | | | 29 | | 29 |
| | | PCB056 & 060 | | | | | 29 | | 29 |
| | | PCB057 | | | | | 29 | | 29 |
| | | PCB058 | | | | | 29 | | 29 |
| | | PCB061 & 070 | | | | | 29 | | 29 |
| | | PCB062 | | | | | 29 | | 29 |
| | | PCB063 | | | | | 29 | | 29 |
| | | PCB065 | | | | | 29 | | 29 |
| | | PCB066 & 076 | | | | | 29 | | 29 |
| | | PCB067 | | | | | 29 | | 29 |
| | | PCB068 | | | | | 29 | | 29 |
| | | PCB073 | | | | | 29 | | 29 |
| | | PCB074 | | | | | 29 | | 29 |
| | | PCB077 | | | | | 29 | | 29 |
| | | PCB078 | | | | | 29 | | 29 |
| | | PCB079 | | | | | 29 | | 29 |
| | | PCB080 | | | | | 29 | | 29 |
| | | PCB081 | | | | | 29 | | 29 |
| | | PCB082 | | | | | 29 | | 29 |
| | | PCB083 | | | | | 29 | | 29 |
| | | PCB084 & 092 | | | | | 29 | | 29 |
| | | PCB085 & 116 | | | | | 29 | | 29 |
| | | PCB086 | | | | | 29 | | 29 |
| | | PCB087 & 117 & 125 | | | | | 29 | | 29 |
| | | PCB088 & 091 | | | | | 29 | | 29 |
| | | PCB089 | | | | | 29 | | 29 |
| | | PCB090 & 101 | | | | | 29 | | 29 |
| | | PCB093 | | | | | 29 | | 29 |
| | | PCB094 | | | | | 29 | | 29 |
| | | PCB095 & 098 & 102 | | | | | 29 | | 29 |
| | | PCB096 | | | | | 29 | | 29 |
| | | PCB097 | | | | | 29 | | 29 |
| | | PCB099 | | | | | 29 | | 29 |
| | | PCB100 | | | | | 29 | | 29 |
| | | PCB103 | | | | | 29 | | 29 |
| | | PCB104 | | | | | 29 | | 29 |
| | | PCB105 | | | | | 29 | | 29 |
| | | PCB106 & 118 | | | | | 29 | | 29 |
| | | PCB107 & 109 | | | | | 29 | | 29 |
| | | PCB108 & 112 | | | | | 29 | | 29 |
| | | PCB110 | | | | | 29 | | 29 |
| | | PCB111 & 115 | | | | | 29 | | 29 |
| | | PCB113 | | | | | 29 | | 29 |
| | | PCB114 | | | | | 29 | | 29 |
| | | PCB119 | | | | | 29 | | 29 |
| | | PCB120 | | | | | 29 | | 29 |
| | | PCB121 | | | | | 29 | | 29 |

BZTO104(e)033180

Table 2.1-2. Summary of LWG Rounds 1 and 2 and Non-LWG Sediment Sample Counts.

| Sum of Sample Count | | | Area | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Media | Group | Analyte | Downstream | Downtown Corridor | Multnomah Channel | Riparian Zone | Study Area | Upriver | Grand Total |
| subsurface sediment | PCB Congeners | PCB122 | | | | | 29 | | 29 |
| | | PCB123 | | | | | 29 | | 29 |
| | | PCB124 | | | | | 29 | | 29 |
| | | PCB126 | | | | | 29 | | 29 |
| | | PCB127 | | | | | 29 | | 29 |
| | | PCB128 & 162 | | | | | 29 | | 29 |
| | | PCB129 | | | | | 29 | | 29 |
| | | PCB130 | | | | | 29 | | 29 |
| | | PCB131 | | | | | 29 | | 29 |
| | | PCB132 & 161 | | | | | 29 | | 29 |
| | | PCB133 & 142 | | | | | 29 | | 29 |
| | | PCB134 & 143 | | | | | 29 | | 29 |
| | | PCB135 | | | | | 29 | | 29 |
| | | PCB136 | | | | | 29 | | 29 |
| | | PCB137 | | | | | 29 | | 29 |
| | | PCB138 & 163 & 164 | | | | | 29 | | 29 |
| | | PCB139 & 149 | | | | | 29 | | 29 |
| | | PCB140 | | | | | 29 | | 29 |
| | | PCB141 | | | | | 29 | | 29 |
| | | PCB144 | | | | | 29 | | 29 |
| | | PCB145 | | | | | 29 | | 29 |
| | | PCB146 & 165 | | | | | 29 | | 29 |
| | | PCB147 | | | | | 29 | | 29 |
| | | PCB148 | | | | | 29 | | 29 |
| | | PCB150 | | | | | 29 | | 29 |
| | | PCB151 | | | | | 29 | | 29 |
| | | PCB152 | | | | | 29 | | 29 |
| | | PCB153 | | | | | 29 | | 29 |
| | | PCB154 | | | | | 29 | | 29 |
| | | PCB155 | | | | | 29 | | 29 |
| | | PCB156 | | | | | 29 | | 29 |
| | | PCB157 | | | | | 29 | | 29 |
| | | PCB158 & 160 | | | | | 29 | | 29 |
| | | PCB159 | | | | | 29 | | 29 |
| | | PCB166 | | | | | 29 | | 29 |
| | | PCB167 | | | | | 29 | | 29 |
| | | PCB168 | | | | | 29 | | 29 |
| | | PCB169 | | | | | 29 | | 29 |
| | | PCB170 | | | | | 29 | | 29 |
| | | PCB171 | | | | | 29 | | 29 |
| | | PCB172 | | | | | 29 | | 29 |
| | | PCB173 | | | | | 29 | | 29 |
| | | PCB174 | | | | | 29 | | 29 |
| | | PCB175 | | | | | 29 | | 29 |
| | | PCB176 | | | | | 29 | | 29 |
| | | PCB177 | | | | | 29 | | 29 |
| | | PCB178 | | | | | 29 | | 29 |
| | | PCB179 | | | | | 29 | | 29 |
| | | PCB180 | | | | | 29 | | 29 |
| | | PCB181 | | | | | 29 | | 29 |
| | | PCB182 & 187 | | | | | 29 | | 29 |
| | | PCB183 | | | | | 29 | | 29 |
| | | PCB184 | | | | | 29 | | 29 |
| | | PCB185 | | | | | 29 | | 29 |
| | | PCB186 | | | | | 29 | | 29 |
| | | PCB188 | | | | | 29 | | 29 |
| | | PCB189 | | | | | 29 | | 29 |
| | | PCB190 | | | | | 29 | | 29 |
| | | PCB191 | | | | | 29 | | 29 |
| | | PCB192 | | | | | 29 | | 29 |
| | | PCB193 | | | | | 29 | | 29 |
| | | PCB194 | | | | | 29 | | 29 |
| | | PCB195 | | | | | 29 | | 29 |
| | | PCB196 & 203 | | | | | 29 | | 29 |
| | | PCB197 | | | | | 29 | | 29 |
| | | PCB198 | | | | | 29 | | 29 |
| | | PCB199 | | | | | 29 | | 29 |
| | | PCB200 | | | | | 29 | | 29 |
| | | PCB201 | | | | | 29 | | 29 |
| | | PCB202 | | | | | 29 | | 29 |
| | | PCB204 | | | | | 29 | | 29 |
| | | PCB205 | | | | | 29 | | 29 |
| | | PCB206 | | | | | 29 | | 29 |
| | | PCB207 | | | | | 29 | | 29 |
| | | PCB208 | | | | | 29 | | 29 |
| | | PCB209 | | | | | 29 | | 29 |
| | | Total PCB Congeners | | | | | 29 | | 29 |

BZTO104(e)033181

Table 2.1-2. Summary of LWG Rounds 1 and 2 and Non-LWG Sediment Sample Counts.

| Sum of Sample Count | | | Area | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Media | Group | Analyte | Downstream | Downtown Corridor | Multnomah Channel | Riparian Zone | Study Area | Upriver | Grand Total |
| subsurface sediment | VOCs | Ethylbenzene | | | | 7 | 474 | | 481 |
| | | 1,1,1,2-Tetrachloroethane | | | | 5 | 409 | | 414 |
| | | 1,1,1-Trichloroethane | | | | 5 | 418 | | 423 |
| | | 1,1,2,2-Tetrachloroethane | | | | 5 | 418 | | 423 |
| | | 1,1,2-Trichloro-1,2,2-trifluoroethane | | | | | 9 | | 9 |
| | | 1,1,2-Trichloroethane | | | | 5 | 418 | | 423 |
| | | 1,1-Dichloroethane | | | | 5 | 418 | | 423 |
| | | 1,1-Dichloroethene | | | | 5 | 418 | | 423 |
| | | 1,1-Dichloropropene | | | | 5 | 9 | | 14 |
| | | 1,2,3-Trichlorobenzene | | | | 5 | 11 | | 16 |
| | | 1,2,3-Trichloropropane | | | | 5 | 409 | | 414 |
| | | 1,2,4-Trimethylbenzene | | | | 5 | 9 | | 14 |
| | | 1,2-Dibromo-3-chloropropane | | | | 5 | 18 | | 23 |
| | | 1,2-Dichloroethane | | | | 5 | 418 | | 423 |
| | | 1,2-Dichloropropane | | | | 5 | 418 | | 423 |
| | | 1,3,5-Trimethylbenzene | | | | 5 | 9 | | 14 |
| | | 1,3-Dichloropropane | | | | 5 | 9 | | 14 |
| | | 1,4-Dichloro-trans-2-butene | | | | | 400 | | 400 |
| | | 1-Methyl-4-isopropylbenzene | | | | 1 | | | 1 |
| | | 2,2-Dichloropropane | | | | 5 | 9 | | 14 |
| | | 2-Chloroethyl vinyl ether | | | | | 400 | | 400 |
| | | 2-Chlorotoluene | | | | 5 | 9 | | 14 |
| | | 4-Chlorotoluene | | | | 5 | 9 | | 14 |
| | | Acetone | | | | 1 | 409 | | 410 |
| | | Acrolein | | | | | 400 | | 400 |
| | | Acrylonitrile | | | | | 400 | | 400 |
| | | Benzene | | | | 7 | 461 | | 468 |
| | | Bromobenzene | | | | 5 | 9 | | 14 |
| | | Bromochloromethane | | | | 5 | 411 | | 416 |
| | | Bromodichloromethane | | | | 5 | 418 | | 423 |
| | | Bromoform | | | | 5 | 418 | | 423 |
| | | Bromomethane | | | | 5 | 418 | | 423 |
| | | BTEX | | | | 5 | 427 | | 432 |
| | | Carbon disulfide | | | | 5 | 418 | | 423 |
| | | Carbon tetrachloride | | | | 5 | 418 | | 423 |
| | | Chlorobenzene | | | | 5 | 418 | | 423 |
| | | Chlorodibromomethane | | | | 5 | 418 | | 423 |
| | | Chloroethane | | | | 5 | 418 | | 423 |
| | | Chloroform | | | | 5 | 418 | | 423 |
| | | Chloromethane | | | | 5 | 418 | | 423 |
| | | cis-1,2-Dichloroethene | | | | 5 | 18 | | 23 |
| | | cis-1,3-Dichloropropene | | | | 5 | 418 | | 423 |
| | | Dichlorodifluoromethane | | | | 5 | 418 | | 423 |
| | | Ethylene dibromide | | | | 5 | 409 | | 414 |
| | | Hexahydrobenzene | | | | | 9 | | 9 |
| | | Isopropylbenzene | | | | 5 | 418 | | 423 |
| | | m,p-Xylene | | | | 7 | 461 | | 468 |
| | | Methyl acetate | | | | | 9 | | 9 |
| | | Methyl iodide | | | | | 400 | | 400 |
| | | Methyl isobutyl ketone | | | | 1 | 409 | | 410 |
| | | Methyl n-butyl ketone | | | | 5 | 418 | | 423 |
| | | Methyl tert-butyl ether | | | | 1 | 409 | | 410 |
| | | Methylcyclohexane | | | | | 9 | | 9 |
| | | Methylene bromide | | | | 5 | 409 | | 414 |
| | | Methylene chloride | | | | 5 | 418 | | 423 |
| | | Methylethyl ketone | | | | 1 | 409 | | 410 |
| | | Methylisopropylbenzene | | | | 4 | 9 | | 13 |
| | | n-Butylbenzene | | | | 5 | 9 | | 14 |
| | | n-Propylbenzene | | | | 5 | 9 | | 14 |
| | | o-Xylene | | | | 7 | 461 | | 468 |
| | | Sec-butylbenzene | | | | 5 | 9 | | 14 |
| | | Styrene | | | | 5 | 418 | | 423 |
| | | tert-Butylbenzene | | | | 5 | 9 | | 14 |
| | | Tetrachloroethene | | | | 5 | 449 | | 454 |
| | | Toluene | | | | 7 | 461 | | 468 |
| | | trans-1,2-Dichloroethene | | | | 5 | 418 | | 423 |
| | | trans-1,3-Dichloropropene | | | | 5 | 418 | | 423 |
| | | Trichloroethene | | | | 5 | 449 | | 454 |
| | | Trichlorofluoromethane | | | | 5 | 418 | | 423 |
| | | Vinyl acetate | | | | | 407 | | 407 |
| | | Vinyl chloride | | | | 5 | 418 | | 423 |
| | | Xylene | | | | 7 | 474 | | 481 |
| | Dioxin Furan Homolog | Heptachlorodibenzofuran homologs | | | | | 181 | | 181 |
| | | Heptachlorodibenzo-p-dioxin homologs | | | | | 181 | | 181 |
| | | Hexachlorodibenzofuran homologs | | | | | 182 | | 182 |
| | | Hexachlorodibenzo-p-dioxin homologs | | | | | 181 | | 181 |
| | | Octachlorodibenzofuran | | | | | 186 | | 186 |

BZT0104(e)033182

Table 2.1-2. Summary of LWG Rounds 1 and 2 and Non-LWG Sediment Sample Counts.

| Sum of Sample Count | | | Area | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Media | Group | Analyte | Downstream | Downtown Corridor | Multnomah Channel | Riparian Zone | Study Area | Upriver | Grand Total |
| subsurface sediment | Dioxin Furan Homolog | Octachlorodibenzo-p-dioxin | | | | | 186 | | 186 |
| | | Pentachlorodibenzofuran homologs | | | | | 182 | | 182 |
| | | Pentachlorodibenzo-p-dioxin homologs | | | | | 182 | | 182 |
| | | Tetrachlorodibenzofuran homologs | | | | | 181 | | 181 |
| | | Tetrachlorodibenzo-p-dioxin homologs | | | | | 181 | | 181 |
| | Dioxins_Furans | 1,2,3,4,6,7,8-Heptachlorodibenzofuran | | | | | 186 | | 186 |
| | | 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin | | | | | 186 | | 186 |
| | | 1,2,3,4,7,8,9-Heptachlorodibenzofuran | | | | | 186 | | 186 |
| | | 1,2,3,4,7,8-Hexachlorodibenzofuran | | | | | 185 | | 185 |
| | | 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin | | | | | 186 | | 186 |
| | | 1,2,3,6,7,8-Hexachlorodibenzofuran | | | | | 186 | | 186 |
| | | 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin | | | | | 185 | | 185 |
| | | 1,2,3,7,8,9-Hexachlorodibenzofuran | | | | | 186 | | 186 |
| | | 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin | | | | | 186 | | 186 |
| | | 1,2,3,7,8-Pentachlorodibenzofuran | | | | | 186 | | 186 |
| | | 1,2,3,7,8-Pentachlorodibenzo-p-dioxin | | | | | 186 | | 186 |
| | | 2,3,4,6,7,8-Hexachlorodibenzofuran | | | | | 186 | | 186 |
| | | 2,3,4,7,8-Pentachlorodibenzofuran | | | | | 186 | | 186 |
| | | 2,3,7,8-Tetrachlorodibenzofuran | | | | | 185 | | 185 |
| | | 2,3,7,8-Tetrachlorodibenzo-p-dioxin | | | | | 186 | | 186 |
| | | Dioxin/furan TCDD toxicity equivalent | | | | | 186 | | 186 |
| | | Dioxin-like PCB congener TCDD toxicity equivalent | | | | | 29 | | 29 |
| | | Total PCDD/F | | | | | 182 | | 182 |
| | | Total TCDD toxicity equivalent | | | | | 23 | | 23 |
| | Atterberg | Liquid Limit | | | | | 14 | | 14 |
| | | Plastic Limit | | | | | 22 | | 22 |
| | | Plasticity Index | | | | | 14 | | 14 |
| | PCB Homologs | Dichlorobiphenyl homologs | | | | | 29 | | 29 |
| | | Heptachlorobiphenyl homologs | | | | | 29 | | 29 |
| | | Hexachlorobiphenyl homologs | | | | | 29 | | 29 |
| | | Monochlorobiphenyl homologs | | | | | 29 | | 29 |
| | | Nonachlorobiphenyl homologs | | | | | 29 | | 29 |
| | | Octachlorobiphenyl homologs | | | | | 29 | | 29 |
| | | Pentachlorobiphenyl homologs | | | | | 29 | | 29 |
| | | Tetrachlorobiphenyl homologs | | | | | 29 | | 29 |
| | | Trichlorobiphenyl homologs | | | | | 29 | | 29 |
| | Petroleum | Diesel Range Hydrocarbons | | 8 | | 9 | 773 | | 790 |
| | | Gasoline Range Hydrocarbons | | 8 | | 8 | 807 | | 823 |
| | | Heavy oil | | | | 8 | 6 | | 14 |
| | | Jet fuel A | | | | | 1 | | 1 |
| | | JP-4 jet fuel | | | | | 1 | | 1 |
| | | Kerosene | | | | | 1 | | 1 |
| | | Lube Oil | | | | | 17 | | 17 |
| | | Mineral spirits | | | | | 1 | | 1 |
| | | Motor oil | | | | | 3 | | 3 |
| | | Naphtha distillate | | | | | 1 | | 1 |
| | | Pencil pitch | | | | | 16 | | 16 |
| | | Phytane | | | | | 3 | | 3 |
| | | Pristane | | | | | 3 | | 3 |
| | | Residual Range Hydrocarbons | | 8 | | 1 | 748 | | 757 |
| | | Total Petroleum Hydrocarbons | | 8 | | 9 | 754 | | 771 |
| surface sediment | Conventionals | Acid Volatile Sulfides | 4 | | | | 76 | | 80 |
| | | Ammonia | 1 | 7 | 1 | | 444 | 23 | 476 |
| | | Cyanide | | | | | 21 | | 21 |
| | | Moisture | | | | | | 2 | 2 |
| | | Oxidation-Reduction Potential | | | | | 2 | | 2 |
| | | Perchlorate | | | | | 13 | | 13 |
| | | pH | | | | | 2 | | 2 |
| | | Specific Gravity | 3 | 1 | 5 | | 634 | | 643 |
| | | Sulfide | 1 | 10 | 1 | | 441 | 23 | 476 |
| | | Total organic carbon | 9 | 17 | 7 | 24 | 1362 | 36 | 1455 |
| | | Total solids | 9 | 17 | 7 | 14 | 1158 | 43 | 1248 |
| | | Total volatile solids | | 8 | | | 183 | 22 | 213 |
| | Grainsize | < 0.075 mm | | | | 7 | 36 | 2 | 45 |
| | | > 0.075 mm | | | | | | 2 | 2 |
| | | >10 Phi clay | | | | 3 | 104 | | 107 |
| | | >9 Phi clay | 5 | 1 | 7 | | 694 | 18 | 725 |
| | | 8-9 Phi clay | 5 | 1 | 7 | 3 | 799 | 18 | 833 |
| | | 9-10 Phi clay | | | | 3 | 104 | | 107 |
| | | Clay | | 15 | | 4 | 354 | 8 | 381 |
| | | Coarse sand | 5 | 10 | 7 | 3 | 893 | 29 | 947 |
| | | Coarse silt | 5 | 1 | 7 | 3 | 799 | 18 | 833 |
| | | Fine gravel | 5 | 8 | 7 | | 770 | 21 | 811 |
| | | Fine sand | 5 | 10 | 7 | 3 | 893 | 29 | 947 |
| | | Fine silt | 5 | 1 | 7 | 3 | 799 | 18 | 833 |
| | | Fines | 5 | 16 | 7 | 9 | 1227 | 39 | 1303 |
| | | Gravel | | 8 | | 9 | 383 | 10 | 410 |

BZTO104(e)033183

Table 2.1-2. Summary of LWG Rounds 1 and 2 and Non-LWG Sediment Sample Counts.

| Sum of Sample Count | | | Area | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Media | Group | Analyte | Downstream | Downtown Corridor | Multnomah Channel | Riparian Zone | Study Area | Upriver | Grand Total |
| surface sediment | Grainsize | Mean grain size | | 1 | | | | | 1 |
| | | Median grain size | | 1 | | | | | 1 |
| | | Medium gravel | 5 | 8 | 7 | | 770 | 21 | 811 |
| | | Medium sand | 5 | 10 | 7 | 3 | 893 | 29 | 947 |
| | | Medium silt | 5 | 1 | 7 | 3 | 799 | 18 | 833 |
| | | Sand | | 7 | | 6 | 332 | 10 | 355 |
| | | Sieve 10 | | | | 7 | 40 | | 47 |
| | | Sieve 140 | | | | 7 | 40 | | 47 |
| | | Sieve 20 | | | | 7 | 40 | | 47 |
| | | Sieve 200 | | | | 7 | 40 | | 47 |
| | | Sieve 230 | | | | | 4 | | 4 |
| | | Sieve 4 | | | | 7 | 40 | | 47 |
| | | Sieve 40 | | | | 7 | 40 | | 47 |
| | | Sieve 60 | | | | 7 | 40 | | 47 |
| | | Silt | | 15 | | 4 | 360 | 8 | 387 |
| | | Very coarse sand | 5 | 10 | 7 | 3 | 891 | 29 | 945 |
| | | Very fine sand | 5 | 10 | 7 | 3 | 891 | 29 | 945 |
| | | Very fine silt | 5 | 1 | 7 | 3 | 799 | 18 | 833 |
| | Metals | Antimony | 5 | 17 | 7 | 12 | 1162 | 31 | 1234 |
| | | Arsenic | 9 | 17 | 7 | 22 | 1328 | 36 | 1419 |
| | | Cadmium | 9 | 17 | 7 | 20 | 1266 | 31 | 1350 |
| | | Copper | 9 | 17 | 7 | 20 | 1287 | 31 | 1371 |
| | | Lead | 9 | 17 | 7 | 20 | 1287 | 31 | 1371 |
| | | Mercury | 9 | 17 | 7 | 20 | 1259 | 31 | 1343 |
| | | Nickel | 9 | 17 | 7 | 20 | 1258 | 31 | 1342 |
| | | Silver | 9 | 17 | 7 | 20 | 1264 | 31 | 1348 |
| | | Zinc | 9 | 17 | 7 | 20 | 1279 | 31 | 1363 |
| | | Aluminum | 5 | 8 | 7 | 11 | 1049 | 21 | 1101 |
| | | Barium | | | | | 221 | | 221 |
| | | Beryllium | | 1 | | 1 | 229 | | 231 |
| | | Calcium | | | | | 155 | | 155 |
| | | Chromium | 9 | 14 | 7 | 20 | 1285 | 24 | 1359 |
| | | Chromium hexavalent | 1 | | 1 | | 61 | | 63 |
| | | Cobalt | | | | | 155 | | 155 |
| | | Iron | | | | | 171 | | 171 |
| | | Magnesium | | | | | 155 | | 155 |
| | | Manganese | | | | | 226 | | 226 |
| | | Potassium | | | | | 155 | | 155 |
| | | Selenium | 5 | 9 | 7 | 20 | 1122 | 21 | 1184 |
| | | Sodium | | | | | 155 | | 155 |
| | | Thallium | | 1 | | 1 | 229 | | 231 |
| | | Tin | | | | | 16 | | 16 |
| | | Titanium | | | | | 75 | | 75 |
| | | Vanadium | | | | | 155 | | 155 |
| | Butyltins | Butyltin ion | 1 | 3 | 1 | 1 | 264 | 3 | 273 |
| | | Dibutyltin dichloride | | | | | 5 | | 5 |
| | | Dibutyltin ion | 1 | 3 | 1 | 1 | 264 | 3 | 273 |
| | | Monobutyltin trichloride | | | | | 5 | | 5 |
| | | Tetrabutyltin | 1 | 3 | 1 | 1 | 269 | 3 | 278 |
| | | Tributyltin chloride | | | | | 5 | | 5 |
| | | Tributyltin ion | 1 | 3 | 1 | 1 | 288 | 3 | 297 |
| | Aroclors | Aroclor 1016 | 9 | 17 | 7 | 13 | 972 | 40 | 1058 |
| | | Aroclor 1221 | 9 | 17 | 7 | 13 | 971 | 40 | 1057 |
| | | Aroclor 1232 | 9 | 17 | 7 | 13 | 971 | 40 | 1057 |
| | | Aroclor 1242 | 9 | 17 | 7 | 13 | 972 | 40 | 1058 |
| | | Aroclor 1248 | 9 | 17 | 7 | 13 | 972 | 40 | 1058 |
| | | Aroclor 1254 | 9 | 17 | 7 | 13 | 972 | 40 | 1058 |
| | | Aroclor 1260 | 9 | 17 | 7 | 13 | 972 | 40 | 1058 |
| | | Aroclor 1262 | 5 | 8 | 7 | 9 | 718 | 21 | 768 |
| | | Aroclor 1268 | 5 | 8 | 7 | 9 | 718 | 21 | 768 |
| | | Total PCB Aroclors | 9 | 17 | 7 | 13 | 973 | 40 | 1059 |
| | Pesticides | Heptachlor epoxide | 9 | 13 | 7 | 15 | 944 | 33 | 1021 |
| | | Endosulfan sulfate | 9 | 13 | 7 | 15 | 943 | 33 | 1020 |
| | | Mirex | 5 | 8 | 7 | 3 | 736 | 21 | 780 |
| | | Oxychlordane | 5 | 8 | 7 | 11 | 830 | 21 | 882 |
| | | Aldrin | 9 | 13 | 7 | 15 | 952 | 35 | 1031 |
| | | alpha-Hexachlorocyclohexane | 9 | 13 | 7 | 11 | 935 | 33 | 1008 |
| | | beta-Hexachlorocyclohexane | 9 | 13 | 7 | 15 | 944 | 33 | 1021 |
| | | delta-Hexachlorocyclohexane | 9 | 13 | 7 | 15 | 942 | 33 | 1019 |
| | | beta-Endosulfan | 9 | 13 | 7 | 15 | 944 | 33 | 1021 |
| | | 2,4'-DDE | 5 | 8 | 7 | 19 | 865 | 21 | 925 |
| | | trans-Nonachlor | 5 | 8 | 7 | 11 | 829 | 21 | 881 |
| | | 4,4'-DDT | 9 | 16 | 7 | 23 | 993 | 40 | 1088 |
| | | cis-Nonachlor | 5 | 8 | 7 | 11 | 829 | 21 | 881 |
| | | trans-Chlordane | 5 | 10 | 7 | 15 | 932 | 35 | 1004 |
| | | 2,4'-DDD | 5 | 8 | 7 | 19 | 866 | 21 | 926 |
| | | Endrin ketone | 5 | 13 | 7 | 15 | 930 | 33 | 1003 |

BZT0104(e)033184

Table 2.1-2. Summary of LWG Rounds 1 and 2 and Non-LWG Sediment Sample Counts.

| Sum of Sample Count | | | Area | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Media | Group | Analyte | Downstream | Downtown Corridor | Multnomah Channel | Riparian Zone | Study Area | Upriver | Grand Total |
| surface sediment | Pesticides | gamma-Hexachlorocyclohexane | 9 | 13 | 7 | 15 | 952 | 35 | 1031 |
| | | Dieldrin | 9 | 13 | 7 | 15 | 952 | 35 | 1031 |
| | | Endrin | 9 | 13 | 7 | 15 | 944 | 33 | 1021 |
| | | Methoxychlor | 9 | 13 | 7 | 15 | 944 | 33 | 1021 |
| | | 4,4'-DDD | 9 | 16 | 7 | 23 | 993 | 40 | 1088 |
| | | 4,4'-DDE | 9 | 16 | 7 | 23 | 991 | 40 | 1086 |
| | | Endrin aldehyde | 9 | 13 | 7 | 15 | 944 | 33 | 1021 |
| | | Heptachlor | 9 | 13 | 7 | 15 | 952 | 35 | 1031 |
| | | 2,4'-DDT | 5 | 8 | 7 | 19 | 866 | 21 | 926 |
| | | alpha-Endosulfan | 9 | 13 | 7 | 15 | 944 | 33 | 1021 |
| | | cis-Chlordane | 5 | 10 | 7 | 15 | 930 | 35 | 1002 |
| | | Toxaphene | 9 | 13 | 7 | 15 | 943 | 33 | 1020 |
| | | Chlordane (cis & trans) | 5 | 12 | 1 | 12 | 328 | 17 | 375 |
| | | Chlordane (technical) | | | | | 4 | | 4 |
| | | Hexachlorocyclohexanes | | | | 4 | 9 | | 13 |
| | | Total Chlordanes | 5 | 8 | 7 | 11 | 830 | 21 | 882 |
| | | Total Endosulfan | 9 | 13 | 7 | 15 | 943 | 33 | 1020 |
| | | Total of 2,4' and 4,4'-DDD | 5 | 8 | 7 | 19 | 866 | 21 | 926 |
| | | Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 5 | 8 | 7 | 19 | 866 | 21 | 926 |
| | | Total of 2,4' and 4,4'-DDE | 5 | 8 | 7 | 19 | 865 | 21 | 925 |
| | | Total of 2,4' and 4,4'-DDT | 5 | 8 | 7 | 19 | 866 | 21 | 926 |
| | | Total of 4,4'-DDD, -DDE, -DDT | 9 | 16 | 7 | 23 | 993 | 40 | 1088 |
| | SVOCs | Hexachlorobenzene | 5 | 14 | 7 | 17 | 1167 | 31 | 1241 |
| | | Benzoic acid | 5 | 14 | 7 | 17 | 1142 | 31 | 1216 |
| | | Dibenzofuran | 9 | 17 | 7 | 17 | 1272 | 31 | 1353 |
| | | Hexachloroethane | 5 | 14 | 7 | 17 | 1122 | 31 | 1196 |
| | | Hexachlorobutadiene | 5 | 14 | 7 | 17 | 1175 | 31 | 1249 |
| | | 1,2,4-Trichlorobenzene | 5 | 14 | 7 | 17 | 1108 | 31 | 1182 |
| | | 1,2-Dichlorobenzene | 5 | 14 | 7 | 17 | 1152 | 31 | 1226 |
| | | 1,3-Dichlorobenzene | 5 | 14 | 7 | 17 | 1152 | 31 | 1226 |
| | | 1,4-Dichlorobenzene | 5 | 14 | 7 | 17 | 1157 | 31 | 1231 |
| | | 2,4-Dinitrotoluene | 5 | 11 | 7 | 17 | 1095 | 21 | 1156 |
| | | 2,6-Dinitrotoluene | 5 | 11 | 7 | 17 | 1095 | 21 | 1156 |
| | | 2-Chloronaphthalene | 5 | 11 | 7 | 17 | 1095 | 21 | 1156 |
| | | 2-Nitroaniline | 5 | 11 | 7 | 17 | 1095 | 21 | 1156 |
| | | 3,3'-Dichlorobenzidine | 5 | 11 | 7 | 17 | 1093 | 21 | 1154 |
| | | 3-Nitroaniline | 5 | 11 | 7 | 17 | 1095 | 21 | 1156 |
| | | 4-Bromophenyl phenyl ether | 5 | 11 | 7 | 17 | 1095 | 21 | 1156 |
| | | 4-Chloroaniline | 5 | 11 | 7 | 17 | 1095 | 21 | 1156 |
| | | 4-Chlorophenyl phenyl ether | 5 | 11 | 7 | 17 | 1095 | 21 | 1156 |
| | | 4-Nitroaniline | 5 | 11 | 7 | 17 | 1095 | 21 | 1156 |
| | | Aniline | 5 | 10 | 7 | 11 | 889 | 21 | 943 |
| | | Azobenzene | 5 | 8 | 7 | 3 | 795 | 21 | 839 |
| | | Benzyl alcohol | 5 | 14 | 7 | 17 | 1145 | 31 | 1219 |
| | | Bis(2-chloro-1-methylethyl) ether | | 2 | | 7 | 233 | | 242 |
| | | Bis(2-chloroethoxy) methane | 5 | 11 | 7 | 17 | 1095 | 21 | 1156 |
| | | Bis(2-chloroethyl) ether | 5 | 11 | 7 | 17 | 1095 | 21 | 1156 |
| | | Bis(2-chloroisopropyl) ether | 5 | 9 | 7 | 10 | 862 | 21 | 914 |
| | | Carbazole | 5 | 9 | 7 | 16 | 1076 | 21 | 1134 |
| | | Diphenyl | | | | 8 | 71 | | 79 |
| | | Hexachlorocyclopentadiene | 5 | 11 | 7 | 13 | 1089 | 21 | 1146 |
| | | Isophorone | 5 | 11 | 7 | 17 | 1095 | 21 | 1156 |
| | | Nitrobenzene | 5 | 11 | 7 | 17 | 1095 | 21 | 1156 |
| | | N-Nitrosodimethylamine | 5 | 10 | 7 | 11 | 891 | 21 | 945 |
| | | N-Nitrosodiphenylamine | 5 | 14 | 7 | 17 | 1147 | 31 | 1221 |
| | | N-Nitrosodipropylamine | 5 | 11 | 7 | 17 | 1095 | 21 | 1156 |
| | | Pyridine | | | | | 1 | | 1 |
| | Phenols | Phenol | 5 | 14 | 7 | 17 | 1203 | 31 | 1277 |
| | | 2-Methylphenol | 5 | 14 | 7 | 17 | 1203 | 31 | 1277 |
| | | 4-Methylphenol | 5 | 13 | 7 | 11 | 1164 | 23 | 1223 |
| | | 2,3,4,5-Tetrachlorophenol | 5 | 8 | 7 | 3 | 795 | 21 | 839 |
| | | 2,3,4,6;2,3,5,6-Tetrachlorophenol coelution | 4 | 1 | 6 | | 563 | 18 | 592 |
| | | 2,3,4,6-Tetrachlorophenol | | | | 11 | 149 | | 160 |
| | | 2,3,5,6-Tetrachlorophenol | 1 | 7 | 1 | 10 | 311 | 3 | 333 |
| | | 2,4,5-Trichlorophenol | 5 | 11 | 7 | 17 | 1151 | 21 | 1212 |
| | | 2,4,6-Trichlorophenol | 5 | 11 | 7 | 17 | 1151 | 21 | 1212 |
| | | 2,4-Dichlorophenol | 5 | 11 | 7 | 17 | 1151 | 21 | 1212 |
| | | 2,4-Dimethylphenol | 5 | 17 | 7 | 17 | 1209 | 31 | 1286 |
| | | 2,4-Dinitrophenol | 5 | 11 | 7 | 13 | 1130 | 21 | 1187 |
| | | 2-Chlorophenol | 5 | 11 | 7 | 17 | 1151 | 21 | 1212 |
| | | 2-Nitrophenol | 5 | 11 | 7 | 13 | 1142 | 21 | 1199 |
| | | 3- and 4-Methylphenol Coelution | | 4 | | 1 | 41 | 8 | 54 |
| | | 4,6-Dinitro-2-methylphenol | 5 | 11 | 7 | 17 | 1150 | 21 | 1211 |
| | | 4-Chloro-3-methylphenol | 5 | 11 | 7 | 17 | 1151 | 21 | 1212 |
| | | 4-Nitrophenol | 5 | 11 | 7 | 17 | 1148 | 21 | 1209 |
| | | Cresol | | | | 1 | 1 | | 2 |
| | | Pentachlorophenol | 5 | 17 | 7 | 15 | 1276 | 37 | 1357 |

BZT0104(e)033185

Table 2.1-2. Summary of LWG Rounds 1 and 2 and Non-LWG Sediment Sample Counts.

| Sum of Sample Count | | | Area | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Media | Group | Analyte | Downstream | Downtown Corridor | Multnomah Channel | Riparian Zone | Study Area | Upriver | Grand Total |
| surface sediment | Phenols | Tetrachlorophenol | | | | 1 | 17 | | 18 |
| | Phthalates | Bis(2-ethylhexyl) phthalate | 5 | 17 | 7 | 25 | 1261 | 31 | 1346 |
| | | Butylbenzyl phthalate | 5 | 14 | 7 | 25 | 1255 | 31 | 1337 |
| | | Dibutyl phthalate | 5 | 14 | 7 | 25 | 1254 | 31 | 1336 |
| | | Diethyl phthalate | 5 | 14 | 7 | 25 | 1255 | 31 | 1337 |
| | | Dimethyl phthalate | 5 | 14 | 7 | 25 | 1255 | 31 | 1337 |
| | | Di-n-octyl phthalate | 5 | 14 | 7 | 25 | 1255 | 31 | 1337 |
| | PAHs | Naphthalene | 9 | 17 | 7 | 27 | 1420 | 37 | 1517 |
| | | Acenaphthene | 9 | 17 | 7 | 27 | 1415 | 37 | 1512 |
| | | Fluorene | 9 | 17 | 7 | 27 | 1415 | 37 | 1512 |
| | | Phenanthrene | 9 | 17 | 7 | 27 | 1415 | 37 | 1512 |
| | | Anthracene | 9 | 17 | 7 | 27 | 1415 | 37 | 1512 |
| | | Fluoranthene | 9 | 17 | 7 | 27 | 1426 | 37 | 1523 |
| | | Pyrene | 9 | 17 | 7 | 27 | 1415 | 37 | 1512 |
| | | Chrysene | 9 | 17 | 7 | 27 | 1415 | 37 | 1512 |
| | | 1,6,7-Trimethylnaphthalene | | | | 8 | 36 | | 44 |
| | | 1-Methylnaphthalene | | | | 8 | 38 | | 46 |
| | | 1-Methylphenanthrene | | | | 8 | 36 | | 44 |
| | | 2,6-Dimethylnaphthalene | | | | 8 | 36 | | 44 |
| | | 2-Methylnaphthalene | 9 | 17 | 7 | 25 | 1229 | 31 | 1318 |
| | | Acenaphthylene | 9 | 17 | 7 | 27 | 1415 | 37 | 1512 |
| | | Benzo(a)anthracene | 9 | 17 | 7 | 27 | 1415 | 37 | 1512 |
| | | Benzo(a)pyrene | 9 | 17 | 7 | 27 | 1415 | 37 | 1512 |
| | | Benzo(b)fluoranthene | 9 | 17 | 7 | 19 | 1319 | 37 | 1408 |
| | | Benzo(b+k)fluoranthene | 4 | 16 | | 23 | 650 | 19 | 712 |
| | | Benzo(e)pyrene | | | | 8 | 71 | | 79 |
| | | Benzo(g,h,i)perylene | 9 | 17 | 7 | 27 | 1415 | 37 | 1512 |
| | | Benzo(j+k)fluoranthene | | | | | 35 | | 35 |
| | | Benzo(k)fluoranthene | 9 | 17 | 7 | 19 | 1284 | 37 | 1373 |
| | | Benzofluoranthenes | | | | | 35 | | 35 |
| | | C1-Chrysene | | | | | 35 | | 35 |
| | | C1-Dibenzothiophene | | | | | 35 | | 35 |
| | | C1-Fluoranthene/pyrene | | | | | 35 | | 35 |
| | | C1-Fluorene | | | | | 35 | | 35 |
| | | C1-Naphthalene | | | | | 35 | | 35 |
| | | C1-Phenanthrene/anthracene | | | | | 35 | | 35 |
| | | C2-Chrysene | | | | | 35 | | 35 |
| | | C2-Dibenzothiophene | | | | | 35 | | 35 |
| | | C2-Fluoranthene/pyrene | | | | | 35 | | 35 |
| | | C2-Fluorene | | | | | 35 | | 35 |
| | | C2-Naphthalene | | | | | 35 | | 35 |
| | | C2-Phenanthrene/anthracene | | | | | 35 | | 35 |
| | | C3-Chrysene | | | | | 35 | | 35 |
| | | C3-Dibenzothiophene | | | | | 35 | | 35 |
| | | C3-Fluoranthene/pyrene | | | | | 35 | | 35 |
| | | C3-Fluorene | | | | | 35 | | 35 |
| | | C3-Naphthalene | | | | | 35 | | 35 |
| | | C3-Phenanthrene/anthracene | | | | | 35 | | 35 |
| | | C4-Chrysene | | | | | 35 | | 35 |
| | | C4-Dibenzothiophene | | | | | 35 | | 35 |
| | | C4-Naphthalene | | | | | 35 | | 35 |
| | | C4-Phenanthrene/anthracene | | | | | 35 | | 35 |
| | | Dibenzo(a,h)anthracene | 9 | 17 | 7 | 27 | 1415 | 37 | 1512 |
| | | Dibenzothiophene | | | | | 35 | | 35 |
| | | High Molecular Weight PAH | 9 | 17 | 7 | 27 | 1415 | 37 | 1512 |
| | | Indeno(1,2,3-cd)pyrene | 9 | 17 | 7 | 27 | 1415 | 37 | 1512 |
| | | Low Molecular Weight PAH | 9 | 17 | 7 | 27 | 1415 | 37 | 1512 |
| | | Perylene | | | | 8 | 71 | | 79 |
| | | Total PAHs | 9 | 17 | 7 | 27 | 1415 | 37 | 1512 |
| | Herbicides | 2,4,5-T | 1 | | 1 | 9 | 219 | 3 | 233 |
| | | 2,4-D | 1 | | 1 | 9 | 219 | 3 | 233 |
| | | 2,4-DB | 1 | | 1 | 9 | 219 | 3 | 233 |
| | | Dalapon | 1 | | 1 | 9 | 219 | 3 | 233 |
| | | Dicamba | 1 | | 1 | 9 | 219 | 3 | 233 |
| | | Dichloroprop | 1 | | 1 | 9 | 219 | 3 | 233 |
| | | Dinoseb | 1 | | 1 | 9 | 219 | 3 | 233 |
| | | MCPA | 1 | | 1 | 9 | 219 | 3 | 233 |
| | | MCPP | 1 | | 1 | 9 | 219 | 3 | 233 |
| | | Silvex | 1 | | 1 | 9 | 219 | 3 | 233 |
| | PCB Congeners | PCB001 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB002 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB003 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB004 | | | | | 11 | | 11 |
| | | PCB004 & 010 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB005 | | | | | 11 | | 11 |
| | | PCB005 & 008 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB006 | 2 | 1 | 1 | | 149 | 2 | 155 |

BZT0104(e)033186

Table 2.1-2. Summary of LWG Rounds 1 and 2 and Non-LWG Sediment Sample Counts.

| Sum of Sample Count | | | Area | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Media | Group | Analyte | Downstream | Downtown Corridor | Multnomah Channel | Riparian Zone | Study Area | Upriver | Grand Total |
| surface sediment | PCB Congeners | PCB007 | | | | | 11 | | 11 |
| | | PCB007 & 009 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB008 | | | | 7 | 90 | | 97 |
| | | PCB009 | | | | | 11 | | 11 |
| | | PCB010 | | | | | 11 | | 11 |
| | | PCB011 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB012 & 013 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB014 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB015 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB016 | | | | | 11 | | 11 |
| | | PCB016 & 032 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB017 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB018 | 2 | 1 | 1 | 7 | 217 | 2 | 230 |
| | | PCB018 & 030 | | | | | 11 | | 11 |
| | | PCB019 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB020 & 021 & 033 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB020 & 028 | | | | | 11 | | 11 |
| | | PCB021 & 033 | | | | | 11 | | 11 |
| | | PCB022 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB023 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB024 | | | | | 11 | | 11 |
| | | PCB024 & 027 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB025 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB026 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB026 & 029 | | | | | 11 | | 11 |
| | | PCB027 | | | | | 11 | | 11 |
| | | PCB028 | 2 | 1 | 1 | 7 | 217 | 2 | 230 |
| | | PCB029 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB030 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB031 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB032 | | | | | 11 | | 11 |
| | | PCB034 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB035 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB036 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB037 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB038 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB039 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB040 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB040 & 041 & 071 | | | | | 11 | | 11 |
| | | PCB041 & 064 &071 &072 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB042 | | | | | 11 | | 11 |
| | | PCB042 & 059 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB043 | | | | | 11 | | 11 |
| | | PCB043 & 049 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB044 | 2 | 1 | 1 | 7 | 217 | 2 | 230 |
| | | PCB044 & 047 & 065 | | | | | 11 | | 11 |
| | | PCB045 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB045 & 051 | | | | | 11 | | 11 |
| | | PCB046 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB047 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB048 | | | | | 11 | | 11 |
| | | PCB048 & 075 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB049 & 069 | | | | | 11 | | 11 |
| | | PCB050 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB050 & 053 | | | | | 11 | | 11 |
| | | PCB051 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB052 | | | | 7 | 90 | | 97 |
| | | PCB052 & 069 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB053 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB054 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB055 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB056 | | | | | 11 | | 11 |
| | | PCB056 & 060 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB057 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB058 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB059 & 062 & 075 | | | | | 11 | | 11 |
| | | PCB060 | | | | | 11 | | 11 |
| | | PCB061 & 070 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB061 & 070 & 074 & 076 | | | | | 11 | | 11 |
| | | PCB062 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB063 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB064 | | | | | 11 | | 11 |
| | | PCB065 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB066 | | | | 7 | 90 | | 97 |
| | | PCB066 & 076 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB067 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB068 | 2 | 1 | 1 | | 149 | 2 | 155 |

BZTO104(e)033187

Table 2.1-2. Summary of LWG Rounds 1 and 2 and Non-LWG Sediment Sample Counts.

| Sum of Sample Count | | | Area | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Media | Group | Analyte | Downstream | Downtown Corridor | Multnomah Channel | Riparian Zone | Study Area | Upriver | Grand Total |
| surface sediment | PCB Congeners | PCB072 | | | | | 11 | | 11 |
| | | PCB073 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB074 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB077 | 3 | 1 | 2 | | 160 | 2 | 168 |
| | | PCB078 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB079 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB080 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB081 | 3 | 1 | 2 | | 160 | 2 | 168 |
| | | PCB082 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB083 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB083 & 099 | | | | | 11 | | 11 |
| | | PCB084 | | | | | 11 | | 11 |
| | | PCB084 & 092 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB085 & 116 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB085 & 116 & 117 | | | | | 11 | | 11 |
| | | PCB086 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB086 & 087 & 097 & 108 & 119 & 125 | | | | | 11 | | 11 |
| | | PCB087 & 117 & 125 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB088 & 091 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB089 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB090 & 101 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB090 & 101 & 113 | | | | | 11 | | 11 |
| | | PCB092 | | | | | 11 | | 11 |
| | | PCB093 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB093 & 095 & 098 & 100 & 102 | | | | | 11 | | 11 |
| | | PCB094 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB095 & 098 & 102 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB096 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB097 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB099 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB100 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB101 | | | | 7 | 79 | | 86 |
| | | PCB103 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB104 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB105 | 3 | 1 | 2 | 7 | 239 | 2 | 254 |
| | | PCB106 | | | | | 11 | | 11 |
| | | PCB106 & 118 | 3 | 1 | 2 | | 149 | 2 | 157 |
| | | PCB107 & 109 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB107 & 124 | | | | | 11 | | 11 |
| | | PCB108 & 112 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB109 | | | | | 11 | | 11 |
| | | PCB110 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB110 & 115 | | | | | 11 | | 11 |
| | | PCB111 | | | | | 11 | | 11 |
| | | PCB111 & 115 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB112 | | | | | 11 | | 11 |
| | | PCB113 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB114 | 3 | 1 | 2 | | 160 | 2 | 168 |
| | | PCB118 | | | | 7 | 90 | | 97 |
| | | PCB119 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB120 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB121 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB122 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB123 | 3 | 1 | 2 | | 160 | 2 | 168 |
| | | PCB124 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB126 | 3 | 1 | 2 | | 160 | 2 | 168 |
| | | PCB127 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB128 | | | | 7 | 79 | | 86 |
| | | PCB128 & 162 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB128 & 166 | | | | | 11 | | 11 |
| | | PCB129 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB129 & 138 & 160 & 163 | | | | | 11 | | 11 |
| | | PCB130 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB131 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB132 | | | | | 11 | | 11 |
| | | PCB132 & 161 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB133 | | | | | 11 | | 11 |
| | | PCB133 & 142 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB134 & 143 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB135 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB135 & 151 & 154 | | | | | 11 | | 11 |
| | | PCB136 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB137 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB138 | | | | 7 | 79 | | 86 |
| | | PCB138 & 163 & 164 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB139 & 140 | | | | | 11 | | 11 |
| | | PCB139 & 149 | 2 | 1 | 1 | | 138 | 2 | 144 |

BZTO104(e)033188

Table 2.1-2. Summary of LWG Rounds 1 and 2 and Non-LWG Sediment Sample Counts.

| Sum of Sample Count | | | Area | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Media | Group | Analyte | Downstream | Downtown Corridor | Multnomah Channel | Riparian Zone | Study Area | Upriver | Grand Total |
| surface sediment | PCB Congeners | PCB140 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB141 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB142 | | | | | 11 | | 11 |
| | | PCB144 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB145 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB146 | | | | | 11 | | 11 |
| | | PCB146 & 165 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB147 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB147 & 149 | | | | | 11 | | 11 |
| | | PCB148 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB150 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB151 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB152 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB153 | 2 | 1 | 1 | 7 | 217 | 2 | 230 |
| | | PCB153 & 168 | | | | | 11 | | 11 |
| | | PCB154 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB155 | 2 | 1 | 1 | | 148 | 2 | 154 |
| | | PCB156 | 3 | 1 | 2 | | 160 | 2 | 168 |
| | | PCB157 | 3 | 1 | 2 | | 160 | 2 | 168 |
| | | PCB158 | | | | | 11 | | 11 |
| | | PCB158 & 160 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB159 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB161 | | | | | 11 | | 11 |
| | | PCB162 | | | | | 11 | | 11 |
| | | PCB164 | | | | | 11 | | 11 |
| | | PCB165 | | | | | 11 | | 11 |
| | | PCB166 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB167 | 3 | 1 | 2 | | 160 | 2 | 168 |
| | | PCB168 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB169 | 3 | 1 | 2 | | 160 | 2 | 168 |
| | | PCB170 | 2 | 1 | 1 | 7 | 228 | 2 | 241 |
| | | PCB171 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB171 & 173 | | | | | 11 | | 11 |
| | | PCB172 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB173 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB174 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB175 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB176 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB177 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB178 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB179 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB180 | 2 | 1 | 1 | 7 | 217 | 2 | 230 |
| | | PCB180 & 193 | | | | | 11 | | 11 |
| | | PCB181 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB182 | | | | | 11 | | 11 |
| | | PCB182 & 187 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB183 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB183 & 185 | | | | | 11 | | 11 |
| | | PCB184 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB185 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB186 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB187 | | | | 7 | 90 | | 97 |
| | | PCB188 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB189 | 3 | 1 | 2 | | 160 | 2 | 168 |
| | | PCB190 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB191 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB192 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB193 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB194 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB195 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB196 | | | | | 11 | | 11 |
| | | PCB196 & 203 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB197 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB197 & 200 | | | | | 11 | | 11 |
| | | PCB198 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB198 & 199 | | | | | 11 | | 11 |
| | | PCB199 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB200 | 2 | 1 | 1 | | 138 | 2 | 144 |
| | | PCB201 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB202 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB203 | | | | | 11 | | 11 |
| | | PCB204 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB205 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB206 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB207 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB208 | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | PCB209 | 2 | 1 | 1 | | 149 | 2 | 155 |

BZTO104(e)033189

Table 2.1-2. Summary of LWG Rounds 1 and 2 and Non-LWG Sediment Sample Counts.

| Sum of Sample Count | | | Area | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Media | Group | Analyte | Downstream | Downtown Corridor | Multnomah Channel | Riparian Zone | Study Area | Upriver | Grand Total |
| surface sediment | PCB Congeners | Total PCB Congeners | 3 | 1 | 2 | 7 | 239 | 2 | 254 |
| | VOCs | Ethylbenzene | 1 | 8 | 1 | 5 | 357 | 8 | 380 |
| | | 1,1,1,2-Tetrachloroethane | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | 1,1,1-Trichloroethane | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | 1,1,2,2-Tetrachloroethane | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | 1,1,2-Trichloro-1,2,2-trifluoroethane | | | | | 1 | | 1 |
| | | 1,1,2-Trichloroethane | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | 1,1-Dichloroethane | 1 | 2 | 1 | 4 | 283 | 3 | 294 |
| | | 1,1-Dichloroethene | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | 1,1-Dichloropropene | | 2 | | 4 | 31 | | 37 |
| | | 1,2,3-Trichlorobenzene | | 2 | | 4 | 31 | | 37 |
| | | 1,2,3-Trichloropropane | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | 1,2,4-Trimethylbenzene | | 2 | | 4 | 31 | | 37 |
| | | 1,2-Dibromo-3-chloropropane | | 2 | | 4 | 31 | | 37 |
| | | 1,2-Dichloroethane | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | 1,2-Dichloroethene | | | | | 8 | | 8 |
| | | 1,2-Dichloropropane | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | 1,3,5-Trimethylbenzene | | 2 | | 4 | 31 | | 37 |
| | | 1,3-Dichloropropane | | 2 | | 4 | 31 | | 37 |
| | | 1,3-Dichloropropene | | | | | 8 | | 8 |
| | | 1,4-Dichloro-trans-2-butene | 1 | | 1 | | 258 | 3 | 263 |
| | | 1-Methyl-4-isopropylbenzene | | 2 | | | 14 | | 16 |
| | | 2,2-Dichloropropane | | 2 | | 4 | 31 | | 37 |
| | | 2-Chloroethyl vinyl ether | 1 | | 1 | | 257 | 3 | 262 |
| | | 2-Chlorotoluene | | 2 | | 4 | 31 | | 37 |
| | | 4-Chlorotoluene | | 2 | | 4 | 31 | | 37 |
| | | Acetone | 1 | 5 | 1 | | 282 | 3 | 292 |
| | | Acrolein | 1 | | 1 | | 240 | | 242 |
| | | Acrylonitrile | 1 | | 1 | | 258 | 3 | 263 |
| | | Benzene | 1 | 8 | 1 | 5 | 355 | 8 | 378 |
| | | Bromobenzene | | 2 | | 4 | 31 | | 37 |
| | | Bromochloromethane | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | Bromodichloromethane | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | Bromoethane | | | | | 1 | | 1 |
| | | Bromoform | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | Bromomethane | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | BTEX | 1 | 8 | 1 | 5 | 320 | 5 | 340 |
| | | Butylbenzene | | | | | 8 | | 8 |
| | | Carbon disulfide | 1 | 2 | 1 | 4 | 285 | 3 | 296 |
| | | Carbon tetrachloride | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | Chlorobenzene | 1 | 5 | 1 | 4 | 294 | 3 | 308 |
| | | Chlorodibromomethane | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | Chloroethane | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | Chloroform | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | Chloromethane | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | cis-1,2-Dichloroethene | 1 | 2 | 1 | 4 | 94 | | 102 |
| | | cis-1,3-Dichloropropene | 1 | 2 | 1 | 4 | 280 | 3 | 291 |
| | | Dichlorodifluoromethane | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | Ethylene dibromide | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | Isopropylbenzene | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | m,p-Xylene | 1 | 8 | 1 | 4 | 331 | 8 | 353 |
| | | Methyl iodide | 1 | | 1 | | 258 | 3 | 263 |
| | | Methyl isobutyl ketone | 1 | 2 | 1 | | 279 | 3 | 286 |
| | | Methyl n-butyl ketone | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | Methyl tert-butyl ether | 1 | | 1 | | 262 | 3 | 267 |
| | | Methylene bromide | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | Methylene chloride | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | Methylethyl ketone | 1 | 2 | 1 | | 271 | | 275 |
| | | Methylisopropylbenzene | | | | 4 | 17 | | 21 |
| | | n-Butylbenzene | | 2 | | 4 | 23 | | 29 |
| | | n-Propylbenzene | | 2 | | 4 | 31 | | 37 |
| | | o-Xylene | 1 | 8 | 1 | 4 | 331 | 8 | 353 |
| | | Sec-butylbenzene | | 2 | | 4 | 28 | | 34 |
| | | Styrene | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | tert-Butylbenzene | | 2 | | 4 | 28 | | 34 |
| | | Tetrachloroethene | 1 | 5 | 1 | 4 | 328 | 3 | 342 |
| | | Toluene | 1 | 5 | 1 | 5 | 349 | 8 | 369 |
| | | trans-1,2-Dichloroethene | 1 | 2 | 1 | 4 | 285 | 3 | 296 |
| | | trans-1,3-Dichloropropene | 1 | 2 | 1 | 4 | 285 | 3 | 296 |
| | | Trichloroethene | 1 | 8 | 1 | 4 | 328 | 8 | 350 |
| | | Trichlorofluoromethane | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | Vinyl acetate | 1 | | 1 | | 240 | | 242 |
| | | Vinyl chloride | 1 | 2 | 1 | 4 | 288 | 3 | 299 |
| | | Xylene | 1 | 8 | 1 | 5 | 357 | 8 | 380 |
| | Dioxin Furan Homolog | Heptachlorodibenzofuran homologs | 2 | | 2 | 1 | 163 | 21 | 189 |
| | | Heptachlorodibenzo-p-dioxin homologs | 2 | | 2 | 1 | 163 | 21 | 189 |
| | | Hexachlorodibenzofuran homologs | 2 | | 2 | 1 | 163 | 21 | 189 |

BZTO104(e)033190

Table 2.1-2. Summary of LWG Rounds 1 and 2 and Non-LWG Sediment Sample Counts.

| Sum of Sample Count | | | Area | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Media | Group | Analyte | Downstream | Downtown Corridor | Multnomah Channel | Riparian Zone | Study Area | Upriver | Grand Total |
| surface sediment | Dioxin Furan Homolog | Hexachlorodibenzo-p-dioxin homologs | 2 | | 2 | 1 | 163 | 21 | 189 |
| | | Octachlorodibenzofuran | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | Octachlorodibenzo-p-dioxin | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | Pentachlorodibenzofuran homologs | 2 | | 2 | 1 | 163 | 21 | 189 |
| | | Pentachlorodibenzo-p-dioxin homologs | 2 | | 2 | 1 | 163 | 21 | 189 |
| | | Tetrachlorodibenzofuran homologs | 2 | | 2 | 1 | 163 | 21 | 189 |
| | | Tetrachlorodibenzo-p-dioxin homologs | 2 | | 2 | 1 | 162 | 21 | 188 |
| | Dioxins_Furans | 1,2,3,4,6,7,8-Heptachlorodibenzofuran | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | 1,2,3,4,7,8,9-Heptachlorodibenzofuran | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | 1,2,3,4,7,8-Hexachlorodibenzofuran | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | 1,2,3,6,7,8-Hexachlorodibenzofuran | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | 1,2,3,7,8,9-Hexachlorodibenzofuran | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | 1,2,3,7,8-Pentachlorodibenzofuran | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | 1,2,3,7,8-Pentachlorodibenzo-p-dioxin | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | 2,3,4,6,7,8-Hexachlorodibenzofuran | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | 2,3,4,7,8-Pentachlorodibenzofuran | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | 2,3,7,8-Tetrachlorodibenzofuran | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | 2,3,7,8-Tetrachlorodibenzo-p-dioxin | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | Dioxin/furan TCDD toxicity equivalent | 2 | | 2 | 1 | 166 | 21 | 192 |
| | | Dioxin-like PCB congener TCDD toxicity equivalent | 3 | 1 | 2 | | 160 | 2 | 168 |
| | | Total PCDD/F | 2 | | 2 | 1 | 163 | 21 | 189 |
| | | Total TCDD toxicity equivalent | 2 | | 2 | | 68 | 2 | 74 |
| | Atterberg | Liquid Limit | | | | | 26 | | 26 |
| | | Plastic Limit | 1 | | | | 54 | | 55 |
| | | Plasticity Index | | | | | 26 | | 26 |
| | PCB Homologs | Dichlorobiphenyl homologs | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | Heptachlorobiphenyl homologs | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | Hexachlorobiphenyl homologs | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | Monochlorobiphenyl homologs | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | Nonachlorobiphenyl homologs | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | Octachlorobiphenyl homologs | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | Pentachlorobiphenyl homologs | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | Tetrachlorobiphenyl homologs | 2 | 1 | 1 | | 149 | 2 | 155 |
| | | Trichlorobiphenyl homologs | 2 | 1 | 1 | | 149 | 2 | 155 |
| | Petroleum | Diesel Range Hydrocarbons | 1 | 11 | 1 | 22 | 594 | 17 | 646 |
| | | Fuel oil no. 2 | | | | 1 | 1 | | 2 |
| | | Gasoline Range Hydrocarbons | 1 | 11 | 1 | 14 | 435 | 17 | 479 |
| | | Heavy oil | | 3 | | 4 | 5 | 5 | 17 |
| | | Jet fuel A | | 3 | | | 1 | 5 | 9 |
| | | JP-4 jet fuel | | 3 | | | 1 | 5 | 9 |
| | | Kerosene | | 3 | | | 1 | 5 | 9 |
| | | Lube Oil | | 3 | | 8 | 143 | 5 | 159 |
| | | Mineral spirits | | 3 | | | 1 | 5 | 9 |
| | | Motor oil | | | | | 2 | | 2 |
| | | Naphtha distillate | | 3 | | | 1 | 5 | 9 |
| | | Non-petroleum hydrocarbons | | 3 | | | | 5 | 8 |
| | | Pencil pitch | | | | | 44 | | 44 |
| | | Phytane | | | | | 44 | | 44 |
| | | Pristane | | | | | 44 | | 44 |
| | | Residual Range Hydrocarbons | 1 | 8 | 1 | 9 | 444 | 12 | 475 |
| | | Total Petroleum Hydrocarbons | 1 | 11 | 1 | 14 | 450 | 17 | 494 |
| Grand Total | | | 2687 | 5276 | 1357 | 3911 | 404794 | 5669 | 423694 |

BZTO104(e)033191

Table 2.1-3. Summary of LWG Rounds 1 and 2, and Non-LWG Biota Sample Counts.

| Sum of Sample Count | | Media | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group | Analyte | black crappie (fillet without skin) | black crappie (fillet) | black crappie (whole body) | brown bullhead (fillet without skin) | brown bullhead (whole body) | carp (fillet without skin) | carp (fillet) | carp (whole body) | chinook (fillet) | chinook (stomach contents) | chinook (whole body) | clam (body without shell) | crayfish (whole body) | lab clam (body without shell) |
| Conventionals | Lipids | | 4 | 4 | 6 | 9 | | 6 | 6 | | | 19 | 35 | 27 | 46 |
| | Total solids | | 4 | 4 | 6 | 9 | | 6 | 6 | | | 19 | 31 | 27 | 46 |
| Metals | Antimony | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | | 23 | 31 | 27 | 46 |
| | Arsenic | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | | 23 | 31 | 27 | 46 |
| | Cadmium | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | | 23 | 31 | 27 | 46 |
| | Copper | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | | 23 | 31 | 27 | 46 |
| | Lead | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | | 23 | 31 | 27 | 46 |
| | Mercury | 4 | | 4 | 6 | 9 | 6 | | 7 | | | 26 | 28 | 27 | 46 |
| | Nickel | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | | 23 | 31 | 27 | 46 |
| | Silver | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | | 23 | 31 | 27 | 46 |
| | Zinc | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | | 23 | 31 | 27 | 46 |
| | Aluminum | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | | 23 | 31 | 27 | 35 |
| | Barium | | | | | | | | | 3 | | 4 | | | |
| | Beryllium | | | | | | | | | 3 | | 4 | | | |
| | Calcium | | | | | | | | | 3 | | 4 | | | |
| | Chromium | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | | 23 | 31 | 27 | 46 |
| | Cobalt | | | | | | | | | 3 | | 4 | | | |
| | Iron | | | | | | | | | 3 | | 4 | | | |
| | Magnesium | | | | | | | | | 3 | | 4 | | | |
| | Manganese | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | | 11 | 3 | 27 | |
| | Potassium | | | | | | | | | 3 | | 4 | | | |
| | Selenium | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | | 23 | 31 | 27 | 35 |
| | Sodium | | | | | | | | | 3 | | 4 | | | |
| | Thallium | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | | 11 | 3 | 27 | |
| | Vanadium | | | | | | | | | 3 | | 4 | | | |
| Butyltins | Butyltin ion | | | | | | | | | | | 11 | 27 | | 46 |
| | Dibutyltin ion | | | | | | | | | | | 11 | 27 | | 46 |
| | Tetrabutyltin | | | | | | | | | | | 11 | 27 | | 46 |
| | Tributyltin ion | | | | | | | | | | | 11 | 27 | | 46 |
| Aroclors | Aroclor 1016 | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Aroclor 1221 | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Aroclor 1232 | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Aroclor 1242 | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Aroclor 1248 | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Aroclor 1254 | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Aroclor 1260 | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Aroclor 1262 | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | | 11 | 3 | 27 | 11 |
| | Aroclor 1268 | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | | 11 | 3 | 27 | 11 |
| | Total PCB Aroclors | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| Pesticides | Heptachlor epoxide | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Endosulfan sulfate | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Mirex | | 4 | 4 | 6 | 9 | | 6 | 6 | | | 7 | 3 | 27 | 11 |
| | Oxychlordane | | 4 | 4 | 6 | 9 | | 6 | 6 | | 6 | 19 | 34 | 27 | 46 |
| | Aldrin | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | alpha-Hexachlorocyclohexane | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | beta-Hexachlorocyclohexane | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | delta-Hexachlorocyclohexane | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | beta-Endosulfan | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | 2,4'-DDE | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | trans-Nonachlor | | 4 | 4 | 6 | 9 | | 6 | 6 | | 6 | 19 | 34 | 27 | 46 |
| | 4,4'-DDT | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | cis-Nonachlor | | 4 | 4 | 6 | 9 | | 6 | 6 | | 6 | 19 | 34 | 27 | 46 |
| | trans-Chlordane | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | 2,4'-DDD | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Endrin ketone | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | gamma-Hexachlorocyclohexane | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Dieldrin | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Endrin | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Methoxychlor | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | 4,4'-DDD | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | 4,4'-DDE | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Endrin aldehyde | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Heptachlor | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | 2,4'-DDT | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | alpha-Endosulfan | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | cis-Chlordane | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Toxaphene | | 4 | 4 | 6 | 9 | | 6 | 6 | | | 19 | 3 | 27 | 11 |
| | Chlordane (cis & trans) | | | | | | | | | 3 | | 4 | 31 | | |
| | Total Chlordanes | | 4 | 4 | 6 | 9 | | 6 | 6 | | 6 | 19 | 34 | 27 | 46 |
| | Total Endosulfan | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |



BZTO104(e)033192

Table 2.1-3. Summary of LWG Rounds 1 and 2, and Non-LWG Biota Sample Counts.

| Sum of Sample Count | | Media | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group | Analyte | black crappie (fillet without skin) | black crappie (fillet) | black crappie (whole body) | brown bullhead (fillet without skin) | brown bullhead (whole body) | carp (fillet without skin) | carp (fillet) | carp (whole body) | chinook (fillet) | chinook (stomach contents) | chinook (whole body) | clam (body without shell) | crayfish (whole body) | lab clam (body without shell) |
| Pesticides | Total of 2,4' and 4,4'-DDD | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Total of 2,4' and 4,4'-DDD, -DDE, -DDT | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Total of 2,4' and 4,4'-DDE | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Total of 2,4' and 4,4'-DDT | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| | Total of 4,4'-DDD, -DDE, -DDT | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 34 | 27 | 46 |
| SVOCs | Benzoic acid | | | | 6 | 9 | | | 6 | | | | | 27 | 11 |
| | Dibenzofuran | | | | 6 | 9 | | | 6 | 3 | | 23 | 32 | 27 | 46 |
| | Hexachlorobenzene | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 35 | 27 | 46 |
| | Hexachloroethane | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | | 19 | 31 | 27 | 46 |
| | Hexachlorobutadiene | | 4 | 4 | 6 | 9 | | 6 | 6 | 3 | 6 | 23 | 31 | 27 | 46 |
| | 1,2,4-Trichlorobenzene | | | | 6 | 9 | | | 6 | 3 | | 19 | 31 | 27 | 46 |
| | 1,2-Dichlorobenzene | | | | 6 | 9 | | | 6 | 3 | | 19 | 31 | 27 | 46 |
| | 1,2-Diphenylhydrazine | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | 10 |
| | 1,3-Dichlorobenzene | | | | 6 | 9 | | | 6 | 3 | | 19 | 31 | 27 | 46 |
| | 1,4-Dichlorobenzene | | | | 6 | 9 | | | 6 | 3 | | 19 | 31 | 27 | 46 |
| | 2,4-Dinitrotoluene | | | | 6 | 9 | | | 6 | 3 | | 11 | 3 | 27 | 11 |
| | 2,6-Dinitrotoluene | | | | 6 | 9 | | | 6 | 3 | | 11 | 3 | 27 | 11 |
| | 2-Chloronaphthalene | | | | 6 | 9 | | | 6 | 3 | | 11 | 3 | 27 | 11 |
| | 2-Nitroaniline | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | 11 |
| | 3,3'-Dichlorobenzidine | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | 11 |
| | 3-Nitroaniline | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | 11 |
| | 4-Bromophenyl phenyl ether | | | | 6 | 9 | | | 6 | 3 | | 11 | 3 | 27 | 11 |
| | 4-Chloroaniline | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | 11 |
| | 4-Chlorophenyl phenyl ether | | | | 6 | 9 | | | 6 | 3 | | 11 | 3 | 27 | 11 |
| | 4-Nitroaniline | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | 11 |
| | Aniline | | | | 6 | 9 | | | 5 | | | | | 27 | 11 |
| | Azobenzene | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | 1 |
| | Benzyl alcohol | | | | 6 | 9 | | | 6 | | | 15 | 31 | 27 | 46 |
| | Bis(2-chloro-1-methylethyl) ether | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | |
| | Bis(2-chloroethoxy) methane | | | | 6 | 9 | | | 6 | 3 | | 11 | 3 | 27 | 11 |
| | Bis(2-chloroethyl) ether | | | | 6 | 9 | | | 6 | 3 | | 11 | 3 | 27 | 11 |
| | Bis(2-chloroisopropyl) ether | | | | | | | | | 3 | | 4 | | | 11 |
| | Carbazole | | | | 6 | 9 | | | 6 | 3 | | 11 | 3 | 27 | 11 |
| | Diphenyl | | | | | | | | | 3 | | 4 | | | |
| | Hexachlorocyclopentadiene | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | 11 |
| | Isophorone | | | | 6 | 9 | | | 6 | | | | | 27 | 11 |
| | Nitrobenzene | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | 11 |
| | N-Nitrosodimethylamine | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | 11 |
| | N-Nitrosodiphenylamine | | | | 6 | 9 | | | 6 | 3 | | 19 | 31 | 27 | 46 |
| | N-Nitrosodipropylamine | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | 11 |
| | Retene | | | | | | | | | 3 | | 4 | | | |
| Phenols | Phenol | | | | 6 | 9 | | | 6 | 2 | | 19 | 31 | 27 | 46 |
| | 2-Methylphenol | | | | 6 | 9 | | | 6 | | | 15 | 31 | 27 | 46 |
| | 4-Methylphenol | | | | 6 | 9 | | | 6 | | | 15 | 31 | 27 | 46 |
| | 2,3,4,5-Tetrachlorophenol | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | 11 |
| | 2,3,4,6-Tetrachlorophenol | | | | | | | | | | | | | | 11 |
| | 2,3,5,6-Tetrachlorophenol | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | 11 |
| | 2,4,5-Trichlorophenol | | | | 6 | 9 | | | 6 | 2 | | 11 | 3 | 27 | 11 |
| | 2,4,6-Trichlorophenol | | | | 6 | 9 | | | 6 | 2 | | 11 | 3 | 27 | 11 |
| | 2,4-Dichlorophenol | | | | 6 | 9 | | | 6 | 2 | | 11 | 3 | 27 | 11 |
| | 2,4-Dimethylphenol | | | | 6 | 9 | | | 6 | 2 | | 19 | 31 | 27 | 46 |
| | 2,4-Dinitrophenol | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | 11 |
| | 2-Chlorophenol | | | | 6 | 9 | | | 6 | 2 | | 11 | 3 | 27 | 11 |
| | 2-Nitrophenol | | | | 6 | 9 | | | 6 | 2 | | 4 | | 27 | 11 |
| | 4,6-Dinitro-2-methylphenol | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | 11 |
| | 4-Chloro-3-methylphenol | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | 11 |
| | 4-Nitrophenol | | | | 6 | 9 | | | 6 | | | 7 | 3 | 27 | 11 |
| | Pentachlorophenol | | | | 6 | 9 | | | 6 | | | 15 | 31 | 27 | 46 |
| Phthalates | Bis(2-ethylhexyl) phthalate | | | | 6 | 9 | | | 6 | | | 15 | 31 | 27 | 46 |
| | Butylbenzyl phthalate | | | | 6 | 9 | | | 6 | | | 15 | 31 | 27 | 46 |
| | Dibutyl phthalate | | | | 6 | 9 | | | 6 | | | 15 | 31 | 27 | 46 |
| | Diethyl phthalate | | | | 6 | 9 | | | 6 | | | 15 | 31 | 27 | 46 |
| | Dimethyl phthalate | | | | 6 | 9 | | | 6 | | | 15 | 31 | 27 | 46 |
| | Di-n-octyl phthalate | | | | 6 | 9 | | | 6 | | | 15 | 31 | 27 | 46 |
| PAHs | Naphthalene | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| | Acenaphthene | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| | Fluorene | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| | Phenanthrene | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| | Anthracene | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| | Fluoranthene | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |



BZTO104(e)033193

Table 2.1-3. Summary of LWG Rounds 1 and 2, and Non-LWG Biota Sample Counts.

| Sum of Sample Count | | Media | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group | Analyte | black crappie (fillet without skin) | black crappie (fillet) | black crappie (whole body) | brown bullhead (fillet without skin) | brown bullhead (whole body) | carp (fillet without skin) | carp (fillet) | carp (whole body) | chinook (fillet) | chinook (stomach contents) | chinook (whole body) | clam (body without shell) | crayfish (whole body) | lab clam (body without shell) |
| PAHs | Pyrene | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| | Chrysene | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| | 1-Methylnaphthalene | | | | | | | | | 3 | | 4 | | | |
| | 2-Methylnaphthalene | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| | Acenaphthylene | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| | Benzo(a)anthracene | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| | Benzo(a)pyrene | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| | Benzo(b)fluoranthene | | | | 6 | 9 | | | 6 | 3 | | 23 | 32 | 27 | 46 |
| | Benzo(b+j)fluoranthene | | | | | | | | | | 6 | | | | |
| | Benzo(b+k)fluoranthene | | | | | | | | | 3 | | 4 | | | |
| | Benzo(g,h,i)perylene | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| | Benzo(k)fluoranthene | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| | Dibenzo(a,h)anthracene | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| | High Molecular Weight PAH | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| | Indeno(1,2,3-cd)pyrene | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| | Low Molecular Weight PAH | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| | Total PAHs | | | | 6 | 9 | | | 6 | 3 | 6 | 23 | 32 | 27 | 46 |
| PCB_Congeners | PCB001 | | | 2 | | 2 | | | 5 | 3 | 6 | 19 | 26 | 10 | 44 |
| | PCB002 | | | 2 | | 2 | | | 5 | 3 | 6 | 19 | 28 | 10 | 34 |
| | PCB003 | | | 2 | | 2 | | | 5 | 3 | 6 | 19 | 28 | 10 | 34 |
| | PCB004 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 28 | 10 | 35 |
| | PCB005 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB006 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB007 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB008 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB009 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB010 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB011 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB012 & 013 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB014 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB015 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB016 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB017 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB018 | | | | | | | | | | | | | | 11 |
| | PCB018 & 030 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB019 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 30 | 10 | 35 |
| | PCB020 & 028 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB021 & 033 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB022 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB023 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB024 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB025 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB026 & 029 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB027 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB028 | | | | | | | | | | | | | | 11 |
| | PCB031 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB032 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB033 | | | | | | | | | | | | | | 11 |
| | PCB034 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB035 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB036 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB037 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB038 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB039 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB040 & 041 & 071 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB042 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB043 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB044 | | | | | | | | | | | | | | 11 |
| | PCB044 & 047 & 065 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB045 & 051 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB046 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB048 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB049 | | | | | | | | | | | | | | 11 |
| | PCB049 & 069 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB050 & 053 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB052 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB054 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB055 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB056 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB057 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |



BZTO104(e)033194

Table 2.1-3. Summary of LWG Rounds 1 and 2, and Non-LWG Biota Sample Counts.

| Sum of Sample Count | | Media | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group | Analyte | black crappie (fillet without skin) | black crappie (fillet) | black crappie (whole body) | brown bullhead (fillet without skin) | brown bullhead (whole body) | carp (fillet without skin) | carp (fillet) | carp (whole body) | chinook (fillet) | chinook (stomach contents) | chinook (whole body) | clam (body without shell) | crayfish (whole body) | lab clam (body without shell) |
| PCB_Congeners | PCB058 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB059 & 062 & 075 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB060 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB061 & 070 & 074 & 076 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB063 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB064 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB066 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB067 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB068 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB070 | | | | | | | | | | | | | | 11 |
| | PCB072 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB073 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB074 | | | | | | | | | | | | | | 11 |
| | PCB077 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB078 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB079 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB080 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB081 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB082 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB083 & 099 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB084 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB085 & 116 & 117 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB086 & 087 & 097 & 108 & 119 & 125 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB087 | | | | | | | | | | | | | | 11 |
| | PCB088 & 091 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB089 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB090 | | | | | | | | | | | | | | 11 |
| | PCB090 & 101 & 113 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB092 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB093 & 095 & 098 & 100 & 102 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB094 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB095 | | | | | | | | | | | | | | 11 |
| | PCB096 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB097 | | | | | | | | | | | | | | 11 |
| | PCB099 | | | | | | | | | | | | | | 11 |
| | PCB101 | | | | | | | | | | | | | | 11 |
| | PCB103 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB104 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB105 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB106 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB107 & 124 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB109 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB110 | | | | | | | | | | | | | | 11 |
| | PCB110 & 115 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB111 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB112 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB114 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB118 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB119 | | | | | | | | | | | | | | 11 |
| | PCB120 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB121 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB122 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB123 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB126 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB127 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB128 | | | | | | | | | | | | | | 11 |
| | PCB128 & 166 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB129 & 138 & 160 & 163 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB130 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB131 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB132 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB133 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB134 & 143 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB135 & 151 & 154 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB136 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB137 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB138 | | | | | | | | | | | | | | 11 |
| | PCB139 & 140 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB141 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB142 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |



BZTO104(e)033195

Table 2.1-3. Summary of LWG Rounds 1 and 2, and Non-LWG Biota Sample Counts.

| Sum of Sample Count | | Media | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group | Analyte | black crappie (fillet without skin) | black crappie (fillet) | black crappie (whole body) | brown bullhead (fillet without skin) | brown bullhead (whole body) | carp (fillet without skin) | carp (fillet) | carp (whole body) | chinook (fillet) | chinook (stomach contents) | chinook (whole body) | clam (body without shell) | crayfish (whole body) | lab clam (body without shell) |
| PCB_Congeners | PCB144 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB145 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB146 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB147 & 149 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB148 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB149 | | | | | | | | | | | | | | 11 |
| | PCB150 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB151 | | | | | | | | | | | | | | 11 |
| | PCB152 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB153 | | | | | | | | | | | | | | 11 |
| | PCB153 & 168 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB155 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB156 | | | 4 | | 9 | | | 6 | 3 | | 7 | | 10 | 11 |
| | PCB156 & 157 | | | | | | | | | | 6 | 12 | 31 | | 35 |
| | PCB157 | | | 4 | | 9 | | | 6 | 3 | | 7 | | 10 | 11 |
| | PCB158 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB159 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB161 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB162 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB164 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB165 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB166 | | | | | | | | | | | | | | 11 |
| | PCB167 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB168 | | | | | | | | | | | | | | 11 |
| | PCB169 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB170 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB171 & 173 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB172 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB174 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB175 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB176 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB177 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB178 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB179 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB180 | | | | | | | | | | | | | | 11 |
| | PCB180 & 193 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB181 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB182 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB183 | | | | | | | | | | | | | | 11 |
| | PCB183 & 185 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB184 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB186 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB187 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB188 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB189 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB190 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB191 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB192 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB194 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB195 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB196 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB197 & 200 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB198 & 199 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB201 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB202 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB203 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB204 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB205 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB206 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | PCB207 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB208 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | PCB209 | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | Total PCB Congeners | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| Dioxin_Furan_Homolog | Heptachlorodibenzofuran homologs | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | Heptachlorodibenzo-p-dioxin homologs | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | Hexachlorodibenzofuran homologs | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | Hexachlorodibenzo-p-dioxin homologs | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | Octachlorodibenzofuran | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | Octachlorodibenzo-p-dioxin | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | Pentachlorodibenzofuran homologs | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |



BZTO104(e)033196

Table 2.1-3. Summary of LWG Rounds 1 and 2, and Non-LWG Biota Sample Counts.

| Sum of Sample Count | | Media | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group | Analyte | black crappie (fillet without skin) | black crappie (fillet) | black crappie (whole body) | brown bullhead (fillet without skin) | brown bullhead (whole body) | carp (fillet without skin) | carp (fillet) | carp (whole body) | chinook (fillet) | chinook (stomach contents) | chinook (whole body) | clam (body without shell) | crayfish (whole body) | lab clam (body without shell) |
| Dioxin_Furan_Homolog | Pentachlorodibenzo-p-dioxin homologs | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | Tetrachlorodibenzofuran homologs | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | Tetrachlorodibenzo-p-dioxin homologs | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| Dioxins_Furans | 1,2,3,4,6,7,8-Heptachlorodibenzofuran | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | 1,2,3,4,7,8,9-Heptachlorodibenzofuran | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | 1,2,3,4,7,8-Hexachlorodibenzofuran | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | 1,2,3,6,7,8-Hexachlorodibenzofuran | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | 1,2,3,7,8,9-Hexachlorodibenzofuran | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | 1,2,3,7,8-Pentachlorodibenzofuran | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | 1,2,3,7,8-Pentachlorodibenzo-p-dioxin | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | 2,3,4,6,7,8-Hexachlorodibenzofuran | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | 2,3,4,7,8-Pentachlorodibenzofuran | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | 2,3,7,8-Tetrachlorodibenzofuran | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | 2,3,7,8-Tetrachlorodibenzo-p-dioxin | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | Dioxin/furan TCDD toxicity equivalent | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | Dioxin-like PCB congener TCDD toxicity equivalent | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 46 |
| | Total PCDD/F | | | 4 | | 9 | | | 6 | 3 | | 19 | 29 | 10 | 35 |
| | Total TCDD toxicity equivalent | | | 4 | | 9 | | | 6 | 3 | | 19 | 28 | 10 | 35 |
| PBDE_Congeners | PBDE001 | | | | | | | | | 3 | | 7 | | | |
| | PBDE002 | | | | | | | | | 3 | | 7 | | | |
| | PBDE003 | | | | | | | | | 3 | | 7 | | | |
| | PBDE007 | | | | | | | | | 3 | | 7 | | | |
| | PBDE008 & PBDE011 | | | | | | | | | 3 | | 7 | | | |
| | PBDE010 | | | | | | | | | 3 | | 7 | | | |
| | PBDE012 | | | | | | | | | 3 | | 7 | | | |
| | PBDE012 & 013 | | | | | | | | | | | | | | |
| | PBDE013 | | | | | | | | | 3 | | 7 | | | |
| | PBDE015 | | | | | | | | | 3 | | 7 | | | |
| | PBDE017 | | | | | | | | | 3 | | 7 | | | |
| | PBDE017 & 025 | | | | | | | | | | | | | | |
| | PBDE025 | | | | | | | | | 3 | | 7 | | | |
| | PBDE028 & PBDE033 | | | | | | | | | 3 | | 7 | | | |
| | PBDE030 | | | | | | | | | 3 | | 7 | | | |
| | PBDE032 | | | | | | | | | 3 | | 7 | | | |
| | PBDE035 | | | | | | | | | 3 | | 7 | | | |
| | PBDE037 | | | | | | | | | 3 | | 7 | | | |
| | PBDE047 | | | | | | | | | 3 | | 7 | | | |
| | PBDE049 | | | | | | | | | 3 | | 7 | | | |
| | PBDE051 | | | | | | | | | | | | | | |
| | PBDE066 | | | | | | | | | 3 | | 7 | | | |
| | PBDE071 | | | | | | | | | 3 | | 7 | | | |
| | PBDE075 | | | | | | | | | 3 | | 7 | | | |
| | PBDE077 | | | | | | | | | 3 | | 7 | | | |
| | PBDE079 | | | | | | | | | | | | | | |
| | PBDE085 | | | | | | | | | 3 | | 7 | | | |
| | PBDE099 | | | | | | | | | 3 | | 7 | | | |
| | PBDE100 | | | | | | | | | 3 | | 7 | | | |
| | PBDE105 | | | | | | | | | 3 | | 7 | | | |
| | PBDE116 | | | | | | | | | 3 | | 7 | | | |
| | PBDE119 | | | | | | | | | 3 | | 7 | | | |
| | PBDE119 & 120 | | | | | | | | | | | | | | |
| | PBDE126 | | | | | | | | | 3 | | 7 | | | |
| | PBDE128 | | | | | | | | | | | | | | |
| | PBDE138 & PBDE166 | | | | | | | | | 3 | | 7 | | | |
| | PBDE140 | | | | | | | | | 3 | | 7 | | | |
| | PBDE153 | | | | | | | | | 3 | | 7 | | | |
| | PBDE154 | | | | | | | | | 3 | | 7 | | | |
| | PBDE155 | | | | | | | | | 3 | | 7 | | | |
| | PBDE181 | | | | | | | | | 3 | | 7 | | | |
| | PBDE183 | | | | | | | | | 3 | | 7 | | | |
| | PBDE190 | | | | | | | | | 3 | | 7 | | | |
| | PBDE203 | | | | | | | | | | | | | | |
| | PBDE206 | | | | | | | | | 3 | | 7 | | | |
| | PBDE207 | | | | | | | | | 3 | | 7 | | | |
| | PBDE208 | | | | | | | | | 3 | | 7 | | | |
| | PBDE209 | | | | | | | | | 3 | | 7 | | | |



BZTO104(e)033197

Table 2.1-3. Summary of LWG Rounds 1 and 2, and Non-LWG Biota Sample Counts.

| Sum of Sample Count | | Media | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group | Analyte | black crappie (fillet without skin) | black crappie (fillet) | black crappie (whole body) | brown bullhead (fillet without skin) | brown bullhead (whole body) | carp (fillet without skin) | carp (fillet) | carp (whole body) | chinook (fillet) | chinook (stomach contents) | chinook (whole body) | clam (body without shell) | crayfish (whole body) | lab clam (body without shell) |
| PCB_Homologs | Dichlorobiphenyl homologs | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | Heptachlorobiphenyl homologs | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | Hexachlorobiphenyl homologs | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | Monochlorobiphenyl homologs | | | 2 | | 2 | | | 5 | 3 | 6 | 19 | 28 | 10 | 35 |
| | Nonachlorobiphenyl homologs | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | Octachlorobiphenyl homologs | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | Pentachlorobiphenyl homologs | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | Tetrachlorobiphenyl homologs | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| | Trichlorobiphenyl homologs | | | 4 | | 9 | | | 6 | 3 | 6 | 19 | 31 | 10 | 35 |
| Grand Total | | 4 | 252 | 1044 | 816 | 2987 | 6 | 378 | 2006 | 1046 | 1398 | 6567 | 9435 | 5662 | 12593 |



BZTO104(e)033198

Table 2.1-3. Summary of LWG Rounds 1 and 2, and Non-LWG Biota Sample C

| Sum of Sample Count | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group | Analyte | largescale sucker (whole body) | Lumbriculus variegatus (whole body) | multiplate invertebrates (whole body) | northern pikeminnow (whole body) | Pacific lamprey (whole body) | peamouth (whole body) | sculpin (whole body) | smallmouth bass (fillet without skin) | smallmouth bass (fillet) | smallmouth bass (whole body) | sturgeon (fillet without skin) | Grand Total |
| Conventionals | Lipids | 6 | 46 | | 6 | | 4 | 26 | | 5 | 20 | | 275 |
| | Total solids | 6 | 46 | 2 | 6 | | 4 | 26 | | 5 | 20 | | 273 |
| Metals | Antimony | 6 | 46 | 2 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 289 |
| | Arsenic | 6 | 46 | 2 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 289 |
| | Cadmium | 6 | 46 | 2 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 289 |
| | Copper | 6 | 46 | 2 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 289 |
| | Lead | 6 | 46 | 2 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 289 |
| | Mercury | 6 | 45 | | 6 | 4 | 4 | 27 | 5 | | 20 | 5 | 285 |
| | Nickel | 6 | 46 | 2 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 289 |
| | Silver | 6 | 46 | 2 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 289 |
| | Zinc | 6 | 46 | 2 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 289 |
| | Aluminum | 6 | 35 | 2 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 267 |
| | Barium | | | | | 4 | | | | | | 5 | 16 |
| | Beryllium | | | | | 4 | | | | | | 5 | 16 |
| | Calcium | | | | | 4 | | | | | | 5 | 16 |
| | Chromium | 6 | 46 | 2 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 289 |
| | Cobalt | | | | | 4 | | | | | | 5 | 16 |
| | Iron | | | | | 4 | | | | | | 5 | 16 |
| | Magnesium | | | | | 4 | | | | | | 5 | 16 |
| | Manganese | 6 | | | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 155 |
| | Potassium | | | | | 4 | | | | | | 5 | 16 |
| | Selenium | 6 | 35 | 2 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 267 |
| | Sodium | | | | | 4 | | | | | | 5 | 16 |
| | Thallium | 6 | | | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 155 |
| | Vanadium | | | | | 4 | | | | | | 5 | 16 |
| Butyltins | Butyltin ion | | 46 | | | | | | | | | | 130 |
| | Dibutyltin ion | | 46 | | | | | | | | | | 130 |
| | Tetrabutyltin | | 46 | | | | | | | | | | 130 |
| | Tributyltin ion | | 46 | | | | | | | | | | 130 |
| Aroclors | Aroclor 1016 | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Aroclor 1221 | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Aroclor 1232 | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Aroclor 1242 | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Aroclor 1248 | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Aroclor 1254 | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Aroclor 1260 | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Aroclor 1262 | 6 | 11 | | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 177 |
| | Aroclor 1268 | 6 | 11 | | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 177 |
| | Total PCB Aroclors | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| Pesticides | Heptachlor epoxide | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Endosulfan sulfate | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Mirex | 6 | 11 | | 6 | | 4 | 26 | | 5 | 20 | | 161 |
| | Oxychlordane | 6 | 46 | 7 | 6 | | 4 | 26 | | 5 | 20 | | 287 |
| | Aldrin | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | alpha-Hexachlorocyclohexane | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | beta-Hexachlorocyclohexane | 6 | 44 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 301 |
| | delta-Hexachlorocyclohexane | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | beta-Endosulfan | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | 2,4'-DDE | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | trans-Nonachlor | 6 | 46 | 7 | 6 | | 4 | 26 | | 5 | 20 | | 287 |
| | 4,4'-DDT | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | cis-Nonachlor | 6 | 46 | 7 | 6 | | 4 | 26 | | 5 | 20 | | 287 |
| | trans-Chlordane | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | 2,4'-DDD | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Endrin ketone | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | gamma-Hexachlorocyclohexane | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Dieldrin | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Endrin | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Methoxychlor | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | 4,4'-DDD | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | 4,4'-DDE | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Endrin aldehyde | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 4 | 302 |
| | Heptachlor | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | 2,4'-DDT | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | alpha-Endosulfan | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | cis-Chlordane | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Toxaphene | 6 | 11 | | 6 | | 4 | 26 | | 5 | 20 | | 173 |
| | Chlordane (cis & trans) | | | | | 4 | | | | | | 5 | 47 |
| | Total Chlordanes | 6 | 46 | 7 | 6 | | 4 | 26 | | 5 | 20 | | 287 |
| | Total Endosulfan | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |



BZTO104(e)033199

Table 2.1-3. Summary of LWG Rounds 1 and 2, and Non-LWG Biota Sample C

| Sum of Sample Count | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group | Analyte | largescale sucker (whole body) | Lumbriculus variegatus (whole body) | multiplate invertebrates (whole body) | northern pikeminnow (whole body) | Pacific lamprey (whole body) | peamouth (whole body) | sculpin (whole body) | smallmouth bass (fillet without skin) | smallmouth bass (fillet) | smallmouth bass (whole body) | sturgeon (fillet without skin) | Grand Total |
| Pesticides | Total of 2,4' and 4,4'-DDD | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Total of 2,4' and 4,4'-DDE | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Total of 2,4' and 4,4'-DDT | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| | Total of 4,4'-DDD, -DDE, -DDT | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 303 |
| SVOCs | Benzoic acid | | 10 | | | | | | | | 20 | | 89 |
| | Dibenzofuran | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 259 |
| | Hexachlorobenzene | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 304 |
| | Hexachloroethane | 6 | 46 | | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 283 |
| | Hexachlorobutadiene | 6 | 46 | 7 | 6 | 4 | 4 | 26 | | 5 | 20 | 5 | 300 |
| | 1,2,4-Trichlorobenzene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 254 |
| | 1,2-Dichlorobenzene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 254 |
| | 1,2-Diphenylhydrazine | 6 | 10 | | | | | 26 | | | 20 | | 130 |
| | 1,3-Dichlorobenzene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 254 |
| | 1,4-Dichlorobenzene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 254 |
| | 2,4-Dinitrotoluene | 6 | 11 | | | 4 | | 26 | | | 20 | 5 | 148 |
| | 2,6-Dinitrotoluene | 6 | 11 | | | 4 | | 26 | | | 20 | 5 | 148 |
| | 2-Chloronaphthalene | 6 | 11 | | | 4 | | 26 | | | 20 | 5 | 148 |
| | 2-Nitroaniline | 6 | 11 | | | | | 26 | | | 20 | | 132 |
| | 3,3'-Dichlorobenzidine | 6 | 11 | | | | | 26 | | | 20 | | 132 |
| | 3-Nitroaniline | 6 | 11 | | | | | 26 | | | 20 | | 132 |
| | 4-Bromophenyl phenyl ether | 6 | 11 | | | 4 | | 26 | | | 20 | 5 | 148 |
| | 4-Chloroaniline | 6 | 11 | | | | | 26 | | | 20 | | 132 |
| | 4-Chlorophenyl phenyl ether | 6 | 11 | | | 4 | | 26 | | | 20 | 5 | 148 |
| | 4-Nitroaniline | 6 | 11 | | | | | 26 | | | 20 | | 132 |
| | Aniline | | 11 | | | | | | | | 20 | | 89 |
| | Azobenzene | 6 | 1 | | | | | 26 | | | 20 | | 112 |
| | Benzyl alcohol | 6 | 46 | | | | | 26 | | | 20 | | 238 |
| | Bis(2-chloro-1-methylethyl) ether | 6 | | | | | | 26 | | | 20 | | 110 |
| | Bis(2-chloroethoxy) methane | 6 | 11 | | | 4 | | 26 | | | 20 | 5 | 148 |
| | Bis(2-chloroethyl) ether | 6 | 11 | | | 4 | | 26 | | | 20 | 5 | 148 |
| | Bis(2-chloroisopropyl) ether | | 11 | | | 4 | | | | | | 5 | 38 |
| | Carbazole | 6 | 11 | | | 4 | | 26 | | | 20 | 5 | 148 |
| | Diphenyl | | | | | 4 | | | | | | 5 | 16 |
| | Hexachlorocyclopentadiene | 6 | 11 | | | | | 26 | | | 20 | | 132 |
| | Isophorone | | 11 | | | | | | | | 20 | | 90 |
| | Nitrobenzene | 6 | 11 | | | | | 26 | | | 20 | | 132 |
| | N-Nitrosodimethylamine | 6 | 11 | | | | | 26 | | | 20 | | 132 |
| | N-Nitrosodiphenylamine | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 254 |
| | N-Nitrosodipropylamine | 6 | 11 | | | | | 26 | | | 20 | | 132 |
| | Retene | | | | | 4 | | | | | | 5 | 16 |
| Phenols | Phenol | 6 | 45 | | | 2 | | 26 | | | 20 | 5 | 250 |
| | 2-Methylphenol | 6 | 46 | | | | | 26 | | | 20 | | 238 |
| | 4-Methylphenol | 6 | 46 | | | | | 26 | | | 20 | | 238 |
| | 2,3,4,5-Tetrachlorophenol | 6 | 10 | | | | | 26 | | | 20 | | 131 |
| | 2,3,4,6-Tetrachlorophenol | | 10 | | | | | | | | | | 21 |
| | 2,3,5,6-Tetrachlorophenol | 6 | 10 | | | | | 26 | | | 20 | | 131 |
| | 2,4,5-Trichlorophenol | 6 | 10 | | | 2 | | 26 | | | 20 | 5 | 144 |
| | 2,4,6-Trichlorophenol | 6 | 10 | | | 2 | | 26 | | | 20 | 5 | 144 |
| | 2,4-Dichlorophenol | 6 | 10 | | | 2 | | 26 | | | 20 | 5 | 144 |
| | 2,4-Dimethylphenol | 6 | 45 | | | 3 | | 26 | | | 20 | 5 | 251 |
| | 2,4-Dinitrophenol | 6 | 10 | | | | | 26 | | | 20 | | 131 |
| | 2-Chlorophenol | 6 | 10 | | | 2 | | 26 | | | 20 | 5 | 144 |
| | 2-Nitrophenol | | 10 | | | 2 | | | | | 20 | 5 | 102 |
| | 4,6-Dinitro-2-methylphenol | 6 | 10 | | | | | 26 | | | 20 | | 131 |
| | 4-Chloro-3-methylphenol | 6 | 10 | | | | | 26 | | | 20 | | 131 |
| | 4-Nitrophenol | 6 | 10 | | | | | 26 | | | 20 | | 131 |
| | Pentachlorophenol | 6 | 46 | | | | | 26 | | | 20 | | 238 |
| Phthalates | Bis(2-ethylhexyl) phthalate | 6 | 46 | | | | | 26 | | | 20 | | 238 |
| | Butylbenzyl phthalate | 6 | 46 | | | | | 26 | | | 20 | | 238 |
| | Dibutyl phthalate | 6 | 46 | | | | | 26 | | | 20 | | 238 |
| | Diethyl phthalate | 6 | 46 | | | | | 26 | | | 20 | | 238 |
| | Dimethyl phthalate | 6 | 46 | | | | | 26 | | | 20 | | 238 |
| | Di-n-octyl phthalate | 6 | 46 | | | | | 26 | | | 20 | | 238 |
| PAHs | Naphthalene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| | Acenaphthene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| | Fluorene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| | Phenanthrene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| | Anthracene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| | Fluoranthene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |



BZTO104(e)033200

Table 2.1-3. Summary of LWG Rounds 1 and 2, and Non-LWG Biota Sample C

| Sum of Sample Count | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group | Analyte | largescale sucker (whole body) | Lumbriculus variegatus (whole body) | multiplate invertebrates (whole body) | northern pikeminnow (whole body) | Pacific lamprey (whole body) | peamouth (whole body) | sculpin (whole body) | smallmouth bass (fillet without skin) | smallmouth bass (fillet) | smallmouth bass (whole body) | sturgeon (fillet without skin) | Grand Total |
| PAHs | Pyrene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| | Chrysene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| | 1-Methylnaphthalene | | | | | 4 | | | | | | 5 | 16 |
| | 2-Methylnaphthalene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| | Acenaphthylene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| | Benzo(a)anthracene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| | Benzo(a)pyrene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| | Benzo(b)fluoranthene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 259 |
| | Benzo(b+j)fluoranthene | | | | | | | | | | | | 6 |
| | Benzo(b+k)fluoranthene | | | | | 4 | | | | | | 5 | 16 |
| | Benzo(g,h,i)perylene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| | Benzo(k)fluoranthene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| | Dibenzo(a,h)anthracene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| | High Molecular Weight PAH | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| | Indeno(1,2,3-cd)pyrene | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| | Low Molecular Weight PAH | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| | Total PAHs | 6 | 46 | | | 4 | | 26 | | | 20 | 5 | 265 |
| PCB_Congeners | PCB001 | | 43 | 7 | | 4 | | 7 | | | 10 | 5 | 193 |
| | PCB002 | | 32 | 7 | | 4 | | 7 | | | 10 | 5 | 174 |
| | PCB003 | | 32 | 7 | | 4 | | 7 | | | 10 | 5 | 174 |
| | PCB004 | | 34 | 7 | | 4 | | 9 | | | 20 | 5 | 199 |
| | PCB005 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB006 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB007 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB008 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB009 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB010 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB011 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB012 & 013 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB014 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB015 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB016 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB017 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB018 | | 11 | | | | | | | | | | 22 |
| | PCB018 & 030 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB019 | | 34 | 7 | | 4 | | 9 | | | 20 | 5 | 201 |
| | PCB020 & 028 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB021 & 033 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB022 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB023 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB024 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB025 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB026 & 029 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB027 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB028 | | 11 | | | | | | | | | | 22 |
| | PCB031 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB032 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB033 | | 11 | | | | | | | | | | 22 |
| | PCB034 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB035 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB036 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB037 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB038 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB039 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB040 & 041 & 071 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB042 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB043 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB044 | | 11 | | | | | | | | | | 22 |
| | PCB044 & 047 & 065 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB045 & 051 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB046 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB048 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB049 | | 11 | | | | | | | | | | 22 |
| | PCB049 & 069 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB050 & 053 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB052 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB054 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB055 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB056 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB057 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |



BZTO104(e)033201

Table 2.1-3. Summary of LWG Rounds 1 and 2, and Non-LWG Biota Sample C

| Sum of Sample Count | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group | Analyte | largescale sucker (whole body) | Lumbriculus variegatus (whole body) | multiplate invertebrates (whole body) | northern pikeminnow (whole body) | Pacific lamprey (whole body) | peamouth (whole body) | sculpin (whole body) | smallmouth bass (fillet without skin) | smallmouth bass (fillet) | smallmouth bass (whole body) | sturgeon (fillet without skin) | Grand Total |
| PCB_Congeners | PCB058 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB059 & 062 & 075 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB060 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB061 & 070 & 074 & 076 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB063 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB064 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB066 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB067 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB068 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB070 | | 11 | | | | | | | | | | 22 |
| | PCB072 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB073 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB074 | | 11 | | | | | | | | | | 22 |
| | PCB077 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB078 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB079 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB080 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB081 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB082 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB083 & 099 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB084 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB085 & 116 & 117 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB086 & 087 & 097 & 108 & 119 & 125 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB087 | | 11 | | | | | | | | | | 22 |
| | PCB088 & 091 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB089 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB090 | | 11 | | | | | | | | | | 22 |
| | PCB090 & 101 & 113 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB092 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB093 & 095 & 098 & 100 & 102 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB094 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB095 | | 11 | | | | | | | | | | 22 |
| | PCB096 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB097 | | 11 | | | | | | | | | | 22 |
| | PCB099 | | 11 | | | | | | | | | | 22 |
| | PCB101 | | 11 | | | | | | | | | | 22 |
| | PCB103 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB104 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB105 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB106 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB107 & 124 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB109 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB110 | | 11 | | | | | | | | | | 22 |
| | PCB110 & 115 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB111 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB112 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB114 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB118 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB119 | | 11 | | | | | | | | | | 22 |
| | PCB120 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB121 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB122 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB123 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB126 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB127 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB128 | | 11 | | | | | | | | | | 22 |
| | PCB128 & 166 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB129 & 138 & 160 & 163 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB130 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB131 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB132 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB133 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB134 & 143 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB135 & 151 & 154 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB136 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB137 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB138 | | 11 | | | | | | | | | | 22 |
| | PCB139 & 140 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB141 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB142 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |



BZTO104(e)033202

Table 2.1-3. Summary of LWG Rounds 1 and 2, and Non-LWG Biota Sample C

| Sum of Sample Count | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group | Analyte | largescale sucker (whole body) | Lumbriculus variegatus (whole body) | multiplate invertebrates (whole body) | northern pikeminnow (whole body) | Pacific lamprey (whole body) | peamouth (whole body) | sculpin (whole body) | smallmouth bass (fillet without skin) | smallmouth bass (fillet) | smallmouth bass (whole body) | sturgeon (fillet without skin) | Grand Total |
| PCB_Congeners | PCB144 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB145 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB146 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB147 & 149 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB148 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB149 | | 11 | | | | | | | | | | 22 |
| | PCB150 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB151 | | 11 | | | | | | | | | | 22 |
| | PCB152 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB153 | | 11 | | | | | | | | | | 22 |
| | PCB153 & 168 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB155 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB156 | | 11 | | | 4 | | 9 | | | 20 | 5 | 99 |
| | PCB156 & 157 | | 35 | 7 | | | | | | | | | 126 |
| | PCB157 | | 11 | | | 4 | | 9 | | | 20 | 5 | 99 |
| | PCB158 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB159 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB161 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB162 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB164 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB165 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB166 | | 11 | | | | | | | | | | 22 |
| | PCB167 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB168 | | 11 | | | | | | | | | | 22 |
| | PCB169 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB170 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB171 & 173 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB172 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB174 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB175 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB176 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB177 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB178 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB179 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB180 | | 11 | | | | | | | | | | 22 |
| | PCB180 & 193 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB181 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB182 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB183 | | 11 | | | | | | | | | | 22 |
| | PCB183 & 185 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB184 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB186 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB187 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB188 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB189 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB190 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB191 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB192 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB194 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB195 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB196 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB197 & 200 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB198 & 199 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB201 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB202 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB203 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB204 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB205 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB206 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | PCB207 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB208 | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | PCB209 | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | Total PCB Congeners | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| Dioxin_Furan_Homolog | Heptachlorodibenzofuran homologs | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | Heptachlorodibenzo-p-dioxin homologs | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | Hexachlorodibenzofuran homologs | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | Hexachlorodibenzo-p-dioxin homologs | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | Octachlorodibenzofuran | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | Octachlorodibenzo-p-dioxin | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | Pentachlorodibenzofuran homologs | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |



BZTO104(e)033203

Table 2.1-3. Summary of LWG Rounds 1 and 2, and Non-LWG Biota Sample C

| Sum of Sample Count | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group | Analyte | largescale sucker (whole body) | Lumbriculus variegatus (whole body) | multiplate invertebrates (whole body) | northern pikeminnow (whole body) | Pacific lamprey (whole body) | peamouth (whole body) | sculpin (whole body) | smallmouth bass (fillet without skin) | smallmouth bass (fillet) | smallmouth bass (whole body) | sturgeon (fillet without skin) | Grand Total |
| Dioxin_Furan_Homolog | Pentachlorodibenzo-p-dioxin homologs | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | Tetrachlorodibenzofuran homologs | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | Tetrachlorodibenzo-p-dioxin homologs | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| Dioxins_Furans | 1,2,3,4,6,7,8-Heptachlorodibenzofuran | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | 1,2,3,4,7,8,9-Heptachlorodibenzofuran | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | 1,2,3,4,7,8-Hexachlorodibenzofuran | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | 1,2,3,6,7,8-Hexachlorodibenzofuran | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | 1,2,3,7,8,9-Hexachlorodibenzofuran | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | 1,2,3,7,8-Pentachlorodibenzofuran | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | 1,2,3,7,8-Pentachlorodibenzo-p-dioxin | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | 2,3,4,6,7,8-Hexachlorodibenzofuran | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | 2,3,4,7,8-Pentachlorodibenzofuran | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | 2,3,7,8-Tetrachlorodibenzofuran | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | 2,3,7,8-Tetrachlorodibenzo-p-dioxin | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | Dioxin/furan TCDD toxicity equivalent | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | Dioxin-like PCB congener TCDD toxicity equivalent | | 46 | 7 | | 4 | | 9 | | | 20 | 5 | 225 |
| | Total PCDD/F | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 195 |
| | Total TCDD toxicity equivalent | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 194 |
| PBDE_Congeners | PBDE001 | | | | | 3 | | | | | | | 13 |
| | PBDE002 | | | | | 3 | | | | | | | 13 |
| | PBDE003 | | | | | 3 | | | | | | | 13 |
| | PBDE007 | | | | | 3 | | | | | | 1 | 14 |
| | PBDE008 & PBDE011 | | | | | 3 | | | | | | 1 | 14 |
| | PBDE010 | | | | | 3 | | | | | | 1 | 14 |
| | PBDE012 | | | | | 3 | | | | | | | 13 |
| | PBDE012 & 013 | | | | | | | | | | | 1 | 1 |
| | PBDE013 | | | | | 3 | | | | | | | 13 |
| | PBDE015 | | | | | 3 | | | | | | 1 | 14 |
| | PBDE017 | | | | | 3 | | | | | | | 13 |
| | PBDE017 & 025 | | | | | 1 | | | | | | 5 | 6 |
| | PBDE025 | | | | | 3 | | | | | | | 13 |
| | PBDE028 & PBDE033 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE030 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE032 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE035 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE037 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE047 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE049 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE051 | | | | | 1 | | | | | | 5 | 6 |
| | PBDE066 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE071 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE075 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE077 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE079 | | | | | 1 | | | | | | 5 | 6 |
| | PBDE085 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE099 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE100 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE105 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE116 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE119 | | | | | 3 | | | | | | | 13 |
| | PBDE119 & 120 | | | | | 1 | | | | | | 5 | 6 |
| | PBDE126 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE128 | | | | | 1 | | | | | | 5 | 6 |
| | PBDE138 & PBDE166 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE140 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE153 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE154 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE155 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE181 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE183 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE190 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE203 | | | | | 1 | | | | | | 5 | 6 |
| | PBDE206 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE207 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE208 | | | | | 4 | | | | | | 5 | 19 |
| | PBDE209 | | | | | 4 | | | | | | 5 | 19 |



BZTO104(e)033204

Table 2.1-3. Summary of LWG Rounds 1 and 2, and Non-LWG Biota Sample C

| Sum of Sample Count | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group | Analyte | largescale sucker (whole body) | Lumbriculus variegatus (whole body) | multiplate invertebrates (whole body) | northern pikeminnow (whole body) | Pacific lamprey (whole body) | peamouth (whole body) | sculpin (whole body) | smallmouth bass (fillet without skin) | smallmouth bass (fillet) | smallmouth bass (whole body) | sturgeon (fillet without skin) | Grand Total |
| PCB_Homologs | Dichlorobiphenyl homologs | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | Heptachlorobiphenyl homologs | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | Hexachlorobiphenyl homologs | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | Monochlorobiphenyl homologs | | 32 | 7 | | 4 | | 7 | | | 10 | 5 | 175 |
| | Nonachlorobiphenyl homologs | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | Octachlorobiphenyl homologs | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | Pentachlorobiphenyl homologs | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | Tetrachlorobiphenyl homologs | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| | Trichlorobiphenyl homologs | | 35 | 7 | | 4 | | 9 | | | 20 | 5 | 203 |
| Grand Total | | 792 | 12565 | 1711 | 384 | 1389 | 256 | 5216 | 5 | 315 | 6660 | 1734 | 75221 |



BZTO104(e)033205

Table 2.1-4. Number of Individual Fish or Invertebrates per Sample during LWG Rounds 1 and 2 and Non-LWG Studies.

| Species | Tissue | Sample | Number of Individuals per Composite |
|---|---|---|---|
| clam | body without shell | LW2-BTFC001 | 106 |
| clam | body without shell | LW2-BTFC002 | 96 |
| clam | body without shell | LW2-BTFC003 | 71 |
| clam | body without shell | LW2-BTFC004 | 102 |
| clam | body without shell | LW2-BTFC005 | 56 |
| clam | body without shell | LW2-BTFC006 Rep 1 | 171 |
| clam | body without shell | LW2-BTFC006 Rep 2 | 171 |
| clam | body without shell | LW2-BTFC007 | 39 |
| clam | body without shell | LW2-BTFC008 | 62 |
| clam | body without shell | LW2-BTFC009 | 63 |
| clam | body without shell | LW2-BTFC010 | 108 |
| clam | body without shell | LW2-BTFC011 | 32 |
| clam | body without shell | LW2-BTFC012 | 50 |
| clam | body without shell | LW2-BTFC013 | 89 |
| clam | body without shell | LW2-BTFC014 | 36 |
| clam | body without shell | LW2-BTFC015 | 32 |
| clam | body without shell | LW2-BTFC016 | 34 |
| clam | body without shell | LW2-BTFC017 | 37 |
| clam | body without shell | LW2-BTFC018 | 16 |
| clam | body without shell | LW2-BTFC019 | 41 |
| clam | body without shell | LW2-BTFC020 | 52 |
| clam | body without shell | LW2-BTFC021 | 37 |
| clam | body without shell | LW2-BTFC022 | 49 |
| clam | body without shell | LW2-BTFC023 | 35 |
| clam | body without shell | LW2-BTFC024 | 110 |
| clam | body without shell | LW2-BTFC025 | 22 |
| clam | body without shell | LW2-BTFC026 | 50 |
| clam | body without shell | LW2-BTFC027 Rep 1 | 75 |
| clam | body without shell | LW2-BTFC027 Rep 2 | 75 |
| clam | body without shell | LW2-BTFC028 | 42 |
| clam | body without shell | LW2-BTFC029 | 10 |
| clam | body without shell | LW2-BTFC030 | 69 |
| clam | body without shell | LW2-BTFC031 | 41 |
| clam | body without shell | LW2-BTFC032 | 5 |
| clam | body without shell | LW2-BTFC033 | 14 |
| lab clam | body without shell | LW2-BTLC001 | 183 |
| lab clam | body without shell | LW2-BTLC002 | 183 |
| lab clam | body without shell | LW2-BTLC003 | 183 |
| lab clam | body without shell | LW2-BTLC004 | 183 |
| lab clam | body without shell | LW2-BTLC005 | 183 |
| lab clam | body without shell | LW2-BTLC006-1 | 183 |
| lab clam | body without shell | LW2-BTLC006-2 | 183 |
| lab clam | body without shell | LW2-BTLC007 | 177 |
| lab clam | body without shell | LW2-BTLC008 | 177 |
| lab clam | body without shell | LW2-BTLC009 | 183 |
| lab clam | body without shell | LW2-BTLC010 | 183 |
| lab clam | body without shell | LW2-BTLC011 | 183 |
| lab clam | body without shell | LW2-BTLC012 | 183 |
| lab clam | body without shell | LW2-BTLC013 | 177 |
| lab clam | body without shell | LW2-BTLC014 | 183 |
| lab clam | body without shell | LW2-BTLC015 | 183 |
| lab clam | body without shell | LW2-BTLC016 | 183 |
| lab clam | body without shell | LW2-BTLC017 | 177 |

BZTO104(e)033206

Table 2.1-4. Number of Individual Fish or Invertebrates per Sample during LWG Rounds 1 and 2 and Non-LWG Studies.

| Species | Tissue | Sample | Number of Individuals per Composite |
|---|---|---|---|
| lab clam | body without shell | LW2-BTLC018 | 183 |
| lab clam | body without shell | LW2-BTLC019 | 183 |
| lab clam | body without shell | LW2-BTLC020 | 177 |
| lab clam | body without shell | LW2-BTLC021 | 177 |
| lab clam | body without shell | LW2-BTLC022 | 177 |
| lab clam | body without shell | LW2-BTLC023 | 183 |
| lab clam | body without shell | LW2-BTLC024 | 177 |
| lab clam | body without shell | LW2-BTLC025 | 177 |
| lab clam | body without shell | LW2-BTLC026 | 177 |
| lab clam | body without shell | LW2-BTLC027-1 | 177 |
| lab clam | body without shell | LW2-BTLC027-2 | 177 |
| lab clam | body without shell | LW2-BTLC028 | 177 |
| lab clam | body without shell | LW2-BTLC029 | 177 |
| lab clam | body without shell | LW2-BTLC030 | 177 |
| lab clam | body without shell | LW2-BTLC031 | 177 |
| lab clam | body without shell | LW2-BTLC032 | 177 |
| lab clam | body without shell | LW2-BTLC033 | 183 |
| lab clam | body without shell | LW2-BTLCCTRL 011906 | 177 |
| lab clam | body without shell | LW2-BTLCCTRL 022406 | 183 |
| lab clam | body without shell | LW2-BTLCTZ 012706 | 183 |
| lab clam | body without shell | LW2-BTLCTZ 122205 | 177 |
| black crappie | fillet | LWG01FZ0306TSBCFLC10 | 5 |
| black crappie | fillet | LWG01FZ0306TSBCFLC20 | 5 |
| black crappie | fillet | LWG01FZ0609TSBCFLC10 | 5 |
| black crappie | fillet | LWG01FZ0609TSBCFLC20 | 5 |
| black crappie | fillet without skin | LWG01FZ0306TSBCFSC10 | 5 |
| black crappie | fillet without skin | LWG01FZ0306TSBCFSC20 | 5 |
| black crappie | fillet without skin | LWG01FZ0609TSBCFSC10 | 5 |
| black crappie | fillet without skin | LWG01FZ0609TSBCFSC20 | 5 |
| black crappie | whole body | LWG01FZ0306TSBCWBC10 | 5 |
| black crappie | whole body | LWG01FZ0306TSBCWBC20 | 5 |
| black crappie | whole body | LWG01FZ0609TSBCWBC10 | 5 |
| black crappie | whole body | LWG01FZ0609TSBCWBC20 | 5 |
| brown bullhead | fillet without skin | LWG01FZ0306TSBBFLC10 | 5 |
| brown bullhead | fillet without skin | LWG01FZ0306TSBBFLC20 | 5 |
| brown bullhead | fillet without skin | LWG01FZ0306TSBBFLC30 | 5 |
| brown bullhead | fillet without skin | LWG01FZ0306TSBBFSC10 | 5 |
| brown bullhead | fillet without skin | LWG01FZ0306TSBBFSC20 | 5 |
| brown bullhead | fillet without skin | LWG01FZ0306TSBBFSC30 | 5 |
| brown bullhead | fillet without skin | LWG01FZ0609TSBBFLC10 | 5 |
| brown bullhead | fillet without skin | LWG01FZ0609TSBBFLC20 | 5 |
| brown bullhead | fillet without skin | LWG01FZ0609TSBBFLC30 | 5 |
| brown bullhead | fillet without skin | LWG01FZ0609TSBBFSC10 | 5 |
| brown bullhead | fillet without skin | LWG01FZ0609TSBBFSC20 | 5 |
| brown bullhead | fillet without skin | LWG01FZ0609TSBBFSC30 | 5 |
| brown bullhead | whole body | LWG0120R001TSBBWBC10 | 5 |
| brown bullhead | whole body | LWG0120R001TSBBWBC20 | 5 |
| brown bullhead | whole body | LWG0128R001TSBBWBC00 | 5 |
| brown bullhead | whole body | LWG01FZ0306TSBBWBC10 | 5 |
| brown bullhead | whole body | LWG01FZ0306TSBBWBC20 | 5 |
| brown bullhead | whole body | LWG01FZ0306TSBBWBC30 | 5 |
| brown bullhead | whole body | LWG01FZ0609TSBBWBC10 | 5 |
| brown bullhead | whole body | LWG01FZ0609TSBBWBC20 | 5 |

BZTO104(e)033207

Table 2.1-4. Number of Individual Fish or Invertebrates per Sample during LWG Rounds 1 and 2 and Non-LWG Studies.

| Species | Tissue | Sample | Number of Individuals per Composite |
|---|---|---|---|
| brown bullhead | whole body | LWG01FZ0609TSBBWBC30 | 5 |
| carp | fillet | LWG01FZ0306TSCPFLC10 | 5 |
| carp | fillet | LWG01FZ0306TSCPFLC20 | 5 |
| carp | fillet | LWG01FZ0306TSCPFLC30 | 5 |
| carp | fillet | LWG01FZ0609TSCPFLC10 | 5 |
| carp | fillet | LWG01FZ0609TSCPFLC20 | 5 |
| carp | fillet | LWG01FZ0609TSCPFLC30 | 5 |
| carp | fillet without skin | LWG01FZ0306TSCPFSC10 | 5 |
| carp | fillet without skin | LWG01FZ0306TSCPFSC20 | 5 |
| carp | fillet without skin | LWG01FZ0306TSCPFSC30 | 5 |
| carp | fillet without skin | LWG01FZ0609TSCPFSC10 | 5 |
| carp | fillet without skin | LWG01FZ0609TSCPFSC20 | 5 |
| carp | fillet without skin | LWG01FZ0609TSCPFSC30 | 5 |
| carp | whole body | LWG01FZ0306TSCPWBC10 | 5 |
| carp | whole body | LWG01FZ0306TSCPWBC20 | 5 |
| carp | whole body | LWG01FZ0306TSCPWBC30 | 5 |
| carp | whole body | LWG01FZ0609TSCPWBC10 | 5 |
| carp | whole body | LWG01FZ0609TSCPWBC20 | 5 |
| carp | whole body | LWG01FZ0609TSCPWBC30 | 5 |
| carp | whole body | LWG1AFZ0609TSCPWB | 1 |
| chinook | stomach contents | LW2-T01 SC | 90 |
| chinook | stomach contents | LW2-T01-NOAA SC | 40 |
| chinook | stomach contents | LW2-T02 SC | 90 |
| chinook | stomach contents | LW2-T02-NOAA SC | 42 |
| chinook | stomach contents | LW2-T03 SC | 72 |
| chinook | stomach contents | LW2-T04 SC | 90 |
| chinook | whole body | LW2-T01-REP1 | 30 |
| chinook | whole body | LW2-T01-REP2 | 30 |
| chinook | whole body | LW2-T01-REP3 | 30 |
| chinook | whole body | LW2-T02-REP1 | 30 |
| chinook | whole body | LW2-T02-REP2 | 30 |
| chinook | whole body | LW2-T02-REP3 | 30 |
| chinook | whole body | LW2-T03-REP1 | 24 |
| chinook | whole body | LW2-T03-REP2 | 21 |
| chinook | whole body | LW2-T03-REP3 | 27 |
| chinook | whole body | LW2-T04-REP1 | 30 |
| chinook | whole body | LW2-T04-REP2 | 30 |
| chinook | whole body | LW2-T04-REP3 | 30 |
| chinook | whole body | LWG1A02R102TSSCWBC00 | 15 |
| chinook | whole body | LWG1A02R112TSSCWBC00 | 14 |
| chinook | whole body | LWG1A02R113TSSCWBC00 | 15 |
| chinook | whole body | LWG1A03R118TSSCWBC00 | 11 |
| chinook | whole body | LWG1A03R125TSSCWBC00 | 13 |
| chinook | whole body | LWG1A04R126TSSCWBC00 | 12 |
| chinook | whole body | LWG1A26R111TSSCWBC00 | 12 |
| clam | body without shell | LWG0106R002TSCAWBC00 | unknown |
| clam | body without shell | LWG0107R003TSCAWBC00 | unknown |
| clam | body without shell | LWG0107R006TSCAWBC00 | unknown |
| crayfish | whole body | LWG0102R001TSCRWBC00 | 8 |
| crayfish | whole body | LWG0102R015TSCRWBC00 | 8 |
| crayfish | whole body | LWG0103R001TSCRWBC00 | 8 |
| crayfish | whole body | LWG0103R002TSCRWBC00 | 9 |
| crayfish | whole body | LWG0103R003TSCRWBC00 | 8 |

BZTO104(e)033208

Table 2.1-4. Number of Individual Fish or Invertebrates per Sample during LWG Rounds 1 and 2 and Non-LWG Studies.

| Species | Tissue | Sample | Number of Individuals per Composite |
|---|---|---|---|
| crayfish | whole body | LWG0103R004TSCRWBC00 | 8 |
| crayfish | whole body | LWG0103R005TSCRWBC00 | 9 |
| crayfish | whole body | LWG0103R032TSCRWBC00 | 9 |
| crayfish | whole body | LWG0104R002TSCRWBC00 | 9 |
| crayfish | whole body | LWG0104R003TSCRWBC00 | 8 |
| crayfish | whole body | LWG0104R004TSCRWBC10 | 9 |
| crayfish | whole body | LWG0104R004TSCRWBC20 | 10 |
| crayfish | whole body | LWG0105R001TSCRWBC00 | 8 |
| crayfish | whole body | LWG0105R003TSCRWBC00 | 8 |
| crayfish | whole body | LWG0106R001TSCRWBC00 | 11 |
| crayfish | whole body | LWG0106R004TSCRWBC10 | 9 |
| crayfish | whole body | LWG0106R004TSCRWBC20 | 8 |
| crayfish | whole body | LWG0106R031TSCRWBC00 | 8 |
| crayfish | whole body | LWG0107R003TSCRWBC00 | 9 |
| crayfish | whole body | LWG0107R004TSCRWBC00 | 9 |
| crayfish | whole body | LWG0107R006TSCRWBC00 | 8 |
| crayfish | whole body | LWG0108R001TSCRWBC00 | 9 |
| crayfish | whole body | LWG0108R002TSCRWBC00 | 9 |
| crayfish | whole body | LWG0108R003TSCRWBC00 | 8 |
| crayfish | whole body | LWG0109R001TSCRWBC10 | 8 |
| crayfish | whole body | LWG0109R001TSCRWBC20 | 9 |
| crayfish | whole body | LWG0109R002TSCRWBC00 | 8 |
| largescale sucker | whole body | LWG0103R014TSLSWBC10 | 5 |
| largescale sucker | whole body | LWG0103R014TSLSWBC20 | 4 |
| largescale sucker | whole body | LWG0105R006TSLSWBC00 | 4 |
| largescale sucker | whole body | LWG0107R009TSLSWBC00 | 6 |
| largescale sucker | whole body | LWG0108R010TSLSWBC00 | 6 |
| largescale sucker | whole body | LWG0109R006TSLSWBC00 | 6 |
| largescale sucker | whole body | LWG01FZ0306TSLSWBC10 | 1 |
| largescale sucker | whole body | LWG01FZ0306TSLSWBC20 | 2 |
| northern pikeminnow | whole body | LWG0103R014TSNPWBC10 | 5 |
| northern pikeminnow | whole body | LWG0103R014TSNPWBC20 | 5 |
| northern pikeminnow | whole body | LWG0105R006TSNPWBC00 | 5 |
| northern pikeminnow | whole body | LWG0107R009TSNPWBC00 | 5 |
| northern pikeminnow | whole body | LWG0108R010TSNPWBC00 | 3 |
| northern pikeminnow | whole body | LWG0109R006TSNPWBC00 | 4 |
| peamouth | whole body | LWG0103R014TSPMWBC00 | 5 |
| peamouth | whole body | LWG0105R006TSPMWBC00 | 5 |
| peamouth | whole body | LWG0107R009TSPMWBC00 | 4 |
| peamouth | whole body | LWG0108R010TSPMWBC00 | 5 |
| peamouth | whole body | LWG0109R006TSPMWBC00 | 5 |
| sculpin | whole body | LWG0102R001TSSPWBC00 | 12 |
| sculpin | whole body | LWG0102R001TSSPWBC10 | 12 |
| sculpin | whole body | LWG0102R015TSSPWBC00 | 17 |
| sculpin | whole body | LWG0103R001TSSPWBC00 | 17 |
| sculpin | whole body | LWG0103R002TSSPWBC10 | 21 |
| sculpin | whole body | LWG0103R002TSSPWBC20 | 18 |
| sculpin | whole body | LWG0103R004TSSPWBC10 | 19 |
| sculpin | whole body | LWG0103R004TSSPWBC20 | 20 |
| sculpin | whole body | LWG0103R005TSSPWBC00 | 13 |
| sculpin | whole body | LWG0103R032TSSPWBC00 | 24 |
| sculpin | whole body | LWG0103R034TSSPWBC00 | 19 |
| sculpin | whole body | LWG0104R002TSSPWBC00 | 22 |

BZTO104(e)033209

Table 2.1-4. Number of Individual Fish or Invertebrates per Sample during LWG Rounds 1 and 2 and Non-LWG Studies.

| Species | Tissue | Sample | Number of Individuals per Composite |
|---|---|---|---|
| sculpin | whole body | LWG0104R003TSSPWBC00 | 20 |
| sculpin | whole body | LWG0104R004TSSPWBC00 | 18 |
| sculpin | whole body | LWG0105R001TSSPWBC00 | 21 |
| sculpin | whole body | LWG0105R020TSSPWBC00 | 23 |
| sculpin | whole body | LWG0106R001TSSPWBC00 | 17 |
| sculpin | whole body | LWG0106R002TSSPWBC10 | 19 |
| sculpin | whole body | LWG0106R002TSSPWBC20 | 19 |
| sculpin | whole body | LWG0106R004TSSPWBC00 | 22 |
| sculpin | whole body | LWG0107R003TSSPWBC00 | 16 |
| sculpin | whole body | LWG0107R006TSSPWBC00 | 15 |
| sculpin | whole body | LWG0108R001TSSPWBC00 | 19 |
| sculpin | whole body | LWG0108R002TSSPWBC00 | 21 |
| sculpin | whole body | LWG0108R003TSSPWBC00 | 18 |
| sculpin | whole body | LWG0109R001TSSPWBC00 | 20 |
| sculpin | whole body | LWG0109R002TSSPWBC00 | 19 |
| smallmouth bass | fillet | LWG0103R014TSSBFLC00 | 5 |
| smallmouth bass | fillet | LWG0105R006TSSBFLC00 | 5 |
| smallmouth bass | fillet | LWG0106R024TSSBFLC00 | 3 |
| smallmouth bass | fillet | LWG0108R032TSSBFLC00 | 5 |
| smallmouth bass | fillet | LWG0109R006TSSBFLC00 | 5 |
| smallmouth bass | fillet without skin | LWG0103R014TSSBFSC00 | 5 |
| smallmouth bass | fillet without skin | LWG0105R006TSSBFSC00 | 5 |
| smallmouth bass | fillet without skin | LWG0106R024TSSBFSC00 | 3 |
| smallmouth bass | fillet without skin | LWG0108R032TSSBFSC00 | 5 |
| smallmouth bass | fillet without skin | LWG0109R006TSSBFSC00 | 5 |
| smallmouth bass | whole body | LWG0103R014TSSBWBC00 | 5 |
| smallmouth bass | whole body | LWG0104R023TSSBWBC10 | 5 |
| smallmouth bass | whole body | LWG0104R023TSSBWBC20 | 5 |
| smallmouth bass | whole body | LWG0104R023TSSBWBC30 | 5 |
| smallmouth bass | whole body | LWG0105R006TSSBWBC00 | 5 |
| smallmouth bass | whole body | LWG0106R024TSSBWBC00 | 1 |
| smallmouth bass | whole body | LWG0107R009TSSBWBC10 | 5 |
| smallmouth bass | whole body | LWG0107R009TSSBWBC20 | 5 |
| smallmouth bass | whole body | LWG0107R009TSSBWBC30 | 5 |
| smallmouth bass | whole body | LWG0108R010TSSBWBC10 | 4 |
| smallmouth bass | whole body | LWG0108R010TSSBWBC20 | 5 |
| smallmouth bass | whole body | LWG0108R010TSSBWBC30 | 5 |
| smallmouth bass | whole body | LWG0108R032TSSBWBC00 | 5 |
| smallmouth bass | whole body | LWG0109R006TSSBWBC00 | 2 |
| smallmouth bass | whole body | LWG0120R001TSSBWBC10 | 5 |
| smallmouth bass | whole body | LWG0120R001TSSBWBC20 | 5 |
| smallmouth bass | whole body | LWG0120R001TSSBWBC30 | 5 |
| smallmouth bass | whole body | LWG0128R001TSSBWBC10 | 5 |
| smallmouth bass | whole body | LWG0128R001TSSBWBC20 | 5 |
| smallmouth bass | whole body | LWG0128R001TSSBWBC30 | 5 |
| Lumbriculus variegatus | whole body | LW2-BTLW001 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW002 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW003 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW004 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW005 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW006-1 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW006-2 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW007 | unknown |

BZTO104(e)033210

Table 2.1-4. Number of Individual Fish or Invertebrates per Sample during LWG Rounds 1 and 2 and Non-LWG Studies.

| Species | Tissue | Sample | Number of Individuals per Composite |
|---|---|---|---|
| Lumbriculus variegatus | whole body | LW2-BTLW008 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW009 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW010 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW011 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW012 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW013 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW014 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW015 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW016 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW017 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW018 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW019 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW020 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW021 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW022 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW023 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW024 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW025 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW026 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW027-1 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW027-2 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW028 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW029 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW030 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW031 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW032 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLW033 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLWCTRL 011106 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLWCTRL 030106 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLWTZ 020106 | unknown |
| Lumbriculus variegatus | whole body | LW2-BTLWTZ 121405 | unknown |
| multiplate invertebrates | whole body | LW2-MIT001 | unknown |
| multiplate invertebrates | whole body | LW2-MIT002 | unknown |
| multiplate invertebrates | whole body | LW2-MIT003/005/006 | unknown |
| multiplate invertebrates | whole body | LW2-MIT004 | unknown |
| multiplate invertebrates | whole body | LW2-MIT007 | unknown |
| multiplate invertebrates | whole body | LW2-MIT008/010 | unknown |
| multiplate invertebrates | whole body | LW2-MIT009 | unknown |

BZTO104(e)033211

Table 2.1-5. Summary of LWG Round 2 Transition Zone Water sample Counts.

| Sum of Sample Count | | Source | Sample Depth | Sampling Method | Filtered/Unfiltered | | | | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LWG | | | | | NonLWG | | | |
| | | <=38 cm BML | | | >38 cm BML | | <=38 cm BML | >38 cm BML | | |
| | | Push Probe | | Small Volume Peeper | Push Probe | | Push Probe | Push Probe | | |
| Group | Analyte | filtered | unfiltered | unfiltered | filtered | unfiltered | unfiltered | filtered | unfiltered | |
| Conventionals | Alkalinity | 13 | 65 | 36 | 8 | 31 | | | | 153 |
| | Calcium carbonate | | | | | | | | 82 | 82 |
| | Carbon dioxide | | | | | | 1 | | 83 | 84 |
| | Chloride | 13 | 65 | 36 | 8 | 31 | | 20 | 82 | 255 |
| | Conductivity | | 51 | | 7 | 26 | 41 | | 97 | 222 |
| | Cyanide | | 11 | 10 | | 3 | 13 | 20 | 19 | 76 |
| | Dissolved oxygen | | | | | | 40 | | 97 | 137 |
| | Ethane | | | | | | 1 | | 83 | 84 |
| | Ethylene | | | | | | 1 | | 83 | 84 |
| | Methane | | | | | | 1 | | 83 | 84 |
| | Nitrate | | | | | | | | 82 | 82 |
| | Nitrite | | | | | | | | 82 | 82 |
| | Nitrogen | | | | | | | | 2 | 2 |
| | Oxidation-Reduction Potential | | 44 | | | 18 | 41 | | 97 | 200 |
| | Perchlorate | 5 | 17 | 12 | 1 | 7 | | | | 42 |
| | pH | 13 | 67 | 36 | 8 | 32 | 41 | | 97 | 294 |
| | Phosphorus | | | | | | | | 79 | 79 |
| | Sulfate | 13 | 65 | 36 | 8 | 31 | | | 82 | 235 |
| | Sulfide | | | | | | | | 82 | 82 |
| | Temperature | | | | | | 41 | | 97 | 138 |
| | Total dissolved solids | | 50 | | | 19 | | | | 69 |
| | Total organic carbon | | | | | | | | 82 | 82 |
| | Total suspended solids | | | | | | | | 55 | 55 |
| | Turbidity | | 51 | | | 18 | | | 36 | 105 |
| Metals | Antimony | | 60 | 35 | | 24 | 13 | | 11 | 143 |
| | Arsenic | | 64 | 39 | | 31 | 13 | | 11 | 158 |
| | Cadmium | | 60 | 35 | | 24 | | | | 119 |
| | Copper | | 53 | 39 | | 25 | 13 | | 11 | 141 |
| | Lead | | 64 | 39 | | 31 | 13 | | 11 | 158 |
| | Mercury | | 60 | 35 | | 24 | | | | 119 |
| | Nickel | | 60 | 35 | | 24 | 13 | | 11 | 143 |
| | Silver | | 60 | 35 | | 24 | 13 | | 11 | 143 |
| | Zinc | | 64 | 39 | | 31 | 13 | | 11 | 158 |
| | Aluminum | | 60 | 35 | | 24 | | | | 119 |
| | Aluminum (dissolved) | 57 | | | 12 | | | | | 69 |
| | Antimony (dissolved) | 57 | | | 12 | | | 20 | | 89 |
| | Arsenic (dissolved) | 60 | | | 19 | | | 20 | | 99 |
| | Barium | | 60 | 35 | | 24 | | | | 119 |
| | Barium (dissolved) | 57 | | | 12 | | | 20 | | 89 |
| | Beryllium | | 60 | 35 | | 24 | | | | 119 |
| | Beryllium (dissolved) | 57 | | | 12 | | | | | 69 |
| | Cadmium (dissolved) | 57 | | | 12 | | | 20 | | 89 |
| | Calcium | | 67 | 43 | | 26 | | | | 136 |
| | Calcium (dissolved) | 69 | | | 20 | | | | | 89 |
| | Chromium | | 65 | 39 | | 25 | 13 | | 11 | 153 |
| | Chromium (dissolved) | 62 | | | 13 | | | 20 | | 95 |
| | Cobalt | | | | | | 13 | | 11 | 24 |
| | Cobalt (dissolved) | | | | | | | 20 | | 20 |
| | Copper (dissolved) | 50 | | | 19 | | | 20 | | 89 |
| | Iron | | 20 | | | 4 | 13 | | 21 | 58 |
| | Iron (dissolved) | 21 | | | 3 | | | 20 | | 44 |
| | Lead (dissolved) | 60 | | | 19 | | | 20 | | 99 |
| | Magnesium | | 67 | 43 | | 26 | 13 | | 11 | 160 |
| | Magnesium (dissolved) | 69 | | | 20 | | | 20 | | 109 |
| | Manganese | | 69 | 43 | | 32 | 13 | | 21 | 178 |
| | Manganese (dissolved) | 69 | | | 20 | | | 20 | | 109 |
| | Mercury (dissolved) | 57 | | | 12 | | | | | 69 |
| | Nickel (dissolved) | 57 | | | 12 | | | 20 | | 89 |
| | Potassium | | 67 | 43 | | 26 | | | | 136 |
| | Potassium (dissolved) | 69 | | | 20 | | | | | 89 |
| | Selenium | | 60 | 35 | | 24 | 13 | | 11 | 143 |
| | Selenium (dissolved) | 57 | | | 12 | | | 20 | | 89 |
| | Silver (dissolved) | 57 | | | 12 | | | 20 | | 89 |
| | Sodium | | 67 | 43 | | 26 | | | | 136 |
| | Sodium (dissolved) | 69 | | | 20 | | | | | 89 |
| | Thallium | | 60 | 35 | | 24 | | | | 119 |
| | Thallium (dissolved) | 57 | | | 12 | | | | | 69 |
| | Titanium | | | | | | 13 | | 11 | 24 |
| | Titanium (dissolved) | | | | | | | 20 | | 20 |
| | Vanadium | | | | | | 13 | | 11 | 24 |
| | Vanadium (dissolved) | | | | | | | 20 | | 20 |
| | Zinc (dissolved) | 60 | | | 19 | | | 20 | | 99 |
| Pesticides | 2,4'-DDE | 4 | 6 | 4 | 1 | 4 | | | | 19 |
| | 2,4'-DDD | 4 | 6 | 4 | 1 | 4 | | | | 19 |

BZTO104(e)033212

Table 2.1-5. Summary of LWG Round 2 Transition Zone Water sample Counts.

| Sum of Sample Count | | Source | Sample Depth | Sampling Method | Filtered/Unfiltered | | | | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LWG | | | | | NonLWG | | | |
| | | <=38 cm BML | | | >38 cm BML | | <=38 cm BML | >38 cm BML | | |
| | | Push Probe | | Small Volume Peeper | Push Probe | | Push Probe | Push Probe | | |
| Group | Analyte | filtered | unfiltered | unfiltered | filtered | unfiltered | unfiltered | filtered | unfiltered | |
| Pesticides | 2,4'-DDT | 4 | 6 | 4 | 1 | 4 | | | | 19 |
| | 4,4'-DDT | 8 | 10 | 8 | 1 | 4 | | | | 31 |
| | 4,4'-DDD | 8 | 10 | 8 | 1 | 4 | | | | 31 |
| | 4,4'-DDE | 8 | 10 | 8 | 1 | 4 | | | | 31 |
| | Total of 2,4' and 4,4'-DDD | 4 | 6 | 4 | 1 | 4 | | | | 19 |
| | Total of 2,4' and 4,4'-DDD, -DDE, -DDT | 4 | 6 | 4 | 1 | 4 | | | | 19 |
| | Total of 2,4' and 4,4'-DDE | 4 | 6 | 4 | 1 | 4 | | | | 19 |
| | Total of 2,4' and 4,4'-DDT | 4 | 6 | 4 | 1 | 4 | | | | 19 |
| | Total of 4,4'-DDD, -DDE, -DDT | 8 | 10 | 8 | 1 | 4 | | | | 31 |
| SVOCs | Benzoic acid | | | | | | | | 11 | 11 |
| | Hexachlorobenzene | | | | | | | | 11 | 11 |
| | Hexachloroethane | | | | | | | | 11 | 11 |
| | Hexachlorobutadiene | | 62 | 39 | | 31 | 41 | | 148 | 321 |
| | Dibenzofuran | 39 | 42 | 24 | 11 | 17 | | 18 | 19 | 170 |
| | 1,2,4-Trichlorobenzene | | 62 | 39 | | 31 | 41 | | 148 | 321 |
| | 1,2-Dichlorobenzene | | 62 | 39 | | 31 | 41 | 20 | 148 | 341 |
| | 1,3-Dichlorobenzene | | 62 | 39 | | 31 | 41 | 20 | 148 | 341 |
| | 1,4-Dichlorobenzene | | 62 | 39 | | 27 | 41 | 20 | 148 | 337 |
| | 2,4-Dinitrotoluene | | | | | | | | 11 | 11 |
| | 2,6-Dinitrotoluene | | | | | | | | 11 | 11 |
| | 2-Chloronaphthalene | | | | | | | | 11 | 11 |
| | 2-Nitroaniline | | | | | | | | 11 | 11 |
| | 3,3'-Dichlorobenzidine | | | | | | | | 11 | 11 |
| | 3-Nitroaniline | | | | | | | | 11 | 11 |
| | 4-Bromophenyl phenyl ether | | | | | | | | 11 | 11 |
| | 4-Chloroaniline | | | | | | | | 11 | 11 |
| | 4-Chlorophenyl phenyl ether | | | | | | | | 11 | 11 |
| | 4-Nitroaniline | | | | | | | | 11 | 11 |
| | Benzyl alcohol | | | | | | | | 11 | 11 |
| | Bis(2-chloroethoxy) methane | | | | | | | | 11 | 11 |
| | Bis(2-chloroethyl) ether | | | | | | | | 11 | 11 |
| | Bis(2-chloroisopropyl) ether | | | | | | | 18 | 11 | 29 |
| | Carbazole | | | | | | | 18 | 11 | 29 |
| | Hexachlorocyclopentadiene | | | | | | | | 11 | 11 |
| | Isophorone | | | | | | | | 11 | 11 |
| | Nitrobenzene | | | | | | | | 11 | 11 |
| | N-Nitrosodimethylamine | | | | | | | | 11 | 11 |
| | N-Nitrosodiphenylamine | | | | | | | | 11 | 11 |
| | N-Nitrosodipropylamine | | | | | | | | 11 | 11 |
| | Pyridine | | | | | | | | 11 | 11 |
| Phenols | Phenol | | | | | | | | 11 | 11 |
| | 2-Methylphenol | | | | | | | | 11 | 11 |
| | 2,4,5-Trichlorophenol | | | | | | | | 11 | 11 |
| | 2,4,6-Tribromophenol | | | | | | | | 2 | 2 |
| | 2,4,6-Trichlorophenol | | | | | | | | 11 | 11 |
| | 2,4-Dichlorophenol | | | | | | | | 11 | 11 |
| | 2,4-Dimethylphenol | | | | | | | | 11 | 11 |
| | 2,4-Dinitrophenol | | | | | | | | 11 | 11 |
| | 2-Chlorophenol | | | | | | | | 11 | 11 |
| | 2-Nitrophenol | | | | | | | | 11 | 11 |
| | 3- and 4-Methylphenol Coelution | | | | | | | | 11 | 11 |
| | 4,6-Dinitro-2-methylphenol | | | | | | | | 11 | 11 |
| | 4-Chloro-3-methylphenol | | | | | | | | 11 | 11 |
| | 4-Nitrophenol | | | | | | | | 13 | 13 |
| | Pentachlorophenol | | | | | | | | 13 | 13 |
| Phthalates | Bis(2-ethylhexyl) phthalate | | | | | | | 18 | 11 | 29 |
| | Butylbenzyl phthalate | | | | | | | 18 | 11 | 29 |
| | Dibutyl phthalate | | | | | | | | 11 | 11 |
| | Diethyl phthalate | | | | | | | 18 | 11 | 29 |
| | Dimethyl phthalate | | | | | | | | 11 | 11 |
| | Di-n-octyl phthalate | | | | | | | | 11 | 11 |
| PAHs | Naphthalene | 39 | 70 | 43 | 11 | 32 | 41 | 20 | 148 | 404 |
| | Acenaphthene | 39 | 42 | 24 | 11 | 17 | 13 | 20 | 19 | 185 |
| | Fluorene | 39 | 42 | 24 | 11 | 17 | 13 | 20 | 19 | 185 |
| | Phenanthrene | 39 | 42 | 24 | 11 | 17 | 13 | 20 | 19 | 185 |
| | Anthracene | 39 | 42 | 24 | 11 | 17 | 13 | 20 | 19 | 185 |
| | Fluoranthene | 39 | 42 | 24 | 11 | 17 | 13 | 20 | 19 | 185 |
| | Pyrene | 39 | 42 | 24 | 11 | 17 | 13 | 20 | 19 | 185 |
| | Chrysene | 39 | 42 | 24 | 11 | 17 | 13 | 20 | 19 | 185 |
| | 2-Methylnaphthalene | 39 | 42 | 24 | 11 | 17 | | 18 | 19 | 170 |
| | Acenaphthylene | 39 | 42 | 24 | 11 | 17 | 13 | 20 | 19 | 185 |
| | Benzo(a)anthracene | 39 | 42 | 24 | 11 | 17 | 13 | 20 | 19 | 185 |
| | Benzo(a)pyrene | 39 | 42 | 24 | 11 | 17 | 13 | 20 | 19 | 185 |
| | Benzo(b)fluoranthene | 39 | 42 | 24 | 11 | 17 | 13 | 20 | 19 | 185 |

BZTO104(e)033213

Table 2.1-5. Summary of LWG Round 2 Transition Zone Water sample Counts.

| Sum of Sample Count | | Source | Sample Depth | Sampling Method | Filtered/Unfiltered | | | | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LWG | | | | | NonLWG | | | |
| | | <=38 cm BML | | | >38 cm BML | | <=38 cm BML | >38 cm BML | | |
| | | Push Probe | | Small Volume Peeper | Push Probe | | Push Probe | Push Probe | | |
| Group | Analyte | filtered | unfiltered | unfiltered | filtered | unfiltered | unfiltered | filtered | unfiltered | |
| PAHs | Benzo(g,h,i)perylene | 39 | 42 | 24 | 11 | 17 | 13 | 20 | 19 | 185 |
| | Benzo(k)fluoranthene | 39 | 42 | 24 | 11 | 17 | 13 | 20 | 19 | 185 |
| | Dibenzo(a,h)anthracene | 39 | 42 | 24 | 11 | 17 | 13 | 20 | 19 | 185 |
| | High Molecular Weight PAH | 39 | 41 | 24 | 11 | 17 | 13 | 20 | 19 | 184 |
| | Indeno(1,2,3-cd)pyrene | 39 | 42 | 24 | 11 | 17 | 13 | 20 | 19 | 185 |
| | Low Molecular Weight PAH | 39 | 41 | 24 | 11 | 17 | 13 | 20 | 19 | 184 |
| | Total PAHs | 39 | 41 | 24 | 11 | 17 | 13 | 20 | 19 | 184 |
| Herbicides | 2,4,5-T | 6 | 7 | 2 | 1 | 2 | | | 2 | 20 |
| | 2,4-D | 6 | 7 | 2 | 1 | 2 | | | 2 | 20 |
| | 2,4-DB | | | 2 | | | | | 2 | 4 |
| | Acifluorfen | | | | | | | | 2 | 2 |
| | Amiben | | | | | | | | 2 | 2 |
| | Bentazone | | | | | | | | 2 | 2 |
| | Dalapon | | | 2 | | | | | 2 | 4 |
| | Dicamba | | | 2 | | | | | 2 | 4 |
| | Dichloroprop | 6 | 7 | 2 | 1 | 2 | | | 2 | 20 |
| | Dinoseb | | | 2 | | | | | 2 | 4 |
| | MCPA | | | 2 | | | | | 2 | 4 |
| | MCPP | | | 2 | | | | | 2 | 4 |
| | Picloram | | | | | | | | 1 | 1 |
| | Silvex | 6 | 7 | 2 | 1 | 2 | | | 2 | 20 |
| VOCs | Ethylbenzene | | 70 | 43 | | 31 | 41 | 20 | 146 | 351 |
| | 1,1,1,2-Tetrachloroethane | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | 1,1,1-Trichloroethane | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | 1,1,2,2-Tetrachloroethane | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | 1,1,2-Trichloro-1,2,2-trifluoroethane | | | | | | | | 14 | 14 |
| | 1,1,2-Trichloroethane | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | 1,1-Dichloroethane | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | 1,1-Dichloroethene | | 70 | 39 | | 31 | 41 | 20 | 146 | 347 |
| | 1,1-Dichloropropene | | | | | | 41 | | 146 | 187 |
| | 1,2,3-Trichlorobenzene | | | | | | 41 | | 146 | 187 |
| | 1,2,3-Trichloropropane | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | 1,2,4-Trimethylbenzene | | | | | | 41 | | 146 | 187 |
| | 1,2-Dibromo-3-chloropropane | | | | | | 41 | | 146 | 187 |
| | 1,2-Dichloroethane | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | 1,2-Dichloropropane | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | 1,3,5-Trimethylbenzene | | | | | | 41 | | 146 | 187 |
| | 1,3-Dichloropropane | | | | | | 41 | | 146 | 187 |
| | 1,4-Dichloro-trans-2-butene | | 70 | 39 | | 31 | | | 14 | 154 |
| | 1,4-Difluorobenzene | | 8 | | | 4 | | | | 12 |
| | 1-Methyl-4-isopropylbenzene | | | | | | 41 | | 146 | 187 |
| | 2,2-Dichloropropane | | | | | | 41 | | 136 | 177 |
| | 2-Chloroethyl vinyl ether | | 70 | 39 | | 31 | | | | 140 |
| | 2-Chlorotoluene | | | | | | 41 | | 146 | 187 |
| | 4-Chlorotoluene | | | | | | 41 | | 146 | 187 |
| | Acetone | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Acrolein | | 70 | 39 | | 31 | | | 17 | 157 |
| | Acrylonitrile | | 70 | 39 | | 31 | 41 | | 138 | 319 |
| | Benzene | | 70 | 43 | | 31 | 41 | 20 | 146 | 351 |
| | Bromobenzene | | | | | | 41 | | 146 | 187 |
| | Bromochloromethane | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Bromodichloromethane | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Bromoethane | | | | | | | | 1 | 1 |
| | Bromoform | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Bromomethane | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | BTEX | | 70 | 43 | | 31 | | | | 144 |
| | Carbon disulfide | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Carbon tetrachloride | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Chlorobenzene | | 70 | 39 | | 31 | 41 | 20 | 146 | 347 |
| | Chlorodibromomethane | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Chloroethane | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Chloroform | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Chloromethane | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | cis-1,2-Dichloroethene | | 62 | 35 | | 24 | 41 | 20 | 146 | 328 |
| | cis-1,3-Dichloropropene | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Dichlorodifluoromethane | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Diisopropyl ether | | | | | | | | 15 | 15 |
| | Epichlorohydrin | | | | | | | | 14 | 14 |
| | Ethylene dibromide | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Isopropylbenzene | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | m,p-Xylene | | 70 | 43 | | 31 | 41 | 20 | 146 | 351 |
| | Methyl iodide | | 70 | 39 | | 31 | | | 14 | 154 |
| | Methyl isobutyl ketone | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Methyl n-butyl ketone | | 70 | 39 | | 31 | 41 | | 146 | 327 |

BZTO104(e)033214

Table 2.1-5. Summary of LWG Round 2 Transition Zone Water sample Counts.

| Sum of Sample Count | | Source | Sample Depth | Sampling Method | Filtered/Unfiltered | | | | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LWG | | | | | NonLWG | | | |
| | | <=38 cm BML | | | >38 cm BML | | <=38 cm BML | >38 cm BML | | |
| | | Push Probe | | Small Volume Peeper | Push Probe | | Push Probe | Push Probe | | |
| Group | Analyte | filtered | unfiltered | unfiltered | filtered | unfiltered | unfiltered | filtered | unfiltered | |
| VOCs | Methyl tert-butyl ether | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Methylene bromide | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Methylene chloride | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Methylethyl ketone | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | n-Butylbenzene | | | | | | 41 | | 146 | 187 |
| | n-Propylbenzene | | | | | | 41 | | 146 | 187 |
| | o-Xylene | | 70 | 43 | | 31 | 41 | | 146 | 331 |
| | Sec-butylbenzene | | | | | | 41 | | 146 | 187 |
| | Styrene | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | tert-Butylbenzene | | | | | | 41 | | 146 | 187 |
| | Tetrachloroethene | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Toluene | | 70 | 43 | | 31 | 41 | 20 | 146 | 351 |
| | trans-1,2-Dichloroethene | | 70 | 39 | | 31 | 41 | 20 | 146 | 347 |
| | trans-1,3-Dichloropropene | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Trichloroethene | | 70 | 39 | | 31 | 41 | 20 | 146 | 347 |
| | Trichlorofluoromethane | | 70 | 39 | | 31 | 41 | | 146 | 327 |
| | Vinyl acetate | | 70 | 39 | | 31 | | | 15 | 155 |
| | Vinyl chloride | | 70 | 39 | | 31 | 41 | 20 | 146 | 347 |
| | Xylene | | 70 | 43 | | 31 | 41 | | 146 | 331 |
| Dioxin Furan H | Heptachlorodibenzofuran homologs | 3 | 3 | | | | | | | 6 |
| | Heptachlorodibenzo-p-dioxin homologs | 3 | 3 | | | | | | | 6 |
| | Hexachlorodibenzofuran homologs | 3 | 3 | | | | | | | 6 |
| | Hexachlorodibenzo-p-dioxin homologs | 3 | 3 | | | | | | | 6 |
| | Octachlorodibenzofuran | 3 | 3 | | | | | | | 6 |
| | Octachlorodibenzo-p-dioxin | 3 | 3 | | | | | | | 6 |
| | Pentachlorodibenzofuran homologs | 3 | 3 | | | | | | | 6 |
| | Pentachlorodibenzo-p-dioxin homologs | 3 | 3 | | | | | | | 6 |
| | Tetrachlorodibenzofuran homologs | 3 | 3 | | | | | | | 6 |
| | Tetrachlorodibenzo-p-dioxin homologs | 3 | 3 | | | | | | | 6 |
| Dioxins Furans | 1,2,3,4,6,7,8-Heptachlorodibenzofuran | 3 | 3 | | | | | | | 6 |
| | 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin | 3 | 3 | | | | | | | 6 |
| | 1,2,3,4,7,8,9-Heptachlorodibenzofuran | 3 | 3 | | | | | | | 6 |
| | 1,2,3,4,7,8-Hexachlorodibenzofuran | 3 | 3 | | | | | | | 6 |
| | 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin | 3 | 3 | | | | | | | 6 |
| | 1,2,3,6,7,8-Hexachlorodibenzofuran | 3 | 3 | | | | | | | 6 |
| | 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin | 3 | 3 | | | | | | | 6 |
| | 1,2,3,7,8,9-Hexachlorodibenzofuran | 3 | 3 | | | | | | | 6 |
| | 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin | 3 | 3 | | | | | | | 6 |
| | 1,2,3,7,8-Pentachlorodibenzofuran | 3 | 3 | | | | | | | 6 |
| | 1,2,3,7,8-Pentachlorodibenzo-p-dioxin | 3 | 3 | | | | | | | 6 |
| | 2,3,4,6,7,8-Hexachlorodibenzofuran | 3 | 3 | | | | | | | 6 |
| | 2,3,4,7,8-Pentachlorodibenzofuran | 3 | 3 | | | | | | | 6 |
| | 2,3,7,8-Tetrachlorodibenzofuran | 3 | 3 | | | | | | | 6 |
| | 2,3,7,8-Tetrachlorodibenzo-p-dioxin | 3 | 3 | | | | | | | 6 |
| | Dioxin/furan TCDD toxicity equivalent | 3 | 3 | | | | | | | 6 |
| | Total PCDD/F | 3 | 3 | | | | | | | 6 |
| Petroleum | Diesel Range Hydrocarbons | 36 | 38 | 21 | 12 | 17 | | | 11 | 135 |
| | Gasoline Range Hydrocarbons | | 39 | 24 | | 18 | | | | 81 |
| | Lube Oil | | | | | | | | 11 | 11 |
| | Residual Range Hydrocarbons | 36 | 38 | 21 | 12 | 17 | | | | 124 |
| | Total Petroleum Hydrocarbons | 36 | 38 | 21 | 12 | 17 | | | | 124 |
| Grand Total | | 2377 | 6954 | 3863 | 634 | 2992 | 3397 | 1146 | 12577 | 33940 |

BZTO104(e)033215

Table 2.1-6. Summary of LWG Round 2 Surface Water Sample Counts.

| Sum of Sample Count | | Event | Media | | | | | | | | | | | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Aug 01 | Jul 05 | | | Mar 05 | | | Nov 04 | | | Nov 99 | Oct 99 | Sep 02 | |
| Group | Analyte | surface water | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water | surface water | |
| Conventionals | Bicarbonate | | | | | | | | | | | 8 | | | 8 |
| | Chloride | | | | | | | | | | | 8 | | | 8 |
| | Conductivity | 23 | | | | | | | | | | | | | 23 |
| | Dissolved organic carbon | | 24 | | | 25 | | | 25 | | | | | 6 | 80 |
| | Dissolved oxygen | 23 | | | | | | | | | | | | | 23 |
| | Hardness as CaCO3 | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | Nitrate | | | | | | | | | | | 8 | | | 8 |
| | Nitrite | | | | | | | | | | | 8 | | | 8 |
| | Oxidation-Reduction Potential | 22 | | | | | | | | | | | | | 22 |
| | Perchlorate | | 2 | | | 2 | | | 2 | | | | | | 6 |
| | pH | 23 | | | | | | | | | | | | | 23 |
| | Salinity | | | | | | | | | | | 8 | | | 8 |
| | Sulfate | | | | | | | | | | | 7 | | | 7 |
| | Temperature | 23 | | | | | | | | | | | | | 23 |
| | Total dissolved solids | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | Total organic carbon | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| | Total suspended solids | | 24 | | | 25 | | | 25 | | | 8 | | 13 | 95 |
| Metals | Antimony | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| | Arsenic | | 24 | | | 25 | | | 25 | | | 8 | 6 | 46 | 134 |
| | Cadmium | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| | Copper | | 24 | | | 25 | | | 25 | | | 8 | | 46 | 128 |
| | Lead | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| | Mercury | | 24 | | | 25 | | | 25 | | | 8 | | 8 | 90 |
| | Nickel | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| | Silver | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| | Zinc | | 24 | | | 25 | | | 25 | | | 8 | | 46 | 128 |
| | Aluminum | | 24 | | | 25 | | | | | | | | | 49 |
| | Aluminum (dissolved) | | 24 | | | 25 | | | | | | | | | 49 |
| | Antimony (dissolved) | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| | Arsenic (dissolved) | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| | Cadmium (dissolved) | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| | Calcium | | | | | | | | | | | 8 | | | 8 |
| | Calcium (dissolved) | | | | | | | | | | | 8 | | | 8 |
| | Chromium | | 24 | | | 25 | | | 25 | | | | | 46 | 120 |
| | Chromium (dissolved) | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | Chromium hexavalent | | 2 | | | 2 | | | 2 | | | | | | 6 |
| | Copper (dissolved) | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| | Iron | | | | | | | | | | | 8 | | | 8 |
| | Iron (dissolved) | | | | | | | | | | | 8 | | | 8 |
| | Lead (dissolved) | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| | Magnesium | | | | | | | | | | | 8 | | | 8 |
| | Magnesium (dissolved) | | | | | | | | | | | 8 | | | 8 |
| | Manganese | | | | | | | | | | | 8 | | | 8 |
| | Manganese (dissolved) | | | | | | | | | | | 8 | | | 8 |
| | Mercury (dissolved) | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| | Nickel (dissolved) | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| | Potassium | | | | | | | | | | | 8 | | | 8 |
| | Potassium (dissolved) | | | | | | | | | | | 8 | | | 8 |
| | Selenium | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | Selenium (dissolved) | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | Silver (dissolved) | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| | Sodium | | | | | | | | | | | 8 | | | 8 |



BZTO104(e)033216

Table 2.1-6. Summary of LWG Round 2 Surface Water Sample Counts.

| Sum of Sample Count | | Event | Media | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Aug 01 | Jul 05 | | | Mar 05 | | | Nov 04 | | | Nov 99 | Oct 99 | Sep 02 | Grand Total |
| Group | Analyte | surface water | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water | surface water | |
| Metals | Sodium (dissolved) | | | | | | | | | | | 8 | | | 8 |
| | Thallium | | | | | | | | 25 | | | | | | 25 |
| | Thallium (dissolved) | | | | | | | | 25 | | | | | | 25 |
| | Zinc (dissolved) | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| Butyltins | Butyltin ion | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| | Dibutyltin ion | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| | Tetrabutyltin | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| | Tributyltin ion | | 24 | | | 25 | | | 25 | | | 8 | | | 82 |
| Aroclors | Aroclor 1016 | | 16 | 8 | 7 | 17 | 8 | 8 | 21 | 8 | 8 | 8 | | | 109 |
| | Aroclor 1221 | | 16 | 8 | 7 | 17 | 8 | 8 | 21 | 8 | 8 | 8 | | | 109 |
| | Aroclor 1232 | | 16 | 8 | 7 | 17 | 8 | 8 | 21 | 8 | 8 | 8 | | | 109 |
| | Aroclor 1242 | | 16 | 8 | 7 | 17 | 8 | 8 | 21 | 8 | 8 | 8 | | | 109 |
| | Aroclor 1248 | | 16 | 8 | 7 | 17 | 8 | 8 | 21 | 8 | 8 | 8 | | | 109 |
| | Aroclor 1254 | | 16 | 8 | 7 | 17 | 8 | 8 | 21 | 8 | 8 | 8 | | | 109 |
| | Aroclor 1260 | | 16 | 8 | 7 | 17 | 8 | 8 | 21 | 8 | 8 | 8 | | | 109 |
| | Aroclor 1262 | | 16 | | | 17 | | | 21 | | | | | | 54 |
| | Aroclor 1268 | | 16 | | | 17 | | | 21 | | | | | | 54 |
| | Total PCB Aroclors | | 16 | 8 | 7 | 17 | 8 | 8 | 21 | 8 | 8 | 8 | | | 109 |
| Pesticides | Heptachlor epoxide | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | Endosulfan sulfate | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | Mirex | | 16 | | | 17 | | | 19 | | | | | | 52 |
| | Oxychlordane | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | Aldrin | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | alpha-Hexachlorocyclohexane | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | beta-Hexachlorocyclohexane | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | delta-Hexachlorocyclohexane | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | beta-Endosulfan | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | 2,4'-DDE | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | trans-Nonachlor | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | 4,4'-DDT | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | 8 | | | 108 |
| | cis-Nonachlor | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | trans-Chlordane | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | 2,4'-DDD | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | Endrin ketone | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | gamma-Hexachlorocyclohexane | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | Dieldrin | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | Endrin | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | Methoxychlor | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | 4,4'-DDD | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | 8 | | | 108 |
| | 4,4'-DDE | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | 8 | | | 108 |
| | Endrin aldehyde | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | Heptachlor | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | 2,4'-DDT | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | alpha-Endosulfan | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | cis-Chlordane | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | Toxaphene | | 16 | | | 17 | | | 19 | | | | | | 52 |
| | Total Chlordanes | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | Total Endosulfan | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | Total of 2,4' and 4,4'-DDD | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | Total of 2,4' and 4,4'-DDD, -DDE, -DDT | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | Total of 2,4' and 4,4'-DDE | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |
| | Total of 2,4' and 4,4'-DDT | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | | | | 100 |



BZTO104(e)033217

Table 2.1-6. Summary of LWG Round 2 Surface Water Sample Counts.

| Sum of Sample Count | | Event | Media | | | | | | | | | | | | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Aug 01 | Jul 05 | | | Mar 05 | | | Nov 04 | | | Nov 99 | Oct 99 | Sep 02 | |
| Group | Analyte | surface water | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water | surface water | |
| Pesticides | Total of 4,4'-DDD, -DDE, -DDT | | 16 | 8 | 8 | 17 | 8 | 8 | 19 | 8 | 8 | 8 | | | 108 |
| SVOCs | Hexachlorobenzene | | 24 | 8 | 8 | 26 | 8 | 8 | 25 | 8 | 8 | 8 | | 1 | 132 |
| | Benzoic acid | | 24 | | | 25 | | | 25 | | | 8 | | 1 | 83 |
| | Dibenzofuran | | 24 | | | 25 | | | 25 | | | 8 | | 11 | 93 |
| | Hexachloroethane | | 24 | | | 26 | | | 25 | | | 8 | | 1 | 84 |
| | Hexachlorobutadiene | 23 | 24 | 8 | 8 | 26 | 8 | 8 | 25 | 8 | 8 | 8 | | 1 | 155 |
| | 1,2,4-Trichlorobenzene | 23 | 24 | | | 25 | | | 25 | | | 8 | | 1 | 106 |
| | 1,2-Dichlorobenzene | 23 | 24 | | | 25 | | | 25 | | | 8 | | 1 | 106 |
| | 1,3-Dichlorobenzene | 23 | 24 | | | 25 | | | 25 | | | 8 | | 1 | 106 |
| | 1,4-Dichlorobenzene | 23 | 24 | | | 25 | | | 25 | | | 8 | | 1 | 106 |
| | 2,4-Dinitrotoluene | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | 2,6-Dinitrotoluene | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | 2-Chloronaphthalene | | 24 | | | 25 | | | 25 | | | | | 11 | 85 |
| | 2-Nitroaniline | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | 3,3'-Dichlorobenzidine | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | 3-Nitroaniline | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | 4-Bromophenyl phenyl ether | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | 4-Chloroaniline | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | 4-Chlorophenyl phenyl ether | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | 4-Nitroaniline | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | Aniline | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | Azobenzene | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | Benzyl alcohol | | 24 | | | 25 | | | 25 | | | 8 | | 1 | 83 |
| | Bis(2-chloroethoxy) methane | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | Bis(2-chloroethyl) ether | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | Bis(2-chloroisopropyl) ether | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | Carbazole | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | Hexachlorocyclopentadiene | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | Isophorone | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | Nitrobenzene | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | N-Nitrosodimethylamine | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | N-Nitrosodiphenylamine | | 24 | | | 25 | | | 25 | | | 8 | | 1 | 83 |
| | N-Nitrosodipropylamine | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | Retene | | | | | | | | | | | | | 10 | 10 |
| Phenols | Phenol | | 24 | | | 25 | | | 25 | | | 8 | | 1 | 83 |
| | 2-Methylphenol | | 24 | | | 25 | | | 25 | | | 8 | | 1 | 83 |
| | 4-Methylphenol | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | 2,3,4,6-Tetrachlorophenol | | 24 | | | 25 | | | | | | | | | 49 |
| | 2,4,5-Trichlorophenol | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | 2,4,6-Trichlorophenol | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | 2,4-Dichlorophenol | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | 2,4-Dimethylphenol | | 24 | | | 25 | | | 25 | | | 8 | | 1 | 83 |
| | 2,4-Dinitrophenol | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | 2-Chlorophenol | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | 2-Nitrophenol | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | 3- and 4-Methylphenol Coelution | | | | | | | | | | | 8 | | 1 | 9 |
| | 4,6-Dinitro-2-methylphenol | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | 4-Chloro-3-methylphenol | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | 4-Nitrophenol | | 24 | | | 25 | | | 25 | | | | | 1 | 75 |
| | Pentachlorophenol | | 24 | | | 25 | | | 25 | | | 8 | 6 | 22 | 110 |
| Phthalates | Bis(2-ethylhexyl) phthalate | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | | 1 | 131 |
| | Butylbenzyl phthalate | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | | 1 | 131 |



BZTO104(e)033218

Table 2.1-6. Summary of LWG Round 2 Surface Water Sample Counts.

| Sum of Sample Count | | Event | Media | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Aug 01 | Jul 05 | | | Mar 05 | | | Nov 04 | | | Nov 99 | Oct 99 | Sep 02 | Grand Total |
| Group | Analyte | surface water | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water | surface water | |
| Phthalates | Dibutyl phthalate | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | | 1 | 131 |
| | Diethyl phthalate | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | | 1 | 131 |
| | Dimethyl phthalate | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | | 1 | 131 |
| | Di-n-octyl phthalate | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | | 1 | 131 |
| PAHs | Naphthalene | 23 | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 41 | 200 |
| | Acenaphthene | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 41 | 177 |
| | Fluorene | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 41 | 177 |
| | Phenanthrene | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 41 | 177 |
| | Anthracene | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 41 | 177 |
| | Fluoranthene | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 41 | 177 |
| | Pyrene | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 41 | 177 |
| | Chrysene | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 22 | 158 |
| | 1-Methylnaphthalene | | | | | | | | | | | | | 10 | 10 |
| | 2-Methylnaphthalene | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | | 11 | 141 |
| | Acenaphthylene | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 41 | 177 |
| | Benzo(a)anthracene | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 22 | 158 |
| | Benzo(a)pyrene | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 41 | 177 |
| | Benzo(b)fluoranthene | | 24 | | | 25 | | | 25 | | | 8 | 6 | 41 | 129 |
| | Benzo(b+j)fluoranthene | | | 8 | 8 | | 8 | 8 | | 8 | 8 | | | | 48 |
| | Benzo(b+k)fluoranthene | | | | | | | | | | | 8 | 6 | | 14 |
| | Benzo(g,h,i)perylene | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 41 | 177 |
| | Benzo(k)fluoranthene | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 41 | 177 |
| | Dibenzo(a,h)anthracene | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 41 | 177 |
| | High Molecular Weight PAH | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 41 | 177 |
| | Indeno(1,2,3-cd)pyrene | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 41 | 177 |
| | Low Molecular Weight PAH | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 41 | 177 |
| | Total PAHs | | 24 | 8 | 8 | 25 | 8 | 8 | 25 | 8 | 8 | 8 | 6 | 41 | 177 |
| Herbicides | 2,4,5-T | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | 2,4-D | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | 2,4-DB | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | Dalapon | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | Dicamba | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | Dichloroprop | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | Dinoseb | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | MCPA | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | MCPP | | 24 | | | 25 | | | 25 | | | | | | 74 |
| | Silvex | | 24 | | | 25 | | | 25 | | | | | | 74 |
| PCB Congeners | PCB001 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB002 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB003 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB004 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB005 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB006 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB007 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB008 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB009 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB010 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB011 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB012 & 013 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB014 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB015 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB016 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |



BZTO104(e)033219

Table 2.1-6. Summary of LWG Round 2 Surface Water Sample Counts.

| Sum of Sample Count | | Event | Media | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Aug 01 | Jul 05 | | | Mar 05 | | | Nov 04 | | | Nov 99 | Oct 99 | Sep 02 | Grand Total |
| Group | Analyte | surface water | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water | surface water | |
| PCB Congeners | PCB017 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB018 & 030 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB019 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB020 & 028 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB021 & 033 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB022 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB023 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB024 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB025 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB026 & 029 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB027 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB031 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB032 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB034 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB035 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB036 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB037 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB038 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB039 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB040 & 041 & 071 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB042 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB043 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB044 & 047 & 065 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB045 & 051 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB046 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB048 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB049 & 069 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB050 & 053 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB052 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB054 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB055 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB056 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB057 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB058 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB059 & 062 & 075 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB060 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB061 & 070 & 074 & 076 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB063 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB064 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB066 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB067 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB068 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB072 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB073 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB077 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB078 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB079 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB080 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB081 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB082 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB083 & 099 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB084 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |



BZTO104(e)033220

Table 2.1-6. Summary of LWG Round 2 Surface Water Sample Counts.

| Sum of Sample Count | | Event | Media | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Aug 01 | Jul 05 | | | Mar 05 | | | Nov 04 | | | Nov 99 | Oct 99 | Sep 02 | Grand Total |
| Group | Analyte | surface water | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water | surface water | |
| PCB Congeners | PCB085 & 116 & 117 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB086 & 087 & 097 & 108 & 119 & 125 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB088 & 091 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB089 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB090 & 101 & 113 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB092 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB093 & 095 & 098 & 100 & 102 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB094 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB096 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB103 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB104 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB105 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB106 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB107 & 124 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB109 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB110 & 115 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB111 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB112 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB114 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB118 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB120 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB121 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB122 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB123 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB126 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB127 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB128 & 166 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB129 & 138 & 160 & 163 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB130 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB131 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB132 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB133 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB134 & 143 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB135 & 151 & 154 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB136 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB137 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB139 & 140 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB141 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB142 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB144 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB145 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB146 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB147 & 149 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB148 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB150 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB152 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB153 & 168 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB155 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB156 & 157 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB158 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB159 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB161 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |



BZTO104(e)033221

Table 2.1-6. Summary of LWG Round 2 Surface Water Sample Counts.

| Sum of Sample Count | | Event | Media | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Aug 01 | Jul 05 | | | Mar 05 | | | Nov 04 | | | Nov 99 | Oct 99 | Sep 02 | Grand Total |
| Group | Analyte | surface water | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water | surface water | |
| PCB Congeners | PCB162 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB164 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB165 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB167 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB169 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB170 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB171 & 173 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB172 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB174 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB175 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB176 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB177 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB178 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB179 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB180 & 193 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB181 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB182 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB183 & 185 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB184 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB186 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB187 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB188 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB189 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB190 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB191 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB192 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB194 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB195 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB196 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB197 & 200 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB198 & 199 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB201 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB202 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB203 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB204 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB205 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB206 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB207 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB208 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | PCB209 | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | Total PCB Congeners | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| VOCs | Ethylbenzene | 23 | | | | | | | | | | 8 | | | 31 |
| | 1,1,1,2-Tetrachloroethane | 23 | | | | | | | | | | | | | 23 |
| | 1,1,1-Trichloroethane | 23 | | | | | | | | | | | | | 23 |
| | 1,1,2,2-Tetrachloroethane | 23 | | | | | | | | | | | | | 23 |
| | 1,1,2-Trichloroethane | 23 | | | | | | | | | | | | | 23 |
| | 1,1-Dichloroethane | 23 | | | | | | | | | | | | | 23 |
| | 1,1-Dichloroethene | 23 | | | | | | | | | | | | | 23 |
| | 1,1-Dichloropropene | 23 | | | | | | | | | | | | | 23 |
| | 1,2,3-Trichlorobenzene | 23 | | | | | | | | | | | | | 23 |
| | 1,2,3-Trichloropropane | 23 | | | | | | | | | | | | | 23 |
| | 1,2,4-Trimethylbenzene | 23 | | | | | | | | | | | | | 23 |



BZTO104(e)033222

Table 2.1-6. Summary of LWG Round 2 Surface Water Sample Counts.

| Sum of Sample Count | | Event | Media | | | | | | | | | | | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Aug 01 | Jul 05 | | | Mar 05 | | | Nov 04 | | | Nov 99 | Oct 99 | Sep 02 | |
| Group | Analyte | surface water | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water | surface water | |
| VOCs | 1,2-Dibromo-3-chloropropane | 23 | | | | | | | | | | | | | 23 |
| | 1,2-Dichloroethane | 23 | | | | | | | | | | | | | 23 |
| | 1,2-Dichloropropane | 23 | | | | | | | | | | | | | 23 |
| | 1,3,5-Trimethylbenzene | 23 | | | | | | | | | | | | | 23 |
| | 1,3-Dichloropropane | 23 | | | | | | | | | | | | | 23 |
| | 1-Methyl-4-isopropylbenzene | 23 | | | | | | | | | | | | | 23 |
| | 2,2-Dichloropropane | 23 | | | | | | | | | | | | | 23 |
| | 2-Chlorotoluene | 23 | | | | | | | | | | | | | 23 |
| | 4-Chlorotoluene | 23 | | | | | | | | | | | | | 23 |
| | Acetone | 23 | | | | | | | | | | | | | 23 |
| | Acrylonitrile | 23 | | | | | | | | | | | | | 23 |
| | Benzene | 23 | | | | | | | | | | 8 | | | 31 |
| | Bromobenzene | 23 | | | | | | | | | | | | | 23 |
| | Bromochloromethane | 23 | | | | | | | | | | | | | 23 |
| | Bromodichloromethane | 23 | | | | | | | | | | | | | 23 |
| | Bromoform | 23 | | | | | | | | | | | | | 23 |
| | Bromomethane | 23 | | | | | | | | | | | | | 23 |
| | BTEX | | | | | | | | | | | 8 | | | 8 |
| | Carbon disulfide | 23 | | | | | | | | | | | | | 23 |
| | Carbon tetrachloride | 23 | | | | | | | | | | | | | 23 |
| | Chlorobenzene | 23 | | | | | | | | | | | | | 23 |
| | Chlorodibromomethane | 23 | | | | | | | | | | | | | 23 |
| | Chloroethane | 23 | | | | | | | | | | | | | 23 |
| | Chloroform | 23 | | | | | | | | | | | | | 23 |
| | Chloromethane | 23 | | | | | | | | | | | | | 23 |
| | cis-1,2-Dichloroethene | 23 | | | | | | | | | | | | | 23 |
| | cis-1,3-Dichloropropene | 23 | | | | | | | | | | | | | 23 |
| | Dichlorodifluoromethane | 23 | | | | | | | | | | | | | 23 |
| | Ethylene dibromide | 23 | | | | | | | | | | | | | 23 |
| | Isopropylbenzene | 23 | | | | | | | | | | | | | 23 |
| | m,p-Xylene | 23 | | | | | | | | | | 8 | | | 31 |
| | Methyl isobutyl ketone | 23 | | | | | | | | | | | | | 23 |
| | Methyl n-butyl ketone | 23 | | | | | | | | | | | | | 23 |
| | Methyl tert-butyl ether | 23 | | | | | | | | | | | | | 23 |
| | Methylene bromide | 23 | | | | | | | | | | | | | 23 |
| | Methylene chloride | 23 | | | | | | | | | | | | | 23 |
| | Methylethyl ketone | 23 | | | | | | | | | | | | | 23 |
| | n-Butylbenzene | 23 | | | | | | | | | | | | | 23 |
| | n-Propylbenzene | 23 | | | | | | | | | | | | | 23 |
| | o-Xylene | 23 | | | | | | | | | | 8 | | | 31 |
| | Sec-butylbenzene | 23 | | | | | | | | | | | | | 23 |
| | Styrene | 23 | | | | | | | | | | | | | 23 |
| | tert-Butylbenzene | 23 | | | | | | | | | | | | | 23 |
| | Tetrachloroethene | 23 | | | | | | | | | | | | | 23 |
| | Toluene | 23 | | | | | | | | | | 8 | | | 31 |
| | trans-1,2-Dichloroethene | 23 | | | | | | | | | | | | | 23 |
| | trans-1,3-Dichloropropene | 23 | | | | | | | | | | | | | 23 |
| | Trichloroethene | 23 | | | | | | | | | | 8 | | | 31 |
| | Trichlorofluoromethane | 23 | | | | | | | | | | | | | 23 |
| | Vinyl chloride | 23 | | | | | | | | | | | | | 23 |
| | Xylene | 23 | | | | | | | | | | 8 | | | 31 |
| Dioxin Furan Homolog | Heptachlorodibenzofuran homologs | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |



BZTO104(e)033223

Table 2.1-6. Summary of LWG Round 2 Surface Water Sample Counts.

| Sum of Sample Count | | Event | Media | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Aug 01 | Jul 05 | | | Mar 05 | | | Nov 04 | | | Nov 99 | Oct 99 | Sep 02 | Grand Total |
| Group | Analyte | surface water | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water by XAD column | surface water by XAD filter | surface water | surface water | surface water | |
| Dioxin Furan Homolog | Heptachlorodibenzo-p-dioxin homologs | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | Hexachlorodibenzofuran homologs | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | Hexachlorodibenzo-p-dioxin homologs | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | Octachlorodibenzofuran | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | Octachlorodibenzo-p-dioxin | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | Pentachlorodibenzofuran homologs | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | Pentachlorodibenzo-p-dioxin homologs | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | Tetrachlorodibenzofuran homologs | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | Tetrachlorodibenzo-p-dioxin homologs | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| Dioxins Furans | 1,2,3,4,6,7,8-Heptachlorodibenzofuran | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | 1,2,3,4,7,8,9-Heptachlorodibenzofuran | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | 1,2,3,4,7,8-Hexachlorodibenzofuran | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | 1,2,3,6,7,8-Hexachlorodibenzofuran | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | 1,2,3,7,8,9-Hexachlorodibenzofuran | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | 1,2,3,7,8-Pentachlorodibenzofuran | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | 1,2,3,7,8-Pentachlorodibenzo-p-dioxin | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | 2,3,4,6,7,8-Hexachlorodibenzofuran | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | 2,3,4,7,8-Pentachlorodibenzofuran | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | 2,3,7,8-Tetrachlorodibenzofuran | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | 2,3,7,8-Tetrachlorodibenzo-p-dioxin | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | Dioxin/furan TCDD toxicity equivalent | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | Dioxin-like PCB congener TCDD TEQ | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | Total PCDD/F | | | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | 36 |
| | Total TCDD toxicity equivalent | | | 6 | 5 | | 6 | 6 | | 6 | 6 | | | | 35 |
| PCB Homologs | Dichlorobiphenyl homologs | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | Heptachlorobiphenyl homologs | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | Hexachlorobiphenyl homologs | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | Monochlorobiphenyl homologs | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | Nonachlorobiphenyl homologs | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | Octachlorobiphenyl homologs | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | Pentachlorobiphenyl homologs | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | Tetrachlorobiphenyl homologs | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| | Trichlorobiphenyl homologs | | | 8 | 7 | | 8 | 8 | | 8 | 8 | | | | 47 |
| Grand Total | | 1655 | 3508 | 2080 | 1901 | 3672 | 2080 | 2080 | 3754 | 2080 | 2080 | 839 | 132 | 1072 | 26933 |



BZTO104(e)033224

Table 2.1-7. Summary of all Category 1 and Category 2 Data in LWG and Existing Database.

| Sum of Sample Count | Category | | |
|---|---|---|---|
| **Group** | **Category 1** | **Category 2** | **Grand Total** |
| Conventionals | 2154 | 393 | 2547 |
| Grainsize | 1177 | 309 | 1486 |
| Metals | 1836 | 466 | 2302 |
| Butyltins | 743 | 127 | 870 |
| Aroclors | 1101 | 422 | 1523 |
| Pesticides | 1186 | 343 | 1529 |
| SVOCs | 1880 | 142 | 2022 |
| Phenols | 1374 | 67 | 1441 |
| Phthalates | 1367 | 59 | 1426 |
| PAHs | 2114 | 198 | 2312 |
| Herbicides | 88 | 13 | 101 |
| PCB Congeners | 137 | 110 | 247 |
| VOCs | 630 | 55 | 685 |
| Dioxin Furan Homolog | 93 | 23 | 116 |
| Dioxins Furans | 115 | 48 | 163 |
| PBDE Congeners | 19 | | 19 |
| PCB Homologs | 19 | 1 | 20 |
| Petroleum | 778 | 107 | 885 |
| Grand Total | 16811 | 2883 | 19694 |

BZTO104(e)033225

Table 2.2-1. Upland Soil Data Available for the Riparian Zone and Summary of DEQ Questionnaire Results, Portland Harbor RI/FS.

| | | DATABASE | | | SOURCE CONTROL | | HABITAT |
|---|---|---|---|---|---|---|---|
| | **Upland Site** | **Are soil data from the riparian zone available?** | **Are upland soil data available that could be representative of riparian zone?** | **Data Entry Comment** | **Are there plans to characterize riverbank soils for source control?** | **Do contaminated riverbank areas need source control?** | **Do areas of the riverbank represent significant habitat?** |
| 1 | Advanced Construction/Marine Finance (former) | No | Yes. 3 locations. SS-9 to SS-11 | Available in hardcopy - data entered (WLCMFH00) | No | Source control evaluations done | None |
| 2 | Arkema | Yes. RB-1 to RB-12 | Yes. 6 locations. | Data are available in LWG's database (WLRELF99) | Yes, upstream of Dock 1 and downstream of Dock 2 | Unsure if riverbank source control is needed at this time | Undeveloped area upstream from Railroad Bridge "appears" to be good habitat |
| 3 | Chevron Asphalt | N/A | N/A | -- | N/A | N/A | N/A |
| 4 | ExxonMobil | Yes. 4 composite samples (2003/2004) from sandy beach where sheen was observed | No | Data are available in LWG's database (WLCEMH04). | No. Barrier wall and sparging/SVE system treating gw where no barrier is present | No. They do not feel the riverbank is a source; primary concern is groundwater | None |
| 5 | Fred Devine | No | No | -- | No further evaluation planned | Will not require source control | Limited. Most of bank is rip rap. |
| 6 | Front Ave. LP | "does not appear to be any" | Possibly near top of bank, 2-4 locations | Available in hardcopy - data entered (WLCFAI89) | Has not been done; plans not indicated | Currently focused on groundwater and stormwater source control | "could be" |
| 7 | GS Roofing | No | No | -- | Yes | Work Plan to be developed | "could be" |
| 8a | Gunderson/Area 1 | No | No | -- | Not at this time | Area 1 riverbank may not require source control | No significant habitat |
| 8b | Gunderson/Area 2 | Yes. 9 samples (GS-#). Also, the City's data collected around Outfall OF-18 may be from the riparian zone | Yes. GS-1 and GS-2. | Received Gunderson data in Excel crosstab; data entered (WLCGNG03). City outfall data already in LWG database. | Yes. In development | Yes. Currently, the area extends from upstream end near launchways to OF-11. Additional sampling results may expand area | No significant habitat |



BZTO104(e)033226

Table 2.2-1. Upland Soil Data Available for the Riparian Zone and Summary of DEQ Questionnaire Results, Portland Harbor RI/FS.

| | | DATABASE | | | SOURCE CONTROL | | HABITAT |
|---|---|---|---|---|---|---|---|
| | **Upland Site** | **Are soil data from the riparian zone available?** | **Are upland soil data available that could be representative of riparian zone?** | **Data Entry Comment** | **Are there plans to characterize riverbank soils for source control?** | **Do contaminated riverbank areas need source control?** | **Do areas of the riverbank represent significant habitat?** |
| 8c | Gunderson/Area 3 | Yes. Samples HA-37 through HA-43 | Yes. 9 samples (MW-#, GP-#, HA-#) | Received data in Excel crosstab; data entered (WLCGNG03) | Yes. In development | Yes. All of Area 3. | No significant habitat |
| 9 | Kinder Morgan/Linnton | Yes. ~20 samples | Yes. MW-# & borings | E-mailed KinderMorgan consultant to obtain appropriate documents. Pending. THIS DATA WAS NOT ENTERED. | Yet to be determined | Area of LNAPL seeps | No |
| 10 | Marcom (former) | Yes. >20 samples | Probably. This site is at very low elevation, so the riparian zone extends far up the site. | Available in hardcopy - data entered (WLCMCL00) | Riverbank in South Parcel will need further investigation; source control in North Parcel warranted but no RP to implement. | North Parcel so far; CSM indicates South Parcel will likely require source control. | "could be" |
| 11 | Oregon Steel Mills | Yes. | DEQ did not provide questionnaire results with OSM's station maps | Received OSM data electronically (WLCOSJ02) | DEQ did not provide questionnaire results with OSM's station maps | DEQ did not provide questionnaire results with OSM's station maps | DEQ did not provide questionnaire results with OSM's station maps |
| 12 | Premier Edible Oil | "potentially at top of bank" | "possible", ~19 samples | Contacted DEQ site manager to obtain appropriate documents. Pending. THIS DATA IS NOT ENTERED. | Not sure yet as just acquired the site, work plan pending | further review of existing data needed | "could be" |
| 13 | Rhone-Poulenc | No | No | -- | No. "This may be a data gap." | Near Outfall 22B | None |
| 14 | Schnitzer Steel | "don't believe so" | Yes. 4 monitoring wells (MW-#) | Available in hardcopy - data entered (WLCITA02) | Needs to be done but no formal plans yet | -- | "could be" |
| 15 | Siltronic Corporation | No | Yes at or near top of bank, S-1 to S-5, P-1 to P-10, Gp-4, GP-7 | Received data electronically from Siltronic (WLCSLH01) | To be determined based on ongoing work | To be determined based on ongoing work | None |



BZTO104(e)033227

Table 2.2-1. Upland Soil Data Available for the Riparian Zone and Summary of DEQ Questionnaire Results, Portland Harbor RI/FS.

| | | DATABASE | | | SOURCE CONTROL | | HABITAT |
|---|---|---|---|---|---|---|---|
| | **Upland Site** | **Are soil data from the riparian zone available?** | **Are upland soil data available that could be representative of riparian zone?** | **Data Entry Comment** | **Are there plans to characterize riverbank soils for source control?** | **Do contaminated riverbank areas need source control?** | **Do areas of the riverbank represent significant habitat?** |
| 16 | Sulzer Pump | Possibly. Sulzer doesn't have elevation on the samples collected. 4 borings, 16 sediment samples. | No | Available in hardcopy - data entered (WLCSPL03) | No | No | Limited. Most of bank is rip rap |
| 17 | Terminal 4, Slip 3 | Yes. 2 locations | No | E-mailed Port of Portland for representative data. Pending. THIS DATA WAS NOT ENTERED. | Part of a recontamination assessment but focus is on Slip 1 | Pencil pitch areas | None |
| 18 | Time Oil | No | No | -- | No. Tank berm prevents overland flow. | -- | Riparian but unsure of significance |
| 19 | Triangle Park | No | Yes. Numerous. | Available in hardcopy - data entered (WLCRDE93) | No | Some areas to be excavated and some to be capped | None is considered "high-quality" |
| 20 | UPRR | "does not appear to be any" | "unable to determine, reworking CSM" | -- | Not at this point | "not likely" | "could be" |
| 21 | Willbridge Terminal | Yes. 9 samples from the RI | The riverbank samples should be representative of the local fill | Data are available in LWG's database (WLRWTI00). | No | Based on the outcome of the ERA and HHRA, no source control measures for the bank are contemplated | Most is rip rap, but mouth of Saltzman Creek could be considered significant habitat. |

**Notes:**

Information taken from DEQ's riparian questionnaire. DEQ Cleanup Site Managers filled out the forms.

Riparian is defined as "top of bank to toe of slope" and according to M. McClincy, DEQ (McClincy 2006, pers. comm.), the definition included any soil or sediment data outside of this range DEQ managers felt were representative of "riparian conditions."



BZTO104(e)033228

Table 4.1-1. Property Name Index (RM 2-11).

| Property Owner (as shown in Map 4.1-2) | River Mile | Other Site Names |
|---|---|---|
| ACF Industries, Inc. | 3.8 | |
| Advanced American Construction | 5.8 | Marine Finance Corporation (see Hendren Tow Boats) |
| Alder Creek Lumber Co., Inc | 2.8 | |
| Anchor Park LLC | 9 | |
| Anderson Bros, Inc. | 7.8 | |
| ANRFS Holdings Inc. | 9.2 | |
| Apollo Dev., Inc. | 11 | former Terminal 1 South |
| Arkema Inc. | 7.4 | Atofina, Atochem North America, Elf Atochem |
| Armstrong Disposal Company | 8.6 | |
| Ash Grove Cement Co. | 2.8 | |
| Ash Grove Cement Co. | 10 | former Goldendale Aluminum |
| ATC Leasing Co. | 8.8 | |
| Automatic Vending | 9.2 | |
| Babcock Land Co. LLC | 4.4 | |
| Becker Land LLC | 8.8 | former Port of Portland |
| Betty Campbell Building | 10.6 | |
| Blue Lagoon - Terminal 5 | 2 | |
| BNSF Railway Co. | 6.8 | |
| BP West Coast Products LLC | 4.8 | ARCO, BP Bulk Terminal 22T |
| Brazil & Co. | 8.4 | |
| Brix De Armond LLC | 5.6 | |
| Brix Maritime Co. | 5.4 | Foss Maritime Company |
| Carson Oil - NW 35th AVE | 9.2 | |
| Chevron USA, Inc. | 7.6 | |
| City of Portland | 5.8, 6, 7, 9.2, 9.9 10.6 | BES Water Pollution Control Lab (RM 6), former Terminal 1 North (RM 10.6) |
| Columbia River Sand & Gravel Inc. | 4.6 | |
| ConocoPhillips Co. | 7.8 | Tosco |
| Consolidated Freightways Inc. | 10.8 | |
| Consolidated Metco, Inc. | 3 | Metco, Inc. |
| Container Recovery | 9 | |
| Cornerstone Property | 8.8 | McWhorter, Inc., Eastman Chemical, McCloskey Corporation |
| Crosby & Overton | 9 | |
| Dasic International Corp. | 10.2 | |
| Dolan and Co. LLC | 10.4 | see Sulzer Pumps |
| Drew Paints, Inc. | 10.8 | |
| Dura Industries | 8.4 | |
| Equilon Enterprises LLC | 8.8 | Shell Oil Products US, Texaco Refining/Marketing, Inc. (see Texaco Product Pipeline) |
| ESCO Corp. - Willbridge Landfill | 7 | |
| ESCO Plant #3 | 10.4 | |
| ExxonMobil Oil Corp. | 5 | Mobil Oil Corporation, Shore Terminals LLC, ST Services (see Shore Terminals LLC) |
| Flowers by Victor | 10.6 | |
| Fred Meyer - Swan Island | 9 | |
| Freightliner Corp. | 8.2, 9 | Freighliner TMP (North), Freighliner TMP II (South) |
| Frevach Land Co. | 3 | |
| Front Ave. LP (LSD CMI NW) | 8.2 | CMI Northwest |
| Front Ave. LP (LSD Tube Frdgs.) | 8 | Tube Forgings |
| Front Ave. LP (LSD Glacier NW) | 8 | Glacier Northwest, Lone Star Northwest |
| Front Avenue MP | 9.8 | |
| Galvanizers Co. | 9.6 | |
| General Electric Co. | 9.6 | General Electric Decommissioning Facility |
| Genstar Roofing Co., Inc. | 7.6 | CertainTeed Corporation, GS Roofing Products |
| GI Trucking | 9 | |

BZTO104(e)033229

Table 4.1-1. Property Name Index (RM 2-11).

| Property Owner (as shown in Map 4.1-2) | River Mile | Other Site Names |
|---|---|---|
| Guilds Lake | 10 | |
| Gunderson LLP | 9 | |
| GWC Properties LLC | 7.8 | Great Western Chemical Corporation, Quadra Chemical Corporation |
| HAJ Inc. | 8.8 | Christenson Oil |
| Hendren Tow Boats | 5.6 | |
| Henry Wong | 10.4 | |
| Hercules Inc. | 9.6 | |
| Herman, Stan | 11 | |
| Hill Investment Co. | 9.2 | |
| Industrial Battery Building | 10.8 | |
| Irvjoy 3rd Generation Corp. | 9.4 | |
| Island Holdings Inc. | 9 | |
| J R Simplot Company | 2.6 | |
| Kesef Development LLC et. al. | 8.4 | Calbag Metals - Front Ave. |
| Kinder Morgan | 4.2 | Kinder Morgan Liquids Terminal - Linnton Petroleum Terminal, GATX Terminals Corporation |
| Kinder Morgan (Willbridge) | 7.6 | Willbridge Terminal (Kinder Morgan Liquids Terminal), GATX Terminals |
| King-Ries Property | 10 | |
| Koppers Industries Inc. | 6.4 | |
| Lakea Corp. | 9.2 | former Columbia American Plating |
| Lakeside Industries | 8.4 | |
| Lampros Properties LLC | 4 | Ryerson Steel |
| Langley-St. Johns Partnership | 5.6 | MarCom Shipyard, MarCom Holdings |
| Linnton Oil Fire Training Grounds | 3.4 | |
| Linnton Plywood Assn. | 4.6 | Linnton Plywood, Columbia Sand & Gravel |
| Longview City Laundry & Cleaners | 9.8 | |
| Magnus Co. | 9 | |
| McCall Oil Real Estate | 8 | McCall Oil Real Estate Company LLC |
| McCormick & Baxter Creosoting Co. | 7.2 | |
| Metco, Inc. | 2.8 | Consolidated Metco, Inc. |
| Metro | 6.6 | Willamette Cove - West, Central, and East Parcels |
| Metro Central Transfer Station | 7.2 | |
| Millican Properties LLC | 3.8 | Portland Container |
| Mogul Corp. | 9.6 | |
| Morse Bros. Inc. | 3.6 | Georgia-Pacific, Inc. - Linnton Fiber Terminal |
| Mt. Hood Chemical Property | 8.4 | |
| Multnomah County - St. Johns Site | 5.8 | |
| Nikko Materials USA, Inc. | 7.2 | Gould Electronics, Inc., NL Industries |
| Northwest Natural Gas Co. | 6.4 | Gasco |
| Northwest Pipe Co. | 4 | |
| Nudelman & Son Inc. | 9.8 | |
| Nurnberg Scientific Co. | 11.2 | |
| ODOT - Surplus Property | 10.6 | |
| Olympic Pipe Line Portland Delivery Facility | 5 | |
| Olympic Pipeline Company | 4.2 | |
| Oregon Steel Mills, Inc. | 2.4 | |
| Oregon Washington Railroad & Navigation Co. (UPRR Albina Yard) | 10 | United Pacific Railroad (UPRR) - Albina Yard |
| Owens-Corning Fiberglas Corp. | 3.8 | |
| Owens-Corning Fiberglas Corp. | 9 | Trumball Asphalt Plant |
| Paramount of Oregon, Inc. | 7.8 | Chevron USA Asphalt Refinery |
| Pacific Power & Light - Mason Substation | 10.4 | |
| Paco Pumps | 9.6 | |
| Port of Portland (P.O.P.) | 10, 4.2-5.5, 1-2 | Terminal 2, Terminal 4, Terminal 5 |

BZTO104(e)033230

Table 4.1-1. Property Name Index (RM 2-11).

| Property Owner (as shown in Map 4.1-2) | River Mile | Other Site Names |
|---|---|---|
| P.O.P. (leased) | 1-9.8 | Lessees are located at Terminal 5, South Rivergate, Terminal 4, Willbridge Terminal, Swan Iland |
| P.O.P. (leased) (Willbridge) | 7.6 | Willbridge Terminal (Chevron - North, ConocoPhillips Company - South) |
| PGE - Forest Park Property | 8.4 | |
| PGE Station E | 10.4 | |
| Portland General Electric Co. | 3.2 | |
| Portland Shipyard LLC | 8.4 | Cascade General Ship Repair Yard |
| Portland Terminal RR Co.(B.N.S.F Lake Yard) | 8.8 | Burlington Northern Santa Fe (BNSF) Railroad, Portland Terminal |
| R K Storage & Warehousing, Inc. | 4.4 | RK Storage |
| R L R Investments LLC | 3.8 | Romar Transportation Company |
| Ralston, Tim (Ralston, TR) | 10.8-11 | Timothy R Ralston (former Terminal 1 South) |
| Riverscape LLC | 10.8 | former Terminal 1 South |
| Roadway Express | 8.8 | |
| Ro-mar Rlty of OR Inc. | 3.6 | |
| Sakrete of Pacific Northwest | 11 | |
| Sause Bros., Inc. | 9.6 | |
| Schmitt Forge | 10 | |
| Schnitzer Investment Corp. | 8.4 | Schnitzer Kittridge |
| Schnitzer Investment Corp. | 7.2 | Schnitzer Doane Lake - Air Liquide |
| Schnitzer Investment Corp. | 3.6 | Burgard lessees: former Premier Edible Oils, Boydstun Metal Works, Western Machine Works, Morgan |
| Schnitzer Steel Industries, Inc. | 4 | International Terminals, Burgard lessees: Portland Blast Media, Cal Bag Metals, Northwest Pipe (storage) |
| Shaver Transportation Co. | 8.4 | |
| Shore Terminals LLC | 5.4 | ExxonMobil Oil Company, ST Services (See ExxonMobil) |
| Siltronic Corp. | 6.6 | Wacker Siltronic Corporation |
| Smurfit-Stone Container | 3.8 | Jefferson Smurfit |
| Southern Pacific Pipe Lines | 7 | |
| Starlink Logistics, Inc. | 7.6 | Rhone-Poulenc, Bayer CropScience, Aventis CropScience |
| States Battery Co. | 10.4 | |
| Steel Hammer Properties LLC | 6.2 | Crawford Street Corporation |
| Steelmill Warehouse LLC | 2.6 | Union Chemical Division of Union Oil Company and H.B. Fuller Company |
| Sulzer Pumps (US), Inc. | 10.4 | Sulzer Bingham Pumps |
| Sunny's Dry Cleaners - Portland | 10 | |
| Tanker Basin LLC | 8 | McCall Oil & Chemical Corporation |
| Texaco Product Pipeline | 8.8 | |
| The Marine Salvage Consortium | 8.4 | Fred Devine Diving and Salvage, Inc. |
| Time Oil NW Terminal | 3.4 | Bell Oil Terminal, Koppers Company/Beazer East |
| Transloader International | 5.6 | |
| Triangle Park LLC | 7.4 | Reidel, Zidell Triangle Park |
| United States of America, Moorings | 6 | U.S. Moorings, US Army Corps of Engineers (adjacent to Northwest Natural) |
| US Coast Guard | 8.2 | US Coast Guard Marine Safety Office/Group Portland (Swan Island Lagoon) |
| University of Portland | 7.8 | |
| UPRR - St. Johns Tank Farm | 4.6 | |
| V&K Service | 7.6 | |
| Van Waters & Rogers, Inc. | 9 | Univar Corporation, Vopak USA, Inc. |
| Walters, Douglas J. | 3.4 | |
| Willamette River Westside CSO Construction | 10.6 | |

BZTO104(e)033231

Table 4.1-1. Property Name Index (RM 2-11).

| Property Owner (as shown in Map 4.1-2) | River Mile | Other Site Names |
|---|---|---|
| Williams, Cindy | 9.6 | |
| Windsor-Allen LLC | 7.8 | |
| Wirfs, Don | 9.2 | Chase Bag, Chase Packaging Corp., Schnitzer Investment Company - NW Yeon |
| Zehrung Corp. (Former) | 10.8 | |
| Zidell, Emery | 8, 8.6 | |

BZTO104(e)033232

Table 4.1-2. LWR Dredging Projects in and Adjacent to the Study Area (1997-2006).

| Description | Fiscal Year Dredged | Dredge Location | | | Purpose | Quantity (Cubic Yards) |
|---|---|---|---|---|---|---|
| | | River Mile or Channel Station Positioning | Terminal | Berth | | |
| FY 97 Corps by Great Lakes #53 Clam | 1997 | 8.5 to 10 | | | Maintenance | 346,000 |
| POP Willamette River Dredging | 1997 | 4.5 | 4 | 410, 411 | Maintenance | 5,454 |
| Goldendale Aluminum (former) | 2000 | 10.1 | -- | Goldendale Dock | Maintenance | unknown |
| POP Willamette River Dredging | 2001 | 1 | 5 | 503 | Maintenance | 1,750 |
| Cargill, Incorporated | 2001 | 11.6 | Irving Elevator | Irving Elevator | Maintenance | 5,000 |
| Chevron Products Company | 2001 | 7.8 | Willbridge | Chevron Pier | Maintenance | 15,000 |
| POP Willamette River Dredging | 2002 | 10 | 2 | 203, 206 | Maintenance | 8,330 |
| POP Willamette River Dredging | 2002 | 1 to 1.5 | 5 | 501, 503 | Maintenance | 3,435 |
| POP Willamette River Dredging | 2002 | 4.5 | 4 | 410, 411 | Maintenance | 2,250 |
| POP Willamette River Dredging | 2003 | 4.5 | 4 | 410, 411 | Maintenance | 500 |
| POP Willamette River Dredging | 2004 | 4.5 | 4 | 410, 411 | Maintenance | 750 |
| Schnitzer Steel Industries | 2004 | 3.8 | International Terminals | 1, 2, 3, 4, 5 | Maintenance | 138,000 |
| City of Portland Fire Bureau Station 6 Dock | 2005 | 9.7 | -- | Fire Boat Dock | Maintenance | 4,130 |
| POP Willamette River Dredging | 2005 | 4.5 | 4 | 410, 411 | Maintenance | 4,329 |
| POP Willamette River Grading | 2005 | 1 to 1.5 | 5 | 501, 503 | Maintenance | 282 |

**Notes**: POP = Port of Portland
Corps = U.S. Army Corps of Engineers
FY = Fiscal Year



BZTO104(e)033233

Table 4.1-3. Summary of Basin Land Use Characteristics.

| | | Land Use (Acres) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Basin Type** | **Outfall/Basin ID** | **Commercial** | **Industrial** | **Multi-Family Residential** | **Mixed Use** | **Parks/ Open Space** | **Rural**** | **Single Family Residential** | **BASIN TOTAL** |
| City Stormwater | OF13 | | 3.8 | 3.4 | 0.7 | | | | 7.9 |
| Only* | OF14 | | 10.4 | 12.8 | | | | | 23.2 |
| | OF15 | | 1.1 | | | | | | 1.1 |
| | OF16 | | 59.6 | | | | | | 59.6 |
| | OF17 | 0.9 | 220.8 | 2.2 | | 578.8 | 583.4 | 449.6 | 1835.6 |
| | OF18 | | 193.6 | 1.6 | | 251.7 | 4.8 | 8.1 | 459.8 |
| | OF19 | | 161.5 | | | 326.7 | 3.4 | | 491.6 |
| | OF19A | | 3.6 | | | | | | 3.6 |
| | OF22 | | 66.9 | | | 23.1 | | | 90.1 |
| | OF22B | | 37.0 | | | | | | 37.0 |
| | OF22C | | 75.4 | | | 785.1 | | 232.7 | 1093.3 |
| | OF45 | | 10.1 | | | | | | 10.1 |
| | OF46 | 8.0 | 31.1 | 0.2 | | 18.0 | | 22.6 | 79.9 |
| | OF47 | | 21.0 | | | | | | 21.0 |
| | OF48 | | | 0.1 | | | | 5.8 | 5.9 |
| | OF49 | 2.3 | 0.1 | 13.1 | 3.2 | 1.5 | | 24.2 | 44.4 |
| | OF50 | 8.1 | 9.1 | 21.5 | 10.7 | 0.2 | | 0.2 | 49.8 |
| | OF52 | | 10.6 | 5.3 | 4.3 | 2.5 | | | 22.8 |
| | OF52A | | 20.1 | 0.9 | 0.4 | | | 3.0 | 24.4 |
| | OF52C | | 24.3 | | | 0.0 | | | 24.4 |
| | OF53 | | | 3.8 | 0.7 | | | 34.4 | 38.9 |
| | OF53A | | 81.8 | | | | | | 81.8 |
| | OFM1 | | 161.8 | | | 0.0 | | | 161.8 |
| | OFM2 | | 122.5 | | | 0.5 | | | 123.1 |
| | OFM3 | | 100.5 | | | | | | 100.5 |
| | OFS1 | | 24.9 | | | | | | 24.9 |
| | OFS2 | | 26.5 | | | | | | 26.5 |
| | OFS5 | | 38.7 | | | | | | 38.7 |
| | OFS6 | | 23.4 | | | | | | 23.4 |
| **Percent Land Use for Basin Type** | | 0.4% | 30.8% | 1.3% | 0.4% | 39.7% | 11.8% | 15.6% | 5005.0 |
| **Percent Basin Type to Total Drainage Area** | | | | | | | | | 37.5% |
| Uncontrolled CSO | OF17 | | 78.1 | 12.6 | 14.1 | 46.6 | | 52.6 | 204.1 |
| | OF46 | 44.3 | 13.7 | 190.7 | 93.7 | 16.0 | | 287.2 | 645.8 |
| **Percent Land Use for Basin Type** | | 5.2% | 10.8% | 23.9% | 12.7% | 7.4% | 0.0% | 40.0% | 849.8 |
| **Percent Basin Type to Total Drainage Area** | | | | | | | | | 6.4% |
| Controlled CSO | OF15 | | 164.8 | 179.8 | 123.4 | 94.0 | | 390.7 | 952.7 |
| | OF24 | 9.6 | 6.0 | | | 15.2 | | 20.3 | 51.1 |
| | OF47 | 13.1 | 3.1 | 19.1 | 57.6 | 26.8 | | 189.6 | 309.3 |
| | OF52 | 4.8 | | 17.4 | 11.3 | 0.5 | | 4.0 | 38.0 |
| | OF53 | | 1.6 | 8.0 | 9.7 | | | 34.3 | 53.5 |
| **Percent Land Use for Basin Type** | | 2.0% | 12.5% | 16.0% | 14.4% | 9.7% | 0.0% | 45.5% | 1404.6 |
| **Percent Basin Type to Total Drainage Area** | | | | | | | | | 10.5% |
| Discharge to | OF12A | | 3.1 | | 22.5 | | | | 25.6 |
| Treatment | OF13 | | 22.4 | | 10.4 | | | | 32.8 |
| | OF23 | | 6.3 | 2.6 | | 2.2 | | 32.2 | 43.3 |
| | OF48 | 2.2 | 0.4 | 3.1 | | 4.2 | | 97.1 | 107.0 |
| | OF49 | 0.5 | | | | 0.0 | | 17.6 | 18.2 |
| | OF50 | | | 2.8 | 0.0 | | | 0.4 | 3.2 |
| | Captured Private Treatment | | 13.8 | | | | | | 13.8 |
| **Percent Land Use for Basin Type** | | 1.1% | 18.9% | 3.5% | 13.5% | 2.7% | 0.0% | 60.4% | 243.8 |
| **Percent Basin Type to Total Drainage Area** | | | | | | | | | 1.8% |
| Creek | Saltzman Creek | | 58.9 | | | 597.9 | 175.2 | 235.1 | 1067.1 |
| **Percent Land Use for Basin Type** | | 0.0% | 5.5% | 0.0% | 0.0% | 56.0% | 16.4% | 22.0% | 1067.1 |
| **Percent Basin Type to Total Drainage Area** | | | | | | | | | 8.0% |

BZTO104(e)033235

Table 4.1-3. Summary of Basin Land Use Characteristics.

| | | Land Use (Acres) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Basin Type** | **Outfall/Basin ID** | **Commercial** | **Industrial** | **Multi-Family Residential** | **Mixed Use** | **Parks/ Open Space** | **Rural**** | **Single Family Residential** | **BASIN TOTAL** |
| Other Stormwater Only | WR-2 | | 1.2 | | | | | | 1.2 |
| | WR-3 | | 3.3 | | | | | | 3.3 |
| | WR-4 | | 2.0 | | | | | | 2.0 |
| | WR-5 | | 0.3 | | | | | | 0.3 |
| | WR-7 | | 8.2 | | | | | | 8.2 |
| | WR-9, WR-11, WR-380 | | 23.4 | | | | | | 23.4 |
| | WR-12 | | 0.9 | | | | | | 0.9 |
| | WR-14 | | 1.5 | | | | | | 1.5 |
| | WR-15 | | 4.5 | | | | | | 4.5 |
| | WR-16 | | 3.0 | | | | | | 3.0 |
| | WR-17 | | 3.2 | | | | | | 3.2 |
| | WR-18 | | 3.0 | | | | | | 3.0 |
| | WR-20 | | 34.4 | | | | | | 34.4 |
| | WR-22, WR-23 | | 28.3 | | | | | | 28.3 |
| | WR-24 | | 37.0 | | | | | | 37.0 |
| | WR-28 | | 2.8 | | | | | | 2.8 |
| | WR-29 | | 4.7 | | | | | | 4.7 |
| | WR-66 | | 47.5 | | | | | | 47.5 |
| | WR-67 | | 7.7 | | | | | | 7.7 |
| | WR-68 | | 1.4 | | | | | | 1.4 |
| | WR-69 | | 3.5 | | | | | | 3.5 |
| | WR-70 | | 5.7 | | | | | | 5.7 |
| | WR-73 | | 3.9 | | | | | | 3.9 |
| | WR-75 | | 4.3 | | | | | | 4.3 |
| | WR-77 | | 7.8 | | | | | | 7.8 |
| | WR-78 | | 0.9 | | | | | | 0.9 |
| | WR-80 | | 3.6 | | | | | | 3.6 |
| | WR-81 | | 12.6 | | | | | | 12.6 |
| | WR-82 | | 2.4 | | | | | | 2.4 |
| | WR-83 | | 2.7 | | | | | | 2.7 |
| | WR-84 | | 8.2 | | | | | | 8.2 |
| | WR-86 | | 1.1 | | | | | | 1.1 |
| | WR-96 | | 2.1 | | | | | | 2.1 |
| | WR-97 | | 8.0 | | | | | | 8.0 |
| | WR-98 | | 4.4 | | | | | | 4.4 |
| | WR-99 | | 15.3 | | | | | | 15.3 |
| | WR-103 | | 1.3 | | | | | | 1.3 |
| | WR-105 | | 0.5 | | | | | | 0.5 |
| | WR-106 | | 1.8 | | | | | | 1.8 |
| | WR-107 | | 12.4 | | | | | | 12.4 |
| | WR-108 | | 9.5 | | | | | | 9.5 |
| | WR-109 | | 3.5 | | | | | | 3.5 |
| | WR-116 | | 0.6 | | | | | | 0.6 |
| | WR-118 | | 2.5 | | | | | | 2.5 |
| | WR-119 | | 9.6 | | | | | | 9.6 |
| | WR-120 | | 1.9 | | | | | | 1.9 |
| | WR-121 | | 7.6 | | | | | | 7.6 |
| | WR-123 | | 75.9 | | | | | | 75.9 |
| | WR-124 | | 38.6 | | | | | | 38.6 |
| | WR-125 | | 2.7 | | | | | | 2.7 |
| | WR-126 | | 3.5 | | | | | | 3.5 |
| | WR-127 | | 3.5 | | | | | | 3.5 |
| | WR-128 | | 2.2 | | | | | | 2.2 |
| | WR-129 | | 0.7 | | | | | | 0.7 |
| | WR-130 | | 0.1 | | | | | | 0.1 |

BZTO104(e)033236

Table 4.1-3. Summary of Basin Land Use Characteristics.

| | | Land Use (Acres) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Basin Type** | **Outfall/Basin ID** | **Commercial** | **Industrial** | **Multi-Family Residential** | **Mixed Use** | **Parks/ Open Space** | **Rural**** | **Single Family Residential** | **BASIN TOTAL** |
| | WR-131 | | 1.7 | | | | | | 1.7 |
| | WR-132 | | 0.7 | | | | | | 0.7 |
| | WR-133 | | 0.2 | | | | | | 0.2 |
| | WR-134 | | 5.1 | | | | | | 5.1 |
| | WR-135 | | 1.7 | | | | | | 1.7 |
| | WR-136 | | 1.4 | | | | | | 1.4 |
| | WR-137 | | 3.4 | | | | | | 3.4 |
| | WR-138 | | 1.5 | | | | | | 1.5 |
| | WR-140 | | 0.5 | | | | | | 0.5 |
| | WR-141 | | 0.5 | | | | | | 0.5 |
| | WR-142 | | 0.5 | | | | | | 0.5 |
| | WR-143 | | 0.5 | | | | | | 0.5 |
| | WR-144 | | 0.5 | | | | | | 0.5 |
| | WR-145 | | 8.1 | | | | | | 8.1 |
| | WR-146 | | 6.4 | | | | | | 6.4 |
| | WR-147 | | 5.0 | | | | | | 5.0 |
| | WR-148 | | 5.6 | | | | | | 5.6 |
| | WR-150 | | 0.5 | | | | | | 0.5 |
| | WR-151 | | 8.6 | | | | | | 8.6 |
| | WR-152 | | 4.2 | | | | | | 4.2 |
| | WR-153 | | 8.1 | | | | | | 8.1 |
| | WR-157 | | 22.1 | | | | | | 22.1 |
| | WR-158 | | 6.0 | | | | | | 6.0 |
| | WR-168 | | 74.1 | | | 0.2 | | | 74.3 |
| | WR-171 | | 20.7 | | | | | | 20.7 |
| | WR-175 | | 2.8 | | | | | | 2.8 |
| | WR-176 | | 1.5 | | | | | | 1.5 |
| | WR-177 | | 13.2 | | | | | | 13.2 |
| | WR-178 | | 3.7 | | | | | | 3.7 |
| | WR-179 | | 5.9 | | | | | | 5.9 |
| | WR-181 | | 17.5 | | | | | | 17.5 |
| | WR-183 | | 15.2 | | | | | | 15.2 |
| | WR-184 | | 1.0 | | | | | | 1.0 |
| | WR-185 | | 2.1 | | | | | | 2.1 |
| | WR-186 | | 2.1 | | | | | | 2.1 |
| | WR-198 | | 2.4 | | | | | | 2.4 |
| | WR-199 | | 0.2 | | | | | | 0.2 |
| | WR-200 | | 0.3 | | | | | | 0.3 |
| | WR-201 | | 0.9 | | | | | | 0.9 |
| | WR-205 | | 0.8 | | | | | | 0.8 |
| | WR-209 | | 0.5 | | | | | | 0.5 |
| | WR-211 | | 5.0 | | | | | | 5.0 |
| | WR-217 | | 63.0 | | | | | | 63.0 |
| | WR-218 | | 73.3 | | | 2.6 | | | 75.9 |
| | WR-219 | | 0.5 | | | 2.8 | | | 3.3 |
| | WR-220 | | 22.9 | | | | | | 22.9 |
| | WR-235 | | 14.6 | | | | | | 14.6 |
| | WR-236 | | 30.6 | | | | | | 30.6 |
| | WR-237 | | 5.6 | | | | | | 5.6 |
| | WR-238 | | 7.1 | | | | | | 7.1 |
| | WR-239 | | 0.7 | | | | | | 0.7 |
| | WR-249 | | 22.2 | | | | | | 22.2 |
| | WR-254 | | 0.1 | | | | | | 0.1 |
| | WR-256 | | 1.9 | | | | | | 1.9 |
| | WR-257 | | 3.4 | | | | | | 3.4 |
| | WR-286 | | 1.9 | | | | | | 1.9 |
| | WR-288 | | 1.0 | | | | | | 1.0 |

BZTO104(e)033237

Table 4.1-3. Summary of Basin Land Use Characteristics.

| | | Land Use (Acres) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Basin Type** | **Outfall/Basin ID** | **Commercial** | **Industrial** | **Multi-Family Residential** | **Mixed Use** | **Parks/ Open Space** | **Rural**** | **Single Family Residential** | **BASIN TOTAL** |
| | WR-364 | | 1.4 | | | | | | 1.4 |
| | WR-365 | | 8.1 | | | | | | 8.1 |
| | WR-369 | | 1.1 | | | | | | 1.1 |
| | WR-374 | | 18.5 | | | | | | 18.5 |
| | WR-375 | | 26.5 | | | | | | 26.5 |
| | WR-376 | | 3.8 | | | | | | 3.8 |
| | WR-378 | | 1.0 | | | | | | 1.0 |
| | WR-379 | | 7.8 | | | | | | 7.8 |
| | WR-381 | | 0.9 | | | | | | 0.9 |
| | WR-382 | | 2.4 | | | | | | 2.4 |
| | WR-383 | | 3.4 | | | | | | 3.4 |
| | WR-384 | | 10.3 | | | | | | 10.3 |
| | WR-385 | | 3.2 | | | | | | 3.2 |
| **Percent Land Use for Basin Type** | | 0.0% | 99.5% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 1088.8 |
| **Percent Basin Type to Total Drainage Area** | | | | | | | | | 8.2% |
| Other | Infiltration/ Sheeting | 0.0 | 687.3 | 7.5 | 8.5 | 73.2 | | 8.6 | 785.2 |
| **Percent Land Use for Basin Type** | | 0.0% | 87.5% | 1.0% | 1.1% | 9.3% | 0.0% | 1.1% | 785.2 |
| **Percent Total Drainage Area** | | | | | | | | | 5.9% |
| Other | Uncharacterized | 1.4 | 525.5 | 106.9 | 9.7 | 1846.0 | | 404.8 | 2894.3 |
| **Percent Land Use for Basin Type** | | 0.05% | 18.2% | 3.7% | 0.3% | 63.8% | 0.0% | 14.0% | 2894.3 |
| **Percent Basin Type to Total Drainage Area** | | | | | | | | | 21.7% |
| **Total Basin Acreage** | | **95.2** | **4200.9** | **615.2** | **380.9** | **4716.7** | **766.8** | **2555.1** | **13330.9** |
| **Percent of Land Use for Total Basin** | | 0.71% | 31.51% | 4.62% | 2.86% | 35.38% | 5.75% | 19.17% | 100.0% |

* An outfall may be noted twice under two basin types because, for example, a portion of the basin drains to the river outfall and another portion drains to a wastewater treatement plant.

** Rural land within the overall site drainage basin is predominantly open space and is essentially equivalent to open space for the purpose of this report.

BZTO104(e)033238

Table 4.1-4. Historical Overwater Features and Fill Placement.

| Site Name | River Mile | River Bank | Major Industrial Operations[1] | Overwater Activities (i.e., docks, pipelines, transfer points, overwater transfer; cite GIS maps, RM maps)[1][3] | | Fill (source of fill, fill history, cite GIS maps)[1][3] |
|---|---|---|---|---|---|---|
| | | | | Historic | Current | |
| Oregon Steel Mills #141 | 2.2 | E | Current: Manufacturing of carbon steel coils and plates. Pipe production capabilities are currently being added. | Pipe used by the War Shipping Administration to convey oil from a river barge to the sump. Leased dock for temporary moorage, unloaded ore slurry (via piping). Dock added in 1969. | None | Fill soils (hydraulically placed dredged material) were placed in the area over an extended time from the 1940s through the 1960s. In the 1970s, OSM did some filling of the riverbank area of the property, using slag generated from its processes and soil from the site. three artificial fill units are present in near-surface soils: 1) soils (sand and silt) used to construct the berm at the top of the shoreline riverbank, 2) a surficial layer of slag-soil fill, and 3) older dredge-fill (predominantly sand and silty sand) used to achieve development grades for the site prior to industrial manufacturing operations. The slag-fill deposits cover a majority of the upland OSM plant area and are typically 2 to 6 ft thick; however, along the riverbank area, the slag-fill unit appears to be wedge-shaped, with a maximum thickness of approximately 12 ft that forms the cliff bank along the shoreline. The wedge configuration appears to be the result of historical placement of the slag-fill along the former shoreline bank. |
| Private Residences | 2.2 | W | NA | Dock added in 1957 | NA | NA |
| South Rivergate Industrial Park #2980 | 2.5 | E | Current:JR Simplot - storage and distribution of urea and anhydrous ammonia; Union Chemical -manufacturer of adhesives and glues; Ash Grove Cement - manufacturer of calcium oxide; POP/Ft James - distribution of paper products; Douglas Walters/T&G Trucking/Online Roofing - container hauling, com'l/resid roofing; PG&E - utility power line tower | JR Simplot - Anhydrous ammonia, urea, and diesel fuel are transferred overwater; Ash Grove - overwater conveyor belt system for loading barges with lime products. One large dock added in 1966 off of present day Ash Grove cement, one dock added in 1969 off of present day JR Simplot and one dock added in 1969 off of present day Ft James/NW Service Center. | | Ash Grove: from 1936 until 1956, the parcel was undeveloped and covered with dredged fill. From 1950s-1970s dredge spoils were placed here from Post Office Bar and mouth of Willamette River. |
| Alder Creek Lumber Company #2446 | 2.9 | Southern end of Sauvie Island | Lumber related activities (log storage, sawmill, lumber, planing) | Floating logs delivered to docks (1959 to present day). | | In 1971, dredged material, obtained from the Multnomah Channel about 1,500 feet west of the southern tip of Sauvie Island, was placed on the bank of the Alder Creek property. In 1972, dredged material from the Georgia Pacific Linnton Fiber Terminal was also placed on the property, approximately 500 feet from Multnomah Channel. |
| PGE Harborton #2353 | 3.2 | W | Electrical switchyard, easement of oil/gas pipelines, radio communication station, turbine power plant, two distillate fuel tanks, and storage of new and surplus equipment | None | None. Floating logs visible offshore on aerial (2000). | Sand and silt fill were hydraulically placed at the site in the early 1970s to depths ranging from 4 to 10 feet bgs. Perimeter dike constructed of silt fill materials. Fill source unknown. |
| Time Oil #170 | 3.4 | E | Current: petroleum products handling and storage; Historic: petroleum products handling and storage, wood treatment products storage and formulation, waste oil storage | Dock added in 1939. Dock used for the mooring of tanker ships while transferring petroleum products to pipelines located on the dock. | Dock still present, not used. Operations ceased in 2001. | Gravel fill covers portions of site within former terminal operations. It is assumed that dredged fill material was placed into this area around the turn of the 20th century, based on the similar practices along the river, but there is no documentation of the specific dates of this activity. In 1989 an excavated area in the former wood treatment area was backfilled with clean soil (fill source unknown). |
| Premier Edible Oils #2013 | 3.6 | E | Current: none; Historic: aboveground oil storage, manufacturing, packaging, and distribution of chemicals, metals, and metal products, edible oil processing and storage facility | Three docks associated with operations at the PEO site since the early 1950s (dock added in 1957). A wooden dock and pilings were located in the slip from the 1950s until the early 1990s. A terminal associated with the Northwest Oil tank farm was also present on the Willamette, south of the existing terminal, until the early 1970s. A pipeline from the dock at PEO ran to the adjacent Time Oil Bell Terminal until 1973, when it was torn out by SIC during construction, resulting in a documented release. By 1977, a large dock was built on the Willamette frontage, which was retrofitted and reconstructed through the years to accommodate operational needs of the facilities. PEO received edible oils for refining by ship. | None - Dock still present on Willamette River frontage, but not used. | The site was a marsh prior to 1941. The bottomlands were filled soon thereafter. The fill material (20-25 ft) has been described as medium-grained sand, most likely a combination of native sands and river dredge spoils. |



BZTO104(e)033239

Table 4.1-4. Historical Overwater Features and Fill Placement.

| Site Name | River Mile | River Bank | Major Industrial Operations[1] | Overwater Activities (i.e., docks, pipelines, transfer points, overwater transfer; cite GIS maps, RM maps)[1][3] | | Fill (source of fill, fill history, cite GIS maps)[1][3] |
|---|---|---|---|---|---|---|
| | | | | Historic | Current | |
| Noncontiguous Burgard Industrial Park Properties #none | 3.7 | E | Current: Boydstun Metal Works - automotive trailer manufacturing and automotive parts storage; Morgan CFS - container unloaded (lumber and building materials); Northwest Pipe - no manufacturing, storage; Schnitzer Steel Remnant- storage; Historic: WW II shipbuilding | None - Site is upland. Assume ships building conducted upland and transported to shipways on the river (International Terminals Slip - Oregon Shipbuilding Corporation Shipyard). | None | In the late 1930's dredged fill was placed during the development of the Industrial Park and during the filling of the shipways in the later 1960's and early 1970's. From 1941 to 1945 the site was filled and slip was dredged prior to construction of shipyards and associated shipways. In 1970, dredged sand was placed as fill at present day Boydstun property. |
| Owens Corning #1036 | 3.8 | W | Current: asphalt product production; Historic: wood product operations and wood treatment, solvent, lubricant, and fuel storage. | Dock added in 1985. Vessels delivered asphalt products to the site at the facility's dock from 1982 to 1987. Vessel activity and product transfer occurred on southern portion of site at location of former dock (removed in 1975). | One dock remains on site but no longer in use. | The fill material was identified as consisting mostly of sand with clay, silt, and gravel. The thickness of the fill ranges from 8 to at least 24 feet. Fill source unknown. |
| Northwest Pipe Company #138 | 4 | E | Current: pipe manufacturing; Historic: pipe manufacturing and ship building (1937-1950, WWII years) - Oregon Shipbuilding Corp. | None - Ship building conducted upland then transported by rail to shipways on the river (International Terminals Slip - Schnitzer Burgard Industrial Park). | None | Dredge fill was placed during 1960's and early 1970's. The depth of the dredge fill ranges from 2 to approximately 20 feet bgs. |
| Portland Container Repair (Burgard Industrial Park) #2375 | 3.6 | E | Current: storage and repair of intermodal containers; Historic: WWII shipyard (1940s-1945, Oregon Shipbuilding Corp), scrap metal storage | None - Site is upland. Assume ships building conducted upland and transported to shipways on the river (International Terminals Slip - Oregon Shipbuilding Corporation Shipyard). | None | Dredge fill placed during the development of the industrial park in the late 1930s and during filling of the shipways in the later 1960s and early 1970s. |
| Schnitzer-Calbag #2355 | 4 | E | Current: Metals recycling, truck maintenance and repair, warehousing; Historic: Ship construction/shipyard activities (1945-1972, Oregon Shipbuilding), metals recycling, truck maintenance and repair, warehousing; upland log storage and log rafting; filling of shipways; grain storage, steel pipe and tank manufacturing | In 1948 a dock was added in the slip. Ships were assembled in the shipways and moored along the southern edge of the slip for outfitting. Interior mechanical and electrical features were installed and the deck painted. A fire destroyed the dock and shops along the south side of the dock. Several ships were damaged, and cranes fell into the slip as the dock collapsed. On river side in 1978 and 1985 docks were added. In 1948 boat rails were added and removed in 1969. | Scrap metal sometimes arrives at the SSI dock in the International Terminals Slip by barge. Bulk materials are loaded and off-loaded by using three dock-mounted cranes. | The site was originally low-lying marsh and lagoons that were filled with dredged material during the development of the industrial park in the late 1930s. In the 1940s material was excavated to create the slip. The shipways were filled in the later 1960s and early 1970s with dredged material. Thickness varies from 25 to 35 ft along the river to 15 feet on the eastern edge of the site. |
| Port of Portland - Terminal 4, Slip 1 #2356 | 4.3 | E | Current: grain mill, liquid bulk storage, storage and maintenance of equipment for loading and unloading ships, loading soda ash to ships, unloading from rail; Historic: oil supply dock for locomotives, marine terminal, bulk storage facilities (grain and liquid) | A dock existed as of 1936.At Pier 1, grain was transported to and from berth using conveyor (1920-2003). Tri-calcium phosphate was also handled at Pier 1. Ore and other bulk raw products were handled at Pier 2 (1921-1996). Pencil pitch (1978-1998), ammonium sulfate (1970), sodium sulfate, soybean meal, sulfur (1961-1967), lead and zinc concentrates (1961-1971), soda ash (1988-present), and alumina/bauxite and chromite (1963) were handled at Pier 4. | Ship loading of soda ash at Pier 4. | In 1917, dredged fill material was deposited across the low-lying ground. Most of lower Gatton Slough was filled at that time. Fill was also placed into the offshore shallows to extend the riverbank out into the channel. In 1950's Slip 1 was dredged. A Slip 2 was planned and excavated but later filled. Fill materials typically consist of silty sand and sandy dredge material, with pockets of gravel, silt, clay, concrete, and wood debris. |
| Babcock #2361 | 4.4 | W | Current: site leased to steel railroad materials storage; Historic: Lumber storage and loading | Historical loading and dock operations (dates unknown). No docks appear on current aerial photograph. | | Varying thicknesses of fill up to approximately 25 feet. Fill consists of medium-grained sand and silt, source unknown. |
| Kinder Morgan Liquids Terminal - Linnton #1096 | 4.4 | W | Refined petroleum products storage since 1918. | A dock existed as of 1936. The dock is infrequently used for loading and unloading of petroleum fuels through above-grade conveyance pipelines connecting the Site dock to the ASTs. No petroleum storage occurs at or near the riverfront outside of the AST containment area. | | Soils are comprised of fill material from 1 to 35 ft bgs. The source of the fill (silt and sand) is likely from dredging activities on the Willamette and Columbia Rivers. |
| RK Storage and Warehousing #2376 (Includes West Coast Adhesives #333 | 4.5 | W | Current: lumber storage and log loading; Historic: lumber storage and log loading, manufactured phenol-formaldehyde glues, and storage of railroad materials. | Dock associated with lumber handling demolished in 1957. | None | Mostly comprised of fill. Between 1961 and 1980, aerial photographs show dumping and fill activities south of the WCA facility. Debris present in the fill consists of concrete, metal, fiberglass, and asphalt to a depth of 5 feet bgs. Fill source unknown |
| Port of Portland Terminal 4, Slip 3 # 272 | 4.6 | E | Current: Loading soda ash at docks Historic: Loading soda ash, unloading pencil pitch, storage and unloading of bulk oil, import and export of ore and concentrate, unloading diesel, No. 6 fuel, and Bunker C oil and transferring via pipeline. | Dock existed as of 1936. Bulk materials (inch pencil pitch) and petroleum products unloaded and/or loaded at ships. Petroleum pipeline traversed Terminal 4. | None at Slip 3 Upland Facility. Berths 410 and 411 along north side of Slip 3 used by Kinder Morgan Bulk Terminals. | Approximately 10 to 30 feet of sandy fill was placed on the lowland area along the Willamette River circa 1920 to create Terminal 4. Fill source unknown. Soil removed from the east bank of Slip 3 during cleanup activity in the 1990s was re-used to fill the excavation (non-impacted soils). Slip 3 was dredged in the teens to 1920s and widened in 1950. |



BZTO104(e)033240

Table 4.1-4. Historical Overwater Features and Fill Placement.

| Site Name | River Mile | River Bank | Major Industrial Operations[1] | Overwater Activities (i.e., docks, pipelines, transfer points, overwater transfer; cite GIS maps, RM maps)[1][3] | | Fill (source of fill, fill history, cite GIS maps)[1][3] |
|---|---|---|---|---|---|---|
| | | | | Historic | Current | |
| Linnton Plywood Association #2373 | 4.7 | W | Linnton Plywood: Sawmill and lumber company, plywood manufacturing, and warehousing in plywood building. Columbia River Sand and Gravel (CRSG): sand barging and distribution | Dock existed as of 1936. Raw logs stored along waterfront pilings until processing operations began at dock (cutting logs and loading onto conveyor). | Operations ceased at Linnton in 2001. Sand is delivered to the CRSG site by tug and barge. | The area leased to CRSG was once used for dredge spoil disposal from dredging the historic log processing area. CRSG has since placed 10 feet of clean fill in this area. The historic wigwam burner was also located on the CRSG site in the area used for dredge spoil disposal. CRSG has since placed 10 feet of clean fill in this area. The air treatment system on the CRSG site captured solids from the sander dust burner, which were spread on the ground to dry and used as fill on this parcel. CRSG has since placed 10 feet of clean fill in this area. Currently, CRSG mixes the dust with the sand. Boring logs indicate fill material at least 24 feet thick in the above areas consisting primarily of silt and fine-to-medium-grained sand. The fill also includes burner ash, angular gravel, wood chips, and brick. Fill source unknown. |
| ARCO #1528 | 4.9 | W | Current: petroleum storage and distribution; Historic: petroleum storage and distribution, foamite plant, toy manufacturing lumber company | Dock existed of 1936. Fuel Transfer activities conducted at site. | | Recent fill (consisting of sand, sandy gravel and cobbles, and/or gravelly sand and contains some debris), source of material unknown. |
| Port of Portland - Terminal 4 (Auto Storage Facility) #172 #2642 | 5 | E | Current: Unloading, storing and processing of new automobiles; Historic: Unloading, storing and processing of new automobiles, unloading of steel and export of lumber products on the northern third of the Facility. | In 1971 and 1974 a docks were constructed. Unloading new automobiles and steel from ships. Throughout the 1990s lumber was loaded from the yard to ships. | Unloading new automobiles from ships. | In the 1950s, 1960s, and possibly the early 1970s, sand fill was used to bring the Facility up to an elevation above the flood level. Fill is about 5 feet thick at the base of the bluff east of the Facility and thickens to about 40 feet at the riverbank. Fill source unknown. |
| Exxon Mobil #137 | 5.1 | W | Petroleum storage and distribution | Dock existed as of 1936. Fuel Transfer activities conducted at site. | | None |
| ST Services/Shore Terminals #1989 | 5.3 | W | Bulk petroleum storage and marine terminal | A dock (constructed in 1978) extends approximately 90 ft into the Willamette River from the site. The dock is used for the mooring of tanker ships while transferring petroleum products to pipelines located on the dock. | | Fill placed upland in 1948. Fill material, consists of sand and silt, was historically placed in the site vicinity on alluvial floodplain materials. Fill source unknown. Petroleum hydrocarbon impacted soils resulting from the release of gasoline in 1988 and 1992 were excavated, aerated onsite, and ultimately used as fill in the excavations. |
| Foss Maritime/Brix Marine #2364 | 5.5 | W | Current: marine vessel transportation services and maintenance; Historic: above and tugboat service and fueling. | Maintenance activities performed at the covered barge permanently moored at the facility dock. | | Some infilling of the northeastern portion of the property occurred in 1948. Fill material was fine to medium sand (dredge fill). |
| Port of Portland Auto, Brix de Armond and Langley St. Johns | 5-5.7 | E | | | | Fill placed up until 1972. Fill placed along eastern shoreline from 1940s to 1960s consisting of MGP waste, quarry discards, and dredge spoils. |
| MarCom #2350 | 5.6 | E | Current: none; Historic: shipbuilding and repair, sandblasting and painting, moorage. | Until 2004, a floating dry dock located off of the facility's shoreline was used to conduct ship repairs, hull overhauls, and maintenance services (e.g., mechanical/electrical retrofits). Barges acted as support platforms relative to operations. Former dock was removed in 1948. Most shoreline features removed by 2005. | None | Filling operations have occurred at the North parcel from as far back as 1917 to at least 1983-1984. Fill encountered in test pits in 1986 included organics, silts and sands with variable amounts of concrete, wood and wood products, asphalt, plastic and glass<br>The fill material at the Mar Com and DSL sites originated from various sources. A substantial amount of fill (greater than 10,000 cubic yards) originating from excavation materials from the Veterans Hospital is documented to have been place at the Mar Com and DSL sites. Extensive fill material has reportedly been placed on the South Parcel. In 1987, the "knoll" at the south corner of the South Parcel was constructed using dredged sediment from the marine way area. |
| Transloader International #2367 | 5.6 | W | Current: unknown; Historical: store, sort and reship logs by land. | Aerial photographs from the early to mid-1960s show log rafts in the river adjacent to the site, but the source and duration of this activity cannot be determined. Offshore there are four dolphins and a 3-ft wide floating walkway. It is not known if these structures are completed. | | Fill was placed in 1948 in order to construct the site. Fill source unknown. |
| Marine Finance (Hendren Tow Boats) #2352 | 5.8 | W | Current: tugboat business, houseboat/sailboat construction; Historic: above and metal salvage, moorage | Overwater structures include a home builder's dock and a gangway and floating facilities owned by a tow boat company. Overwater activities have been prevalent at this site since the early 1920s when there was a ferry slip located here. | | Between 1936 and 1948 the area was filled; the fill was likely obtained from private dredging operations. In 1961 material was excavated at the site. Artificial fill material was placed at the site during the 1930s and 1960s. The excavations and soil borings completed at the site indicate that the fill material underling the site is approximately 9 to 30 feet thick. The fill material consists of road base material, brownish-gray, poorly graded fine to medium sand and silty sand, and organic and construction debris. |
| U.S. Moorings #1641 | 6 | W | Government port, supply, repair facilities for dredge and other support vessels, warehousing facilities, fuel storage, motor pool garage and parking. | In 1963 a dock and floating structure was removed from the site. On the south end of the property a dock was constructed in 1936. Fueling of dredges, sandblasting, and vehicle maintenance occur at the site. | Docking facilities, maintenance, and overhaul to support the dredge fleet and the hydrographic survey vessels. | Dredge material from river used as fill upland (1914), and partial filling of new parcel in 1945. |



BZTO104(e)033241

Table 4.1-4. Historical Overwater Features and Fill Placement.

| Site Name | River Mile | River Bank | Major Industrial Operations[1] | Overwater Activities (i.e., docks, pipelines, transfer points, overwater transfer; cite GIS maps, RM maps)[1][3] | | Fill (source of fill, fill history, cite GIS maps)[1][3] |
|---|---|---|---|---|---|---|
| | | | | Historic | Current | |
| Gasco #84 | 6.2 | W | Current: liquefied natural gas storage and distribution, solid and liquid coal tar pitch storage and distribution; northern portion - bulk fuel storage and distribution; Historic: oil manufactured gas plant, coal tar formulation, storage and distribution, electrode grade pitch manufacture and distribution. | A dock existed as of 1936 and a second dock was removed in 1957 (on the south end of the property). Fuel and Marine Marketing Inc (FAMM) conducts overwater transfer of bulk petroleum from barge to their bulk storage facility.<br>Koppers Industries (KI) (now Beazer's East) conducts overwater transfer of heated liquid coal tar pitch from barge to their bulk storage facility. | | Much of the Gasco property has been extensively filled through time, beginning with initial MGP site development activities between 1905 and 1913. Low-lying areas, primarily to the southeast (lampblack storage and tar pond area) received MGP by-product placement through time (1940, 1952 aerial photographs), and likely received soils from the excavation of the LNG tank containment basin at the central portion of the site in 1967 and 1968 (1968 aerial photograph). By 1975, the southern portion of the property was predominantly filled. Retention ponds were filled in 1981. The thickness of the surficial fill ranges from approximately 2 feet along the western portion of the site near the Tualatin Mountains, to a maximum of approximately 30 feet in the northern and eastern portions of the site, near the Willamette River. Much of the fill at the site, especially in the northwestern and central areas, was found to consist of poorly graded sands and silty sands that was likely hydraulically placed river-dredge material. Other areas of fill at the site were found to contain lampblack and/or pencil pitch material, solidified t |
| City of Portland BES Water Pollution Control Laboratory #2452 | 6.1 | E | Current: analytical lab; Historical: lumber mill operations, fruit box manufacturer | Lumber mill operations when dock present. Dock removed in 1979. | None | Pre-1970's fill that brought the site to the grade of the pavement for the Portland Lumber Mill. Early 1970's fill in the foundation of the Coast Veneer facility and along the bank of the river. Placement of "black sand" fill in the Coast Veneer area and in isolated piles on the southern portion of the site. From 1988 to 1989, construction and other debris were disposed in the southern and northwestern portions of the site. |
| Crawford Street Corporation #2363 | 6.1 | W | Current: metal forging, steel recycling and distribution; Historic: above activities and lumber and sawmill. | None/Unknown | None/Unknown | Up to approximately 6 feet of black sand fill material was placed by previous property owners during the demolition of the former lumber mill building in 1977-1978. The sand had reportedly been obtained from a local sandblasting company and previously had been used to clean land- and ship-based oil tanks. Reported to have been transported to the beach fronting the property and into the Willamette River by riverbank erosion. |
| Siltronic #183 | 6.2 | W | Current: manufactures silicon wafers from silicon crystal ingots; Historical: waste disposal area (waste effluent pond, 11-acre lagoon, disposal pit, spent oxide/lampblack disposal pile). | Tugboat refueling by former Western Transportation facility. In 1957 two docks were removed from the upstream end of the site. | None | Up until 1975, the site was covered with fill up to 30 feet thick in places. The fill consisted of<br>former MGP process wastes, dredged material from Willamette River dredging operations, quarry rock,<br>and potentially materials and wastes from other onsite and offsite sources. The southern portion of the site was filled to about 30 feet above MSL (current grade) between 1971 and 1977. The fill included quarry rock, Willamette River dredge<br>spoils (which may or may not have included sediments impacted by direct discharge of wastes), and MGP waste from the PG&C facility |
| Willamette Cove #2066 | 6.7 | E | Current: vacant; Historical: plywood manufacturing plant (west parcel), ship repair and maintenanced (central parcel) - US Government facilitated during Great Depression and wars (WWI, WWII, and the Korean War), cooperage plant-manufactured wood vats, kegs, barrels, shingles (east parcel) | From the early 1900s through 1953, St. Johns Dry Docks operated in-water dry docks adjacent to the Central Parcel. Dock existed as of 1936. Docks were used for ship repair and maintenance (central parcel) during the Great Depression, WWI, WWII and the Korean War. The plywood and cooperage conducted variety of overwater activities associated with wood processing. In 1969 and 1985 the dock structure was removed. | None | Sandy fill was placed on a strip of lowland adjacent to the bluff and outward into the Willamette River prior to and concurrent with facility development (completed by 1930). In early 1970s filled the former log pond on the West Parcel. Fill source unknown. Debris in fill (bricks, metal, wood). Fill was placed on the upstream end of the site (in the head of the cove) in 1985. |
| McCormick and Baxter #74 | 7 | E | Current: none; Historical: manufactured fir lumber and wood products treatment. | Historically, creosote was unloaded at a dock (present in 1936) and transported to a large tank by pipeline. Unloading at the creosote dock was gradually phased out throughout the 1980s. A pier was removed in 1980 and the dock removed in 2000. | None | The site is located in an area that was constructed of dredged material fill in the early 1900s. |
| Arkema | 7 | W | NA | Dock removed in 1957. | | Fill added in 1957. |



BZTO104(e)033242

Table 4.1-4. Historical Overwater Features and Fill Placement.

| Site Name | River Mile | River Bank | Major Industrial Operations[1] | Overwater Activities (i.e., docks, pipelines, transfer points, overwater transfer; cite GIS maps, RM maps)[1][3] | | Fill (source of fill, fill history, cite GIS maps)[1][3] |
|---|---|---|---|---|---|---|
| | | | | Historic | Current | |
| Arkema | 7.3 | W | Current: none; Historical: inorganic chemical manufacturing company from 1941 to 2001. Produced sodium chlorate and potassium chlorate, chlorine, sodium hydroxide, hydrogen gas, hydrochloric acid and DDT. | Docks were added at the site in 1961, 1948, and 1963. Shipments of sodium chloride (salt) were historically delivered by ship to either the Salt Dock or Dock 1. Sodium hydroxide, sodium chlorate solution, and chlorine were loaded onto barges for shipment from Dock 2. | None | The eastern portion of the site generally between Docks 1 and 2 has been filled with plant debris consisting of asphalt, concrete, pipe, soil, and fill from other sources. This fill material was placed from approximately 1948 to 1957. |
| Triangle Park LLC - North Portland Yard #277 | 7.4 | E | Current: vacant; Historic: wharf, shipbuilding (1921-1946), lumber manufacturer, sawmill, concrete, marine towing | Dock existed as of 1936. Docks associated with ship building, repair, and product transfer. In 1966 a dock and floating structure was removed. | A dock and dolphins are still present at the site, but the site is vacant. There is temporary barge moorage along the shoreline. | Fill was place on the downstream end of the property in 1974 and upstream in 1966. The fill blanketing the site extends to a depth of approximately 15 feet bgs and is composed predominantly of sand. Fill created dock and berth area. |
| Willbridge Terminals #1549 | 7.5 | W | Bulk petroleum storage since early 1900s. | Dock existed as of 1936. Each of the three terminals which compose the Willbridge Terminals Site have a marine dock for the loading and unloading of petroleum products to or from tankers, barges and tug boats. | | Fill material of gravel, silt and sand was deposited over most of the site. The sloughs and lagoons were filled in the early 1900s. The source of the fill is primarily Willamette River dredging. There is relatively little fill in the KMLT terminal's south tank yard, while there are significant fill areas on the rest of the site. |
| Shaver Transportation #2377 | 8.4 | W | Current: general towing and lightering; Historic: mobile telephone service and marine transportation. | Overwater activities include a fleet of 11 tugboats and 16 barges, a main dock including ramp and 3-finger piers, 200-ft shop barge including ramp and fuel dispensers (unknown type and capacity), and a 200 ft floating shed. | | Fill was added to level the near-bank area where the lower parking lot was built. Fill source unknown. |
| Willbridge Terminals (WMCSR-NWR-94-06) #2355 | 7.7 | W | Current: distribution of refined petroleum products (gasoline, diesel fuel, lubricating oil), fuel storage. | Marine docks (one at each facility - constructed in 1936) for loading and unloading petroleum products to or from tankers, barges, and tug boats. | | Fill material of gravel, silt and sand has been deposited over most of the site. The source of the fill is primarily Willamette River dredging. The thickness of the fill material ranges from nonexistent to greater than 30 feet. There is relatively little fill in the KMLT terminal's south tank yard, while there are significant fill areas on the rest of the site. The lakes and sloughs were filled with dredge materials from the Willamette River. Fill material place on downstream end of site from 1948-1957. |
| McCall Oil #134 | 7.9 | W | Asphalt manufacturing and chemical manufacturing, storage and distribution | Douglas Oil operated a marine dock at the northeastern portion of the site. This dock was added in 1975 and was used to transfer asphalt from moored barges to the asphalt facility via pipeline. The dock was later replaced by the existing dock located northeast of the terminal. | Petroleum products are received and dispensed at the marine dock. | In 1966, dredge spoils from the Willamette River were added to the shoreline to create additional land. |
| US Coast Guard - Marine Safety Station #1338 | 8 | E | Current: USCG marine safety and marine inspection offices; Historic: roofing shingle manufacturer, lumber company | A dock was constructed in 1974. Activities unknown. | A fixed pier is located in the southwest corner of the property and is used as a dock and fueling platform for the buoy tender CGC Bluebell. Support activities include minor onboard ship repair and storage of ship equipment. A floating dock is located east of the fixed pier and is used for servicing and launching the smaller vessels. | The property was created by filling marshy lowlands in Mocks Bottom ifrom the late 1930s to the early 1960s. |
| Fred Devine Diving and Salvage #2365 | 8.2 | E | Current: moorage; Historic: moorage and waterfront structures (1940s), cleaner and solvent storage. | A dock was constructed in 1979 where fueling and loading/unloading activities occur. | | None/not reported in CSM |
| Front Avenue LP Properties #1239 | 8.2 | W | Lumber facility/storage, concrete plant, pipe fittings manufacturing | A dock was constructed in 1991. Ships deliver raw materials to facilities at the site (e.g., sand and aggregate to Glacier NW on Parcel 1) | | Large portions of the site were formed by filling the riverbed and lake bed from 1887 through 1980. A large volume of fill was placed on Parcels 1 and 3 between the 1940s and the 1970s. The fill was made up of slag from a steel mill which began operating at the property in approximately 1942 (predecessor to Oregon Steel Mills), dredged material from the Willamette River, and construction debris (MFA 2002). Fill is estimated to range from 15 to 45 feet thick on all but the northeastern third of the property. |



BZTO104(e)033243

Table 4.1-4. Historical Overwater Features and Fill Placement.

| Site Name | River Mile | River Bank | Major Industrial Operations[1] | Overwater Activities (i.e., docks, pipelines, transfer points, overwater transfer; cite GIS maps, RM maps)[1][3] | | Fill (source of fill, fill history, cite GIS maps)[1][3] |
|---|---|---|---|---|---|---|
| | | | | Historic | Current | |
| Cascade General #271 | 8.4 | E | Current: Cascade General - Ship repair yard and other industrial operations, POP - parking lot/undeveloped property; Historic: Cascade General - ship repair/industrial operations (1947-present), military shipyard (1942-1947), POP - steel fabrication and ship scrapping, wood products, storage; runways, taxiways for airport | Docks were constructed on the downstream end of the site in 1948, 1957, and 1979. Boat rails were added in three areas (one added in 1948, the other two removed in 1957 and 1963 where docks were placed). Activities at the docks include: ship hull washing, abrasive blasting and painting in dry docks and ship hull abrasive blasting and outfitting | | From 1922 to 1931, Swan Island was excavated for the navigation channel and filled at its southerly base and connected to the east shore of the Willamette River when the main navigation channel was relocated to the west side of Swan Island. During the late 1940s and through part of the 1950s, the five southernmost shipways were abandoned in place by filling with dredged materials. In 1961 fill was placed on the upstream end of the site. Three of the five treatment ponds were filled. Fill source unknown for ponds. Shipways constructed in 1940s and removed in 1950s for construction of dry docks. Filling in northwest portion of yard in 1970s. |
| Kittridge Distribution Center - Schnitzer Investment Corp #2442 | 8.6 | W | Current: Storage, mixing, and distribution of oil-based inks; storage of trailer-mounted generators and large spools of cables and supplies for maintenance of telecommunication cables; newspaper machines, limited bearing cleaning with lube oil; distribution of household decorative tiles and tile installation supplies; Historic: above and acetylene production and lime recovery operations, scrap metal handling and diesel truck refueling. | None - upland location | | The small portion (~10%) of the site that is not paved is covered with imported clean landscape fill. |
| Lakeside Industries #2372 | 8.6 | W | Current: asphalt manufacturing; Historic: asphalt manufacturing and moorage | Dock added in 1948. Since 1995, raw aggregate is delivered to the site by tug and barge, and after being unloaded with a conveyor system, the aggregate is stockpiled along the edge of the river. | | The fill predominantly consists of sand extending to approximately 10 feet bgs. |
| Christianson Oil #2426 | 8.7 | E | Petroleum/lubricant storage, blending, and distribution | None - upland location | | None |
| Gunderson LLC #1155 | 8.8 | W | Current: Manufacturing rail cars and marine barges; Historical: rail car and marine vessel manufacturing, ship dismantling and auto salvage. | Dock was present 1936 and launchways in 1957. The application of marine primers and paints onto the marine barges is conducted on the launchways. This work is considered over-water activity. Completed railcars are temporarily staged on outfitting dock (gantry) for re-work of welds, touch-up painting, and using a transit to make sure cars are level. | | Gunderson site adjacent to the Willamette River was raised above the river level beginning in the 1930s using dredged fill material. The man-made fills were placed over much of the site. Therefore, most of the sand and silt found in the subsurface of the Gunderson site are fill material obtained from the dredging of the Willamette River channel. A gulley on-site was filled in the 1970s, fill source unknown. Fill was also placed in 1957. |
| Equilon Property (Pipeline Containment) #2117 | 8.8 | W | Current: Storage/distribution of gasoline, diesel and ethanol ; Historical: Beginning in 1928 -Storage/distribution of petroleum, bunker fuel, jet fuel, and lubrication oil | The Equilon facility includes a dock on the Willamette where petroleum products are transferred from vessels to an underground pipeline corridor that extends upgradient beneath the Gunderson property to the main bulk petroleum facility. The dock has existed since at least 1936. | | The riverbank in the vicinity of the dock is composed of fill materials deposited there sometime after 1936. The fill is believed to be dredged sand material. |
| Trumbull Asphalt #1160 | 9.1 | W | Asphalt and roofing manufacturing plant | None - upland location | | The industrial area surrounding the site is known as the Guilds Lake area because of a shallow lake that formerly occupied the area until it was filled to provide industrial land in the early 1900s. Fill consists of asphalt, crushed rock subgrade, silt and sand. Fill source unknown. |
| Van Waters and Rogers #330 | 9 | W | Bulk chemical packaging, storage and distribution. | None - upland location | | Between 1910 and 1930, the lake and surrounding area were filled with dredged sediment from the Willamette River and upland fill material |
| Columbia Plating #29 | 9.1 | E | Electroplating, plating, polishing, anodizing, and coloring (all after 1975) | None - upland location | | None |
| City of Portland | 9.5-10.0 | E | NA | Dock removed in 1939. | NA | Original shoreline formed cove. In 1969 area was filled (corresponding with filling of lagoon). |
| Goldendale Aluminum #2440 | 10 | E | Current: storage of lubricating and hydraulic oils; Historic: alumina and electrode binder pitch unloading facility, grain shipment facility. | Two docks constructed in 1936. Activities began in 1957 and included ship refueling, alumina and pitch unloading. Prior to this time, the site was a grain shipment facility. | None | A small area in the northeast section of the site was filled beginning in 1969. |
| | | | | Over-water activities associated with the historical sawmill and shipyard operations were performed in | | |



BZTO104(e)033244

Table 4.1-4. Historical Overwater Features and Fill Placement.

| Site Name | River Mile | River Bank | Major Industrial Operations[1] | Overwater Activities (i.e., docks, pipelines, transfer points, overwater transfer; cite GIS maps, RM maps)[1][3] | | Fill (source of fill, fill history, cite GIS maps)[1][3] |
|---|---|---|---|---|---|---|
| | | | | Historic | Current | |
| Port of Portland - Terminal 2 #2769 | 10 | W | Current: marine terminal; Historic: marine terminal, shipyard-ship construction during WWII (unknown to 1949), exporter of agricultural and manufactured wood products. | shipyard operations were performed in areas that were subsequently filled to create the current Facility. Thus, none of these operations were conducted in areas that are currently within the Willamette River.A dock was removed from the site in 1966 and then in 1987 two docks were added. Activities at site included loading and unloading by SSA of break-bulk lumber, plywood, pulp and products on vessels, railcars, trucks, agricultural and manufactured wood products. | Infrequent loading and unloading by SSA of break-bulk lumber, plywood, pulp and products on vessels, railcars, and trucks. | The Facility is built largely on filled riverbed. In 1927 fill was placed east of the old sawmill operations. Creation of Slip No.2 in 1923. Dredging of the slip at the WISCO shipyard (non Port of Portland Terminal 2) in the 1940s. In 1966 a dock was removed and the area filled. Backfilling occurred downstream of Terminal 2 in the 1950s and 1960s. Backfilling occurred upstream of Terminal 2 in 1987. In 1981 the dredge berth was filled after it was relocated. Fill source not identified. |
| Sulzer Bingham Pumps #1235 | 10.3 | W | Equipment pump manufacturer | Several large pieces of metal slag are located along the Willamette River bank, at and above the surface water level. Information regarding the lease of submerged lands and/or overwater structures was not found in Oregon DSL files. | | By 1947 the site was filled with layers of sand and layers of silt and sand mixed with brick and wood debris up to 22.5 feet bgs. |
| UPRR Albina Rail Yard #178 | 10.4 | E | Switching yard | There were several former docks located along the shoreline between RM 10 and 11 originating from 1936. Two docks are still visible on 2005 aerial photo. There is no information regarding the types of activities associated with the former docks. | None | The Albina rail yard is situated over both hydraulic fill and fine-grained alluvium. The hydraulic fill may be 10 feet to 20 feet in thickness and most likely originated from sediments previously dredged from the river. |
| Port of Portland-Terminal 1 North #3377 | 10.6 | W | Current: lumber company operations (Emerson hardwood), CSO shaft and tunneling operations (COP); Historic: Sawmill, planning mill, steam plant/drying kilns, and lumber storage yard, Ship repair and shipbuilding by Oregon War Industries (<1946), Retail coal and wood dealer, Edible oil refiners, finished wood products, retail fuel wood dealer, wholesale dried fruit. | In 1908 a coal and gravel dock was located along the river. In 1946 a single-berth dock was used as a lumber terminal. Loading and unloading of items such as lumber, logs, paper products, steel, containers, and bagged grain. All overwater operations ceased in 1986, but dock berth structures are still present along the shoreline. | None, dock berth structures still present. | Filled submersible and submerged lands. Filling was occurring in 1957. Fill source not identified. The fill consists of sandy gravel, sand, silty sand with traces of clayey silt and wood debris. Albina Ferry Slip (Slip 1) created in 1914. |
| Port of Portland - Terminal 1 South (Riverscape) #2642 | 10.9 | W | Current: mixed com'l and residential; Historic: marine terminal, emerson hardwood dock, willamette iron and steel dock. | Docks were constructed in the early 1900s. Activities included loading and unloading of items such as lumber, logs, paper products, steel, containers, and bagged grain. All overwater ceased in 1986 and most dock/pier structures have been removed. | None | Filled submersible and submerged lands in early 1900s. Fill source not identified. |

Notes (sources)

[1] Information obtained from CSM site summaries (2005) and site summary addenda (2006)

[2] Known or documented spills at the sites were obtained from DEQ ERIS database for the period of 1995 to 2006.

[3] Additional information obtained from Map 4.1-12a-f.



BZTO104(e)033245

Table 4.4-1. Summary of TSS samples collected by the LWG, November 2005-April 2006.

| Data Need | Sample Parameter | Location | River Flow[1] cubic feet per second (cfs) | Date Sampled | Sampling Methodology | No. Samples per Event | Total No. Samples |
|---|---|---|---|---|---|---|---|
| Upstream TSS | TSS | RM 23 | 15,900 | 11/5/2005 | Vertically and horizonatally integrated transect sample, peristaltic pump | 1 | 10 |
| | | | 20,000 | 2/21/2006 | | 1 | |
| | | | 28,000 | 4/5/2006 | | 1 | |
| | | RM 16[2] | 170,000 | 1/19/2006 | Horizontally integrated transect sample, Nisken Bottle | 1 | |
| | | RM 23 | 145,000 | 2/3/2006 | | 1 | |
| | | | 109,000 | 2/7/2006 | | 1 | |
| | | | 67,700 | 12/22/2005 | Vertically and horizonatally integrated transect sample, peristaltic pump | 1 | |
| | | | 54,000 | 2/11/2006 | | 1 | |
| | | | 41,500 | 3/3/2006 | | 1 | |
| | | | 32,300 | 3/1/2006 | | 1 | |
| TSS Study Area | | RM 2 (west, mid, east)<br>Multnomah Channel (west, mid, east)<br>RM 6.3 (west, mid, east)<br>RM 11 (west, mid, east) | <29,000 | 4/3/2006<br>4/4/2006 | Vertically integrated transect samples, peristaltic pump | 12 samples @ mid-flood tide and 12 samples @ mid-ebb tide for each location | 24 |

**Notes:**

[1] Daily mean discharge as measured by USGS Gauge No. 14211720 on the upstream side of Morrison Bridge, Portland, OR, RM 12.8 - http://waterdata.usgs.gov/or/nwis/dv/?site_no=14211720&PARAmeter_cd=00060

[2] TSS sample collected at RM 16 during the January 2006 high flow surface water sampling event

NA = not applicable



BZTO104(e)033246

Table 4.4-2. Upstream Samples TSS and TOC results, November 2005-April 2006.

| Sample Date | Flow Rate ($ft^3$/sec) | River Mile | Station ID | Sample ID | Y Northing | X Easting | Validated Results | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Total suspended solids | Total organic carbon |
| | | | | | | | mg/l | mg/l |
| 11/22/2005 | 16,000 | 23.7 | LW2-HMW05 | LW2-HMW05-001 | EDI 1 - 632374.723<br>EDI 2 - 632330.845<br>EDI 3 - 632289.286<br>EDI 4 - 632245.046 | EDI 1 - 7657149.114<br>EDI 2 - 7657037.655<br>EDI 3 - 7656938.180<br>EDI 4 - 7656828.995 | 8 [2] | NS[2] |
| 12/22/2005 | 67,000 | 23 | | LW2-HMW05-002 | | | 50 | NS |
| 01/19/2006[1] | 170,000 | 16 | | LW3-W1024 | | | 49 | NS |
| 02/03/2006 | 145,000 | 23 | | LW2-HMW05-003 | | | 39 | NS |
| 02/07/2006 | 109,000 | | | LW2-HMW05-004 | | | 25 | NS |
| 02/11/2006 | 54,000 | | | LW2-HMW05-005 | EDI 1 - 734734.993 | EDI 1 - 7550380.627 | 20 | NS |
| 02/21/2006 | 20,000 | | | LW2-HMW05-106 | EDI 2 - 734911.609 | EDI 2 - 7549367.197 | 7 | NS |
| 02/21/2006 | | | | LW2-HMW05-206 | EDI 3 - 735054.443 | EDI 3 - 7548551.139 | 7 | NS |
| 03/01/2006 | 32,300 | | | LW2-HMW05-007 | EDI 4 - 735133.139 | EDI 4 - 7548046.806 | 9 | NS |
| 03/03/2006 | 41,500 | | | LW2-HMW05-108 | | | 22 | 2.4 |
| 03/03/2006 | | | | LW2-HMW05-208 | | | 22 | 2.2 |
| 03/03/2006 | | | | LW2-HMW05-308 | | | 21 | 2.2 |
| 04/05/2006 | 28,000 | | | LW2-HMW05-009 | | | 9 | 2.4 |

**Notes:**

NS - Not Sampled

EDI - equal discharge increment

[1] - TSS sample collected at RM 16 during January surface water event

[2] - Result from EDI composite sample



BZTO104(e)033247

Table 4.4-3. LWR Samples TSS and TOC results, April 2006.

| Sample Date | Flow Rate ($ft^3$/sec) | River Mile | Station ID | Sample ID | Y Northing | X Easting | Validated Results | | Tide | Location |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Total suspended solids mg/l | Total organic carbon mg/l | | |
| 04/03/06 | 29,000 | 2 | LW2-HMW01 | LW2-HMW01-001-C | 725492.6198 | 7616888.2723 | 8 | 1.9 | rising | channel |
| 04/03/06 | | 2 | LW2-HMW01 | LW2-HMW01-002-C | 725490.4907 | 7616889.2330 | 9 | 1.8 | falling | channel |
| 04/03/06 | | 2 | LW2-HMW01 | LW2-HMW01-001-E | 725109.6955 | 7617420.7472 | 9 | 1.8 | rising | east |
| 04/03/06 | | 2 | LW2-HMW01 | LW2-HMW01-002-E | 725096.2397 | 7617408.5067 | 9 | 1.8 | falling | east |
| 04/03/06 | | 2 | LW2-HMW01 | LW2-HMW01-001-W | 725906.2974 | 7616337.2681 | 8 | 1.8 | rising | west |
| 04/03/06 | | 2 | LW2-HMW01 | LW2-HMW01-002-W | 725901.5942 | 7616335.9179 | 7 | 1.8 | falling | west |
| 04/04/06 | | 6.3 | LW2-HMW03 | LW2-HMW03-001-C | 706119.3953 | 7624281.1149 | 8 | 1.9 | rising | channel |
| 04/04/06 | | 6.3 | LW2-HMW03 | LW2-HMW03-002-C | 706120.6197 | 7624270.2138 | 8 | 2.1 | falling | channel |
| 04/04/06 | | 6.3 | LW2-HMW03 | LW2-HMW03-001-E | 706501.7279 | 7624501.4206 | 7 | 1.9 | rising | east |
| 04/04/06 | | 6.3 | LW2-HMW03 | LW2-HMW03-002-E | 706501.3909 | 7624506.7571 | 8 | 2.1 | falling | east |
| 04/04/06 | | 6.3 | LW2-HMW03 | LW2-HMW03-001-W | 705683.0457 | 7624028.5994 | 9 | 1.8 | rising | west |
| 04/04/06 | | 6.3 | LW2-HMW03 | LW2-HMW03-002-W | 705683.1730 | 7624020.1468 | 9 | 2.1 | falling | west |
| 04/04/06 | | 11 | LW2-HMW04 | LW2-HMW04-001-C | 690102.1837 | 7642525.0915 | 8 | 2.1 | rising | channel |
| 04/04/06 | | 11 | LW2-HMW04 | LW2-HMW04-002-C | 690107.6296 | 7642524.1304 | 9 | 2.2 | falling | channel |
| 04/04/06 | | 11 | LW2-HMW04 | LW2-HMW04-001-E | 689784.8742 | 7642209.8672 | 8 | 2.1 | rising | east |
| 04/04/06 | | 11 | LW2-HMW04 | LW2-HMW04-102-E | 690301.8370 | 7642736.8674 | 9 | 2.2 | falling | east |
| 04/04/06 | | 11 | LW2-HMW04 | LW2-HMW04-202-E[1] | 690302.6549 | 7642737.8484 | 9 | 2.3 | falling | east |
| 04/04/06 | | 11 | LW2-HMW04 | LW2-HMW04-302-E[2] | 690302.6549 | 7642737.8484 | 11 | 2.2 | falling | east |
| 04/04/06 | | 11 | LW2-HMW04 | LW2-HMW04-001-W | 690298.0377 | 7642743.6438 | 12 | 2.0 | rising | west |
| 04/04/06 | | 11 | LW2-HMW04 | LW2-HMW04-102-W | 689795.9499 | 7642217.0371 | 9 | 2.4 | falling | west |
| 04/04/06 | | 11 | LW2-HMW04 | LW2-HMW04-202-W[1] | 689785.5972 | 7642202.9812 | 10 | 2.2 | falling | west |
| 04/04/06 | | 11 | LW2-HMW04 | LW2-HMW04-302-W[2] | 689785.5972 | 7642202.9812 | 10 | 2.2 | falling | west |
| 04/03/06 | | Multnomah Channel | LW2-HMW02 | LW2-HMW02-001-C | 719997.5289 | 7614816.7273 | 8 | 1.9 | rising | channel |
| 04/03/06 | | Multnomah Channel | LW2-HMW02 | LW2-HMW02-002-C | 720003.4937 | 7614816.5317 | 8 | 1.9 | falling | channel |
| 04/03/06 | | Multnomah Channel | LW2-HMW02 | LW2-HMW02-001-E | 720396.0370 | 7614846.2195 | 8 | 1.9 | rising | east |
| 04/03/06 | | Multnomah Channel | LW2-HMW02 | LW2-HMW02-002-E | 720392.9609 | 7614848.6009 | 7 | 1.9 | falling | east |
| 04/03/06 | | Multnomah Channel | LW2-HMW02 | LW2-HMW02-001-W | 719778.5360 | 7614805.6372 | 7 | 1.9 | rising | west |
| 04/03/06 | | Multnomah Channel | LW2-HMW02 | LW2-HMW02-102-W | 719783.4178 | 7614801.7639 | 9 | 1.8 | falling | west |
| 04/03/06 | | Multnomah Channel | LW2-HMW02 | LW2-HMW02-202-W[1] | 719790.9055 | 7614796.0088 | 9 | 1.9 | falling | west |
| 04/03/06 | | Multnomah Channel | LW2-HMW02 | LW2-HMW02-302-W[2] | 719790.9055 | 7614796.0088 | 10 | 1.8 | falling | west |

Notes:

[1] - Field Replicate

[2] - Field (Homogenate) Split



BZTO104(e)033248

Table 4.5-1. Summary of Sediment Transport Characteristics, RMs 0-26.

| Reach ID | RMs | Estimated Average Cross-Sectional Area | Bathymetric Change 2001-2004[a] | Average Bed Shear (high flow) | Percentage Fine-Grained Surface Sediment Area[b] |
|---|---|---|---|---|---|
| Upriver | 15.5-26 | NA | NA | 5.8 $N/m^2$ | NA |
| Downtown Corridor | 11 -15.5 | 34,000 | Net deepening in areas of the main channel, primarily ≤1ft; No change or small-scale deepening dominant in nearshore areas, primarily ≤1ft. | 3.4 $N/m^2$ | NA |
| Upper Study Area 2 | 10-11 | 49,000 | Nearly equal proportion of small scale deepening, shallowing, and no-change portions in nearshore area. Predominantly minor net deepening≤1ft in the channel. Several feet of deposition in the deep areas (dredged holes/borrow pits) on western side of channel. | 5.0 $N/m^2$ | 16 |
| Upper Study Area 1 | 9.2-10 | 63,000 | Majority of channel area shows up to 2 feet of net deposition, up to several feet thick on the broad western channel flank. | 2.7 $N/m^2$ | 23 |
| Upper ISA | 6.9-9.2 | 68,000 | Upper portion of channel is depositional. Areas showing deepening and/or no change predominate the remainder of this reach, likely influenced by anthropogenic factors. | 1.7 $N/m^{2\,c}$<br>0.5 $N/m^2$ (Swan Island Lagoon) | 42 |
| Middle ISA | 5.0-6.9 | 57,000 | Net deepening (≤1 ft) in majority of both channel and nearshore areas. Sand wave migration evident in the channel. Minor shoaling in dredged areas. | 4.2 $N/m^2$ | 17 |
| Lower ISA | 3.0-5.0 | 65,000 | Most of main channel area shows no net change, though net shoaling (≤ 1 ft) observed on channel margins. Deepening dominates nearshore areas, likely due to anthropogenic factors. | 1.4 $N/m^2$ | 25 |
| Lower Study Area | 2.0-3.0 | 68,000 | Minor changes in channel (≤1 ft); apparantly natural deepening (≤5 ft) along western shoreline, shoaling (≤2 ft) along eastern shoreline and eastern borrow pits. | 0.7 $N/m^2$ | 73 |
| Downstream | 0.0-2.0 | 70,000 | Minor changes in channel; apparantly natural deepening ( ≤5 ft) along western shoreline, and shoaling (≤2 ft)along eastern shoreline and eastern borrow pits. | 1 $N/m^2$ | NA |

**Notes:**

[a] Details of the 2001-2004 bathymetric change evaluation results are presented in Integral 2004x (Round 1 Site Characterization Summary Report).

[b] Estimated based on silt and clay content from grain-size data in the Nature and Extent database.

[c] Outside of Swan Island Lagoon.

NA: Not available.

BZTO104(e)033249

Table 5.1-1. Site Summary Status

| ECSI | Site | Additional Information Identifed by DEQ | Full Site Summary or Addendum to be Submitted for Round 2 Report | Nature of New Information | New Information Relevant to site CSM? | Notes |
|---|---|---|---|---|---|---|
| 794 | ACF Industries | Yes | Addendum | FS, arsenic hot spot removal, stormwater pipe historical pathway, NFA issued | Yes | |
| 2446 | Alder Creek Lumber Company | Not in DEQ CUP | | | No | |
| 970 | Anderson Brothers Property | Yes | | Additional soil, GW, catch basins samples, implementation of BMPs | No | New data confirms pathway information in original SS |
| 1528 | ARCO Bulk Terminal | Yes | Addendum | SCM monitoring, stormwater data | Yes | |
| 398 | Arkema | n/a | Addendum | Revised Site Summary | Yes | |
| 2361 | Babcock Land Company | Not in DEQ CUP | | No new site information | No | |
| 3395 | BNSF (Willbridge Railyard, Kleenblast | n/a | Report | First Site Summary | Yes | |
| 2362 | Burgard Industrial Park - Boydstun Metals | Not in DEQ CUP | | No new site information | No | |
| | Burgard Industrial Park - Noncontiguous | Not in DEQ CUP | | No new site information | No | |
| 2375 | Burgard Industrial Park - Portland Container Repair | Not in DEQ CUP | | No new site information | No | |
| 2355 | Burgard Industrial Park - Schnitzer Steel | No | | No new site information | | |
| 138 | Burgard Industrial Park (NW Pipe) | Yes | | Additional soil and GW data (VOCs), stormwater data and catch basin data | No | New data confirms pathway information in original SS |
| 2454 | Calbag Metals - Front Avenue | Yes | Addendum | Extensive onsite catch basin and offsite storm pipe investigation and cleanout. Historic stormwater pathway complete, NFA | Yes | |
| 271 | Cascade General (Portland Shipyard) | n/a | Report | Revised Site Summary | Yes | |
| 2424 | Chase Bag | Not in DEQ CUP | | | No | |
| 1281 | Chevron Asphalt Refinery | n/a | Report | First Site Summary | Yes | |
| 2426 | Christenson Oil | No | | | | |
| 2452 | City of Portland - BES Water Pollution Control Lab | n/a | | No new sampling has been conducted at the site | No | |
| 29 | Columbia American Plating | Yes | | Screening level risk evaluation, SOW for additional work under PPA | No | |
| 3295 | Consolidated Metco | No | | | | |
| 2363 | Crawford Street Corp | No | | | | |
| 137 | ExxonMobil Oil Terminal | Yes | Addendum | GW investigations, remediation system expansion, work plan for investigation of storm sewers | Yes | |
| 2364 | Foss Maritime/Brix Marine | Yes | | Quarterly GW monitoring, seep and related sampling, no data available | No | |
| 2365 | Fred Devine Diving and Salvage | No | | | | |
| 2366 | Freightliner TMP | Yes | | Additional GW data | No | New data confirms pathway information in original SS |
| 115 | Freightliner TMP2 (Parts Plant) | No | | | | |
| 1239 | Front Avenue LP Properties | Yes | Addendum | Additional soil and GW data for TFA parcel, invest. of slag material along riverbank | Yes | |
| 84 | Gasco (NW Natural, Koppers, Pacific Northern Oil) | n/a | Report | Revised Site Summary | Yes | |
| 4003 | GE Decommisioning | New | Report | First Site Summary | Yes | |
| 2370 | Georgia Pacific - Linnton (Morse Bros.) | No | | | | |
| 2440 | Goldendale Aluminum | Yes | Report | First Site Summary | Yes | |
| 49 | Gould Electronics, Inc./ NL Industries | No | | | | |



BZTO104(e)033250

Table 5.1-1. Site Summary Status

| ECSI | Site | Additional Information Identifed by DEQ | Full Site Summary or Addendum to be Submitted for Round 2 Report | Nature of New Information | New Information Relevant to site CSM? | Notes |
|---|---|---|---|---|---|---|
| 117 | GS Roofing Products (Genstar) | No | | | | |
| 1155 | Gunderson | n/a | Addendum | Paving a large portion of the site, discovery of a seep, and a soil and groundwater evaluation of the riverbank. | | |
| 2371 | Jefferson-Smurfit | No | | | | |
| 2441 | Joseph T. Ryerson & Son | Not in DEQ CUP | | | No | |
| 1096 | Kinder Morgan Linnton Terminal (GATX) | n/a | | Continued IRAM monitoring | No | New data confirms pathway information in original SS |
| 2372 | Lakeside Industries | No | | | | |
| 1189 | Linnton Oil Fire Training Grounds | n/a | | No new sampling has been conducted at the site | No | |
| 2373 | Linnton Plywood | No | | | | |
| 2350 | Mar Com | Yes | Addendum | North Parcel investigation, floating dock removed in 2004 | Yes | |
| 2352 | Marine Finance Corporation (Hendren Tow Boats) | Yes | Addendum | Additional soil data, soil removal and site cleanup, paving of entire site, PPA, NFA | Yes | |
| 134 | McCall Oil | No | | | | |
| 74 | McCormick & Baxter Creosoting | Yes | | Additional routine GW monitoring, new well installation | No | New well installation-results show NAPL has not migrated laterally or vertically |
| 135 | McWhorter Technologies | Not in DEQ CUP | | | No | |
| 2374 | Olympic Pipeline Co. | No | | | | |
| 141 | Oregon Steel Mills | n/a | Report | Revised Site Summary | Yes | |
| 1036 | Owens Corning - Linnton | No | | | | |
| 2642 | Port of Portland - Terminal 1 North | n/a | Report | First Site Summary | Yes | |
| 2642 | Port of Portland - Terminal 1 South | n/a | Report | First Site Summary | Yes | |
| 2769 | Port of Portland - Terminal 2 | n/a | Report | First Site Summary | Yes | |
| 2356 | Port of Portland - Terminal 4, Slip 1 | n/a | Report | First Site Summary | Yes | |
| 272 | Port of Portland - Terminal 4, Slip 3 | n/a | Report | Revised Site Summary | Yes | |
| 172 | Port of Portland - Terminal 4, Toyota Auto Storage | n/a | Report | First Site Summary | Yes | |
| 2353 | Portland General Electric - Harborton | No | | | | |
| 2013 | Premier Edible Oils (Schnitzer Investment) | Yes | | White paper commenting on existing reports | No | No new information on site |
| 155 | Rhone Poulenc (SLLI) | n/a | Report | Revised Site Summary | Yes | |
| 2376 | RK Storage and Warehousing | Not in DEQ CUP | | No new sampling has been conducted at the site | No | |
| 2437 | RoMar Transportation Systems | Yes | | Level II ESA, Additional soil, GW, and catch basin data; hotspot PCB soil removal, NFA | No | New data confirms pathway information in original SS |
| 2104 | Santa Fe Pacific Pipeline | n/a | | No new sampling has been conducted at the site | No | |
| 395 | Schnitzer Investment - Doane Lake (Air Liquide American Corp.) | Not in DEQ CUP | | No new sampling has been conducted at the site | No | |
| 2442 | Schnitzer Investment - Kittridge | No | | | | |
| 2377 | Shaver Transportation | No | | | | |
| 183 | Siltronics | n/a | Report | EPA-requested report revision | Yes | |
| 2980 | South Rivergate Industrial Park | No | | | | |
| 1989 | ST Services/Shore Terminal | No | | | | |
| 1235 | Sulzer Bingham Pumps | Yes | Addendum | Additional stormwater and catch basin sediment investigation and cleanout, implementation of BMPs, medium-priority site | Yes | |



BZTO104(e)033251

Table 5.1-1. Site Summary Status

| ECSI | Site | Additional Information Identifed by DEQ | Full Site Summary or Addendum to be Submitted for Round 2 Report | Nature of New Information | New Information Relevant to site CSM? | Notes |
|---|---|---|---|---|---|---|
| 2117 | Texaco/Equilon Enterprises - Pipeline | No | | | | |
| 169 | Texaco/Equilon Enterprises-Bulk Terminal | No | | | | |
| 170 | Time Oil | n/a | Report | Revised Site Summary | Yes | |
| 2367 | Transloader International (General Construction) | Not in DEQ CUP | | No new sampling has been conducted at the site | No | |
| 277 | Triangle Park (Riedel Environmental) | Yes | | Phase II ESA for PPA, Additional soil and GW data | No | New data confirms pathway information in original SS |
| 1160 | Trumbull Asphalt Plant | No | | | | |
| 178 | UPRR Albina Railyard | n/a | Report | 2000-2004 Stormwater data reported | Yes | |
| 1641 | US ACOE - Portland Moorings | No | | | | |
| 1338 | US Coast Guard - Marine Safety Station | No | | | | |
| 330 | Van Water and Rogers | Yes | | GW remediation occuring under RCRA, Additional shallow soil and GW data confirming VOC contamination | No | New data confirms pathway information in original SS |
| 2066 | Willamette Cove | Yes | Addendum | Riverbank Sampling | Yes | |
| 1549 | Willbridge Bulk Fuel Facility | n/a | Addendum | Shoreline well installation | Yes | |



BZTO104(e)033252

Table 5.1-2. Upland Site Pathway Assessment Summary.

| Site Name | ECSI # | River Mile | River Bank | Potential Upland and Over-Water Sources | Pathway Summary | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Groundwater | | | | Direct Discharge Storm/Wastewater | | | Direct Discharge Overwater Discharges | | | Overland Transport | | | Riverbank Erosion | | |
| | | | | | COIs | Potentially Complete Pathway | Historic/ Current | NAPL | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current |
| **ACF Industries** | 794 | 4 | West | Former UST area, sandblasting, painting, adjacent rail tracks | | d | | Y(H) | 1,4,7 (Stormwater Ditch) | a | H | | d | | | d | | | d | |
| **Alder Creek Lumber Co.** | 2446 | 2.7 | West | Wood waste leachate, private outfalls, overwater dock, potentially contaminated dredge material | NS | c | ? | ? | 11 | c | H,C | NS | c | ? | 11 | c | ? | 11 | a | H.C |
| **Anderson Brothers** | 970 | 8 | East | Former UST, paint spill area, historic waste disposal system | NS | c | ? | ? | 11 | c | H,C? | | d | | | d | | | d | |
| **ARCO** | 1528 | 4.9 | West | Truck-loading rack area, remanufacturing warehouse, tank farms, historic spill areas, groundwater plume, seepage from interceptor well and seawall, dock operations | 1,3,4,7 | a | H,C | Y | 1,3,4,7 | b | H,C | 3,4,7 | b | H,C | | d | | | d | |
| **Arkema** | 398 | 7.3 | West | Former unlined MPR pond and trench, historic discharge through pipe, unpaved areas with contamined soils, historic spill areas, stormwater outfalls, contaminated groundwater plume | 1,2,5,7,10 | a | H,C | Y | 1,5 | a | H | NS | c | H | 5,7 | c | H | 5,7 | b | H,C |
| **Babcock Land Co.** | 2361 | 4.4 | West | Foundry sand, historic dock operations | NS | c | ? | ? | NS | c | ? | NS | c | H | NS | c | ? | NS | c | ? |
| **BNSF** | 3395 | 8 | West | DTL fueling and switching operation, former AST, historic track switch lubrication, diesel spill area | NS | c | ? | N? | 7 | c | H,C | | d | | | d | | | d | |
| **Burgard Ind. Park - Boydstun Metals, Portland Blast Media** | 2362 | 4.1 | East | Oil storage area, contaminated soils, stormwater outfall, unknown source | 1 | c | H,C | N | 3,6,7 | c | H | | d | | | d | | | d | |
| **Burgard Ind. Park - Noncontiguous Properties** | N/A | 4.1 | East | Former shipyard sewer and stormwater discharges, groundwater contamination on NW Pipe leased property (2) | 1,2,4 | c | H,C | Y | 11 | c | ? | | d | | NS | c | ? | NS | c | ? |
| **Burgard Ind. Park - NW Pipe** | 138 | 4 | East | ASTs and 55-gallon drums, pipe lining and coating building, transformer storage area, asphalt dipper tank, industrial well, dust suppressant use, alleged solvent and petroleum dumping areas, catch basins and storm drains | 1,3,4,7 | c | H,C | Y | 1,3,4 | b | H, C? | | d | | | d | | | d | |
| **Burgard Ind. Park - Portland Container Repair** | 2375 | 4 | East | PCE groundwater contamination (source unknown), PCB-contaminated soil (since removed), fuel truck parking area, wash pad area | 1 | c | H,C | N | 4 (/) | c | H,C? | | d | | | d | | | d | |
| **Burgard Ind. Park - Schnitzer Steel, Calbag Metals** | 2355 | 4 | East | Former NW Oil Co. tanks, former sanitary sewer and stormwater discharges, former shipyard shipways, ASR on ground surface, storm drains and outfalls, over-water activities | 1,4,6 | c | H.C | N | 1,4,6 (?) | b | H,C | 1,4 | b | H,C? | NS | c | ? | 3,4,5 | c | H |
| **Calbag Metals - Front Ave.** | 2454 | 8.5 | West | Stormwater runoff to Outfall 19 | | d | | N | 6,7,9 | a | H | | d | | | d | | | d | |
| **Cascade General (Portland Shipyard)** | 271 | 8.5 | East | Paint shed and blast booth area: BWTP; Buildings 43,50, and 80 areas; Building 73, 4, and 58; WSI storage area: substations; USTs; N. Channel Ave. fabrication site; drydocks and berths | 1,7 | c | H,C | N | 1,3,4,6,7 | c | C, H | 3,7,8,9 | b | H?,C | NS | c | ? | NS | c | ? |
| **Chase Bag** | 2424 | 9.2 | West | Subsurface groundwater VOC plume, former UST, observed leaking drums along east and south boundaries, observed pool of petroleum substance | 1 | c | ? | ? | NS | c | ? | | d | | | d | | | d | |
| **Chevron Asphalt Refinery** | 1281 | 8 | West | Historic spills and boilovers | 1,3,4,7 | c | H,C | Y | 1,3,4,7 | c | ? | | d | | | d | | | d | |



BZTO104(e)033254

Table 5.1-2. Upland Site Pathway Assessment Summary.

| Site Name | ECSI # | River Mile | River Bank | Potential Upland and Over-Water Sources | Pathway Summary | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Groundwater | | | | Direct Discharge Storm/Wastewater | | | Direct Discharge Overwater Discharges | | | Overland Transport | | | Riverbank Erosion | | |
| | | | | | COIs | Potentially Complete Pathway | Historic/ Current | NAPL | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current |
| **Christenson Oil** | 2426 | 8.8 | West | Historic spills, stormwater conveyance, unnamed creek | NS | c | ? | ? | 1,3,4,7 | a | H, C? | | d | | | d | | | d | |
| **City of Portland - BES** | 2452 | 6.1 | East | Historic operations (lumber mill, fruit box manufacturing), fill and debris material, subsurface electrical conduit, historic lumber mill deck, WPCL | | d | | N | 11 | c | H,C | 5 | c | H | 4,7 | c | ? | NS | c | ? |
| **Columbia American Plating** | 29 | 9.5 | East | Spills and releases | 1,2,7,10 | c | H,C | N | 1,2,7,10 | b | H | | d | | | d | | | d | |
| **Consolidated Metro** | 3295 | 2.2 | East | PAH-contaminated fill material, cutting fluid spills, catch basins and storm drains | 3,4 | c | H,C | Y | 3,4 | a | H,C | | d | | | d | | | d | |
| **Crawford Street Corp.** | 2363 | 6.5 | West | Historic and current manufacturing operations, historic and current site runoff, sandblast fill material, former UST, electrical transformer, railroad right-of-way, historic dock operations, historic private outfalls, beach metal debris | 11 | c | C | N | 1,3,4,6,7 | c | ? | 1,3,4,6,7 | c | H | 1,3,4,6,7 | b | H,C | 1,3,4,6,7,9 | b | H,C |
| **Exxon/Mobil Oil Terminal** | 137 | 5 | West | North and Center tank farms, fuel loading rack,over-water fuel transfer spills | 1,3,4,7 | a | H,C | Y | 1,4 | b | H,C | 1,3,4 | c | H,C | | d | | | c | H |
| **Foss Maritime/Brix Marine** | 2364 | 5.7 | West | Former gasoline and lube oil UST and pipelines, former gasoline dispenser area, former 30-weight oil pipeline area, current lube oil and diesel UST and pipelines, catch basins, transformers, overwater activities (vessel servicing and emmissions) | 1,3,4,7 | b | H,C | Y | NS | c | ? | 1,2,3,4,7,8 | b | H,C? | NS | c | ? | NS | c | ? |
| **Fred Devine Diving and Salvage** | 2365 | 8 | East | Maintenance operations, oil/water separators, former USTs, ASTs, PGE transformers, catch basins, over-water spills, vessel emisions, storage area NE of warehouse | NS | c | ? | ? | 2,3,4,7,9 | c | H,C | 2,3,4,7,9 | c | H,C | 4,7,8, 9 | c | H,C | NS | c | ? |
| **Freightliner TMP** | 2366 | 8.5 | East | Former USTs, former wheel paint booth, stormwater discharges | 1,2,4 | c | H,C | Y | 7 | c | H,C | | d | | | d | | | d | |
| **Freightliner TMP2 (Parts Plant)** | 115 | 9.3 | East | Former UST, former wet filter paint booths, stormwater discharges | 1,2,4 | c | H,C | Y(H) | 7 | c | H,C | | d | | | d | | | d | |
| **Front Avenue LP Properties (CMI NW, Hampton, Lonestar NW/Glacier NW, Tube Forging)** | 1239 | 8.3 | West | Slag fill material, Parcels 1,2, and 3 former and current operations, caustic-lube oil and graphic lube oil discharges to stormdrain, overwater activities | 1,2,3,4,6,7 | c | H,C | Y | 1,2,3,4,6,7 | c | H,C? | 4 | b | H,C | 1,2,3,4,7 | c | ? | 7 | c | ? |
| **Gasco (NW Natural, Koppers, Pacific Northern Oil)** | 84 | 6 | West | Former retort area, former tar processing area, former light oil plantKopperCo. Plan/Current KI tank Farm, former naphthalene plant, former coke oven area, former pitch plant/tar loading area, former tar settling ponds, former Kopper co./Current KI pencil pitch storage area, former spent oxid storage area, MGP by product incorporation into fill, overwater activities, historic direct discharge of tar and oil to river | 1,3,7,10 | b | H,C | Y | 1,3,7,10 | a | H,C | 3,4 | c | H, C? | | d | | 1,3,7 | a | H,C |



BZTO104(e)033255

Table 5.1-2. Upland Site Pathway Assessment Summary.

| Site Name | ECSI # | River Mile | River Bank | Potential Upland and Over-Water Sources | Pathway Summary | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Groundwater | | | | Direct Discharge Storm/Wastewater | | | Direct Discharge Overwater Discharges | | | Overland Transport | | | Riverbank Erosion | | |
| | | | | | COIs | Potentially Complete Pathway | Historic/ Current | NAPL | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current |
| **GE Decommissioning** | 4003 | 9.5 | West | Former equipment handling and pressure washing areas, report of subsurface oil in storage yard, former transformer pit outlet drain, catch basins and storm drains | NS | c | ? | ? | 3,4,6,7 | a | H | | d | | | d | | | d | |
| **Georgia Pacific - Linnton** | 2370 | 3.6 | West | Gasoline UST and soil remediation pile, ASTs, former ACF site, former wood-treating plant, former Linnton Oil fire training grounds, dock and former overwater fueling | 1,3 | c | H,C | N | 1,3,4 | c | H,C | NS | c | ? | | d | | NS | c | ? |
| **Goldendale Aluminum** | 2440 | 10 | East | Former alumini and pitch handling operations, ASTs, former USTs, storage buildings, transformers, outfalls, overland runoff areas, historic grain shipment facility, dock operations and spills | 11 | c | H | N | 3,4,7 | c | C | 3,4,7 | a | H | 1,2,3,4,6,7 | c | H | NS | c | ? |
| **Gould Electronics/NL Industries** | 49 | 7.2 | West | Former smelter and other site operations, historical landfilling operations, surface and subsurface soil contamination, former East Doane Lake sediment, current onsite containment facility | 1,5,7,9, 10 | c | H?,C | N | 1,5,7,10 | a | H | | d | | | d | | | d | |
| **GS Roofing** | 117 | 7.5 | West | Facility operations, former USTs, storm sewer catch basins/drains, and O/W separators, former wastewater discharge, landfilled materials, railroad spur, finished products storage area | 1,2,4,6,7 | c | H,C | Y(H) | 1,3,4,7 | b | H,C? | | d | | NS | c | ? | NS | c | ? |
| **Gunderson** | 1155 | 8.8 | West | Former TCA tank, marine paint and blast areas, launchways, former salvage yard, hazardous materials storage areas, marine barge launchways, railcar storage on outfitting dock | 1,3,4, 6, 7 | a | H,C | N | **4,6,7** | c | H, C? | **1,7** | b | H,C | **1,3,6,7** | a | H, C | 1,3,6,7 | a | H,C |
| **Jefferson Smurfit** | 2371 | 4 | East | Former fuel ASTs and USTs, stormwater outfalls | 3,4 | c | H | ? | 4,7 | c | H,C | | d | | NS | c | ? | NS | c | ? |
| **Kinder Morgan Linnton Terminal (GATX)** | 1096 | 4.1 | West | Petroleum fuel storage areas, dock operations | 1,3,4,7 | a | H,C | Y | 7 | c | H?,C | 1 | a | H, C? | | d | | NS | c | ? |
| **Lakeside Industries** | 2372 | 8.5 | West | Former dry wells, Gunderson VOC groundwater plume, dock operations | 1 | c | H,C | N | NS | c | ? | NS | c | ? | NS | c | ? | NS | c | ? |
| **Linnton Oil Fire Training Gds.** | 1189 | 3.5 | West | Residual contaminated soil pockets (remaining after remediation), historic main training area, upper and lower ponds, historic north drainage system (direct discharge to river) | | d | | N | 3,10 | a | H | | d | | 3 | c | H | | d | |
| **Linnton Plywood (Columbia River Sand and Gravel)** | 2373, 2351 | 4.7 | West | Eroded bank at maintenace shop area; private outfalls, tug and barge operations at CRSG and historic log operations | 4,7 | d | H,C | N | 1,2,3,4,7 | b | H | 4,6,7 | c | H | 3,4,7 | b | H | 4,7 | c | ? |



BZTO104(e)033256

Table 5.1-2. Upland Site Pathway Assessment Summary.

| Site Name | ECSI # | River Mile | River Bank | Potential Upland and Over-Water Sources | Pathway Summary | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Groundwater | | | | Direct Discharge Storm/Wastewater | | | Direct Discharge Overwater Discharges | | | Overland Transport | | | Riverbank Erosion | | |
| | | | | | COIs | Potentially Complete Pathway | Historic/ Current | NAPL | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current |
| **Mar Com** | 2350 | 5.6 | East | **North Parcel**: stained soils, sandblast grit piles, contaminated riverbank soil. **South Parcel**: former sawmill, Building C, steel fabrication building, former warehouse, machine shop, compressor shed, paint booth, contaminated soil in knoll and SW corner, upland drydocks, historic overwater drydock | 1,2,3,4,7,8,9 | c | H,C | N | 1,2,3,4,7,8,9 | b | H,C? | 1,2,3,4,7,8,9 | c | H | 1,3,4,7 | b | H | 1,2,3,4,7,8,9 | c | H |
| **Marine Finance (Hendren Tow Boats)** | 2352 | 5.8 | West | Former metal salvage operation, former USTs, former drum storage area, former warehouse, pooled water below stormdrain, overwater dock, stormwater pipe | 1,3,4,7,8 | d | H?, C | N | NS | c | ? | 1,2,3,4,7 | a | H,C? | 1,3,4,7,8 | c | H? | 11 | c | H |
| **McCall Oil** | 134 | 7.4 | West | Bulk fuel storage, marine fuel transfers, rail fuel transfers, former CCA and solvent storage, drum storage, underground pipeline corridor, catch basins, upgradient facilities (Chevron, TFA), dock operations | 1, 2, 3, 4, 7 | c | H, C | Y | 1,2,3,4,9 | c | ? | 1,2,3,4 | b | H, C? | | d | | NS | c | ? |
| **McCormick & Baxter Creosoting** | 74 | 7 | East | Former onsite waste disposal area, former central processing area, former tank farm area, former small waste disposal areas and trench, former dock operations | 3,7,10 | a | H,C | Y | 3,7,10 | a | H | 3,7,10 | a | H | 3,7,10 | a | H | 3,7,10 | a | H |
| **McWhorter Technologies** | 135 | 8.8 | West | Historic spills or releases from tanks and pipelines, former creek | NS | c | ? | ? | 1,2,3,4,9 | a | H | | d | | | d | | | d | |
| **Olympic Pipeline** | 2374 | 3.5-7.9 | West | Pipeline pump station (area of 1995 spill), AST farm, soil stockpile area, injection pump area | 1,3,4,7 | c | H,C | N | 11 | c | H,C | | d | | | d | | | d | |
| **Oregon Steel Mills** | 141 | 2.4 | East | Former Ramsey Lake sump, riverbank fill area, stormwater collection system, historic overwater spills from oil sump transfers | | d | | Y, H | 3,4,6,7 | c | H | 3,4 | c | H | | d | | 1,3,6,7 | a | H,C |
| **Owens Corning - Linnton** | 1036 | 3.8 | West | Historic releases in pole barn storage area, former wood-processing area, former UST, process area releases in northern portion, historic releases during product unloading at dock | | d | | N | 11 | c | H | 3,4 | c | H | 3,4 | c | H,C | 3,4 | c | H,C |
| **POP - Terminal 1 North** | 3377 | 10.6 | West | Suspected former UST, former wood-filled ravine, soil beneath Warehouse No. 101 | 1,3,4,7 | c | H?, C | N | 11 | c | H?, C | NS | c | H | | d | | | d | |
| **POP - Terminal 1 South** | 2642 | 11 | West | B-5 area, B-37 (dry well area), B-38 area, B-102 area, B-3, B-11, B-97, berths | | d | | N | 11 | c | H | NS | c | H | | d | | NS | c | H |
| **POP - Terminal 2** | 2769 | 10 | West | Gearlocker, former Buildings 3060 and 3070, former USTs, berths 201, 202, and 203 | | d | | N | **3,4** | c | **H** | NS | c | H,C? | | d | | NS | c | ? |
| **POP - Terminal 4, Auto Storage** | 172 | 4.8 to 5.6 | East | Completely paved storage yard | | d | | N | 11 | c | H?,C | | d | | | d | | | d | |
| **POP - Terminal 4, Slip 1** | 2356 | 4.7 | East | Railroad tracks in western portion of OU1, former paint storage area in OU2, riverbank of Wheeler Bay | **3** | **b** | H | N | **3,5,6,7,8** | c | H,C | **3,10** | **c** | C | | d | | 3,7 | a | H,C |



BZTO104(e)033257

Table 5.1-2. Upland Site Pathway Assessment Summary.

| Site Name | ECSI # | River Mile | River Bank | Potential Upland and Over-Water Sources | Pathway Summary | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Groundwater | | | | Direct Discharge Storm/Wastewater | | | Direct Discharge Overwater Discharges | | | Overland Transport | | | Riverbank Erosion | | |
| | | | | | COIs | Potentially Complete Pathway | Historic/ Current | NAPL | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current |
| **POP - Terminal 4, Slip 3** | 272 | 5 | East | East end of Slip 3, pencil pitch in limited area of riverbank and Slip 3 bank, | 3,4 | a | H,C? | Y | **3,5,6,7,9** | c | H,C | **3,4** | c | H | | d | | 3 | a | H,C |
| **Portland General Electric - Harborton** | 2353 | 3.3 | West | Pockets of subsurface contaminated soils near monitoring wells | 3,4 | c | H | N | NS | c | H,C | | d | | | d | | NS | c | ? |
| **Premier Edible Oils** | 2013 | 4 | East | Near-surface and smear zone contaminanted soil in the following areas: 1) former NW Oil Company tank farm, 2) southern shoreline, 3) vicinity of former PEO diesel USTs, 4) WWTP, 5) former process buildings and truck-loading area; historic outfalls | 1,3,4,10 | c | H,C | Y | 1,3,4,7 | a | H | 4,7 | a | H | 1,3,4 | b | H,C | 1,3,4 | b | ? |
| **Rhone Poulenc** | 155 | 7.2 | West | Former insecticide and herbicide areas, former lake area, former East Doane Lake | 1,2, 3,4,5,6.7,1 0 | a | H,C | Y | 10 | c | H | | d | | 1,5,6.7,10 | c | H | | d | |
| **RK Storage and Warehousing** | 2376 | 4.5 | West | Former UST, former stockpiled oily sludge, former stockpiled sandblast grit | | d | | N | NS | c | H,C | NS | c | H | NS | c | ? | NS | c | ? |
| **RoMar Transportation Syst.** | 2437 | 3.8 | East | Historic releases from stored scrap metal equuipment and parts | NS | c | | | NS | c | H,C | | d | | | d | | | d | |
| **Ryerson and Son** | 2441 | 4.1 | East | Historic stormwater trench to slip, USTs | NS | c | | | NS | c | H,C | | d | | | d | | | d | |
| **Santa Fe Pacific Pipeline** | 2104 | 7 | West | Containment area at the SFPP site | | d | | Y | | d | | | d | | | d | | | d | |
| **Schnitzer Investment - Doane Lake (Aire Liquide)** | 395 | 7.3 | West | Former discharge of calcium hydroxide into Doane Lake, former acetone UST, unknown source of subsurface contamination, compressor oil spill | 10 | c | H | N | 10 | a | H | | d | | | d | | | d | |
| **Schnitzer Investment - Kittridge** | 2442 | 8.4 | West | Historic acetylene plant and lime recovery | 1,4,7 | c | H,C | N | 1,4,7,10 | a | H | | d | | | d | | | d | |
| **Shaver Transportation** | 2377 | 8.4 | West | Diesel fuel AST, former diesel fuel USTs, storage building, Overwater activities | NS | c | | | NS | c | ? | 4 | b | H, C | NS | c | ? | NS | c | ? |
| **Siltronics** | 183, 84, 155 | 6 | West | PG&E disposal ponds and adjacent lowland areas, PG&C disposal piles, potential PG&C waste product fill (WWTP area and Fab 1 and parking lot), potential disposal area, north drainage ditch and City Outfall 22, former Western Transportation tanks, Olympic pipeline, former TCE USTs, Kinder Morgan pumping station, Rhone Poulenc AG Company, contaminated fill, former Western Transportation Dock | 1,2,3,4,7, 10 | a | H,C | Y | 1,2,3,4,7, 10 | b | H, C? | 3,4 | c | H | 1,2,3,4,7, 10 | c | H | 2,3,4,7,10 | b | H,C |
| **South Rivergate Ind. Park** | 2980 | 2.5 to 3.4 | East | **J.R Simplot:** warehouse storage and transfer or urea, truck storage and transfer of anhydrous ammonia, tank storage and transfer of diesel fuel, overwater transfer of urea, anhydrous ammonia, and diesel fuel. **Ash Grove Cement**: storage tanks and manufacturing of lime products, overwater transfer of lime products. **Fort James**: UST | NS | c | | | 10 | c | H,C | 10 | a | H, C? | NS | c | H,C | NS | c | H,C |



BZTO104(e)033258

Table 5.1-2. Upland Site Pathway Assessment Summary.

| Site Name | ECSI # | River Mile | River Bank | Potential Upland and Over-Water Sources | Pathway Summary | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Groundwater | | | | Direct Discharge Storm/Wastewater | | | Direct Discharge Overwater Discharges | | | Overland Transport | | | Riverbank Erosion | | |
| | | | | | COIs | Potentially Complete Pathway | Historic/ Current | NAPL | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current |
| **ST Services/Shore Terminal** | 1989 | 5.4 | West | Terminal tank farm, dock operations | | d | | N | 11 | c | H,C? | NS | c | H,C | NS | c | ? | NS | c | ? |
| **Sulzer Bingham Pumps** | 1235 | 10.3 | West | Former and existing USTs, historic sandblasting areas, hazardous waste storage area (including radioisotopes), electrical substations, historic welding and machine operations on piers, metal slag along riverbank, potential residual contamination from historical operations | 1,4, 10 | c | H,C | ? | 7 | a | H,C? | 7 | c | ? | 6 | c | H,C | 7 | c | H,C |
| **Texaco/Equilon - Bulk Terminal** | 169 | 8.8 | West | Pipe containment, ASTs, foundary sand, historic wooden flume and utilities (possibly a preferential GW pathway) | 1,3,4 | c | H,C | Y | 1,3,4 | c | H,C | | d | | | d | | | d | |
| **Texaco/Equilon - Pipeline** | 2117 | 8.8 | West | Dock and over-water fueling activities | 1,3,4 | c | H,C | Y | 1,3,4 | c | H,C | 1,3,4 | a | H, C? | NS | c | ? | NS | c | ? |
| **Time Oil** | 170 | 4 | East | Former wood treatment formulation and storage area, former Main Terminal tank farm, former Bell Terminal tank farm, dock operations | 1,2,3,4,7,9, 10 | c | H,C | Y | 3,4,7,10 | a | H | NS | c | H | 1,3,4,7,10 | c | H,C | 3,7,9 | c | H? |
| **Transloader International** | 2367 | 5.6 | West | Dolphin and floating walkway, outfall (ownership unknown) | NS | c | ? | ? | NS | c | ? | NS | c | ? | NS | c | ? | NS | c | ? |
| **Triangle Park (Riedel Env.)** | 277 | 7.4 | East | Former lumber mills, wood-processing, rail-car servicing, oil and fuel storage, former concrete plant, former sludge disposal pond, former ASTs and USTs, former power plant, possible underground fuel storage vault, former chemical storage areas, oil spill areas, former transformer building and storage, former sandblasting and spray-painting area, former shipbuilding shops and warehouse, former steam-cleaning and lumber planing and drying area, former tug and barge operations, former equipment storage yard, former dock operations and fueling | 1,2,3,4,5,6, 7,9, 10 | a | H,C | N | 1,2,3,4,5,6,7,10 | b | H,C | 3,4,6 | c | H | 1,2,3,4,5,6, 7,10 | b | H,C | 1,2,3,4,5,6, 7,10 | b | H,C |
| **Trumbull Asphalt Plant** | 1160 | 9.1 | West | Asphalt tank farm, roofing production line (historic wastewater discharge to Outfall 18), boiler lines and fuel tank, fume line | 1,4 | c | H,C | Y | 4 | c | H | | d | | | d | | | d | |
| **UPRR Albina Railroad** | 178 | 10 to 11 | East | Existing and former fueling areas, locomotive washing area, wastewater treatment plant, freight car repair shop (former paint stripper area, former UST) | 2,3,4,7 | c | H,C | N | 2,3,4,7 | a | H,C? | NS | c | H | | d | | NS | c | H |
| **US Coast Guard - Marine Safety Station** | 1338 | 8 | East | Dock and over-water maintenance operations, fuel storage and buried product lines, garage, buoy storage yard, former drum storage area, Mt. Jefferson building, catch basins | | d | | N | NS | c | ? | 1,2,3,4,7 | b | H,C? | NS | c | ? | NS | c | ? |
| **USACE - Portland Moorings** | 1641 | 6 | West | Former sandblasting area, opil-stained soil at west end of property, historic sunken barge, | 11 | c | ? | ? | 3,4,7,8 | c | H,C | 4 | b | H, C? | 3,4,7,8 | c | ? | NS | c | ? |
| **Van Waters & Rogers** | 330 | 8.9 | West | Former recycling area, loading dock area, spill areas | 1 | c | H,C | Y | 1 | c | H | | d | | | d | | | d | |



BZTO104(e)033259

Table 5.1-2. Upland Site Pathway Assessment Summary.

| Site Name | ECSI # | River Mile | River Bank | Potential Upland and Over-Water Sources | Pathway Summary | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Groundwater | | | | Direct Discharge Storm/Wastewater | | | Direct Discharge Overwater Discharges | | | Overland Transport | | | Riverbank Erosion | | |
| | | | | | COIs | Potentially Complete Pathway | Historic/ Current | NAPL | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current | COIs | Potentially Complete Pathway | Historic/ Current |
| **Willamette Cove** | 272 | 6.8 | East | Spills and historic waste disposal practices on the west, central, and east parcels, slag and beach debris, contaminated groundwater and seeps, riverbank soil, historic drydock activities | 2,3,4 | c | C | N | NS | c | H? | NS | c | H | NS | c | ? | 6 | c | H,C |
| **Willbridge Bulk Fuel Facility** | 1549 | 7.5 | West | ConocoPhillips, Chevron, and Kinder Morgan bulk terminals and dock operations | 1,3,4,7 | a | H,C | Y | 1,3,4,7 | c | H,C? | 1,3,4,7 | a | H | NS | c | ? | NS | c | ? |

**Notes:**
**This table is assembled from Table 1 of the Site Summaries. Entries in bold indicate a difference from Table 1 based on additional analysis or a correction.**
**ECSI number: DEQ Environmental Cleanup Site Inventory number**
**COI: A chemical is listed as a pathway COI if it was detected in sampled media, identified as having been released to site media, or documented to have been released directly to the river from site operations.**

1: VOCs
2: SVOCs
3: PAHs
4.TPHs
5: Pesticides/Herbicides
6: PCB Aroclors and congeners
7: Metals
8: Butyltins
9: Phthalates
10: Other
11: None reported

**Pathway: The potential for impacting in-water media rated as follows:**
a: Documented evidence of a complete pathway
b: Likely a complete pathway
c: Insufficient data to make determination
d: Not a complete pathway

**Historic/Current: Available information indicates if the predominant impact to in-water media is historic (H) or current (C).**
**NAPL: Available information indicates the presence of historic or current NAPL (Y/N).**
**N/A = Not applicable, pathway is not present at site (e.g., riverbank at an inland site).**
**NS = No sampling of upland COIs reported. For storm/waste water, no sampling beyond permit requirements reported.**
**? = Unknown, typically due to lack of sampling information.**



BZTO104(e)033260

**Table 5.1-3. Stormwater Basin Characteristics and Potential Sources**

| Outfall ID | River Mile | River Bank | Owner | Outfall Size (Inches) | Outfall Material[1] | Outfall Status | Basin Area (acres) | Offshore sediment COIs with elevated Concentrations | Potential sources in the Outfall Basin that match sediment COIs with elevated concentrations | Potential sources upstream that match sediment COIs with elevated concentrations |
|---|---|---|---|---|---|---|---|---|---|---|
| **OF13** | 11 | West | CITY OF PORTLAND | 24" | CSP | Active | 32.8 | None Identified | | |
| **OF14** | 10.8 | West | CITY OF PORTLAND | 30" | CSP | Active | 23.2 | None Identified | | |
| **OF15** | 10.4 | West | CITY OF PORTLAND | 102" | CSP | Active | 1.1 | NA | | |
| **OF16** | 9.7 | West | CITY OF PORTLAND | 36" | CSP | Active | 59.6 | PCBs, BEHP | | Sulzer Bingham (ECSI #1235) - PCBs |
| **OF17** | 9.6 | West | CITY OF PORTLAND | 90" | CSP | Active | 1835.6 | PCBs | | Sulzer Bingham (ECSI #1235) - PCBs |
| **OF18** | 8.8 | West | CITY OF PORTLAND | 72" | CSP | Active | 459.8 | PCBs, BEHP, Pb, Hg, DDT | Gunderson (ECSI #1155) - PCBs and metals<br><br>Texaco/Equilon - Pipeline (ECSI #2117) - metals<br><br>Texaco/Equilon - Bulk Terminal (ECSI #169) - metals<br><br>McWhorter Technologies (ECSI #135) - BEHP | Port of Portland Terminal 2 (ECSI #2769) - metals |
| **OF19** | 8.3 | West | CITY OF PORTLAND | 42" | CSP | Active | 491.6 | PAHs, BEHP, Cr, Cu, Hg, Pb, Zn | Brazil and Co. (ECSI #970)–PCBs.<br><br>Calbag Metals (ECSI #2454)–Cadmium, lead, mercury, and zinc.<br><br>Dura Industries (ECSI #111)–Cadmium, chromium, and lead.<br><br>Schnitzer Investment Corp. (ECSI #2442)–Cadmium, lead, mercury, and zinc.<br><br>PGE–Forest Park (ECSI # | Gunderson (ECSI #1155) PAHs, PCBs, phthalates, and metals.<br><br>Lakeside Industries (ECSI #2372)–Cadmium, lead, and zinc.<br><br>McCall Oil ( ECSI #134)–PAHs, and lead. - 1 |
| **OF19A** | 8.3 | West | CITY OF PORTLAND | 60" | CSP | Active | 3.6 | PAHs, BEHP, Cr, Cu, Hg, Pb, Zn | Brazil and Co. (ECSI #970)–PCBs.<br><br>Calbag Metals (ECSI #2454)–Cadmium, lead, mercury, and zinc.<br><br>Dura Industries (ECSI #111)–Cadmium, chromium, and lead.<br><br>Schnitzer Investment Corp. (ECSI #2442)–Cadmium, lead, mercury, and zinc.<br><br>PGE–Forest Park (ECSI # | Gunderson (ECSI #1155) PAHs, PCBs, phthalates, and metals.<br><br>Lakeside Industries (ECSI #2372)–Cadmium, lead, and zinc.<br><br>McCall Oil ( ECSI #134)–PAHs, and lead. |



BZTO104(e)033261

**Table 5.1-3. Stormwater Basin Characteristics and Potential Sources**

| Outfall ID | River Mile | River Bank | Owner | Outfall Size (Inches) | Outfall Material[1] | Outfall Status | Basin Area (acres) | Offshore sediment COIs with elevated Concentrations | Potential sources in the Outfall Basin that match sediment COIs with elevated concentrations | Potential sources upstream that match sediment COIs with elevated concentrations |
|---|---|---|---|---|---|---|---|---|---|---|
| **OF22** | 7.7 | West | CITY OF PORTLAND | 60" | CSP | Active | 90.1 | PAHs, BEHP | McCall Oil (ECSI #134) - PAHs, BEHP<br><br>Willbridge (ECSI # 1549) - PAHs | Front Avenue LP Properties (ECSI #1239) - PAHs, BEHP |
| **OF22B** | 6.9 | West | CITY OF PORTLAND | 48" | CSP | Active | 37.0 | PCBs, PAHs, DDT, As, Cr, Hg, Pb, Zn | Gould Inc./NL Industries Inc. (ECSI #49)–Arsenic, lead, and zinc.<br><br>Metro Central Transfer Station (ECSI #1398)–Heavy metals and pesticides.<br><br>Doane Lake Study Area (ECSI #36)–PCBs, Lead and arsenic.<br><br>Schnitzer Investment–Doane Lake (ECSI #395)–arsenic a | ATOFINA Chemicals (ECSI #398)–DDT.<br><br>ESCO Corp.–Willbridge Landfill (ECSI #397)–Lead, foundry sand, slag, demolition debris, dust, and foundry yard debris.<br><br>Rhone Poulenc–East Doane Lake (ECSI #155)–lead, arsenic, and pesticides. The Rhone Poulenc site d |
| **OF22C** | 6.9 | West | CITY OF PORTLAND | 84" | CSP | Active | 1093.3 | PCBs, PAHs, As | Koppers Industries Inc. (ECSI #2348)–See Wacker Siltronic (ECSI #183).<br><br>Wacker Siltronic (ECSI # 183)–PAHs.<br><br>Santa Fe Pacific Pipeline Co. (ECSI #2104)–PAHs.<br><br>Doane Lake Study Area (ECSI #36)–PAHs, coal tar, arsenic. | ESCO Corp.–Willbridge Landfill (ECSI #397)–Foundry sand, slag, demolition debris, dust, and foundry yard debris.<br><br>Rhone Poulenc–East Doane Lake (ECSI #155)– arsenic. The Rhone Poulenc site discharges to private outfall WP-06 directly adjacent to Outfall |
| **OF24** | 4.3 | West | CITY OF PORTLAND | 12" | CMP | Active | | NA | | |
| **OF45** | 11 | East | CITY OF PORTLAND | 27" | CSP | Active | 10.1 | None Identified | | |
| **OF46** | 10.4 | East | CITY OF PORTLAND | 80" | VARIES | Active | 79.9 | None Identified | | |
| **OF47** | 9.9 | East | CITY OF PORTLAND | 48" | | Active | 21.0 | None Identified | | |
| **OF48** | 7.2 | East | CITY OF PORTLAND | 30" | CMP | Active | 107.0 | PAHs, As, Cr, Cu, Pb, Zn | | Triangle Park (ECSI #277) - PAHs, metals<br><br>Cascade General (ECSI #271) - PAHs, metals |
| **OF49** | 6.4 | East | CITY OF PORTLAND | 15" | CSP | Active | 18.2 | PAHs, Hg | | Willamette Cove (ECSI #2066) - PAHs, metals<br><br>McCormick & Baxter (ECSI # 74) - PAHs, metals |
| **OF50** | 5.9 | East | CITY OF PORTLAND | 30" | MONO | Active | 3.2 | Cr, Cu, Pb, Zn, As, PAHs | | |
| **OF52** | 5.7 | East | CITY OF PORTLAND | 30" | | Active | 22.8 | PAHs, PCBs | | City of Portland BES (ECSI #2452) - PCBs<br><br>Crawford Street Corp. (ECSI #2363) - PAHs, PCBs |
| **OF52A** | 5.6 | East | CITY OF PORTLAND | 36" | CSP | Active | 22.3 | PAHs | MarCom (ECSI #2350) - PAHs | Crawford Street Corp. (ECSI #2363) - PAHs, |



BZTO104(e)033262

**Table 5.1-3. Stormwater Basin Characteristics and Potential Sources**

| Outfall ID | River Mile | River Bank | Owner | Outfall Size (Inches) | Outfall Material[1] | Outfall Status | Basin Area (acres) | Offshore sediment COIs with elevated Concentrations | Potential sources in the Outfall Basin that match sediment COIs with elevated concentrations | Potential sources upstream that match sediment COIs with elevated concentrations |
|---|---|---|---|---|---|---|---|---|---|---|
| **OF52C** | 4.4 | East | CITY OF PORTLAND | 36" | CSP | Active | 21.5 | PAHs, Cr | Port of Portland T4 Slip 1 (ECSI # 2356) - PAHs, metals | Port of Portland T4 Slip 3 (ECSI # 272) - PAHs, metals |
| **OF53** | 5.1 | East | CITY OF PORTLAND | 48" | CMP | Active | 38.9 | None Identified | | |
| **OF53A** | 2.7 | East | CITY OF PORTLAND | 48" | CSP | Active | 81.8 | PCBs | OSM (ECSI# 141) - PCBs | OSM (ECSI# 141), during reverse flow - PCBs |
| **OFM-1** | 8.4 | East Swan Island | CITY OF PORTLAND | 60" | CSP | Active | 161.8 | BEHP, PCBs, Pb | Fred Divine (ECSI #2365) - BEHP, metals<br>Freightliner TMP (ECSI #2366) - metals | Freightliner TMP II (ECSI# 115) - metals<br>Cascade General (ECSI #271) - metals |
| **WR-1** | 10.4 | West | SULTZER PUMPS | 12" | CMP | Not Evaluated | 0.3 | None Identified | | |
| **WR-102** | 4.7 | West | UNDETERMINED | 48" | CSP | Active | | None Identified | | |
| **WR-103** | 4.5 | West | LINNTON PLYWOOD | 18" | STL | Active | 1.3 | None Identified | | |
| **WR-104** | 4.6 | West | LINNTON PLYWOOD | 18" | CMP | Active | 16.0 | None Identified | | |
| **WR-105** | 4.6 | West | LINNTON PLYWOOD | 8" | | Active | 0.5 | None Identified | | |
| **WR-106** | 4.5 | West | LINNTON PLYWOOD | 4",3",6" | | Active | 1.8 | None Identified | | |
| **WR-107** | 6.3 | West | NW NATURAL GAS | 12" | CMP | Active | 12.4 | PAHs | Gasco (ECSI #84) - PAHs | Siltronic (ECSI #183) - PAHs |
| **WR-108** | 4.1 | East | SCHNITZER STL | 24" | STL | Active | 9.5 | PCBs, PAHs | Schnitzer Calbag (ECSI #2355) - PCBs | NW Pipe (ESCI #138) - PCBs, PAHs<br>Boydstun (ECSI #2362) - PCBs, PAHs<br>Burgard Noncontiguous - PCBs<br>Port of Portland T4, Slip 1 (ECSI #2356) - PCBs, PAHs |
| **WR-109** | 4 | East | SCHNITZER STL | 24" | STL | Active | 3.5 | PCBs | Schnitzer Calbag (ECSI #2355) - PCBs | NW Pipe (ESCI #138) - PCBs<br>Boydstun (ECSI #2362) - PCBs<br>Burgard Noncontiguous - PCBs<br>Port of Portland T4, Slip 1 (ECSI #2356) - PCBs |
| **WR-11** | 7.8 | West | QUADRA CHEMICALS | 12" | PVC | Active | 23.4 | None Identified | | |
| **WR-116** | 3.7 | East | SCHNITZER STL | Unknown | Unknown | Active | 0.6 | PCBs | Schnitzer Calbag (ECSI #2355) - PCBs | NW Pipe (ESCI #138) - PCBs<br>Boydstun (ECSI #2362) - PCBs<br>Romar (ECSI #2437) - PCBs<br>Burgard Noncontiguous - PCBs |
| **WR-118** | 3.7 | East | SCHNITZER STL | 8" | Unknown | Not Evaluated | 2.5 | None Identified | | |
| **WR-119** | 3.7 | East | SCHNITZER STL | Unknown | Unknown | Active | 9.6 | None Identified | | |



BZTO104(e)033263

**Table 5.1-3. Stormwater Basin Characteristics and Potential Sources**

| Outfall ID | River Mile | River Bank | Owner | Outfall Size (Inches) | Outfall Material[1] | Outfall Status | Basin Area (acres) | Offshore sediment COIs with elevated Concentrations | Potential sources in the Outfall Basin that match sediment COIs with elevated concentrations | Potential sources upstream that match sediment COIs with elevated concentrations |
|---|---|---|---|---|---|---|---|---|---|---|
| **WR-12** | 7.7 | West | CONOCOPHILLIPS/TOSCO | 4" | PVC | Active | 0.9 | PAHs | McCall Oil (ECSI #134) - PAHs<br><br>Willbridge (ECSI # 1549) - PAHs | Front Avenue LP Properties (ECSI #1239) - PAHs |
| **WR-120** | 3.7 | East | SCHNITZER STL | Unknown | Unknown | Active | 1.9 | PCBs, BEHP | Schnitzer Calbag (ECSI #2355) - PCBs | NW Pipe (ESCI #138) - PCBs, BEHP<br><br>Boydstun (ECSI #2362) - PCBs<br><br>Romar (ECSI #2437) - PCBs<br><br>Burgard Noncontiguous - PCBs |
| **WR-121** | 3.7 | East | SCHNITZER STL | Unknown | Unknown | Active | 7.6 | PCBs, BEHP | Schnitzer Calbag (ECSI #2355) - PCBs | NW Pipe (ESCI #138) - PCBs, BEHP<br><br>Boydstun (ECSI #2362) - PCBs<br><br>Romar (ECSI #2437) - PCBs<br><br>Burgard Noncontiguous - PCBs |
| **WR-123** | 3.7 | East | SCHNITZER STL / NORTHWEST PIPE / LAMPROS | 48" | CSP | Active | 76.0 | PCBs, BEHP | NW Pipe (ECSI #138) - PCBs<br><br>Schnitzer Calbag - PCBs<br><br>Boydstun Metal works - PCBs | Boydstun Metal Works NE (Burgard Non Contiguous) - PCBs |
| **WR-124** | 3.7 | East | SCHNITZER STL / BOYDSTUN METAL WORKS (?) | 30" (24"?) | STL | Active | 38.6 | PCBs, BEHP | Boydstun (ECSI #2362) - PCBs | NW Pipe (ESCI #138) - PCBs, BEHP<br><br>Boydstun (ECSI #2362) - PCBs<br><br>Romar (ECSI #2437) - PCBs<br><br>Burgard Noncontiguous - PCBs |
| **WR-125** | 3.7 | East | SCHNITZER STL | 6" | CSP | Active | 2.7 | None Identified | | |
| **WR-126** | 4.5 | West | UNDETERMINED | 36" | CMP | Active | 3.5 | None Identified | | |
| **WR-127** | 8.5 | West | GUNDERSON | 12" | STL | Active | 3.5 | None Identified | | |
| **WR-128** | 8.5 | West | GUNDERSON | 8" | PVC | Active | 2.2 | As, PCBs, PAHs, Hg, DDT | Gunderson (ECSI #1155) - PCBs, PAHs, metals | |
| **WR-129** | 8.6 | West | GUNDERSON | 6" | CMP | Active | 0.7 | As, PCBs, PAHs, Hg, DDT | Gunderson (ECSI #1155) - PCBs, PAHs, metals | |
| **WR-130** | 8.6 | West | GUNDERSON | 8" | PVC | Active | 0.1 | As, PCBs, PAHs, Hg, DDT | Gunderson (ECSI #1155) - PCBs, PAHs, metals | |
| **WR-131** | 8.6 | West | GUNDERSON | 6" | CMP | Active | 107.0 | DDT | | |
| **WR-132** | 8.6 | West | GUNDERSON | 8" | PVC | Active | 0.7 | As | Gunderson (ECSI #1155) - metals | Port of Portland Terminal 2 (ECSI #2769) - metals<br><br>Texaco/Equilon - Pipeline (ECSI #2117) - metals<br><br>Texaco/Equilon - Bulk Terminal (ECSI #169) - metals |
| **WR-133** | 8.6 | West | GUNDERSON | 12" | STL | Active | 0.2 | As | Gunderson (ECSI #1155) - metals | Port of Portland Terminal 2 (ECSI #2769) - metals<br><br>Texaco/Equilon - Pipeline (ECSI #2117) - metals<br><br>Texaco/Equilon - Bulk Terminal (ECSI #169) - metals |
| **WR-134** | 8.7 | West | GUNDERSON | 12" | STL | Active | 5.1 | None Identified | | |
| **WR-135** | 8.7 | West | GUNDERSON | 12" | STL | Active | 1.7 | None Identified | | |
| **WR-136** | 8.7 | West | GUNDERSON | 12" | STL | Active | 1.4 | None Identified | | |
| **WR-137** | 8.7 | West | GUNDERSON | 15" | STL | Active | 3.4 | None Identified | | |



BZTO104(e)033264

**Table 5.1-3. Stormwater Basin Characteristics and Potential Sources**

| Outfall ID | River Mile | River Bank | Owner | Outfall Size (Inches) | Outfall Material[1] | Outfall Status | Basin Area (acres) | Offshore sediment COIs with elevated Concentrations | Potential sources in the Outfall Basin that match sediment COIs with elevated concentrations | Potential sources upstream that match sediment COIs with elevated concentrations |
|---|---|---|---|---|---|---|---|---|---|---|
| **WR-138** | 8.8 | West | GUNDERSON | 12" | STL | Active | 1.5 | PCBs, BEHP, Hg | Gunderson (ECSI #1155) - PCBs, metals | Port of Portland Terminal 2 (ECSI #2769) - metals<br>Texaco/Equilon - Pipeline (ECSI #2117) - metals<br>Texaco/Equilon - Bulk Terminal (ECSI #169) - metals |
| **WR-139** | 8.8 | West | GUNDERSON | 6" | CMP | Active | 0.3 | PCBs, BEHP, Hg | Gunderson (ECSI #1155) - PCBs, metals | Port of Portland Terminal 2 (ECSI #2769) - metals<br>Texaco/Equilon - Pipeline (ECSI #2117) - metals<br>Texaco/Equilon - Bulk Terminal (ECSI #169) - metals |
| **WR-14** | 7.6 | West | CHEVRON TRANSPORTATION | 4" | STL | Active | 0.5 | PCBs, Hg, DDT | Willbridge (ECSI # 1549) - PAHs, metals | Front Avenue LP Properties (ECSI 1239) - PCBs, PAHs, metals<br>McCall Oil (ECSI #134) - PAHs, metals<br>Schnitzer Kittridge (ECSI #2442) - PCBs, metals<br>Calbag Metals, Front Avenue (ECSI #2454) - PCBs, metals |
| **WR-140** | 8.8 | West | GUNDERSON | 6" | CMP | Active | 0.5 | PCBs, PAHs, As | Gunderson (ECSI #1155) - PCBs, PAHs, metals | Port of Portland Terminal 2 (ECSI #2769) - metals, PAHs<br>Texaco/Equilon - Pipeline (ECSI #2117) - metals, PAHs<br>Texaco/Equilon - Bulk Terminal (ECSI #169) - metals, PAHs |
| **WR-141** | 8.8 | West | GUNDERSON | 6" | CMP | Active | 0.5 | PCBs, PAHs, As | Gunderson (ECSI #1155) - PCBs, PAHs, metals | Port of Portland Terminal 2 (ECSI #2769) - metals, PAHs<br>Texaco/Equilon - Pipeline (ECSI #2117) - metals, PAHs<br>Texaco/Equilon - Bulk Terminal (ECSI #169) - metals, PAHs |
| **WR-142** | 8.8 | West | GUNDERSON | 6" | CMP | Active | 0.5 | PCBs, PAHs, As | Gunderson (ECSI #1155) - PCBs, PAHs, metals | Port of Portland Terminal 2 (ECSI #2769) - metals, PAHs<br>Texaco/Equilon - Pipeline (ECSI #2117) - metals, PAHs<br>Texaco/Equilon - Bulk Terminal (ECSI #169) - metals, PAHs |
| **WR-143** | 8.9 | West | GUNDERSON | 8" | CMP | Active | 0.5 | None Identified | | |
| **WR-144** | 8.9 | West | GUNDERSON | 6" | CMP | Active | 0.5 | None Identified | | |
| **WR-145** | 8.9 | West | GUNDERSON | 6" | CMP | Active | 8.1 | None Identified | | |
| **WR-146** | 8.9 | West | GUNDERSON | | OTHER | Active | 6.4 | None Identified | | |
| **WR-147** | 9.1 | West | GUNDERSON | 12" | STL | Active | 5.0 | PCBs | Gunderson (ECSI #1155) - PCBs | |
| **WR-148** | 9.1 | West | GUNDERSON | | OTHER | Active | 5.6 | PCBs | Gunderson (ECSI #1155) - PCBs | |
| **WR-149** | 9.1 | West | GUNDERSON | | | Not Evaluated | | PCBs | Gunderson (ECSI #1155) - PCBs | |
| **WR-15** | 9 | East Swan Island | NORTHWEST PAPER BOX MFG | 10" | STL | Active | 4.5 | None Identified | | |
| **WR-150** | 8.9 | West | GUNDERSON | 6" | CMP | Active | 0.5 | None Identified | | |
| **WR-151** | 3.4 | East | TIME OIL RIVERGATE | 12" | CSP | Not Evaluated | 8.6 | None Identified | | |
| **WR-152** | 5.3 | West | SHORE TERMINALS | 6" | CMP | Active | 4.2 | None Identified | | |
| **WR-153** | 3.4 | West | MORSE BROTHERS | 36" | CSP | Active | 8.1 | None Identified | | |
| **WR-154** | 4.4 | East | International Raw Materials | 6" | PVC | Not Evaluated | 4.0 | PAHs, BEHP | Port of Portland T4, Slip 1 (ECSI #2356) - PCBs, BEHP | Port of Portland T4, Slip 3 (ECSI #272) - PCBs, BEHP |
| **WR-155** | 8.2 | West Swan Island | CASCADE GENERAL | 8" | CMP | Active | | None Identified | | |



BZTO104(e)033265

**Table 5.1-3. Stormwater Basin Characteristics and Potential Sources**

| Outfall ID | River Mile | River Bank | Owner | Outfall Size (Inches) | Outfall Material[1] | Outfall Status | Basin Area (acres) | Offshore sediment COIs with elevated Concentrations | Potential sources in the Outfall Basin that match sediment COIs with elevated concentrations | Potential sources upstream that match sediment COIs with elevated concentrations |
|---|---|---|---|---|---|---|---|---|---|---|
| **WR-156** | 8.4 | East | CASCADE GENERAL | 18" | | Not Evaluated | | None Identified | | |
| **WR-157** | 8.4 | East | CASCADE GENERAL | | | Not Evaluated | 22.1 | None Identified | | |
| **WR-158** | 8.6 | East | CASCADE GENERAL | 18" | STL | Not Evaluated | 6.0 | None Identified | | |
| **WR-159** | 8.9 | East | CASCADE GENERAL | 12" | STL | Not Evaluated | 9.0 | None Identified | | |
| **WR-16** | 9.1 | West Swan Island | NORTHWEST PAPER BOX MFG | 10" | CSP | Active | 3.0 | PAHs, BEHP | There is no ECSI or stormwater data for this Priority 1 outfall or owner | Freightliner TMP II (ECSI# 115) - SVOCs |
| **WR-160** | 8.8 | East | Port of Portland | 6" | STL | Not Evaluated | | None Identified | | |
| **WR-161** | 8.2 | West Swan Island | CASCADE GENERAL | 8" | STL | Active | | PCBs, As, Hg | Cascade General (ECSI #271) - PCBs, metals | Fred Divine (ECSI #2365) - PCBs, metals<br>Freightliner TMP (ECSI #2366) - metals<br>Freightliner TMP2 (ECSI #115) - metals<br>US Coast Guard (ECSI #1338) - metals |
| **WR-162** | 8.2 | East | CASCADE GENERAL | 18" | CMP | Active | | BEHP | Cascade General (ECSI #271) - BEHP | Fred Divine (ECSI #2365) - BEHP |
| **WR-163** | 9.1 | East | Port of Portland | 12" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs | Goldendale Aluminum (ECSI # 2440) - PCBs |
| **WR-164** | 9 | West Swan Island | Port of Portland | 18" | CSP | Not Evaluated | | None Identified | | |
| **WR-166** | 5.3 | East | PORT OF PORTLAND / TOYOTA | 24" | Unknown | Active | 9.8 | None Identified | | |
| **WR-167** | 5.1 | East | PORT OF PORTLAND / TOYOTA | 18" | Unknown | Active | 8.0 | None Identified | | |
| **WR-168** | 4.9 | East | PORT OF PORTLAND / TOYOTA | 36" | Unknown | Active | 16.7 | None Identified | | |
| **WR-169** | 4.7 | East | Port of Portland | 24" | | Not Evaluated | 34.4 | PAHs | Port of Portland T4, Slip 3 (ECSI #272) - PAHs | Port of Portland T4, Auto Storage (ECSI #172) - PAHs |
| **WR-17** | 2.6 | East | JR SIMPLOT COMPANY | 12" | CMP | Active | 3.2 | PCBs | | OSM (ECSI# 141), during reverse flow - PCBs |
| **WR-170** | 4.7 | East | Port of Portland | 6" | | Not Evaluated | 0.5 | PAHs | Port of Portland T4, Slip 3 (ECSI #272) - PAHs | Port of Portland T4, Auto Storage (ECSI #172) - PAHs |
| **WR-171** | 4.7 | East | Port of Portland | 8" | | Not Evaluated | 3.4 | PAHs | Port of Portland T4, Slip 3 (ECSI #272) - PAHs | Port of Portland T4, Auto Storage (ECSI #172) - PAHs |



BZTO104(e)033266

**Table 5.1-3. Stormwater Basin Characteristics and Potential Sources**

| Outfall ID | River Mile | River Bank | Owner | Outfall Size (Inches) | Outfall Material[1] | Outfall Status | Basin Area (acres) | Offshore sediment COIs with elevated Concentrations | Potential sources in the Outfall Basin that match sediment COIs with elevated concentrations | Potential sources upstream that match sediment COIs with elevated concentrations |
|---|---|---|---|---|---|---|---|---|---|---|
| **WR-172** | 4.6 | East | Port of Portland | | | Not Evaluated | 0.2 | PAHs | Port of Portland T4, Slip 3 (ECSI #272) - PAHs | Port of Portland T4, Auto Storage (ECSI #172) - PAHs |
| **WR-173** | 4.6 | East | Port of Portland | 3" | | Not Evaluated | 0.2 | PAHs | Port of Portland T4, Slip 3 (ECSI #272) - PAHs | Port of Portland T4, Auto Storage (ECSI #172) - PAHs |
| **WR-174** | 4.7 | East | Port of Portland | | | Not Evaluated | 0.1 | PAHs | Port of Portland T4, Slip 3 (ECSI #272) - PAHs | Port of Portland T4, Auto Storage (ECSI #172) - PAHs |
| **WR-175** | 4.7 | East | Port of Portland | | | Not Evaluated | 2.9 | PAHs | Port of Portland T4, Slip 3 (ECSI #272) - PAHs | Port of Portland T4, Auto Storage (ECSI #172) - PAHs |
| **WR-176** | 4.6 | East | PORT OF PORTLAND / KINDER MORGAN T-4 | 10" | Unknown | Active | 4.2 | PAHs | Port of Portland T4, Slip 3 (ECSI #272) - PAHs | Port of Portland T4, Auto Storage (ECSI #172) - PAHs |
| **WR-177** | 4.4 | East | PORT OF PORTLAND | 18" | CSP | Active | 15.2 | PAHs | Port of Portland T4, Slip 1 (ECSI #2356) - PAHs | Port of Portland T4, Slip 3 (ECSI #272) - PAHs |
| **WR-178** | 4.4 | East | Port of Portland | 21" | | Not Evaluated | 13.5 | PAHs, BEHP | Port of Portland T4, Slip 1 (ECSI #2356) - PCBs, BEHP | Port of Portland T4, Slip 3 (ECSI #272) - PCBs, BEHP |
| **WR-179** | 4.4 | East | Port of Portland | 21" | | Not Evaluated | 5.5 | PAHs, BEHP | Port of Portland T4, Slip 1 (ECSI #2356) - PCBs, BEHP | Port of Portland T4, Slip 3 (ECSI #272) - PCBs, BEHP |
| **WR-18** | 2.7 | East | JR SIMPLOT COMPANY | 12" | CMP | Active | 3.0 | PCBs | | OSM (ECSI# 141), during reverse flow - PCBs |
| **WR-180** | 4.3 | East | Port of Portland | 21" | | Not Evaluated | 3.5 | PAHs, BEHP | Port of Portland T4, Slip 1 (ECSI #2356) - PCBs, BEHP | Port of Portland T4, Slip 3 (ECSI #272) - PCBs, BEHP |
| **WR-181** | 4.3 | East | Port of Portland | 15" | | Not Evaluated | 18.0 | PAHs, BEHP | Port of Portland T4, Slip 1 (ECSI #2356) - PCBs, BEHP | Port of Portland T4, Slip 3 (ECSI #272) - PCBs, BEHP |
| **WR-182** | 4.2 | East | Port of Portland | 18" | | Not Evaluated | | None Identified | | |



BZTO104(e)033267

Table 5.1-3. Stormwater Basin Characteristics and Potential Sources

| Outfall ID | River Mile | River Bank | Owner | Outfall Size (Inches) | Outfall Material[1] | Outfall Status | Basin Area (acres) | Offshore sediment COIs with elevated Concentrations | Potential sources in the Outfall Basin that match sediment COIs with elevated concentrations | Potential sources upstream that match sediment COIs with elevated concentrations |
|---|---|---|---|---|---|---|---|---|---|---|
| WR-183 | 4.2 | East | Port of Portland | 21" | | Not Evaluated | 15.0 | None Identified | | |
| WR-184 | 4.1 | East | Port of Portland | 10" | | Not Evaluated | 1.0 | PAHs, BEHP | Schnitzer Calbag (ECSI #2355) - PCBs | NW Pipe (ESCI #138) - PAHs, BEHP<br>Boydstun (ECSI #2362) - PAHs<br>Port of Portland T4, Slip 1 (ECSI #2356) - PAHs, BEHP |
| WR-185 | 8.8 | East Swan Island | BECKER TRUCKING | 12" | Unknown | Active | 2.1 | None Identified | | |
| WR-186 | 8.9 | East Swan Island | BECKER TRUCKING | 12" | Unknown | Active | 2.1 | None Identified | | |
| WR-187 | 6.2 | East | Schnitzer Property | 12" | CMP | Unknown | | None Identified | | |
| WR-188 | 6.2 | East | Schnitzer Property | 10" | CSP | Not Evaluated | | PCBs | Crawford Street Corp. (ECSI # 2363) - PCBs | Willamette Cove (ECSI #2066) - PCBs |
| WR-19 | 2.9 | East | Ash Grove Cement | 24" | CMP | Not Evaluated | Unknown | None Identified | | |
| WR-198 | 8.1 | East Swan Island | US Coast Guard | 15" | CMP | Not Evaluated | 2.4 | None Identified | | |
| WR-199 | 8 | East Swan Island | US Coast Guard | 10" | CMP | Not Evaluated | 0.2 | None Identified | | |
| WR-2 | 10.3 | West | SULTZER PUMPS | 24" | STL | Active | 1.2 | None Identified | | |
| WR-20 | 4.5 | East | PORT OF PORTLAND / KINDER MORGAN T-4 | 24" | CMP | Active | 30.7 | PAHs | Port of Portland T4, Slip 1 (ECSI #2356) - PAHs | Port of Portland T4, Auto Storage (ECSI #172) - PAHs<br>Port of Portland T4, Slip 3 (ECSI #272) - PCBs, BEHP |
| WR-200 | 8 | East Swan Island | US Coast Guard | 12" | CMP | Not Evaluated | 0.3 | PCBs, BEHP | | Cascade General (ECSI #271) - PCBs, BEHP<br>Fred Divine (ECSI #2365) - PCBs, BEHP |
| WR-201 | 8 | East Swan Island | US Coast Guard | 12" | CMP | Not Evaluated | 0.9 | PCBs, BEHP | | Cascade General (ECSI #271) - PCBs, BEHP<br>Fred Divine (ECSI #2365) - PCBs, BEHP |
| WR-202 | 4.9 | West | UNDETERMINED | 60" | CMP | Active | | PAHs | ARCO (ECSI #1528) - PAHs | ExxonMobil (ESSI #137) - PAHs<br>Olympic Pipeline (ECSI #2374) - PAHs |
| WR-203 | 4.8 | West | UNDETERMINED | 36" | CMP | Active | | PAHs | ARCO (ECSI #1528) - PAHs | ExxonMobil (ESSI #137) - PAHs<br>Olympic Pipeline (ECSI #2374) - PAHs |
| WR-204 | 4 | West | UNDETERMINED | 24" | | Active | | None Identified | | |
| WR-205 | 6 | West | US ARMY CORPS OF ENGINEERS | 24" | STL | Not Evaluated | 0.8 | PAHs | USACE Portland Moorings (ECSI #1641) - PAHs | Gasco (ECSI #84) - PAHs |
| WR-206 | 6 | West | ODOT (UNDETERMINED) | 24" | STL | Active | | As | | USACE Portland Moorings (ECSI #1641) - As<br>Gasco (ECSI #84) - As |
| WR-207 | 5.8 | West | ODOT (UNDETERMINED) | 24" | STL | Active | | PAHs | Marine Finance (Hendren Tow Boats) (ECSI #2352) - PAHs | USACE Portland Moorings (ECSI #1641) - PAHs<br>Gasco (ECSI #84) - PAHs |
| WR-208 | 5.6 | West | ODOT (UNDETERMINED) | 24" | STL | Active | | PAHs | Marine Finance (Hendren Tow Boats) (ECSI #2352) - PAHs | USACE Portland Moorings (ECSI #1641) - PAHs<br>Gasco (ECSI #84) - PAHs |
| WR-209 | 5.2 | West | UNDETERMINED | 48" | | Active | 0.5 | None Identified | | |
| WR-21 | 3.6 | East | Schnitzer STL (Premier Edible Oils) | 36" | sump | Not Evaluated | | None Identified | | |
| WR-211 | 5.6 | West | Stan Wagner | 36" | CMP | Not Evaluated | 5.0 | PAHs | | Marine Finance (Hendren Tow Boats) (ECSI #2352) - PAHs<br>USACE Portland Moorings (ECSI #1641) - PAHs<br>Gasco (ECSI #84) - PAHs |



BZTO104(e)033268

Table 5.1-3. Stormwater Basin Characteristics and Potential Sources

| Outfall ID | River Mile | River Bank | Owner | Outfall Size (Inches) | Outfall Material[1] | Outfall Status | Basin Area (acres) | Offshore sediment COIs with elevated Concentrations | Potential sources in the Outfall Basin that match sediment COIs with elevated concentrations | Potential sources upstream that match sediment COIs with elevated concentrations |
|---|---|---|---|---|---|---|---|---|---|---|
| WR-212 | 5.4 | West | FOSS/BRIX MARITIME | 10" | CSP | Active | | PAHs | FossMaritime/Brix Marine (ECSI #2364) - PAHs | Marine Finance (Hendren Tow Boats) (ECSI #2352) - PAHs |
| WR-213 | 6.9 | West | RHONE POULENC | 24" | CMP | Not Evaluated | | PCBs, PAHs, As | Rhone Poulenc (ECSI #155) - PAHs | Gould Electronics/NL Industries (ECSI #49) - As<br><br>Schnitzer Investment - Doane Lake (Air Liquide) (ECSI #395) - As<br><br>Arkema (ECSI #398) - As |
| WR-214 | 7.4 | East | TRIANGLE PARK / REIDEL | 6" | STL | Not Evaluated | | None Identified | | |
| WR-215 | 7.7 | East | TRIANGLE PARK / REIDEL | 15"x2 | STL | Not Evaluated | | None Identified | | |
| WR-216 | 10.3 | East | UNION PACIFIC RAILROAD | 12" | Unknown | Active | 12.1 | None Identified | | |
| WR-217 | 10.8 | East | UNION PACIFIC RAILROAD | 18" | Unknown | Active | 63.0 | None Identified | | |
| WR-218 | 10 | East | UNION PACIFIC RAILROAD | 30" | CMP | Active | 73.3 | PCBs | | Goldendale Aluminum (ECSI # 2440) - PCBs |
| WR-219 | 5.6 | East | MAR COM | 18" | STL | Not Evaluated | 0.5 | PCBs | Mar Com (ECSI #2350) - PCBs | City of Portland BES (ECSI #2452) - PCBs<br><br>Crawford Street Corp. (ECSI #2363) - PCBs |
| WR-22 | 2.3 | East | OREGON STL MILLS | 36" | STL | Active | 28.3 | PCBs | OSM (ECSI# 141) - PCBs | |
| WR-220 | 3.1 | East | GEORGIA PACIFIC | 30" | CSP | Active | 22.9 | None Identified | | |
| WR-221 | 2.9 | East | GEORGIA PACIFIC | 30" | CSP | Active | | None Identified | | |
| WR-224 | 10.9 | West | Port of Portland T1 | 12" | | Not Evaluated | | None Identified | | |
| WR-225 | 10.9 | West | Port of Portland T1 | 12" | | Not Evaluated | | None Identified | | |
| WR-226 | 10.8 | West | Port of Portland T1 | 12" | | Not Evaluated | | None Identified | | |
| WR-227 | 10.7 | West | Port of Portland T1 | 15" | | Not Evaluated | | None Identified | | |
| WR-228 | 10.6 | West | Port of Portland T1 | 8" | | Not Evaluated | | None Identified | | |
| WR-229 | 10.6 | West | Port of Portland T1 | 6" | | Not Evaluated | | None Identified | | |
| WR-23 | 2.3 | East | OREGON STL MILLS | 24" | CMP | Active | 20.0 | PCBs | OSM (ECSI# 141) - PCBs | |
| WR-230 | 10.5 | West | Port of Portland T1 | 15" | | Not Evaluated | | None Identified | | |
| WR-231 | 10.5 | West | Port of Portland T1 | 6" | | Not Evaluated | | None Identified | | |
| WR-232 | 10.5 | West | Port of Portland T1 | 15" | | Not Evaluated | | None Identified | | |



BZTO104(e)033269

Table 5.1-3. Stormwater Basin Characteristics and Potential Sources

| Outfall ID | River Mile | River Bank | Owner | Outfall Size (Inches) | Outfall Material[1] | Outfall Status | Basin Area (acres) | Offshore sediment COIs with elevated Concentrations | Potential sources in the Outfall Basin that match sediment COIs with elevated concentrations | Potential sources upstream that match sediment COIs with elevated concentrations |
|---|---|---|---|---|---|---|---|---|---|---|
| WR-233 | 10.5 | West | Port of Portland T1 | 8" | | Not Evaluated | | None Identified | | |
| WR-234 | 10.4 | West | Port of Portland T1 | 6" | | Not Evaluated | | None Identified | | |
| WR-235 | 9.7 | West | Port of Portland T2 | 27" | | Not Evaluated | 14.6 | PCBs | | Sulzer Bingham (ECSI #1235) - PCBs |
| WR-236 | 9.9 | West | Port of Portland T2 | 36" | | Not Evaluated | 30.6 | None Identified | | |
| WR-237 | 3.6 | West | MORSE BROTHERS | 12" | CSP | Active | 5.6 | None Identified | | |
| WR-238 | 3.5 | West | MORSE BROTHERS | Unknown | Unknown | Active | 7.1 | None Identified | | |
| WR-239 | 3.5 | West | MORSE BROTHERS | 24" | CSP | Active | 0.7 | None Identified | | |
| WR-24 | 2.1 | East | OREGON STL MILLS | 36" | PVC | Active | 37.0 | PCBs, PAHs | OSM (ECSI# 141) - PCBs, PAHs | South Rivergate (ECSI# 2980) - TPH |
| WR-240 | 9.9 | East | GOLDENDALE ALUMINUM | 12" | CMP | Not Evaluated | | None Identified | | |
| WR-241 | 10 | East | GOLDENDALE ALUMINUM | 12" | CMP | Not Evaluated | | None Identified | | |
| WR-244 | 10.1 | East | GOLDENDALE ALUMINUM | Unknown | Unknown | Not Evaluated | | None Identified | | |
| WR-245 | 10.1 | East | GOLDENDALE ALUMINUM | Unknown | Unknown | Not Evaluated | | None Identified | | |
| WR-248 | 7.5 | East | TRIANGLE PARK / REIDEL | 18" | STL | Not Evaluated | | None Identified | | |
| WR-249 | 9.5 | East | Shenanigans/Freightliner | 36" | CMP | Not Evaluated | 22.2 | None Identified | | |
| WR-25 | 4.8 | West | BP WEST COAST PRODUCTS | 6" | STL | Active | Unknown | PAHs | ARCO (ECSI #1528) - PAHs | ExxonMobil (ESSI #137) - PAHs<br>Olympic Pipeline (ECSI #2374) - PAHs |
| WR-250 | 9.1 | West Swan Island | Freightliner | 12 | CMP | Not Evaluated | | None Identified | | |
| WR-251 | 9.1 | West Swan Island | Freightliner | 12" | CMP | Not Evaluated | | None Identified | | |
| WR-252 | 9.1 | West Swan Island | Freightliner | 8" | PVC | Not Evaluated | | None Identified | | |
| WR-253 | 9.1 | West Swan Island | Freightliner | 12": | CMP | Not Evaluated | | None Identified | | |
| WR-254 | 9.1 | West Swan Island | Freightliner | 12" | STL | Not Evaluated | 0.1 | None Identified | | |
| WR-256 | 8.2 | West Swan Island | HAMPTON LUMBER | 15" | CSP | Not Evaluated | 1.9 | None Identified | | |
| WR-257 | 8.2 | West Swan Island | HAMPTON LUMBER | 15" | CSP | Not Evaluated | 3.4 | None Identified | | |
| WR-258 | 9.6 | West | CITY OF PORTLAND- FIRE BUREAU | 10" | PVC | Active | | None Identified | | |
| WR-259 | 9.5 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-26 | 4.8 | West | BP WEST COAST PRODUCTS | 4" | STL | Active | Unknown | PAHs | ARCO (ECSI #1528) - PAHs | ExxonMobil (ESSI #137) - PAHs<br>Olympic Pipeline (ECSI #2374) - PAHs |
| WR-260 | 9.5 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |



BZTO104(e)033270

Table 5.1-3. Stormwater Basin Characteristics and Potential Sources

| Outfall ID | River Mile | River Bank | Owner | Outfall Size (Inches) | Outfall Material[1] | Outfall Status | Basin Area (acres) | Offshore sediment COIs with elevated Concentrations | Potential sources in the Outfall Basin that match sediment COIs with elevated concentrations | Potential sources upstream that match sediment COIs with elevated concentrations |
|---|---|---|---|---|---|---|---|---|---|---|
| WR-261 | 9.5 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-262 | 9.5 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-263 | 9.5 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-264 | 9.5 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-265 | 9.6 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-266 | 9.6 | West | FORT JAMES / GEORGIA PACIFIC | 18" | CSP | Active | | None Identified | | |
| WR-267 | 9.4 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-268 | 9.4 | West | FORT JAMES / GEORGIA PACIFIC | 12", 6"? | CSP | Active | | None Identified | | |
| WR-269 | 9.4 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-27 | 4.9 | West | BP WEST COAST PRODUCTS | 6" | STL | Active | Unknown | PAHs | ARCO (ECSI #1528) - PAHs | ExxonMobil (ESSI #137) - PAHs<br>Olympic Pipeline (ECSI #2374) - PAHs |
| WR-270 | 9.4 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-271 | 9.4 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-272 | 9.4 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-273 | 9.3 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-274 | 9.3 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-275 | 9.3 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-276 | 9.3 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-277 | 9.3 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-278 | 9.2 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-279 | 9.2 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-28 | 7.5 | West | GS ROOFING / CERTAINTEED | 10" | CMP | Active | 2.9 | None Identified | | |
| WR-280 | 9.2 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | None Identified | | |
| WR-281 | 9.2 | West | FORT JAMES / GEORGIA PACIFIC | 12" | CSP | Active | | PCBs | | Gunderson (ECSI #1155) - PCBs |
| WR-282 | 10.9 | East | SAKRETE OF PACIFIC NW | 4" | PVC | Not Evaluated | | None Identified | | |
| WR-283 | 10.9 | East | SAKRETE OF PACIFIC NW | 15" | CMP | Active | | None Identified | | |
| WR-286 | 5.5 | East | MAR COM | 4" | PVC | Not Evaluated | 1.9 | None Identified | | |
| WR-287 | 6.9 | West | SILTRONIC CORP | 12" | Unknown | Active | | PAHs | Siltronic (ECSI #183) - PAHs | Rhone Poulenc (ECSI #155) - PAHs |



BZTO104(e)033271

**Table 5.1-3. Stormwater Basin Characteristics and Potential Sources**

| Outfall ID | River Mile | River Bank | Owner | Outfall Size (Inches) | Outfall Material[1] | Outfall Status | Basin Area (acres) | Offshore sediment COIs with elevated Concentrations | Potential sources in the Outfall Basin that match sediment COIs with elevated concentrations | Potential sources upstream that match sediment COIs with elevated concentrations |
|---|---|---|---|---|---|---|---|---|---|---|
| **WR-288** | 6 | West | US ARMY CORPS OF ENGINEERS | 6" | PVC | Not Evaluated | 1.0 | PAHs | USACE Portland Moorings (ECSI #1641) - PAHs | Gasco (ECSI #84) - PAHs |
| **WR-289** | 8.7 | East Swan Island | Dallas Mavis | 10" | CSP | Not Evaluated | | None Identified | | |
| **WR-29** | 7.5 | West | GS ROOFING / CERTAINTEED | 24" | CMP | Active | 4.5 | None Identified | | |
| **WR-291** | 10.9 | East | SAKRETE OF PACIFIC NW | 6" | CSP | Active | | None Identified | | |
| **WR-3** | 10.3 | West | SULTZER PUMPS | 15" | STL | Active | 3.3 | None Identified | | |
| **WR-30** | 9 | West Swan Island | Port of Portland | 8" | CMP | Not Evaluated | | None Identified | | |
| **WR-31** | 9 | West Swan Island | Port of Portland | 8" | CMP | Not Evaluated | | BEHP | | Cascade General (ECSI #271) - BEHP<br>Fred Divine (ECSI #2365) - BEHP |
| **WR-32** | 9 | West Swan Island | Port of Portland | 8" | CMP | Not Evaluated | | BEHP | | Cascade General (ECSI #271) - BEHP<br>Fred Divine (ECSI #2365) - BEHP |
| **WR-33** | 8.9 | West Swan Island | Port of Portland | 8" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs | Fred Divine (ECSI #2365) - PCBs |
| **WR-34** | 8.9 | West Swan Island | Port of Portland | 8" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs | Fred Divine (ECSI #2365) - PCBs |
| **WR-35** | 8.9 | West Swan Island | Port of Portland | 8" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs | Fred Divine (ECSI #2365) - PCBs |
| **WR-36** | 8.9 | West Swan Island | Freightliner | 8" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs | Fred Divine (ECSI #2365) - PCBs |
| **WR-360** | 8.6 | West | GUNDERSON | | | Active | 0.4 | PCBs, PAHs | Gunderson (ECSI #1155) - PCBs, PAHs | Port of Portland Terminal 2 (ECSI #2769) - PAHs<br>Texaco/Equilon - Pipeline (ECSI #2117) - PAHs<br>Texaco/Equilon - Bulk Terminal (ECSI #169) - PAHs |
| **WR-361** | 8.6 | West | GUNDERSON | 12" | STL | Active | 0.9 | As, Hg | Gunderson (ECSI #1155) - metals | Port of Portland Terminal 2 (ECSI #2769) - metals<br>Texaco/Equilon - Pipeline (ECSI #2117) - metals<br>Texaco/Equilon - Bulk Terminal (ECSI #169) - metals |
| **WR-363** | 8.8 | West | GUNDERSON | | | Active | 1.6 | None Identified | | |
| **WR-364** | 4.5 | West | LINNTON PLYWOOD | 8" | | Active | 1.4 | None Identified | | |
| **WR-365** | 4.6 | West | GLACIER NW / NW AGGREGATES | | | Active | 8.1 | None Identified | | |
| **WR-366** | 4.7 | West | GLACIER NW / NW AGGREGATES | | | Active | | None Identified | | |
| **WR-369** | 7.7 | West | CONOCOPHILLIPS/TOSCO | 4" | | Active | 1.1 | None Identified | | |
| **WR-37** | 8.8 | West Swan Island | Freightliner | 8" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs | Fred Divine (ECSI #2365) - PCBs |
| **WR-370** | 7.7 | West | CONOCOPHILLIPS/TOSCO | 3" | | Active | | PCBs, Hg, DDT | Willbridge (ECSI # 1549) - PAHs, metals | Front Avenue LP Properties (ECSI 1239) - PCBs, metals<br>McCall Oil (ECSI #134) - metals<br>Schnitzer Kittridge (ECSI #2442) - PCBs, metals<br>Calbag Metals, Front Avenue (ECSI #2454) - PCBs, metals |
| **WR-371** | 5.4 | West | FOSS/BRIX MARITIME | 6" | CSP | Not Evaluated | | PAHs | FossMaritime/Brix Marine (ECSI #2364) - PAHs | Marine Finance (Hendren Tow Boats) (ECSI #2352) - PAHs |
| **WR-372** | 5.4 | West | FOSS/BRIX MARITIME | 4" | Unknown | Not Evaluated | | PAHs | FossMaritime/Brix Marine (ECSI #2364) - PAHs | Marine Finance (Hendren Tow Boats) (ECSI #2352) - PAHs |
| **WR-373** | 5.5 | West | FOSS/BRIX MARITIME | | Unknown | Not Evaluated | | PAHs | FossMaritime/Brix Marine (ECSI #2364) - PAHs | Marine Finance (Hendren Tow Boats) (ECSI #2352) - PAHs |
| **WR-374** | 5.4 | East | TOYOTA LOGISTICS | Unknown | Unknown | Active | 17.8 | None Identified | | |



BZTO104(e)033272

**Table 5.1-3. Stormwater Basin Characteristics and Potential Sources**

| Outfall ID | River Mile | River Bank | Owner | Outfall Size (Inches) | Outfall Material[1] | Outfall Status | Basin Area (acres) | Offshore sediment COIs with elevated Concentrations | Potential sources in the Outfall Basin that match sediment COIs with elevated concentrations | Potential sources upstream that match sediment COIs with elevated concentrations |
|---|---|---|---|---|---|---|---|---|---|---|
| **WR-375** | 5.2 | East | TOYOTA LOGISTICS | 18"? | Unknown | Active | 19.1 | None Identified | | |
| **WR-376** | 5.6 | East | MAR COM | | OTHER | Active | 3.8 | None Identified | | |
| **WR-377** | 8.9 | West | GUNDERSON | | | Active | 4.3 | None Identified | | |
| **WR-378** | 8.3 | West Swan Island | HAMPTON LUMBER | 12" | Unknown | Not Evaluated | 1.0 | None Identified | | |
| **WR-379** | 8.3 | West | HAMPTON LUMBER | 18" | CSP | Not Evaluated | 7.8 | BEHP | | Calbag Metals (ECSI #2454) - BEHP |
| **WR-38** | 8.8 | West Swan Island | Freightliner | | | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs | Fred Divine (ECSI #2365) - PCBs |
| **WR-380** | 7.8 | West | QUADRA CHEMICALS | 6" | Unknown | Active | | None Identified | | |
| **WR-381** | 10.1 | East | GOLDENDALE ALUMINUM | Unknown | Unknown | Active | 0.9 | PCBs | Goldendale Aluminum (ECSI # 2440) - PCBs | |
| **WR-382** | 3.9 | East | SCHNITZER STL | Unknown | Unknown | Active | 2.4 | PCBs | Schnitzer Steel & Calbag Metals (ECSI # 2355) - PCBs<br><br>NW Pipe (ESCI #138) - PCBs | |
| **WR-383** | 3.9 | East | SCHNITZER STL | Unknown | Unknown | Active | 3.4 | None Identified | | |
| **WR-384** | 3.8 | East | SCHNITZER STL | Unknown | Unknown | Active | 10.3 | None Identified | | |
| **WR-385** | 3.7 | East | SCHNITZER STL | 24" | STL | Active | | BEHP | | NW Pipe (ESCI #138) - PCBs, BEHP |
| **WR-386** | 3.7 | East | SCHNITZER STL | Unknown | Unknown | Unknown | | BEHP | | |
| **WR-387** | 3.7 | East | SCHNITZER STL | 15" | Unknown | Active | | None Identified | | |
| **WR-389** | 9.4 | West | FORT JAMES / GEORGIA PACIFIC | 4" | Unknown | Active | | None Identified | | |
| **WR-39** | 8.8 | West Swan Island | CASCADE GENERAL | 8" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs | Fred Divine (ECSI #2365) - PCBs |
| **WR-390** | 7.5 | West | KINDER MORGAN-WILLBRIDGE | | | Active | | None Identified | | |
| **WR-391** | 7.5 | West | KINDER MORGAN-WILLBRIDGE | | | Active | | None Identified | | |
| **WR-392** | 4.8 | West | BP WEST COAST PRODUCTS | 4-6"? | Unknown | Active | | PAHs | ARCO (ECSI #1528) - PAHs | ExxonMobil (ESSI #137) - PAHs<br><br>Olympic Pipeline (ECSI #2374) - PAHs |
| **WR-393** | 5.9 | West | ODOT (UNDETERMINED) | >6" | STL | Not Evaluated | | As, PAHs | | USACE Portland Moorings (ECSI #1641) - As, PAHs<br><br>Gasco (ECSI #84) - As, PAHs |
| **WR-4** | 10.3 | West | SULTZER PUMPS | 24" | CMP | Active | 1.9 | None Identified | | |
| **WR-40** | 8.7 | West Swan Island | Freightliner | 8" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs, BEHP | Fred Divine (ECSI #2365) - PCBs, BEHP |
| **WR-41** | 8.8 | West Swan Island | CASCADE GENERAL | | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs, BEHP | Fred Divine (ECSI #2365) - PCBs, BEHP |
| **WR-42** | 8.7 | West Swan Island | CASCADE GENERAL | 8" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs, BEHP | Fred Divine (ECSI #2365) - PCBs, BEHP |
| **WR-43** | 8.6 | West Swan Island | CASCADE GENERAL | 8" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs, BEHP | Fred Divine (ECSI #2365) - PCBs, BEHP |
| **WR-44** | 8.6 | West Swan Island | CASCADE GENERAL | 24" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs, BEHP | Fred Divine (ECSI #2365) - PCBs, BEHP |
| **WR-45** | 8.6 | West Swan Island | CASCADE GENERAL | 18" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs, BEHP | Fred Divine (ECSI #2365) - PCBs, BEHP |
| **WR-46** | 8.6 | West Swan Island | CASCADE GENERAL | 18" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs, BEHP | Fred Divine (ECSI #2365) - PCBs, BEHP |
| **WR-47** | 8.6 | West Swan Island | CASCADE GENERAL | 12" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs, BEHP | Fred Divine (ECSI #2365) - PCBs, BEHP |
| **WR-48** | 8.5 | West Swan Island | CASCADE GENERAL | 12" | CMP | Not Evaluated | | PCBs, BEHP | Cascade General (ECSI #271) - PCBs, BEHP | Fred Divine (ECSI #2365) - PCBs, BEHP |
| **WR-49** | 8.5 | West Swan Island | CASCADE GENERAL | 18" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs, BEHP | Fred Divine (ECSI #2365) - PCBs, BEHP |
| **WR-5** | 10.4 | West | SULTZER PUMPS | 48" | STL | Active | 3.8 | None Identified | | |
| **WR-50** | 8.5 | West Swan Island | CASCADE GENERAL | 10" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs, BEHP | Fred Divine (ECSI #2365) - PCBs, BEHP |
| **WR-51** | 8.4 | West Swan Island | CASCADE GENERAL | 18" | CMP | Not Evaluated | | PCBs, BEHP | Cascade General (ECSI #271) - PCBs, BEHP | Fred Divine (ECSI #2365) - PCBs, BEHP |
| **WR-52** | 8.4 | West Swan Island | CASCADE GENERAL | 10" | STL | Not Evaluated | | PCBs, BEHP | Cascade General (ECSI #271) - PCBs, BEHP | Fred Divine (ECSI #2365) - PCBs, BEHP |
| **WR-53** | 8.4 | West Swan Island | CASCADE GENERAL | 18" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs, BEHP | Fred Divine (ECSI #2365) - PCBs, BEHP |
| **WR-54** | 8.4 | West Swan Island | CASCADE GENERAL | 10" | | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs | Fred Divine (ECSI #2365) - PCBs |
| **WR-55** | 8.3 | West Swan Island | CASCADE GENERAL | | | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs | Fred Divine (ECSI #2365) - PCBs |
| **WR-56** | 8.3 | West Swan Island | CASCADE GENERAL | | | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs | Fred Divine (ECSI #2365) - PCBs |
| **WR-57** | 8.3 | West Swan Island | CASCADE GENERAL | 18" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs | Fred Divine (ECSI #2365) - PCBs |
| **WR-58** | 8.3 | West Swan Island | CASCADE GENERAL | 8" | STL | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs | Fred Divine (ECSI #2365) - PCBs |
| **WR-59** | 8.3 | West Swan Island | CASCADE GENERAL | 8" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs | Fred Divine (ECSI #2365) - PCBs |



BZTO104(e)033273

**Table 5.1-3. Stormwater Basin Characteristics and Potential Sources**

| Outfall ID | River Mile | River Bank | Owner | Outfall Size (Inches) | Outfall Material[1] | Outfall Status | Basin Area (acres) | Offshore sediment COIs with elevated Concentrations | Potential sources in the Outfall Basin that match sediment COIs with elevated concentrations | Potential sources upstream that match sediment COIs with elevated concentrations |
|---|---|---|---|---|---|---|---|---|---|---|
| WR-6 | 6.9 | West | RHONE POULENC | 6" | STL | Active | | PAHs, PCBs, DDT | Rhone Poulenc (ECSI #155) - PAHs, PCBs, DDT | Gould Electronics/NL Industries (ECSI #49) - DDT<br>Arkema (ECSI #398) - DDT |
| WR-60 | 8.3 | West Swan Island | CASCADE GENERAL | 8" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs | Fred Divine (ECSI #2365) - PCBs |
| WR-61 | 8.2 | West Swan Island | CASCADE GENERAL | 12" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs | Fred Divine (ECSI #2365) - PCBs |
| WR-62 | 8.3 | West Swan Island | CASCADE GENERAL | 18" | CMP | Not Evaluated | | PCBs | Cascade General (ECSI #271) - PCBs | Fred Divine (ECSI #2365) - PCBs |
| WR-63 | 8.1 | West Swan Island | CASCADE GENERAL | 6" | METAL | Active | | None Identified | | |
| WR-64 | 8.1 | West Swan Island | CASCADE GENERAL | 10" | CMP | Active | | None Identified | | |
| WR-65 | 8.2 | West Swan Island | CASCADE GENERAL | 10" | CMP | Active | | None Identified | | |
| WR-66 | 6.4 | West | SILTRONIC CORP | Unknown | Unknown | Active | | PAHs | Siltronic (ECSI #183) - PAHs | Rhone Poulenc (ECSI #155) - PAHs |
| WR-67 | 6.6 | West | SILTRONIC CORP | 36" | Unknown | Active | | PAHs | Siltronic (ECSI #183) - PAHs | Rhone Poulenc (ECSI #155) - PAHs |
| WR-68 | 8.8 | East Swan Island | BECKER TRUCKING | 15" | Unknown | Active | | None Identified | | |
| WR-69 | 8.7 | East Swan Island | Dallas & Mavis | 12" | PVC | Not Evaluated | | None Identified | | |
| WR-7 | 8 | West | TUBE FORGINGS / GLACIER NORTHWEST | 18" | CSP | Active | | None Identified | | |
| WR-70 | 8.6 | East Swan Island | CHRISTENSON ELECTRIC / UPS / GOURMET DELI | 10" | Unknown | Active | | None Identified | | |
| WR-71 | 8.7 | East Swan Island | Dallas & Mavis/Foster Farms | 9" | CSP | Not Evaluated | | None Identified | | |
| WR-72 | 8.7 | East Swan Island | Dallas & Mavis/Foster Farms | 4" | PVC | Not Evaluated | | None Identified | | |
| WR-73 | 8.7 | East Swan Island | Dallas & Mavis/Foster Farms | 6" | PVC | Not Evaluated | | None Identified | | |
| WR-74 | 8.8 | East Swan Island | Dallas & Mavis/Foster Farms | 6" | PVC | Not Evaluated | | None Identified | | |
| WR-75 | 4.1 | West | KINDER MORGAN-LINNTON | 15" | CMP | Active | 4.0 | None Identified | | |
| WR-76 | 4.1 | West | KINDER MORGAN-LINNTON | 4" | STL | Active | 13.0 | None Identified | | |
| WR-77 | 4.1 | West | KINDER MORGAN-LINNTON | 15" | CMP | Active | 9.0 | None Identified | | |
| WR-78 | 5 | West | ST SERVICES/SHORE TERMINALS | 15" | STL | Active | | None Identified | | |
| WR-79 | 3.7 | West | OWNER UNKNOWN | 36" | CSP | Not Evaluated | | None Identified | | |
| WR-8 | 8 | West | Unknown | 24" | CMP | Not Evaluated | | None Identified | | |
| WR-80 | 3.8 | West | OWENS CORNING-LINNTON | 24" | CSP | Active | 31.4 | None Identified | | |
| WR-81 | 3.6 | West | OWENS CORNING-LINNTON | 20" | STL | Active | 12.6 | None Identified | | |
| WR-82 | 3.7 | East | SMURFIT-STONE | 18" | CSP | Active | 1.0 | None Identified | | |
| WR-83 | 3.7 | East | SMURFIT-STONE | 30" | | Active | 2.0 | None Identified | | |
| WR-84 | 3.7 | East | SMURFIT-STONE | 30" | | Active | 7.0 | None Identified | | |
| WR-85 | 3.6 | East | Schnitzer STL (Premier Edible Oils) | 10" | CSP | Not Evaluated | | None Identified | | |
| WR-86 | 5.6 | East | MAR COM | 8" | STL | Not Evaluated | | PCBs | Mar Com (ECSI #2350) - PCBs | City of Portland BES (ECSI #2452) - PCBs<br>Crawford Street Corp. (ECSI #2363) - PCBs |
| WR-87 | 6 | West | US ARMY CORPS OF ENGINEERS | 4" | STL | Not Evaluated | | PAHs | USACE Portland Moorings (ECSI #1641) - PAHs | Gasco (ECSI #84) - PAHs |



BZTO104(e)033274

**Table 5.1-3. Stormwater Basin Characteristics and Potential Sources**

| Outfall ID | River Mile | River Bank | Owner | Outfall Size (Inches) | Outfall Material[1] | Outfall Status | Basin Area (acres) | Offshore sediment COIs with elevated Concentrations | Potential sources in the Outfall Basin that match sediment COIs with elevated concentrations | Potential sources upstream that match sediment COIs with elevated concentrations |
|---|---|---|---|---|---|---|---|---|---|---|
| **WR-88** | 6 | West | US ARMY CORPS OF ENGINEERS | 4" | STL | Not Evaluated | | PAHs | USACE Portland Moorings (ECSI #1641) - PAHs | Gasco (ECSI #84) - PAHs |
| **WR-89** | 5.9 | West | US ARMY CORPS OF ENGINEERS / US MOORINGS | 6" | PVC | Active | | None Identified | | |
| **WR-9** | 7.9 | West | MCCALL OIL COMPANY | Unknown | Unknown | Active | 0.1 | None Identified | | |
| **WR-90** | 6 | West | US ARMY CORPS OF ENGINEERS | 30" | STL | Not Evaluated | | PAHs | USACE Portland Moorings (ECSI #1641) - PAHs | Gasco (ECSI #84) - PAHs |
| **WR-91** | 6 | West | US ARMY CORPS OF ENGINEERS | 6" | PVC&CMP | Not Evaluated | Unknown | PAHs | USACE Portland Moorings (ECSI #1641) - PAHs | Gasco (ECSI #84) - PAHs |
| **WR-92** | 5.9 | West | US ARMY CORPS OF ENGINEERS / US MOORINGS | 6" | PVC | Active | | None Identified | | |
| **WR-93** | 6 | West | US ARMY CORPS OF ENGINEERS | 12" | STL | Not Evaluated | | PAHs | USACE Portland Moorings (ECSI #1641) - PAHs | Gasco (ECSI #84) - PAHs |
| **WR-94** | 6.1 | West | US ARMY CORPS OF ENGINEERS | 8" | STL | Not Evaluated | | PAHs | USACE Portland Moorings (ECSI #1641) - PAHs | Gasco (ECSI #84) - PAHs |
| **WR-95** | 7.4 | West | ATOFINA | 36" | FBRGLSS | Active | | DDT | Arkema (ECSI #398) - DDT | |
| **WR-96** | 7.3 | West | ATOFINA | 36" | FBRGLSS | Active | | DDT, PAHs | Arkema (ECSI #398) - DDT | GS Roofing (ECSI #117) - PAHs<br>Willbridge (ECSI #1549) - PAHs |
| **WR-97** | 7.2 | West | ATOFINA | 24" | FBRGLSS | Active | | DDT, PAHs | Arkema (ECSI #398) - DDT | GS Roofing (ECSI #117) - PAHs<br>Willbridge (ECSI #1549) - PAHs |
| **WR-98** | 7.1 | West | ATOFINA | 30" | FBRGLSS | Active | | DDT, PAHs | Arkema (ECSI #398) - DDT | GS Roofing (ECSI #117) - PAHs<br>Willbridge (ECSI #1549) - PAHs |

Notes; 1 - STL STL
PVC Polyvinyl chloride
CSP Corrugated STL Pipe
CMP Corrugated Metal Pipe
CONBRK Concrete and Brick
FBRGLSS Fiberglass
HDPE High Density Polyethylene
NREENC Non-reinforced Concrete
RCP Reinforced STL Pipe
BRKSTN Brick and Stone

Not Evaluated - Determined to b



BZTO104(e)033275

Table 5.1-4. Active NPDES Permitted Discharges to the Portland Harbor Study Area[1].

| File No. | Facility | Permit Category | Permit Type | River Mile |
|---|---|---|---|---|
| **Major NPDES - Individual Permit** | | | | |
| 108015 | City of Portland, Port of Portland, Oregon Department of Transportation - Municipal Storm Water Permit | STM | NPDES MS4 | multiple |
| 93450 | Siltronic Corporation | IND | NPDES-IW-B14 | 6.3 |
| **Minor NPDES - Individual Permit** | | | | |
| **64905** | **Oregon Steel Mills** | **IND** | **NPDES-IW-B08** | **2.7** |
| 47430 | Northwest Natural Gas Company | IND | NPDES-IW-B15 | 6.4 |
| 70596 | Cascade General | IND | NPDES-IW-B15 | 8.2 |
| 74995 | Stralink Logistics | IND | NPDES-IW-B15 | 7.0 |
| 100025 | Kinder Morgan/Portland Bulk Terminal 4 | IND | NPDES-IW-B15 | 4.6 |
| 100517 | Univar USA | IND | NPDES-IW-B15 | 9.0 |
| **3690** | **Ash Grove Cement** | **IND** | **NPDES-IW-B16** | **3.3** |
| 68471 | ATOFINA Chemicals, Inc. (closed, now stormwater only) | IND | NPDES-IW-B16 | 7.4 |
| 108460 | Columbia River Sand & Gravel - Linnton Dist. Facility | IND | NPDES-IW-B16 | 4.8 |
| **General Permits** | | | | |
| 6739 | Northwest Pipe Company | IND | GEN01 | 4.0 |
| 8550 | GS Roofing Products Company, Inc. | IND | GEN01 | 7.0 |
| 62231 | Northwest Natural Gas Company | IND | GEN01 | 6.4 |
| 65589 | Owens Corning (Corp.) | IND | GEN01 | 4.0 |
| 100415 | J. R. Simplot Company - Rivergate Terminal | IND | GEN01 | 3.0 |
| 101321 | Freightliner Truck Manufacturing Plant 2 (TMP2) | IND | GEN01 | 8.5 |
| 102334 | Sulzer Pumps | IND | GEN01 | 10.5 |
| 106458 | Hexion Specialty | IND | GEN01 | 5.0 |
| 110322 | Oregon Transfer Co. | IND | GEN01 | 9.0 |
| 54175 | McCall Oil And Chemical Corporation | IND | GEN05 | 7.8 |
| 65589 | Owens Corning (Corp.) | IND | GEN05 | 4.0 |
| ~~4248~~ | ~~BP West Coast Products (ARCO)~~ | ~~IND~~ | ~~GEN12Z~~ | ~~4.3~~ |
| 6739 | Northwest Pipe Company | STM | GEN12Z | 4.1 |
| 8550 | GS Roofing Products Company, Inc. | STM | GEN12Z | 7.0 |
| **16055** | **Paramount Petroleum** | **STM** | **GEN12Z** | **8.1** |
| 30386 | Gunderson, Inc. | STM | GEN12Z | 8.9 |
| 32876 | Morse Bros. Linnton Terminal | STM | GEN12Z | 3.7 |
| ~~64905~~ | ~~Portland Steelworks - Rivergate (See File 108565)~~ | ~~STM~~ | ~~GEN12Z~~ | ~~2.4~~ |
| **64905** | **Oregon Steel Mills** | **STM** | **GEN12Z** | **2.7** |
| **68471** | **ATOFINA Chemicals, Inc.** | **STM** | **GEN12Z** | **7.4** |
| 70596 | Cascade General, Inc. | STM | GEN12Z | 8.2 |
| 84885 | Steinfeld's Products Company | STM | GEN12Z | 3.3 |
| 93450 | Siltronic Corporation | STM | GEN12Z | 6.3 |
| 100408 | Freightliner TMP | STM | GEN12Z | 8.2 |
| 100415 | J. R. Simplot Company - Rivergate Terminal | STM | GEN12Z | 2.9 |
| 100447 | Carson Oil Co., Inc. | STM | GEN12Z | 9.1 |
| ~~100475~~ | ~~Crown Cork & Seal Company, Inc.~~ | ~~STM~~ | ~~GEN12Z~~ | ~~4.7~~ |
| ~~100483~~ | ~~ESCO Corporation~~ | ~~STM~~ | ~~GEN12Z~~ | ~~10.2~~ |
| 100514 | Consolidated Metco, Inc. | STM | GEN12Z | 3.0 |
| 100721 | Rudie Wilhelm Warehouse Co. | STM | GEN12Z | 9.1 |
| ~~100726~~ | ~~Toyota Motor Sales, U.S.A., Inc.~~ | ~~STM~~ | ~~GEN12Z~~ | ~~5.0~~ |
| 101321 | Freightliner Truck Manufacturing Plant 2 (TMP) | STM | GEN12Z | 8.2 |
| 101536 | United Parcel Service, Inc. | STM | GEN12Z | 8.0 |
| 101620 | Auto Truck Transport Corporation | STM | GEN12Z | 9.3 |
| 101853 | Mt. Hood Chemical Corporation | STM | GEN12Z | 8.5 |
| 102121 | Union Pacific Railroad Company - Albina | STM | GEN12Z | 10.5 |
| 102334 | Sulzer Pumps | STM | GEN12Z | 10.5 |
| 103380 | Pacific Rail Services | STM | GEN12Z | 9.1 |
| ~~103803~~ | ~~Owens Corning Corp.~~ | ~~STM~~ | ~~GEN12Z~~ | ~~9.1~~ |
| 104250 | Columbia Distributing Company | STM | GEN12Z | 8.1 |
| 104836 | ESCO Corporation | STM | GEN12Z | 10.1 |
| 104856 | Tube Forgings of America, Inc. | STM | GEN12Z | 8.4 |
| 104892 | Galvanizers Company | STM | GEN12Z | 9.5 |
| 107172 | Quadra Chemicals Western Inc. | STM | GEN12Z | 8.0 |

BZTO104(e)033277

Table 5.1-4. Active NPDES Permitted Discharges to the Portland Harbor Study Area[1].

| File No. | Facility | Permit Category | Permit Type | River Mile |
|---|---|---|---|---|
| 107179 | Calbag Metals Co. | STM | GEN12Z | 10.3 |
| 107213 | Goldendale Aluminum Company | STM | GEN12Z | 10.2 |
| 107443 | Roadway Express, Inc. | STM | GEN12Z | 8.0 |
| 107564 | Chevron U.S.A. - Willbridge Asphalt Refinery | STM | GEN12Z | 8.1 |
| 107564 | Chevron U.S.A. - Willbridge Transportation | STM | GEN12Z | 8.0 |
| 107655 | Savage Services Corp. | STM | GEN12Z | 10.2 |
| 107658 | ABF Freight System, Inc | STM | GEN12Z | 9.0 |
| 107748 | G. I. Trucking Company | STM | GEN12Z | 8.2 |
| 107922 | Air Liquide (See Liquid Air File 50791) | STM | GEN12Z | 6.9 |
| 107985 | Stevedoring Services of America, Inc. | STM | GEN12Z | 9.8 |
| ~~108053~~ | ~~Distribution, Inc. - FTL~~ | ~~STM~~ | ~~GEN12Z~~ | ~~8.6~~ |
| **108101** | **Alder Creek Lumber Co., Inc.** | **STM** | **GEN12Z** | **2.9** |
| 108103 | Schnitzer Steel Industries, Inc. - DBA | STM | GEN12Z | 3.8 |
| 108394 | Usacoe - Us Government Moorings; St. Helens Road, Portland | STM | GEN12Z | 6.1 |
| 108460 | Linnton Plywood Association | STM | GEN12Z | 4.8 |
| 108460 | Columbia River Sand & Gravel, Inc. | STM | GEN12Z | 4.8 |
| 108590 | United Parcel Service Co. | STM | GEN12Z | 8.0 |
| 108673 | Fred Meyer Dairy Plant (Swan Island Dairy) | STM | GEN12Z | 8.2 |
| 108730 | HAJ DBA Christenson Oil | STM | GEN12Z | 8.6 |
| 108995 | SAIA Motor Freight Line, Inc. | STM | GEN12Z | 8.0 |
| ~~108997~~ | ~~Columbia American Plating Company~~ | ~~STM~~ | ~~GEN12Z~~ | ~~9.5~~ |
| 109008 | International Raw Materials, Ltd. | STM | GEN12Z | 4.0 |
| 109186 | Time Oil Co. - NW Terminal | STM | GEN12Z~~,T,C~~ | 3.6 |
| 109831 | Fedex Ground Package System, Inc. | STM | GEN12Z | 8.2 |
| 109845 | Jefferson Smurfit Corporation (U.S.) | STM | GEN12Z | 3.9 |
| 109851 | Peninsula Truck Lines, Inc. | STM | GEN12Z | 9.9 |
| 109852 | Portland Terminal Railroad Company | STM | GEN12Z | 9.1 |
| 109872 | Western Wire Works, Inc. | STM | GEN12Z | 8.7 |
| 109938 | Shore Terminals LLC | STM | GEN12Z | 5.1 |
| 110199 | Federal Express Corporation | STM | GEN12Z | 9.8 |
| 110258 | McCracken Motor Freight, Inc. | STM | GEN12Z | 10.3 |
| 110261 | Lincoln & Allen Company | STM | GEN12Z | 10.1 |
| 110272 | Container Recovery, Inc. | STM | GEN12Z | 9.2 |
| ~~110329~~ | ~~Maiden Bronze, Inc.~~ | ~~STM~~ | ~~GEN12Z~~ | ~~9.5~~ |
| 110646 | Metro Central Transfer Station | STM | GEN12Z | 8.2 |
| ~~110757~~ | ~~Burlington Northern & Santa Fe Railway -~~ | ~~STM~~ | ~~GEN12Z~~ | ~~7.0~~ |
| 110778 | Rose City Moving & Storage Company | STM | GEN12Z | 7.9 |
| 111009 | Mt. Hood Beverage Company | STM | GEN12Z | 9.3 |
| 111065 | IMACC Corporation - Container Management Services | STM | GEN12Z | 9.3 |
| 111221 | A.G.G. Enterprises, Inc. | STM | GEN12Z | 8.8 |
| 111236 | Portland Container Repair Corporation | STM | GEN12Z | 3.8 |
| 111331 | Sakrete of the Pacific Northwest | STM | GEN12Z | 10.8 |
| 111395 | Boydstun Metal Works, Inc. | STM | GEN12Z | 3.2 |
| 111396 | Boydstun Metal Works Inc. | STM | GEN12Z | 4.3 |
| 111845 | Becker Trucking, Inc. See File #109849 | STM | GEN12Z | 8.9 |
| 111878 | RM Beverage Delaware, - Maletis Beverage | STM | GEN12Z | 8.2 |
| 111952 | Calbag Metals Co. | STM | GEN12Z | 3.7 |
| 112017 | Exxon Mobil Oil Corporation | STM | GEN12Z | 5.2 |
| 112482 | Barrich, Inc. - MRP Services Inc. | STM | GEN12Z | 9.2 |
| **113286** | **Environmental Fibers International** | **STM** | **GEN12Z** | **8.6** |
| **113672** | **Toyota Logistics Services, Inc.** | **STM** | **GEN12Z** | **4.9** |
| **114024** | **Port of Portland Terminal 2** | **STM** | **GEN12Z** | **10.2** |
| **114961** | **Greenway Recycling** | **STM** | **GEN12Z** | **8.5** |
| 4248 | BP West Coast Products (ARCO) | IND | GEN13 | 4.3 |
| 32300 | Kinder Morgan Linnton Terminal | IND | GEN13 | 2.6 |
| ~~54175~~ | ~~McCall Oil And Chemical Corporation~~ | ~~IND~~ | ~~GEN13~~ | ~~7.8~~ |
| 57374 | Shore Terminals/ (DBA) ST Services | IND | GEN13 | 4.4 |
| 65589 | Owens Corning (Corp.) | IND | GEN13 | 4.0 |
| 80841 | Kinder Morgan Liquid Terminals - Willbridge Terminal | IND | GEN13 | 5.4 |
| 87693 | Equilon Enterprises L.L.C. (DBA)-Shell Oil Products | IND | GEN13 | 6.3 |
| 90845 | Conocophillips Company | IND | GEN13 | 5.7 |
| 100122 | Chevron U.S.A. Inc. - Willbridge Distribution Center | IND | GEN13 | 7.9 |
| ~~103803~~ | ~~Owens Corning Corp.~~ | ~~IND~~ | ~~GEN13~~ | ~~9.0~~ |

BZTO104(e)033278

Table 5.1-4. Active NPDES Permitted Discharges to the Portland Harbor Study Area[1].

| File No. | Facility | Permit | | River Mile |
|---|---|---|---|---|
| | | Category | Type | |
| 111157 | Fuel and Marine Marketing LLC | IND | GEN13 | 6.4 |
| 112103 | Olympic Pipe Line Co. | IND | GEN13 | 5.2 |
| 32300 | Kinder Morgan Linnton Terminal | IND | GEN15A | 4.3 |
| 62231 | Northwest Natural Gas Company | IND | GEN15A | 6.4 |
| 87693 | Equilon Enterprises L.L.C. (DBA)-Shell Oil Products | IND | GEN15A | 6.3 |
| ~~106456~~ | ~~SFPP, L.P.~~ | ~~IND~~ | ~~GEN15A~~ | ~~7.0~~ |
| ~~107640~~ | ~~Port of Portland Terminal 4~~ | ~~IND~~ | ~~GEN15A~~ | ~~5.0~~ |
| ~~111880~~ | ~~Shell Oil Products USA~~ | ~~IND~~ | ~~GEN15A~~ | ~~8.8~~ |

**Notes:**

[1]DEQ Facility Profiler Database accessed 1/29/07 http://deq12.deq.state.or.us/fp20/StartPage.asp?

**Definitions:**

| | |
|---|---|
| GEN01 | Cooling water/heat pumps |
| GEN05 | Boiler blowdown |
| GEN12Z | Industrial stormwater |
| GEN12T | Industrial stormwater |
| GEN13 | Oily Stormwater |
| GEN15A | Tank cleanups and treated groundwater |
| NPDES MS4 | Municipal Stormwater Permit |
| NPDES-IW-B08 | Primary smelting and/or refining - Ferrous and non-ferrous metals not elsewhere classified above |
| NPDES-IW-B14 | Facilities not elsewhere classified which dispose of process wastewater (includes remediated groundwater) - Tier 1 sources |
| NPDES-IW-B15 | Facilities not elsewhere classified which dispose of process wastewater (includes remediated groundwater) |
| NPDES-IW-B16 | Facilities not elsewhere classified which dispose of non-process wastewaters |
| Stikethrough | Permit listed in 2004 and not listed in 2006 |
| Bold | Permit listed in 2006 and not listed in 2004 |

BZTO104(e)033279

Table 5.1-5. Overwater Releases.

| Site Name | River Mile | River Bank | Major Industrial Operations[1] | Documented In-River[1][2] | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Date | Materials Released | Volume Spilled | Spill Surface | Comments |
| Oregon Steel Mills #141 | 2.2 | E | Current: Manufacturing of carbon steel coils and plates. Pipe production capabilities are currently being added. | 12/22/1997 | Hydraulic fluid | Some of (~15 gallons) 40-70 GAL | Catch Basin/River | |
| | | | | 2/4/2000 | Hydraulic fluid | 1-2 Gal | Storm drain, then to river | |
| | | | | 1940s?[5] | Oil | Unknown | River | Transfer pipe from vessels to sump was observed to be leaking badly (prior to OSM ownership). |
| South Rivergate Industrial Park #2980 | 2.5 | E | Current:JR Simplot - storage and distribution of urea and anhydrous ammonia; Union Chemical -manufacturer of adhesives and glues; Ash Grove Cement - manufacturer of calcium oxide; POP/Ft James - distribution of paper products; Douglas Walters/T&G Trucking | 4/18/2004 | Tar | Unknown | River | All reported from JR Simplot |
| | | | | 9/28/2002 | Anhydrous ammonia | Unknown | River | |
| | | | | 5/29/2001 | Granular Urea | 500 lbs | Dock, ship deck, river | |
| | | | | 1/15/2001 | Conveyor residual lube oil into river | Unknown | River | |
| | | | | 5/5/1998 | 500- by 50-feet sheen | Unknown | River | |
| | | | | 11/16/1999 | Sheen on river | Not available | River | |
| | | | | 4/13/1998 | Urea | 1,000-1,600 lbs | River | |
| Premier Edible Oils #2013 | 3.6 | E | Current: none; Historic: aboveground oil storage, manufacturing, packaging, and distribution of chemicals, metals, and metal products, edible oil processing and storage facility | 1988 | Edible Oil | 20-50 gal | GAL | No spills indicated in DEQ ERIS dbase, spill reported in CSM. |
| Noncontiguous Burgard Industrial Park Properties #none | 3.7 | E | Current: Boydstun Metal Works - automotive trailer manufacturing and automotive parts storage; Morgan CFS - container unloaded (lumber and building materials); Northwest Pipe - no manufacturing, storage; Schnitzer Steel Remnant- storage; Historic: WW II s | 9/2/2003 | Diesel | 10 gallons | Barge deck and river | |
| | | | | 11/18/2003 | Hydrualic fluid | <1 gallon | International Slip Waterway | |
| | | | | 3/29/2001 | Oily water | Unknown | International Slip Waterway | |
| | | | | 5/1/1981 | Transformer fluids containing PCBs | Unknown | Upper and lower decks and bilge of ship | |
| Schnitzer-Calbag #2355 | 4 | E | Current: Metals recycling, truck maintenance and repair, warehousing; Historic: Ship construction/shipyard activities (1945-1972, Oregon Shipbuilding), metals recycling, truck maintenance and repair, warehousing; upland log storage and log rafting; fillin | 11/18/2003 | hydraulic oil | <1 gal | River | |
| | | | | 9/2/2003 | Diesel | 10 gal | River | |
| | | | | 3/29/2001 | Oily water | Unknown | International Slip Waterway | |



BZTO104(e)033281

Table 5.1-5. Overwater Releases.

| Site Name | River Mile | River Bank | Major Industrial Operations[1] | Documented In-River[1][2] | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Date | Materials Released | Volume Spilled | Spill Surface | Comments |
| | | | | 5/1/1981 | Transformer fluids containing PCBs | Unknown | Upper and lower decks and bilge of ship | |
| Kinder Morgan Liquids Terminal - Linnton #1096 | 4.4 | W | Bulk petroleum facility since installation of fuel ASTs in 1918 | 10/3/1998 | Fuel? | 200 gal | River | Dock line broke |
| | | | | 6/14/1999 | Potash | 5-7 tons | River | |
| Port of Portland Terminal 4, Slip 3 # 272 | 4.6 | E | Current: Loading soda ash at docks Historic: Loading soda ash, unloading pencil pitch, storage and unloading of bulk oil, import and export of ore and concentrate, unloading diesel, No. 6 fuel, and Bunker C oil and transferring via pipeline. | 6/18/1997 | Pitch | small amount | River | |
| | | | | 1971 | Oil seep | Unknown | River | |
| Linnton Plywood Association #2373 | 4.7 | W | Linnton Plywood: Sawmill and lumber company, plywood manufacturing, and warehousing in plywood building. Columbia River Sand and Gravel (CRSG): sand barging and distribution | 2/17/1995 | Pale oil | 20-55 gal | storm drain, sheen on river | |
| ARCO #1528 | 4.9 | W | Current: petroleum storage and distribution; Historic: petroleum storage and distribution, foamite plant, toy manufacturing lumber company | 10/31/2005 | Diesel | 18,000 spilled (at least 1,000 gal to river) | Ground/River | |
| | | | | 8/13/1997 | #2 Diesel | 25,000 gallons, unknown total amount to river | Ground/River | |
| | | | | 1995, 2003, 2004 | Reported sheen on water inside boomed area (multiple separate incidences) | | | |
| POP - Terminal 4 (Auto Storage Facility) #172 #2642 | 5 | E | Current: Unloading, storing and processing of new automobiles; Historic: Unloading, storing and processing of new automobiles, unloading of steel and export of lumber products on the northern third of the Facility. | None | | | | Sheens reported but no spills. |
| Exxon Mobil #137 | 5.1 | W | Petroleum storage and distribution | 1/20/2004 | oil residue | 4 gallons | River via outfall | 25 feet out into the River spanning 50 feet on either side of the outfall. Cleanup conducted |
| | | | | 5/4/2004 | Oil | not reported | River | |
| | | | | 8/11/2003 | Jet Fuel | 50-100 gallons | River | |
| ST Services/Shore Terminals #1989 | 5.3 | W | Bulk petroleum storage and marine terminal | 8/11/2003 | JP8 fuel | 50-100 gal | River | |
| Foss Maritime/Brix Marine #2364 | 5.5 | W | Current: marine vessel transportation services and maintenance; Historic: above and tugboat service and fueling. | 1995 - 2004 | fuel | <25 gal at a time | River | Small amounts of fuel (<25 gallons at a time) released into Willamette from maintenance activities, periodically from 1995 - 2004. |
| | | | | 9/9/2004 | lube oil | unknown | River | |
| | | | | 7/8/2002 | fuel | 5 gallons | River | |
| MarCom #2350 | 5.6 | E | Current: none; Historic: shipbuilding and repair, sandblasting and painting, moorage. | 2/23/2006 | Unknown oil - air compressor | 1 gal | River | |
| | | | | 6/6/2000 | Lanolite | Unknown, 50 x 100 ft sheen | River | |
| | | | | 10/1997 | Oily/Water materials | 50 gal | River | |
| | | | | 4/2/1997 | Sandblasting paint/dust | Unknown | River | |



BZTO104(e)033282

Table 5.1-5. Overwater Releases.

| Site Name | River Mile | River Bank | Major Industrial Operations[1] | Documented In-River[1][2] | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Date | Materials Released | Volume Spilled | Spill Surface | Comments |
| | | | | Apr-97 | Oil-contaminated bilge water | 20 gal | River | |
| | | | | ~1970s | Barge in shipway tipped over releasing fuel oil | Unknown | In shipway | The barge/fuel oil release was addressed at the time by excavating the saturated soils/material and placing it on the top of the bank adjacent to the spillway. |
| Marine Finance (Hendren Tow Boats) #2352 | 5.8 | W | Current: tugboat business, houseboat/sailboat construction; Historic: above and metal salvage, moorage | 2003 | oily bilge water | 1 gal | River | |
| U.S. Moorings #1641 | 6 | W | Government port, supply, repair facilities for dredge and other support vessels, warehousing facilities, fuel storage, motor pool garage and parking. | 1/15/2004 | hydraulic oil | 10 gal | River | 50- by 300-ft sheen. Also trace amounts of hydraulic oil in 2004 and 2003. |
| | | | | 11/24/1996 | oil slick of black fuel oil | Unknown | River | |
| | | | | 3/9/1996 | Unknown oil | Unknown | River | |
| | | | | 12/29/1990 | Sinking of anchor barge Raggy at its moorings - diesel / motor oil | 350 gal (diesel)/ unknown (motor oil) | River | |
| Gasco #84 | 6.2 | W | Current: liquefied natural gas storage and distribution, solid and liquid coal tar pitch storage and distribution; northern portion - bulk fuel storage and distribution; Historic: oil manufactured gas plant, coal tar formulation, storage and distribution, | 10/22/2003 | coal tar pitch | 2 gal | River | KI operations |
| | | | | 3/2000 | oily water | <25 gal at a time | River | NW natural operations |
| | | | | 1998 | fuel oil (PNO) | few gallons | River | NW natural operations |
| | | | | 10/1/1969 | coal tar pitch | Unknown | River | KI operations |
| Willamette Cove #2066 | 6.7 | E | Current: vacant; Historical: plywood manufacturing plant (west parcel), ship repair and maintenanced (central parcel) - US Government facilitated during Great Depression and wars (WWI, WWII, and the Korean War), cooperage plant-manufactured wood vats, ke | None | | | | 8/16/01: 30' cabin cruiser partly submerged in Willamette River. Sheen noted when discovered. |
| Arkema | 7.3 | W | Current: none; Historical: inorganic chemical manufacturing company from 1941 to 2001. Produced sodium chlorate and potassium chlorate, chlorine, sodium hydroxide, hydrogen gas, hydrochloric acid and DDT. | 3/7/1979 | bunker oil | 2 - 5 gal | overwater dock | 100% recovered |
| | | | | 11/1/1989 | oil | 10 gal | River | |
| | | | | 1/1/1971 | gasoline | several hundred gallons | River | Cleaned up |



BZTO104(e)033283

Table 5.1-5. Overwater Releases.

| Site Name | River Mile | River Bank | Major Industrial Operations[1] | Documented In-River[1][2] | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Date | Materials Released | Volume Spilled | Spill Surface | Comments |
| Willbridge Terminals #1549 | 7.5 | W | Bulk petroleum storage since early 1900s. | 12/1/1975 | Asphalt | 100 gal | Saltzman Creek | Tank overflow |
| | | | | 6/1/1976 | gasoline | NA | River | |
| | | | | 6/1/1978 | gasoline | NA | River | |
| | | | | 10/1/1979 | aviation gasoline | 70 gal | River | |
| | | | | 4/1/1980 | lube oil | 2 gal | River | |
| | | | | 4/1/1981 | Undocumented solvent | NA | Saltzman Creek | |
| | | | | 12/1/1981 | diesel | NA | Saltzman Creek | Leak from drum on pick up |
| | | | | 3/1/1982 | oily water | NA | Saltzman Creek | Leak from weephole in flume wall |
| | | | | 12/1/1982 | Petroleum product | 90 gal | Saltzman Creek | |
| | | | | 8/1/1984 | black oil | NA | River | seepage from docking facility |
| | | | | 9/4/1984 | heavy hydrocarbon | NA | River | seepage from docking facility |
| | | | | 9/9/1984 | heavy hydrocarbon | NA | River | seepage from docking facility |
| Shaver Transportation #2377 | 8.4 | W | Current: general towing and lightering; Historic: mobile telephone service and marine transportation. | 3/3/2005 | diesel | 10-03 gal | river | Spill contained and cleaned up. |
| Willbridge Terminals (WMCSR-NWR-94-06) #2355 | 7.7 | W | Current: distribution of refined petroleum products (gasoline, diesel fuel, lubricating oil), fuel storage. | 1989 | Asphalt | 6300 gal | River | Multiple instances of sheen was observed on water (1998-2004), no spills >1 gallon. |



BZTO104(e)033284

Table 5.1-5. Overwater Releases.

| Site Name | River Mile | River Bank | Major Industrial Operations[1] | Documented In-River[1][2] | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Date | Materials Released | Volume Spilled | Spill Surface | Comments |
| McCall Oil #134 | 7.9 | W | Asphalt manufacturing and chemical manufacturing, storage and distribution | 1991 and Mid 70's | Asphalt | Unknown | River | |
| | | | | Mid 70's | Oil and water | Unknown | River | |
| US Coast Guard - Marine Safety Station #1338 | 8 | E | Current: USCG marine safety and marine inspection offices; Historic: roofing shingle manufacturer, lumber company | 12/7/2004 | Petroleum | Sheen | River | |
| | | | | 8/18/2002 | Diesel - bilge from tug | Unknown | River | 400-by 100-ft sheen |
| | | | | 11/28/1998 | Diesel | ~30 gal | River | |
| | | | | 10/8/1996 | Fuel | Unknown | River | |
| Fred Devine Diving and Salvage #2365 | 8.2 | E | Current: moorage; Historic: moorage and waterfront structures (1940s), cleaner and solvent storage. | 2000 | paint | 5 gal | River | 1 pint of hydraulic oil spilled into Willamette - date unknown. Crews cleaned up spill |
| Cascade General #271 | 8.4 | E | Current: Cascade General - Ship repair yard and other industrial operations, POP - parking lot/undeveloped property; Historic: Cascade General - ship repair/industrial operations (1947-present), military shipyard (1942-1947), POP - steel fabrication and s | 4/18/2006 | Sandblasting dust | Unknown | River | |
| | | | | 11/25/2003 | Lube oil | 15 gal | River | |
| | | | | 5/29/2003 | Lube oil | 55 gal | River | |
| | | | | 6/9/2000 | Hydraulic oil | 1 barrel | River | |
| | | | | 1/29/1999 | Hydraulic oil | 5 gal | River | |
| | | | | 10/20/1998 | Generator fuel | 5 gal | River | |
| | | | | 12/23/1997 | Diesel | 25-50 gal | River | |
| | | | | 11/13/1997 | Crude oil | 100 gal | River | |
| | | | | 9/27/1997 | Diesel | 22 gal | River | |
| | | | | 8/28/1997 | Unknown oil | 25-40 gal | River | |
| | | | | 4/9/1996 | Unknown oil | ~25 gal | River | |
| | | | | 7/20/1993 | Hydraulic oil | ~50 gal | River | |
| | | | | 1/8/1992 | 2-D Fuel oil | 3 barrels | River | |
| | | | | 9/16/1991 | Waste oil/lubricants | ~35 gal | River | |
| | | | | 4/17/1991 | Lube oil | 150-200 gal | River | |
| | | | | 6/11/1987 | Diesel | ~25 gal | River | |
| | | | | 5/13/2004 | hydraulic oil | <5 gal | River | Small amount of hydraulic oil spilled on dock, when dock is submerged, a sheen is seen in the water. |
| | | | | 12/6/2000 | Oil | 0.5 gal | River | Residual oil spilled from equipment while loading onto barge. |
| | | | | 5/22/2000 | Diesel | 3 gal | River | 3 gl. Fuel can of diesel fell in river. |
| | | | | 3/21/2000 | Diesel | ~ 5 gal | River | 5 gl diesel into river, after check ball valve failed. |
| | | | | 2/23/2000 | Generator fuel | ~1 gal | River | 10 gl spilled during generator testing, ~1 gl. Reached river. |
| | | | | 4/11/2002 | Oil | 2 L | River | Release of 2 liters of oil into the Willamette |
| | | | | 4/11/1982 | Ballast water | 900 bbls | River | |
| Gunderson LLC #1155 | 8.8 | W | Current: Manufacturing rail cars and marine barges; Historical: rail car and marine vessel manufacturing, ship dismantling and auto salvage. | 2/26/2001 | gtea-415 & toluene | 1.5 gal | River | |
| Equilon Property (Pipeline Containment) #2117 | 8.8 | W | Current: Storage/distribution of gasoline, diesel and ethanol ; Historical: Beginning in 1928 - Storage/distribution of petroleum, bunker fuel, jet fuel, and lubrication oil | 1994, 1992, 1989, 1988 | Diesel | ~250 gal | River | Action was taken |



BZTO104(e)033285

Table 5.1-5. Overwater Releases.

| Site Name | River Mile | River Bank | Major Industrial Operations[1] | Documented In-River[1][2] | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Date | Materials Released | Volume Spilled | Spill Surface | Comments |
| Goldendale Aluminum #2440 | 10 | E | Current: storage of lubricating and hydraulic oils; Historic: alumina and electrode binder pitch unloading facility, grain shipment facility. | 1991 | Bunker C fuel | 8,000 gallons | River | |
| POP - Terminal 2 #2769 | 10 | W | Current: marine terminal; Historic: marine terminal, shipyard-ship construction during WWII (unknown to 1949), exporter of agricultural and manufactured wood products. | 10/25/2000 | Hydraulic oil | 1 gal | River | |
| | | | | 10/9/1998 | Sheen observed coming off of T2 dock | Unknown | River | |
| | | | | 3/21/1998 | loads of pallets containing paints and thinners | Unknown | River | |
| | | | | 6/17/1978 | Oil and bilge water | Unknown | River | |

Notes (sources)

[1] Information obtained from CSM site summaries (2005) and site summary addenda (2006)

[2] Known or documented spills at the sites were obtained from DEQ ERIS database for the period of 1995 to 2006:



BZTO104(e)033286

Table 5.2-1. Shoreline or Nearshore Facilities Upstream of RM 11 that are Listed in DEQ's ESCI Database.

| ESCI # | Facility or Site Name/Status | Address | Type(s) of Operation | Hazardous Substances/Waste Types | Detected Chemicals in Upland Samples[1] | Potential Pathways to River[2] |
|---|---|---|---|---|---|---|
| 4590 | Albers Mill Property/ RI recommended 4/06 | 1200 NW Naito Parkway Portland, OR 97209 | former cereal and grain mill, currently office space | historic fill and debris, liberty ship hulls buried here - petroleum, metals | PAHs (S), petroleum (motor oil, mineral spirits), chromium (S), copper (S), lead (S), mercury (s), zinc (S), copper (GW) | GW |
| 4535 | Waterfront Pearl Condominium Construction Site/recommended for site screening 11/05 | 1118 NW NAITO PKWY Portland, OR 97209 | location of former Liberty Ship Memorial Park, former black top paved parking | historic fill and debris, liberty ship hulls buried here - petroleum, metals | PAHs (S), petroleum (motor oil, mineral spirits), chromium (S), copper (S), lead (S), mercury (s), zinc (S), copper (GW) | GW |
| 1962 | Union Station Agricultural Marketing Center Site, ODA Laboratory Services, Union Station Parcel A North/Engineered cap and building on Lot 1 | 1207 NW Naito Pkwy Portland, OR 97209 | Couch Lake filled in the 1890s, railyard for over 100 years | PAHs, petroleum hydrocarbons, lead, arsenic | arsenic (S), lead (S), PAH (S), TPH (S) | |
| 1414 | Union Station - Track #5/ placed on Inventory 1/01 | Union Station Portland, OR 97209 | Amtrak refueling of diesel locomotives (1973-1992) | diesel fuel | LPAH(B), HPAH(B), diesel(S), ethylbenzene(B), toluene(S), xylenes(S) | DR, SW, GW |
| 1885 | Union Station - Parcel B South/ RI/FS complete 5/03, capped Lots 1, 3, & 7 | 1100 to 1300 NW 9th Avenue Portland, OR 97209 | residential housing (1997 to present), railyard (1890s to 1996) | PAHs, petroleum hydrocarbons, lead, arsenic | arsenic(S), lead(S), PAH (GW), TPH (S) | |
| 2761 | Vermiculite Northwest (former) - WR Grace Co./recommended for site screening 11/00 | 2303 N Harding St. Portland, OR 97227 | | asbestos | | |
| 3036 | Tucker Building/ NFA 8/04 &comments period on Confirmed Release List closed 10/05 | 2110 N Lewis Ave. Portland, OR 97227 | | asbestos, petroleum, PCB | petroleum(S) | |
| 1394 | Louis Dreyfus Facility/placed on Confirmed Release List 3/97 (low priority) | (foot of) N Holladay St. Dock & Elevator Portland, OR 97227 | | petroleum | TPH(S) | DR, GW(unknown) |
| 4578 | Everett Street Building/site screening recommended 1/06 (Kronke, Trutz) | 509 NW Everett Street Portland, OR 97209 | | PAHs and lead, unknown source | PAHs (S), lead (S) | unknown at this time |
| 383 | Old Town Parking-Helistop Structure/ RA 1992 | 33 NW Davis Portland, OR 97209 | Broadway Cab Co. service center (mid-1950's-1985) | PAHs, ammonia, heavy metals, PAHs, BTEX | VOCs (GW), PAHs (GW) | GW |
| 1138 | Natural Gas Building Garage (aka Portland Gas Manufacturing Site, Portland Gas & Coke Co.,MGP, Portland Gas Light Co.)/Options Letter for Further Action Letter sent 3/02 | NW 1st and Everett Portland, OR 97209 | former coal/gas manufacturing (Portland Gas and Coke) (1860-1913) | coal and oil tars, BTEX, spent iron oxide, process wastewaters | no testing has been completed but locatons south of this site have detected compounds consistent with coal and oil tars | |
| 876 | North Waterfront Park | NW Front Ave. Portland, OR 97209 | | benzene, toluene, xylene, ethylbenzene | benzene(GW), ethylbenzene(B), toluene(B), xylenes(B) | SW, GW |
| 334 | I-5/I-84 pesticide spill/DEQ spill response initiated cleanup, site screening recommended 2/94 | I-5 & I-84 interchange Portland, OR 97232 | 450 lbs. CAPTAN (endosulfan) spilled from overturned truck on 2/86 | endosulfan | | |
| 4426 | East Portland Gas Works (former)/site screening recommended 6/05 | 110 SE 2nd Ave. & 5 SE MLK Ave. Portland, OR 97214 | former gas plant | PAHs | no testing has been completed | |
| 4416 | Oak Tower Redevelopment/ RA 4/06 & proposed for inventory 10/06 | 225 Oak St. Portland, OR 97204 | heating oil spill | TPH, PAHs, TCE | diesel (S), TCE (GW) | |



BZTO104(e)033287

Table 5.2-1. Shoreline or Nearshore Facilities Upstream of RM 11 that are Listed in DEQ's ESCI Database.

| ESCI # | Facility or Site Name/Status | Address | Type(s) of Operation | Hazardous Substances/Waste Types | Detected Chemicals in Upland Samples[1] | Potential Pathways to River[2] |
|---|---|---|---|---|---|---|
| 1135 | NW Cast Metal Products, Broad Spectrum Electronics Lab (aka. Auric Ent., H & M Electronics, Pacific Meats, NW Cast Metal Products, Ross Electric)/Site confirmatory sampling required 3/96 | 79 SE Taylor St. Portland, OR 97214 | former Southern Pacific Railroad warehouse, 1912 International Harvester Building, warehouse for several othe rparties over the years, lab located on 3rd floor in corner of building | alleged dumping of PCBs, solvents, lead, arsenic, mercury, zinc, cyanide compounds, phenols, acids | PAHs (S) | |
| 2414 | Eastbank Riverfront Project (aka. Eastbank Esplanade, Portland Development Commission)/ partial NFA 1999 | Portland, OR 97214 | | lead, petroleum | lead(S), petroleum(S) | |
| 151 | Portland General Electric Station L/ NFA 1994 sediment cap | 1841 SE Water Ave. Portland, OR 97214 | steam electric plant, electrical equip. maintenance and warehousing | PCBs, heavy metals, BTEX, PAHs | PCB(S) | DR, GW |
| 602 | South Waterfront Redevelopment Area - now Strand Condominium Towers (aka. Lincoln Steam Plant, Pacific Power & Light)/ RA 10/05 | SW River Dr. Portland, OR 97201 | Parcel 3A - site of former Lincoln Steam Plant | PAHs, lead, arsenic, asbestos, PCBs | lead(B), oil(S) | DR, GW, SW |
| 4420 | South Waterfront at River Place - Stanford's Rest., RiverPlace Square Apts (Trammel Crow)/ added to database 5/05 | Parcel 2 Areas B&C SW RIVER DR., PORTLAND OR 97201 | | | | |
| 4421 | South Waterfront at River Place - SW River Drive & SW River Parkway w/ storm drains | Parcel 2 Area A, SW RIVER DRIVE AND SW RIVER PARKWAY , PORTLAND OR 97201 | | | | |
| 4422 | South Waterfront Park - on the river (aka. South Waterfront Redevelopment Area, Parcel 3A/3B)/ RA (capped PAH-contaminated soil, bank stabilization) 10/05 | Parcel 3A & 3B, Area D FOOT OF SW MONTGOMERY ST. , PORTLAND OR 97201 | Parcel 3A - site of former Lincoln Steam Plant | | | |
| 4423 | South Waterfront Park- PGT Building(aka. South Waterfront Parcel 3B)/NFA 1994, added to database 5/05 | Parcel 3B SW RIVER PARKWAY , PORTLAND OR 97201 | | | | |
| 4424 | South Waterfront River Place Lot 108- NE corner SW River Dr/SW River Pkwy/ FS 2/05, asbestos removal alternatives 5/05 | Parcel 3B, Area D SW RIVER PKWY/SW RIVER DR. (NE CORNER) PORTLAND OR 97201 | | this parcel has the asbestos buried in soils | | |
| 2492 | South Waterfront Redevelopment Area 3/ ROD 1/04, RA 2/04, Inventory 4/04 | SW RIVER PKWY. & SW HARBOR DR Portland, OR 97201 | Portland Lumber Company (former) | PAHs, metals, diesel, lead, oil | PAHs(B), cadmium(GW), chromium(GW), diesel(S), lead(GW), oil(S) | GW |
| 2232 | Innventures (aka. CM Company Inc. a corp. of Id., Marriott residence Inn, Portland Development Commission - lot 5)/ hotspot cleanup, site effectively capped, delisted 2002 | 2115 SW River Portland, OR 97201 | lumber storage (~1900-1950) for the Portland Lumber Company; scrap steel storage (1950's-1970's); 1994-1995 storage for PAH-contaminated soil | diesel & heavy oil, petroleum hydrocarbons, metals | PAHs, gasoline, oil or fuel-related compounds (S) | |



BZTO104(e)033288

Table 5.2-1. Shoreline or Nearshore Facilities Upstream of RM 11 that are Listed in DEQ's ESCI Database.

| ESCI # | Facility or Site Name/Status | Address | Type(s) of Operation | Hazardous Substances/Waste Types | Detected Chemicals in Upland Samples[1] | Potential Pathways to River[2] |
|---|---|---|---|---|---|---|
| 875 | Schnitzer - SW Moody Ave. (also #1401 SW Moody Right-of-way)/ Unit B: NFA, Units A & C: Phase I RA done 12/95, Phase II RA incorporates development | Units A, B, & C Moody Ave. Portland, OR 97201 | former metals salvaging, processing, & pesticides formulation; property transferred to OHSU | Unite A soils: DDTs, hexachloropentadiene, PCBs, TCE, 1,2 DCE, acetone; Unit A groundwater: barium, lead, cadmium, chromium, lead, zinc, acetone, carbon disulfide, benzene, toluene, 4- methyl-2-pentanone, ethylbenzene, cincole, cyanide; Unit C soils: lead, PCBs, CPAHs | Unite A soils: DDTs, hexachloropentadiene, PCBs, TCE, 1,2 DCE, acetone; Unit A groundwater: barium, lead, cadmium, chromium, lead, zinc, acetone, carbon disulfide, benzene, toluene, 4- methyl-2-pentanone, ethylbenzene, cincole, cyanide; Unit C soils: lead, PCBs, CPAHs | SW, GW |
| 1923 | Westwood Corp.(aka. Swinterton Builders)/ FS 2000, NFA 2000 | 3030 SW MOODY AVE STE 250 Portland, OR 97201 | foundry & scrap business (1930's-1984) | diesel-range petroleum, metals, possibly PCBs and PAHs | diesel, kerosene, lead (S) | SW, GW |
| 689 | Zidell Marine Corporation(aka. North Macadam Project, Zidell Explorations)/ROD 2/05, negotiations 7/05 | 3121 SW Moody Ave. Portland, OR 97201 | ship dismantling, barge construction, tube forging; numerous oil spills reported; fire pits for burning debris and insulation; ballast water discharged onsite | metals, petroleum hydrocarbons, asbestos, PCBs | antimony(B), arsenic(S), benzene(GW), chromium(S), lead(S), nickel(B), oil(B), PCBs(B), PAHs(S), tributyltin(S). Metals, PAHs, PCBs, and butyltins also present in sediments. | DR, GW, SW |
| 4036 | US Bank/Blocks 25 & 29 excavated in 2004, partial NFA 5/05 | 3505-3439 & 3400-3500 SW Bond Ave. Portland, OR 97239 | Currently being redeveloped for mixed urban res./comm.; opast uses include shipbuilding (1943-1945), steel and metal fabricating, electrical products manufacturing. Blocks 25/29 used for storage of logging and suplus Zidell equipment. Recently used for warehouse/office space with parking/loading dock. | localized areas of petroleum hydrocarbon contamination | TPH (S) | SW |
| 1292 | Gibson-Homans Co./EPA SI 1985, site screening recommended in 1994 | 3419 SW Moody Ave. Portland, OR 97201 | manufactures protective coatings, including asphaltic roof coatings, aluminum roof coatings, putty, caulk, sealants, wood preservatives, adhesives | no noticable discharges | | |
| 3993 | Pacific Richfield - South Waterfront (aka.North Macadam Investors, North Macadam Central district, Rosebud Holdings, Waterfront South)/cleanup 1/04 & partial NFA 4/06 | 3305-3401, 3500 SW BOND STREET Portland, OR 97239 | previosuly used for sand & gravel operations (1930-1989); small welding shop operated for short period afterward. | Petroleum hydrocarbons, SVOCs, PAHs in localized areas | TPH (S), arsenic (S), low levels of PAHs (GW) | |
| 4527 | Neighborhood Park (public Storage)/RA 6/06 | 3508 SW Moody Portland, OR 97239 | machine shop and door manufacturer (1950's-1960's), now storage units | PAHs, VOCs, metals | diesel-range petroleum hydrocarbons (GW), VOCs (B), metals (B), PAHs (S) | |
| 1925 | Mackenzie/Saito Property (North Macadam District Project) | 690 SW Bancroft St. Portland, OR 97201 | lumber mill (former) | oil-range hydrocarbons, PAHs | benzene(GW), PAHs(GW), ethylbenzene(GW), oil(S), toluene(GW), xylenes(GW) | GW |



BZTO104(e)033289

Table 5.2-1. Shoreline or Nearshore Facilities Upstream of RM 11 that are Listed in DEQ's ESCI Database.

| ESCI # | Facility or Site Name/Status | Address | Type(s) of Operation | Hazardous Substances/Waste Types | Detected Chemicals in Upland Samples[1] | Potential Pathways to River[2] |
|---|---|---|---|---|---|---|
| 4007 | Prometheus Property (aka. Lakeside Industries [circa 1989], North Landing, The Landing at Macadam, LLC)/ placed on | Bond & Lowell St.<br>T1S/R1E/S10<br>PORTLAND OR 97201 | undeveloped, former asphalt manufacturing plant (formerly Lakeside); 6-8 USTs with leakage | PAHs, diesel, PCBs, metals | Diesel (S), HAPH (S) | GW, SW |
| 2409 | Ross Island Sand & Gravel Co. (Hardtack Island Plant)/RA 11/05 & land-use assessment 3/06 | Hardtack Island-Willamette River Milepost 15,<br>4315 SE McLoughlin Blvd<br>Portland, OR 97201 | | PCBs, PAHs, petroleum, metals, pesticides/herbicides | copper(S), PCBs(S), PAHs(S), tributyltin(S) | GW |
| 985 | Grunbaum Property (aka. Winter Products (former), North Macadam District Project, Koncll Construction & Demolition Corp.)/Confirmed Release List 4/04 | 3604 SW Macadam Ave.<br>Portland, OR 97201 | Winter manufactured die-cast zinc furniture hardware with finishes used in the die-cast process; treated wastewater discharged to City sewer. Winter Products relocated in mid | Electroplating wastes - zinc, copper, nickel, cyanide; petroleum products, PCE, TCE | arsenic (GW), lead (S), petroleum (S), PCE (B), TCE (GW) | SW, GW |
| 883, 4723 | Willamette Oaks Building (aka. Ankrom Moisan Assoc. Architects, Huntington Park Bldg., Pacific Pride, Huntington North, Macadam Sunset Fuel - Pacific Pride,)/ 883 - Remedial Design 12/04; 4723 - site screening recommended 10/06 | 6720 SW Macadam Ave.<br>(6140 - 6230 SW Macadam Ave Portland 97239)<br>PORTLAND OR 97219-2367 | dry-cleaning (former), rubber company (former) | PCE, TCE, other solvents associated with dry-cleaning | diesel (S), gas (S), chlorinated solvents(GW), PAHs (GW) dichloroethylenes(GW), tetrachloroethylene(GW), trichloroethylene(GW), vinyl chloride(GW) | GW |
| 4085 | Two Main Place/ quick clean-up performed for redevelopment | 101 SW Main St. Portland, OR 97204 | parking lot for past 20 yrs or so; gas stations and laundries in the past | gasoline and chlorinated hydrocarbons | petroleum (S, GW), PCE (GW) | |
| 3104 | Rodda Paint Building (former)/ Placed on Inventory 4/02 | 6932 SW Macadam Ave.<br>Portland, OR 97219 | paint making operation (former) | toluene, xylene-based solvents, mineral spirits, paint wastes containing metals, water-based resins, petroleum hydrocarbons, chlorinated VOCs | acetone(S), butylbenzenes(S), chloroform(GW), cumene(B), dichloroethane(GW), dichloroethylenes(GW), ethylbenzene(S), propylbenzene(B), tetrachloroethylene(GW), toluene(GW), trichloroethane(GW), trichloroethylene(GW) | GW, SW, WW, DR |
| 123 | Huntington Rubber Corp. | 7030 SW Macadam Ave.<br>Portland, OR 97219 | rubber products manufacturer | petroleum | petroleum-contaminated wastewater | WW |
| 1006 | Oaks Bottom Landfill (aka. Sellwood Disposal Site)/ NFA 1996 | 1S/1E/S23<br>Portland, OR 97202 | closed solid waste landfill | former demolition debris and brush landfill | | |
| 1258 | Abes Main St. Cleaners (aka. Chris & Jessies Main St. Cleaners, ODEQ Abes Main St. Cleaners, Parker J Former Abes Main St. Cleaners)/RA recommended 7/06 | 10863 SE Main St.<br>Milwaukie, OR 97222 | laundry/dry cleaner | perchloroethylene, trichloroethylene, Stoddard solvent | tetrachloroethylene(B) | GW, WW |
| 2613 | Willamette View Inc. (aka. Spears, Willie Hot, Willamette View Manor, Willamette View Retirement Home, )/ Site screening recommended 2001 | 12705 SE River Rd.<br>Portland, OR 97222 | retirement home | diesel-range TPH, lead (offsite source suspected) | TPH(B) | GW |
| 812 | BLE Inc. (aka. BLE Inc.Jeepers Its Ericksons, Ericksons Automotive, Groundwater - Foothills Road Industrial Area, Lake Oswego Area Groundwater Contamination, Lake Oswego Public Water Supply RPN)/ NFA 3/04 | Eastern end of Lake Oswego; impacted city well at 101 Foothills Rd.<br>Lake Oswego 97034 | inactive public water supply wells | PCE, TCE, cis-1,2-DCE | VOCs(GW) | GW |



BZTO104(e)033290

Table 5.2-1. Shoreline or Nearshore Facilities Upstream of RM 11 that are Listed in DEQ's ESCI Database.

| ESCI # | Facility or Site Name/Status | Address | Type(s) of Operation | Hazardous Substances/Waste Types | Detected Chemicals in Upland Samples[1] | Potential Pathways to River[2] |
|---|---|---|---|---|---|---|
| 4026 | Lake Oswego Chip Facility (Crown Zellerback, Georgia Pacific Wood Chip Facility, Foothills Park, James River Paper Company, City of Lake Oswego)/ RA 2/05 & NFA 10/05 | 199 Foothills Rd. Lake Oswego, OR 97034 | chip processing, rail lines, barge loading, wood chip loading | PAHs, metals, herbicides | gasoline (GW), PAHs (S) | GW, SW |
| 2616 | Erickson's Automotive (aka. BLE Inc.Jeepers Its Ericksons, Ericksons Automotive, Groundwater - Foothills Road Industrial Area, Lake Oswego Area Groundwater Contamination, Lake Oswego Public Water Supply RPN)/ NFA 3/04 | 101 Foothills Rd. Lake Oswego, OR 97034 | | Petroleum, PAHs, VOCs (benzene, toluene, ethylbenzene, xylenes, and chlorinated hydrocarbons) | dichloroethylene(GW), naphthalene(GW), tetrachloroethylene(GW), trichloroethylene(GW) | GW |
| 71 | Martin Electric (aka. Warren Oliver Co.)/ NFA - 1993 | 91 Foothills Rd. Lake Oswego, OR 97034 | electrical equipment firm | PCBs from transformer waste oils | PCB 1221(S) | |
| 1066 | Gross Property Disposal Site/ NFA 1992 | 3S/1E/S2 West Linn, OR 97068 | vacant farm land | PCBs | PCBs(S) | |
| 2301 | Clackamette Cove Area (aka. City of Gladstone, Clackamas County Sheriff's Office, Dakota Minerals, Klineline Sand & Gravel, Portland Traction Railroad, City of Oregon, Jack Parker Property, Northwest Aggregates Co., Western Pacific Construction Materials Co.)/ RA 1/04 | 16288 Main St. Oregon City, OR 97045 | | gasoline(BTEX, PAHs), heavy metals, asphalt, diesel & lube oil-range TPH, PAHs, chlorinated hydrocarbons | arsenic(B), chlorobenzene(GW), chromium(S), dichlorobenzene(GW), iron(GW), lead(B), TPH(S) | GW |
| 129 | Jeff Lohr Residence (aka. Agnes Olsen Residence, Ivan B. Carlson Residence, The Barlow House (1887), Eileen Olsen Property)/FA 8/01 | 1206 Washington St. Oregon City, OR 97045 | private home | PCBs, oil | oil- or fuel- related compounds(S), PCBs(S) | |
| 283 | Willamette Falls Locks (COE Civil Willamette Falls Locks, US Army Corps of Engineers)/ XPA 1992 | Btwn lock gates 4 & 5, west side of West Linn, OR 97068 | water transportation, freight | heavy metals, ammonia, methylene chloride, oils, latex, clarified white water | ammonia(S), arsenic(S), chromium(S), lead(S), methylene chloride (surface water) | DR |
| 263 | West Linn Paper Company (aka. Crown Zellerbach, James River Corp. - West Linn Mill, Simpson Paper Co. Evergreen Mill, West Linn Paper Co. Willamette Falls Mill, Simpson Hog Fuel Site)/ EPA recommended SI in 4/04 | 4800 Mill St. West Linn, OR 97068 | wood pulping and specialty paper mill in operation since 1888 | oil, PCBs | oil- or fuel- related compounds(S), PCB 1221(S) | DR, GW |
| 4597 | Traschel Property (aka. American Cleaners)/Independent cleanup 3/06 | 502/503 Main St. Oregon City, OR 97045 | former dry cleaner, auto sales, auto repair | gas, diesel, VOCs | diesel (B), PCE (GW), gas (S), waste oil (S) | |
| 2114 | Sullivan Electrical Substation/ Site screening recommended | 5600 Willamette Falls Dr. West Linn, OR 97068 | electrical substation | | | |

**Notes:**

[1] S=soil or sediment, GW=groundwater, B=both

[2] Pathways Identified in ECSI Site Summary Reports: GW = groundwater, SW = stormwater/surface runoff, WW = wastewater discharge, DR = direct release, spill



BZTO104(e)033291

Table 5.2-2. Active NPDES Permitted Discharges to the LWR, Outside the Study Area[1].

| File No. | Facility | Location | | Permit | | River Mile |
|---|---|---|---|---|---|---|
| | | Latitude | Longitude | Category | Type | |
| **Major NPDES - Individual Permit** | | | | | | |
| 108015 | PORTLAND, CITY OF AND CO-APPLICANTS | 45.5506 | -122.6204 | STM | NPDES-DOM-MS4-1 | 2.0 |
| 108013 | GRESHAM, CITY OF; FAIRVIEW, CITY OF; MULTNOMAH COUNTY | 45.5164 | -122.5353 | STM | NPDES-DOM-MS4-1 | 12.6 |
| 16590 | CLACKAMAS COUNTY SERVICE DISTRICT #1 | 45.4398 | -122.6424 | DOM | NPDES-DOM-A3 | 18.7 |
| 62795 | OAK LODGE SANITARY DISTRICT | 45.4241 | -122.6518 | DOM | NPDES-DOM-C1a | 20.1 |
| 70735 | PORTLAND, CITY OF | 45.4213 | -122.6579 | DOM | NPDES-DOM-Ba | 20.2 |
| **Minor NPDES - Individual Permit** | | | | | | |
| 115018 | THE PINNACLE CONDOMINIUMS OWNERS' ASSOCIATION | 45.5326 | -122.68 | IND | NPDES-IW-B16 | 11.6 |
| 110220 | GSL PROPERTIES, INC. | 45.5174 | -122.6726 | IND | NPDES-IW-B16 | 11.9 |
| 106060 | OREGON MUSEUM OF SCIENCE AND INDUSTRY | 45.5082 | -122.6647 | IND | NPDES-IW-B16 | 13.5 |
| 113611 | INTELLIGENT COMMUNITY SERVICES | 45.4994 | -122.6706 | IND | NPDES-IW-B16 | 14.5 |
| 109444 | ANKROM MOISAN ASSOCIATED ARCHITECTS, INC. | 45.4752 | -122.6714 | IND | NPDES-IW-B15 | 15.8 |
| **General Permits** | | | | | | |
| 111851 | CANBY EXCAVATING, INC | 44.9541 | -123.0708 | STM | GEN12C | 1.0 |
| 111283 | COLUMBIA GRAIN, INC. | 45.6358 | -122.769 | STM | GEN12Z | 1.1 |
| 115113 | PORTLAND BULK TERMINALS,LLC | 45.6369 | -122.7733 | STM | GEN12C | 1.4 |
| 70613 | KINDER MORGAN BULK TERMINALS, INC. | 45.6346 | -122.771 | STM | GEN12Z | 1.5 |
| 102016 | MULTIMEDIA HOLDING CORP | 44.9408 | -123.0341 | IND | GEN15A | 2.0 |
| 110908 | HOYT STREET PROPERTIES, LLC | 45.5317 | -122.6803 | STM | GEN12C | 11.0 |
| 105307 | JACOBSEN & CO. INC., K.F. | 45.5391 | -122.6799 | STM | GEN12A | 11.0 |
| 44571 | GLACIER NORTHWEST, INC. | 45.5382 | -122.6779 | IND | GEN01 | 11.1 |
| 110908 | HOYT STREET PROPERTIES, LLC | 45.5317 | -122.6803 | IND | GEN15A | 11.4 |
| 100571 | TARR ACQUISITION, LLC | 45.5406 | -122.6741 | STM | GEN12Z | 11.4 |
| 109826 | USDOT; NATIONAL RAILROAD PASSENGER CORP. (AMTRAK) | 45.5285 | -122.6763 | STM | GEN12Z | 11.5 |
| 113814 | WATERFRONT PEARL, LP | 45.5327 | -122.6786 | STM | GEN12C | 11.6 |
| 111356 | CLD PACIFIC GRAIN, LLC | 45.5365 | -122.6754 | STM | GEN12Z | 11.7 |
| 116131 | ANDERSEN CONSTRUCTION COMPANY | 45.5304 | -122.6844 | STM | GEN12C | 11.7 |
| 113630 | GSL PROPERTIES, INC. | 45.5275 | -122.6727 | STM | GEN12C | 11.8 |
| 107609 | US POSTAL SERVICE | 45.5294 | -122.6789 | STM | GEN12Z | 11.9 |
| 104545 | NORCREST CHINA COMPANY; WHEAT MARKETING CENTER, INC. | 45.5292 | -122.673 | IND | GEN01 | 12.0 |
| 38192 | HERCULES INCORPORATED | 45.5473 | -122.709 | IND | GEN01 | 12.0 |
| 113816 | HALSEY STREET - DPP LLC | 45.5334 | -122.6197 | STM | GEN12C | 12.1 |
| 114430 | PROVIDENCE HEALTH SYSTEM-OREGON | 45.5283 | -122.6135 | STM | GEN12C | 12.3 |
| 112042 | PACIFIC COAST FRUIT COMPANY | 45.5237 | -122.6643 | STM | GEN12Z | 12.3 |
| 113997 | Gerding/Edlen Development Company, LLC | 45.5318 | -122.5631 | STM | GEN12C | 12.3 |
| 116153 | Stacy Witback/Kiewit Pacific, Inc. a J.V. | 45.5212 | -122.6767 | STM | GEN12C | 12.5 |
| 113737 | ELECTRONICS RECYCLING (USA) CO. LTD. | 45.5177 | -122.6644 | STM | GEN12Z | 12.6 |
| 115704 | LAURELHURST VILLAGE INVESTMENTS, LLC | 45.5188 | -122.6333 | STM | GEN12C | 12.7 |
| 106750 | EAST SIDE PLATING, INC. | 45.5134 | -122.663 | STM | GEN12Z | 13.0 |
| 115140 | Rivers East LLC | 45.5115 | -122.6663 | STM | GEN12C | 13.3 |
| 115102 | Kiewit -Bilfinger Berger, AJV (KBB) | 45.5074 | -122.6627 | STM | GEN12C | 13.4 |
| 113341 | WALSH CONSTRUCTION COMPANY | 45.5075 | -122.6729 | STM | GEN12C | 13.5 |
| 112362 | HOFFMAN CONSTRUCTION COMPANY | 45.5012 | -122.6865 | STM | GEN12C | 13.8 |
| 112439 | HOFFMAN CONSTRUCTION COMPANY | 45.4995 | -122.6851 | STM | GEN12C | 13.9 |
| 107211 | DARIGOLD, INC. | 45.503 | -122.6597 | STM | GEN12Z | 13.9 |
| 113334 | Land O' Lakes, L.L.C. | 45.5039 | -122.6579 | STM | GEN12Z | 14.0 |
| 104861 | ZIDELL MARINE CORPORATION | 45.5002 | -122.6705 | STM | GEN12Z | 14.0 |
| 100103 | PACIFIC SAW AND KNIFE COMPANY - DBA | 45.465 | -122.6355 | STM | GEN12Z | 14.2 |
| 111942 | NORTH MACADAM INVESTORS, LLC | 45.4971 | -122.6689 | STM | GEN12C | 14.3 |
| 115035 | OSF International, Inc. | 45.4933 | -122.6693 | STM | GEN12C | 14.6 |
| 109995 | ARCHER-DANIELS-MIDLAND COMPANY | 45.4848 | -122.6438 | STM | GEN12Z | 15.0 |
| 105053 | STAFF JENNINGS INC. | 45.484 | -122.6365 | IND | GEN15A | 16.7 |
| 112975 | D.R. HORTON, INC. - PORTLAND | 45.459 | -122.6535 | STM | GEN12C | 17.2 |
| 62795 | OAK LODGE SANITARY DISTRICT | 45.4241 | -122.6518 | STM | GEN12Z | 19.9 |
| 107661 | LAKE-SHORE CONCRETE CO. | 45.4204 | -122.6613 | STM | GEN12A | 20.2 |
| 107631 | EDWARDS, MARJORIE L | 45.4624 | -122.7029 | IND | GEN15A | 20.2 |
| 113967 | CRAFTSMAN BUILDER'S INC. | 45.4211 | -122.6652 | STM | GEN12C | 20.3 |
| 114786 | PARKER DEVELOPMENT NW, INC. | 45.4064 | -122.6602 | STM | GEN12C | 21.2 |
| 114678 | Skreen Construction Inc | 45.4041 | -122.6603 | STM | GEN12C(AGENT) | 21.2 |
| 115866 | PALUMBO, JOHN | 45.4025 | -122.66 | STM | GEN12C | 21.5 |
| 101733 | STANLEY WORKS, THE - DBA THE STANLEY WORKS, INC. | 45.3996 | -122.6234 | STM | GEN12Z | 21.5 |
| 111022 | COLEMAN T. INC. | 45.288 | -122.9126 | STM | GEN12A | 22.0 |
| 113673 | STANGEL, JAMIE | 45.3996 | -122.6281 | STM | GEN12C(AGENT) | 22.5 |

BZTO104(e)033293

Table 5.2-2. Active NPDES Permitted Discharges to the LWR, Outside the Study Area[1].

| File No. | Facility | Location | | Permit | | River Mile |
|---|---|---|---|---|---|---|
| | | Latitude | Longitude | Category | Type | |
| 114681 | OLIVER ROSE INVESTMENTS LLC | 45.4022 | -122.6258 | STM | GEN12C(AGENT) | 22.6 |
| 114940 | Home Port, Inc. | 45.3976 | -122.6238 | STM | GEN12C(AGENT) | 22.8 |
| 114731 | BFG Enterprise, LLC | 45.3958 | -122.6122 | STM | GEN12C(AGENT) | 23.1 |
| 48480 | LAKE OSWEGO, CITY OF | 45.3859 | -122.6325 | IND | GEN02 | 23.8 |
| 113276 | RENAISSANCE DEVELOPMENT CORP | 45.3697 | -122.6277 | STM | GEN12C | 24.2 |

**Notes:**
[1]Compiled November 2006 (DEQ 2006a).

**Definitions:**

| | |
|---|---|
| GEN01 | Cooling water/heat pumps |
| GEN02 | Filter backwash |
| GEN03 | Fish hatcheries |
| GEN05 | Boiler blowdown |
| GEN12A | Stormwater from gravel mining |
| GEN12C | Construction that disturbs five or more acres |
| GEN12Z | Industrial stormwater |
| GEN13 | Oil/water separators |
| GEN15A | Petrolem hydrocarbon cleanups |
| IND | Industrial |
| DOM | Domestic |
| AGR | Agricultural |
| ND | No Data |

BZTO104(e)033294

Table 5.2-3. Summary of Willamette River Subbasin TMDLs.

| Subbasin | Parameter | | | | | |
|---|---|---|---|---|---|---|
| | Temperature | Dissolved Oxygen | Bacteria | pH | Toxics | Other |
| **Approved 9/2006** | | | | | | |
| Clackamas Subbasin | x | | | | | |
| McKenzie Subbasin | x | | | | | |
| North Santiam | x | | | | | |
| South Santiam | x | | | | | |
| Coast Fork | x | | x | | mercury | ammonia & phosphorus (5/96) |
| Middle Fork | x | | | | | |
| Upper Willamette | x | x | x | | mercury | turbidity |
| Middle Willamette | x | | x | | mercury | |
| Lower Willamette | x | | x | x | DDT & dieldrin (Johnson Creek), mercury | |
| Willamette Main Stem | x | | x | | mercury | |
| **Approved 8/2001** | | | | | | |
| Tualatin | x | x | x | x | | phosphorus (1/94), ammonia (12/92), chlorophyll a, volatile solids |
| **Approved 2/1991** | | | | | | |
| Willamette and Columbia Rivers | | | | | | dioxin |
| **Due in 2007** | | | | | | |
| Molla-Pudding | x | x | x | | arsenic, iron, manganese, DDT | ammonia & BOD (10/93), flow |
| Yamhill | x | x | x | | chlorophyrifos | phosphorus (12/92), flow |

Source: DEQ 2001, 2006.



BZTO104(e)033295

Table 6.0-1. Matrix of COIs in All Media.

| Chemical Group/Chemical Name | Media | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Black crappie (f w/o s) | Black crappie (f) | Black crappie (wb) | Brown bullhead (f w/o s) | Brown bullhead (wb) | Carp (f w/o s) | Carp (f) | Carp (wb) | Chinook (f) | Chinook (sc) | Chinook (wb) | Clam (b w/o s) | Crayfish (wb) | Lab clam (b w/o s) | Largescale sucker (wb) | Lumbriculus variegatus (wb) | Multiplate invertebrates (wb) | Northern pikeminnow (wb) | Pacific lamprey (wb) | Peamouth (wb) | Sculpin (wb) | Sediment porewater | Seep | Smallmouth bass (f w/o s) | Smallmout h bass (f) | Smallmout h bass (wb) | Sturgeon (f w/o s) | Subsurface sediment | Surface sediment | Surface water | Surface water (XAD-C) | Surface water (XAD-F) | TZW | |
| **Conventionals** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acid Volatile Sulfides | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | 2 |
| Alkalinity | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | X | 2 |
| Ammonia | | | | | | | | | | | | | | | | | | | | | | X | | | | | | X | X | | | | | 3 |
| Bicarbonate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | 1 |
| Calcium carbonate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | 1 |
| Carbon dioxide | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | 1 |
| Chloride | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | X | | | X | 3 |
| Conductivity | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | X | | | X | 3 |
| Cyanide | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | 3 |
| Dissolved organic carbon | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | X | | | | 2 |
| Dissolved oxygen | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | X | 2 |
| Ethane | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | 1 |
| Ethylene | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | 1 |
| Hardness as CaCO3 | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | X | | | | 2 |
| Lipids | | X | X | X | X | | X | X | | | X | X | X | X | X | X | | X | | X | X | | | | X | X | | | | | | | | 17 |
| Methane | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | 1 |
| Moisture | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | 2 |
| Nitrate | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | X | | | X | 3 |
| Nitrite | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | 1 |
| Nitrogen | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | 1 |
| Oxidation-Reduction Potential | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | X | X | | | X | 4 |
| Oxygen | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | 1 |
| Perchlorate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | X | 3 |
| pH | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | X | X | | | X | 4 |
| Phosphorus | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | X | 2 |
| Silica | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | 1 |
| Specific Gravity | | | | | | | | | | | | | | | | | | | | | | X | | | | | | X | X | | | | | 3 |
| Sulfate | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | X | | | X | 3 |
| Sulfide | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | 3 |
| Temperature | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | X | | | X | 3 |
| Total dissolved solids | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | X | 2 |
| Total organic carbon | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | X | | | X | 4 |
| Total solids | | X | X | X | X | | X | X | | | X | X | X | X | X | X | X | X | | X | X | X | | | X | X | | X | X | | | | | 21 |
| Total suspended solids | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | X | | | X | 3 |
| Total volatile solids | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | 2 |
| Turbidity | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | X | 2 |
| **Metals** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aluminum | | X | X | X | X | | X | X | | | X | X | X | X | X | X | X | X | | X | X | X | X | | X | X | X | X | X | X | | | X | 25 |
| Antimony | | | | | | | | | | | X | X | X | X | X | X | X | | X | | | | X | | | X | | X | X | X | | | X | 14 |
| Arsenic | | X | X | X | X | | X | X | X | | X | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | X | X | X | X | | | X | 27 |
| Barium | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | X | X | | | | X | 6 |
| Beryllium | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | 3 |
| Boron | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | 1 |
| Cadmium | | X | X | X | X | | X | X | | | X | X | X | X | X | X | X | X | X | X | X | | X | | X | X | | X | X | X | | | X | 24 |
| Calcium | | | | | | | | | X | | X | | | | | | | | X | | | X | X | | | | X | X | X | X | | | X | 10 |
| Chromium | | X | | X | X | | X | X | X | | X | X | X | X | X | X | X | X | X | X | X | X | X | | | X | X | X | X | X | | | X | 25 |
| Chromium hexavalent | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | 2 |
| Cobalt | | | | | | | | | X | | X | | | | | | | | X | | | X | X | | | | X | X | X | | | | X | 9 |
| Copper | | X | X | X | X | | X | X | X | | X | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | X | X | X | X | | | X | 27 |
| Iron | | | | | | | | | X | | X | | | | | | | | X | | | X | X | | | | X | X | X | X | | | X | 10 |
| Lead | | | X | | X | | X | X | | | X | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | X | X | X | X | | | X | 24 |
| Magnesium | | | | | | | | | X | | X | | | | | | | | X | | | X | X | | | | X | X | X | X | | | X | 10 |
| Manganese | | X | X | X | X | | X | X | X | | X | X | X | | X | | | X | X | X | X | X | X | | X | X | X | X | X | X | | | X | 24 |
| Mercury | X | | X | X | X | X | | X | | | X | X | X | X | X | X | | X | X | X | X | X | X | X | | X | X | X | X | X | | | X | 25 |
| Molybdenum | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | 1 |
| Nickel | | X | X | X | X | | X | X | | | X | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | X | X | X | X | | | X | 26 |
| Potassium | | | | | | | | | X | | X | | | | | | | | X | | | X | X | | | | X | X | X | | | | X | 9 |
| Selenium | | | | | X | | | X | X | | X | X | | X | | X | X | X | X | X | X | | X | | | X | X | X | X | X | | | X | 19 |
| Silicon | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | 1 |
| Silver | | | | | X | | | X | | | X | X | X | X | | X | X | | X | | X | X | X | | | | | X | X | X | | | X | 16 |
| Sodium | | | | | | | | | X | | X | | | | | | | | X | | | X | X | | | | X | X | X | X | | | X | 10 |
| Thallium | | X | X | X | X | | X | X | | | X | X | X | | X | | | X | | X | X | | | | X | X | | X | X | X | | | X | 19 |
| Tin | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | 2 |
| Titanium | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | 3 |
| Vanadium | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | X | X | | | | X | 5 |
| Zinc | | X | X | X | X | | X | X | X | | X | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | X | X | X | X | | | X | 27 |
| **Butyltins** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Butyltin ion | | | | | | | | | | | X | X | | X | | X | | | | | | X | | | | | | X | X | X | | | | 8 |
| Monobutyltin trichloride | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | 1 |
| Dibutyltin ion | | | | | | | | | | | | X | | X | | X | | | | | | X | | | | | | X | X | X | | | | 7 |
| Dibutyltin dichloride | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | 1 |
| Tributyltin ion | | | | | | | | | | | X | X | | X | | X | | | | | | X | | | | | | X | X | X | | | | 8 |
| Tributyltin chloride | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | 1 |
| Tetrabutyltin | | | | | | | | | | | | | | | | X | | | | | | X | | | | | | X | X | | | | | 4 |
| **PCB Aroclors** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aroclor 1016 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | 1 |
| Aroclor 1221 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | 1 |
| Aroclor 1232 | | | | | | | | | | | | | | | | | | | | | | | | | | X | | X | | | | | | 2 |
| Aroclor 1242 | | | | | | | | | | X | X | X | | X | | X | X | | | | | | | | | | | X | X | | X | X | | 10 |
| Aroclor 1248 | | X | X | X | X | | X | X | | X | X | X | | X | X | X | X | X | | X | X | | | | X | X | | X | X | X | X | X | | 23 |
| Aroclor 1254 | | | | | | | | | X | X | X | X | | X | | X | X | | X | | | | X | | | | | X | X | X | X | X | | 14 |
| Aroclor 1260 | | X | X | X | X | | X | X | | X | X | X | X | X | X | X | X | X | | X | X | | | | X | X | X | X | X | X | X | X | | 25 |
| Aroclor 1268 | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | 2 |
| Aroclors | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | 1 |
| Sum of 7 Aroclors | | | | | | | | | | X | X | X | | X | | X | X | | | | | | X | | | | | X | X | | X | X | | 11 |
| Sum of 9 Aroclors | | X | X | X | X | | X | X | X | | X | X | X | X | X | X | | X | X | X | X | | | | X | X | X | X | X | X | | | | 23 |
| **PCB Congeners** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total PCB Congeners | | | X | | X | | | X | X | X | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | | 19 |
| Total PCB Congeners (incomplete list) | | | | | | | | | | | | | | X | | X | | | | | | | | | | | | | X | | | | | 3 |
| **PCB Homologs** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Monochlorobiphenyl homologs | | | X | | X | | | X | X | X | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | | 19 |



BZTO104(e)033297

Table 6.0-1. Matrix of COIs in All Media.

| | Media | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Chemical Group/Chemical Name** | **Black crappie (f w/o s)** | **Black crappie (f)** | **Black crappie (wb)** | **Brown bullhead (f w/o s)** | **Brown bullhead (wb)** | **Carp (f w/o s)** | **Carp (f)** | **Carp (wb)** | **Chinook (f)** | **Chinook (sc)** | **Chinook (wb)** | **Clam (b w/o s)** | **Crayfish (wb)** | **Lab clam (b w/o s)** | **Largescale sucker (wb)** | **Lumbriculus variegatus (wb)** | **Multiplate invertebrates (wb)** | **Northern pikeminnow (wb)** | **Pacific lamprey (wb)** | **Peamouth (wb)** | **Sculpin (wb)** | **Sediment porewater** | **Seep** | **Smallmouth bass (f w/o s)** | **Smallmouth bass (f)** | **Smallmouth bass (wb)** | **Sturgeon (f w/o s)** | **Subsurface sediment** | **Surface sediment** | **Surface water** | **Surface water (XAD-C)** | **Surface water (XAD-F)** | **TZW** | **Grand Total** |
| Dichlorobiphenyl homologs | | | X | | X | | | X | X | X | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | | **19** |
| Trichlorobiphenyl homologs | | | X | | X | | | X | X | X | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | | **19** |
| Tetrachlorobiphenyl homologs | | | X | | X | | | X | X | X | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | | **19** |
| Pentachlorobiphenyl homologs | | | X | | X | | | X | X | X | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | | **19** |
| Hexachlorobiphenyl homologs | | | X | | X | | | X | X | X | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | | **19** |
| Heptachlorobiphenyl homologs | | | X | | X | | | X | X | X | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | | **19** |
| Octachlorobiphenyl homologs | | | X | | X | | | X | X | X | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | | **19** |
| Nonachlorobiphenyl homologs | | | X | | X | | | X | X | X | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | | **19** |
| **PCDD/Fs** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2,3,4,6,7,8-Heptachlorodibenzofuran | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | X | | | X | X | X | X | | X | X | | **19** |
| 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | X | | | X | X | X | X | | X | X | X | **20** |
| 1,2,3,4,7,8,9-Heptachlorodibenzofuran | | | X | | X | | | X | | | X | X | X | X | | X | X | | | | X | | | | | X | X | X | X | | X | X | X | **17** |
| 1,2,3,4,7,8-Hexachlorodibenzofuran | | | X | | X | | | X | | | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | X | **18** |
| 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin | | | X | | X | | | X | | | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | | **17** |
| 1,2,3,6,7,8-Hexachlorodibenzofuran | | | X | | X | | | X | | | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | X | **18** |
| 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | | **18** |
| 1,2,3,7,8,9-Hexachlorodibenzofuran | | | X | | X | | | X | | | | | X | X | | X | | | | | X | | | | | X | | X | X | | X | X | | **12** |
| 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin | | | X | | X | | | X | | | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | | **17** |
| 1,2,3,7,8-Pentachlorodibenzofuran | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | X | **19** |
| 1,2,3,7,8-Pentachlorodibenzo-p-dioxin | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | | **18** |
| 2,3,4,6,7,8-Hexachlorodibenzofuran | | | X | | X | | | X | | | X | X | X | X | | X | | | X | | X | | | | | X | X | X | X | | X | X | | **16** |
| 2,3,4,7,8-Pentachlorodibenzofuran | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | X | **19** |
| 2,3,7,8-Tetrachlorodibenzofuran | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | X | **19** |
| 2,3,7,8-Tetrachlorodibenzo-p-dioxin | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | | X | | **17** |
| Total PCDD/F | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | X | | | X | X | X | X | | X | X | X | **20** |
| **PCDD/F and PCB TEQs** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | X | | | X | X | X | X | | X | X | X | **20** |
| Dioxin-like PCB congener TCDD toxicity equivalen | | | X | | X | | | X | X | X | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | | **19** |
| Total TCDD toxicity equivalent | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | | **18** |
| **PCDD/F Homologs** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tetrachlorodibenzofuran homologs | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | X | | | X | X | X | X | | X | X | X | **20** |
| Tetrachlorodibenzo-p-dioxin homologs | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | X | **19** |
| Pentachlorodibenzofuran homologs | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | X | | | X | X | X | X | | X | X | X | **20** |
| Pentachlorodibenzo-p-dioxin homologs | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | | **18** |
| Hexachlorodibenzofuran homologs | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | X | | | X | X | X | X | | X | X | X | **20** |
| Hexachlorodibenzo-p-dioxin homologs | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | | | | X | X | X | X | | X | X | X | **19** |
| Heptachlorodibenzofuran homologs | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | X | | | X | X | X | X | | X | X | X | **20** |
| Heptachlorodibenzo-p-dioxin homologs | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | X | | | X | X | X | X | | X | X | X | **20** |
| Octachlorodibenzofuran | | | | | X | | | X | X | | X | X | X | X | | X | X | | | | X | | X | | | X | X | X | X | | X | X | | **17** |
| Octachlorodibenzo-p-dioxin | | | X | | X | | | X | X | | X | X | X | X | | X | X | | X | | X | | X | | | X | X | X | X | | X | X | | **19** |
| **Organochlorine Pesticides** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,4'-DDD | | | | X | X | | X | X | | X | X | X | X | X | X | X | X | X | | | X | | | | X | X | | X | X | | X | X | X | **21** |
| 2,4'-DDE | | | | | | | | | | X | | X | X | X | | X | X | X | | | X | | | | | | | X | X | | X | X | | **12** |
| 2,4'-DDT | | X | X | X | X | | X | X | | X | X | X | X | X | X | X | X | X | | X | X | | | | X | X | | X | X | X | X | X | X | **25** |
| 4,4'-DDD | | X | X | X | X | | X | X | | X | X | X | X | X | X | X | X | X | | X | X | | | | X | X | | X | X | X | X | X | X | **25** |
| 4,4'-DDE | | X | X | X | X | | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | | X | | X | X | X | X | X | | X | X | X | **27** |
| 4,4'-DDT | | X | X | X | X | | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | | | | X | X | X | X | X | X | X | X | X | **27** |
| Aldrin | | | | | | | | | | X | | X | | X | | X | X | | | | | | X | | | | | X | X | | X | X | | **10** |
| alpha-Endosulfan | | | | | | | X | X | X | X | X | X | | X | X | X | X | | | | | | | | | X | X | X | X | X | X | X | | **17** |
| alpha-Hexachlorocyclohexane | | | X | | | | | | | X | | X | | X | | X | X | | | | | | | | | | | X | X | | X | X | | **10** |
| beta-Endosulfan | | | | | X | | | | | X | X | X | X | X | | X | X | | | | | | | | | | | X | X | | X | X | | **12** |
| beta-Hexachlorocyclohexane | | | | | | | | | | X | | X | | X | | X | X | | | | X | | | | X | | | X | X | | X | X | | **11** |
| Chlordane (cis & trans) | | | | | | | | | | | X | X | | | | | | | | | | | | | | | X | X | X | | | | | **5** |
| cis-Chlordane | | | X | | X | | X | X | | X | X | X | | X | | X | X | | | X | X | | | | | X | X | X | X | X | X | X | | **19** |
| cis-Nonachlor | | | | | | | | | | X | | X | | X | | X | X | | | | | | | | | | | X | X | | X | X | | **9** |
| delta-Hexachlorocyclohexane | | | X | | | | | | | X | X | X | | X | | X | | | | | X | | X | | | | X | X | X | X | X | X | | **14** |
| Dieldrin | | | X | X | X | | | | X | X | X | X | | X | | X | X | | | | X | | | | X | X | X | X | X | | X | X | | **18** |
| Endosulfan sulfate | | | X | | | | | | | X | X | X | | X | | X | X | | | | X | | | | | | | X | X | X | X | X | | **13** |
| Endrin | | | | | | | | | | X | X | X | X | X | | X | X | | | | | | | | | | | X | X | | X | X | | **11** |
| Endrin aldehyde | | | | | | | | | | | X | X | | | | | | | | | | | | | X | | | X | X | | | | | **5** |
| Endrin ketone | | | | | | | | | | X | | X | | X | | X | | | | | | | | | | | | X | X | | X | | | **7** |
| gamma-Hexachlorocyclohexane | | | | | X | | | | | X | | X | | X | X | X | X | | | | X | | X | | | | | X | X | X | X | X | | **14** |
| Heptachlor | | | X | | | | | | | | X | X | | X | | X | X | | | | | | | | | | | X | X | | X | X | | **10** |
| Heptachlor epoxide | | | | | | | | | | X | X | X | | X | | X | X | | | | X | | X | | | | | X | X | | X | X | | **12** |
| Methoxychlor | | | | | X | | X | X | | | X | X | | | | | | X | | | X | | | | | | X | X | X | X | X | X | | **13** |
| Mirex | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | **2** |
| Oxychlordane | | | X | | | | | X | | X | | X | | X | X | X | X | | | | | | | | | | | X | X | | X | X | | **12** |
| Total Chlordanes | | X | X | X | X | | X | X | | X | X | X | X | X | X | X | X | | | X | X | | | | X | X | | X | X | X | X | X | | **23** |
| Total Endosulfan | | | X | | X | | X | X | X | X | X | X | X | X | X | X | X | | | | X | | | | | X | X | X | X | X | X | X | | **21** |
| Total of 2,4' and 4,4'-DDD | | X | X | X | X | | X | X | | X | X | X | X | X | X | X | X | X | | X | X | | | | X | X | | X | X | X | X | X | X | **25** |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | | X | X | X | X | | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | | | | X | X | X | X | X | X | X | X | X | **27** |
| Total of 2,4' and 4,4'-DDE | | X | X | X | X | | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | | | | X | X | X | X | X | | X | X | X | **26** |
| Total of 2,4' and 4,4'-DDT | | X | X | X | X | | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | | | | X | X | X | X | X | X | X | X | X | **27** |
| Total of 4,4'-DDD, -DDE, -DDT | | X | X | X | X | | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | | X | | X | X | X | X | X | X | X | X | X | **28** |
| Toxaphene | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | **2** |
| trans-Chlordane | | | X | | X | | | | | X | X | X | X | X | | X | X | | | | X | | | | | | | X | X | X | X | X | | **15** |
| trans-Nonachlor | | X | X | X | X | | | X | | X | X | X | | X | X | X | X | | | | X | | | | X | | | X | X | | X | X | | **18** |
| **Chlorinated Herbicides** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,4,5-T | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | X | | | | | **2** |
| 2,4-D | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | X | | | X | **5** |
| 2,4-DB | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | | **3** |
| Dalapon | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | X | | | X | **4** |
| Dicamba | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | | | | | | **2** |
| Dichloroprop | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | X | **2** |
| MCPA | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | | **3** |
| MCPP | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | | **3** |
| Silvex | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | **3** |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,6,7-Trimethylnaphthalene | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | **2** |
| 1-Methylnaphthalene | | | | | | | | | | | X | | | | | | | | X | | | X | | | | | X | X | X | X | | | | **7** |
| 1-Methylphenanthrene | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | **2** |



BZTO104(e)033298

Table 6.0-1. Matrix of COIs in All Media.

| Chemical Group/Chemical Name | Media | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Black crappie (f w/o s) | Black crappie (f) | Black crappie (wb) | Brown bullhead (f w/o s) | Brown bullhead (wb) | Carp (f w/o s) | Carp (f) | Carp (wb) | Chinook (f) | Chinook (sc) | Chinook (wb) | Clam (b w/o s) | Crayfish (wb) | Lab clam (b w/o s) | Largescale sucker (wb) | Lumbriculus variegatus (wb) | Multiplate invertebrates (wb) | Northern pikeminnow (wb) | Pacific lamprey (wb) | Peamouth (wb) | Sculpin (wb) | Sediment porewater | Seep | Smallmouth bass (f w/o s) | Smallmouth bass (f) | Smallmouth bass (wb) | Sturgeon (f w/o s) | Subsurface sediment | Surface sediment | Surface water | Surface water (XAD-C) | Surface water (XAD-F) | TZW | |
| 2,6-Dimethylnaphthalene | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | | **2** |
| 2-Methylnaphthalene | | | | | | | | X | X | X | X | X | | X | X | X | | | X | | | X | X | | | X | X | X | X | X | X | X | X | X | **19** |
| Acenaphthene | | | | | | | | X | | X | X | X | | X | | X | | | X | | X | X | X | | | X | X | X | X | X | X | X | X | X | **18** |
| Acenaphthylene | | | | | | | | | | X | X | X | | X | | X | | | X | | | X | X | | | | X | X | X | X | X | X | X | X | **15** |
| Anthracene | | | | | | | | | | X | X | X | | X | | X | | | X | | | X | X | | | | X | X | X | X | X | X | X | X | **15** |
| Benzo(a)anthracene | | | | | | | | | | X | X | X | X | X | | X | | | | | | X | X | | | | | X | X | X | X | X | X | X | **14** |
| Benzo(a)pyrene | | | | | | | | | | X | | X | | X | | X | | | | | | X | X | | | | | X | X | X | X | X | X | X | **12** |
| Benzo(b)fluoranthene | | | | | | | | | | | X | X | | X | | X | | | | | | X | X | | | | | X | X | X | | | | X | **10** |
| Benzo(b+j)fluoranthene | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | X | X | | **3** |
| Benzo(b+k)fluoranthene | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | | **3** |
| Benzo(e)pyrene | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | **2** |
| Benzo(g,h,i)perylene | | | | | | | | | | X | | X | | X | | X | | | | | | X | | | | | | X | X | X | X | X | X | **11** |
| Benzo(j+k)fluoranthene | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | **1** |
| Benzo(k)fluoranthene | | | | | | | | | | X | X | X | | X | | X | | | | | | X | | | | | | X | X | X | X | X | X | **12** |
| Benzofluoranthenes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | **1** |
| Chrysene | | | | | | | | | | X | X | X | X | X | | X | | | | | | X | X | | | | | X | X | X | X | X | X | **14** |
| Dibenz(a,h)anthracene | | | | | | | | | | X | X | X | | X | | X | | | | | | X | | | | | | X | X | X | X | X | X | **12** |
| Dibenzothiophene | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | **1** |
| Fluoranthene | | | | X | X | | | | | X | X | X | X | X | | X | | | X | | | X | X | | | X | X | X | X | X | X | X | X | **19** |
| Fluorene | | | | | | | | X | X | X | X | X | | X | X | X | | | X | | X | X | X | | | X | X | X | X | X | X | X | X | X | **20** |
| 11igh Molecular Weight PA1 | | | | X | X | | | | | X | X | X | X | X | | X | | | X | | | X | X | | | X | X | X | X | X | X | X | X | **19** |
| 11PA11s (incomplete list) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | **1** |
| Indeno(1,2,3-cd)pyrene | | | | | | | | | | X | | X | | X | | X | | | | | | X | | | | | | | X | X | X | X | X | **11** |
| Low Molecular Weight PA1 | | | | X | X | | | X | X | X | X | X | X | X | X | X | | | X | | X | X | X | | | X | X | | X | X | X | X | X | **23** |
| LPA11s (incomplete list) | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | X | X | X | | X | **5** |
| Naphthalene | | | | | | | | X | | | X | X | | X | X | X | | | X | | X | X | X | | | X | | | X | X | X | X | X | **17** |
| Perylene | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | **2** |
| Phenanthrene | | | | X | X | | | | | X | X | X | X | X | | X | | | X | | | X | X | | | X | | X | X | X | X | X | X | **18** |
| Pyrene | | | | | | | | | | X | X | X | X | X | | X | | | X | | | X | X | | | X | X | X | X | X | X | X | X | **17** |
| Total PA11s | | | | X | X | | | X | X | X | X | X | X | X | X | X | | | X | | X | X | X | | | X | X | X | X | X | X | X | X | **23** |
| Total PA11s (incomplete list) | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | X | | | X | **5** |
| **Phthalate Esters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | | | | X | X | | | | | | X | X | | X | X | X | | | | | X | | X | | | X | | X | X | | X | X | X | **15** |
| Butylbenzyl phthalate | | | | | | | | | | | X | | | | | | | | | | | | X | | | | | X | X | X | X | X | X | **8** |
| Dibutyl phthalate | | | | | | | | | | | X | X | | X | | X | | | | | | | X | | | | | X | X | | X | | X | **9** |
| Diethyl phthalate | | | | | | | | | | | | | | X | | | | | | | | | X | | | | | X | X | | X | | X | **6** |
| Dimethyl phthalate | | | | | | | | | | | | | | X | | | | | | | | | | | | | | X | X | | X | X | X | **6** |
| Di-n-octyl phthalate | | | | | | | | | | | | | | | | | | | | | X | | | | | X | | X | X | | X | | | **5** |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | **3** |
| 1,2-Dichlorobenzene | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | X | **4** |
| 1,3-Dichlorobenzene | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | **3** |
| 1,4-Dichlorobenzene | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | X | | | X | **5** |
| 2,4-Dinitrotoluene | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | **1** |
| 2-Chloronaphthalene | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | **1** |
| 3-Nitroaniline | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | **1** |
| 4-Chloroaniline | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X | X | | | | | **3** |
| 4-Nitroaniline | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | **2** |
| Anillite | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | **2** |
| Benzoic acid | | | | | | | | | | | | | | X | | | | | | | | | | | | | | X | X | X | | | | **4** |
| Benzyl alcohol | | | | | | | | | | | X | X | | X | | X | | | | | | | | | | | | X | X | | | | | **6** |
| Bis(2-chloroethoxy) methane | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | **1** |
| Bis(2-chloroethyl) ether | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | **1** |
| Bis(2-chloroisopropyl) ether | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | **1** |
| Carbazole | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | X | | | X | **4** |
| Dibenzofuran | | | | | | | | | | | X | X | | X | | X | | | X | | X | X | X | | | X | X | X | X | X | | | X | **14** |
| Diphenyl | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | **2** |
| Hexachlorobenzene | | | X | | | | X | | | X | X | X | | X | | X | | X | X | X | | | | | | | X | | X | X | X | X | | **16** |
| Hexachlorobutadiene | | | X | | | | | | | X | | X | | X | | X | | | | | X | | | | | | | X | X | X | X | X | | **11** |
| Hexachloroethane | | | | | | | | | | | | | | X | | | | | | X | | | | | | | | X | X | | | | | **4** |
| Isophorone | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | X | | | | **2** |
| Nitrobenzene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | **1** |
| N-Nitrosodiphenylamine | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X | X | | | | | **3** |
| N-Nitrosodipropylamine | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | **1** |
| Retene | | | | | | | | | | | | | | | | | | | X | | | X | | | | | | X | | | | | | **3** |
| **Phenols** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,3,4,5-Tetrachlorophenol | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | **2** |
| 2,3,4,6/2,3,5,6-Tetrachlorophenol coelution | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | **2** |
| 2,3,5,6-Tetrachlorophenol | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | **2** |
| 2,4,5-Trichlorophenol | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | | **3** |
| 2,4,6-Tribromophenol | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | **1** |
| 2,4,6-Trichlorophenol | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | | **3** |
| 2,4-Dichlorophenol | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | | **3** |
| 2,4-Dimethylphenol | | | | | | | | | | | | | | | | | | | X | | | | X | | | | | | X | | | | X | **4** |
| 2,4-Dinitrophenol | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | **1** |
| 2-Chlorophenol | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | | **3** |
| 2-Methylphenol | | | | | | | | | | | | | | X | | X | | | | | | | X | | | | | X | X | | | | X | **6** |
| 3- and 4-Methylphenol Coelution | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | **2** |
| 4-Chloro-3-methylphenol | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | X | | | | **3** |
| 4-Methylphenol | | | | | | | | | | | | | X | | | X | | | | | X | | | | | | | X | X | | | | | **5** |
| 4-Nitrophenol | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | | | | | | **2** |
| Pentachlorophenol | | | | | | | | | | | X | | X | X | | X | | | | | | X | X | | | | | X | X | X | | | | **9** |
| Phenol | | | | | | | | | | | X | X | X | X | | X | | | | | | | | | | | | X | X | X | | | X | **9** |
| **Volatile Organic Compounds** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | **1** |
| 1,1,1-Trichloroethane | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | **1** |
| 1,1,2,2-Tetrachloroethane | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | | **3** |
| 1,1,2-Trichloroethane | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | **1** |
| 1,1-Dichloroethane | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | | **3** |
| 1,1-Dichloroethene | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | X | | **2** |
| 1,2,3-Trichloropropane | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | | **3** |



BZTO104(e)033299

Table 6.0-1. Matrix of COIs in All Media.

| | Media | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Chemical Group/Chemical Name** | **Black crappie (f w/o s)** | **Black crappie (f)** | **Black crappie (wb)** | **Brown bullhead (f w/o s)** | **Brown bullhead (wb)** | **Carp (f w/o s)** | **Carp (f)** | **Carp (wb)** | **Chinook (f)** | **Chinook (sc)** | **Chinook (wb)** | **Clam (b w/o s)** | **Crayfish (wb)** | **Lab clam (b w/o s)** | **Largescale sucker (wb)** | **Lumbriculus variegatus (wb)** | **Multiplate invertebrates (wb)** | **Northern pikeminnow (wb)** | **Pacific lamprey (wb)** | **Peamouth (wb)** | **Sculpin (wb)** | **Sediment porewater** | **Seep** | **Smallmouth bass (f w/o s)** | **Smallmouth bass (f)** | **Smallmouth bass (wb)** | **Sturgeon (f w/o s)** | **Subsurface sediment** | **Surface sediment** | **Surface water** | **Surface water (XAD-C)** | **Surface water (XAD-F)** | **TZW** | **Grand Total** |
| 1,2,4-Trimethylbenzene | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | X | | | X | **3** |
| 1,2-Dichloroethane | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | **3** |
| 1,2-Dichloropropane | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | **1** |
| 1,3,5-Trimethylbenzene | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | X | | | X | **3** |
| 1-Methyl-4-isopropylbenzene | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | **2** |
| Acetone | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | X | **4** |
| Acrolein | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | **2** |
| Benzene | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | X | | | X | **5** |
| Bromochloromethane | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | **1** |
| Bromodichloromethane | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | **1** |
| BTEX | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | X | **4** |
| Carbon disulfide | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | **3** |
| Chlorobenzene | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | X | **4** |
| Chloroethane | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | **3** |
| Chloroform | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | **3** |
| Chloromethane | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | | | | | X | **3** |
| cis-1,2-Dichloroethene | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | X | **3** |
| Dichlorodifluoromethane | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | **1** |
| Ethylbenzene | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | X | | | X | **5** |
| Isopropylbenzene | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | X | **4** |
| m,p-Xylene | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | X | | | X | **5** |
| Methyl iodide | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | **1** |
| Methyl isobutyl ketone | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | **3** |
| Methyl n-butyl ketone | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | **3** |
| Methyl tert-butyl ether | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | **3** |
| Methylcyclohexane | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | **1** |
| Methylene bromide | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | **1** |
| Methylene chloride | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | X | **4** |
| Methylethyl ketone | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | **3** |
| n-Butylbenzene | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | **2** |
| n-Propylbenzene | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | **2** |
| o-Xylene | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | X | | | X | **5** |
| Sec-butylbenzene | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | X | | | X | **3** |
| Styrene | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | **3** |
| tert-Butylbenzene | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | **2** |
| Tetrachloroethene | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | X | **4** |
| Toluene | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | X | | | X | **5** |
| trans-1,2-Dichloroethene | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | X | | | X | **4** |
| Trichloroethene | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | X | | | X | **5** |
| Vinyl acetate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | **1** |
| Vinyl chloride | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | X | | | X | **4** |
| Xylene | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | X | | | X | **5** |
| **Petroleum Hydrocarbons** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Diesel Range Hydrocarbons | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | X | **4** |
| Fuel oil no. 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | **1** |
| Gasoline Range Hydrocarbons | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | **3** |
| Heavy oil | | | | | | | | | | | | | | | | | | | | | | | X | | | | | X | X | | | | | **3** |
| Lube Oil | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | **3** |
| Motor oil | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | **2** |
| Non-petroleum hydrocarbons | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | **1** |
| Oil And Grease | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | **1** |
| Pencil pitch | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | **2** |
| Phytane | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | **1** |
| Pristane | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | **1** |
| Residual Range Hydrocarbons | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | **3** |
| Total Petroleum Hydrocarbons | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X | **3** |
| TPH (incomplete list) | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | **2** |
| **PBDE Congeners** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PBDE007 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE008 & PBDE011 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE010 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | | | | | | | | **3** |
| PBDE012 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | | | | | | | | **3** |
| PBDE012 & 013 | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | **1** |
| PBDE013 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | | | | | | | | **3** |
| PBDE015 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE017 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | | | | | | | | **3** |
| PBDE017 & 025 | | | | | | | | | | | | | | | | | | | X | | | | | | | | X | | | | | | | **2** |
| PBDE025 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | | | | | | | | **3** |
| PBDE028 & PBDE033 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE032 | | | | | | | | | | | X | | | | | | | | | | | | | | | | X | | | | | | | **2** |
| PBDE035 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE037 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE047 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE049 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE051 | | | | | | | | | | | | | | | | | | | X | | | | | | | | X | | | | | | | **2** |
| PBDE066 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE071 | | | | | | | | | | | | | | | | | | | X | | | | | | | | X | | | | | | | **2** |
| PBDE075 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE077 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE079 | | | | | | | | | | | | | | | | | | | X | | | | | | | | X | | | | | | | **2** |
| PBDE085 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE099 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE100 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE119 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | | | | | | | | **3** |
| PBDE119 & 120 | | | | | | | | | | | | | | | | | | | X | | | | | | | | X | | | | | | | **2** |
| PBDE126 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE128 | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | **1** |
| PBDE138 & PBDE166 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE140 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE153 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |
| PBDE154 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | **4** |



BZTO104(e)033300

Table 6.0-1. Matrix of COIs in All Media.

| Chemical Group/Chemical Name | Media | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Black crappie (f w/o s) | Black crappie (f) | Black crappie (wb) | Brown bullhead (f w/o s) | Brown bullhead (wb) | Carp (f w/o s) | Carp (f) | Carp (wb) | Chinook (f) | Chinook (sc) | Chinook (wb) | Clam (b w/o s) | Crayfish (wb) | Lob clam (b w/o s) | Largescale sucker (wb) | Lumbriculus variegatus (wb) | Multiplate invertebrates (wb) | Northern pikeminnow (wb) | Pacific lamprey (wb) | Peamouth (wb) | Sculpin (wb) | Sediment porewater | Seep | Smallmouth bass (f w/o s) | Smallmouth bass (f) | Smallmouth bass (wb) | Sturgeon (f w/o s) | Subsurface sediment | Surface sediment | Surface water | Surface water (XAD-C) | Surface water (XAD-F) | TZW | Grand Total |
| PBDE155 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | | 4 |
| PBDE183 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | | 4 |
| PBDE203 | | | | | | | | | | | | | | | | | | | X | | | | | | | | X | | | | | | | | 2 |
| PBDE206 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | | 4 |
| PBDE207 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | | 4 |
| PBDE208 | | | | | | | | | X | | X | | | | | | | | X | | | | | | | | X | | | | | | | | 4 |
| PBDE209 | | | | | | | | | | | | | | | | | | | X | | | | | | | | X | | | | | | | | 2 |
| **Atterberg Limits** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Liquid Limit | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | | 2 |
| Plastic Limit | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | | 2 |
| Plasticity Index | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | | 2 |
| **Grand Total** | 1 | 25 | 221 | 34 | 225 | 1 | 31 | 231 | 239 | 214 | 310 | 279 | 215 | 299 | 39 | 306 | 232 | 29 | 262 | 30 | 244 | 49 | 115 | 1 | 29 | 239 | 265 | 447 | 549 | 107 | 257 | 256 | 165 | 5946 |

**Notes:**
b w/o s - body without shell
f - fillet
f w/o s - fillet without skin
sc - stomach contents
wb - whole body
XAD-C - XAD column
XAD-F - XAD filter



BZTO104(e)033301

Table 6.0-2. COPCs and iCOCs Identified Based on Ecological and/or Human Health Risk Evaluations, and Analytes Selected as Indicator Chemicals for Nature and Extent Discussions.

| COPC | Human Health iCOC | Ecological iCOC | Human Health Potential iCOC[a] | Ecological Potential iCOC[b] | Selected Indicator Chemicals | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Sediment | Surface Water | Biota | TZW |
| **Conventionals** | | | | | | | | |
| Ammonia | | | | X | | | | |
| Cyanide | | | | X | | | | X |
| Perchlorate | | | | X | | | | X |
| Sulfides | | | | X | | | | |
| **Metals** | | | | | | | | |
| Aluminum | | | | | | | | X |
| Antimony | | | | | | | | |
| Arsenic | X | | | X | X | X | X | X |
| Barium | | | | | | | | X |
| Cadmium | | X | | | | | | X |
| Chromium | | | | | | | | |
| Copper | | X | | | | | | |
| Iron | | | | | | | | |
| Lead | | | | X | | X | | X |
| Magnesium | | | | | | | | |
| Manganese | | | | | | | | |
| Mercury | X | X | | X | X | | X | X |
| Nickel | | | | | | | | |
| Potassium | | | | | | | | |
| Selenium | | | | | | | | |
| Silver | | | | X | | | | |
| Sodium | | | | | | | | |
| Thallium | | | | | | | | X |
| Vanadium | | | | | | | | |
| Zinc | | X | | | X | | X | X |
| **Butyltins** | | | | | | | | |
| Tributyltin ion | | X | | X | X | | X | |
| **Total PCBs** | | | | | | | | |
| Total PCB Aroclors | X | X | | | X | X | X | |
| Total PCB Congeners | X | X | | | X | X | X | |
| Total PCB TEQ | | X | | | X | X | X | |
| **Dioxins/Furans** | | | | | | | | |
| Dioxin TEQ | X | X | | | X | X | X | |
| **Herbicides** | | | | | | | | |
| Dalapon | | | | | | | | |
| Silvex | | | | | | | | |
| **Organochlorine Pesticides** | | | | | | | | |
| 2,4'-DDD | | X | | X | | | | |
| 2,4'-DDE | | | | | | | | |
| 2,4'-DDT | | X | | X | | | | |
| 4,4'-DDD | | X | | X | | | | |
| 4,4'-DDE | | X | | X | | | | |
| 4,4'-DDT | | X | | X | | | | |
| Total of 2,4' and 4,4'-DDD (Sum DDD) | X | X | X | X | X | X | X | X |
| Total of 2,4' and 4,4'-DDE (Sum DDE) | X | X | | X | X | X | X | X |
| Total of 2,4' and 4,4'-DDT (Sum DDT) | X | | X | X | X | X | X | X |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | | X | | | X | X | X | X |
| Total of 4,4'-DDD, -DDE, -DDT | | | | | | | | |
| Aldrin | X | X | | | X | X | X | |
| alpha-Hexachlorocyclohexane | X | | | X | | | | |
| beta-Hexachlorocyclohexane | X | | | X | X | X | X | |

BZTO104(e)033302

Table 6.0-2. COPCs and iCOCs Identified Based on Ecological and/or Human Health Risk Evaluations, and Analytes Selected as Indicator Chemicals for Nature and Extent Discussions.

| COPC | Human Health iCOC | Ecological iCOC | Human Health Potential iCOC[a] | Ecological Potential iCOC[b] | Selected Indicator Chemicals | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Sediment | Surface Water | Biota | TZW |
| delta-Hexachlorocyclohexane | | | | X | | | | |
| gamma-Hexachlorocyclohexane | X | | | | | | | |
| Total Chlordanes | X | | | X | X | X | X | |
| Dieldrin | X | | | X | | | | |
| Endrin | | | | X | | | | |
| Endrin aldehyde | | | | | | | | |
| Endrin ketone | | | | X | | | | |
| Heptachlor | X | | | | | | | |
| Heptachlor epoxide | X | | | | | | | |
| Total Endosulfan | | | | | | | | |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | |
| *LPAHs* | | | | | | | | |
| 2-Methylnaphthalene | | | | X | | | | |
| Acenaphthene | | | | X | | | | |
| Anthracene | | | | X | | | | |
| Fluorene | | | | X | | | | |
| Naphthalene | | | | X | | | | |
| Phenanthrene | | | | X | X | | | |
| *HPAHs* | | | | | | | | |
| Benzo(a)anthracene | X | | | X | X | X | X | |
| Benzo(a)pyrene | X | X | | X | X | X | X | X |
| Benzo(b)fluoranthene | X | | | X | | | | |
| Benzo(g,h,i)perylene | | | | X | | | | |
| Benzo(k)fluoranthene | X | | | X | | | | |
| Chrysene | | X | | X | | | | |
| Dibenzo(a,h)anthracene | X | | | X | | | | |
| Fluoranthene | | | | X | | | | |
| Indeno(1,2,3-cd)pyrene | X | | | X | | | | |
| Pyrene | | X | | X | | | | |
| Total HPAHs | | | | | X | | | X |
| Total PAHs | | X | | | X | X | X | X |
| **Phthalates** | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | X | X | | X | X | | X | |
| Dibutyl phthalate | | | | X | | | | |
| **Semivolatile Organic Compounds** | | | | | | | | |
| 1,2-Dichlorobenzene | | | | | | | | X |
| 1,4-Dichlorobenzene | | | | | | | | X |
| Dibenzofuran | | | | | | | | |
| Hexachlorobenzene | X | | | X | X | X | | |
| Hexachlorobutadiene | | | | | | | | |
| **Phenols** | | | | | | | | |
| 4-Chloro-3-methylphenol | | | | | | | | |
| Pentachlorophenol | X | | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | |
| 1,1,2-Trichloroethane | | | | | | | | X |
| 1,1-Dichloroethane | | | | | | | | X |
| 1,2,3-Trichloropropane | | | | | | | | |
| 1,2,4-Trimethylbenzene | | | | | | | | |
| 1,2-Dichloroethane | | | | | | | | X |
| 1,2-Dichloropropane | | | | | | | | |
| 1,3,5-Trimethylbenzene | | | | | | | | |
| Acrolein | | | | | | | | |
| Benzene | | | | | | | | X |

BZTO104(e)033303

Table 6.0-2. COPCs and iCOCs Identified Based on Ecological and/or Human Health Risk Evaluations, and Analytes Selected as Indicator Chemicals for Nature and Extent Discussions.

| COPC | Human Health iCOC | Ecological iCOC | Human Health Potential iCOC[a] | Ecological Potential iCOC[b] | Selected Indicator Chemicals | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Sediment | Surface Water | Biota | TZW |
| Bromodichloromethane | | | | | | | | |
| Carbon disulfide | | | | | | | | |
| Chlorobenzene | | | | | | | | X |
| Chloroethane | | | | | | | | X |
| Chloroform | | | X | | | | | X |
| cis-1,2-Dichloroethene | | | | | | | | X |
| Ethylbenzene | | | | | | | | X |
| Isopropylbenzene | | | | | | | | |
| m,p-Xylene | | | | | | | | X |
| Methyl tert-butyl ether | | | | | | | | |
| Methylene chloride | | | | | | | | X |
| o-Xylene | | | | | | | | X |
| Tetrachloroethene | | | | | | | | X |
| Toluene | | | | | | | | X |
| Total Xylenes | | | | | | | | X |
| trans-1,2-Dichloroethene | | | | | | | | X |
| Trichloroethene | | | X | | | | | X |
| Vinyl chloride | | | | | | | | X |
| **Petroleum (TPH)** | | | | | | | | |
| Diesel Range Hydrocarbons | | | | X | | | | X |
| Gasoline Range Hydrocarbons | | | | | | | | X |
| Residual Range Hydrocarbons | | | | X | | | | X |
| Total Petroleum Hydrocarbons | | | | | X | | | |

**Notes:**

[a] Human Health Potential iCOCs include potential human health iCOCs in surface water and TZW for drinking water scenarios and in TZW for consumption of fish/shellfish. Potential iCOCs are differentiated from other iCOCs because they were identified through less certain and/or less rigorous evaluations based on fewer lines of evidence.

[b] Potential ecological iCOCs for benthic invertebrates were identified as those chemicals with potential risk estimates from the TZW LOE, benthic invertebrate floating percentile method (FPM) LOE that were not supported by any other LOEs (i.e., in tissue or surface water LOEs), or based on high uncertainty. Potential ecological iCOCs for fish were identified as those chemicals with potential risk estimates from the TZW LOE that were not supported by any other LOEs (i.e., in tissue, surface water, or dietary LOEs).

COPC - Chemical of Potential Concern.
iCOC - intial Chemical of Concern.
TZW - Transition zone water.
TEQ - Toxic Equivalent (2,3,7,8- TCDD).

BZTO104(e)033304

Table 6.1-1. Summary Statistics for Grainsize, TOC, and Indicator Chemicals in Surface Sediment, Study Area (RM 2-11).

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # Analyzed | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median (half DL)[a] | 95th (half DL)[a] |
| **Grainsize** | | | | | | | | | | | | | | |
| Fines | percent | 1150 | 1150 | 100 | | 103 T | 54.3 | 61.7 | 92.8 T | 0 | 103 T | 54.3 | 61.7 | 92.8 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Total organic carbon | percent | 1318 | 1314 | 99.7 | 0.0072 J | 27 | 1.82 | 1.75 | 3.19 | 0.00433 U | 27 | 1.82 | 1.75 | 3.19 |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 1259 | 1132 | 89.9 | 0.7 | 132 | 4.9 | 3.79 | 9 | 0.7 | 132 | 4.67 | 3.66 J | 8.9 |
| Mercury | mg/kg | 1224 | 1116 | 91.2 | 0.006 J | 4.84 | 0.104 | 0.07 | 0.276 | 0.006 J | 4.84 | 0.0966 | 0.065 | 0.266 J |
| Zinc | mg/kg | 1240 | 1240 | 100 | 17.3 G | 2010 | 150 | 106 | 374 | 17.3 G | 2010 | 150 | 106 | 374 |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | ug/kg | 274 | 260 | 94.9 | 0.45 J | 47000 | 589 | 30 | 1158 | 0.23 U | 47000 | 559 | 26 | 980 |
| **PCB Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg | 948 | 713 | 75.2 | 0.851 JT | 27400 JT | 199 | 33.9 JT | 810 T | 0.851 JT | 27400 JT | 162 | 20 UT | 606 T |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | ug/kg | 233 | 218 | 93.6 | 0.0324 T | 35400 | 411 | 29.9 JT | 972 | 0.0324 T | 35400 | 385 | 26.7 | 849 |
| **Dioxins/Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g | 151 | 151 | 100 | 0.008 JT | 16600 JT | 124 | 1.94 JT | 75.8 JT | 0.00803 JT | 16600 JT | 124 | 1.94 JT | 75.8 JT |
| **Total PCB TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 155 | 155 | 100 | 0.0133 JT | 324 T | 9.71 | 1.45 T | 41.7 T | 0.0133 JT | 324 T | 9.71 | 1.45 T | 41.7 T |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | ug/kg | 880 | 213 | 24.2 | 0.0033 J | 691 J | 6.03 | 0.57 NJ | 11.4 | 0.00333 J | 691 J | 2.44 | 0.16 U | 7.77 P |
| beta-Hexachlorocyclohexane | ug/kg | 917 | 414 | 45.1 | 0.0014 J | 20.3 J | 2.67 | 1.91 NJ | 7.3 NJ | 0.00112 U | 99 U | 2.18 | 0.7 U | 7.99 NJ |
| Total Chlordanes | ug/kg | 810 | 551 | 68 | 0.0349 JT | 669 JT | 6.28 | 0.99 JT | 18.1 JT | 0.0349 JT | 669 JT | 4.88 | 0.913 JT | 11.9 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | ug/kg | 850 | 756 | 88.9 | 0.051 JT | 16200 JT | 156 | 7.93 JT | 382 JT | 0.051 JT | 16200 JT | 139 | 7.13 JT | 282 JT |
| Total of 2,4' and 4,4'-DDD | ug/kg | 850 | 727 | 85.5 | 0.051 JT | 3040 JT | 41.1 | 3.71 JT | 136 JT | 0.041 UT | 3040 JT | 35.5 | 2.9 JT | 112 JT |
| Total of 2,4' and 4,4'-DDE | ug/kg | 848 | 707 | 83.4 | 0.088 JT | 2530 JT | 19.1 | 2.65 JT | 55.6 JT | 0.0384 UT | 2530 JT | 16.4 | 2.37 JT | 38.8 JT |
| Total of 2,4' and 4,4'-DDT | ug/kg | 849 | 656 | 77.3 | 0.077 JT | 12500 JT | 113 | 2.06 JT | 193 JT | 0.0441 UJ | 12500 JT | 87.7 | 1.5 UT | 115 T |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | ug/kg | 1329 | 1261 | 94.9 | 0.5 J | 320000 | 1980 | 87 | 5570 | 0.5 J | 320000 | 1880 | 81 | 4800 |
| Benzo(a)pyrene | ug/kg | 1329 | 1257 | 94.6 | 0.86 J | 340000 | 2370 | 109 J | 6800 | 0.24 U | 340000 | 2240 | 93 | 5900 |
| High Molecular Weight PAH | ug/kg | 1329 | 1309 | 98.5 | 2.16 JT | 4350000 T | 23800 | 1080 T | 69700 T | 2.16 JT | 4350000 T | 23400 | 1040 T | 62400 T |
| Phenanthrene | ug/kg | 1329 | 1257 | 94.6 | 0.53 J | 1700000 | 5330 | 102 | 7800 | 0.53 J | 1700000 | 5040 | 92.5 | 6900 |
| Total PAHs | ug/kg | 1329 | 1309 | 98.5 | 3.3 JT | 7260000 T | 33200 | 1324 JT | 85300 T | 3.3 JT | 7260000 T | 32700 | 1278 JT | 82100 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | ug/kg | 1224 | 722 | 59 | 7 J | 440000 J | 1300 | 160 | 2550 T | 2 U | 440000 J | 874 | 88 | 2000 |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | |
| Hexachlorobenzene | ug/kg | 1128 | 349 | 30.9 | 0.0122 J | 340 | 4.04 | 0.83 J | 6.18 J | 0.0122 J | 10000 U | 31.8 | 1.6 UJ | 14.5 J |
| **Petroleum** | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | 443 | 431 | 97.3 | 8.4 JT | 33100 JT | 1180 | 580 JT | 2640 JT | 8.4 JT | 33100 JT | 1150 | 568 JT | 2600 JT |

**Notes:**

[a] - This value was selected from an ascending ranked list of all results. Where n = the number of samples, the actual sample result corresponding to the rand of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

G - Estimate is greater than value shown.

J - The associated numerical value is an estimated quantity.

N - Presumptive evidence of presence of material; identification of the compound is not definitive.

P - GC/HPLC criteria exceeded RPD>40% (>25% CLP pesticides).

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033306

Table 6.1-2. Summary Statistics for Grainsize, TOC, and Indicator Chemicals in Subsurface Sediment, Study Area (RM 2-11).

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte** | **Units** | **# Analyzed** | **# Detected** | **% Detected** | **Minimum** | **Maximum** | **Mean** | **Median[a]** | **95th[a]** | **Minimum (full DL)** | **Maximum (full DL)** | **Mean (half DL)** | **Median (half DL)[a]** | **95th (half DL)[a]** |
| **Grainsize** | | | | | | | | | | | | | | |
| Fines | percent | 936 | 936 | 100 | 0.24 | 101 T | 54.3 | 63.6 T | 91 T | 0.24 | 101 T | 54.3 | 63.6 T | 91 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Total organic carbon | percent | 1145 | 1101 | 96.2 | 0.02 J | 35.5 | 1.7 | 1.64 | 3.82 T | 0.02 U | 35.5 | 1.64 | 1.58 | 3.72 |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 1116 | 1072 | 96.1 | 0.5 E | 44.5 J | 4.02 | 3.56 | 6.95 | 0.5 E | 44.5 J | 3.95 | 3.5 | 6.83 J |
| Mercury | mg/kg | 1014 | 951 | 93.8 | 0.007 J | 4.14 | 0.16 | 0.088 | 0.5 | 0.006 U | 4.14 | 0.151 | 0.081 | 0.489 |
| Zinc | mg/kg | 1104 | 1104 | 100 | 24 | 1930 | 131 | 101 | 288 T | 24 | 1930 | 131 | 101 | 288 T |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | ug/kg | 308 | 182 | 59.1 | 0.32 J | 90000 | 1630 | 25 | 4100 | 0.068 U | 90000 | 963 | 2.1 J | 1400 |
| **PCB Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg | 1002 | 607 | 60.6 | 0.906 T | 26000 T | 328 | 78 T | 843 JT | 0.906 T | 150000 UT | 296 | 26 JT | 568 JT |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | ug/kg | 27 | 27 | 100 | 13.6 | 36800 | 2030 | 338 T | 2830 | 13.6 | 36800 | 2030 | 338 T | 2830 |
| **Dioxins/Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g | 182 | 167 | 91.8 | 0.000183 T | 9680 JT | 72.6 | 1.48 T | 54.7 T | 0 UT | 9680 JT | 66.6 | 1.13 T | 41 T |
| **Total PCB TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 27 | 27 | 100 | 0.117 T | 318 T | 23.2 | 7.43 JT | 48.8 T | 0.117 T | 318 T | 23.2 | 7.43 JT | 48.8 T |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | ug/kg | 770 | 95 | 12.3 | 0.119 J | 1340 J | 30.8 | 1.38 NJ | 92 | 0.0269 UJ | 3800 U | 13 | 0.105 U | 20 U |
| beta-Hexachlorocyclohexane | ug/kg | 782 | 337 | 43.1 | 0.057 JT | 318 NJ | 5.22 | 2.59 J | 12.3 NJ | 0.0291 U | 3800 U | 8.89 | 0.85 U | 12.9 NJ |
| Total Chlordanes | ug/kg | 682 | 417 | 61.1 | 0.038 JT | 2330 JT | 21.2 | 1.94 JT | 53.7 JT | 0.0359 UT | 2330 JT | 13.2 | 0.79 JT | 31 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | ug/kg | 848 | 680 | 80.2 | 0.07 JT | 95400 JT | 408 | 14 JT | 624 JT | 0.049 UJT | 95400 JT | 327 | 9.2 T | 431 JT |
| Total of 2,4' and 4,4'-DDD | ug/kg | 848 | 634 | 74.8 | 0.079 JT | 71100 JT | 272 | 7.3 JT | 282 JT | 0.0415 UT | 71100 JT | 204 | 3.7 T | 232 T |
| Total of 2,4' and 4,4'-DDE | ug/kg | 848 | 573 | 67.6 | 0.041 JT | 2830 JT | 22 | 4.23 JT | 51 JT | 0.0389 UT | 2830 JT | 15.2 | 2.25 JT | 38.6 JT |
| Total of 2,4' and 4,4'-DDT | ug/kg | 848 | 579 | 68.3 | 0.07 JT | 26300 JT | 160 | 3.3 T | 342 JT | 0.0427 UT | 26300 JT | 110 | 1.18 JT | 152 JT |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | ug/kg | 1090 | 968 | 88.8 | 0.17 J | 760000 | 4510 | 97 | 9900 | 0.17 J | 760000 | 4010 | 70 | 8100 |
| Benzo(a)pyrene | ug/kg | 1090 | 951 | 87.2 | 0.16 J | 940000 | 5530 | 120 | 12000 | 0.16 J | 940000 | 4830 | 81 | 9600 |
| High Molecular Weight PAH | ug/kg | 1090 | 1030 | 94.5 | 0.15 JT | 13400000 T | 67900 | 1110 T | 118000 T | 0.15 JT | 13400000 T | 64200 | 911 T | 107000 T |
| Phenanthrene | ug/kg | 1090 | 967 | 88.7 | 0.24 J | 8500000 | 36700 | 170 | 41000 | 0.24 J | 8500000 | 32500 | 120 | 26000 |
| Total PAHs | ug/kg | 1090 | 1042 | 95.6 | 0.15 JT | 53300000 T | 213000 | 1450 T | 190000 T | 0.15 JT | 53300000 T | 203000 | 1255 T | 147400 JT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | ug/kg | 1067 | 377 | 35.3 | 2.4 J | 18000 | 460 | 98 | 1500 | 2 U | 21500 U | 232 | 27 U | 820 |
| **Semivolatile Ogranic Compounds** | | | | | | | | | | | | | | |
| Hexachlorobenzene | ug/kg | 871 | 166 | 19.1 | 0.066 J | 14000 | 99.1 | 1.12 J | 36.1 J | 0.0162 U | 14000 | 44.7 | 1.4 U | 50 UG |
| **Petroleum** | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | 718 | 605 | 84.3 | 3 JT | 321000 JT | 2700 | 710 JT | 6820 JT | 3 JT | 321000 JT | 2280 | 550 JT | 5160 JT |

**Notes:**

[a] - This value was selected from an ascending ranked list of all results. Where n = the number of samples, the actual sample result corresponding to the rand of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

E - Estimated.

G - Estimate is greater than value shown.

J - The associated numerical value is an estimated quantity.

N - Presumptive evidence of presence of material; identification of the compound is not definitive.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033307

Table 6.1-3a. Summary Statistics for Grainsize, TOC, and Indicator Chemicals[b] in Surface Sediment, Study Area Riparian Zone (RM 2-11).

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # Analyzed | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **Grainsize** | | | | | | | | | | | | | | |
| Fines | percent | 8 | 8 | 100 | 0.083 | 7.41 T | 1.8 | 0.87 T | 2.43 T | 0.083 | 7.41 T | 1.8 | 0.87 T | 2.43 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Total organic carbon | percent | 16 | 16 | 100 | 0.0445 | 18.9 | 1.72 | 0.16 | 2.45 | 0.0445 | 18.9 | 1.72 | 0.16 | 2.45 |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 18 | 18 | 100 | 1.1 | 61.9 | 12.6 | 3 | 54.8 | 1.1 | 61.9 | 12.6 | 3 | 54.8 |
| Mercury | mg/kg | 18 | 10 | 55.6 | 0.0113 J | 0.769 | 0.156 | 0.08 | 0.18 | 0.0103 U | 0.769 | 0.148 | 0.09 | 0.2 U |
| Zinc | mg/kg | 18 | 18 | 100 | 55 | 2850 | 495 | 86.3 B | 2650 B | 55 | 2850 | 495 | 86.3 B | 2650 B |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | µg/kg | 1 | 1 | 100 | 0.7 J | 0.7 J | 0.7 | 0.7 J | 0.7 J | 0.7 J | 0.7 J | 0.7 | 0.7 J | 0.7 J |
| **PCB Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 9 | 2 | 22.2 | 9.1 JT | 64.7 T | 36.9 | 9.1 JT | 9.1 JT | 7.7 UT | 100 UT | 56.6 | 64.7 T | 100 UT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | pg/g | 6 | 6 | 100 | 350 JT | 36200 JT | 15300 | 6480 JT | 25900 T | 350 JT | 36200 JT | 15300 | 6480 JT | 25900 T |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg | 18 | 0 | 0 | | | | | | 0.19 U | 26.6 UJ | 6.32 | 1.34 UJ | 10 U |
| beta-Hexachlorocyclohexane | µg/kg | 18 | 0 | 0 | | | | | | 0.19 U | 30 U | 10.7 | 1.32 UJ | 30 U |
| Total Chlordanes | µg/kg | 10 | 4 | 40 | 5.85 JT | 100 JT | 34.9 | 6.24 JT | 27.6 T | 0.38 UT | 100 JT | 14.7 | 2.05 UT | 27.6 T |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg | 10 | 5 | 50 | 3.36 JT | 88.6 JT | 28.9 | 20.1 T | 29.1 JT | 0.38 UT | 88.6 JT | 15.1 | 3.11 UJT | 29.1 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg | 10 | 2 | 20 | 7.13 T | 40.6 JT | 23.9 | 7.13 T | 7.13 T | 0.38 UT | 40.6 JT | 6.13 | 2.05 UT | 7.13 T |
| Total of 2,4' and 4,4'-DDE | µg/kg | 10 | 2 | 20 | 3.34 JT | 13 T | 8.17 | 3.34 JT | 3.34 JT | 0.38 UT | 61.8 UJT | 8.89 | 2.05 UT | 13 T |
| Total of 2,4' and 4,4'-DDT | µg/kg | 10 | 4 | 40 | 3.36 JT | 48 JT | 20.2 | 3.48 JT | 25.8 T | 0.38 UT | 48 JT | 9.23 | 3.11 UJT | 25.8 T |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg | 22 | 14 | 63.6 | 6.2 JT | 386 J | 73 | 18 T | 168 | 6.2 JT | 500 U | 159 | 68 | 500 U |
| Benzo(a)pyrene | µg/kg | 22 | 14 | 63.6 | 6.4 T | 533 J | 84.1 | 15 | 196 | 6.4 T | 533 J | 167 | 59.2 | 500 U |
| High Molecular Weight PAH | µg/kg | 22 | 18 | 81.8 | 25.5 JT | 7510 JT | 1220 | 319 JT | 5660 JT | 25.5 JT | 7510 JT | 1080 | 500 UT | 1810 T |
| Phenanthrene | µg/kg | 22 | 9 | 40.9 | 15.4 | 416 J | 99.5 | 45.8 | 130 J | 10 U | 500 U | 157 | 45.8 | 500 U |
| Total PAHs | µg/kg | 22 | 18 | 81.8 | 25.5 JT | 8540 JT | 1400 | 319 JT | 7010 JT | 25.5 JT | 8540 JT | 1230 | 500 UT | 1936 JT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg | 21 | 10 | 47.6 | 49 | 33200 J | 4000 | 155 J | 4230 JB | 13.2 U | 33200 J | 2080 | 155 J | 2000 U |
| **SVOCs** | | | | | | | | | | | | | | |
| Hexachlorobenzene | µg/kg | 21 | 3 | 14.3 | 1.94 J | 4.53 | 3.12 | 2.88 J | 2.88 J | 0.19 UT | 500 U | 122 | 10 U | 500 U |
| **Petroleum** | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | 7 | 3 | 42.9 | 2 JT | 732 T | 274 | 88 T | 88 T | 2 JT | 732 T | 146 | 50 UT | 88 T |

**Notes:**

[a] - This value was selected from an ascending ranked list of all results. Where n = the number of samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] - As available.

E - Estimated.

G - Estimate is greater than value shown.

J - The associated numerical value is an estimated quantity.

N - Presumptive evidence of presence of material; identification of the compound is not definitive.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033308

Table 6.1-3b. Summary Statistics for Grainsize, TOC, and Indicator Chemicals[b] in Surface Sediment, Downtown Corridor Riparian Zone (RM 11-15.5).

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # Analyzed | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Surface*** | | | | | | | | | | | | | | |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 3 | 3 | 100 | 2 | 9 | 4.33 | 2 | 2 | 2 | 9 | 4.33 | 2 | 2 |
| Mercury | mg/kg | 3 | 1 | 33.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 0.2 U | 1.3 | 0.567 | 0.2 U | 0.2 U |
| Zinc | mg/kg | 3 | 3 | 100 | 685 | 1420 | 939 | 712 | 712 | 685 | 1420 | 939 | 712 | 712 |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | µg/kg | 1 | 1 | 100 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| **PCB Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 3 | 1 | 33.3 | 4300 | 4300 | 4300 | 4300 | 4300 | 100 UT | 4300 | 1500 | 100 UT | 100 UT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg | 2 | 0 | 0 | | | | | | 10 U | 10 U | 10 | 10 U | 10 U |
| beta-Hexachlorocyclohexane | µg/kg | 2 | 0 | 0 | | | | | | 30 U | 30 U | 30 | 30 U | 30 U |
| Total of 4,4'-DDD, -DDE, -DDT | µg/kg | 2 | 0 | 0 | | | | | | 10 UT | 10 UT | 10 | 10 UT | 10 UT |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg | 3 | 1 | 33.3 | 80 | 80 | 80 | 80 | 80 | 80 | 3000 U | 2030 | 3000 U | 3000 U |
| Benzo(a)pyrene | µg/kg | 3 | 1 | 33.3 | 70 | 70 | 70 | 70 | 70 | 70 | 3000 U | 2020 | 3000 U | 3000 U |
| High Molecular Weight PAH | µg/kg | 3 | 1 | 33.3 | 869 T | 869 T | 869 | 869 T | 869 T | 869 T | 3000 UT | 2290 | 3000 UT | 3000 UT |
| Phenanthrene | µg/kg | 3 | 1 | 33.3 | 120 | 120 | 120 | 120 | 120 | 120 | 3000 U | 2040 | 3000 U | 3000 U |
| Total PAHs | µg/kg | 3 | 1 | 33.3 | 1073 T | 1073 T | 1070 | 1073 T | 1073 T | 1073 T | 3000 UT | 2360 | 3000 UT | 3000 UT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg | 2 | 1 | 50 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 U | 3000 | 3000 | 3000 |
| **SVOCs** | | | | | | | | | | | | | | |
| Hexachlorobenzene | µg/kg | 2 | 0 | 0 | | | | | | 3000 U | 3000 U | 3000 | 3000 U | 3000 U |
| **Petroleum** | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | 1 | 0 | 0 | | | | | | 25 U | 25 U | 25 | 25 U | 25 U |

**Notes:**

[a] - This value was selected from an ascending ranked list of all results. Where n – the number of samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] - As available.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033309

Table 6.1-3c. Summary Statistics for Grainsize, TOC, and Indicator Chemicals[b] in Surface Sediment, Study Area Upriver Riparian Zone (RM 15.5-26).

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # Analyzed | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Surface*** | | | | | | | | | | | | | | |
| **Grainsize** | | | | | | | | | | | | | | |
| Fines | percent | 2 | 2 | 100 | 12 T | 31 T | 21.5 | 12 T | 12 T | 12 T | 31 T | 21.5 | 12 T | 12 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Total organic carbon | percent | 2 | 2 | 100 | 0.32 | 0.55 | 0.435 | 0.32 | 0.32 | 0.32 | 0.55 | 0.435 | 0.32 | 0.32 |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 2 | 0 | 0 | | | | | | 2.39 U | 2.49 U | 2.44 | 2.39 U | 2.39 U |
| Mercury | mg/kg | 2 | 0 | 0 | | | | | | 0.19 U | 0.2 U | 0.195 | 0.19 U | 0.19 U |
| Zinc | mg/kg | 2 | 2 | 100 | 43.8 J | 48.6 J | 46.2 | 43.8 J | 43.8 J | 43.8 J | 48.6 J | 46.2 | 43.8 J | 43.8 J |
| **PCB Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 2 | 0 | 0 | | | | | | 20 UT | 20 UT | 20 | 20 UT | 20 UT |
| **Pesticides** | | | | | | | | | | | | | | |
| 4,4'-DDD | µg/kg | 2 | 0 | 0 | | | | | | 3.3 U | 3.3 U | 3.3 | 3.3 U | 3.3 U |
| 4,4'-DDT | µg/kg | 2 | 0 | 0 | | | | | | 6.7 U | 6.7 U | 6.7 | 6.7 U | 6.7 U |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg | 2 | 0 | 0 | | | | | | 50 U | 50 U | 50 | 50 U | 50 U |
| Benzo(a)pyrene | µg/kg | 2 | 0 | 0 | | | | | | 50 U | 50 U | 50 | 50 U | 50 U |
| High Molecular Weight PAH | µg/kg | 2 | 1 | 50 | 187 T | 187 T | 187 | 187 T | 187 T | 50 UT | 187 T | 119 | 50 UT | 50 UT |
| Phenanthrene | µg/kg | 2 | 1 | 50 | 60 | 60 | 60 | 60 | 60 | 50 U | 60 | 55 | 50 U | 50 U |
| Total PAHs | µg/kg | 2 | 1 | 50 | 247 T | 247 T | 247 | 247 T | 247 T | 50 UT | 247 T | 149 | 50 UT | 50 UT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg | 2 | 0 | 0 | | | | | | 100 U | 100 U | 100 | 100 U | 100 U |
| **SVOCs** | | | | | | | | | | | | | | |
| Hexachlorobenzene | µg/kg | 2 | 0 | 0 | | | | | | 20 U | 20 U | 20 | 20 U | 20 U |
| **Petroleum** | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | 2 | 2 | 100 | 48 | 110 | 79 | 48 | 48 | 48 | 110 | 79 | 48 | 48 |

**Notes:**

[a] - This value was selected from an ascending ranked list of all results. Where n = the number of samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] - As available.

J - The associated numerical value is an estimated quantity.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033310

Table 6.1-4a. Summary Statistics for Grainsize, TOC, and Indicator Chemicals[b] in Subsurface Sediment, Study Area Riparian Zone (RM 2-11).

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # Analyzed | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **Grainsize** | | | | | | | | | | | | | | |
| Fines | percent | 4 | 4 | 100 | 0.13 | 20.7 | 5.76 | 0.51 | 1.68 | 0.13 | 20.7 | 5.76 | 0.51 | 1.68 |
| **Conventionals** | | | | | | | | | | | | | | |
| Total organic carbon | percent | 4 | 2 | 50 | 0.08 | 0.77 | 0.425 | 0.08 | 0.08 | 0.05 U | 0.77 | 0.238 | 0.05 U | 0.08 |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 21 | 21 | 100 | 1.69 | 19.1 | 5.49 | 5.49 | 7.65 | 1.69 | 19.1 | 5.49 | 5.49 | 7.65 |
| Mercury | mg/kg | 7 | 2 | 28.6 | 0.09 | 0.453 | 0.272 | 0.09 | 0.09 | 0 U | 0.453 | 0.12 | 0.09 | 0.2 U |
| Zinc | mg/kg | 23 | 23 | 100 | 46.5 J | 7280 | 685 | 204 | 1530 | 46.5 J | 7280 | 685 | 204 | 1530 |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | µg/kg | 2 | 2 | 100 | 53 | 4100 | 2080 | 53 | 53 | 53 | 4100 | 2080 | 53 | 53 |
| **PCB Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 22 | 16 | 72.7 | 42 JT | 34000 JT | 5350 | 3400 JT | 13500 JT | 20 UT | 34000 JT | 3900 | 350 JT | 6400 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg | 5 | 0 | 0 | | | | | | 10 U | 10 U | 10 | 10 U | 10 U |
| beta-Hexachlorocyclohexane | µg/kg | 5 | 0 | 0 | | | | | | 10 U | 30 U | 14 | 10 U | 10 U |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg | 7 | 4 | 57.1 | 14.5 J | 2870 | 779 | 30.5 J | 200 | 10 U | 2870 | 491 | 30.5 J | 300 UH |
| Benzo(a)pyrene | µg/kg | 7 | 4 | 57.1 | 13 J | 2970 | 828 | 49.5 J | 279 | 10 U | 2970 | 519 | 49.5 J | 300 UH |
| High Molecular Weight PAH | µg/kg | 7 | 6 | 85.7 | 14 JT | 37400 T | 6940 | 137 JT | 3490 T | 14 JT | 37400 T | 5990 | 300 UT | 3490 T |
| Phenanthrene | µg/kg | 7 | 2 | 28.6 | 185 | 4250 | 2220 | 185 | 185 | 10 U | 4250 | 682 | 10 U | 300 UH |
| Total PAHs | µg/kg | 7 | 6 | 85.7 | 14 JT | 42500 JT | 7820 | 137 JT | 3670 JT | 14 JT | 42500 JT | 6740 | 300 UT | 3670 JT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg | 5 | 2 | 40 | 280 J | 426 J | 353 | 280 J | 280 J | 20 U | 426 J | 209 | 280 J | 300 UH |
| **SVOCs** | | | | | | | | | | | | | | |
| Hexachlorobenzene | µg/kg | 5 | 0 | 0 | | | | | | 10 U | 300 UH | 68 | 10 U | 10 U |
| **Petroleum** | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | 11 | 7 | 63.6 | 2180 JT | 12400 JT | 8510 | 8450 JT | 11600 JT | 0 UT | 12400 JT | 5420 | 6850 JT | 11600 JT |

**Notes:**

[a] - This value was selected from an ascending ranked list of all results. Where n – the number of samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] - As available.

H - Holding time exceeded.

J - The associated numerical value is an estimated quantity.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033311

Table 6.1-4b. Summary Statistics for Grainsize, TOC, and Indicator Chemicals[b] in Subsurface Sediment, Downstream Riparian Zone (RM 0-2).

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # Analyzed | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 1 | 1 | 100 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 |
| Zinc | mg/kg | 1 | 1 | 100 | 59.3 | 59.3 | 59.3 | 59.3 | 59.3 | 59.3 | 59.3 | 59.3 | 59.3 | 59.3 |
| **PCB Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 1 | 0 | 0 | | | | | | 20 UT | 20 UT | 20 | 20 UT | 20 UT |

**Notes:**

[a] - This value was selected from an ascending ranked list of all results. Where n – the number of samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] - As available.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033312

Table 6.1-5. Summary Statistics for Grainsize, TOC, and Indicator Chemicals[b] in Surface Sediment, Downtown Corridor (RM 11-15.5).

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # Analyzed | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median (half DL)[a] | 95th (half DL)[a] |
| **Grainsize** | | | | | | | | | | | | | | |
| Fines | percent | 16 | 16 | 100 | 9 T | 79.3 T | 41.4 | 34.6 T | 69.9 T | 9 T | 79.3 T | 41.4 | 34.6 T | 69.9 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Total organic carbon | percent | 17 | 17 | 100 | 0.17 | 2.54 | 1.63 | 1.68 | 2.54 | 0.17 | 2.54 | 1.63 | 1.68 | 2.54 |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 17 | 14 | 82.4 | 2.94 | 4.7 | 3.49 | 3.3 | 4.4 | 2.28 U | 4.7 | 3.09 | 3.21 | 4.4 |
| Mercury | mg/kg | 17 | 13 | 76.5 | 0.04 | 0.56 | 0.0983 | 0.06 | 0.094 | 0.038 U | 0.56 | 0.0934 | 0.06 | 0.1 U |
| Zinc | mg/kg | 17 | 17 | 100 | 54.1 J | 105 | 79.7 | 78.7 | 93.9 N | 54.1 J | 105 | 79.7 | 78.7 | 93.9 N |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | ug/kg | 3 | 3 | 100 | 0.4 J | 12 | 4.36 | 0.69 J | 0.69 J | 0.4 J | 12 | 4.36 | 0.69 J | 0.69 J |
| **PCB Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg | 17 | 13 | 76.5 | 5 T | 35 T | 19.7 | 17.9 T | 33 T | 5 T | 35 T | 17.4 | 16.4 T | 33 T |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | ug/kg | 1 | 1 | 100 | 32.2 | 32.2 | 32.2 | 32.2 | 32.2 | 32.2 | 32.2 | 32.2 | 32.2 | 32.2 |
| **Total PCB TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 1 | 1 | 100 | 0.512 JT | 0.512 JT | 0.512 | 0.512 JT | 0.512 JT | 0.512 JT | 0.512 JT | 0.512 | 0.512 JT | 0.512 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | ug/kg | 13 | 0 | 0 | | | | | | 0.19 U | 2 U | 0.383 | 0.299 UJ | 1 U |
| beta-Hexachlorocyclohexane | ug/kg | 13 | 0 | 0 | | | | | | 0.598 U | 2 U | 0.59 | 0.55 U | 1 U |
| Total Chlordanes | ug/kg | 8 | 8 | 100 | 0.27 JT | 1.51 JT | 0.648 | 0.39 JT | 1.4 JT | 0.27 JT | 1.51 JT | 0.648 | 0.39 JT | 1.4 JT |
| Total of 2,4' and 4,4'-DDD | ug/kg | 8 | 5 | 62.5 | 0.39 JT | 4.28 JT | 2.07 | 1.4 JT | 3.2 T | 0.39 JT | 4.28 JT | 1.62 | 1.1 JT | 3.2 T |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | ug/kg | 8 | 8 | 100 | 2 JT | 7.9 JT | 3.85 | 2.8 JT | 7.19 JT | 2 JT | 7.9 JT | 3.85 | 2.8 JT | 7.19 JT |
| Total of 2,4' and 4,4'-DDE | ug/kg | 8 | 7 | 87.5 | 0.89 JT | 3.5 JT | 1.69 | 1.31 JT | 2 JT | 0.89 JT | 3.5 JT | 1.54 | 1.3 JT | 2 JT |
| Total of 2,4' and 4,4'-DDT | ug/kg | 8 | 6 | 75 | 0.71 JT | 2.09 JT | 1.44 | 1.2 JT | 1.93 JT | 0.71 JT | 2.09 JT | 1.3 | 1.1 JT | 1.93 JT |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | ug/kg | 17 | 12 | 70.6 | 6 J | 300 | 64.1 | 16 | 220 | 6 J | 300 | 50.8 | 19 | 220 |
| Benzo(a)pyrene | ug/kg | 17 | 12 | 70.6 | 6 J | 330 | 54.1 | 18 | 120 | 6 J | 330 | 43.8 | 22 | 120 |
| High Molecular Weight PAH | ug/kg | 17 | 15 | 88.2 | 20 T | 3260 T | 541 | 161 JT | 2120 T | 20 T | 3260 T | 480 | 136 T | 2120 T |
| Phenanthrene | ug/kg | 17 | 12 | 70.6 | 7 J | 1500 | 161 | 16 | 99 | 7 J | 1500 | 120 | 20 | 99 |
| Total PAHs | ug/kg | 17 | 15 | 88.2 | 20 T | 6250 T | 789 | 186.3 JT | 2290 T | 20 T | 6250 T | 699 | 136 T | 2290 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | ug/kg | 17 | 14 | 82.4 | 58 | 950 | 242 | 130 | 420 | 58 | 950 | 213 | 120 | 420 |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | |
| Hexachlorobenzene | ug/kg | 14 | 1 | 7.14 | 4.84 | 4.84 | 4.84 | 4.84 | 4.84 | 0.39 U | 20 U | 3.86 | 0.335 U | 10 U |
| **Petroleum** | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | 11 | 10 | 90.9 | 116 | 1050 JT | 517 | 437 JT | 890 JT | 25 U | 1050 JT | 472 | 437 JT | 890 JT |

**Notes:**

[a] - This value was selected from an ascending ranked list of all results. Where n – the number of samples, the actual sample result corresponding to the rand of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] - As available.

J - The associated numerical value is an estimated quantity.

N - Presumptive evidence of presence of material; identification of the compound is not definitive.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033313

Table 6.1-6. Summary Statistics for Grainsize, TOC, and Indicator Chemicals[b] in Subsurface Sediment, Downtown Corridor (RM 11-15.5).

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte** | **Units** | **# Analyzed** | **# Detected** | **% Detected** | **Minimum** | **Maximum** | **Mean** | **Median[a]** | **95th[a]** | **Minimum (full DL)** | **Maximum (full DL)** | **Mean (half DL)** | **Median (half DL)[a]** | **95th (half DL)[a]** |
| **Grainsize** | | | | | | | | | | | | | | |
| Fines | percent | 11 | 11 | 100 | 14.3 T | 69.38 | 42.9 | 48.8 T | 63.6 T | 14.3 T | 69.38 | 42.9 | 48.8 T | 63.6 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Total organic carbon | percent | 21 | 21 | 100 | 0.07 | 2.74 | 1.23 | 1.17 | 2.13 | 0.07 | 2.74 | 1.23 | 1.17 | 2.13 |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 21 | 12 | 57.1 | 0.5 | 19.7 | 4.07 | 3.04 | 3.94 | 0.5 | 19.7 | 2.44 | 0.7 | 3.74 |
| Mercury | mg/kg | 21 | 21 | 100 | 0.01 E | 0.87 E | 0.113 | 0.06 | 0.178 | 0.01 E | 0.87 E | 0.113 | 0.06 | 0.178 |
| Zinc | mg/kg | 21 | 21 | 100 | 29.4 | 243 J | 103 | 90.4 J | 179 | 29.4 | 243 J | 103 | 90.4 J | 179 |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | ug/kg | 1 | 0 | 0 | | | | | | 1 U | 1 U | 0.5 | 0.5 U | 0.5 U |
| **PCB Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg | 25 | 15 | 60 | 10 T | 260 T | 65.9 | 35 T | 246 T | 10 UT | 260 T | 43.5 | 16 UT | 78 T |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | ug/kg | 24 | 1 | 4.17 | 1 J | 1 J | 1 | 1 J | 1 J | 0.13 U | 2 U | 0.692 | 1 J | 1 U |
| beta-Hexachlorocyclohexane | ug/kg | 24 | 1 | 4.17 | 1 J | 1 J | 1 | 1 J | 1 J | 0.64 U | 2 U | 0.782 | 1 U | 1 U |
| Total Chlordanes | ug/kg | 7 | 5 | 71.4 | 0.24 JT | 1.3 JT | 0.766 | 0.6 JT | 1.1 JT | 0.24 JT | 1.3 JT | 0.668 | 0.59 JT | 1.1 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | ug/kg | 7 | 7 | 100 | 1.6 JT | 29.4 JT | 9.45 | 7 JT | 8.19 JT | 1.6 JT | 29.4 JT | 9.45 | 7 JT | 8.19 JT |
| Total of 2,4' and 4,4'-DDD | ug/kg | 7 | 7 | 100 | 0.43 JT | 11.8 JT | 3.09 | 1.2 JT | 3.6 T | 0.43 JT | 11.8 JT | 3.09 | 1.2 JT | 3.6 T |
| Total of 2,4' and 4,4'-DDE | ug/kg | 7 | 7 | 100 | 0.83 JT | 4.7 JT | 2.06 | 1.7 JT | 2.3 T | 0.83 JT | 4.7 JT | 2.06 | 1.7 JT | 2.3 T |
| Total of 2,4' and 4,4'-DDT | ug/kg | 7 | 7 | 100 | 0.34 JT | 12.9 JT | 4.3 | 3 JT | 5.2 JT | 0.34 JT | 12.9 JT | 4.3 | 3 JT | 5.2 JT |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | ug/kg | 25 | 25 | 100 | 0.7 G | 135 G | 30.2 | 23 G | 50 G | 0.7 G | 135 G | 30.2 | 23 G | 50 G |
| Benzo(a)pyrene | ug/kg | 25 | 24 | 96 | 0.6 G | 168 G | 35.8 | 25 | 62 G | 0.6 G | 168 G | 34.6 | 25 | 62 G |
| High Molecular Weight PAH | ug/kg | 25 | 25 | 100 | 5.7 T | 1650 T | 366 | 289 T | 629 T | 5.7 T | 1650 T | 366 | 289 T | 629 T |
| Phenanthrene | ug/kg | 25 | 25 | 100 | 0.9 G | 226 G | 57.7 | 42 G | 130 | 0.9 G | 226 G | 57.7 | 42 G | 130 |
| Total PAHs | ug/kg | 25 | 25 | 100 | 7.7 T | 2321 T | 501 | 378 T | 1048 T | 7.7 T | 2321 T | 501 | 378 T | 1048 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | ug/kg | 12 | 6 | 50 | 20 J | 210 B | 112 | 73 | 200 B | 20 J | 210 B | 74.4 | 60 U | 200 B |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | |
| Hexachlorobenzene | ug/kg | 12 | 1 | 8.33 | 0.87 J | 0.87 J | 0.87 | 0.87 J | 0.87 J | 0.27 U | 15 U | 2.62 | 0.5 U | 6 U |
| **Petroleum** | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | 8 | 8 | 100 | 140 JT | 870 JT | 411 | 325 JT | 580 JT | 140 JT | 870 JT | 411 | 325 JT | 580 JT |

**Notes:**

[a] - This value was selected from an ascending ranked list of all results. Where n = the number of samples, the actual sample result corresponding to the rand of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] - As available.

B - Analyte detected in method blank.

E - Estimated.

G - Estimate is greater than value shown.

J - The associated numerical value is an estimated quantity.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033314

Table 6.1-7. Summary Statistics for Grainsize, TOC, and Indicator Chemicals in Surface Sediment, Upriver (RM 15.5-26).

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # Analyzed | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median (half DL)[a] | 95th (half DL)[a] |
| **Grainsize** | | | | | | | | | | | | | | |
| Fines | percent | 39 | 39 | 100 | 0.28 | 98.4 T | 29.6 | 21 | 89.9 | 0.28 | 98.4 T | 29.6 | 21 | 89.9 |
| **Conventionals** | | | | | | | | | | | | | | |
| Total organic carbon | percent | 36 | 36 | 100 | 0.16 | 2.57 | 1.19 | 1.18 | 2.37 | 0.16 | 2.57 | 1.19 | 1.18 | 2.37 |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 36 | 31 | 86.1 | 2.15 J | 5.29 | 3.2 | 3.14 | 4.3 | 2.15 J | 5.29 | 2.93 | 2.9 J | 4.3 |
| Mercury | mg/kg | 31 | 26 | 83.9 | 0.014 J | 0.055 | 0.0304 | 0.026 T | 0.05 | 0.014 J | 0.19 U | 0.0407 | 0.03 | 0.095 U |
| Zinc | mg/kg | 31 | 31 | 100 | 49.7 | 165 | 73.2 | 67.4 J | 105 | 49.7 | 165 | 73.2 | 67.4 J | 105 |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | ug/kg | 3 | 2 | 66.7 | 0.72 J | 1.1 NJ | 0.91 | 0.72 J | 0.72 J | 0.087 U | 1.1 NJ | 0.621 | 0.72 J | 0.72 J |
| **PCB Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg | 40 | 10 | 25 | 1.47 JT | 37 JT | 7.6 | 3.81 JT | 11.4 JT | 1.47 JT | 42 UT | 8.71 | 4.7 J | 20 UT |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | ug/kg | 2 | 2 | 100 | 3.9 | 31 | 17.5 | 3.9 | 3.9 | 3.9 | 31 | 17.5 | 3.9 | 3.9 |
| **Dioxins/Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g | 21 | 21 | 100 | 0.00684 JT | 0.937 JT | 0.128 | 0.0734 JT | 0.24 J | 0.00684 JT | 0.937 JT | 0.128 | 0.0734 JT | 0.24 J |
| **Total PCB TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 2 | 2 | 100 | 0.175 JT | 0.92 JT | 0.548 | 0.175 JT | 0.175 JT | 0.175 JT | 0.92 JT | 0.548 | 0.175 JT | 0.175 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | ug/kg | 35 | 1 | 2.86 | 0.349 NJ | 0.349 NJ | 0.349 | 0.349 NJ | 0.349 NJ | 0.0329 UJ | 2.1 U | 0.337 | 0.075 U | 1 U |
| beta-Hexachlorocyclohexane | ug/kg | 33 | 14 | 42.4 | 0.195 | 2.01 J | 0.943 | 0.934 NJ | 1.87 J | 0.0356 U | 2.1 U | 0.756 | 0.75 U | 1.52 NJ |
| Total Chlordanes | ug/kg | 21 | 12 | 57.1 | 0.057 JT | 1.18 JT | 0.363 | 0.19 JT | 0.682 JT | 0.0438 UT | 1.18 JT | 0.234 | 0.13 UT | 0.593 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | ug/kg | 21 | 21 | 100 | 0.087 JT | 5 JT | 1.44 | 1.05 JT | 2.61 JT | 0.087 JT | 5 JT | 1.44 | 1.05 JT | 2.61 JT |
| Total of 2,4' and 4,4'-DDD | ug/kg | 21 | 16 | 76.2 | 0.12 JT | 1.56 JT | 0.629 | 0.638 JT | 1.15 JT | 0.0507 UT | 1.56 JT | 0.5 | 0.441 JT | 0.855 JT |
| Total of 2,4' and 4,4'-DDE | ug/kg | 21 | 21 | 100 | 0.087 JT | 2.45 T | 0.744 | 0.534 T | 1.48 JT | 0.087 JT | 2.45 T | 0.744 | 0.534 T | 1.48 JT |
| Total of 2,4' and 4,4'-DDT | ug/kg | 21 | 8 | 38.1 | 0.21 JT | 1.4 JT | 0.568 | 0.41 JT | 0.84 JT | 0.0486 UJT | 1.4 JT | 0.235 | 0.0347 UJT | 0.55 JT |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | ug/kg | 37 | 18 | 48.6 | 1.6 J | 28 | 9.58 | 7.7 | 20 | 0.24 U | 50 U | 8.83 | 5 U | 25 U |
| Benzo(a)pyrene | ug/kg | 37 | 19 | 51.4 | 1.6 J | 28 | 9.89 | 9.1 | 18 | 0.33 U | 50 U | 9.12 | 6.7 U | 25 U |
| High Molecular Weight PAH | ug/kg | 37 | 23 | 62.2 | 1.7 JT | 305 T | 80.9 | 55.5 JT | 155 JT | 1 UT | 305 T | 54.3 | 25 UT | 155 JT |
| Phenanthrene | ug/kg | 37 | 18 | 48.6 | 0.91 J | 71 | 10.6 | 6.6 | 19 | 0.59 U | 71 | 9.34 | 5 U | 25 U |
| Total PAHs | ug/kg | 37 | 24 | 64.9 | 0.91 JT | 376 JT | 88.3 | 60.8 JT | 176.9 JT | 0.91 JT | 376 JT | 61.3 | 25 UT | 176.9 JT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | ug/kg | 31 | 21 | 67.7 | 4.2 J | 2100 | 130 | 23 J | 110 | 3.2 UJ | 2100 | 111 | 25 | 190 U |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | |
| Hexachlorobenzene | ug/kg | 31 | 8 | 25.8 | 0.318 J | 1.04 J | 0.71 | 0.698 J | 1.01 J | 0.31 U | 21 U | 3.49 | 1.85 U | 10 U |
| **Petroleum** | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | 17 | 13 | 76.5 | 28 | 433 JT | 191 | 224 T | 346 T | 25 U | 433 JT | 150 | 116 JT | 346 T |

**Notes:**

[a] - This value was selected from an ascending ranked list of all results. Where n – the number of samples, the actual sample result corresponding to the rand of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

J - The associated numerical value is an estimated quantity.

N - Presumptive evidence of presence of material; identification of the compound is not definitive.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033315

Table 6.1-8. Summary Statistics for Grainsize, TOC, and Indicator Chemicals in Surface Sediment, Downstream (RM 0-2).

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # Analyzed | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median (half DL)[a] | 95th (half DL)[a] |
| **Grainsize** | | | | | | | | | | | | | | |
| Fines | percent | 5 | 5 | 100 | 19.4 T | 91.7 T | 60.1 | 64 T | 86.3 T | 19.4 T | 91.7 T | 60.08 | 64 T | 86.3 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Total organic carbon | percent | 9 | 9 | 100 | 0.13 | 2.64 | 1.14 | 1.2 | 1.96 | 0.13 | 2.64 | 1.14 | 1.2 | 1.96 |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 9 | 9 | 100 | 0.6 E | 3.72 | 2.4 | 2.5 E | 3.58 J | 0.6 E | 3.72 | 2.4 | 2.5 E | 3.58 J |
| Mercury | mg/kg | 9 | 9 | 100 | 0.02 | 0.111 | 0.062 | 0.066 | 0.086 | 0.02 | 0.111 | 0.062 | 0.066 | 0.086 |
| Zinc | mg/kg | 9 | 9 | 100 | 51 | 139 | 95.5 | 107 | 117 | 51 | 139 | 95.5 | 107 | 117 |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | ug/kg | 1 | 0 | 0 | | | | | | 3.2 U | 3.2 U | 3.2 | 3.2 U | 3.2 U |
| **PCB Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg | 9 | 6 | 66.7 | 5 T | 140 T | 47.9 | 9.5 JT | 74 JT | 4.7 UJT | 140 T | 34.7 | 10 UT | 74 JT |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | ug/kg | 3 | 3 | 100 | 9.46 T | 51.3 | 35.9 | 47 | 47 | 9.46 T | 51.3 | 35.92 | 47 | 47 |
| **Dioxins/Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g | 2 | 2 | 100 | 0.173 JT | 1.38 JT | 0.777 | 0.173 JT | 0.173 JT | 0.173 JT | 1.38 JT | 0.777 | 0.173 JT | 0.173 JT |
| **Total PCB TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 3 | 3 | 100 | 1.62 T | 4.56 T | 2.61 | 1.66 T | 1.66 T | 1.62 T | 4.56 T | 2.61 | 1.66 T | 1.66 T |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | ug/kg | 6 | 3 | 50 | 0.0206 J | 0.4 J | 0.274 | 0.4 J | 0.4 J | 0.0206 J | 2 U | 0.8085 | 0.4 J | 2 UG |
| beta-Hexachlorocyclohexane | ug/kg | 9 | 4 | 44.4 | 0.4 J | 5.38 NJ | 3.72 | 3.84 NJ | 5.24 NJ | 0.0328 U | 5.38 NJ | 2.33 | 2 U | 5.24 NJ |
| Total Chlordanes | ug/kg | 5 | 4 | 80 | 0.249 JT | 0.766 JT | 0.444 | 0.302 JT | 0.46 JT | 0.0404 UT | 0.766 JT | 0.364 | 0.302 JT | 0.46 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | ug/kg | 5 | 5 | 100 | 0.452 T | 4.46 JT | 3.22 | 4.18 JT | 4.24 JT | 0.452 T | 4.46 JT | 3.22 | 4.18 JT | 4.24 JT |
| Total of 2,4' and 4,4'-DDD | ug/kg | 5 | 4 | 80 | 1.15 T | 2.15 JT | 1.54 | 1.24 T | 1.62 JT | 0.0468 UT | 2.15 JT | 1.24 | 1.24 T | 1.62 JT |
| Total of 2,4' and 4,4'-DDE | ug/kg | 5 | 4 | 80 | 1.12 JT | 2.21 T | 1.84 | 1.87 T | 2.17 JT | 0.0438 UT | 2.21 T | 1.48 | 1.87 T | 2.17 JT |
| Total of 2,4' and 4,4'-DDT | ug/kg | 5 | 5 | 100 | 0.147 JT | 0.875 JT | 0.518 | 0.452 T | 0.682 JT | 0.147 JT | 0.875 JT | 0.518 | 0.452 T | 0.682 JT |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | ug/kg | 9 | 9 | 100 | 3 G | 42 G | 18.5 | 21 | 30 | 3 G | 42 G | 18.5 | 21 | 30 |
| Benzo(a)pyrene | ug/kg | 9 | 9 | 100 | 6.6 | 109 G | 36 | 36 G | 43 | 6.6 | 109 G | 36 | 36 G | 43 |
| High Molecular Weight PAH | ug/kg | 9 | 9 | 100 | 47.6 JT | 713 T | 288 | 281 T | 545 T | 47.6 JT | 713 T | 288 | 281 T | 545 T |
| Phenanthrene | ug/kg | 9 | 9 | 100 | 1.7 J | 140 | 27.9 | 14 G | 38 G | 1.7 J | 140 | 27.9 | 14 G | 38 G |
| Total PAHs | ug/kg | 9 | 9 | 100 | 52.2 JT | 793 T | 337 | 308 JT | 738 T | 52.2 JT | 793 T | 337 | 308 JT | 738 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | ug/kg | 5 | 1 | 20 | 100 | 100 | 100 | 100 | 100 | 5.6 U | 100 | 44.72 | 48 U | 62 U |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | |
| Hexachlorobenzene | ug/kg | 5 | 1 | 20 | 0.0404 J | 0.0404 J | 0.0404 | 0.0404 J | 0.0404 J | 0.0278 U | 5.5 U | 1.6 | 0.0404 J | 2.6 UT |
| **Petroleum** | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | 1 | 1 | 100 | 208 JT | 208 JT | 208 | 208 JT | 208 JT | 208 JT | 208 JT | 208 | 208 JT | 208 JT |

**Notes:**

[a] - This value was selected from an ascending ranked list of all results. Where n – the number of samples, the actual sample result corresponding to the rand of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

E - Estimated.

G - Estimate is greater than value shown.

J - The associated numerical value is an estimated quantity.

N - Presumptive evidence of presence of material; identification of the compound is not definitive.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033316

Table 6.1-9. Summary Statistics for Grainsize, TOC, and Indicator Chemicals[b] in Subsurface Sediment, Downstream (RM 0-2).

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte** | **Units** | **# Analyzed** | **# Detected** | **% Detected** | **Minimum** | **Maximum** | **Mean** | **Median[a]** | **95th[a]** | **Minimum (full DL)** | **Maximum (full DL)** | **Mean (half DL)** | **Median (half DL)[a]** | **95th (half DL)[a]** |
| **Conventionals** | | | | | | | | | | | | | | |
| Total organic carbon | percent | 11 | 11 | 100 | 0.06 | 0.99 | 0.57 | 0.54 | 0.99 | 0.06 | 0.99 | 0.57 | 0.54 | 0.99 |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 11 | 11 | 100 | 0.6 E | 5.8 E | 2.53 | 2.4 E | 5.6 E | 0.6 E | 5.8 E | 2.53 | 2.4 E | 5.6 E |
| Mercury | mg/kg | 11 | 11 | 100 | 0.01 | 0.13 | 0.0618 | 0.05 | 0.12 | 0.01 | 0.13 | 0.0618 | 0.05 | 0.12 |
| Zinc | mg/kg | 11 | 11 | 100 | 10.8 | 166 | 78.5 | 75.5 | 138 | 10.8 | 166 | 78.5 | 75.5 | 138 |
| **PCB Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg | 11 | 5 | 45.5 | 5 T | 72 T | 26.6 | 14 T | 35 T | 5 T | 72 T | 17.5 | 10 UT | 35 T |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | ug/kg | 11 | 1 | 9.09 | 0.2 J | 0.2 J | 0.2 | 0.2 J | 0.2 J | 0.2 J | 2 U | 1.78 | 2 U | 2 UG |
| beta-Hexachlorocyclohexane | ug/kg | 9 | 0 | 0 | | | | | | 2 U | 2 U | 2 | 2 U | 2 UG |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | ug/kg | 11 | 10 | 90.9 | 1 G | 130 | 34.1 | 5 G | 86 G | 1 G | 130 | 31.2 | 5 G | 86 G |
| Benzo(a)pyrene | ug/kg | 11 | 11 | 100 | 0.9 GB | 180 | 46 | 9 GB | 123 G | 0.9 GB | 180 | 46 | 9 GB | 123 G |
| High Molecular Weight PAH | ug/kg | 11 | 11 | 100 | 11 T | 1630 T | 405 | 76 T | 1080 T | 11 T | 1630 T | 405 | 76 T | 1080 T |
| Phenanthrene | ug/kg | 11 | 11 | 100 | 2 GB | 250 | 54.4 | 10 GB | 140 | 2 GB | 250 | 54.4 | 10 GB | 140 |
| Total PAHs | ug/kg | 11 | 11 | 100 | 20.7 T | 1998 JT | 499 | 88.4 T | 1307 T | 20.7 T | 1998 JT | 499 | 88.4 T | 1307 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | ug/kg | 2 | 1 | 50 | 56 | 56 | 56 | 56 | 56 | 36 U | 56 | 46 | 36 U | 36 U |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | |
| Hexachlorobenzene | ug/kg | 2 | 0 | 0 | | | | | | 20 U | 20 U | 20 | 20 U | 20 U |

**Notes:**

[a] - This value was selected from an ascending ranked list of all results. Where n = the number of samples, the actual sample result corresponding to the rand of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] - As available.

B - Analyte detected in method blank.

E - Estimated.

G - Estimate is greater than value shown.

J - The associated numerical value is an estimated quantity.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033317

Table 6.1-10. Summary Statistics for Grainsize, TOC, and Indicator Chemicals in Surface Sediment, Multnomah Channel.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # Analyzed | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median (half DL)[a] | 95th (half DL)[a] |
| **Grainsize** | | | | | | | | | | | | | | |
| Fines | percent | 7 | 7 | 100 | 1.41 T | 18.6 T | 8.17 | 4.26 T | 16.2 T | 1.41 T | 18.6 T | 8.17 | 4.26 T | 16.2 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Total organic carbon | percent | 7 | 7 | 100 | 0.21 | 1.58 | 0.517 | 0.437 T | 0.44 | 0.21 | 1.58 | 0.517 | 0.437 T | 0.44 |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 7 | 7 | 100 | 2.73 | 6.5 T | 3.9 | 3.3 | 4.44 | 2.73 | 6.5 T | 3.9 | 3.3 | 4.44 |
| Mercury | mg/kg | 7 | 7 | 100 | 0.02 | 0.06 T | 0.0324 | 0.033 | 0.04 | 0.02 | 0.06 T | 0.0324 | 0.033 | 0.04 |
| Zinc | mg/kg | 7 | 7 | 100 | 60.4 | 102 T | 75.3 | 71.6 | 78.8 | 60.4 | 102 T | 75.3 | 71.6 | 78.8 |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | ug/kg | 1 | 1 | 100 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 |
| **PCB Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg | 7 | 2 | 28.6 | 2.4 JT | 3.3 T | 2.85 | 2.4 JT | 2.4 JT | 2.3 UT | 3.3 T | 1.66 | 1.2 UT | 2.4 JT |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | ug/kg | 2 | 2 | 100 | 0.15 T | 7.08 | 3.62 | 0.15 T | 0.15 T | 0.15 T | 7.08 | 3.62 | 0.15 T | 0.15 T |
| **Dioxins/Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g | 2 | 2 | 100 | 0.192 JT | 0.386 JT | 0.289 | 0.192 JT | 0.192 JT | 0.192 JT | 0.386 JT | 0.289 | 0.192 JT | 0.192 JT |
| **Total PCB TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 2 | 2 | 100 | 0.116 T | 0.235 JT | 0.176 | 0.116 T | 0.116 T | 0.116 T | 0.235 JT | 0.176 | 0.116 T | 0.116 T |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | ug/kg | 7 | 5 | 71.4 | 0.017 JT | 0.257 NJ | 0.109 | 0.093 NJ | 0.112 NJ | 0.017 JT | 0.257 NJ | 0.0827 | 0.067 J | 0.112 NJ |
| beta-Hexachlorocyclohexane | ug/kg | 7 | 4 | 57.1 | 0.00206 JT | 1.63 NJ | 0.513 | 0.124 J | 0.294 J | 0.00206 JT | 1.63 NJ | 0.3 | 0.01775 U | 0.294 J |
| Total Chlordanes | ug/kg | 7 | 2 | 28.6 | 0.057 JT | 0.287 JT | 0.172 | 0.057 JT | 0.057 JT | 0.0429 UT | 0.287 JT | 0.0646 | 0.02175 UT | 0.057 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | ug/kg | 7 | 7 | 100 | 1.27 JT | 5.71 JT | 2.88 | 2.63 JT | 3.55 JT | 1.27 JT | 5.71 JT | 2.88 | 2.63 JT | 3.55 JT |
| Total of 2,4' and 4,4'-DDD | ug/kg | 7 | 7 | 100 | 0.674 JT | 4.55 T | 1.92 | 1.7 JT | 2.27 JT | 0.674 JT | 4.55 T | 1.92 | 1.7 JT | 2.27 JT |
| Total of 2,4' and 4,4'-DDE | ug/kg | 7 | 7 | 100 | 0.156 T | 0.745 JT | 0.426 | 0.398 JT | 0.714 JT | 0.156 T | 0.745 JT | 0.426 | 0.398 JT | 0.714 JT |
| Total of 2,4' and 4,4'-DDT | ug/kg | 7 | 7 | 100 | 0.211 JT | 0.972 JT | 0.531 | 0.447 JT | 0.629 JT | 0.211 JT | 0.972 JT | 0.531 | 0.447 JT | 0.629 JT |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | ug/kg | 7 | 7 | 100 | 30 | 280 | 121 | 77 | 220 | 30 | 280 | 121 | 77 | 220 |
| Benzo(a)pyrene | ug/kg | 7 | 7 | 100 | 59 | 450 | 222 | 150 | 410 | 59 | 450 | 222 | 150 | 410 |
| High Molecular Weight PAH | ug/kg | 7 | 7 | 100 | 384 T | 3130 T | 1470 | 990 T | 2670 T | 384 T | 3130 T | 1470 | 990 T | 2670 T |
| Phenanthrene | ug/kg | 7 | 7 | 100 | 8.3 | 150 | 51.5 | 38 | 94 | 8.3 | 150 | 51.5 | 38 | 94 |
| Total PAHs | ug/kg | 7 | 7 | 100 | 415 JT | 3390 T | 1600 | 1110 JT | 2970 T | 415 JT | 3390 T | 1600 | 1110 JT | 2970 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | ug/kg | 7 | 1 | 14.3 | 9.6 J | 9.6 J | 9.6 | 9.6 J | 9.6 J | 2.3 U | 33 U | 6.36 | 4.2 U | 9.6 J |
| **Semivolatile Organic Compounds** | | | | | | | | | | | | | | |
| Hexachlorobenzene | ug/kg | 7 | 3 | 42.9 | 0.122 JT | 0.871 J | 0.468 | 0.412 J | 0.412 J | 0.0187 U | 2.9 U | 0.618 | 0.412 J | 1.45 U |
| **Petroleum** | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | 1 | 1 | 100 | 187 JT | 187 JT | 187 | 187 JT | 187 JT | 187 JT | 187 JT | 187 | 187 JT | 187 JT |

**Notes:**

[a] - This value was selected from an ascending ranked list of all results. Where n – the number of samples, the actual sample result corresponding to the rand of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

J - The associated numerical value is an estimated quantity.

N - Presumptive evidence of presence of material; identification of the compound is not definitive.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033318

Table 6.1-11. Polycyclic Aromatic Hydrocarbons by Number of Fused Aromatic Rings.

| Analyte | Number of Rings |
|---|---|
| Naphthalene | 2 |
| 2-Methylnaphthalene | 2 |
| Acenaphthylene | 3 |
| Acenaphthene | 3 |
| Fluorene | 3 |
| Phenanthrene | 3 |
| Anthracene | 3 |
| Fluoranthene | 4 |
| Pyrene | 4 |
| Benzo(a)anthracene | 4 |
| Chrysene | 4 |
| Benzo(b)fluoranthene | 5 |
| Benzo(k)fluoranthene | 5 |
| Benzo(a)pyrene | 5 |
| Dibenzo(a,h)anthracene | 5 |
| Indeno(1,2,3-cd)pyrene | 6 |
| Benzo(g,h,i)perylene | 6 |

BZTO104(e)033319

Table 6.1-12. Samples Selected for Statistical Comparisons by Subarea.

| Subarea | River Mile | Survey/Sample ID | Upper Depth | Lower Depth | Year Sampled |
|---|---|---|---|---|---|
| Downstream | 0 | WLR0797WRBC01WRA | 0 | 20 | 1997 |
| Downstream | 0 | WLR0797WRBC01WRBC01 | 0 | 20 | 1997 |
| Downstream | 1.6 | WLR0797WRBC07WRBC07 | 0 | 24 | 1997 |
| Downstream | 1.8 | WLR0797WRBC08WRBC08 | 0 | 25 | 1997 |
| Downstream | 1.9 | LW2-G001 | 0 | 28 | 2004 |
| Downstream | 1.9 | LW2-G002 | 0 | 28 | 2004 |
| Downstream | 2 | LW2-D1-1 | 0 | 28 | 2004 |
| Downstream | 2 | LW2-D1-2 | 0 | 29 | 2004 |
| Downstream | 2 | WLR0797WRBC09WRBC09 | 0 | 25 | 1997 |
| Downtown | 11 | LW2-G516 | 0 | 25 | 2004 |
| Downtown | 11 | WLCAYH00SD01SD01S | 0 | 20 | 2000 |
| Downtown | 11 | WLCDRD05PG122122 | 0 | 30 | 2005 |
| Downtown | 11.1 | WLCDRD05PG124124 | 0 | 29 | 2005 |
| Downtown | 11.1 | WLCDRD05PG126126 | 0 | 30 | 2005 |
| Downtown | 11.2 | WLCDRD05PG128128 | 0 | 30 | 2005 |
| Downtown | 11.3 | WLCDRD05PG130130 | 0 | 21 | 2005 |
| Downtown | 11.4 | WLCDRD05PG132132 | 0 | 30 | 2005 |
| Downtown | 11.5 | WLCDRD05PG134134 | 0 | 30 | 2005 |
| Downtown | 14 | WLCRIF01HS02HS02 | 0 | 10 | 2001 |
| Downtown | 14 | WLCRIF01HS03HS03 | 0 | 10 | 2001 |
| Downtown | 13 | WLCRIF01HS04HS04 | 0 | 10 | 2001 |
| Downtown | 13 | WLCRIF01HS05HS05 | 0 | 10 | 2001 |
| Downtown | 14 | WLCRIL99HCSS02HCSS02 | 0 | 10 | 1999 |
| Downtown | 14 | WLCRIL99HCSS03HCSS03 | 0 | 10 | 1999 |
| Downtown | 14 | WLCRIL99HCSS04HCSS04 | 0 | 10 | 1999 |
| Downtown | 14 | WLCRIV99PA03PA03 | 0 | 10 | 1999 |
| Downtown | 14 | WLCRIV99PA04PA04 | 0 | 10 | 1999 |
| Downtown | 11 | WLCT1F00T1S07T1S07 | 0 | 10 | 2000 |
| Downtown | 11 | WLCT1F00T1S08T1S08 | 0 | 10 | 2000 |
| Downtown | 11.3 | WLCT1F00T1S09T1S09 | 0 | 10 | 2000 |
| Downtown | 12 | WLCWQH99SN06SED01 | 0 | 3 | 1997 |
| Downtown | 13 | WLCZDI00WRS05WRS05-1 | 0 | 15.24 | 1997 |
| Downtown | 13 | WLCZDI00WRS06WRS06-1 | 0 | 15.24 | 1997 |
| Downtown | 13 | WLCZDI00WRS07WRS07-1 | 0 | 15.24 | 1997 |
| Downtown | 13 | WLCZDI00WRS08WRS08-1 | 0 | 15.24 | 1997 |
| Downtown | 13 | WLCZDI00WRS09WRS09-1 | 0 | 15.24 | 1998 |
| Downtown | 13 | WLCZDI00WRS10WRS10-1 | 0 | 12.192 | 1998 |
| Downtown | 13 | WLCZDI00WRS11WRS11-1 | 0 | 21.336 | 1998 |
| Downtown | 13 | WLCZDI00WRS12WRS12-1 | 0 | 15.24 | 1998 |
| Downtown | 13 | WLCZDI00WRS13WRS13-1 | 0 | 24.384 | 1998 |
| Downtown | 13 | WLCZDI00WRS15WRS15-1 | 0 | 9.144 | 1998 |
| Downtown | 13 | WLCZDI00WRS16WRS16-1 | 0 | 6.096 | 1998 |
| Downtown | 13 | WLCZDI00WRS17WRS17-1 | 0 | 6.096 | 1998 |
| Downtown | 13 | WLCZDI00WRS18WRS18-1 | 0 | 6.096 | 1998 |
| Downtown | 13 | WLCZDI00WRS19WRS19-1 | 0 | 21.336 | 1998 |
| Downtown | 14 | WLCZDI00WRS20WRS20-1 | 0 | 18.288 | 1998 |

BZTO104(e)033320

Table 6.1-12. Samples Selected for Statistical Comparisons by Subarea.

| Subarea | River Mile | Survey/Sample ID | Upper Depth | Lower Depth | Year Sampled |
|---|---|---|---|---|---|
| Downtown | 14 | WLCZDI00WRS21WRS21-1 | 0 | 24.384 | 1998 |
| Downtown | 14 | WLCZDI00WRS22WRS22-1 | 0 | 30.48 | 2000 |
| Downtown | 14 | WLCZDI00WRS23WRS23-1 | 0 | 30.48 | 2000 |
| Downtown | 14 | WLCZDI00WRS24WRS24-1 | 0 | 30.48 | 2000 |
| Downtown | 13 | WLCZDI00WRS25WRS25-1 | 0 | 30 | 2000 |
| Downtown | 13 | WLCZDI00WRS26WRS26-1 | 0 | 30 | 2000 |
| Downtown | 13 | WLCZDI00WRS27WRS27-1 | 0 | 30.48 | 2000 |
| Downtown | 13 | WLCZDI00WRS28WRS28-1 | 0 | 30.48 | 2000 |
| Downtown | 13 | WLCZDI00WRS29WRS29-1 | 0 | 30 | 2000 |
| Downtown | 13 | WLCZDI00WRS30WRS30-1 | 0 | 30.48 | 2000 |
| Downtown | 13 | WLCZDI00WRS31WRS31-1 | 0 | 30 | 2000 |
| Downtown | 13 | WLCZDI00WRS32WRS32-1 | 0 | 30.48 | 2000 |
| Downtown | 13 | WLCZDI00WRS33WRS33-1 | 0 | 30.48 | 2000 |
| Downtown | 13 | WLCZDI00WRS34WRS34-1 | 0 | 30.48 | 2000 |
| Downtown | 13 | WLCZDI00WRS35WRS35-1 | 0 | 30 | 2000 |
| Downtown | 13 | WLCZDI00WRS36WRS36-1 | 0 | 30.48 | 2000 |
| Downtown | 13 | WLCZDI00WRS37WRS37-1 | 0 | 30 | 2000 |
| Downtown | 13 | WLCZDI00WRS38WRS38-1 | 0 | 30.48 | 2000 |
| Downtown | 13 | WLCZDI00WRS39WRS39-1 | 0 | 30.48 | 2000 |
| Downtown | 13 | WLCZDI00WRS40WRS40-1 | 0 | 21.336 | 2000 |
| Downtown | 13 | WLCZDI00WRS41WRS44-1 | 0 | 30.48 | 2000 |
| Downtown | 13 | WLCZDI00WRS45WRS45-1 | 0 | 30.48 | 2000 |
| Downtown | 14 | WLCZDI00WRS46WRS46-1 | 0 | 30 | 2000 |
| Downtown | 13 | WLCZDI00WRS47WRS47 | 0 | 15.24 | 2003 |
| Downtown | 13 | WLCZDI00WRS48WRS48 | 0 | 15.24 | 2003 |
| Downtown | 13 | WLCZDI00WRS49WRS49 | 0 | 15.24 | 2003 |
| Downtown | 13 | WLCZDI00WRS50WRS50 | 0 | 15.24 | 2003 |
| Downtown | 13 | WLCZDI00WRS51WRS51 | 0 | 15.24 | 2003 |
| Downtown | 13 | WLCZDI00WRS52WRS52 | 0 | 15.24 | 2003 |
| Downtown | 13 | WLCZDI00WRS53WRS53 | 0 | 15.24 | 2003 |
| Downtown | 13 | WLCZDI00WRS54WRS54 | 0 | 15.24 | 2003 |
| Multnomah Channel | 2.9 | LW2-G045 | 0 | 21 | 2004 |
| Multnomah Channel | 2.9 | LW2-G047 | 0 | 26 | 2004 |
| Multnomah Channel | 2.9 | LW2-G048 | 0 | 23 | 2004 |
| Multnomah Channel | 3 | LW2-B007 | 0 | 15 | 2004 |
| Multnomah Channel | 3 | LW2-G049 | 0 | 27 | 2004 |
| Multnomah Channel | 3.1 | LW2-G054 | 0 | 20 | 2004 |
| Multnomah Channel | 2.9 | LW2-GBT003 | 0 | 10 | 2005 |
| Upper Study Area | 9.2 | LW2-G466 | 0 | 27 | 2004 |
| Upper Study Area | 9.3 | LW2-G475-1 | 0 | 28 | 2004 |
| Upper Study Area | 9.3 | LW2-G475-2 | 0 | 27 | 2004 |
| Upper Study Area | 9.4 | LW2-G478 | 0 | 29 | 2004 |
| Upper Study Area | 9.5 | LW2-G483 | 0 | 27 | 2004 |
| Upper Study Area | 9.6 | LW2-G486 | 0 | 28 | 2004 |
| Upper Study Area | 9.8 | PSYSEA98PSY77PSY77S | 0 | 10 | 1998 |
| Upper Study Area | 9.8 | WLCT0I98GRAB10GRAB10 | 0 | 10 | 1998 |
| Upper Study Area | 10.5 | WLCT0I98GRAB11GRAB11 | 0 | 10 | 1998 |
| Upper Study Area | 10.6 | LW2-G512 | 0 | 27 | 2004 |
| Upper Study Area | 10.9 | WLCT0I98GRAB12GRAB12 | 0 | 10 | 1998 |



BZTO104(e)033321

Table 6.1-12. Samples Selected for Statistical Comparisons by Subarea.

| Subarea | River Mile | Survey/Sample ID | Upper Depth | Lower Depth | Year Sampled |
|---|---|---|---|---|---|
| Upriver | 15.3 | WLCRIL99HCSS24HCSS24 | 0 | 10 | 1999 |
| Upriver | 15.3 | WLCRIL99HCSS30HCSS30 | 0 | 10 | 1999 |
| Upriver | 15.4 | LW2-U1C-1 | 0 | 25 | 2004 |
| Upriver | 15.4 | LW2-U1C-2 | 0 | 28 | 2004 |
| Upriver | 15.4 | LW2-U1C-3 | 0 | 25.5 | 2004 |
| Upriver | 15.4 | WLCDRD05PGR01Ref01 | 0 | 27 | 2005 |
| Upriver | 15.4 | WLCDRI03CREF01CREF01 | 0 | 10 | 2004 |
| Upriver | 15.4 | WLLRSH01HC02HC02 | 0 | 10 | 2001 |
| Upriver | 15.5 | WLCRIL99HCSS29HCSS29 | 0 | 10 | 1999 |
| Upriver | 15.6 | WLCRIL99HCSS31HCSS31 | 0 | 10 | 1999 |
| Upriver | 15.6 | WLLRSH01HC01HC01 | 0 | 10 | 2001 |
| Upriver | 15.9 | WLCRIL99HCSS33HCSS33 | 0 | 10 | 1999 |
| Upriver | 16 | LW2-U2C-1 | 0 | 26 | 2004 |
| Upriver | 16 | LW2-U2C-2 | 0 | 20 | 2004 |
| Upriver | 16 | LW2-U2C-3 | 0 | 23 | 2004 |
| Upriver | 16 | WLCRIL99HCSS32CSS103 | 0 | 10 | 1999 |
| Upriver | 16 | WLCRIL99HCSS32HCSS32 | 0 | 10 | 1999 |
| Upriver | 16 | WLLRSH01HC03HC03 | 0 | 10 | 2001 |
| Upriver | 17 | LW2-U3C-1 | 0 | 24 | 2004 |
| Upriver | 17 | LW2-U3C-2 | 0 | 25 | 2004 |
| Upriver | 17 | LW2-U3C-3 | 0 | 22 | 2004 |
| Upriver | 17 | WLCMBJ99D09940D09940 | 0 | 15 | 1999 |
| Upriver | 17 | WLCMBJ99D09940D09954 | 0 | 15 | 1999 |
| Upriver | 17 | WLLRSH01HC04HC04 | 0 | 10 | 2001 |
| Upriver | 17 | WLLRSH01HC05HC05 | 0 | 10 | 2001 |
| Upriver | 18 | LW2-U4Q-1 | 0 | 26 | 2004 |
| Upriver | 18 | LW2-U4Q-2 | 0 | 26 | 2004 |
| Upriver | 18 | LW2-U4Q-3 | 0 | 25 | 2004 |
| Upriver | 18 | WLCDRD05PGR03Ref03 | 0 | 30 | 2005 |
| Upriver | 18 | WLLRSH01HC07HC07 | 0 | 10 | 2001 |
| Upriver | 18 | WLLRSH01HC08HC08 | 0 | 10 | 2001 |
| Upriver | 21 | WLCMBJ99D09941D09941 | 0 | 15 | 1999 |
| Upriver | 22 | WLCMBJ99D09942D09942 | 0 | 15 | 1999 |
| Upriver | 23 | LW2-U6TOC-1 | 0 | 23 | 2004 |
| Upriver | 23 | LW2-U6TOC-2 | 0 | 25 | 2004 |
| Upriver | 23 | LW2-U6TOC-3 | 0 | 25.5 | 2004 |
| Upriver | 23 | WLCDRD05PGR02Ref02 | 0 | 30 | 2005 |
| Upriver | 23 | WLCDRI03CREF02CREF02 | 0 | 10 | 2004 |
| Upriver | 23 | WLCMBA01ED0130ED0130 | 0 | 38 | 2001 |
| Upriver | 23 | WLCMBJ99D09943D09943 | 0 | 15 | 1999 |
| Upriver | 23 | WLLRSH01HC09HC09 | 0 | 10 | 2001 |
| Upriver | 23 | WLLRSH01HC10HC10 | 0 | 10 | 2001 |
| Upriver | 25 | LW2-U5Q-1 | 0 | 18 | 2004 |
| Upriver | 25 | LW2-U5Q-2 | 0 | 23 | 2004 |
| Upriver | 25 | LW2-U5Q-3 | 0 | 20 | 2004 |

BZTO104(e)033322

Table 6.1-13. Summary Statistics for the Selected Chemicals in each Subarea, post ROS Data Reduction.

| | | Upriver (RM 15.3 to 26) | | | | | | | | | Downtown (RM 11 to 15.3) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Units | N* | Total N** | Total Detected | Total Censored | % Detected | Min | Max | Mean | SD | N | Total N* | Total Detected | Total Censored | % Detected | Min | Max | Mean | SD |
| Fines | % | 33 | 33 | 33 | 0 | 100.0% | 0.28 | 98.4 | 24.23 | 25.5 | 36 | 36 | 36 | 0 | 100.0% | 0.5 | 89.4 | 37.44 | 28.737 |
| TOC | % | 30 | 30 | 30 | 0 | 100.0% | 0.16 | 2.57 | 1.062 | 0.72 | 17 | 17 | 17 | 0 | 100.0% | 0.17 | 2.54 | 1.634 | 0.6061 |
| Mercury | mg/kg | 30 | 23 | 23 | 0 | 100.0% | 0.014 | 0.055 | 0.03 | 0.01 | 59 | 59 | 40 | 19 | 67.8% | 0.01 | 1.4 | 0.16 | 0.2758 |
| Arsenic | mg/kg | 35 | 35 | 28 | 7 | 80.0% | 1.957 | 5.29 | 2.971 | 0.74 | 65 | 65 | 34 | 31 | 52.3% | 0.76 | 25 | 3.312 | 3.6168 |
| Total PCBs | µg/kg | 39 | 37 | 10 | 27 | 27.0% | 0.626 | 37 | 3.368 | 6.01 | 63 | 63 | 33 | 30 | 52.4% | 0.75 | 7100 | 281 | 1048 |
| Total DDx | µg/kg | 21 | 21 | 21 | 0 | 100.0% | 0.087 | 5 | 1.44 | 1.16 | 8 | 8 | 8 | 0 | 100.0% | 2 | 7.9 | 3.85 | 2.3306 |
| Total PAHs | µg/kg | 36 | 36 | 22 | 14 | 61.1% | 0.91 | 376 | 56.59 | 83 | 64 | 64 | 56 | 8 | 87.5% | 0.07 | 25210 | 1462 | 4427.5 |
| Bis2ethylhexyl Ph. | µg/kg | 30 | 30 | 21 | 9 | 70.0% | 0.949 | 2100 | 94.63 | 380 | 17 | 17 | 14 | 3 | 82.4% | 58 | 950 | 215.2 | 217.64 |
| Dioxin TEQ | pg/g | 21 | 21 | 21 | 0 | 100.0% | 0.007 | 0.937 | 0.128 | 0.2 | 1 | 1 | 1 | 0 | 100.0% | 4.19 | 4.19 | 4.19 | NA |

| | | Upper Study Area (RM 9.2 to 11) | | | | | | | | | Study Area (RM 2 to 11) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Units | N | Total N* | Total Detected | Total Censored | % Detected | Min | Max | Mean | SD | N | Total N* | Total Detected | Total Censored | % Detected | Min | Max | Mean | SD |
| Fines | % | 8 | 8 | 8 | 0 | 100.00% | 34.3 | 60.4 | 52.88 | 8.73 | 1150 | na | 1150 | na | 100.0% | 0 | 103 | 54.3 | 30.1 |
| TOC | % | 11 | 11 | 11 | 0 | 100.00% | 1.23 | 2.75 | 1.982 | 0.46 | 1315 | na | 1311 | na | 99.7% | 0.01 | 27 | 1.82 | 1.71 |
| Mercury | mg/kg | 11 | 11 | 10 | 1 | 90.91% | 0.036 | 0.078 | 0.05 | 0.01 | 1221 | na | 1113 | na | 91.2% | 0.01 | 4.84 | 0.104 | 0.187 |
| Arsenic | mg/kg | 11 | 11 | 11 | 0 | 100.00% | 2 | 6 | 3.377 | 1.11 | 1256 | na | 1129 | na | 89.9% | 0.7 | 132 | 4.9 | 6.93 |
| Total PCBs | µg/kg | 11 | 11 | 8 | 3 | 72.73% | 3.325 | 19.4 | 10.21 | 5.39 | 945 | na | 710 | na | 75.1% | 0.85 | 27400 | 200 | 1140 |
| Total DDx | µg/kg | 7 | 7 | 7 | 0 | 100.00% | 1.9 | 4.52 | 2.967 | 0.86 | 847 | na | 753 | na | 88.9% | 0.05 | 16200 | 156 | 1010 |
| Total PAHs | µg/kg | 11 | 11 | 11 | 0 | 100.00% | 61.3 | 1864 | 452.5 | 611 | 1326 | na | 1306 | na | 98.5% | 3.3 | 7260000 | 33300 | 253000 |
| Bis2ethylhexyl Ph. | µg/kg | 11 | 11 | 10 | 1 | 90.91% | 39 | 1000 | 229 | 291 | 1221 | na | 720 | na | 59.0% | 7 | 444000 | 1300 | 16500 |
| Dioxin TEQ | pg/g | na | na | na | na | na | na | na | na | na | 150 | na | 150 | na | 100.0% | 2.48 | 26400 | 3240 | 1350 |

| | | Downstream (RM 0 to 2) | | | | | | | | | Multnomah Channel (LWR to Sauvie Island Bridge)*** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Units | N | Total N* | Total Detected | Total Censored | % Detected | Min | Max | Mean | SD | N | Total N* | Total Detected | Total Censored | % Detected | Min | Max | Mean | SD |
| Fines | % | 4 | 4 | 4 | 0 | 100.00% | 86.3 | 91.7 | 87.9 | 2.55 | 7 | 7 | 7 | 0 | 100.00% | 1.41 | 18.6 | 8.17 | 7.4478 |
| TOC | % | 9 | 9 | 9 | 0 | 100.00% | 0.13 | 2.64 | 1.429 | 0.87 | 7 | 7 | 7 | 0 | 100.00% | 0.21 | 1.58 | 0.517 | 0.4798 |
| Mercury | mg/kg | 9 | 9 | 9 | 0 | 100.00% | 0.02 | 0.087 | 0.062 | 0.02 | 7 | 7 | 7 | 0 | 100.00% | 0.02 | 0.06 | 0.032 | 0.0145 |
| Arsenic | mg/kg | 9 | 9 | 9 | 0 | 100.00% | 0.6 | 4.33 | 2.707 | 1.43 | 7 | 7 | 7 | 0 | 100.00% | 2.73 | 6.5 | 3.901 | 1.2953 |
| Total PCBs | µg/kg | 9 | 9 | 6 | 3 | 66.67% | 3.651 | 17.8 | 7.715 | 4.41 | 7 | 7 | 2 | 5 | 28.57% | 2.3 | 3.3 | 2.5 | 0.3559 |
| Total DDx | µg/kg | 4 | 4 | 4 | 0 | 100.00% | 4.18 | 8.96 | 5.795 | 2.24 | 7 | 7 | 7 | 0 | 100.00% | 1.27 | 5.71 | 2.876 | 1.5065 |
| Total PAHs | µg/kg | 9 | 9 | 9 | 0 | 100.00% | 76.9 | 1167 | 445.5 | 371 | 7 | 7 | 7 | 0 | 100.00% | 415 | 3390 | 1602 | 1289.9 |
| Bis2ethylhexyl Ph. | µg/kg | 4 | 4 | 2 | 2 | 50.00% | 18.55 | 100 | 48.06 | 36.2 | 7 | 7 | 1 | 6 | 14.29% | 2.3 | 33 | 11.36 | 10.203 |
| Dioxin TEQ | pg/g | 2 | 2 | 2 | 0 | 100.00% | 0.074 | 0.099 | 0.086 | 0.02 | 2 | 2 | 2 | 0 | 100.00% | 0.19 | 0.386 | 0.289 | 0.1372 |

**Notes:**

* - N' is the original number of records in the data base, prior to the application of the Regression on Statistics (ROS) method.

** - 'Total N' is the number of records used to generated the summary statistics (i.e., after removal of records based on ROS analysis). Some censored records were dropped because the value imputed by the ROS was greater than the maximum detected value.

*** - Multnomah Channel had such small sample sizes and too few censored values for most analytes that using ROS wasn't useful. The summary statistics were therefore calculated based on the data set as is without replacement of nondetects.



BZTO104(e)033324

Table 6.1-14. Pair-Wise Statistical Results Comparisons of the Means for Each Analyte Among Station Groupings. Yellow-shaded rows show significant differences (p < 0.05, Mann-Whitney U-test).

| | | Upriver | | | Downtown | | | | Significant |
|---|---|---|---|---|---|---|---|---|---|
| | Units | N | Mean | SD | N | Mean | SD | P Value | Difference? |
| Fines | % | 33 | 24.23 | 25.47 | 36 | 37.44 | 28.70 | 0.088051 | No |
| TOC | % | 30 | 1.06 | 0.72 | 17 | 1.63 | 0.61 | 0.010552 | Yes |
| Mercury | mg/kg | 23 | 0.03 | 0.01 | 59 | 0.16 | 0.28 | 0.000079 | Yes |
| Arsenic | mg/kg | 35 | 2.97 | 0.74 | 65 | 3.31 | 3.62 | 0.088103 | No |
| Total PCBs | ug/kg | 37 | 3.37 | 6.01 | 63 | 281.00 | 1048 | 0.000000 | Yes |
| Total DDx | ug/kg | 21 | 1.44 | 1.16 | 8 | 3.85 | 2.33 | 0.001280 | Yes |
| Total PAHs | ug/kg | 36 | 56.59 | 82.98 | 64 | 1462 | 4427 | 0.000068 | Yes |
| Bis2ethylhexyl Ph. | ug/kg | 30 | 94.63 | 379.81 | 17 | 215.21 | 217.64 | 0.000001 | Yes |
| Dioxin TEQ | pg/g | 21 | 0.13 | 0.20 | 1 | 4.19 | na | na | na |

| | | Upriver | | | Upper Study Area | | | | Significant |
|---|---|---|---|---|---|---|---|---|---|
| | Units | N | Mean | SD | N | Mean | SD | P Value | Difference? |
| Fines | % | 33 | 24.23 | 25.47 | 8 | 52.88 | 8.73 | 0.001264 | Yes |
| TOC | % | 30 | 1.06 | 0.72 | 11 | 1.98 | 0.46 | 0.000678 | Yes |
| Mercury | mg/kg | 23 | 0.03 | 0.01 | 11 | 0.05 | 0.01 | 0.000309 | Yes |
| Arsenic | mg/kg | 35 | 2.97 | 0.74 | 11 | 3.38 | 1.11 | 0.216423 | No |
| Total PCBs | ug/kg | 37 | 3.37 | 6.01 | 11 | 10.21 | 5.39 | 0.000036 | Yes |
| Total DDx | ug/kg | 21 | 1.44 | 1.16 | 7 | 2.97 | 0.86 | 0.002493 | Yes |
| Total PAHs | ug/kg | 36 | 56.59 | 82.98 | 11 | 452.49 | 611.21 | 0.000170 | Yes |
| Bis2ethylhexyl Ph. | ug/kg | 30 | 94.63 | 379.81 | 11 | 229.05 | 291.22 | 0.000071 | Yes |
| Dioxin TEQ | pg/g | 21 | 0.13 | 0.20 | na | na | na | na | na |

| | | Upriver | | | Downstream | | | | Significant |
|---|---|---|---|---|---|---|---|---|---|
| | | N | Mean | SD | N | Mean | SD | P Value | Difference? |
| Fines | % | 33 | 24.23 | 25.47 | 4 | 87.90 | 2.55 | 0.004556 | Yes |
| TOC | % | 30 | 1.06 | 0.72 | 9 | 1.43 | 0.87 | 0.243346 | No |
| Mercury | mg/kg | 23 | 0.03 | 0.01 | 9 | 0.06 | 0.02 | 0.001554 | Yes |
| Arsenic | mg/kg | 35 | 2.97 | 0.74 | 9 | 2.71 | 1.43 | 0.849997 | No |
| Total PCBs | ug/kg | 37 | 3.37 | 6.01 | 9 | 7.72 | 4.41 | 0.000140 | Yes |
| Total DDx | ug/kg | 21 | 1.44 | 1.16 | 4 | 5.80 | 2.24 | 0.003027 | Yes |
| Total PAHs | ug/kg | 36 | 56.59 | 82.98 | 9 | 445.51 | 371.17 | 0.000080 | Yes |
| Bis2ethylhexyl Ph. | ug/kg | 30 | 94.63 | 379.81 | 4 | 48.06 | 36.16 | 0.156635 | No |
| Dioxin TEQ | pg/g | 21 | 0.13 | 0.20 | 2 | 0.09 | 0.02 | 0.827259 | No |

| | | Upriver | | | Multnomah Channel | | | | Significant |
|---|---|---|---|---|---|---|---|---|---|
| | | N | Mean | SD | N | Mean | SD | P Value | Difference? |
| Fines | % | 33 | 24.23 | 25.47 | 7 | 8.17 | 7.45 | 0.084281 | No |
| TOC | % | 30 | 1.06 | 0.72 | 7 | 0.52 | 0.48 | 0.060007 | No |
| Mercury | mg/kg | 23 | 0.03 | 0.01 | 7 | 0.03 | 0.01 | 0.749939 | No |
| Arsenic | mg/kg | 35 | 2.97 | 0.74 | 7 | 3.90 | 1.30 | 0.041165 | Yes |
| Total PCBs | ug/kg | 37 | 3.37 | 6.01 | 2 | 2.85 | 0.64 | 0.279069 | na |
| Total DDx | ug/kg | 21 | 1.44 | 1.16 | 7 | 2.88 | 1.51 | 0.013622 | Yes |
| Total PAHs | ug/kg | 36 | 56.59 | 82.98 | 7 | 1602.00 | 1289.89 | 0.000034 | Yes |
| Bis2ethylhexyl Ph. | ug/kg | 30 | 94.63 | 379.81 | 2 | 13.05 | 4.88 | 0.640429 | na |
| Dioxin TEQ | pg/g | 21 | 0.13 | 0.20 | 2 | 0.29 | 0.14 | 0.063618 | na |

| | | Downtown | | | Upper Study Area | | | | Significant |
|---|---|---|---|---|---|---|---|---|---|
| | Units | N | Mean | SD | N | Mean | SD | P Value | Difference? |
| Fines | % | 36 | 37.44 | 28.70 | 8 | 52.88 | 8.73 | 0.201244 | No |
| TOC | % | 17 | 1.63 | 0.61 | 11 | 1.98 | 0.46 | 0.138186 | No |
| Mercury | mg/kg | 59 | 0.16 | 0.28 | 11 | 0.05 | 0.01 | 0.294205 | No |
| Arsenic | mg/kg | 65 | 3.31 | 3.62 | 11 | 3.38 | 1.11 | 0.052209 | No |
| Total PCBs | ug/kg | 63 | 281.00 | 1048 | 11 | 10.21 | 5.39 | 0.068248 | No |
| Total DDx | ug/kg | 8 | 3.85 | 2.33 | 7 | 2.97 | 0.86 | 0.728454 | No |
| Total PAHs | ug/kg | 64 | 1462 | 4427 | 11 | 452.49 | 611.21 | 0.674976 | No |
| Bis2ethylhexyl Ph. | ug/kg | 17 | 215.21 | 217.64 | 11 | 229.05 | 291.22 | 0.346804 | No |
| Dioxin TEQ | pg/g | 1 | 4.19 | na | na | na | na | na | na |

BZTO104(e)033326

Table 6.1-14. Pair-Wise Statistical Results Comparisons of the Means for Each Analyte Among Station Groupings. Yellow-shaded rows show significant differences (p < 0.05, Mann-Whitney U-test).

| | | Downtown | | | Downstream | | | | Significant |
|---|---|---|---|---|---|---|---|---|---|
| | | N | Mean | SD | N | Mean | SD | P Value | Difference? |
| Fines | % | 36 | 37.44 | 28.70 | 4 | 87.90 | 2.55 | 0.001866 | Yes |
| TOC | % | 17 | 1.63 | 0.61 | 9 | 1.43 | 0.87 | 0.589909 | No |
| Mercury | mg/kg | 59 | 0.16 | 0.28 | 9 | 0.06 | 0.02 | 0.949495 | No |
| Arsenic | mg/kg | 65 | 3.31 | 3.62 | 9 | 2.71 | 1.43 | 0.868645 | No |
| Total PCBs | ug/kg | 63 | 281.00 | 1048 | 9 | 7.72 | 4.41 | 0.017946 | Yes |
| Total DDx | ug/kg | 8 | 3.85 | 2.33 | 4 | 5.80 | 2.24 | 0.089430 | No |
| Total PAHs | ug/kg | 64 | 1462 | 4427 | 9 | 445.51 | 371.17 | 0.290480 | No |
| Bis2ethylhexyl Ph. | ug/kg | 17 | 215.21 | 217.64 | 4 | 48.06 | 36.16 | 0.010695 | Yes |
| Dioxin TEQ | pg/g | 1 | 4.19 | na | 2 | 0.09 | 0.02 | na | na |

| | | Downtown | | | Multnomah Channel | | | | Significant |
|---|---|---|---|---|---|---|---|---|---|
| | | N | Mean | SD | N | Mean | SD | P Value | Difference? |
| Fines | % | 36 | 37.44 | 28.70 | 7 | 8.17 | 7.45 | 0.025285 | Yes |
| TOC | % | 17 | 1.63 | 0.61 | 7 | 0.52 | 0.48 | 0.003856 | Yes |
| Mercury | mg/kg | 59 | 0.16 | 0.28 | 7 | 0.03 | 0.01 | 0.032800 | Yes |
| Arsenic | mg/kg | 65 | 3.31 | 3.62 | 7 | 3.90 | 1.30 | 0.041024 | Yes |
| Total PCBs | ug/kg | 63 | 281.00 | 1048 | 2 | 2.85 | 0.64 | 0.094639 | na |
| Total DDx | ug/kg | 8 | 3.85 | 2.33 | 7 | 2.88 | 1.51 | 0.417888 | No |
| Total PAHs | ug/kg | 64 | 1462 | 4427 | 7 | 1602.00 | 1289.89 | 0.010897 | Yes |
| Bis2ethylhexyl Ph. | ug/kg | 17 | 215.21 | 217.64 | 2 | 13.05 | 4.88 | 0.023927 | na |
| Dioxin TEQ | pg/g | 1 | 4.19 | na | 2 | 0.29 | 0.14 | 1.000000 | na |

| | | Upper Study Area | | | Downstream | | | | Significant |
|---|---|---|---|---|---|---|---|---|---|
| | | N | Mean | SD | N | Mean | SD | P Value | Difference? |
| Fines | % | 8 | 52.88 | 8.73 | 4 | 87.90 | 2.55 | 0.006579 | Yes |
| TOC | % | 11 | 1.98 | 0.46 | 9 | 1.43 | 0.87 | 0.128357 | No |
| Mercury | mg/kg | 11 | 0.05 | 0.01 | 9 | 0.06 | 0.02 | 0.159241 | No |
| Arsenic | mg/kg | 11 | 3.38 | 1.11 | 9 | 2.71 | 1.43 | 0.568812 | No |
| Total PCBs | ug/kg | 11 | 10.21 | 5.39 | 9 | 7.72 | 4.41 | 0.382105 | No |
| Total DDx | ug/kg | 7 | 2.97 | 0.86 | 4 | 5.80 | 2.24 | 0.023343 | Yes |
| Total PAHs | ug/kg | 11 | 452.49 | 611.21 | 9 | 445.51 | 371.17 | 0.518425 | No |
| Bis2ethylhexyl Ph. | ug/kg | 11 | 229.05 | 291.22 | 4 | 48.06 | 36.16 | 0.050187 | No |
| Dioxin TEQ | pg/g | na | na | na | 2 | 0.09 | 0.02 | na | na |

| | | Upper Study Area | | | Multnomah Channel | | | | Significant |
|---|---|---|---|---|---|---|---|---|---|
| | | N | Mean | SD | N | Mean | SD | P Value | Difference? |
| Fines | % | 8 | 52.88 | 8.73 | 7 | 8.17 | 7.45 | 0.001194 | Yes |
| TOC | % | 11 | 1.98 | 0.46 | 7 | 0.52 | 0.48 | 0.001304 | Yes |
| Mercury | mg/kg | 11 | 0.05 | 0.01 | 7 | 0.03 | 0.01 | 0.014474 | Yes |
| Arsenic | mg/kg | 11 | 3.38 | 1.11 | 7 | 3.90 | 1.30 | 0.441409 | No |
| Total PCBs | ug/kg | 11 | 10.21 | 5.39 | 2 | 2.85 | 0.64 | 0.029914 | na |
| Total DDx | ug/kg | 7 | 2.97 | 0.86 | 7 | 2.88 | 1.51 | 0.654721 | No |
| Total PAHs | ug/kg | 11 | 452.49 | 611.21 | 7 | 1602.00 | 1289.89 | 0.005740 | Yes |
| Bis2ethylhexyl Ph. | ug/kg | 11 | 229.05 | 291.22 | 2 | 13.05 | 4.88 | 0.029914 | na |
| Dioxin TEQ | pg/g | na | na | na | 2 | 0.29 | 0.14 | 1.000000 | na |

| | | Downstream | | | Multnomah Channel | | | | Significant |
|---|---|---|---|---|---|---|---|---|---|
| | | N | Mean | SD | N | Mean | SD | P Value | Difference? |
| Fines | % | 4 | 87.90 | 2.55 | 7 | 8.17 | 7.45 | 0.008151 | Yes |
| TOC | % | 9 | 1.43 | 0.87 | 7 | 0.52 | 0.48 | 0.124823 | No |
| Mercury | mg/kg | 9 | 0.06 | 0.02 | 7 | 0.03 | 0.01 | 0.030011 | Yes |
| Arsenic | mg/kg | 9 | 2.71 | 1.43 | 7 | 3.90 | 1.30 | 0.314615 | No |
| Total PCBs | ug/kg | 9 | 7.72 | 4.41 | 2 | 2.85 | 0.64 | 0.033896 | na |
| Total DDx | ug/kg | 4 | 5.80 | 2.24 | 7 | 2.88 | 1.51 | 0.023343 | Yes |
| Total PAHs | ug/kg | 9 | 445.51 | 371.17 | 7 | 1602.00 | 1289.89 | 0.022859 | Yes |
| Bis2ethylhexyl Ph. | ug/kg | 4 | 48.06 | 36.16 | 2 | 13.05 | 4.88 | 0.064078 | na |
| Dioxin TEQ | pg/g | 2 | 0.09 | 0.02 | 2 | 0.29 | 0.14 | 0.121336 | na |

BZTO104(e)033327

Table 6.1-15. Summary Statistics for Selected Chemicals in the Riparian Zone (+13 to +22 NAVD88) by Subarea.

| Analyte | Units | # | # Detected | % Detected | Detected Concentrations Minimum | Detected Concentrations Maximum | Detected Concentrations Mean | Detected Concentrations Median | Detected Concentrations 95th | Detected and Nondetected Concentrations Minimum | Detected and Nondetected Concentrations Maximum | Detected and Nondetected Concentrations Mean | Detected and Nondetected Concentrations Median | Detected and Nondetected Concentrations 95th |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Study Area (RM 2 to 11)** | | | | | | | | | | | | | | |
| **Surface** | | | | | | | | | | | | | | |
| Fines | percent | 8 | 8 | 100 | 0.083 | 7.41 T | 1.8 | 0.87 T | 2.43 T | 0.083 | 7.41 T | 1.8 | 0.87 T | 2.43 T |
| Total organic carbon | percent | 16 | 16 | 100 | 0.0445 | 18.9 | 1.72 | 0.16 | 2.45 | 0.0445 | 18.9 | 1.72 | 0.16 | 2.45 |
| Mercury | mg/kg | 18 | 10 | 55.6 | 0.0113 J | 0.769 | 0.156 | 0.08 | 0.18 | 0.0103 U | 0.769 | 0.148 | 0.09 | 0.2 U |
| Arsenic | mg/kg | 18 | 18 | 100 | 1.1 | 61.9 | 12.6 | 3 | 54.8 | 1.1 | 61.9 | 12.6 | 3 | 54.8 |
| Total PCB Aroclors | µg/kg | 9 | 2 | 22.2 | 9.1 JT | 64.7 T | 36.9 | 9.1 JT | 9.1 JT | 7.7 UT | 100 UT | 56.6 | 64.7 T | 100 UT |
| Total PAHs | µg/kg | 22 | 18 | 81.8 | 25.5 JT | 8540 JT | 1400 | 319 JT | 7010 JT | 25.5 JT | 8540 JT | 1230 | 500 UT | 1936 JT |
| Total DDx | µg/kg | 10 | 5 | 50 | 3.36 JT | 88.6 JT | 28.9 | 20.1 T | 29.1 JT | 0.38 UT | 88.6 JT | 15.1 | 3.11 UJT | 29.1 JT |
| Bis(2-ethylhexyl) phthalate | µg/kg | 21 | 10 | 47.6 | 49 | 33200 J | 4000 | 155 J | 4230 JB | 13.2 U | 33200 J | 2080 | 155 J | 2000 U |
| **Subsurface** | | | | | | | | | | | | | | |
| Fines | percent | 4 | 4 | 100 | 0.13 | 20.7 | 5.76 | 0.51 | 1.68 | 0.13 | 20.7 | 5.76 | 0.51 | 1.68 |
| Total organic carbon | percent | 4 | 2 | 50 | 0.08 | 0.77 | 0.425 | 0.08 | 0.08 | 0.05 U | 0.77 | 0.238 | 0.05 U | 0.08 |
| Mercury | mg/kg | 7 | 2 | 28.6 | 0.09 | 0.453 | 0.272 | 0.09 | 0.09 | 0 U | 0.453 | 0.12 | 0.09 | 0.2 U |
| Arsenic | mg/kg | 21 | 21 | 100 | 1.69 | 19.1 | 5.49 | 5.49 | 7.65 | 1.69 | 19.1 | 5.49 | 5.49 | 7.65 |
| Total PCB Aroclors | µg/kg | 22 | 16 | 72.7 | 42 JT | 34000 JT | 5350 | 3400 JT | 13500 JT | 20 UT | 34000 JT | 3900 | 350 JT | 6400 JT |
| Total PAHs | µg/kg | 7 | 6 | 85.7 | 14 JT | 42500 JT | 7820 | 137 JT | 3670 JT | 14 JT | 42500 JT | 6740 | 300 UT | 3670 JT |
| Sum 4,4' DDx | µg/kg | 5 | 4 | 80 | 122 T | 2646 T | 1430 | 786 T | 2185 T | 10 UT | 2646 T | 1150 | 786 T | 2185 T |
| Bis(2-ethylhexyl) phthalate | µg/kg | 5 | 2 | 40 | 280 J | 426 J | 353 | 280 J | 280 J | 20 U | 426 J | 209 | 280 J | 300 UH |
| **Downstream (RM 0 to 2, Subsurface only)** | | | | | | | | | | | | | | |
| **Subsurface** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 1 | 0 | 0 | | | | | | | | | | |
| Arsenic | mg/kg | 1 | 1 | 100 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 | 8.07 |
| **Surface** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 3 | 1 | 33.3 | 4300 | 4300 | 4300 | 4300 | 4300 | 100 UT | 4300 | 1500 | 100 UT | 100 UT |
| Arsenic | mg/kg | 3 | 3 | 100 | 2 | 9 | 4.33 | 2 | 2 | 2 | 9 | 4.33 | 2 | 2 |
| Mercury | mg/kg | 3 | 1 | 33.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 0.2 U | 1.3 | 0.567 | 0.2 U | 0.2 U |
| Total PAHs | µg/kg | 3 | 1 | 33.3 | 1073 T | 1073 T | 1070 | 1073 T | 1073 T | 1073 T | 3000 UT | 2360 | 3000 UT | 3000 UT |
| Sum 4,4' DDx | µg/kg | 2 | 0 | 0 | | | | | | 10 UT | 10 UT | 10 | 10 UT | 10 UT |
| Bis(2-ethylhexyl) phthalate | µg/kg | 2 | 1 | 50 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 U | 3000 | 3000 | 3000 |
| **Upriver (RM 15.3 to 26)** | | | | | | | | | | | | | | |
| **Surface** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 2 | 0 | 0 | | | | | | 20 UT | 20 UT | 20 | 20 UT | 20 UT |
| Total organic carbon | percent | 2 | 2 | 100 | 0.32 | 0.55 | 0.435 | 0.32 | 0.32 | 0.32 | 0.55 | 0.435 | 0.32 | 0.32 |
| Fines | percent | 2 | 2 | 100 | 12 T | 31 T | 21.5 | 12 T | 12 T | 12 T | 31 T | 21.5 | 12 T | 12 T |
| Arsenic | mg/kg | 2 | 0 | 0 | | | | | | 2.39 U | 2.49 U | 2.44 | 2.39 U | 2.39 U |
| Mercury | mg/kg | 2 | 0 | 0 | | | | | | 0.19 U | 0.2 U | 0.195 | 0.19 U | 0.19 U |
| Total PAHs | µg/kg | 2 | 1 | 50 | 247 T | 247 T | 247 | 247 T | 247 T | 50 UT | 247 T | 149 | 50 UT | 50 UT |
| Sum 4,4' DDx | µg/kg | 2 | 0 | 0 | | | | | | 6.7 UT | 6.7 UT | 6.7 | 6.7 UT | 6.7 UT |
| Bis(2-ethylhexyl) phthalate | µg/kg | 2 | 0 | 0 | | | | | | 100 U | 100 U | 100 | 100 U | 100 U |



BZTO104(e)033328

Table 6.1-16. Upriver Summary Statistics, Post-ROS Data Reduction.

| Analyte | units | N | Total N* | Total Detected | N censored | % Detected | min | max | arithmetic mean | geometric mean | median | standard deviation | variance | Percentiles 5th | 10th | 15th | 20th | 25th | 50th | 75th | 90th | 95th | Skewness | 95% UCL | Data Distribution | Single Det. Value | No Detections DL | 1/2DL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | mg/kg | 21 | 21 | 21 | 0 | 100% | 17.2 | 38.1 | 25.4 | 24.689 | 25.6 | 6.24 | 39 | 17.5 | 17.6 | 17.6 | 19.3 | 19.9 | 25.6 | 29.1 | 32.7 | 36.2 | 0.380 | 27.559 | NORMAL | | | |
| Fines | % | 33 | 35 | 35 | 0 | 100% | 0.28 | 100 | 28.6 | 13.567 | 17.5 | 30.5 | 929 | 0.873 | 3.03 | 4.01 | 4.3 | 4.96 | 17.5 | 42.1 | 79.1 | 98.9 | 1.316 | 40.739 | GAMMA | | | |
| Mercury | mg/kg | 30** | 23 | 23 | 0 | 100% | 0.014 | 0.055 | 0.0296 | 0.028 | 0.026 | 0.0113 | 0.000127 | 0.0161 | 0.0176 | 0.02 | 0.0208 | 0.022 | 0.026 | 0.036 | 0.047 | 0.0498 | 0.807 | 0.034 | NORMAL | | | |
| Lead | mg/kg | 30 | 30 | 30 | 0 | 100% | 4.56 | 14.3 | 8.02 | 7.669 | 7.51 | 2.57 | 6.6 | 5.25 | 5.52 | 5.78 | 5.81 | 5.9 | 7.51 | 9.18 | 10.5 | 13.8 | 1.049 | 8.842 | GAMMA | | | |
| Total of 4,4'-DDD, -DDE, -DDT (U=0) | µg/kg | 30** | 21 | 21 | 0 | 100% | 0.087 | 3.19 | 1.19 | 0.867 | 0.986 | 0.858 | 0.736 | 0.24 | 0.262 | 0.32 | 0.499 | 0.547 | 0.986 | 1.83 | 2.37 | 2.74 | 0.855 | 1.543 | NORMAL | | | |
| Total of 2,4' and 4,4'-DDD (U=0) | µg/kg | 21** | 17 | 17 | 0 | 100% | 0.12 | 1.15 | 0.567 | 0.471 | 0.494 | 0.322 | 0.104 | 0.154 | 0.199 | 0.246 | 0.284 | 0.302 | 0.494 | 0.855 | 0.979 | 1.03 | 0.315 | 0.704 | NORMAL | | | |
| Total of 2,4' and 4,4'-DDE (U=0) | µg/kg | 21 | 21 | 21 | 0 | 100% | 0.087 | 2.22 | 0.807 | 0.606 | 0.565 | 0.612 | 0.375 | 0.198 | 0.234 | 0.299 | 0.32 | 0.376 | 0.565 | 1.08 | 1.5 | 2.16 | 1.178 | 1.092 | GAMMA | | | |
| Total of 2,4' and 4,4'-DDE (U=1/2RL) | µg/kg | 21 | 21 | 21 | 0 | 100.0% | 0.105 | 2.45 | 0.78 | 0.577147463 | 0.609 | 0.58915609 | 0.3471049 | 0.138 | 0.21 | 0.218 | 0.265 | 0.317 | 0.609 | 1.1 | 1.48 | 1.48 | 1.207068411 | 1.066557983 | GAMMA | | | |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT (U=0) | µg/kg | 21 | 21 | 21 | 0 | 100% | 0.087 | 3.75 | 1.53 | 1.174 | 1.37 | 1.02 | 1.05 | 0.351 | 0.53 | 0.713 | 0.76 | 0.834 | 1.37 | 1.98 | 3.16 | 3.68 | 0.975 | 1.915 | NORMAL | | | |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT (U=1/2RL) | µg/kg | 21 | 21 | 21 | 0 | 100.0% | 0.2 | 5 | 1.561333333 | 1.188829055 | 1.2 | 1.12562389 | 1.267029133 | 0.309 | 0.328 | 0.461 | 0.687 | 0.787 | 1.2 | 2.2 | 2.65 | 2.69 | 1.387736111 | 2.102967552 | GAMMA | | | |
| Total organic carbon | % | 30 | 30 | 30 | 0 | 100% | 0.16 | 2.57 | 1.06 | 0.801 | 1.13 | 0.724 | 0.524 | 0.189 | 0.245 | 0.294 | 0.352 | 0.445 | 1.13 | 1.37 | 2.08 | 2.47 | 0.645 | 1.354 | GAMMA | | | |
| Zinc | mg/kg | 30 | 30 | 30 | 0 | 100% | 43.8 | 165 | 71.4 | 68.411 | 66 | 24 | 575 | 49.1 | 50.2 | 51.3 | 54.8 | 56.6 | 66 | 79.7 | 90.5 | 109 | 2.301 | 78.388 | GAMMA | | | |
| Dioxin/furan TCDD toxicity equivalent: Birds (U=0) | pg/g | 21 | 21 | 21 | 0 | 100% | 0.00207 | 0.715 | 0.086704762 | 0.038730697 | 0.0471 | 0.15161335 | 0.022986608 | 0.00727 | 0.00835 | 0.00901 | 0.0126 | 0.0141 | 0.0471 | 0.0676 | 0.15 | 0.156 | 3.886585972 | 0.143 | GAMMA | | | |
| Dioxin/furan TCDD toxicity equivalent: Birds (U=1/2RL) | pg/g | 21 | 21 | 21 | 0 | 100.0% | 0.0308 | 0.725 | 0.145842857 | 0.109707807 | 0.11 | 0.14655172 | 0.021477407 | 0.0399 | 0.0473 | 0.0483 | 0.0538 | 0.0649 | 0.11 | 0.166 | 0.208 | 0.275 | 3.338341099 | 0.197343489 | GAMMA | | | |
| Dioxin/furan TCDD toxicity equivalent: Mammals (U=0) | pg/g | 21 | 21 | 21 | 0 | 100% | 0.00684 | 0.937 | 0.128185238 | 0.062460704 | 0.0734 | 0.20492182 | 0.04077242 | 0.00835 | 0.0153 | 0.0164 | 0.0204 | 0.0245 | 0.0734 | 0.115 | 0.24 | 0.323 | 3.536259551 | 0.2706 | GAMMA | | | |
| Dioxin/furan TCDD toxicity equivalent: Mammals (U=1/2RL) | pg/g | 21 | 21 | 21 | 0 | 100.0% | 0.0346 | 0.947 | 0.162661905 | 0.108317722 | 0.0996 | 0.20122337 | 0.040490846 | 0.0394 | 0.0411 | 0.044 | 0.0484 | 0.0515 | 0.0996 | 0.174 | 0.333 | 0.362 | 3.271665153 | 0.232290578 | GAMMA | | | |
| Aluminum | mg/kg | 21 | 21 | 21 | 0 | 100% | 10200 | 35000 | 20795.2381 | 19738.94 | 19300 | 6837.65137 | 46753476.19 | 11300 | 12900 | 14900 | 15100 | 15400 | 19300 | 24400 | 30200 | 33900 | 0.546503308 | 23369 | NORMAL | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 2 | 2 | 2 | 0 | 100% | | | | | | | | | | | | | | | | | | | | | | |
| Copper | mg/kg | 30 | 30 | 29 | 1 | 96.7% | 12.2 | 47.2 | 23.1 | 21.784 | 20.5 | 8.61 | 74.1 | 14.2 | 15 | 15.9 | 16.3 | 16.5 | 20.5 | 28.8 | 31 | 39.6 | 1.219 | 25.816 | GAMMA | | | |
| Cadmium | mg/kg | 30** | 23 | 22 | 1 | 95.7% | 0.0849 | 0.214 | 0.142 | 0.135 | 0.124 | 0.0456 | 0.00208 | 0.085 | 0.0858 | 0.0899 | 0.098 | 0.108 | 0.124 | 0.168 | 0.21 | 0.21 | 0.309 | 0.163 | GAMMA | | | |
| Total Petroleum Hydrocarbons (U=0) | mg/kg | 7 | 7 | 6 | 1 | 85.7% | 6.48 | 260 | 103 | 55.753 | 48 | 106 | 11200 | 12.9 | 19.4 | 25.8 | 28 | 28 | 48 | 175 | 248 | 254 | 0.898001767 | 180.571 | NORMAL | | | |
| Total Petroleum Hydrocarbons (U=1/2RL) | mg/kg | 19 | 19 | 15 | 4 | 78.9% | 14.421092 | 430 | 151.649714 | 95.97888521 | 110 | 128.417004 | 16490.92685 | 26.642109 | 28 | 29.148811 | 29.641158 | 29.641158 | 110 | 250 | 304 | 367 | 0.691886396 | 227.8945977 | GAMMA | | | |
| Arsenic | mg/kg | 35 | 35 | 28 | 7 | 80.0% | 1.96 | 5.29 | 2.97 | 2.890 | 2.88 | 0.745 | 0.555 | 2.16 | 2.16 | 2.16 | 2.29 | 2.43 | 2.88 | 3.33 | 3.68 | 4.32 | 1.255 | 3.084 | GAMMA | | | |
| Silver | mg/kg | 33 | 33 | 26 | 7 | 78.8% | 0.024 | 0.235 | 0.088185922 | 0.075 | 0.082 | 0.05384007 | 0.002898753 | 0.0306 | 0.0355955 | 0.0368 | 0.0414 | 0.0485892 | 0.082 | 0.104 | 0.1436 | 0.218 | 1.364438551 | 0.105 | GAMMA | | | |
| Total of 2,4' and 4,4'-DDD (U=1/2RL) | µg/kg | 21 | 21 | 16 | 5 | 76.2% | 0.0981862 | 1.56 | 0.516772834 | 0.37195313 | 0.441 | 0.39881177 | 0.159050825 | 0.0934862 | 0.137 | 0.1589524 | 0.1589524 | 0.1589524 | 0.441 | 0.804 | 0.855 | 1.15 | 0.949244073 | 0.718589261 | GAMMA | | | |
| Residual Range Hydrocarbons | mg/kg | 12 | 12 | 9 | 3 | 75.0% | 37.1 | 380 | 150 | 111.337 | 130 | 112 | 12500 | 37.1 | 37.1 | 37.1 | 42.5 | 57.3 | 130 | 208 | 284 | 330 | 0.794137833 | 207.699 | NORMAL | | | |
| Hexachlorobenzene | µg/kg | 30 | 11 | 8 | 3 | 72.7% | 0.216 | 1.04 | 0.591 | 0.515 | 0.584 | 0.307 | 0.094 | 0.249 | 0.282 | 0.3 | 0.318 | 0.319 | 0.584 | 0.832 | 1.01 | 1.02 | 0.262 | 0.759 | NORMAL | | | |
| 4,4'-DDE | µg/kg | 39** | 32 | 23 | 9 | 71.9% | 0.087 | 2.06 | 0.622 | 0.481 | 0.466 | 0.45 | 0.202 | 0.111 | 0.202 | 0.246 | 0.301 | 0.311 | 0.466 | 0.874 | 1.3 | 1.31 | 1.351 | 0.778 | GAMMA | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg | 30 | 30 | 21 | 9 | 70.0% | 0.949 | 2100 | 94.6 | 17.072 | 20.5 | 380 | 144000 | 3.75 | 4.13 | 4.3 | 4.74 | 5.07 | 20.5 | 33 | 57.8 | 115 | 5.429 | 212.457 | NON-PARAMETRIC * | | | |
| 4,4'-DDD | µg/kg | 39** | 23 | 16 | 7 | 69.6% | 0.0779 | 1.15 | 0.39 | 0.281 | 0.252 | 0.309 | 0.0953 | 0.0792 | 0.0969 | 0.123 | 0.129 | 0.135 | 0.252 | 0.598 | 0.766 | 0.946 | 0.941 | 0.533 | GAMMA | | | |
| Tributyltin ion (Sediment***) | µg/kg | 3 | 3 | 2 | 1 | 66.7% | 0.34 | 1.1 | | | | | | | | | | | | | | | | | | | | |
| Polycyclic Aromatic Hydrocarbons (U=0) | µg/kg | 36 | 36 | 22 | 14 | 61.1% | 0.91 | 376 | 56.6 | 16.319 | 16.2 | 82.9 | 6880 | 1.4 | 1.73 | 2.52 | 2.52 | 2.54 | 16.2 | 70.5 | 162 | 198 | 2.219 | 88.164 | GAMMA | | | |
| Polycyclic Aromatic Hydrocarbons (U=1/2RL) | µg/kg | 39 | 39 | 25 | 14 | 64.1% | 4.7770452 | 600 | 93.47987808 | 47.67267185 | 56.355313 | 117.375652 | 13777.04362 | 7.5984411 | 9.4793297 | 9.7491621 | 13.262711 | 20.45692 | 56.355313 | 145 | 182 | 221 | 2.709523051 | 128.3753613 | GAMMA | | | |
| Dibenzo(a,h)anthracene | µg/kg | 36 | 21 | 12 | 9 | 57.1% | 0.188 | 2.2 | 0.799 | 0.595 | 0.58 | 0.629 | 0.396 | 0.22 | 0.22 | 0.282 | 0.282 | 0.306 | 0.58 | 1.2 | 1.7 | 2 | 1.015 | 1.086 | GAMMA | | | |
| Total Chlordanes (U=0) | µg/kg | 21 | 21 | 12 | 9 | 57.1% | 0.0281 | 1.18 | 0.226 | 0.118 | 0.09 | 0.288 | 0.0832 | 0.0281 | 0.0281 | 0.0366 | 0.0441 | 0.0441 | 0.09 | 0.349 | 0.593 | 0.682 | 2.189 | 0.356 | GAMMA | | | |
| Total Chlordanes (U=1/2RL) | µg/kg | 21 | 21 | 12 | 9 | 57.1% | 0.0886427 | 1.2 | 0.330348992 | 0.230578132 | 0.221 | 0.29858693 | 0.089154156 | 0.0886427 | 0.0886427 | 0.0886427 | 0.0886427 | 0.1007529 | 0.221 | 0.432 | 0.695 | 0.82 | 1.529537204 | 0.616360815 | NON-PARAMETRIC | | | |
| Dibutyl phthalate | µg/kg | 30** | 23 | 13 | 10 | 56.5% | 2.83 | 12 | 5.62 | 5.203 | 4.9 | 2.44 | 5.96 | 3.17 | 3.23 | 3.52 | 3.62 | 4.09 | 4.9 | 6.5 | 9.26 | 10.9 | 1.410 | 6.514 | GAMMA | | | |
| Pyrene | µg/kg | 36 | 36 | 20 | 16 | 55.6% | 1.78 | 89 | 13.1 | 7.157 | 7 | 18.7 | 349 | 1.78 | 1.78 | 1.89 | 2.28 | 2.86 | 7 | 15.5 | 27 | 40.5 | 3.103 | 19.482 | LOGNORMAL | | | |
| Benzo(a)pyrene | µg/kg | 36** | 29 | 16 | 13 | 55.2% | 1.08 | 28 | 6.15 | 3.987 | 3.5 | 6.2 | 38.4 | 1.29 | 1.42 | 1.45 | 1.61 | 1.77 | 3.5 | 9.1 | 12.2 | 16 | 1.911 | 11.162 | NON-PARAMETRIC | | | |
| Benzo(a)anthracene | µg/kg | 36** | 29 | 15 | 14 | 51.7% | 0.583 | 28 | 5.75 | 3.183 | 2.55 | 6.88 | 47.4 | 0.885 | 1.21 | 1.26 | 1.26 | 1.34 | 2.55 | 7.7 | 14.4 | 20 | 1.896 | 7.927 | NON-PARAMETRIC | | | |
| Indeno(1,2,3-cd)pyrene | µg/kg | 36** | 29 | 14 | 15 | 48.3% | 0.914 | 14 | 3.76 | 2.702 | 2.48 | 3.22 | 10.4 | 1.15 | 1.19 | 1.19 | 1.19 | 1.19 | 2.48 | 5.3 | 7.96 | 9.26 | 1.481 | 6.364 | NON-PARAMETRIC | | | |
| beta-Hexachlorocyclohexane | µg/kg | 30 | 30 | 14 | 16 | 46.7% | 0.151 | 2.01 | 0.613 | 0.454 | 0.402 | 0.52 | 0.271 | 0.151 | 0.151 | 0.201 | 0.255 | 0.281 | 0.402 | 0.855 | 1.48 | 1.71 | 1.470 | 0.935 | LOGNORMAL | | | |
| Benzo(b)fluoranthene | µg/kg | 36** | 29 | 13 | 16 | 44.8% | 0.669 | 32 | 6.43 | 3.337 | 2.14 | 7.95 | 63.2 | 0.965 | 0.965 | 1.26 | 1.41 | 1.48 | 2.14 | 7.9 | 16.2 | 21.8 | 1.833 | 8.942 | NON-PARAMETRIC | | | |
| Phenanthrene | µg/kg | 36 | 36 | 16 | 20 | 44.4% | 0.315 | 71 | 7.07 | 2.323 | 1.74 | 15 | 225 | 0.339 | 0.442 | 0.609 | 0.742 | 0.742 | 1.74 | 6.77 | 10.2 | 29.2 | 3.655 | 11.589 | NON-PARAMETRIC | | | |
| Chrysene | µg/kg | 36 | 36 | 14 | 22 | 38.9% | 0.632 | 65 | 7.51 | 3.514 | 2.42 | 12.1 | 146 | 0.959 | 1.04 | 1.09 | 1.23 | 1.43 | 2.42 | 8.61 | 14.7 | 25.2 | 3.518 | 16.917 | NON-PARAMETRIC | | | |
| 4,4'-DDT | µg/kg | 34** | 18 | 7 | 11 | 38.9% | 0.0462 | 1 | 0.23 | 0.112 | 0.0533 | 0.312 | 0.0973 | 0.0462 | 0.0462 | 0.0462 | 0.0462 | 0.0462 | 0.0533 | 0.28 | 0.688 | 0.969 | 1.816 | 0.358 | NON-PARAMETRIC | | | |
| Total of 2,4' and 4,4'-DDT (U=0) | µg/kg | 21 | 21 | 8 | 13 | 38.1% | 0.0677 | 1.4 | 0.258 | 0.143 | 0.0677 | 0.338 | 0.114 | 0.0677 | 0.0677 | 0.0677 | 0.0677 | 0.0677 | 0.0677 | 0.366 | 0.55 | 0.84 | 2.335 | 0.386 | NON-PARAMETRIC | | | |
| Total of 2,4' and 4,4'-DDT (U=1/2RL) | µg/kg | 21 | 21 | 8 | 13 | 38.1% | 0.105877 | 1.4 | 0.292828596 | 0.195096352 | 0.105877 | 0.32568465 | 0.106070489 | 0.105877 | 0.105877 | 0.105877 | 0.105877 | 0.105877 | 0.105877 | 0.366 | 0.55 | 0.84 | 2.345033538 | 0.662696189 | NON-PARAMETRIC | | | |
| Selenium | µg/kg | 21 | 21 | 8 | 13 | 38.1% | 0.0275 | 0.168 | 0.0702 | 0.061 | 0.0544 | 0.0411 | 0.00169 | 0.0338 | 0.0367 | 0.0386 | 0.041 | 0.041 | 0.0544 | 0.079 | 0.13 | 0.164 | 1.384 | 0.087 | GAMMA | | | |
| Diesel Range Hydrocarbons | µg/kg | 19 | 19 | 7 | 12 | 36.8% | 3.58 | 56 | 18.8 | 13.649 | 11.7 | 16.5 | 272 | 5.15 | 6.23 | 6.75 | 6.97 | 7.96 | 11.7 | 25.2 | 41.8 | 53.3 | 1.314383193 | 26.483 | GAMMA | | | |
| 2,4'-DDT | µg/kg | 21 | 21 | 7 | 14 | 33.3% | 0.106 | 0.439 | 0.164 | 0.144 | 0.106 | 0.0951 | 0.00905 | 0.106 | 0.106 | 0.106 | 0.106 | 0.106 | 0.106 | 0.21 | 0.278 | 0.322 | 1.630 | 0.199 | NON-PARAMETRIC | | | |
| Benzo(k)fluoranthene | µg/kg | 36** | 29 | 9 | 20 | 31.0% | 0.351 | 15 | 2.42 | 1.251 | 0.797 | 3.53 | 12.4 | 0.367 | 0.367 | 0.558 | 0.558 | 0.558 | 0.797 | 2.6 | 5.98 | 10.2 | 2.488 | 3.543 | NON-PARAMETRIC | | | |
| Polychlorinated biphenyls (as Aroclors) (U=0) | µg/kg | 39** | 37 | 10 | 27 | 27.0% | 0.626 | 37 | 3.37 | 2.160 | 1.99 | 6.01 | 36.1 | 1.25 | 1.31 | 1.31 | 1.31 | 1.31 | 1.99 | 3 | 4.74 | 7.04 | 5.193 | 7.675 | NON-PARAMETRIC | | | |
| Polychlorinated biphenyls (as Aroclors) (U=1/2RL) | µg/kg | 42 | 30 | 10 | 20 | 33.3% | 1.9090013 | 41.6 | 7.393944146 | 5.525551544 | 4.1996732 | 7.61045786 | 57.91906878 | 2.9755094 | 3.0998822 | 3.0998822 | 3.0998822 | 3.0998822 | 4.1996732 | 8.9827555 | 12.956666 | 15.87 | 3.387458075 | 13.45051718 | NON-PARAMETRIC | | | |
| Total of 4,4'-DDD, -DDE, -DDT (U=1/2RL) | µg/kg | 21 | 21 | 5 | 16 | 23.8% | 0.6491574 | 15 | 2.361844888 | 1.757248704 | 1.4816822 | 2.99405463 | 8.964363147 | 0.8999769 | 0.9447749 | 1.081161 | 1.1750498 | 1.1750498 | 1.4816822 | 2.3 | 3.2 | 3.6407038 | 4.117861154 | 5.209758981 | NON-PARAMETRIC | | | |
| delta-Hexachlorocyclohexane | µg/kg | 30 | 20 | 4 | 16 | 20.0% | 0.155 | 0.287 | 0.187 | 0.184 | 0.17 | 0.0359 | 0.00129 | 0.169 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.18 | 0.252 | 0.255 | 1.919 | 0.201 | NON-PARAMETRIC | | | |
| Antimony | mg/kg | 30 | 30 | 5 | 25 | 16.7% | 0.06 | 2.52 | | | | | | | | | | | | 0.133 | 3.89 | 2.5 | | | | | | |
| alpha-Hexachlorocyclohexane | µg/kg | 30 | 30 | 2 | 28 | 6.7% | 0.0351 | 5.03 | | | | | | | | | | | | 1.48 | 4.38 | 2 | | | | | | |
| Naphthalene | µg/kg | 36 | 36 | 2 | 34 | 5.6% | 0.55 | 50 | | | | | | | | | | | | 13 | 50 | 50 | | | | | | |
| Endrin aldehyde | µg/kg | 30 | 30 | 1 | 29 | 3.3% | 0.0459 | 2 | | | | | | | | | | | | | | | | | | 0.0306 | | |
| Aldrin | µg/kg | 32 | 32 | 1 | 31 | 3.1% | 0.0329 | 2 | | | | | | | | | | | | | | | | | | 0.309 | | |
| Dieldrin | µg/kg | 32 | 32 | 1 | 31 | 3.1% | 0.0538 | 2 | | | | | | | | | | | | | | | | | | 0.123 | | |
| Pentachlorophenol | µg/kg | 36 | 36 | 1 | 35 | 2.8% | 0.57 | 250 | | | | | | | | | | | | | | | | | | 12 | | |
| 4-Chloro-3-methyl phenol | µg/kg | 21 | 21 | 0 | 21 | 0.0% | 3.1 | 6.3 | | | | | | | | | | | | | | | | | | | 6.3 | 3.15 |
| Hexachlorobutadiene | µg/kg | 30 | 30 | 0 | 30 | 0.0% | 0.0363 | 20 | | | | | | | | | | | | | | | | | | | 20 | 10 |
| Endrin | µg/kg | 12 | 12 | 0 | 12 | 0.0% | 0.088 | 2 | | | | | | | | | | | | | | | | | | | 2 | 1 |
| Endrin ketone | µg/kg | 30 | 30 | 0 | 30 | 0.0% | 0.0309 | 2 | | | | | | | | | | | | | | | | | | | 2 | 1 |
| gamma-Hexachlorocyclohexane | µg/kg | 32 | 32 | 0 | 32 | 0.0% | 0.0802 | 2 | | | | | | | | | | | | | | | | | | | 2 | 1 |
| Heptachlor | µg/kg | 32 | 32 | 0 | 32 | 0.0% | 0.0349 | 2 | | | | | | | | | | | | | | | | | | | 2 | 1 |
| Heptachlor epoxide | µg/kg | 30 | 30 | 0 | 30 | 0.0% | 0.0417 | 2 | | | | | | | | | | | | | | | | | | | 2 | 1 |
| 2-Methylnaphthalene | µg/kg | 30 | 30 | 0 | 30 | 0.0% | 0.53 | 50 | | | | | | | | | | | | | | | | | | | 50 | 25 |

**Notes:**
** - some censored records were dropped because the imputed value was greater than the maximum detected value
* - total N is the number of records used to generated the summary statistics (i.e., after removal of records based on ROS analysis)

Data Treatment

| | |
|---|---|
| 100% Detects | "– direct analysis of all data to compute summary stats" |
| < 100% but ≥ 20% Detects | "– ROS on nondetects before computing summary stats and UCL" |
| Less than 20% Detects | "should be inspected on a case by case basis, in general however, use the 90th percentile if ndetected>1 but %detected<20%; if ndetected=1, then just report value, if ndetected=0, then report DL and 1/2DL" |
| | "– sample size (Total N) too small data for analysis" |

ROS – Regression on Order Statistics

Proposed Recommendations for selecting the test statistics
>20% detects – impute the nondetects using ROS and use the 95% UCL on the mean.
<20% detects and N detected >1, calculate the upper quantiles on the whole data set with nondetects at the DL. (use the 90% quantile)
N detected = 1; use the detected value
N detected = 0; use 1/2 the DL, max DL provided as an alternate.



BZTO104(e)033330

Table 6.1-17. Metals Tolerance Limits.

| Chemcode | Distribution | 95% UCL on 90th percentile - Threshold Level | Maximum Value | Notes |
|---|---|---|---|---|
| aluminum | normal | 33,800 | 35,000 | |
| antimony | normal | 0.14 | 0.21 | 2 extreme values removed |
| arsenic | lognormal | 4.32 | 5.29 | |
| cadmium | lognormal | 0.30 | 0.7 | 1 exteme value removed |
| chromium | normal | 36.78 | 38.1 | |
| copper | lognormal | 40.55 | 47.2 | |
| lead | lognormal | 14.16 | 18.3 | |
| mercury | non-parametric | 0.08 | 0.18 | 2 extreme values removed |
| selenim | lognormal | 0.16 | 0.16 | |
| silver | lognormal | 0.21 | 0.235 | |
| zinc | lognormal | 117.06 | 165 | |

**Notes:**

For the 95% UCL on the 90th percentile, there is 95% confidence that at least 90% of the upriver/background distribution will not exceed this threshold value.

Units are mg/kg.

Parametric tolerance limits used either a normal or lognormal distribution.

BZTO104(e)033331

Table 6.1-18. Total PCB data (Aroclors) from Collocated Stations in the Nautre and Extent Date Set.

| Sample1 | Date1 | Value1 | Units1 | Sample 2 | Date2 | Value2 | Units2 | Days Between Samples | Ratio | Absolute Values of the difference |
|---|---|---|---|---|---|---|---|---|---|---|
| LW2-G092 | 28-Jul-04 | 1500 | µg/kg | LWG0103R005SDS015C00 | 24-Oct-02 | 1500 | ug/kg | 643 | 1.00 | 0 |
| LW2-G433-1 | 09-Sep-04 | 33.8 | µg/kg | LW2-G433-2 | 09-Sep-04 | 34 | ug/kg | 0 | 1.01 | 0.2 |
| LW2-G353-1 | 23-Aug-04 | 78 | µg/kg | LW2-G353-2 | 23-Aug-04 | 76 | ug/kg | 0 | 1.03 | 2 |
| LW2-G251-1 | 12-Aug-04 | 8.6 | µg/kg | LW2-G251-2 | 12-Aug-04 | 8.9 | ug/kg | 0 | 1.03 | 0.3 |
| LW2-G410-1 | 09-Sep-04 | 21.9 | µg/kg | LW2-G410-2 | 09-Sep-04 | 21.1 | ug/kg | 0 | 1.04 | 0.8 |
| LW2-G450-1 | 25-Aug-04 | 94 | µg/kg | LW2-G450-2 | 25-Aug-04 | 98 | ug/kg | 0 | 1.04 | 4 |
| LW2-G270-1 | 21-Jul-04 | 4.3 | µg/kg | LW2-G270-2 | 21-Jul-04 | 4.5 | ug/kg | 0 | 1.05 | 0.2 |
| LWG0103R003SDS015C10 | 17-Oct-02 | 6.8 | µg/kg | LWG0103R003SDS015C31 | 17-Oct-02 | 7.2 | ug/kg | 0 | 1.06 | 0.4 |
| LW2-GBT018 | 16-Dec-05 | 80 | µg/kg | WLCDRD05PG07070 | 25-May-05 | 75 | ug/kg | 205 | 1.07 | 5 |
| WLCOSJ00RB06SD0006 | 10-Oct-00 | 1160 | µg/kg | WLCOSJ00RB13SD0015 | 10-Oct-00 | 1240 | ug/kg | 0 | 1.07 | 80 |
| LW2-G075-1 | 02-Aug-04 | 5.7 | µg/kg | LW2-G075-2 | 02-Aug-04 | 6.3 | ug/kg | 0 | 1.11 | 0.6 |
| LW2-G023-1 | 04-Aug-04 | 2.8 | µg/kg | LW2-G023-2 | 04-Aug-04 | 3.1 | ug/kg | 0 | 1.11 | 0.3 |
| LW2-G519-1 | 16-Aug-04 | 69 | µg/kg | LW2-G519-2 | 16-Aug-04 | 62 | ug/kg | 0 | 1.11 | 7 |
| LW2-B021 | 29-Jul-04 | 81 | µg/kg | LW2-GBT024 | 12-Dec-05 | 72 | ug/kg | 501 | 1.13 | 9 |
| LW2-G345-1 | 22-Jul-04 | 19.5 | µg/kg | LW2-G345-2 | 22-Jul-04 | 17 | ug/kg | 0 | 1.15 | 2.5 |
| LW2-G203-1 | 20-Jul-04 | 66 | µg/kg | LW2-G203-2 | 20-Jul-04 | 57.5 | ug/kg | 0 | 1.15 | 8.5 |
| LW2-G044-1 | 05-Aug-04 | 17.8 | µg/kg | LW2-G044-2 | 05-Aug-04 | 20.6 | ug/kg | 0 | 1.16 | 2.8 |
| LW2-G197-1 | 25-Aug-04 | 51.6 | µg/kg | LW2-G197-2 | 26-Aug-04 | 60.2 | ug/kg | 1 | 1.17 | 8.6 |
| PSYSEA98PSY08PSY08S | 07-Apr-98 | 144 | µg/kg | WLCOFH02M103M103 | 22-Aug-02 | 121 | ug/kg | 1598 | 1.19 | 23 |
| LWG0106R002SDS015C20 | 23-Oct-02 | 20 | µg/kg | LWG0106R002SDS015C31 | 23-Oct-02 | 24 | ug/kg | 0 | 1.20 | 4 |
| LW2-G475-1 | 01-Sep-04 | 9.24 | µg/kg | LW2-G475-2 | 01-Sep-04 | 11.1 | ug/kg | 0 | 1.20 | 1.86 |
| WLCOSJ00RB06SD0007 | 10-Oct-00 | 1020 | µg/kg | WLCOSJ00RB13SD0015 | 10-Oct-00 | 1240 | ug/kg | 0 | 1.22 | 220 |
| LW2-G209 | 07-Sep-04 | 196 | µg/kg | LWG0105R003SDS015C00 | 23-Oct-02 | 250 | ug/kg | 685 | 1.28 | 54 |
| LW2-G294-1 | 21-Jul-04 | 80 | µg/kg | LW2-G294-2 | 21-Jul-04 | 62.5 | ug/kg | 0 | 1.28 | 17.5 |
| WLCOFH02M104M104 | 22-Aug-02 | 6.8 | µg/kg | WLCOFH02M110M110 | 22-Aug-02 | 8.79 | ug/kg | 0 | 1.29 | 1.99 |
| LW2-G471 | 31-Aug-04 | 14.7 | µg/kg | WLCDRD05PG09696 | 24-May-05 | 19.2 | ug/kg | 266 | 1.31 | 4.5 |
| PSYSEA98PSY08PSY08S | 07-Apr-98 | 144 | µg/kg | WLCOFH02M109M109 | 22-Aug-02 | 191.1 | ug/kg | 1598 | 1.33 | 47.1 |
| LWG0103R004SDS015C11 | 18-Oct-02 | 346 | µg/kg | LWG0103R004SDS015C20 | 18-Oct-02 | 259 | ug/kg | 0 | 1.34 | 87 |
| LW2-G019 | 20-Jul-04 | 1530 | µg/kg | LW2-GBT002 | 19-Dec-05 | 1130 | ug/kg | 517 | 1.35 | 400 |
| LW2-G324-1 | 22-Jul-04 | 19.8 | µg/kg | LW2-G324-2 | 22-Jul-04 | 14.3 | ug/kg | 0 | 1.38 | 5.5 |
| LW2-G007-1 | 20-Jul-04 | 271 | µg/kg | LW2-G007-2 | 20-Jul-04 | 382 | ug/kg | 0 | 1.41 | 111 |
| WLCOSJ00RB04SD0004 | 10-Oct-00 | 1770 | µg/kg | WLCOSJ00RB13SD0015 | 10-Oct-00 | 1240 | ug/kg | 0 | 1.43 | 530 |
| LW2-B025-1 | 29-Jul-04 | 109 | µg/kg | LW2-B025-2 | 29-Jul-04 | 76 | ug/kg | 0 | 1.43 | 33 |
| LWG0109R001SDS015C10 | 24-Oct-02 | 31 | µg/kg | LWG0109R001SDS015C20 | 24-Oct-02 | 21 | ug/kg | 0 | 1.48 | 10 |
| LW2-G492-1 | 24-Aug-04 | 173 | µg/kg | LW2-G492-2 | 24-Aug-04 | 110 | ug/kg | 0 | 1.57 | 63 |
| WLCOFH02M103M103 | 22-Aug-02 | 121 | µg/kg | WLCOFH02M109M109 | 22-Aug-02 | 191.1 | ug/kg | 0 | 1.58 | 70.1 |
| LW2-B022-1 | 27-Jul-04 | 119 | µg/kg | LW2-B022-2 | 27-Jul-04 | 71 | ug/kg | 0 | 1.68 | 48 |
| LW2-GBT006-1 | 16-Dec-05 | 54 | µg/kg | LW2-GBT006-2 | 16-Dec-05 | 92.5 | ug/kg | 0 | 1.71 | 38.5 |
| LW2-G351 | 22-Oct-04 | 309 | µg/kg | LW2-G351-2 | 28-Oct-04 | 171 | ug/kg | 6 | 1.81 | 138 |
| LW2-D1-1 | 05-Nov-04 | 17.8 | µg/kg | LW2-D1-2 | 05-Nov-04 | 9.83 | ug/kg | 0 | 1.81 | 7.97 |
| LW2-G246 | 12-Aug-04 | 4.4 | µg/kg | WLCMFH00SD06SD06S | 08-Aug-00 | 8 | ug/kg | 1465 | 1.82 | 3.6 |
| LW2-G372-1 | 24-Aug-04 | 179 | µg/kg | LW2-G372-2 | 24-Aug-04 | 95 | ug/kg | 0 | 1.88 | 84 |
| LW2-G384-1 | 23-Aug-04 | 44 | µg/kg | LW2-G384-2 | 23-Aug-04 | 91 | ug/kg | 0 | 2.07 | 47 |
| LWG0103R004SDS015C20 | 18-Oct-02 | 259 | µg/kg | LWG0103R004SDS015C30 | 18-Oct-02 | 122 | ug/kg | 0 | 2.12 | 137 |
| LWG0103R003SDS015C20 | 17-Oct-02 | 15.8 | µg/kg | LWG0103R003SDS015C31 | 17-Oct-02 | 7.2 | ug/kg | 0 | 2.19 | 8.6 |
| LW2-G355 | 29-Oct-04 | 1000 | µg/kg | LWG0107R006SDS015C00 | 12-Nov-02 | 2200 | ug/kg | 717 | 2.20 | 1200 |
| LWG0103R003SDS015C10 | 17-Oct-02 | 6.8 | µg/kg | LWG0103R003SDS015C20 | 17-Oct-02 | 15.8 | ug/kg | 0 | 2.32 | 9 |
| LW2-G362-1 | 22-Oct-04 | 48.5 | µg/kg | LW2-G362-2 | 22-Oct-04 | 18 | ug/kg | 0 | 2.69 | 30.5 |
| LWG0103R004SDS015C11 | 18-Oct-02 | 346 | µg/kg | LWG0103R004SDS015C30 | 18-Oct-02 | 122 | ug/kg | 0 | 2.84 | 224 |
| LWG0106R002SDS015C10 | 23-Oct-02 | 75 | µg/kg | LWG0106R002SDS015C31 | 23-Oct-02 | 24 | ug/kg | 0 | 3.13 | 51 |
| LWG0104R003SDS015C00 | 24-Oct-02 | 30 | µg/kg | WLCT4C04VC16VC1601 | 17-Mar-04 | 96 | ug/kg | 510 | 3.20 | 66 |
| LW2-GBT027-1 | 06-Dec-05 | 53 | µg/kg | LW2-GBT027-2 | 07-Dec-05 | 15 | ug/kg | 1 | 3.53 | 38 |
| LW2-C527-A | 26-Oct-05 | 140 | µg/kg | WR-WSI98SD0610 | 21-Sep-97 | 38 | ug/kg | 2957 | 3.68 | 102 |
| LWG0106R002SDS015C10 | 23-Oct-02 | 75 | µg/kg | LWG0106R002SDS015C20 | 23-Oct-02 | 20 | ug/kg | 0 | 3.75 | 55 |
| LW2-G210 | 21-Oct-04 | 2.39 | µg/kg | WLCDRD05PG04242 | 26-May-05 | 10 | ug/kg | 217 | 4.18 | 7.61 |
| LW2-G430 | 22-Oct-04 | 2.39 | µg/kg | PSYSEA98PSY03PSY03S | 05-Apr-98 | 10 | ug/kg | 2392 | 4.18 | 7.61 |
| LWG0109R001SDS015C10 | 24-Oct-02 | 31 | µg/kg | LWG0109R001SDS015C31 | 24-Oct-02 | 145 | ug/kg | 0 | 4.68 | 114 |
| LW2-B004 | 28-Jul-04 | 1400 | µg/kg | WLCOSJ00RB10SD0011 | 10-Oct-00 | 290 | ug/kg | 1387 | 4.83 | 1110 |
| LW2-G231 | 07-Sep-04 | 2.02 | µg/kg | WLCMFH00SD03SD03 | 08-Aug-00 | 12 | ug/kg | 1491 | 5.94 | 9.98 |
| LWG0109R001SDS015C20 | 24-Oct-02 | 21 | µg/kg | LWG0109R001SDS015C31 | 24-Oct-02 | 145 | ug/kg | 0 | 6.90 | 124 |
| WLCOSJ00RB04SD0014 | 10-Oct-00 | 9300 | µg/kg | WLCOSJ00RB13SD0015 | 10-Oct-00 | 1240 | ug/kg | 0 | 7.50 | 8060 |
| LW2-G425 | 07-Oct-04 | 14.9 | µg/kg | PSYSEA98PSY01PSY01S | 05-Apr-98 | 112 | ug/kg | 2377 | 7.52 | 97.1 |
| WLCDRI03CREF01CREF01 | 18-Sep-04 | 3.4 | µg/kg | WLLRSH01HC02HC02 | 27-Aug-01 | 29 | ug/kg | 1118 | 8.53 | 25.6 |
| LW2-G140-1 | 10-Aug-04 | 44.5 | µg/kg | LW2-G140-2 | 10-Aug-04 | 2.6 | ug/kg | 0 | 17.12 | 41.9 |
| LW2-U4Q-1 | 04-Nov-04 | 1.86 | µg/kg | WLLRSH01HC08HC08 | 27-Aug-01 | 37 | ug/kg | 1165 | 19.89 | 35.14 |
| LW2-C533-A | 19-Oct-05 | 110 | µg/kg | LW2-G282 | 22-Oct-04 | 3130 | ug/kg | 362 | 28.45 | 3020 |
| LW2-G126 | 07-Oct-04 | 2.47 | µg/kg | WLCGXV99S2S2_10 | 08-Oct-99 | 134 | ug/kg | 1826 | 54.25 | 131.53 |
| LW2-G336 | 14-Sep-04 | 19.3 | µg/kg | WR-WSI98SD0810 | 22-Sep-97 | 2000 | ug/kg | 2549 | 103.63 | 1980.7 |
| LW2-G126 | 07-Oct-04 | 2.47 | µg/kg | WLCGXV99S2S2_30 | 08-Oct-99 | 288 | ug/kg | 1826 | 116.60 | 285.53 |



BZTO104(e)033332

Table 6.1-19. Summary of Data from Study Area Collocated Pairs.

| All Pairs | No. Collocated Pairs | Ratio Range (larger / smaller value) | Range of Absoulute Concentration Differences | % of Ratios below listed factors | | |
|---|---|---|---|---|---|---|
| | | | | < 2X | <5X | <10X |
| Total PCBs | 69 | 1.00 - 116.60 | 0.00 - 8060 | 61% | 84% | 91% |
| Total DDx | 49 | 1.02 - 14.93 | 0.06 - 1760 | 67% | 96% | 98% |
| Total PAHs | 140 | 1.00 - 680.68 | 1.36 - 1,412,050 | 48% | 84% | 94% |
| BEHP | 103 | 1.00 - 3467.74 | 0.00 - 32,640 | 50% | 77% | 85% |
| Mercury | 100 | 1.00 - 14.94 | 0.00 - 0.400 | 77% | 93% | 98% |
| Arsenic | 120 | 1.00 - 4.61 | 0.00 - 6.8 | 91% | 98% | 99% |
| Fines | 98 | 1.00 - 20.00 | 0.10 - 58.54 | 82% | 94% | 95% |
| TOC | 162 | 1.00 - 83.75 | 0.00 - 18.08 | 80% | 94% | 96% |

| Same Day Pairs | No. Collocated Pairs | Ratio Range (larger / smaller value) | Range of Absoulute Concentration Differences | % of Ratios below listed factors | | |
|---|---|---|---|---|---|---|
| | | | | < 2X | <5X | <10X |
| Total PCBs | 47 | 1.01 - 17.12 | 0.20 - 8060 | 74% | 94% | 98% |
| Total DDx | 38 | 1.02 - 14.93 | 0.06 - 1760 | 71% | 95% | 97% |
| Total PAHs | 65 | 1.01 - 680.68 | 15 - 1,412,050 | 54% | 88% | 98% |
| BEHP | 48 | 1.00 - 32.70 | 0 - 31,506 | 71% | 96% | 96% |
| Mercury | 48 | 1.00 - 10.56 | 0.00 - 0.400 | 88% | 98% | 98% |
| Arsenic | 66 | 1.00 - 1.87 | 0.01 - 3.57 | 100% | 100% | 100% |
| Fines | 42 | 1.00 - 2.54 | 0.23 - 21.1 | 86% | 100% | 100% |
| TOC | 62 | 1.00 - 5.51 | 0 - 12.79 | 89% | 98% | 100% |

BZTO104(e)033333

Table 6.2-1. Summary of TZW Analytes Selected for Mapping.

| Analyte Name | Sample Count[a] | % Detected | Exceedance of Eco Chronic SL | Eco Potential TZW iCOCs | Exceedance of Region 9 Tap Water PRG (ug/L) | Exceedance of AWQC (for Fish Consumption at 17.5 grams/day) (ug/L) | Exceedance of MCL (ug/L) | Human Health Potential TZW iCOCs | Mapped in Round 2 Report (Section 6) |
|---|---|---|---|---|---|---|---|---|---|
| **Other** | | | | | | | | | |
| Cyanide | 34 | 94% | √ | √ | √ | √ | √ | | √ |
| Perchlorate | 34 | 47% | √ | √ | | -- | -- | | √ |
| **Metals** | | | | | | | | | |
| Aluminum | 152 | 62% | √ | | | -- | -- | | √[b] |
| Antimony | 57 | 26% | | | | √ | √ | | |
| Arsenic | 60 | 92% | | | √ | √ | √ | | √[c] |
| Barium | 152 | 100% | √ | | | -- | √ | | √[b] |
| Beryllium | 95 | 56% | √ | | | -- | | | |
| Cadmium | 152 | 61% | √ | | | -- | √ | | √[b] |
| Chromium | 179 | 61% | √ | | | -- | √ | | |
| Cobalt | 13 | 62% | √ | | -- | -- | -- | | |
| Copper | 155 | 37% | √ | | | -- | | | |
| Iron | 54 | 100% | √ | | | -- | -- | | |
| Lead | 176 | 44% | √ | | -- | -- | √ | | √[b] |
| Magnesium | 192 | 100% | √ | | -- | -- | -- | | |
| Manganese | 194 | 100% | √ | | √ | √ | -- | | √[c] |
| Mercury | 57 | 9% | | | √ | | | | √[b] |
| Nickel | 165 | 87% | √ | | | | -- | | |
| Potassium | 110 | 93% | √ | | -- | -- | -- | | |
| Silver | 104 | 31% | √ | | -- | -- | -- | | |
| Sodium | 179 | 98% | √ | | -- | -- | -- | | |
| Thallium | 57 | 46% | | | √ | | -- | | |
| Vanadium | 13 | 69% | √ | | -- | -- | -- | | |
| Zinc | 176 | 57% | √ | | | | -- | | |
| **Dioxins** | | | | | | | | | |
| Dioxin TEQ | 6 | 33% | -- | | √ | √ | | | |
| **Pesticides** | | | | | | | | | |
| 2,4'-DDD | 14 | 71% | √ | √ | √ | √ | -- | | √[e] |
| 2,4'-DDT | 14 | 21% | √ | √ | √ | Y | -- | | √[e] |
| 4,4'-DDD | 26 | 35% | √ | √ | √ | Y | -- | | √[e] |
| 4,4'-DDE | 26 | 31% | √ | √ | √ | Y | -- | | √[e] |
| 4,4'-DDT | 26 | 31% | √ | √ | √ | Y | -- | | √[e] |
| Total of 2,4' and 4,4'-DDD | 14 | 71% | -- | √ | √ | Y | -- | √ | √[e] |
| Total of 2,4' and 4,4'-DDE | 14 | 21% | -- | | √ | Y | -- | | √[e] |
| Total of 2,4' and 4,4'-DDT | 14 | 36% | √ | √ | √ | Y | -- | √ | √[e] |
| **Herbicides** | | | | | | | | | |
| Dalapon | 2 | 100% | √ | | √ | | | | |
| Silvex | 15 | 7% | √ | | | -- | | | |
| **PAHs** | | | | | | | | | |
| 2-Methylnaphthalene | 105 | 26% | √ | √ | | -- | -- | | √[d] |
| Acenaphthene | 118 | 94% | √ | √ | | √ | -- | | √[d] |
| Anthracene | 118 | 75% | √ | √ | | | -- | | √[d] |
| Benzo(a)anthracene | 118 | 44% | √ | √ | √ | √ | -- | | √[d] |
| Benzo(a)pyrene | 118 | 36% | √ | √ | √ | √ | √ | | √ |
| Benzo(b)fluoranthene | 118 | 30% | √ | √ | √ | √ | -- | | √[d] |
| Benzo(g,h,i)perylene | 118 | 37% | √ | √ | | -- | -- | | √[d] |
| Benzo(k)fluoranthene | 118 | 25% | √ | √ | √ | √ | -- | | √[d] |
| Chrysene | 118 | 45% | √ | √ | √ | √ | -- | | √[d] |
| Dibenzo(a,h)anthracene | 118 | 26% | √ | √ | √ | √ | -- | | √[d] |
| Fluoranthene | 118 | 64% | √ | √ | | | -- | | √[d] |
| Fluorene | 118 | 77% | √ | √ | | | -- | | √[d] |
| Indeno(1,2,3-cd)pyrene | 118 | 36% | √ | √ | √ | √ | -- | | √[d] |
| Naphthalene | 193 | 42% | √ | √ | | -- | -- | | √[d] |
| Phenanthrene | 118 | 67% | √ | √ | | -- | -- | | √[d] |
| Pyrene | 118 | 68% | √ | √ | | | -- | | √[d] |
| **SVOCs** | | | | | | | | | |
| 1,2-Dichlorobenzene | 142 | 11% | √ | | | √ | √ | | √[f] |
| 1,4-Dichlorobenzene | 142 | 9% | √ | | √ | √ | √ | | √[f] |
| Dibenzofuran | 105 | 54% | √ | | | -- | -- | | |
| **VOCs** | | | | | | | | | |
| 1,1,2-Trichloroethane | 150 | 3% | | | √ | √ | √ | | √[g] |
| 1,1-Dichloroethene | 150 | 9% | √ | | | | √ | | √[g] |
| 1,2,3-Trichloropropane | 150 | 1% | -- | | | -- | -- | | |
| 1,2,4-Trimethylbenzene | 41 | 41% | √ | | -- | -- | -- | | |
| 1,2-Dichloroethane | 150 | 8% | | | √ | √ | √ | | √[g] |
| 1,2-Dichloropropane | 150 | 5% | | | √ | √ | √ | | |
| 1,3,5-Trimethylbenzene | 41 | 39% | √ | | -- | -- | -- | | |
| Acrolein | 6 | 33% | | | | √ | -- | | |

BZTO104(e)033335

Table 6.2-1. Summary of TZW Analytes Selected for Mapping.

| Analyte Name | Sample Count[a] | % Detected | Exceedance of Eco Chronic SL | Eco Potential TZW iCOCs | Exceedance of Region 9 Tap Water PRG (ug/L) | Exceedance of AWQC (for Fish Consumption at 17.5 grams/day) (ug/L) | Exceedance of MCL (ug/L) | Human Health Potential TZW iCOCs | Mapped in Round 2 Report (Section 6) |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | 154 | 43% | √ | | √ | √ | √ | | √[h] |
| Bromodichloromethane | 150 | 2% | | | √ | √ | -- | | |
| Carbon disulfide | 150 | 7% | √ | | | -- | -- | | |
| Chlorobenzene | 150 | 29% | √ | | √ | √ | √ | | √ |
| Chloroethane | 150 | 7% | √ | | | -- | -- | | √[g] |
| Chloroform | 150 | 10% | | √ | √ | √ | -- | √ | √[g] |
| cis-1,2-Dichloroethene | 138 | 32% | √ | | | -- | √ | | √[g] |
| Ethylbenzene | 154 | 30% | √ | | | | | | √[h] |
| Isopropylbenzene | 150 | 23% | √ | | | -- | -- | | |
| m,p-Xylene | 154 | 35% | √ | | | -- | | | √[h] |
| Methyl tert-butyl ether | 150 | 21% | | | | -- | -- | | |
| Methylene chloride | 150 | 8% | | | √ | √ | -- | | √[g] |
| o-Xylene | 154 | 40% | √ | | | -- | | | √[h] |
| Tetrachloroethene | 150 | 5% | | | √ | √ | √ | | √[g] |
| Toluene | 154 | 49% | √ | | | | | | √[h] |
| Total Xylenes (calc'd) | 154 | 44% | √ | | -- | -- | -- | | √[h] |
| trans-1,2-Dichloroethene | 150 | 11% | | | | | √ | | √[g] |
| Trichloroethene | 150 | 17% | √ | √ | √ | √ | √ | √ | √[g] |
| Vinyl chloride | 150 | 38% | √ | | √ | √ | √ | | √[g] |
| **Petroleum** | | | | | | | | | |
| TPH-GRH | 150 | 48% | -- | | -- | -- | -- | | √ |
| TPH-DRH | 95 | 65% | -- | | -- | -- | -- | | √ |
| TPH-RRH | 95 | 40% | -- | | -- | -- | -- | | √ |

**Notes:**

Blank cells indicate that an analyte does not exceed a screening level and/or is not a potential iCOC.

-- Indicates that a screening level is not available.

[a] All samples from the top 38 cm BML, including filtered and unfiltered samples, were included in the screening.

[b] This analyte is presented in a scatter plot of concentration vs. river mile, instead of on a series of 11x17 maps.

[c] This analyte is presented in a scatter plot of concentration vs. river mile, in addition to presentation on a series of 11x17 maps.

[d] This analyte is presented as part of the 11x17 map series of Total PAH concentrations, which also show total LPAH and total HPAH concentrations at each sampling point.

[e] This analyte is presented as part of the 11x17 map series of Total DDX concentrations, which also show total DDE, total DDD, and total DDT concentrations at each sampling point.

[f] This analyte is presented as part of the 11x17 map series which shows the total of 1,2-DCB and 1,4-DCB.

[g] This analyte is presented as part of the 11x17 map series of Total Aliphatic Chlorinated VOCs (CVOCs). This list included the 17 detected aliphatic CVOCs: 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,2,3-Trichloropropane, 1,2-Dichloroethane, 1,2-Dichloropropane, Chloroethane, Chloroform, Chloromethane, cis-1,2-Dichloroethene, Methylene chloride, Tetrachloroethene, trans-1,2-Dichloroethene, Trichloroethene, Vinyl chloride, and Vinylidene chloride.

[h] This analyte is presented as part of the 11x17 map series of Total BTEX, which includes paired pie-chart presentations of the relative contribution of benzene, toluene, ethylbenzene, and xylenes.

BZTO104(e)033336

Table 6.2-2. Summary of Map Presentation of Nature and Extent of TZW Chemistry.

| | River Mile | | | | |
|---|---|---|---|---|---|
| **Analyte/Analyte Group** | **4-5** | **5-6** | **6-7** | **7-8** | **8-9** |
| **Other** | | | | | |
| Perchlorate | NS | NS | NS | Figure 6.2-7 | NS |
| Cyanide | NS | NS | Figure 6.2-8 | NS | NS |
| **Metals** | | | | | |
| Manganese (Mn) | Map 6.2-4a | Map 6.2-4b | Map 6.2-4c | Map 6.2-4d | Map 6.2-4e |
| Arsenic (As) | Map 6.2-5a | Map 6.2-5b | Map 6.2-5c | Map 6.2-5d | Map 6.2-5e |
| **Pesticides** | | | | | |
| Pesticides (Total DDD, Total DDE, and Total DDT) | NS | NS | NS | Map 6.2-6 | NS |
| **PAHs** | | | | | |
| Total PAHs, (including distinction of LPAHs and HPAHs) | Map 6.2-1a | Map 6.2-1b | Map 6.2-1c | Map 6.2-1d | NS |
| Benzo(a)pyrene | Map 6.2-2a | Map 6.2-2b | Map 6.2-2c | ND | NS |
| **VOCs** | | | | | |
| Chlorobenzene (MCB) | ND | ND | Map 6.2-7a | Map 6.2-7b | ND |
| Dichlorobenznenes (Total of 1,2-DCB and 1,4-DCB) | ND* | ND | Map 6.2-7a | Map 6.2-7b | ND |
| Total BTEX | Map 6.2-8a | Map 6.2-8b | Map 6.2-8c, Figure 6.2-5a, Figure 6.2-5b | Map 6.2-8d | Map 6.2-8e |
| Total Aliphatic Chlorinated VOCs (CVOCs), (including designation of highest individual concentration) | ND* | ND* | Map 6.2-9a | Map 6.2-9b | Map 6.2-9c |
| **TPH** | | | | | |
| Total TPH (including distinction of TPH-DRH, TPH-RRH, and TPH-GRH) | Map 6.2-3a | Map 6.2-3b | Map 6.2-3c | Map 6.2-3d | NS |

**Notes:**

NS indicates that a map was not created for the given river mile because the analyte was not sampled in TZW in this reach.

ND indicates that a map was not created for the given river mile because the analyte was not detected in shallow (0-38 cm BML) TZW in this reach.

ND* indicates that a map was not created for the given river mile because the analyte in this reach was detected in only 2 or fewer points, with no corresponding exceedances of screening levels.



BZTO104(e)033337

Table 6.3-1. Water Quality Monitoring Locations in the Lower Willamette River.

| Organization | Primary Station ID | River Mile | Location | Available Data (1990 - 2000) | | | | | | Data Usability Category |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Conventional Parameters | Major Metals | Trace Metals | Pesticides/ PCBs | Volatiles/ Semivolatiles | Dioxins | |
| DEQ | 402000* | 7 | Willamette R. at SP&S Railroad Bridge | x | x | | | | | 2 |
| | 402478* | ~8.4 | Swan Island Channel Midpoint | x | x | | | | | 2 |
| | 402288* | 13.2 | Willamette R. at Hawthorne Bridge | x | x | | | | | 2 |
| USGS | 14211720 | 12.8 | Willamette R. at Portland | x | x | x | x | | | 2 |
| DEQ | SW99-01 - SW99-02 | 7 | McCormick & Baxter | | | | | x | | 1 |
| | SW99-03 - SW99-05 | 8 | McCormick & Baxter | | | | | x | | 1 |
| Woodward-Clyde | WR-1 | 8 | Rhône-Poulenc St Helens Road Facility | x | x | x | x | x | x | 1 |
| | WR-2 - WR-4 | 7 | Rhône-Poulenc St Helens Road Facility | x | x | x | x | x | x | 1 |
| DEQ/OSU | SPMD-1 - SPMD-12 | 7 | McCormick & Baxter | | x | | | x | | 1 |
| | SPMD-14 - SPMD-20 | 7 | McCormick & Baxter | | x | | | x | | 1 |

**Notes:**
* STORET number



BZTO104(e)033338

Table 6.3-2. Summary Statistics for Conventional and COPC Analytes in Round 2A Surface Water.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median [a] | 95th [a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median [a] (half DL) | 95th [a] (half DL) |
| **Conventionals** | | | | | | | | | | | | | | |
| **Peristaltic Pump Samples** | | | | | | | | | | | | | | |
| Total suspended solids | mg/l | 74 | 49 | 66.2 | 3.0 J | 25.0 J | 8.2 | 7.0 J | 15.0 J | 3.0 J | 25.0 J | 6.3 | 5.5 T | 14.0 T |
| **Metals** | | | | | | | | | | | | | | |
| **Peristaltic Pump Samples** | | | | | | | | | | | | | | |
| Arsenic | mg/l | 74 | 74 | 100 | 0.00033 T | 0.00075 T | 0.00045 | 0.00044 | 0.00056 | 0.00033 T | 0.00075 T | 0.00045 | 0.00044 | 0.00056 |
| Arsenic (dissolved) | mg/l | 74 | 74 | 100 | 0.00025 | 0.00064 | 0.00038 | 0.00037 | 0.00049 | 0.00025 | 0.00064 | 0.00038 | 0.00037 | 0.00049 |
| Lead | mg/l | 74 | 74 | 100 | 0.000077 | 0.0018 | 0.00024 | 0.00016 T | 0.00047 T | 0.000077 | 0.0018 | 0.00024 | 0.00016 T | 0.00047 T |
| Lead (dissolved) | mg/l | 74 | 60 | 81.1 | 0.0000090 J | 0.00015 | 0.000026 | 0.000020 J | 0.000060 | 0.0000090 U | 0.00015 | 0.000022 | 0.000015 J | 0.000047 |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | | | | | | |
| **Peristaltic Pump Samples** | | | | | | | | | | | | | | |
| Total PAHs | µg/l | 74 | 53 | 71.6 | 0.0026 JT | 2.5 JT | 0.10 | 0.021 JT | 0.080 JT | 0.0026 JT | 2.5 JT | 0.073 | 0.012 JT | 0.078 JT |
| **XAD Column Samples** | | | | | | | | | | | | | | |
| Benzo(a)pyrene | pg/l | 24 | 16 | 66.7 | 18.3 J | 336 | 73.2 | 37.9 J | 143 J | 16.9 U | 336 | 60.6 | 36.7 J | 125 J |
| Total PAHs | pg/l | 24 | 24 | 100 | 4370 JT | 169166 JT | 34200 | 21700 JT | 65500 JT | 4370 JT | 169166 JT | 34200 | 21700 JT | 65500 JT |
| **XAD Filter Samples** | | | | | | | | | | | | | | |
| Benzo(a)pyrene | pg/l | 24 | 17 | 70.8 | 275 | 6300 | 1330 | 755 | 2890 | 185 U | 6300 | 985 | 555 | 2570 |
| Total PAHs | pg/l | 24 | 24 | 100 | 482 T | 61930 T | 11900 | 5630 JT | 34800 T | 482 T | 61930 T | 11900 | 5630 JT | 34800 T |
| **PCB Congeners** | | | | | | | | | | | | | | |
| **XAD Column Samples** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalen | pg/l | 24 | 24 | 100 | 0.00015 JT | 0.0040 JT | 0.0015 | 0.0011 JT | 0.0031 JT | 0.00015 JT | 0.0040 JT | 0.0015 | 0.0011 JT | 0.0031 JT |
| **XAD Filter Samples** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalen | pg/l | 23 | 23 | 100 | 0.0010 JT | 0.046 JT | 0.0092 | 0.0057 JT | 0.018 T | 0.00096 JT | 0.046 JT | 0.0092 | 0.0057 JT | 0.018 T |
| **Dioxin/Furans** | | | | | | | | | | | | | | |
| **XAD Column Samples** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalen | pg/l | 18 | 18 | 100 | 0.00049 T | 0.040 JT | 0.011 | 0.0043 T | 0.038 JT | 0.00049 T | 0.040 JT | 0.011 | 0.0043 T | 0.038 JT |
| **XAD Filter Samples** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalen | pg/l | 18 | 18 | 100 | 0.040 JT | 0.91 JT | 0.22 | 0.10 JT | 0.53 JT | 0.040 JT | 0.91 JT | 0.22 | 0.10 JT | 0.53 JT |
| **Organochlorine Pesticides** | | | | | | | | | | | | | | |
| **XAD Column Samples** | | | | | | | | | | | | | | |
| Aldrin | pg/l | 24 | 19 | 79.2 | 0.54 J | 3.3 J | 1.3 | 1.2 J | 2.2 J | 0.34 UJ | 3.3 J | 1.1 | 1.0 J | 2.0 J |
| beta-Hexachlorocyclohexane | pg/l | 24 | 24 | 100 | 1.7 J | 33.7 | 7.9 | 4.9 | 19.4 | 1.7 J | 33.7 | 7.9 | 4.9 | 19.4 |
| Hexachlorobenzene | pg/l | 24 | 24 | 100 | 15.7 | 55.4 | 38.6 | 37.7 | 53.4 | 15.7 | 55.4 | 38.6 | 37.7 | 53.4 |
| Total Chlordanes | pg/l | 24 | 24 | 100 | 7.9 JT | 55.5 JT | 21.0 | 19.9 JT | 26.6 JT | 7.9 JT | 55.5 JT | 21.0 | 19.9 JT | 26.6 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | pg/l | 24 | 24 | 100 | 12.4 JT | 3460 T | 541 | 72.7 JT | 2100 T | 12.4 JT | 3460 T | 541 | 72.7 JT | 2100 T |
| Total of 2,4' and 4,4'-DDD | pg/l | 24 | 24 | 100 | 5.8 JT | 2560 T | 422 | 46.1 T | 1760 T | 5.8 JT | 2560 T | 422 | 46.1 T | 1760 T |
| Total of 2,4' and 4,4'-DDE | pg/l | 24 | 24 | 100 | 5.1 JT | 349 T | 54.5 | 22.0 JT | 136 T | 5.1 JT | 349 T | 54.5 | 22.0 JT | 136 T |
| Total of 2,4' and 4,4'-DDT | pg/l | 24 | 24 | 100 | 0.74 JT | 547 T | 64.7 | 6.1 JT | 200 T | 0.74 JT | 547 T | 64.7 | 6.1 JT | 200 T |
| **XAD Filter Samples** | | | | | | | | | | | | | | |
| Aldrin | pg/l | 24 | 22 | 91.7 | 0.11 J | 13.0 | 1.1 | 0.41 J | 1.0 J | 0.11 J | 13.0 | 1.0 | 0.40 J | 0.98 J |
| beta-Hexachlorocyclohexane | pg/l | 24 | 6 | 25.0 | 0.17 J | 1.2 J | 0.73 | 0.60 J | 1.0 J | 0.024 U | 1.2 J | 0.22 | 0.053 U | 0.82 J |
| Hexachlorobenzene | pg/l | 24 | 23 | 95.8 | 3.1 J | 32.0 | 8.2 | 5.6 J | 17.4 | 0.92 U | 32.0 | 7.9 | 4.3 | 17.4 |
| Total Chlordanes | pg/l | 24 | 24 | 100 | 0.10 JT | 185 JT | 14.3 | 5.5 JT | 15.5 JT | 0.10 JT | 185 JT | 14.3 | 5.5 JT | 15.5 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | pg/l | 24 | 24 | 100 | 7.6 JT | 6790 T | 810 | 41.6 JT | 3120 T | 7.6 JT | 6790 T | 810 | 41.6 JT | 3120 T |
| Total of 2,4' and 4,4'-DDD | pg/l | 24 | 24 | 100 | 0.65 JT | 2610 T | 389 | 16.9 JT | 1760 T | 0.65 JT | 2610 T | 389 | 16.9 JT | 1760 T |
| Total of 2,4' and 4,4'-DDE | pg/l | 24 | 24 | 100 | 5.0 JT | 520 T | 78.6 | 17.3 JT | 290 T | 5.0 JT | 520 T | 78.6 | 17.3 JT | 290 T |
| Total of 2,4' and 4,4'-DDT | pg/l | 24 | 20 | 83.3 | 0.60 JT | 4030 T | 410 | 9.9 T | 1380 T | 0.18 UT | 4030 T | 342 | 9.2 JT | 1300 T |

**Notes:**

[a] - This value was selected from an ascending ranked list of all results. Where n = the number of samples, the actual sample result corresponding to the rand of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

J - The associated numerical value is an estimated quantity.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033339

Table 6.4-1. Summary Statistics for Indicator Chemicals in Invertebrate Tissues by Area.

| Analyte | Units | # Analyzed | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Study Area*** | | | | | | | | | | | | | | |
| ***Chinook (stomach contents)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 5 | 5 | 100 | 43 JT | 163 JT | 80.3 | 55.1 JT | 88.2 JT | 43 JT | 163 JT | 80.3 | 55.1 JT | 88.2 JT |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 5 | 5 | 100 | 0.391 T | 2.3 T | 1.53 | 1.77 T | 2.29 T | 0.391 T | 2.3 T | 1.53 | 1.77 T | 2.29 T |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 5 | 5 | 100 | 1.89 J | 77.8 | 21.2 | 7.67 J | 11.8 | 1.89 J | 77.8 | 21.2 | 7.67 J | 11.8 |
| Benzo(a)pyrene | µg/kg-Wet | 5 | 2 | 40 | 2.26 J | 20.7 | 11.5 | 2.26 J | 2.26 J | 1.63 U | 20.7 | 5.67 | 2.26 J | 2.91 U |
| High Molecular Weight PAH | µg/kg-Wet | 5 | 5 | 100 | 49.9 JT | 1050 JT | 338 | 200 JT | 261 JT | 49.9 JT | 1050 JT | 338 | 200 JT | 261 JT |
| Low Molecular Weight PAH | µg/kg-Wet | 5 | 5 | 100 | 45.7 JT | 1410 JT | 347 | 72.3 JT | 141 JT | 45.7 JT | 1410 JT | 347 | 72.3 JT | 141 JT |
| Total PAHs | µg/kg-Wet | 5 | 5 | 100 | 95.5 JT | 2460 JT | 685 | 272 JT | 402 JT | 95.5 JT | 2460 JT | 685 | 272 JT | 402 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 5 | 2 | 40 | 0.00576 J | 0.0426 J | 0.0242 | 0.00576 J | 0.00576 J | 0.00576 J | 0.0426 J | 0.0175 | 0.01665 U | 0.01775 U |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 5 | 1 | 20 | 0.215 J | 0.215 J | 0.215 | 0.215 J | 0.215 J | 0.0225 U | 0.215 J | 0.0616 | 0.0299 U | 0.0371 U |
| Total Chlordanes | µg/kg-Wet | 5 | 5 | 100 | 1.08 JT | 4.61 JT | 2.67 | 2.98 JT | 3.37 JT | 1.08 JT | 4.61 JT | 2.67 | 2.98 JT | 3.37 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 5 | 5 | 100 | 0.62 JT | 137 JT | 34 | 2.43 JT | 27.8 T | 0.62 JT | 137 JT | 34 | 2.43 JT | 27.8 T |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 5 | 5 | 100 | 8.88 JT | 327 JT | 107 | 12.7 JT | 175 T | 8.88 JT | 327 JT | 107 | 12.7 JT | 175 T |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 5 | 5 | 100 | 5.03 JT | 147 JT | 49.2 | 9.21 JT | 77.8 T | 5.03 JT | 147 JT | 49.2 | 9.21 JT | 77.8 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 5 | 5 | 100 | 1.18 JT | 69.4 T | 23.5 | 1.5 JT | 43.9 JT | 1.18 JT | 69.4 T | 23.5 | 1.5 JT | 43.9 JT |
| ***Clam (Corbicula spp.--body without shell)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 32 | 32 | 100 | 30.2 JT | 1470 JT | 161 | 77 JT | 299 JT | 30.2 JT | 1470 JT | 161 | 77 JT | 299 JT |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | µg/kg-Wet | 25 | 19 | 76 | 2.5 | 530 | 38.4 | 6.8 T | 63 | 1.8 U | 530 | 29.6 | 6 | 33 |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 33 | 33 | 100 | 0.837 T | 4.63 | 2.31 | 2.19 | 3.38 | 0.837 T | 4.63 | 2.31 | 2.19 | 3.38 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 27 | 27 | 100 | 0.116 T | 6.76 T | 1.2 | 0.568 JT | 4.37 T | 0.116 T | 6.76 T | 1.2 | 0.568 JT | 4.37 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 29 | 29 | 100 | 0.749 T | 9.39 T | 2.73 | 1.98 T | 5.52 T | 0.749 T | 9.39 T | 2.73 | 1.98 T | 5.52 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 29 | 29 | 100 | 0.694 | 1.25 | 0.924 | 0.923 | 1.05 | 0.694 | 1.25 | 0.924 | 0.923 | 1.05 |
| Mercury | mg/kg-Wet | 26 | 26 | 100 | 0.005 JT | 0.016 J | 0.0096 | 0.009 J | 0.012 | 0.005 JT | 0.016 J | 0.0096 | 0.009 J | 0.012 |
| Zinc | mg/kg-Wet | 29 | 29 | 100 | 21.4 | 54 | 35.1 | 35.6 | 46.9 | 21.4 | 54 | 35.1 | 35.6 | 46.9 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 30 | 28 | 93.3 | 2.95 T | 670 | 81.5 | 22 | 160 | 2.95 T | 670 | 77.2 | 20 | 160 |
| Benzo(a)pyrene | µg/kg-Wet | 30 | 27 | 90 | 1.4 T | 490 | 43.9 | 5 | 60 | 1.4 T | 490 | 41.2 | 7 | 60 |
| High Molecular Weight PAH | µg/kg-Wet | 30 | 30 | 100 | 26.1 JT | 4450 T | 537 | 193 T | 1060 T | 26.1 JT | 4450 T | 537 | 193 T | 1060 T |
| Low Molecular Weight PAH | µg/kg-Wet | 30 | 27 | 90 | 8.12 JT | 542 T | 73.4 | 32 T | 240 T | 8.12 JT | 542 T | 68.1 | 29.6 T | 240 T |
| Total PAHs | µg/kg-Wet | 30 | 30 | 100 | 34.2 JT | 4980 T | 603 | 218 T | 1180 T | 34.2 JT | 4980 T | 603 | 218 T | 1180 T |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 32 | 29 | 90.6 | 0.126 JT | 5.07 | 0.419 | 0.224 J | 0.399 | 0.126 JT | 5.07 | 0.428 | 0.243 | 0.528 |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 32 | 1 | 3.13 | 1.2 NJ | 1.2 NJ | 1.2 | 1.2 NJ | 1.2 NJ | 0.00418 U | 8.5 UT | 0.215 | 0.02115 U | 0.5 UJ |
| Total Chlordanes | µg/kg-Wet | 32 | 32 | 100 | 1.1 JT | 16 JT | 4.13 | 3.32 JT | 6.31 JT | 1.1 JT | 16 JT | 4.13 | 3.32 JT | 6.31 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 32 | 32 | 100 | 2.15 T | 242 T | 28.7 | 10.2 T | 116 T | 2.15 T | 242 T | 28.7 | 10.2 T | 116 T |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 32 | 32 | 100 | 7.82 JT | 463 JT | 58.8 | 23.6 T | 181 T | 7.82 JT | 463 JT | 58.8 | 23.6 T | 181 T |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 32 | 32 | 100 | 4.89 JT | 107 JT | 19.9 | 12.8 T | 63.2 T | 4.89 JT | 107 JT | 19.9 | 12.8 T | 63.2 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 32 | 31 | 96.9 | 0.778 JT | 114 T | 10.6 | 2.2 T | 44.4 T | 0.778 JT | 114 T | 10.4 | 2.2 T | 44.4 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 29 | 2 | 6.9 | 120 J | 140 J | 130 | 120 J | 120 J | 53 U | 340 UT | 49.2 | 26.5 U | 120 J |
| ***Crayfish (whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 27 | 12 | 44.4 | 16 T | 280 T | 63.6 | 43 T | 110 T | 1.7 UT | 280 T | 29.5 | 3.5 UT | 59 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 27 | 27 | 100 | 0.16 | 1.3 | 0.781 | 0.79 | 1.1 | 0.16 | 1.3 | 0.781 | 0.79 | 1.1 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 10 | 10 | 100 | 0.455 T | 22.7 T | 3.22 | 0.79 T | 2.16 T | 0.455 T | 22.7 T | 3.22 | 0.79 T | 2.16 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 10 | 10 | 100 | 0.488 T | 4.55 T | 1.78 | 1.13 T | 4.42 T | 0.488 T | 4.55 T | 1.78 | 1.13 T | 4.42 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 27 | 27 | 100 | 0.25 | 0.5 J | 0.352 | 0.35 J | 0.41 J | 0.25 | 0.5 J | 0.352 | 0.35 J | 0.41 J |
| Mercury | mg/kg-Wet | 27 | 27 | 100 | 0.02 | 0.041 | 0.0283 | 0.028 | 0.037 | 0.02 | 0.041 | 0.0283 | 0.028 | 0.037 |
| Zinc | mg/kg-Wet | 27 | 27 | 100 | 13.7 J | 20.3 J | 16.7 | 16.6 J | 19.1 J | 13.7 J | 20.3 J | 16.7 | 16.6 J | 19.1 J |



BZTO104(e)033341

Table 6.4-1. Summary Statistics for Indicator Chemicals in Invertebrate Tissues by Area.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # Analyzed | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 27 | 1 | 3.7 | 80 JT | 80 JT | 80 | 80 JT | 80 JT | 17 UT | 80 JT | 18.6 | 16.5 UT | 16.5 UT |
| Benzo(a)pyrene | µg/kg-Wet | 27 | 0 | 0 | | | | | | 17 UT | 37 UT | 16.3 | 16.5 UT | 16.5 UT |
| High Molecular Weight PAH | µg/kg-Wet | 27 | 3 | 11.1 | 93 JT | 380 JT | 214 | 170 T | 170 T | 17 UT | 380 JT | 45.9 | 16.5 UT | 93 JT |
| Low Molecular Weight PAH | µg/kg-Wet | 27 | 1 | 3.7 | 97 T | 97 T | 97 | 97 T | 97 T | 33 UT | 97 T | 30.8 | 35 UT | 45 UT |
| Total PAHs | µg/kg-Wet | 27 | 3 | 11.1 | 93 JT | 477 JT | 247 | 170 T | 170 T | 33 UT | 477 JT | 53.7 | 35 UT | 93 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 27 | 0 | 0 | | | | | | 1 U | 2 U | 0.519 | 0.5 U | 0.5 U |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 27 | 0 | 0 | | | | | | 1 U | 2 UJ | 0.519 | 0.5 U | 0.5 UJ |
| Total Chlordanes | µg/kg-Wet | 27 | 5 | 18.5 | 1 T | 2.7 JT | 1.6 | 1.3 JT | 1.9 JT | 1 UT | 2.7 JT | 0.793 | 0.5 UJT | 1.3 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 27 | 5 | 18.5 | 1.2 JT | 21.3 JT | 7.62 | 3.1 JT | 9.6 JT | 1 UT | 21.3 JT | 1.82 | 0.5 UT | 3.1 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 27 | 27 | 100 | 1.6 JT | 84.9 JT | 11.7 | 7.2 JT | 17.9 JT | 1.6 JT | 84.9 JT | 11.7 | 7.2 JT | 17.9 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 27 | 27 | 100 | 1.6 JT | 51 T | 6.49 | 4 T | 8.8 T | 1.6 JT | 51 T | 6.49 | 4 T | 8.8 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 27 | 20 | 74.1 | 1.1 JT | 17.5 JT | 5.09 | 3 JT | 12.6 T | 1 UT | 17.5 JT | 4.18 | 2.35 UJT | 9.5 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 27 | 0 | 0 | | | | | | 99 UJT | 270 UJT | 63.8 | 50 UJT | 100 UT |
| ***Lab-exposed clam (Corbicula fluminea--body without shell)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 43 | 43 | 100 | 11 T | 128 JT | 29.7 | 21.5 JT | 60.1 JT | 11 T | 128 JT | 29.7 | 21.5 JT | 60.1 JT |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | µg/kg-Wet | 43 | 19 | 44.2 | 0.45 J | 680 | 42 | 3.7 | 34 | 0.45 J | 680 | 19 | 1 U | 11 |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 43 | 43 | 100 | 0.527 | 2.29 | 1.04 | 0.93 | 1.72 | 0.527 | 2.29 | 1.04 | 0.93 | 1.72 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 33 | 33 | 100 | 0.00817 JT | 42.5 T | 1.58 | 0.136 T | 1.49 JT | 0.00817 JT | 42.5 T | 1.58 | 0.136 T | 1.49 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 43 | 42 | 97.7 | 0.112 JT | 2.27 T | 0.64 | 0.577 JT | 1.63 JT | 0 UT | 2.27 T | 0.626 | 0.577 JT | 1.63 JT |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 43 | 43 | 100 | 0.303 JT | 0.548 | 0.427 | 0.419 J | 0.536 | 0.303 JT | 0.548 | 0.427 | 0.419 J | 0.536 |
| Mercury | mg/kg-Wet | 43 | 43 | 100 | 0.00705 T | 0.0162 | 0.00986 | 0.0095 | 0.0123 | 0.00705 T | 0.0162 | 0.00986 | 0.0095 | 0.0123 |
| Zinc | mg/kg-Wet | 43 | 43 | 100 | 10.2 | 16.8 | 13 | 12.5 | 15.6 | 10.2 | 16.8 | 13 | 12.5 | 15.6 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 43 | 43 | 100 | 0.39 J | 67 | 5.54 | 1.6 | 22 | 0.39 J | 67 | 5.54 | 1.6 | 22 |
| Benzo(a)pyrene | µg/kg-Wet | 43 | 41 | 95.3 | 0.42 J | 33 | 2.22 | 0.64 | 6.2 | 0.12 U | 33 | 2.12 | 0.63 | 6.2 |
| High Molecular Weight PAH | µg/kg-Wet | 43 | 43 | 100 | 13.1 JT | 1170 T | 118 | 35.9 JT | 603 JT | 13.1 JT | 1170 T | 118 | 35.9 JT | 603 JT |
| Low Molecular Weight PAH | µg/kg-Wet | 43 | 43 | 100 | 5.07 JT | 168 T | 25.4 | 12 JT | 126 T | 5.07 JT | 168 T | 25.4 | 12 JT | 126 T |
| Total PAHs | µg/kg-Wet | 43 | 43 | 100 | 18.2 JT | 1320 T | 143 | 46.9 JT | 761 JT | 18.2 JT | 1320 T | 143 | 46.9 JT | 761 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 43 | 26 | 60.5 | 0.0119 J | 2.14 | 0.109 | 0.0232 J | 0.0493 J | 0.0119 J | 2.14 | 0.0946 | 0.0258 J | 0.075 U |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 43 | 5 | 11.6 | 0.00131 J | 0.00873 J | 0.00427 | 0.00268 J | 0.00629 J | 0.00118 U | 0.46 U | 0.047 | 0.0207 U | 0.155 U |
| Total Chlordanes | µg/kg-Wet | 43 | 43 | 100 | 1.61 JT | 8.2 JT | 3.81 | 2.79 JT | 7.21 JT | 1.61 JT | 8.2 JT | 3.81 | 2.79 JT | 7.21 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 43 | 43 | 100 | 0.511 JT | 941 T | 26 | 1.02 T | 6.26 T | 0.511 JT | 941 T | 26 | 1.02 T | 6.26 T |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 43 | 43 | 100 | 1.13 JT | 1040 T | 30.3 | 2.97 T | 8.79 JT | 1.13 JT | 1040 T | 30.3 | 2.97 T | 8.79 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 43 | 43 | 100 | 0.526 JT | 11.2 T | 1.71 | 1.01 T | 2.88 JT | 0.526 JT | 11.2 T | 1.71 | 1.01 T | 2.88 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 43 | 40 | 93 | 0.075 JT | 87.1 T | 2.79 | 0.161 JT | 3.34 T | 0.075 JT | 87.1 T | 2.6 | 0.16 JT | 1.7 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 43 | 35 | 81.4 | 53 J | 8600 | 376 | 100 J | 340 J | 53 U | 8600 | 311 | 86 J | 280 J |
| ***Lab-exposed worm (Lumbriculus variegatus--whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 43 | 43 | 100 | 30.1 JT | 3230 JT | 377 | 114 JT | 1860 JT | 30.1 JT | 3230 JT | 377 | 114 JT | 1860 JT |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | µg/kg-Wet | 43 | 24 | 55.8 | 0.89 J | 1700 | 80.4 | 5.7 | 31 | 0.44 U | 1700 | 45.4 | 2.1 | 22 |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 43 | 43 | 100 | 1.35 | 3.46 | 2.32 | 2.32 | 2.84 | 1.35 | 3.46 | 2.32 | 2.32 | 2.84 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 33 | 33 | 100 | 0.849 JT | 472 JT | 18.9 | 2.48 JT | 21.9 JT | 0.849 JT | 472 JT | 18.9 | 2.48 JT | 21.9 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 43 | 43 | 100 | 0.31 T | 48.8 JT | 5.38 | 1.78 JT | 12.5 JT | 0.31 T | 48.8 JT | 5.38 | 1.78 JT | 12.5 JT |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 43 | 43 | 100 | 0.246 J | 3.04 | 1.04 | 0.895 | 1.83 | 0.246 J | 3.04 | 1.04 | 0.895 | 1.83 |
| Mercury | mg/kg-Wet | 42 | 41 | 97.6 | 0.00206 J | 0.0105 | 0.00488 | 0.0041 | 0.0082 | 0.0009 U | 0.0105 | 0.00478 | 0.004 J | 0.0082 |
| Zinc | mg/kg-Wet | 43 | 43 | 100 | 18.2 T | 31.5 | 26.3 | 26.3 | 30.6 | 18.2 T | 31.5 | 26.3 | 26.3 | 30.6 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 43 | 43 | 100 | 5.9 | 2600 | 189 | 40 | 820 | 5.9 | 2600 | 189 | 40 | 820 |
| Benzo(a)pyrene | µg/kg-Wet | 43 | 43 | 100 | 2.2 | 1500 | 105 | 17 | 400 | 2.2 | 1500 | 105 | 17 | 400 |



BZTO104(e)033342

Table 6.4-1. Summary Statistics for Indicator Chemicals in Invertebrate Tissues by Area.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # Analyzed | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| High Molecular Weight PAH | µg/kg-Wet | 43 | 43 | 100 | 70.7 T | 33600 T | 2570 | 499 T | 12100 T | 70.7 T | 33600 T | 2570 | 499 T | 12100 T |
| Low Molecular Weight PAH | µg/kg-Wet | 43 | 43 | 100 | 12.3 T | 3760 T | 436 | 61.5 T | 3050 T | 12.3 T | 3760 T | 436 | 61.5 T | 3050 T |
| Total PAHs | µg/kg-Wet | 43 | 43 | 100 | 83 T | 37300 T | 3000 | 564 JT | 15660 T | 83 T | 37300 T | 3000 | 564 JT | 15660 T |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 43 | 33 | 76.7 | 0.043 J | 37 | 1.56 | 0.431 J | 0.889 | 0.043 J | 37 | 1.27 | 0.427 J | 0.86 NJ |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 41 | 9 | 22 | 0.003 J | 0.0493 J | 0.0125 | 0.00732 J | 0.019 J | 0.003 J | 1.5 U | 0.0855 | 0.02595 U | 0.225 U |
| Total Chlordanes | µg/kg-Wet | 43 | 43 | 100 | 2.43 JT | 71.9 T | 6.69 | 4.32 T | 10 JT | 2.43 JT | 71.9 T | 6.69 | 4.32 T | 10 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 43 | 43 | 100 | 4.78 T | 1260 T | 82.7 | 17.6 T | 131 T | 4.78 T | 1260 T | 82.7 | 17.6 T | 131 T |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 43 | 43 | 100 | 14.5 JT | 1490 T | 118 | 40.7 JT | 284 JT | 14.5 JT | 1490 T | 118 | 40.7 JT | 284 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 43 | 43 | 100 | 9.66 JT | 188 T | 30.6 | 19 T | 71 JT | 9.66 JT | 188 T | 30.6 | 19 T | 71 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 43 | 42 | 97.7 | 0.0456 JT | 37.9 T | 4.85 | 0.541 JT | 15.3 JT | 0.0456 JT | 37.9 T | 4.74 | 0.541 JT | 15.3 JT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 43 | 25 | 58.1 | 69 J | 220 J | 128 | 120 J | 200 J | 53 U | 530 U | 92.9 | 83 J | 200 J |
| ***Epibenthic invertebrates (whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 7 | 7 | 100 | 25.2 JT | 490 JT | 103 | 34.8 JT | 73.8 JT | 25.2 JT | 490 JT | 103 | 34.8 JT | 73.8 JT |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 7 | 7 | 100 | 0.307 JT | 4 JT | 0.989 | 0.448 JT | 0.777 JT | 0.307 JT | 4 JT | 0.989 | 0.448 JT | 0.777 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 7 | 7 | 100 | 0.296 JT | 1.48 JT | 0.715 | 0.705 JT | 0.796 JT | 0.296 JT | 1.48 JT | 0.715 | 0.705 JT | 0.796 JT |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 2 | 2 | 100 | 0.349 | 0.45 | 0.4 | 0.349 | 0.349 | 0.349 | 0.45 | 0.4 | 0.349 | 0.349 |
| Zinc | mg/kg-Wet | 2 | 2 | 100 | 12.6 J | 24.8 J | 18.7 | 12.6 J | 12.6 J | 12.6 J | 24.8 J | 18.7 | 12.6 J | 12.6 J |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 7 | 6 | 85.7 | 0.00926 J | 0.0872 | 0.0464 | 0.025 J | 0.0828 | 0.00926 J | 0.0872 | 0.0407 | 0.025 J | 0.0828 |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 7 | 3 | 42.9 | 0.00457 J | 0.00794 J | 0.00598 | 0.00542 J | 0.00542 J | 0.00295 U | 0.0268 U | 0.00625 | 0.00542 J | 0.00794 J |
| Total Chlordanes | µg/kg-Wet | 7 | 7 | 100 | 0.313 JT | 2.06 JT | 1.1 | 0.852 JT | 1.74 T | 0.313 JT | 2.06 JT | 1.1 | 0.852 JT | 1.74 T |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 7 | 7 | 100 | 0.782 T | 44.4 T | 7.88 | 1.22 T | 4.55 T | 0.782 T | 44.4 T | 7.88 | 1.22 T | 4.55 T |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 7 | 7 | 100 | 2.67 T | 94.8 T | 18.4 | 4.73 JT | 11.9 T | 2.67 T | 94.8 T | 18.4 | 4.73 JT | 11.9 T |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 7 | 7 | 100 | 1.28 T | 30.7 T | 7.45 | 3.21 T | 6.59 T | 1.28 T | 30.7 T | 7.45 | 3.21 T | 6.59 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 7 | 7 | 100 | 0.0502 T | 19.7 T | 3.06 | 0.288 T | 0.776 T | 0.0502 T | 19.7 T | 3.06 | 0.288 T | 0.776 T |
| *Upriver* | | | | | | | | | | | | | | |
| ***Chinook (stomach contents)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 1 | 1 | 100 | 9.17 JT | 9.17 JT | 9.17 | 9.17 JT | 9.17 JT | 9.17 JT | 9.17 JT | 9.17 | 9.17 JT | 9.17 JT |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.423 T | 0.423 T | 0.423 | 0.423 T | 0.423 T | 0.423 T | 0.423 T | 0.423 | 0.423 T | 0.423 T |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 1 | 1 | 100 | 2.66 | 2.66 | 2.66 | 2.66 | 2.66 | 2.66 | 2.66 | 2.66 | 2.66 | 2.66 |
| Benzo(a)pyrene | µg/kg-Wet | 1 | 1 | 100 | 1.07 J | 1.07 J | 1.07 | 1.07 J | 1.07 J | 1.07 J | 1.07 J | 1.07 | 1.07 J | 1.07 J |
| High Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 59.4 JT | 59.4 JT | 59.4 | 59.4 JT | 59.4 JT | 59.4 JT | 59.4 JT | 59.4 | 59.4 JT | 59.4 JT |
| Low Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 28 JT | 28 JT | 28 | 28 JT | 28 JT | 28 JT | 28 JT | 28 | 28 JT | 28 JT |
| Total PAHs | µg/kg-Wet | 1 | 1 | 100 | 87.4 JT | 87.4 JT | 87.4 | 87.4 JT | 87.4 JT | 87.4 JT | 87.4 JT | 87.4 | 87.4 JT | 87.4 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 1 | 0 | 0 | | | | | | 0.000169 U | 0.000169 U | 0.0000845 | 0.0000845 U | 0.0000845 U |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 1 | 0 | 0 | | | | | | 0.00892 U | 0.00892 U | 0.00446 | 0.00446 U | 0.00446 U |
| Total Chlordanes | µg/kg-Wet | 1 | 1 | 100 | 2.26 JT | 2.26 JT | 2.26 | 2.26 JT | 2.26 JT | 2.26 JT | 2.26 JT | 2.26 | 2.26 JT | 2.26 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 1 | 1 | 100 | 0.56 JT | 0.56 JT | 0.56 | 0.56 JT | 0.56 JT | 0.56 JT | 0.56 JT | 0.56 | 0.56 JT | 0.56 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 1 | 1 | 100 | 6.61 JT | 6.61 JT | 6.61 | 6.61 JT | 6.61 JT | 6.61 JT | 6.61 JT | 6.61 | 6.61 JT | 6.61 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 1 | 1 | 100 | 5.36 JT | 5.36 JT | 5.36 | 5.36 JT | 5.36 JT | 5.36 JT | 5.36 JT | 5.36 | 5.36 JT | 5.36 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 1 | 1 | 100 | 0.686 T | 0.686 T | 0.686 | 0.686 T | 0.686 T | 0.686 T | 0.686 T | 0.686 | 0.686 T | 0.686 T |
| ***Lab-exposed clam (Corbicula fluminea--body without shell)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 1 | 0 | 0 | | | | | | 20 UT | 20 UT | 10 | 10 UT | 10 UT |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | µg/kg-Wet | 1 | 1 | 100 | 0.091 NJ | 0.091 NJ | 0.091 | 0.091 NJ | 0.091 NJ | 0.091 NJ | 0.091 NJ | 0.091 | 0.091 NJ | 0.091 NJ |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 1 | 1 | 100 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.16 T | 0.16 T | 0.16 | 0.16 T | 0.16 T | 0.16 T | 0.16 T | 0.16 | 0.16 T | 0.16 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 1 | 1 | 100 | 0.392 | 0.392 | 0.392 | 0.392 | 0.392 | 0.392 | 0.392 | 0.392 | 0.392 | 0.392 |
| Mercury | mg/kg-Wet | 1 | 1 | 100 | 0.0113 | 0.0113 | 0.0113 | 0.0113 | 0.0113 | 0.0113 | 0.0113 | 0.0113 | 0.0113 | 0.0113 |



BZTO104(e)033343

Table 6.4-1. Summary Statistics for Indicator Chemicals in Invertebrate Tissues by Area.

| Analyte | Units | # Analyzed | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| Zinc | mg/kg-Wet | 1 | 1 | 100 | 10.6 | 10.6 | 10.6 | 10.6 | 10.6 | 10.6 | 10.6 | 10.6 | 10.6 | 10.6 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 1 | 1 | 100 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 |
| Benzo(a)pyrene | µg/kg-Wet | 1 | 1 | 100 | 0.26 J | 0.26 J | 0.26 | 0.26 J | 0.26 J | 0.26 J | 0.26 J | 0.26 | 0.26 J | 0.26 J |
| High Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 18.3 JT | 18.3 JT | 18.3 | 18.3 JT | 18.3 JT | 18.3 JT | 18.3 JT | 18.3 | 18.3 JT | 18.3 JT |
| Low Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 11.4 JT | 11.4 JT | 11.4 | 11.4 JT | 11.4 JT | 11.4 JT | 11.4 JT | 11.4 | 11.4 JT | 11.4 JT |
| Total PAHs | µg/kg-Wet | 1 | 1 | 100 | 29.7 JT | 29.7 JT | 29.7 | 29.7 JT | 29.7 JT | 29.7 JT | 29.7 JT | 29.7 | 29.7 JT | 29.7 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 1 | 0 | 0 | | | | | | 0.15 U | 0.15 U | 0.075 | 0.075 U | 0.075 U |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 1 | 0 | 0 | | | | | | 0.62 U | 0.62 U | 0.31 | 0.31 U | 0.31 U |
| Total Chlordanes | µg/kg-Wet | 1 | 1 | 100 | 4.6 JT | 4.6 JT | 4.6 | 4.6 JT | 4.6 JT | 4.6 JT | 4.6 JT | 4.6 | 4.6 JT | 4.6 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 1 | 1 | 100 | 0.69 JT | 0.69 JT | 0.69 | 0.69 JT | 0.69 JT | 0.69 JT | 0.69 JT | 0.69 | 0.69 JT | 0.69 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 1 | 1 | 100 | 5.89 JT | 5.89 JT | 5.89 | 5.89 JT | 5.89 JT | 5.89 JT | 5.89 JT | 5.89 | 5.89 JT | 5.89 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 1 | 1 | 100 | 1.2 JT | 1.2 JT | 1.2 | 1.2 JT | 1.2 JT | 1.2 JT | 1.2 JT | 1.2 | 1.2 JT | 1.2 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 1 | 1 | 100 | 4 JT | 4 JT | 4 | 4 JT | 4 JT | 4 JT | 4 JT | 4 | 4 JT | 4 JT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 1 | 1 | 100 | 85 J | 85 J | 85 | 85 J | 85 J | 85 J | 85 J | 85 | 85 J | 85 J |
| ***Lab-exposed worm (Lumbriculus variegatus--whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 1 | 0 | 0 | | | | | | 5.5 UT | 5.5 UT | 2.75 | 2.75 UT | 2.75 UT |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | µg/kg-Wet | 1 | 0 | 0 | | | | | | 0.072 U | 0.072 U | 0.036 | 0.036 U | 0.036 U |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 1 | 1 | 100 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.057 JT | 0.057 JT | 0.057 | 0.057 JT | 0.057 JT | 0.057 JT | 0.057 JT | 0.057 | 0.057 JT | 0.057 JT |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 1 | 1 | 100 | 1.52 | 1.52 | 1.52 | 1.52 | 1.52 | 1.52 | 1.52 | 1.52 | 1.52 | 1.52 |
| Mercury | mg/kg-Wet | 1 | 1 | 100 | 0.00891 | 0.00891 | 0.00891 | 0.00891 | 0.00891 | 0.00891 | 0.00891 | 0.00891 | 0.00891 | 0.00891 |
| Zinc | mg/kg-Wet | 1 | 1 | 100 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 1 | 1 | 100 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Benzo(a)pyrene | µg/kg-Wet | 1 | 1 | 100 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 |
| High Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 22.3 JT | 22.3 JT | 22.3 | 22.3 JT | 22.3 JT | 22.3 JT | 22.3 JT | 22.3 | 22.3 JT | 22.3 JT |
| Low Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 4.74 JT | 4.74 JT | 4.74 | 4.74 JT | 4.74 JT | 4.74 JT | 4.74 JT | 4.74 | 4.74 JT | 4.74 JT |
| Total PAHs | µg/kg-Wet | 1 | 1 | 100 | 27.04 JT | 27.04 JT | 27 | 27.04 JT | 27.04 JT | 27.04 JT | 27.04 JT | 27 | 27.04 JT | 27.04 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 1 | 1 | 100 | 0.36 J | 0.36 J | 0.36 | 0.36 J | 0.36 J | 0.36 J | 0.36 J | 0.36 | 0.36 J | 0.36 J |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 1 | 0 | 0 | | | | | | 0.31 U | 0.31 U | 0.155 | 0.155 U | 0.155 U |
| Total Chlordanes | µg/kg-Wet | 1 | 0 | 0 | | | | | | 1 UT | 1 UT | 0.5 | 0.5 UT | 0.5 UT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 1 | 1 | 100 | 0.96 JT | 0.96 JT | 0.96 | 0.96 JT | 0.96 JT | 0.96 JT | 0.96 JT | 0.96 | 0.96 JT | 0.96 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 1 | 1 | 100 | 11.3 JT | 11.3 JT | 11.3 | 11.3 JT | 11.3 JT | 11.3 JT | 11.3 JT | 11.3 | 11.3 JT | 11.3 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 1 | 1 | 100 | 6.66 JT | 6.66 JT | 6.66 | 6.66 JT | 6.66 JT | 6.66 JT | 6.66 JT | 6.66 | 6.66 JT | 6.66 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 1 | 1 | 100 | 3.7 T | 3.7 T | 3.7 | 3.7 T | 3.7 T | 3.7 T | 3.7 T | 3.7 | 3.7 T | 3.7 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 1 | 1 | 100 | 66 J | 66 J | 66 | 66 J | 66 J | 66 J | 66 J | 66 | 66 J | 66 J |
| ***Downstream*** | | | | | | | | | | | | | | |
| ***Clam (Corbicula spp.--body without shell)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 1 | 1 | 100 | 118 JT | 118 JT | 118 | 118 JT | 118 JT | 118 JT | 118 JT | 118 | 118 JT | 118 JT |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | µg/kg-Wet | 1 | 1 | 100 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 1 | 1 | 100 | 1.89 | 1.89 | 1.89 | 1.89 | 1.89 | 1.89 | 1.89 | 1.89 | 1.89 | 1.89 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.215 T | 0.215 T | 0.215 | 0.215 T | 0.215 T | 0.215 T | 0.215 T | 0.215 | 0.215 T | 0.215 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 2.89 T | 2.89 T | 2.89 | 2.89 T | 2.89 T | 2.89 T | 2.89 T | 2.89 | 2.89 T | 2.89 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 1 | 1 | 100 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 |
| Mercury | mg/kg-Wet | 1 | 1 | 100 | 0.006 J | 0.006 J | 0.006 | 0.006 J | 0.006 J | 0.006 J | 0.006 J | 0.006 | 0.006 J | 0.006 J |
| Zinc | mg/kg-Wet | 1 | 1 | 100 | 33.2 | 33.2 | 33.2 | 33.2 | 33.2 | 33.2 | 33.2 | 33.2 | 33.2 | 33.2 |
| **PAHs** | | | | | | | | | | | | | | |



BZTO104(e)033344

Table 6.4-1. Summary Statistics for Indicator Chemicals in Invertebrate Tissues by Area.

| Analyte | Units | # Analyzed | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| Benzo(a)anthracene | µg/kg-Wet | 1 | 1 | 100 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Benzo(a)pyrene | µg/kg-Wet | 1 | 1 | 100 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 |
| High Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 268 T | 268 T | 268 | 268 T | 268 T | 268 T | 268 T | 268 | 268 T | 268 T |
| Low Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 32.6 T | 32.6 T | 32.6 | 32.6 T | 32.6 T | 32.6 T | 32.6 T | 32.6 | 32.6 T | 32.6 T |
| Total PAHs | µg/kg-Wet | 1 | 1 | 100 | 300 T | 300 T | 300 | 300 T | 300 T | 300 T | 300 T | 300 | 300 T | 300 T |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 1 | 1 | 100 | 0.171 J | 0.171 J | 0.171 | 0.171 J | 0.171 J | 0.171 J | 0.171 J | 0.171 | 0.171 J | 0.171 J |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 1 | 0 | 0 | | | | | | 0.0418 U | 0.0418 U | 0.0209 | 0.0209 U | 0.0209 U |
| Total Chlordanes | µg/kg-Wet | 1 | 1 | 100 | 2.8 JT | 2.8 JT | 2.8 | 2.8 JT | 2.8 JT | 2.8 JT | 2.8 JT | 2.8 | 2.8 JT | 2.8 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 1 | 1 | 100 | 9.49 T | 9.49 T | 9.49 | 9.49 T | 9.49 T | 9.49 T | 9.49 T | 9.49 | 9.49 T | 9.49 T |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 1 | 1 | 100 | 23.5 T | 23.5 T | 23.5 | 23.5 T | 23.5 T | 23.5 T | 23.5 T | 23.5 | 23.5 T | 23.5 T |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 1 | 1 | 100 | 12.4 T | 12.4 T | 12.4 | 12.4 T | 12.4 T | 12.4 T | 12.4 T | 12.4 | 12.4 T | 12.4 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 1 | 1 | 100 | 1.61 T | 1.61 T | 1.61 | 1.61 T | 1.61 T | 1.61 T | 1.61 T | 1.61 | 1.61 T | 1.61 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 1 | 0 | 0 | | | | | | 53 U | 53 U | 26.5 | 26.5 U | 26.5 U |
| ***Lab-exposed clam (Corbicula fluminea--body without shell)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 1 | 1 | 100 | 24.9 JT | 24.9 JT | 24.9 | 24.9 JT | 24.9 JT | 24.9 JT | 24.9 JT | 24.9 | 24.9 JT | 24.9 JT |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | µg/kg-Wet | 1 | 0 | 0 | | | | | | 1.4 U | 1.4 U | 0.7 | 0.7 U | 0.7 U |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 1 | 1 | 100 | 0.769 | 0.769 | 0.769 | 0.769 | 0.769 | 0.769 | 0.769 | 0.769 | 0.769 | 0.769 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.0402 T | 0.0402 T | 0.0402 | 0.0402 T | 0.0402 T | 0.0402 T | 0.0402 T | 0.0402 | 0.0402 T | 0.0402 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.315 T | 0.315 T | 0.315 | 0.315 T | 0.315 T | 0.315 T | 0.315 T | 0.315 | 0.315 T | 0.315 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 1 | 1 | 100 | 0.458 | 0.458 | 0.458 | 0.458 | 0.458 | 0.458 | 0.458 | 0.458 | 0.458 | 0.458 |
| Mercury | mg/kg-Wet | 1 | 1 | 100 | 0.0096 | 0.0096 | 0.0096 | 0.0096 | 0.0096 | 0.0096 | 0.0096 | 0.0096 | 0.0096 | 0.0096 |
| Zinc | mg/kg-Wet | 1 | 1 | 100 | 13.1 | 13.1 | 13.1 | 13.1 | 13.1 | 13.1 | 13.1 | 13.1 | 13.1 | 13.1 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 1 | 1 | 100 | 0.78 | 0.78 | 0.78 | 0.78 | 0.78 | 0.78 | 0.78 | 0.78 | 0.78 | 0.78 |
| Benzo(a)pyrene | µg/kg-Wet | 1 | 1 | 100 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 |
| High Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 20 JT | 20 JT | 20 | 20 JT | 20 JT | 20 JT | 20 JT | 20 | 20 JT | 20 JT |
| Low Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 8.44 JT | 8.44 JT | 8.44 | 8.44 JT | 8.44 JT | 8.44 JT | 8.44 JT | 8.44 | 8.44 JT | 8.44 JT |
| Total PAHs | µg/kg-Wet | 1 | 1 | 100 | 28.5 JT | 28.5 JT | 28.5 | 28.5 JT | 28.5 JT | 28.5 JT | 28.5 JT | 28.5 | 28.5 JT | 28.5 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 1 | 1 | 100 | 0.0189 J | 0.0189 J | 0.0189 | 0.0189 J | 0.0189 J | 0.0189 J | 0.0189 J | 0.0189 | 0.0189 J | 0.0189 J |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 1 | 0 | 0 | | | | | | 0.0415 U | 0.0415 U | 0.0208 | 0.02075 U | 0.02075 U |
| Total Chlordanes | µg/kg-Wet | 1 | 1 | 100 | 2.13 JT | 2.13 JT | 2.13 | 2.13 JT | 2.13 JT | 2.13 JT | 2.13 JT | 2.13 | 2.13 JT | 2.13 JT |
| Total Endosulfan | µg/kg-Wet | 1 | 0 | 0 | | | | | | 0.0616 UT | 0.0616 UT | 0.0308 | 0.0308 UT | 0.0308 UT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 1 | 1 | 100 | 0.766 JT | 0.766 JT | 0.766 | 0.766 JT | 0.766 JT | 0.766 JT | 0.766 JT | 0.766 | 0.766 JT | 0.766 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 1 | 1 | 100 | 1.63 JT | 1.63 JT | 1.63 | 1.63 JT | 1.63 JT | 1.63 JT | 1.63 JT | 1.63 | 1.63 JT | 1.63 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 1 | 1 | 100 | 0.77 T | 0.77 T | 0.77 | 0.77 T | 0.77 T | 0.77 T | 0.77 T | 0.77 | 0.77 T | 0.77 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 1 | 1 | 100 | 0.0945 JT | 0.0945 JT | 0.0945 | 0.0945 JT | 0.0945 JT | 0.0945 JT | 0.0945 JT | 0.0945 | 0.0945 JT | 0.0945 JT |
| **Phenols** | | | | | | | | | | | | | | |
| Pentachlorophenol | µg/kg-Wet | 1 | 0 | 0 | | | | | | 31 U | 31 U | 15.5 | 15.5 U | 15.5 U |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 1 | 1 | 100 | 100 J | 100 J | 100 | 100 J | 100 J | 100 J | 100 J | 100 | 100 J | 100 J |
| ***Lab-exposed worm (Lumbriculus variegatus--whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 1 | 1 | 100 | 296 JT | 296 JT | 296 | 296 JT | 296 JT | 296 JT | 296 JT | 296 | 296 JT | 296 JT |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | µg/kg-Wet | 1 | 0 | 0 | | | | | | 1.2 U | 1.2 U | 0.6 | 0.6 U | 0.6 U |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 1 | 1 | 100 | 2.34 | 2.34 | 2.34 | 2.34 | 2.34 | 2.34 | 2.34 | 2.34 | 2.34 | 2.34 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 2.01 JT | 2.01 JT | 2.01 | 2.01 JT | 2.01 JT | 2.01 JT | 2.01 JT | 2.01 | 2.01 JT | 2.01 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 8.45 JT | 8.45 JT | 8.45 | 8.45 JT | 8.45 JT | 8.45 JT | 8.45 JT | 8.45 | 8.45 JT | 8.45 JT |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 1 | 1 | 100 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| Mercury | mg/kg-Wet | 1 | 1 | 100 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 |
| Zinc | mg/kg-Wet | 1 | 1 | 100 | 27.7 | 27.7 | 27.7 | 27.7 | 27.7 | 27.7 | 27.7 | 27.7 | 27.7 | 27.7 |
| **PAHs** | | | | | | | | | | | | | | |



BZTO104(e)033345

Table 6.4-1. Summary Statistics for Indicator Chemicals in Invertebrate Tissues by Area.

| Analyte | Units | # Analyzed | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| Benzo(a)anthracene | µg/kg-Wet | 1 | 1 | 100 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Benzo(a)pyrene | µg/kg-Wet | 1 | 1 | 100 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| High Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 296 T | 296 T | 296 | 296 T | 296 T | 296 T | 296 T | 296 | 296 T | 296 T |
| Low Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 33 T | 33 T | 33 | 33 T | 33 T | 33 T | 33 T | 33 | 33 T | 33 T |
| Total PAHs | µg/kg-Wet | 1 | 1 | 100 | 329 T | 329 T | 329 | 329 T | 329 T | 329 T | 329 T | 329 | 329 T | 329 T |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 1 | 1 | 100 | 0.335 J | 0.335 J | 0.335 | 0.335 J | 0.335 J | 0.335 J | 0.335 J | 0.335 | 0.335 J | 0.335 J |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 1 | 0 | 0 | | | | | | 0.0413 U | 0.0413 U | 0.0207 | 0.02065 U | 0.02065 U |
| Total Chlordanes | µg/kg-Wet | 1 | 1 | 100 | 3.4 JT | 3.4 JT | 3.4 | 3.4 JT | 3.4 JT | 3.4 JT | 3.4 JT | 3.4 | 3.4 JT | 3.4 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 1 | 1 | 100 | 15.5 T | 15.5 T | 15.5 | 15.5 T | 15.5 T | 15.5 T | 15.5 T | 15.5 | 15.5 T | 15.5 T |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 1 | 1 | 100 | 41 JT | 41 JT | 41 | 41 JT | 41 JT | 41 JT | 41 JT | 41 | 41 JT | 41 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 1 | 1 | 100 | 25.3 T | 25.3 T | 25.3 | 25.3 T | 25.3 T | 25.3 T | 25.3 T | 25.3 | 25.3 T | 25.3 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 1 | 1 | 100 | 0.163 JT | 0.163 JT | 0.163 | 0.163 JT | 0.163 JT | 0.163 JT | 0.163 JT | 0.163 | 0.163 JT | 0.163 JT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 1 | 1 | 100 | 140 J | 140 J | 140 | 140 J | 140 J | 140 J | 140 J | 140 | 140 J | 140 J |
| ***Multnomah Channel*** | | | | | | | | | | | | | | |
| ***Clam (Corbicula spp.--body without shell)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 1 | 1 | 100 | 48.6 JT | 48.6 JT | 48.6 | 48.6 JT | 48.6 JT | 48.6 JT | 48.6 JT | 48.6 | 48.6 JT | 48.6 JT |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | µg/kg-Wet | 1 | 1 | 100 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 1 | 1 | 100 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.0983 T | 0.0983 T | 0.0983 | 0.0983 T | 0.0983 T | 0.0983 T | 0.0983 T | 0.0983 | 0.0983 T | 0.0983 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 1.02 T | 1.02 T | 1.02 | 1.02 T | 1.02 T | 1.02 T | 1.02 T | 1.02 | 1.02 T | 1.02 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 1 | 1 | 100 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 | 1.03 |
| Mercury | mg/kg-Wet | 1 | 1 | 100 | 0.008 J | 0.008 J | 0.008 | 0.008 J | 0.008 J | 0.008 J | 0.008 J | 0.008 | 0.008 J | 0.008 J |
| Zinc | mg/kg-Wet | 1 | 1 | 100 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 | 30.5 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 1 | 1 | 100 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| Benzo(a)pyrene | µg/kg-Wet | 1 | 1 | 100 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| High Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 467 T | 467 T | 467 | 467 T | 467 T | 467 T | 467 T | 467 | 467 T | 467 T |
| Low Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 84.1 T | 84.1 T | 84.1 | 84.1 T | 84.1 T | 84.1 T | 84.1 T | 84.1 | 84.1 T | 84.1 T |
| Total PAHs | µg/kg-Wet | 1 | 1 | 100 | 551 T | 551 T | 551 | 551 T | 551 T | 551 T | 551 T | 551 | 551 T | 551 T |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 1 | 1 | 100 | 0.144 J | 0.144 J | 0.144 | 0.144 J | 0.144 J | 0.144 J | 0.144 J | 0.144 | 0.144 J | 0.144 J |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 1 | 0 | 0 | | | | | | 0.0418 U | 0.0418 U | 0.0209 | 0.0209 U | 0.0209 U |
| Total Chlordanes | µg/kg-Wet | 1 | 1 | 100 | 2.41 JT | 2.41 JT | 2.41 | 2.41 JT | 2.41 JT | 2.41 JT | 2.41 JT | 2.41 | 2.41 JT | 2.41 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 1 | 1 | 100 | 10.5 T | 10.5 T | 10.5 | 10.5 T | 10.5 T | 10.5 T | 10.5 T | 10.5 | 10.5 T | 10.5 T |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 1 | 1 | 100 | 22.8 T | 22.8 T | 22.8 | 22.8 T | 22.8 T | 22.8 T | 22.8 T | 22.8 | 22.8 T | 22.8 T |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 1 | 1 | 100 | 10.5 T | 10.5 T | 10.5 | 10.5 T | 10.5 T | 10.5 T | 10.5 T | 10.5 | 10.5 T | 10.5 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 1 | 1 | 100 | 1.74 T | 1.74 T | 1.74 | 1.74 T | 1.74 T | 1.74 T | 1.74 T | 1.74 | 1.74 T | 1.74 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 1 | 0 | 0 | | | | | | 53 U | 53 U | 26.5 | 26.5 U | 26.5 U |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 1 | 1 | 100 | 15.8 JT | 15.8 JT | 15.8 | 15.8 JT | 15.8 JT | 15.8 JT | 15.8 JT | 15.8 | 15.8 JT | 15.8 JT |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | µg/kg-Wet | 1 | 0 | 0 | | | | | | 1 U | 1 U | 0.5 | 0.5 U | 0.5 U |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 1 | 1 | 100 | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.000238 T | 0.000238 T | 0.000238 | 0.000238 T | 0.000238 T | 0.000238 T | 0.000238 T | 0.000238 | 0.000238 T | 0.000238 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.444 T | 0.444 T | 0.444 | 0.444 T | 0.444 T | 0.444 T | 0.444 T | 0.444 | 0.444 T | 0.444 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 1 | 1 | 100 | 0.411 | 0.411 | 0.411 | 0.411 | 0.411 | 0.411 | 0.411 | 0.411 | 0.411 | 0.411 |
| Mercury | mg/kg-Wet | 1 | 1 | 100 | 0.0091 | 0.0091 | 0.0091 | 0.0091 | 0.0091 | 0.0091 | 0.0091 | 0.0091 | 0.0091 | 0.0091 |
| Zinc | mg/kg-Wet | 1 | 1 | 100 | 12.2 | 12.2 | 12.2 | 12.2 | 12.2 | 12.2 | 12.2 | 12.2 | 12.2 | 12.2 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 1 | 1 | 100 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Benzo(a)pyrene | µg/kg-Wet | 1 | 1 | 100 | 0.57 | 0.57 | 0.57 | 0.57 | 0.57 | 0.57 | 0.57 | 0.57 | 0.57 | 0.57 |



BZTO104(e)033346

Table 6.4-1. Summary Statistics for Indicator Chemicals in Invertebrate Tissues by Area.

| Analyte | Units | # Analyzed | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| High Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 20.6 JT | 20.6 JT | 20.6 | 20.6 JT | 20.6 JT | 20.6 JT | 20.6 JT | 20.6 | 20.6 JT | 20.6 JT |
| Low Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 6.85 JT | 6.85 JT | 6.85 | 6.85 JT | 6.85 JT | 6.85 JT | 6.85 JT | 6.85 | 6.85 JT | 6.85 JT |
| Total PAHs | µg/kg-Wet | 1 | 1 | 100 | 27.5 JT | 27.5 JT | 27.5 | 27.5 JT | 27.5 JT | 27.5 JT | 27.5 JT | 27.5 | 27.5 JT | 27.5 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 1 | 1 | 100 | 0.0118 J | 0.0118 J | 0.0118 | 0.0118 J | 0.0118 J | 0.0118 J | 0.0118 J | 0.0118 | 0.0118 J | 0.0118 J |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 1 | 1 | 100 | 0.00343 J | 0.00343 J | 0.00343 | 0.00343 J | 0.00343 J | 0.00343 J | 0.00343 J | 0.00343 | 0.00343 J | 0.00343 J |
| Total Chlordanes | µg/kg-Wet | 1 | 1 | 100 | 1.92 JT | 1.92 JT | 1.92 | 1.92 JT | 1.92 JT | 1.92 JT | 1.92 JT | 1.92 | 1.92 JT | 1.92 JT |
| Total Endosulfan | µg/kg-Wet | 1 | 0 | 0 | | | | | | 0.119 UT | 0.119 UT | 0.0595 | 0.0595 UT | 0.0595 UT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 1 | 1 | 100 | 0.575 JT | 0.575 JT | 0.575 | 0.575 JT | 0.575 JT | 0.575 JT | 0.575 JT | 0.575 | 0.575 JT | 0.575 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 1 | 1 | 100 | 1.23 JT | 1.23 JT | 1.23 | 1.23 JT | 1.23 JT | 1.23 JT | 1.23 JT | 1.23 | 1.23 JT | 1.23 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 1 | 1 | 100 | 0.55 JT | 0.55 JT | 0.55 | 0.55 JT | 0.55 JT | 0.55 JT | 0.55 JT | 0.55 | 0.55 JT | 0.55 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 1 | 1 | 100 | 0.106 JT | 0.106 JT | 0.106 | 0.106 JT | 0.106 JT | 0.106 JT | 0.106 JT | 0.106 | 0.106 JT | 0.106 JT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 1 | 1 | 100 | 120 J | 120 J | 120 | 120 J | 120 J | 120 J | 120 J | 120 | 120 J | 120 J |
| ***Lab-exposed worm (Lumbriculus variegatus--whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 1 | 1 | 100 | 29.8 JT | 29.8 JT | 29.8 | 29.8 JT | 29.8 JT | 29.8 JT | 29.8 JT | 29.8 | 29.8 JT | 29.8 JT |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | µg/kg-Wet | 1 | 1 | 100 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 1 | 1 | 100 | 2.07 | 2.07 | 2.07 | 2.07 | 2.07 | 2.07 | 2.07 | 2.07 | 2.07 | 2.07 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 1.43 JT | 1.43 JT | 1.43 | 1.43 JT | 1.43 JT | 1.43 JT | 1.43 JT | 1.43 | 1.43 JT | 1.43 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.902 JT | 0.902 JT | 0.902 | 0.902 JT | 0.902 JT | 0.902 JT | 0.902 JT | 0.902 | 0.902 JT | 0.902 JT |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 1 | 1 | 100 | 0.469 | 0.469 | 0.469 | 0.469 | 0.469 | 0.469 | 0.469 | 0.469 | 0.469 | 0.469 |
| Mercury | mg/kg-Wet | 1 | 1 | 100 | 0.0034 | 0.0034 | 0.0034 | 0.0034 | 0.0034 | 0.0034 | 0.0034 | 0.0034 | 0.0034 | 0.0034 |
| Zinc | mg/kg-Wet | 1 | 1 | 100 | 26.1 | 26.1 | 26.1 | 26.1 | 26.1 | 26.1 | 26.1 | 26.1 | 26.1 | 26.1 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 1 | 1 | 100 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 |
| Benzo(a)pyrene | µg/kg-Wet | 1 | 1 | 100 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 |
| High Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 475 T | 475 T | 475 | 475 T | 475 T | 475 T | 475 T | 475 | 475 T | 475 T |
| Low Molecular Weight PAH | µg/kg-Wet | 1 | 1 | 100 | 41.4 JT | 41.4 JT | 41.4 | 41.4 JT | 41.4 JT | 41.4 JT | 41.4 JT | 41.4 | 41.4 JT | 41.4 JT |
| Total PAHs | µg/kg-Wet | 1 | 1 | 100 | 517 JT | 517 JT | 517 | 517 JT | 517 JT | 517 JT | 517 JT | 517 | 517 JT | 517 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 1 | 1 | 100 | 0.073 J | 0.073 J | 0.073 | 0.073 J | 0.073 J | 0.073 J | 0.073 J | 0.073 | 0.073 J | 0.073 J |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 1 | 0 | 0 | | | | | | 0.003 U | 0.003 U | 0.0015 | 0.0015 U | 0.0015 U |
| Total Chlordanes | µg/kg-Wet | 1 | 1 | 100 | 1.89 JT | 1.89 JT | 1.89 | 1.89 JT | 1.89 JT | 1.89 JT | 1.89 JT | 1.89 | 1.89 JT | 1.89 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 1 | 1 | 100 | 11.2 T | 11.2 T | 11.2 | 11.2 T | 11.2 T | 11.2 T | 11.2 T | 11.2 | 11.2 T | 11.2 T |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 1 | 1 | 100 | 24.4 JT | 24.4 JT | 24.4 | 24.4 JT | 24.4 JT | 24.4 JT | 24.4 JT | 24.4 | 24.4 JT | 24.4 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 1 | 1 | 100 | 11.7 JT | 11.7 JT | 11.7 | 11.7 JT | 11.7 JT | 11.7 JT | 11.7 JT | 11.7 | 11.7 JT | 11.7 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 1 | 1 | 100 | 1.43 JT | 1.43 JT | 1.43 | 1.43 JT | 1.43 JT | 1.43 JT | 1.43 JT | 1.43 | 1.43 JT | 1.43 JT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 1 | 1 | 100 | 130 J | 130 J | 130 | 130 J | 130 J | 130 J | 130 J | 130 | 130 J | 130 J |

**Notes:**

[a] - This value was selected from an ascending ranked list of all results. Where n = the number of samples, the actual sample result corresponding to the rand of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

J - The associated numerical value is an estimated quantity.

N - Presumptive evidence of presence of material; identification of the compound is not definitive.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033347

Table 6.4-2. Summary Statistics for Indicator Chemicals for Fish Tissues by Area.

| Analyte | Units | # Analyzed | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Study Area*** | | | | | | | | | | | | | | |
| ***Black crappie (fillet without skin)*** | | | | | | | | | | | | | | |
| **Metals** | | | | | | | | | | | | | | |
| Mercury | mg/kg-Wet | 4 | 4 | 100 | 0.067 | 0.101 | 0.086 | 0.086 | 0.09 | 0.067 | 0.101 | 0.086 | 0.086 | 0.09 |
| ***Black crappie (fillet)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 4 | 4 | 100 | 19.6 T | 32 T | 24.1 | 22.2 T | 22.6 T | 19.6 T | 32 T | 24.1 | 22.2 T | 22.6 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 4 | 4 | 100 | 0.99 | 1.8 | 1.4 | 1.2 | 1.6 | 0.99 | 1.8 | 1.4 | 1.2 | 1.6 |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 4 | 4 | 100 | 0.1 J | 0.18 T | 0.14 | 0.13 | 0.15 | 0.1 J | 0.18 T | 0.14 | 0.13 | 0.15 |
| Zinc | mg/kg-Wet | 4 | 4 | 100 | 7.45 | 9.03 | 8.23 | 7.75 T | 8.69 | 7.45 | 9.03 | 8.23 | 7.75 T | 8.69 |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 4 | 0 | 0 | | | | | | 1 U | 1 U | 0.5 | 0.5 U | 0.5 U |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 4 | 0 | 0 | | | | | | 1 U | 1 U | 0.5 | 0.5 U | 0.5 U |
| Total Chlordanes | µg/kg-Wet | 4 | 1 | 25 | 1.1 JT | 1.1 JT | 1.1 | 1.1 JT | 1.1 JT | 1.1 JT | 1.6 UT | 0.813 | 0.75 UT | 0.8 UT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 4 | 4 | 100 | 1.8 JT | 2.7 JT | 2.23 | 2 T | 2.4 JT | 1.8 JT | 2.7 JT | 2.23 | 2 T | 2.4 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 4 | 4 | 100 | 8.8 JT | 13.7 JT | 11.4 | 10.4 JT | 12.5 JT | 8.8 JT | 13.7 JT | 11.4 | 10.4 JT | 12.5 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 4 | 4 | 100 | 5.5 T | 7.8 T | 6.73 | 6.5 T | 7.1 T | 5.5 T | 7.8 T | 6.73 | 6.5 T | 7.1 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 4 | 4 | 100 | 1.5 JT | 3.4 JT | 2.4 | 1.5 JT | 3.2 JT | 1.5 JT | 3.4 JT | 2.4 | 1.5 JT | 3.2 JT |
| ***Black crappie (whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 4 | 4 | 100 | 85 T | 250 T | 134 | 90 T | 109 T | 85 T | 250 T | 134 | 90 T | 109 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 4 | 4 | 100 | 3.33 T | 7.5 T | 5.26 | 3.7 | 6.5 | 3.33 T | 7.5 T | 5.26 | 3.7 | 6.5 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 4 | 4 | 100 | 1.16 JT | 1.33 JT | 1.24 | 1.22 T | 1.26 T | 1.16 JT | 1.33 JT | 1.24 | 1.22 T | 1.26 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 4 | 4 | 100 | 2.54 T | 5.26 T | 3.38 | 2.77 JT | 2.93 T | 2.54 T | 5.26 T | 3.38 | 2.77 JT | 2.93 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 4 | 4 | 100 | 0.185 T | 0.42 | 0.279 | 0.22 | 0.29 | 0.185 T | 0.42 | 0.279 | 0.22 | 0.29 |
| Mercury | mg/kg-Wet | 4 | 4 | 100 | 0.033 | 0.044 | 0.0394 | 0.0365 T | 0.044 | 0.033 | 0.044 | 0.0394 | 0.0365 T | 0.044 |
| Zinc | mg/kg-Wet | 4 | 4 | 100 | 14.2 T | 16.8 | 15.4 | 15.1 | 15.5 | 14.2 T | 16.8 | 15.4 | 15.1 | 15.5 |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg-Wet | 4 | 4 | 100 | 103 JT | 301 JT | 164 | 106 JT | 146 JT | 103 JT | 301 JT | 164 | 106 JT | 146 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 4 | 0 | 0 | | | | | | 1 U | 1.3 U | 0.538 | 0.5 UJ | 0.5 UT |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 4 | 0 | 0 | | | | | | 1.5 UJ | 3.8 U | 1.14 | 0.75 UT | 1.15 UJ |
| Total Chlordanes | µg/kg-Wet | 4 | 4 | 100 | 2.1 JT | 9.2 JT | 6.33 | 5.1 T | 8.9 JT | 2.1 JT | 9.2 JT | 6.33 | 5.1 T | 8.9 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 4 | 4 | 100 | 7.9 JT | 18.5 JT | 12.1 | 11 JT | 11 JT | 7.9 JT | 18.5 JT | 12.1 | 11 JT | 11 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 4 | 4 | 100 | 59.2 JT | 99.6 JT | 80.2 | 63 JT | 99 JT | 59.2 JT | 99.6 JT | 80.2 | 63 JT | 99 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 4 | 4 | 100 | 37 JT | 80.5 T | 55.6 | 38 T | 67 T | 37 JT | 80.5 T | 55.6 | 38 T | 67 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 4 | 3 | 75 | 13.3 JT | 21.6 JT | 16.6 | 15 JT | 15 JT | 6.9 UT | 21.6 JT | 13.3 | 13.3 JT | 15 JT |
| ***Brown bullhead (fillet without skin)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 6 | 6 | 100 | 37 T | 1300 JT | 354 | 56 T | 560 T | 37 T | 1300 JT | 354 | 56 T | 560 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 6 | 6 | 100 | 0.93 | 1.3 | 1.08 | 0.97 T | 1.2 T | 0.93 | 1.3 | 1.08 | 0.97 T | 1.2 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 6 | 6 | 100 | 0.02 J | 0.02 J | 0.02 | 0.02 J | 0.02 J | 0.02 J | 0.02 J | 0.02 | 0.02 J | 0.02 J |
| Mercury | mg/kg-Wet | 6 | 6 | 100 | 0.035 | 0.094 | 0.0608 | 0.057 | 0.074 | 0.035 | 0.094 | 0.0608 | 0.057 | 0.074 |
| Zinc | mg/kg-Wet | 6 | 6 | 100 | 3.96 J | 6.49 J | 5.23 | 5.32 J | 5.51 J | 3.96 J | 6.49 J | 5.23 | 5.32 J | 5.51 J |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 6 | 0 | 0 | | | | | | 33 UT | 76 UT | 20.1 | 16.5 UT | 16.5 UT |
| Benzo(a)pyrene | µg/kg-Wet | 6 | 0 | 0 | | | | | | 33 UT | 80 UT | 24.1 | 16.5 UT | 38.5 UT |
| High Molecular Weight PAH | µg/kg-Wet | 6 | 1 | 16.7 | 110 T | 110 T | 110 | 110 T | 110 T | 33 UT | 110 T | 43.8 | 16.5 UT | 55 UT |
| Low Molecular Weight PAH | µg/kg-Wet | 6 | 2 | 33.3 | 110 JT | 140 T | 125 | 110 JT | 110 JT | 33 UT | 140 T | 60.7 | 33 UT | 110 JT |
| Total PAHs | µg/kg-Wet | 6 | 2 | 33.3 | 110 JT | 250 T | 180 | 110 JT | 110 JT | 33 UT | 250 T | 79 | 33 UT | 110 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 6 | 0 | 0 | | | | | | 1 U | 13 UT | 1.75 | 0.5 U | 2 UT |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 6 | 0 | 0 | | | | | | 1 UJ | 8.5 UT | 1.41 | 0.5 UJ | 2 UT |
| Total Chlordanes | µg/kg-Wet | 6 | 4 | 66.7 | 1.2 JT | 1.6 JT | 1.43 | 1.3 T | 1.6 JT | 1.2 JT | 20 UT | 2.95 | 1.6 JT | 2 UT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 6 | 4 | 66.7 | 2.7 JT | 3.8 JT | 3.13 | 2.8 JT | 3.2 JT | 2.7 JT | 8.6 UT | 3.52 | 3.2 JT | 4.3 UT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 6 | 6 | 100 | 12 JT | 26.5 JT | 20.9 | 20.9 JT | 25.9 JT | 12 JT | 26.5 JT | 20.9 | 20.9 JT | 25.9 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 6 | 6 | 100 | 6.6 JT | 26.5 JT | 13.5 | 11 T | 15 JT | 6.6 JT | 26.5 JT | 13.5 | 11 T | 15 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 6 | 4 | 66.7 | 5.6 JT | 11.5 JT | 7.98 | 7.1 JT | 7.7 JT | 5.6 JT | 11.5 JT | 6.42 | 5.6 JT | 7.7 JT |



BZTO104(e)033349

Table 6.4-2. Summary Statistics for Indicator Chemicals for Fish Tissues by Area.

| Analyte | Units | # Analyzed | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Study Area*** | | | | | | | | | | | | | | |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 6 | 1 | 16.7 | 100 T | 100 T | 100 | 100 T | 100 T | 100 T | 220 UT | 68.3 | 50 UT | 100 T |
| ***Brown bullhead (whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 6 | 6 | 100 | 67 T | 1700 T | 404 | 125 T | 314 JT | 67 T | 1700 T | 404 | 125 T | 314 JT |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 6 | 6 | 100 | 1.5 T | 3.8 | 2.43 | 2.3 | 2.6 | 1.5 T | 3.8 | 2.43 | 2.3 | 2.6 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 6 | 6 | 100 | 1.44 T | 2.43 JT | 1.76 | 1.66 T | 1.85 JT | 1.44 T | 2.43 JT | 1.76 | 1.66 T | 1.85 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 6 | 6 | 100 | 2.21 T | 16.5 T | 6.82 | 4.37 T | 8.31 T | 2.21 T | 16.5 T | 6.82 | 4.37 T | 8.31 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 6 | 6 | 100 | 0.04 J | 0.08 J | 0.0558 | 0.05 J | 0.06 J | 0.04 J | 0.08 J | 0.0558 | 0.05 J | 0.06 J |
| Mercury | mg/kg-Wet | 6 | 6 | 100 | 0.025 T | 0.054 | 0.0367 | 0.031 | 0.046 | 0.025 T | 0.054 | 0.0367 | 0.031 | 0.046 |
| Zinc | mg/kg-Wet | 6 | 6 | 100 | 12.7 | 15.6 | 14.1 | 14.1 | 14.9 | 12.7 | 15.6 | 14.1 | 14.1 | 14.9 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 6 | 0 | 0 | | | | | | 33 UT | 33 UT | 16.5 | 16.5 UT | 16.5 UT |
| Benzo(a)pyrene | µg/kg-Wet | 6 | 0 | 0 | | | | | | 33 UT | 33 UT | 16.5 | 16.5 UT | 16.5 UT |
| High Molecular Weight PAH | µg/kg-Wet | 6 | 1 | 16.7 | 40 T | 40 T | 40 | 40 T | 40 T | 33 UT | 49 UT | 22.8 | 16.5 UT | 24.5 UT |
| Low Molecular Weight PAH | µg/kg-Wet | 6 | 1 | 16.7 | 60 T | 60 T | 60 | 60 T | 60 T | 33 UT | 60 T | 23.8 | 16.5 UT | 16.5 UT |
| Total PAHs | µg/kg-Wet | 6 | 1 | 16.7 | 100 T | 100 T | 100 | 100 T | 100 T | 33 UT | 100 T | 32.8 | 16.5 UT | 24.5 UT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg-Wet | 6 | 6 | 100 | 83.3 JT | 1950 JT | 511 | 236 JT | 354 JT | 83.3 JT | 1950 JT | 511 | 236 JT | 354 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 6 | 0 | 0 | | | | | | 1 U | 13 UT | 1.75 | 0.5 U | 2 U |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 6 | 0 | 0 | | | | | | 1 UJ | 8.5 UT | 1.9 | 1.15 UJ | 3.4 U |
| Total Chlordanes | µg/kg-Wet | 6 | 4 | 66.7 | 1.8 JT | 67 T | 20 | 3.7 JT | 7.3 JT | 1.8 JT | 67 T | 15.7 | 4.4 UJT | 10 UT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 6 | 6 | 100 | 6.9 JT | 25 JT | 11.4 | 8 JT | 12 T | 6.9 JT | 25 JT | 11.4 | 8 JT | 12 T |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 6 | 6 | 100 | 37.5 JT | 141 JT | 85.6 | 87.4 JT | 102 JT | 37.5 JT | 141 JT | 85.6 | 87.4 JT | 102 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 6 | 6 | 100 | 29.5 JT | 70 T | 47.4 | 42 JT | 58 T | 29.5 JT | 70 T | 47.4 | 42 JT | 58 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 6 | 5 | 83.3 | 8.6 JT | 58 JT | 32.2 | 33.1 JT | 38 T | 6.9 UT | 58 JT | 27.4 | 23.1 JT | 38 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 6 | 1 | 16.7 | 2700 T | 2700 T | 2700 | 2700 T | 2700 T | 98 UT | 2700 T | 491 | 49.5 UT | 50 UT |
| ***Carp (fillet without skin)*** | | | | | | | | | | | | | | |
| **Metals** | | | | | | | | | | | | | | |
| Mercury | mg/kg-Wet | 6 | 6 | 100 | 0.074 | 0.191 T | 0.127 | 0.098 | 0.185 | 0.074 | 0.191 T | 0.127 | 0.098 | 0.185 |
| ***Carp (fillet)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 6 | 6 | 100 | 350 T | 1200 JT | 812 | 670 T | 1200 JT | 350 T | 1200 JT | 812 | 670 T | 1200 JT |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 6 | 6 | 100 | 3.3 T | 8 T | 4.63 | 4.27 T | 4.5 T | 3.3 T | 8 T | 4.63 | 4.27 T | 4.5 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 6 | 6 | 100 | 0.05 J | 0.16 | 0.0967 | 0.08 JT | 0.12 J | 0.05 J | 0.16 | 0.0967 | 0.08 JT | 0.12 J |
| Zinc | mg/kg-Wet | 6 | 6 | 100 | 17.4 J | 29.8 J | 23.3 | 23.8 J | 24.6 JT | 17.4 J | 29.8 J | 23.3 | 23.8 J | 24.6 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 6 | 0 | 0 | | | | | | 4 UT | 13 UT | 3.23 | 2 UT | 4.9 UT |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 6 | 0 | 0 | | | | | | 4 UJT | 8.5 UT | 2.91 | 2 UT | 4.25 UT |
| Total Chlordanes | µg/kg-Wet | 6 | 1 | 16.7 | 4.3 JT | 4.3 JT | 4.3 | 4.3 JT | 4.3 JT | 4.3 JT | 20 UJT | 6.13 | 4.9 UT | 8.5 UT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 6 | 6 | 100 | 23 JT | 79.5 JT | 42.5 | 33.5 JT | 54.5 JT | 23 JT | 79.5 JT | 42.5 | 33.5 JT | 54.5 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 6 | 6 | 100 | 99.5 JT | 173 JT | 148 | 138 JT | 173 JT | 99.5 JT | 173 JT | 148 | 138 JT | 173 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 6 | 6 | 100 | 73 JT | 135 JT | 94.8 | 87 JT | 98.5 JT | 73 JT | 135 JT | 94.8 | 87 JT | 98.5 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 6 | 1 | 16.7 | 63 JT | 63 JT | 63 | 63 JT | 63 JT | 6.9 UT | 63 JT | 13.4 | 3.45 UT | 3.45 UT |
| ***Carp (whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 6 | 6 | 100 | 230 T | 6500 JT | 1640 | 690 T | 1100 T | 230 T | 6500 JT | 1640 | 690 T | 1100 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 6 | 6 | 100 | 5.6 T | 13 T | 7.88 | 6.9 T | 8 T | 5.6 T | 13 T | 7.88 | 6.9 T | 8 T |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 6 | 6 | 100 | 2.17 T | 11.1 T | 4.79 | 3.39 T | 5.66 T | 2.17 T | 11.1 T | 4.79 | 3.39 T | 5.66 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 6 | 6 | 100 | 5.39 T | 38.8 T | 13.2 | 8.43 T | 9.99 T | 5.39 T | 38.8 T | 13.2 | 8.43 T | 9.99 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 6 | 6 | 100 | 0.125 JT | 0.22 | 0.166 | 0.14 J | 0.21 | 0.125 JT | 0.22 | 0.166 | 0.14 J | 0.21 |
| Mercury | mg/kg-Wet | 7 | 7 | 100 | 0.029 | 0.047 T | 0.0405 | 0.042 | 0.0445 T | 0.029 | 0.047 T | 0.0405 | 0.042 | 0.0445 T |
| Zinc | mg/kg-Wet | 6 | 6 | 100 | 87.1 | 112 | 99.3 | 96.7 | 110 T | 87.1 | 112 | 99.3 | 96.7 | 110 T |
| **PAHs** | | | | | | | | | | | | | | |



BZTO104(e)033350

Table 6.4-2. Summary Statistics for Indicator Chemicals for Fish Tissues by Area.

| Analyte | Units | # Analyzed | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Study Area*** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 6 | 0 | 0 | | | | | | 31 UT | 33 UT | 16.1 | 16 UT | 16.5 UT |
| Benzo(a)pyrene | µg/kg-Wet | 6 | 0 | 0 | | | | | | 31 UT | 33 UT | 16.1 | 16 UT | 16.5 UT |
| High Molecular Weight PAH | µg/kg-Wet | 6 | 0 | 0 | | | | | | 31 UT | 33 UT | 16.1 | 16 UT | 16.5 UT |
| Low Molecular Weight PAH | µg/kg-Wet | 6 | 2 | 33.3 | 111 T | 222 JT | 167 | 111 T | 111 T | 32 UT | 222 JT | 66.3 | 16 UT | 111 T |
| Total PAHs | µg/kg-Wet | 6 | 2 | 33.3 | 111 T | 222 JT | 167 | 111 T | 111 T | 32 UT | 222 JT | 66.3 | 16 UT | 111 T |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg-Wet | 6 | 6 | 100 | 343 JT | 8150 JT | 1920 | 574 JT | 1380 JT | 343 JT | 8150 JT | 1920 | 574 JT | 1380 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 6 | 0 | 0 | | | | | | 1 U | 13 UT | 2.74 | 2 UT | 4.95 UT |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 6 | 0 | 0 | | | | | | 1.5 UJ | 8.5 UT | 2.63 | 2 UT | 4.25 UT |
| Total Chlordanes | µg/kg-Wet | 6 | 3 | 50 | 3.2 JT | 13.9 JT | 8.47 | 8.3 T | 8.3 T | 3.2 JT | 20 UT | 7.32 | 4.95 UT | 10 UT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 6 | 6 | 100 | 22.6 JT | 171 JT | 66.7 | 46 JT | 64.8 JT | 22.6 JT | 171 JT | 66.7 | 46 JT | 64.8 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 6 | 6 | 100 | 143 JT | 431 JT | 210 | 168 JT | 188 JT | 143 JT | 431 JT | 210 | 168 JT | 188 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 6 | 6 | 100 | 81 JT | 260 JT | 135 | 105 JT | 145 T | 81 JT | 260 JT | 135 | 105 JT | 145 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 6 | 1 | 16.7 | 47 JT | 47 JT | 47 | 47 JT | 47 JT | 6.9 UT | 47 JT | 10.7 | 3.45 UT | 3.45 UT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 6 | 0 | 0 | | | | | | 94 UT | 99 UT | 48.3 | 48 UT | 49 UT |
| ***Chinook (whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 15 | 15 | 100 | 30 JT | 309 JT | 113 | 92.8 JT | 253 JT | 30 JT | 309 JT | 113 | 92.8 JT | 253 JT |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | µg/kg-Wet | 8 | 8 | 100 | 1.3 J | 4.1 | 2.51 | 2 J | 4.1 J | 1.3 J | 4.1 | 2.51 | 2 J | 4.1 J |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 15 | 15 | 100 | 1.5 | 3.6 | 2.15 | 1.8 | 3.3 | 1.5 | 3.6 | 2.15 | 1.8 | 3.3 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 9 | 9 | 100 | 1.27 JT | 4.63 JT | 2.26 | 1.81 JT | 3.61 JT | 1.27 JT | 4.63 JT | 2.26 | 1.81 JT | 3.61 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 9 | 9 | 100 | 1.82 JT | 4.54 JT | 2.8 | 2.54 JT | 3.37 JT | 1.82 JT | 4.54 JT | 2.8 | 2.54 JT | 3.37 JT |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 15 | 15 | 100 | 0.04646 | 0.25 | 0.11 | 0.0663 | 0.2 | 0.04646 | 0.25 | 0.11 | 0.0663 | 0.2 |
| Mercury | mg/kg-Wet | 15 | 15 | 100 | 0.01014 J | 0.02 | 0.0139 | 0.012411 | 0.019 | 0.01014 J | 0.02 | 0.0139 | 0.012411 | 0.019 |
| Zinc | mg/kg-Wet | 15 | 15 | 100 | 24.038 | 33.3 | 29.5 | 29.6 | 33.3 | 24.038 | 33.3 | 29.5 | 29.6 | 33.3 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 15 | 2 | 13.3 | 0.2 J | 0.21 J | 0.205 | 0.2 J | 0.2 J | 0.13 U | 33 UT | 6.52 | 0.2 J | 16.5 UT |
| Benzo(a)pyrene | µg/kg-Wet | 15 | 0 | 0 | | | | | | 0.13 U | 33 UT | 6.51 | 0.065 U | 16.5 UT |
| High Molecular Weight PAH | µg/kg-Wet | 15 | 8 | 53.3 | 0.93 JT | 3.8 JT | 2.03 | 1.58 JT | 2.94 JT | 0.37 UT | 33 UT | 7.56 | 2.94 JT | 16.5 UT |
| Low Molecular Weight PAH | µg/kg-Wet | 15 | 10 | 66.7 | 8.38 JT | 33 T | 14.6 | 11.5 JT | 16.9 JT | 8.38 JT | 41 UT | 15.7 | 16 UT | 20.5 UT |
| Total PAHs | µg/kg-Wet | 15 | 10 | 66.7 | 9.96 JT | 33 T | 16.2 | 14.2 JT | 17.9 JT | 9.96 JT | 41 UT | 16.7 | 16 UT | 20.5 UT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg-Wet | 9 | 9 | 100 | 72.3 | 277 | 147 | 111 | 246 | 72.3 | 277 | 147 | 111 | 246 |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 15 | 0 | 0 | | | | | | 0.16 U | 1.2 U | 0.305 | 0.275 U | 0.5 U |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 15 | 0 | 0 | | | | | | 0.33 U | 1.2 UT | 0.384 | 0.5 UT | 0.55 U |
| Total Chlordanes | µg/kg-Wet | 15 | 12 | 80 | 0.59 JT | 7.8 JT | 3.2 | 1.6 JT | 7.6 JT | 0.59 JT | 19 UT | 4.12 | 3.92 JT | 9.5 UT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 15 | 15 | 100 | 1.6 T | 143 T | 30.2 | 5.2 JT | 132 T | 1.6 T | 143 T | 30.2 | 5.2 JT | 132 T |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 15 | 15 | 100 | 16.9 JT | 284 T | 77.4 | 32.5 JT | 272 T | 16.9 JT | 284 T | 77.4 | 32.5 JT | 272 T |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 15 | 15 | 100 | 7 T | 93 T | 30.2 | 19 T | 92 T | 7 T | 93 T | 30.2 | 19 T | 92 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 15 | 14 | 93.3 | 6.1 JT | 48 T | 18.2 | 10.7 JT | 48 T | 6.1 JT | 48 T | 17.6 | 10.7 JT | 48 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 11 | 0 | 0 | | | | | | 95 UT | 860 UT | 156 | 55 U | 360 U |
| ***Largescale sucker (whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 6 | 6 | 100 | 95 T | 2020 JT | 819 | 350 T | 1400 T | 95 T | 2020 JT | 819 | 350 T | 1400 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 6 | 6 | 100 | 5.4 T | 8.7 T | 7.56 | 7.5 T | 8.63 T | 5.4 T | 8.7 T | 7.56 | 7.5 T | 8.63 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 6 | 6 | 100 | 0.18 | 0.27 | 0.233 | 0.225 T | 0.27 | 0.18 | 0.27 | 0.233 | 0.225 T | 0.27 |
| Mercury | mg/kg-Wet | 6 | 6 | 100 | 0.045 | 0.085 | 0.0677 | 0.066 T | 0.079 | 0.045 | 0.085 | 0.0677 | 0.066 T | 0.079 |
| Zinc | mg/kg-Wet | 6 | 6 | 100 | 17.1 | 19.7 T | 17.9 | 17.7 | 17.9 | 17.1 | 19.7 T | 17.9 | 17.7 | 17.9 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 6 | 0 | 0 | | | | | | 26 UT | 33 UT | 14.4 | 13 UT | 16 UT |
| Benzo(a)pyrene | µg/kg-Wet | 6 | 0 | 0 | | | | | | 26 UT | 33 UT | 14.4 | 13 UT | 16 UT |
| High Molecular Weight PAH | µg/kg-Wet | 6 | 0 | 0 | | | | | | 26 UT | 33 UT | 14.4 | 13 UT | 16 UT |
| Low Molecular Weight PAH | µg/kg-Wet | 6 | 2 | 33.3 | 42 JT | 147 JT | 94.5 | 42 JT | 42 JT | 26 UT | 147 JT | 41.1 | 15 UT | 42 JT |
| Total PAHs | µg/kg-Wet | 6 | 2 | 33.3 | 42 JT | 147 JT | 94.5 | 42 JT | 42 JT | 26 UT | 147 JT | 41.1 | 15 UT | 42 JT |



BZTO104(e)033351

Table 6.4-2. Summary Statistics for Indicator Chemicals for Fish Tissues by Area.

| Analyte | Units | # Analyzed | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Study Area*** | | | | | | | | | | | | | | |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 6 | 0 | 0 | | | | | | 1 U | 13 UT | 2.5 | 2 U | 2 UT |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 6 | 0 | 0 | | | | | | 3.3 UJ | 8.5 UT | 2.33 | 2 UT | 2.1 U |
| Total Chlordanes | µg/kg-Wet | 6 | 2 | 33.3 | 8.6 JT | 9.6 JT | 9.1 | 8.6 JT | 8.6 JT | 7.1 UT | 20 UT | 6.99 | 5.5 UT | 9.6 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 6 | 6 | 100 | 27.5 JT | 190 T | 63.8 | 36 JT | 57 T | 27.5 JT | 190 T | 63.8 | 36 JT | 57 T |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 6 | 6 | 100 | 143 JT | 670 T | 256 | 170 JT | 218 JT | 143 JT | 670 T | 256 | 170 JT | 218 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 6 | 6 | 100 | 79 T | 185 T | 121 | 96 JT | 160 T | 79 T | 185 T | 121 | 96 JT | 160 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 6 | 5 | 83.3 | 17 JT | 295 T | 85.1 | 36.3 JT | 46 JT | 6.9 UT | 295 T | 71.5 | 31 T | 46 JT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 6 | 2 | 33.3 | 800 T | 3000 JT | 1900 | 800 T | 800 T | 78 UT | 3000 JT | 663 | 48.5 UT | 800 T |
| ***Northern pikeminnow (whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 6 | 6 | 100 | 370 T | 1800 T | 833 | 670 T | 1010 T | 370 T | 1800 T | 833 | 670 T | 1010 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 6 | 6 | 100 | 2.3 T | 8.1 T | 5.25 | 4.6 T | 6.3 T | 2.3 T | 8.1 T | 5.25 | 4.6 T | 6.3 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 6 | 6 | 100 | 0.19 | 0.36 T | 0.26 | 0.21 | 0.36 | 0.19 | 0.36 T | 0.26 | 0.21 | 0.36 |
| Mercury | mg/kg-Wet | 6 | 6 | 100 | 0.146 T | 0.494 | 0.28 | 0.173 | 0.39 | 0.146 T | 0.494 | 0.28 | 0.173 | 0.39 |
| Zinc | mg/kg-Wet | 6 | 6 | 100 | 16.4 | 20 | 18 | 17.5 T | 19.4 | 16.4 | 20 | 18 | 17.5 T | 19.4 |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 6 | 0 | 0 | | | | | | 4 UT | 13 UT | 4.23 | 4.9 U | 5 UT |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 6 | 0 | 0 | | | | | | 4 UT | 9.8 U | 3.61 | 4.25 UT | 4.25 UT |
| Total Chlordanes | µg/kg-Wet | 6 | 0 | 0 | | | | | | 11 UT | 19 UT | 6.42 | 5.5 UT | 7 UT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 6 | 5 | 83.3 | 17 JT | 72 T | 44.7 | 46 T | 48 T | 8.6 UT | 72 T | 38 | 40.5 T | 48 T |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 6 | 6 | 100 | 145 T | 761 T | 322 | 251 T | 353 T | 145 T | 761 T | 322 | 251 T | 353 T |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 6 | 6 | 100 | 82 T | 598 T | 261 | 210 T | 305 T | 82 T | 598 T | 261 | 210 T | 305 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 6 | 2 | 33.3 | 53 JT | 91 T | 72 | 53 JT | 53 JT | 6.9 UT | 91 T | 26.3 | 3.45 UT | 53 JT |
| ***Peamouth (whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 4 | 4 | 100 | 138 T | 290 T | 187 | 147 T | 174 T | 138 T | 290 T | 187 | 147 T | 174 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 4 | 4 | 100 | 6.93 T | 10.7 T | 8.93 | 7.9 T | 10.2 T | 6.93 T | 10.7 T | 8.93 | 7.9 T | 10.2 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 4 | 4 | 100 | 0.35 | 0.48 | 0.425 | 0.42 | 0.45 | 0.35 | 0.48 | 0.425 | 0.42 | 0.45 |
| Mercury | mg/kg-Wet | 4 | 4 | 100 | 0.031 | 0.054 | 0.0383 | 0.033 | 0.035 | 0.031 | 0.054 | 0.0383 | 0.033 | 0.035 |
| Zinc | mg/kg-Wet | 4 | 4 | 100 | 23.1 | 25.2 | 24.1 | 23.5 | 24.7 | 23.1 | 25.2 | 24.1 | 23.5 | 24.7 |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 4 | 0 | 0 | | | | | | 1 UT | 1.7 UT | 0.613 | 0.5 UT | 0.6 UT |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 4 | 0 | 0 | | | | | | 2.4 UT | 4.1 UT | 1.6 | 1.35 UT | 1.8 UT |
| Total Chlordanes | µg/kg-Wet | 4 | 2 | 50 | 3.1 T | 3.4 T | 3.25 | 3.1 T | 3.1 T | 3.1 T | 11 UT | 3.65 | 3.1 T | 3.4 T |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 4 | 4 | 100 | 11.1 T | 29.5 T | 22.5 | 24.5 T | 25 JT | 11.1 T | 29.5 T | 22.5 | 24.5 T | 25 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 4 | 4 | 100 | 132 JT | 215 T | 160 | 142 T | 150 JT | 132 JT | 215 T | 160 | 142 T | 150 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 4 | 4 | 100 | 109 T | 185 T | 132 | 110 T | 125 JT | 109 T | 185 T | 132 | 110 T | 125 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 4 | 2 | 50 | 7 T | 12.1 JT | 9.55 | 7 T | 7 T | 6.9 UJT | 12.1 JT | 6.5 | 3.45 UT | 7 T |
| ***Sculpin (whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 26 | 26 | 100 | 62 JT | 3360 T | 562 | 226 JT | 2300 T | 62 JT | 3360 T | 562 | 226 JT | 2300 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 26 | 26 | 100 | 2.2 T | 6 | 4.17 | 4.1 | 5.5 | 2.2 T | 6 | 4.17 | 4.1 | 5.5 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 9 | 9 | 100 | 0.772 T | 38.6 T | 6.31 | 1.66 T | 5.52 JT | 0.772 T | 38.6 T | 6.31 | 1.66 T | 5.52 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 9 | 9 | 100 | 4.82 T | 43.7 T | 14.8 | 13.9 T | 15.5 T | 4.82 T | 43.7 T | 14.8 | 13.9 T | 15.5 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 26 | 26 | 100 | 0.13 | 0.3 | 0.205 | 0.21 | 0.27 | 0.13 | 0.3 | 0.205 | 0.21 | 0.27 |
| Mercury | mg/kg-Wet | 27 | 27 | 100 | 0.025 | 0.086 | 0.0416 | 0.039 | 0.069 | 0.025 | 0.086 | 0.0416 | 0.039 | 0.069 |
| Zinc | mg/kg-Wet | 26 | 26 | 100 | 13.6 | 18 | 15.4 | 15.4 | 17.5 | 13.6 | 18 | 15.4 | 15.4 | 17.5 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 26 | 0 | 0 | | | | | | 27 UT | 33 UT | 15.2 | 15.5 UT | 16.5 UT |
| Benzo(a)pyrene | µg/kg-Wet | 26 | 0 | 0 | | | | | | 27 UT | 33 UT | 15.2 | 15.5 UT | 16.5 UT |
| High Molecular Weight PAH | µg/kg-Wet | 26 | 0 | 0 | | | | | | 27 UT | 33 UT | 15.3 | 15.5 UT | 16.5 UT |
| Low Molecular Weight PAH | µg/kg-Wet | 26 | 10 | 38.5 | 29 T | 132 T | 46.5 | 37 T | 45 JT | 27 UT | 132 T | 29.1 | 16.5 UT | 45 JT |
| Total PAHs | µg/kg-Wet | 26 | 10 | 38.5 | 29 T | 132 T | 46.5 | 37 T | 45 JT | 27 UT | 132 T | 29.1 | 16.5 UT | 45 JT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg-Wet | 9 | 9 | 100 | 203 JT | 2450 JT | 934 | 758 JT | 1930 JT | 203 JT | 2450 JT | 934 | 758 JT | 1930 JT |



BZTO104(e)033352

Table 6.4-2. Summary Statistics for Indicator Chemicals for Fish Tissues by Area.

| Analyte | Units | # Analyzed | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Study Area*** | | | | | | | | | | | | | | |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 26 | 0 | 0 | | | | | | 1 U | 13 UT | 1.59 | 0.8 U | 4.8 U |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 26 | 12 | 46.2 | 2 NJ | 6.2 NJ | 3.92 | 3.9 NJ | 5.3 NJ | 1 UJ | 9.6 U | 3.58 | 4.1 NJ | 4.8 U |
| Total Chlordanes | µg/kg-Wet | 26 | 14 | 53.8 | 2.5 JT | 16 JT | 8.87 | 8.9 JT | 14.4 JT | 2.5 JT | 20 UT | 6.58 | 4.8 UT | 10.6 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 26 | 19 | 73.1 | 4.6 JT | 376 T | 41.6 | 8.3 T | 173 JT | 4 UT | 376 T | 31.3 | 6.7 T | 102 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 26 | 26 | 100 | 18 JT | 3060 T | 213 | 49 JT | 570 JT | 18 JT | 3060 T | 213 | 49 JT | 570 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 26 | 19 | 73.1 | 14 JT | 657 T | 75.7 | 25 JT | 244 JT | 11 UT | 657 T | 58.2 | 19 JT | 168 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 26 | 22 | 84.6 | 8.45 T | 2030 T | 150 | 31 JT | 162 JT | 6.9 UT | 2030 T | 128 | 30.4 JT | 162 JT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 26 | 3 | 11.5 | 99 T | 28000 JT | 12500 | 9400 JT | 9400 JT | 82 UT | 28000 JT | 1530 | 80 UT | 405 UT |
| ***Smallmouth bass (fillet without skin)*** | | | | | | | | | | | | | | |
| **Metals** | | | | | | | | | | | | | | |
| Mercury | mg/kg-Wet | 5 | 5 | 100 | 0.071 | 0.129 T | 0.0946 | 0.087 | 0.113 | 0.071 | 0.129 T | 0.0946 | 0.087 | 0.113 |
| ***Smallmouth bass (fillet)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 5 | 5 | 100 | 39 T | 93 T | 62 | 60 T | 72 T | 39 T | 93 T | 62 | 60 T | 72 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 5 | 5 | 100 | 0.32 | 1.1 | 0.818 | 0.9 | 0.96 | 0.32 | 1.1 | 0.818 | 0.9 | 0.96 |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 5 | 5 | 100 | 0.18 | 0.28 | 0.21 | 0.2 | 0.2 | 0.18 | 0.28 | 0.21 | 0.2 | 0.2 |
| Zinc | mg/kg-Wet | 5 | 5 | 100 | 8 J | 10.9 J | 9.11 | 8.67 J | 9.6 J | 8 J | 10.9 J | 9.11 | 8.67 J | 9.6 J |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 5 | 0 | 0 | | | | | | 1 U | 1 U | 0.5 | 0.5 U | 0.5 U |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 5 | 1 | 20 | 4.5 N | 4.5 N | 4.5 | 4.5 N | 4.5 N | 1 U | 4.5 N | 1.3 | 0.5 U | 0.5 U |
| Total Chlordanes | µg/kg-Wet | 5 | 3 | 60 | 1.8 JT | 4.1 JT | 2.97 | 3 JT | 3 JT | 1.3 UT | 4.1 JT | 2.2 | 1.8 JT | 3 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 5 | 5 | 100 | 1.9 T | 6.4 JT | 3.86 | 4.1 JT | 4.2 JT | 1.9 T | 6.4 JT | 3.86 | 4.1 JT | 4.2 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 5 | 5 | 100 | 24.2 JT | 42 JT | 30.8 | 27.7 JT | 33.9 JT | 24.2 JT | 42 JT | 30.8 | 27.7 JT | 33.9 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 5 | 5 | 100 | 12 T | 25 T | 16 | 14 T | 16 T | 12 T | 25 T | 16 | 14 T | 16 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 5 | 5 | 100 | 7.6 JT | 15.2 JT | 10.9 | 9.5 JT | 12.9 JT | 7.6 JT | 15.2 JT | 10.9 | 9.5 JT | 12.9 JT |
| ***Smallmouth bass (whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 14 | 14 | 100 | 90 JT | 4500 JT | 1110 | 780 T | 3300 JT | 90 JT | 4500 JT | 1110 | 780 T | 3300 JT |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 14 | 14 | 100 | 1.5 T | 7.2 T | 5.44 | 5.5 T | 7 T | 1.5 T | 7.2 T | 5.44 | 5.5 T | 7 T |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 14 | 14 | 100 | 1.45 JT | 10.4 JT | 4.07 | 3.19 JT | 8.92 T | 1.45 JT | 10.4 JT | 4.07 | 3.19 JT | 8.92 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 14 | 14 | 100 | 7.92 T | 33.9 T | 15.7 | 12.2 T | 26.5 T | 7.92 T | 33.9 T | 15.7 | 12.2 T | 26.5 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 14 | 14 | 100 | 0.17 | 0.39 | 0.264 | 0.25 | 0.34 | 0.17 | 0.39 | 0.264 | 0.25 | 0.34 |
| Mercury | mg/kg-Wet | 14 | 14 | 100 | 0.052 | 0.114 | 0.0831 | 0.078 | 0.106 | 0.052 | 0.114 | 0.0831 | 0.078 | 0.106 |
| Zinc | mg/kg-Wet | 14 | 14 | 100 | 13.4 | 16.3 | 14.7 | 14.5 | 16 | 13.4 | 16.3 | 14.7 | 14.5 | 16 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 14 | 0 | 0 | | | | | | 25 UT | 33 UT | 15.4 | 15.5 UT | 16.5 UT |
| Benzo(a)pyrene | µg/kg-Wet | 14 | 0 | 0 | | | | | | 25 UT | 33 UT | 15.4 | 15.5 UT | 16.5 UT |
| High Molecular Weight PAH | µg/kg-Wet | 14 | 1 | 7.14 | 75 T | 75 T | 75 | 75 T | 75 T | 25 UT | 75 T | 19.7 | 15.5 UT | 16.5 UT |
| Low Molecular Weight PAH | µg/kg-Wet | 14 | 7 | 50 | 31 JT | 308 T | 120 | 45 T | 252 T | 30 UT | 308 T | 67.9 | 16 UT | 252 T |
| Total PAHs | µg/kg-Wet | 14 | 7 | 50 | 31 JT | 308 T | 131 | 111 T | 252 T | 30 UT | 308 T | 73.3 | 16 UT | 252 T |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg-Wet | 14 | 14 | 100 | 344 JT | 4530 JT | 1120 | 549 JT | 3480 JT | 344 JT | 4530 JT | 1120 | 549 JT | 3480 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 14 | 0 | 0 | | | | | | 1 UT | 13 UT | 2.54 | 2 UT | 6.5 UT |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 14 | 0 | 0 | | | | | | 1.2 UJT | 8.5 UT | 2.93 | 2 UT | 4.25 UT |
| Total Chlordanes | µg/kg-Wet | 14 | 2 | 14.3 | 5.4 JT | 5.6 JT | 5.5 | 5.4 JT | 5.4 JT | 5.4 JT | 32 UT | 6.72 | 5.5 UT | 10 UT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 14 | 14 | 100 | 11 JT | 139 T | 41.5 | 31 JT | 68 JT | 11 JT | 139 T | 41.5 | 31 JT | 68 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 14 | 14 | 100 | 65 JT | 408 T | 205 | 178 JT | 363 JT | 65 JT | 408 T | 205 | 178 JT | 363 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 14 | 14 | 100 | 53 JT | 220 T | 132 | 128 JT | 190 T | 53 JT | 220 T | 132 | 128 JT | 190 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 14 | 9 | 64.3 | 7.3 JT | 160 T | 48.6 | 27 T | 115 JT | 6.9 UT | 160 T | 32.5 | 15 JT | 115 JT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 14 | 2 | 14.3 | 32000 JT | 87000 JT | 59500 | 32000 JT | 32000 JT | 86 UT | 87000 JT | 8620 | 48 UT | 32000 JT |
| ***Upriver*** | | | | | | | | | | | | | | |
| ***Brown bullhead (whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 3 | 3 | 100 | 15 JT | 44 JT | 28.9 | 27.6 JT | 27.6 JT | 15 JT | 44 JT | 28.9 | 27.6 JT | 27.6 JT |
| **Conventionals** | | | | | | | | | | | | | | |



BZTO104(e)033353

Table 6.4-2. Summary Statistics for Indicator Chemicals for Fish Tissues by Area.

| Analyte | Units | # Analyzed | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Study Area*** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 3 | 3 | 100 | 2.1 | 2.6 | 2.27 | 2.1 | 2.1 | 2.1 | 2.6 | 2.27 | 2.1 | 2.1 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 3 | 3 | 100 | 0.475 JT | 2.95 JT | 1.43 | 0.855 JT | 0.855 JT | 0.475 JT | 2.95 JT | 1.43 | 0.855 JT | 0.855 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 3 | 3 | 100 | 0.723 T | 1.95 T | 1.24 | 1.04 T | 1.04 T | 0.723 T | 1.95 T | 1.24 | 1.04 T | 1.04 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 3 | 3 | 100 | 0.07 J | 0.09 JT | 0.08 | 0.08 J | 0.08 J | 0.07 J | 0.09 JT | 0.08 | 0.08 J | 0.08 J |
| Mercury | mg/kg-Wet | 3 | 3 | 100 | 0.054 T | 0.094 | 0.0717 | 0.067 | 0.067 | 0.054 T | 0.094 | 0.0717 | 0.067 | 0.067 |
| Zinc | mg/kg-Wet | 3 | 3 | 100 | 13.9 T | 14.5 | 14.3 | 14.4 | 14.4 | 13.9 T | 14.5 | 14.3 | 14.4 | 14.4 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 3 | 0 | 0 | | | | | | 33 UT | 33 UT | 16.5 | 16.5 UT | 16.5 UT |
| Benzo(a)pyrene | µg/kg-Wet | 3 | 0 | 0 | | | | | | 33 UT | 33 UT | 16.5 | 16.5 UT | 16.5 UT |
| High Molecular Weight PAH | µg/kg-Wet | 3 | 0 | 0 | | | | | | 33 UT | 93 UT | 26.5 | 16.5 UT | 16.5 UT |
| Low Molecular Weight PAH | µg/kg-Wet | 3 | 0 | 0 | | | | | | 33 UT | 86 UT | 25.3 | 16.5 UT | 16.5 UT |
| Total PAHs | µg/kg-Wet | 3 | 0 | 0 | | | | | | 33 UT | 93 UT | 26.5 | 16.5 UT | 16.5 UT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg-Wet | 3 | 3 | 100 | 19.1 JT | 56.3 JT | 33.2 | 24.2 JT | 24.2 JT | 19.1 JT | 56.3 JT | 33.2 | 24.2 JT | 24.2 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 3 | 0 | 0 | | | | | | 1 U | 1 U | 0.5 | 0.5 U | 0.5 U |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 3 | 0 | 0 | | | | | | 1.1 UJ | 1.8 UJ | 0.7 | 0.65 UJ | 0.65 UJ |
| Total Chlordanes | µg/kg-Wet | 3 | 3 | 100 | 1.1 T | 3.7 JT | 2.3 | 2.1 T | 2.1 T | 1.1 T | 3.7 JT | 2.3 | 2.1 T | 2.1 T |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 3 | 3 | 100 | 2.3 JT | 4.5 JT | 3.67 | 4.2 JT | 4.2 JT | 2.3 JT | 4.5 JT | 3.67 | 4.2 JT | 4.2 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 3 | 3 | 100 | 18 JT | 52 JT | 30.1 | 20.4 JT | 20.4 JT | 18 JT | 52 JT | 30.1 | 20.4 JT | 20.4 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 3 | 3 | 100 | 12 JT | 37 JT | 20.3 | 12 JT | 12 JT | 12 JT | 37 JT | 20.3 | 12 JT | 12 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 3 | 3 | 100 | 3.7 JT | 10.5 JT | 6.13 | 4.2 JT | 4.2 JT | 3.7 JT | 10.5 JT | 6.13 | 4.2 JT | 4.2 JT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 3 | 1 | 33.3 | 3000 JT | 3000 JT | 3000 | 3000 JT | 3000 JT | 99 UJT | 3000 JT | 1030 | 49.5 UJT | 49.5 UJT |
| ***Chinook (whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 4 | 4 | 100 | 12.1 JT | 20.4 JT | 15.6 | 14.5 T | 15.2 JT | 12.1 JT | 20.4 JT | 15.6 | 14.5 T | 15.2 JT |
| **Butyltins** | | | | | | | | | | | | | | |
| Tributyltin ion | µg/kg-Wet | 3 | 3 | 100 | 0.37 J | 0.45 J | 0.413 | 0.42 J | 0.42 J | 0.37 J | 0.45 J | 0.413 | 0.42 J | 0.42 J |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 4 | 4 | 100 | 1.8 | 2.7 | 2.05 | 1.8 | 1.9 | 1.8 | 2.7 | 2.05 | 1.8 | 1.9 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 3 | 3 | 100 | 0.415 JT | 1.14 JT | 0.697 | 0.537 JT | 0.537 JT | 0.415 JT | 1.14 JT | 0.697 | 0.537 JT | 0.537 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 3 | 3 | 100 | 0.494 JT | 0.717 JT | 0.634 | 0.692 JT | 0.692 JT | 0.494 JT | 0.717 JT | 0.634 | 0.692 JT | 0.692 JT |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 4 | 4 | 100 | 0.03 J | 0.05597 | 0.0451 | 0.0468 | 0.04776 T | 0.03 J | 0.05597 | 0.0451 | 0.0468 | 0.04776 T |
| Mercury | mg/kg-Wet | 4 | 4 | 100 | 0.009353 J | 0.01287 | 0.0117 | 0.012 | 0.012738 | 0.009353 J | 0.01287 | 0.0117 | 0.012 | 0.012738 |
| Zinc | mg/kg-Wet | 4 | 4 | 100 | 26.865 T | 34 | 29.7 | 28.757 | 29.055 | 26.865 T | 34 | 29.7 | 28.757 | 29.055 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 4 | 0 | 0 | | | | | | 0.13 U | 27 UT | 3.42 | 0.065 U | 0.065 U |
| Benzo(a)pyrene | µg/kg-Wet | 4 | 0 | 0 | | | | | | 0.13 U | 27 UT | 3.42 | 0.065 U | 0.065 U |
| High Molecular Weight PAH | µg/kg-Wet | 4 | 3 | 75 | 0.21 JT | 1.37 JT | 0.633 | 0.32 JT | 0.32 JT | 0.21 JT | 27 UT | 3.85 | 0.32 JT | 1.37 JT |
| Low Molecular Weight PAH | µg/kg-Wet | 4 | 3 | 75 | 5.04 JT | 9.77 JT | 6.71 | 5.32 JT | 5.32 JT | 5.04 JT | 27 UT | 8.41 | 5.32 JT | 9.77 JT |
| Total PAHs | µg/kg-Wet | 4 | 3 | 75 | 5.25 JT | 10.1 JT | 7.35 | 6.69 JT | 6.69 JT | 5.25 JT | 27 UT | 8.89 | 6.69 JT | 10.1 JT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg-Wet | 3 | 3 | 100 | 12.8 | 21.6 | 16.7 | 15.8 | 15.8 | 12.8 | 21.6 | 16.7 | 15.8 | 15.8 |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 4 | 0 | 0 | | | | | | 0.16 U | 1 U | 0.186 | 0.08 U | 0.085 U |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 4 | 0 | 0 | | | | | | 0.33 U | 1.6 U | 0.328 | 0.165 U | 0.18 U |
| Total Chlordanes | µg/kg-Wet | 4 | 3 | 75 | 2.07 JT | 3.02 JT | 2.42 | 2.18 JT | 2.18 JT | 1 UT | 3.02 JT | 1.94 | 2.07 JT | 2.18 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 4 | 1 | 25 | 1 JT | 1 JT | 1 | 1 JT | 1 JT | 0.69 UT | 1 UJT | 0.571 | 0.44 UT | 0.5 UJT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 4 | 4 | 100 | 8.5 JT | 12.2 JT | 9.63 | 8.61 JT | 9.2 JT | 8.5 JT | 12.2 JT | 9.63 | 8.61 JT | 9.2 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 4 | 4 | 100 | 6.3 T | 7.9 T | 7 | 6.6 T | 7.2 T | 6.3 T | 7.9 T | 7 | 6.6 T | 7.2 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 4 | 4 | 100 | 1.3 JT | 3.3 JT | 2.38 | 2.31 JT | 2.6 JT | 1.3 JT | 3.3 JT | 2.38 | 2.31 JT | 2.6 JT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 4 | 2 | 50 | 140 J | 140 J | 140 | 140 J | 140 J | 81 UT | 140 J | 95.1 | 60 U | 140 J |
| ***Smallmouth bass (whole body)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 6 | 4 | 66.7 | 63 T | 290 JT | 183 | 120 T | 260 JT | 63 T | 290 JT | 135 | 63 T | 260 JT |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | 6 | 6 | 100 | 4.1 | 6.9 | 5.37 | 4.9 | 6.1 | 4.1 | 6.9 | 5.37 | 4.9 | 6.1 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |



BZTO104(e)033354

Table 6.4-2. Summary Statistics for Indicator Chemicals for Fish Tissues by Area.

| Analyte | Units | # Analyzed | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Study Area*** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 6 | 6 | 100 | 0.967 JT | 2.81 JT | 1.59 | 1.26 JT | 1.79 T | 0.967 JT | 2.81 JT | 1.59 | 1.26 JT | 1.79 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 6 | 6 | 100 | 2.58 T | 8.21 T | 5.04 | 3.59 T | 8.15 T | 2.58 T | 8.21 T | 5.04 | 3.59 T | 8.15 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 6 | 6 | 100 | 0.1 J | 0.36 | 0.233 | 0.19 | 0.33 | 0.1 J | 0.36 | 0.233 | 0.19 | 0.33 |
| Mercury | mg/kg-Wet | 6 | 6 | 100 | 0.167 | 0.549 | 0.322 | 0.233 | 0.513 | 0.167 | 0.549 | 0.322 | 0.233 | 0.513 |
| Zinc | mg/kg-Wet | 6 | 6 | 100 | 12.8 | 16.8 | 14.7 | 14.4 | 15 | 12.8 | 16.8 | 14.7 | 14.4 | 15 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 6 | 0 | 0 | | | | | | 33 UT | 33 UT | 16.5 | 16.5 UT | 16.5 UT |
| Benzo(a)pyrene | µg/kg-Wet | 6 | 0 | 0 | | | | | | 33 UT | 33 UT | 16.5 | 16.5 UT | 16.5 UT |
| High Molecular Weight PAH | µg/kg-Wet | 6 | 0 | 0 | | | | | | 33 UT | 93 UT | 21.5 | 16.5 UT | 16.5 UT |
| Low Molecular Weight PAH | µg/kg-Wet | 6 | 0 | 0 | | | | | | 33 UT | 73 UT | 26.3 | 16.5 UT | 36.5 UT |
| Total PAHs | µg/kg-Wet | 6 | 0 | 0 | | | | | | 33 UT | 93 UT | 27.9 | 16.5 UT | 36.5 UT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg-Wet | 6 | 6 | 100 | 78.1 JT | 317 JT | 169 | 111 JT | 275 JT | 78.1 JT | 317 JT | 169 | 111 JT | 275 JT |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 6 | 0 | 0 | | | | | | 1 U | 3 U | 0.683 | 0.5 U | 0.6 U |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 6 | 0 | 0 | | | | | | 2.2 UJ | 4 UJ | 1.64 | 1.55 UJ | 1.85 UJ |
| Total Chlordanes | µg/kg-Wet | 6 | 6 | 100 | 4.5 JT | 15 JT | 8.13 | 5.9 JT | 10.9 JT | 4.5 JT | 15 JT | 8.13 | 5.9 JT | 10.9 JT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 6 | 6 | 100 | 4.7 JT | 17.4 JT | 11.2 | 9.6 JT | 14.5 JT | 4.7 JT | 17.4 JT | 11.2 | 9.6 JT | 14.5 JT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 6 | 6 | 100 | 56.9 JT | 120 JT | 84.8 | 77.5 JT | 105 JT | 56.9 JT | 120 JT | 84.8 | 77.5 JT | 105 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 6 | 6 | 100 | 32 JT | 60 JT | 48.7 | 47 JT | 59 JT | 32 JT | 60 JT | 48.7 | 47 JT | 59 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 6 | 6 | 100 | 13.1 JT | 43 JT | 24.9 | 20.2 JT | 35 JT | 13.1 JT | 43 JT | 24.9 | 20.2 JT | 35 JT |
| **Phthalates** | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | µg/kg-Wet | 6 | 1 | 16.7 | 4800 T | 4800 T | 4800 | 4800 T | 4800 T | 99 UJT | 4800 T | 898 | 50 UJT | 275 UJT |
| ***Other Lower Willamette River Data (not used for nature & extent)*** | | | | | | | | | | | | | | |
| ***Chinook (fillet) from Clackamas River Hatchery*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 3 | 3 | 100 | 9.5 J | 20 J | 14.8 | 15 J | 15 J | 9.5 J | 20 J | 14.8 | 15 J | 15 J |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 3 | 3 | 100 | 0.158 T | 0.192 T | 0.174 | 0.173 T | 0.173 T | 0.158 T | 0.192 T | 0.174 | 0.173 T | 0.173 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 3 | 3 | 100 | 0.178 T | 0.286 T | 0.242 | 0.261 T | 0.261 T | 0.178 T | 0.286 T | 0.242 | 0.261 T | 0.261 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 3 | 3 | 100 | 0.72 | 1.26 | 1.03 | 1.11 | 1.11 | 0.72 | 1.26 | 1.03 | 1.11 | 1.11 |
| Zinc | mg/kg-Wet | 3 | 3 | 100 | 4.56 | 4.6 | 4.58 | 4.57 | 4.57 | 4.56 | 4.6 | 4.58 | 4.57 | 4.57 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 3 | 0 | 0 | | | | | | 15 U | 16 U | 7.67 | 7.5 U | 7.5 U |
| Benzo(a)pyrene | µg/kg-Wet | 3 | 0 | 0 | | | | | | 3.8 U | 4 U | 1.93 | 1.9 U | 1.9 U |
| High Molecular Weight PAH | µg/kg-Wet | 3 | 0 | 0 | | | | | | 15 UT | 16 UT | 7.67 | 7.5 UT | 7.5 UT |
| Low Molecular Weight PAH | µg/kg-Wet | 3 | 2 | 66.7 | 1.8 JT | 5.4 T | 3.6 | 1.8 JT | 1.8 JT | 1.8 JT | 5.4 T | 3.03 | 1.9 UT | 1.9 UT |
| Total PAHs | µg/kg-Wet | 3 | 2 | 66.7 | 1.8 JT | 5.4 T | 3.6 | 1.8 JT | 1.8 JT | 1.8 JT | 15 UT | 4.9 | 5.4 T | 5.4 T |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg-Wet | 3 | 3 | 100 | 8.71 | 15.3 | 12.6 | 13.8 | 13.8 | 8.71 | 15.3 | 12.6 | 13.8 | 13.8 |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 3 | 0 | 0 | | | | | | 0.91 U | 0.92 U | 0.457 | 0.455 U | 0.455 U |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 3 | 0 | 0 | | | | | | 0.91 U | 0.92 U | 0.457 | 0.455 U | 0.455 U |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 3 | 0 | 0 | | | | | | 1.7 UT | 3.6 UT | 1.17 | 0.85 UT | 0.85 UT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 3 | 2 | 66.7 | 10.9 JT | 12 JT | 11.5 | 10.9 JT | 10.9 JT | 3.6 UT | 12 JT | 8.23 | 10.9 JT | 10.9 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 3 | 2 | 66.7 | 8.9 JT | 11 JT | 9.95 | 8.9 JT | 8.9 JT | 3.6 UT | 11 JT | 7.23 | 8.9 JT | 8.9 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 3 | 2 | 66.7 | 1 JT | 2 T | 1.5 | 1 JT | 1 JT | 1 JT | 2 T | 1.18 | 1 JT | 1 JT |
| ***Chinook (whole body) from Clackamas River Hatchery*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 4 | 4 | 100 | 13 J | 19 | 16.8 | 17 JT | 18 | 13 J | 19 | 16.8 | 17 JT | 18 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 7 | 7 | 100 | 0.0607 T | 0.283 T | 0.174 | 0.172 T | 0.226 T | 0.0607 T | 0.283 T | 0.174 | 0.172 T | 0.226 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 7 | 7 | 100 | 0.129 T | 0.334 T | 0.262 | 0.274 JT | 0.333 JT | 0.129 T | 0.334 T | 0.262 | 0.274 JT | 0.333 JT |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 4 | 4 | 100 | 0.80 | 0.98 T | 0.90 | 0.90 | 0.92 | 0.80 | 0.98 T | 0.90 | 0.90 | 0.92 |
| Mercury | mg/kg-Wet | 7 | 7 | 100 | 0.04 | 0.10 | 0.07 | 0.06 T | 0.10 | 0.04 | 0.10 | 0.07 | 0.06 T | 0.10 |
| Zinc | mg/kg-Wet | 4 | 4 | 100 | 22.00 | 37.50 | 27.70 | 22.10 T | 29.10 | 22.00 | 37.50 | 27.70 | 22.10 T | 29.10 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 4 | 0 | 0 | | | | | | 15 U | 16 U | 7.75 | 7.5 UT | 8 U |
| Benzo(a)pyrene | µg/kg-Wet | 4 | 0 | 0 | | | | | | 3.8 UT | 3.9 U | 1.94 | 1.95 U | 1.95 U |
| High Molecular Weight PAH | µg/kg-Wet | 4 | 1 | 25 | 1 JT | 1 JT | 1 | 1 JT | 1 JT | 1 JT | 16 UT | 6.13 | 7.5 UT | 8 UT |
| Low Molecular Weight PAH | µg/kg-Wet | 4 | 3 | 75 | 5.2 T | 6.5 JT | 5.77 | 5.6 T | 5.6 T | 3.9 UT | 6.5 JT | 4.81 | 5.2 T | 5.6 T |



BZTO104(e)033355

Table 6.4-2. Summary Statistics for Indicator Chemicals for Fish Tissues by Area.

| Analyte | Units | # Analyzed | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Study Area*** | | | | | | | | | | | | | | |
| Total PAHs | µg/kg-Wet | 4 | 3 | 75 | 5.2 T | 6.6 JT | 6.1 | 6.5 JT | 6.5 JT | 5.2 T | 16 UT | 6.58 | 6.5 JT | 6.6 JT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg-Wet | 7 | 7 | 100 | 6.89 | 17.1 T | 13.1 | 13.2 T | 16.8 | 6.89 | 17.1 T | 13.1 | 13.2 T | 16.8 |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 4 | 0 | 0 | | | | | | 0.91 UT | 0.96 U | 0.468 | 0.465 U | 0.47 U |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 4 | 0 | 0 | | | | | | 0.91 UT | 0.96 U | 0.468 | 0.465 U | 0.47 U |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 4 | 0 | 0 | | | | | | 1.6 UT | 2.7 UT | 1.14 | 1.1 UT | 1.3 UT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 4 | 4 | 100 | 5.4 JT | 7.9 JT | 6.75 | 6.1 JT | 7.6 JT | 5.4 JT | 7.9 JT | 6.75 | 6.1 JT | 7.6 JT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 4 | 4 | 100 | 5.4 JT | 7.9 JT | 6.41 | 6.1 JT | 6.25 JT | 5.4 JT | 7.9 JT | 6.41 | 6.1 JT | 6.25 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 4 | 1 | 25 | 1.35 JT | 1.35 JT | 1.35 | 1.35 JT | 1.35 JT | 1.35 JT | 3.8 UT | 1.21 | 0.9 UT | 1.35 JT |
| ***Lamprey (adult) from Willamette Falls*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 4 | 4 | 100 | 39 J | 50 | 44.3 | 42 | 46 J | 39 J | 50 | 44.3 | 42 | 46 J |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | percent-Wet | | | | | | | | | | | | | |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 4 | 4 | 100 | 0.241 T | 0.333 T | 0.289 | 0.266 T | 0.316 T | 0.241 T | 0.333 T | 0.289 | 0.266 T | 0.316 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 4 | 4 | 100 | 1 T | 1.26 T | 1.18 | 1.19 T | 1.26 T | 1 T | 1.26 T | 1.18 | 1.19 T | 1.26 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 4 | 4 | 100 | 0.209 | 0.274 | 0.24 | 0.215 | 0.261 | 0.209 | 0.274 | 0.24 | 0.215 | 0.261 |
| Mercury | mg/kg-Wet | 4 | 4 | 100 | 0.125 | 0.168 | 0.137 | 0.126 | 0.129 | 0.125 | 0.168 | 0.137 | 0.126 | 0.129 |
| Zinc | mg/kg-Wet | 4 | 4 | 100 | 18 | 19.9 | 19.2 | 19.1 | 19.6 | 18 | 19.9 | 19.2 | 19.1 | 19.6 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 4 | 0 | 0 | | | | | | 16 U | 20 U | 8.88 | 8 U | 9.5 UJ |
| Benzo(a)pyrene | µg/kg-Wet | 4 | 0 | 0 | | | | | | 3.9 U | 4.9 U | 2.18 | 1.95 U | 2.35 U |
| High Molecular Weight PAH | µg/kg-Wet | 4 | 2 | 50 | 9.6 JT | 12.4 JT | 11 | 9.6 JT | 9.6 JT | 9.6 JT | 20 UT | 10.4 | 9.6 JT | 10 UT |
| Low Molecular Weight PAH | µg/kg-Wet | 4 | 3 | 75 | 3.6 JT | 48.1 JT | 30.9 | 40.9 T | 40.9 T | 3.6 JT | 48.1 JT | 24.8 | 6.5 UJT | 40.9 T |
| Total PAHs | µg/kg-Wet | 4 | 3 | 75 | 3.6 JT | 57.7 JT | 38.2 | 53.3 JT | 53.3 JT | 3.6 JT | 57.7 JT | 31 | 9.5 UJT | 53.3 JT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg-Wet | 4 | 4 | 100 | 38.5 | 48.6 | 44.8 | 45.7 | 46.4 | 38.5 | 48.6 | 44.8 | 45.7 | 46.4 |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 4 | 0 | 0 | | | | | | 0.84 UJ | 0.93 UJ | 0.45 | 0.455 UJ | 0.46 UJ |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 4 | 0 | 0 | | | | | | 0.84 UJ | 0.93 UJ | 0.45 | 0.455 UJ | 0.46 UJ |
| Total Chlordanes | µg/kg-Wet | | | | | | | | | | | | | |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 4 | 0 | 0 | | | | | | 7 UJT | 8.8 UJT | 4.1 | 4.2 UJT | 4.3 UJT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 4 | 0 | 0 | | | | | | 23 UJT | 28 UJT | 12.8 | 12 UJT | 13.5 UJT |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 4 | 0 | 0 | | | | | | 23 UJT | 28 UJT | 12.8 | 12 UJT | 13.5 UJT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 4 | 0 | 0 | | | | | | 4.4 UJT | 5.7 UJT | 2.56 | 2.6 UJT | 2.6 UJT |
| ***Sturgeon (fillet without skin) from RM 3.5 to 9.2*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 5 | 5 | 100 | 43 | 430 JT | 133 | 51.5 JT | 90 | 43 | 430 JT | 133 | 51.5 JT | 90 |
| **Conventionals** | | | | | | | | | | | | | | |
| Lipids | | | | | | | | | | | | | | |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 5 | 5 | 100 | 0.137 T | 1.44 T | 0.606 | 0.555 T | 0.62 T | 0.137 T | 1.44 T | 0.606 | 0.555 T | 0.62 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 5 | 5 | 100 | 0.61 T | 4.11 T | 1.67 | 1.09 T | 1.71 T | 0.61 T | 4.11 T | 1.67 | 1.09 T | 1.71 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg-Wet | 5 | 5 | 100 | 0.157 | 0.538 | 0.342 | 0.314 | 0.422 | 0.157 | 0.538 | 0.342 | 0.314 | 0.422 |
| Mercury | mg/kg-Wet | 5 | 5 | 100 | 0.0963 | 0.322 T | 0.242 | 0.263 | 0.305 | 0.0963 | 0.322 T | 0.242 | 0.263 | 0.305 |
| Zinc | mg/kg-Wet | 5 | 5 | 100 | 2.08 | 2.93 T | 2.56 | 2.55 | 2.72 | 2.08 | 2.93 T | 2.56 | 2.55 | 2.72 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg-Wet | 5 | 0 | 0 | | | | | | 15 UT | 16 U | 7.6 | 7.5 U | 7.5 U |
| Benzo(a)pyrene | µg/kg-Wet | 5 | 0 | 0 | | | | | | 3.8 UT | 3.9 U | 1.92 | 1.9 U | 1.95 U |
| High Molecular Weight PAH | µg/kg-Wet | 5 | 2 | 40 | 0.9 JT | 2.5 JT | 1.7 | 0.9 JT | 0.9 JT | 0.9 JT | 15 UT | 5.18 | 7.5 UT | 7.5 UT |
| Low Molecular Weight PAH | µg/kg-Wet | 5 | 3 | 60 | 3.1 JT | 23.1 T | 9.87 | 3.4 JT | 3.4 JT | 3.1 JT | 23.1 T | 6.72 | 3.1 JT | 3.4 JT |
| Total PAHs | µg/kg-Wet | 5 | 3 | 60 | 4 JT | 23.1 T | 11 | 5.9 JT | 5.9 JT | 4 JT | 23.1 T | 9.6 | 7.5 UT | 7.5 UT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg-Wet | 5 | 5 | 100 | 84.7 | 964 | 289 | 96.2 | 206 | 84.7 | 964 | 289 | 96.2 | 206 |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg-Wet | 5 | 0 | 0 | | | | | | 0.47 U | 1 U | 0.424 | 0.455 U | 0.475 U |
| beta-Hexachlorocyclohexane | µg/kg-Wet | 5 | 0 | 0 | | | | | | 0.23 U | 1 U | 0.4 | 0.455 U | 0.475 U |
| Total Chlordanes | µg/kg-Wet | | | | | | | | | | | | | |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 5 | 0 | 0 | | | | | | 1.1 UT | 24 UT | 5.82 | 5 UT | 7.5 UT |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | µg/kg-Wet | 5 | 5 | 100 | 38 JT | 125 JT | 77.7 | 64 JT | 122 JT | 38 JT | 125 JT | 77.7 | 64 JT | 122 JT |



BZTO104(e)033356

Table 6.4-2. Summary Statistics for Indicator Chemicals for Fish Tissues by Area.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # Analyzed | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Study Area*** | | | | | | | | | | | | | | |
| Total of 2,4' and 4,4'-DDE | µg/kg-Wet | 5 | 5 | 100 | 27.5 JT | 94 JT | 50.3 | 51 JT | 51 JT | 27.5 JT | 94 JT | 50.3 | 51 JT | 51 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 5 | 5 | 100 | 10 JT | 74 JT | 27.4 | 13 JT | 28 JT | 10 JT | 74 JT | 27.4 | 13 JT | 28 JT |

[a] - This value was selected from an ascending ranked list of all results. Where n = the number of samples, the actual sample result corresponding to the rand of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

J - The associated numerical value is an estimated quantity.

N - Presumptive evidence of presence of material; identification of the compound is not definitive.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033357

Table 7.1-1. Summary of iCOCs, Potential iCOCs, and Select TZW Analytes.

| | Human Health iCOCs | | | Human Health Potential TZW iCOCs | | Human Health Select TZW Analytes | | Ecological iCOCs | | | Ecological Potential iCOCs | | | | | Ecological Select TZW Analytes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Anlayte** | Fish Consumption | Shellfish Consumption | Sediment Direct Contact | TZW -Drinking Water Scenario | TZW - Fish/Shellfish Consumption | TZW - AWQC EF>10 [a] | TZW - MCL EF>100 [b] | Benthic Invertebrates [c] | Fish [d] | Wildlife [e] | Benthic Invertebrates [d] | Fish [f] | Benthic Invertebrates - FPM [g] | Benthic Invertebrates - TZW [h] | Benthic Invertebrates - Other (High) Uncertainties [i] | TZW - Chronic Eco SL EF > 10 [j] |
| **Other** | | | | | | | | | | | | | | | | |
| Cyanide | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- | √ | √ | -- | √ | -- | √ |
| Perchlorate | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ | -- | √ | -- | √ |
| **Conventionals** | | | | | | | | | | | | | | | | |
| Ammonia | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- | √ | -- | -- | -- |
| Sulfides | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- | √ | -- | -- | -- |
| **Metals** | | | | | | | | | | | | | | | | |
| Aluminum | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ |
| Arsenic | √ | √ | √ | -- | -- | √ | -- | -- | -- | -- | √ | -- | √ | -- | √ | -- |
| Barium | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ |
| Cadmium | -- | -- | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- | -- | -- | -- | √ |
| Cobalt | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ |
| Copper | -- | -- | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- | -- | -- | -- | √ |
| Iron | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ |
| Lead | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- | √ | -- | -- | √ |
| Manganese | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ |
| Mercury | √ | -- | -- | -- | -- | -- | -- | -- | √ | -- | √ | -- | √ | -- | √ | -- |
| Silver | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- | √ | -- | -- | √ |
| Sodium | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ |
| Vanadium | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ |
| Zinc | -- | -- | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- | -- | -- | -- | √ |
| **Butyltins** | | | | | | | | | | | | | | | | |
| Tributyltin | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- | √ | -- | -- | -- | √ | -- |
| **PCBs** | | | | | | | | | | | | | | | | |
| PCB TEQ | √ | √ | √ | -- | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- | -- | -- |
| Total PCBs | √ | √ | √ | -- | -- | -- | -- | √ | √ | √ | -- | -- | -- | -- | -- | -- |
| **Dioxins/Furans** | | | | | | | | | | | | | | | | |
| Dioxin TEQ | √ | √ | √ | -- | -- | √ | -- | -- | -- | √ | -- | -- | -- | -- | -- | -- |
| **Pesticides** | | | | | | | | | | | | | | | | |
| 2,4'-DDD | -- | -- | -- | -- | -- | -- | -- | √ | √ | -- | -- | -- | -- | -- | -- | √ |
| 2,4'-DDT | -- | -- | -- | -- | -- | -- | -- | √ | √ | -- | -- | -- | -- | -- | -- | √ |
| 4,4'-DDD | -- | -- | -- | -- | -- | -- | -- | √ | √ | -- | -- | -- | -- | -- | -- | √ |
| 4,4'-DDE | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- | √ | -- | -- | √ | √ | √ |
| 4,4'-DDT | -- | -- | -- | -- | -- | -- | -- | √ | √ | -- | -- | -- | -- | -- | -- | √ |
| Aldrin | -- | √ | -- | -- | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- | -- | -- |
| alpha-Hexachlorocyclohexane | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- | √ | -- | √ | -- |
| beta-Hexachlorocyclohexane | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- | -- | -- | √ | -- |
| delta-Hexachlorocyclohexane | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- | √ | -- | √ | -- |



BZTO104(e)033359

Table 7.1-1. Summary of iCOCs, Potential iCOCs, and Select TZW Analytes.

| | Human Health iCOCs | | | Human Health Potential TZW iCOCs | | Human Health Select TZW Analytes | | Ecological iCOCs | | | Ecological Potential iCOCs | | | | | Ecological Select TZW Analytes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Anlayte** | Fish Consumption | Shellfish Consumption | Sediment Direct Contact | TZW -Drinking Water Scenario | TZW - Fish/Shellfish Consumption | TZW - AWQC EF>10 [a] | TZW - MCL EF>100 [b] | Benthic Invertebrates [c] | Fish [d] | Wildlife [e] | Benthic Invertebrates [d] | Fish [f] | Benthic Invertebrates - FPM [g] | Benthic Invertebrates - TZW [h] | Benthic Invertebrates - Other (High) Uncertainties [i] | TZW - Chronic Eco SL EF > 10 [j] |
| Dalapon | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dieldrin | √ | √ | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- | √ | -- | √ | -- |
| Endrin | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- | -- | -- | √ | -- |
| Endrin Keytone | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- | √ | -- | √ | -- |
| gamma-Hexachlorocyclohexane | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Heptachlor | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Heptachlor Epoxide | -- | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Chlordanes | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ | √ | -- | √ | -- |
| Total of 2,4' and 4,4'-DDD | √ | √ | -- | -- | √ | √ | -- | -- | -- | √ | √ | -- | √ | -- | √ | -- |
| Total of 2,4' and 4,4'-DDE | √ | √ | -- | -- | -- | √ | -- | -- | -- | √ | √ | -- | √ | -- | √ | -- |
| Total of 2,4' and 4,4'-DDT | √ | √ | -- | -- | √ | √ | -- | -- | -- | -- | √ | -- | √ | √ | √ | √ |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | -- | -- | -- | -- | -- | -- | -- | √ | √ | -- | -- | -- | -- | -- | -- | -- |
| **PAHs** | | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ | -- | √ | √ | √ |
| Acenaphthene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ | -- | √ | √ | √ |
| Anthracene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ | -- | √ | √ | √ |
| Benzo(a)anthracene | -- | √ | √ | -- | -- | √ | -- | -- | -- | -- | √ | √ | -- | √ | √ | √ |
| Benzo(a)pyrene | -- | √ | √ | -- | -- | √ | √ | √ | -- | -- | -- | √ | -- | -- | -- | √ |
| Benzo(b)fluoranthene | -- | √ | √ | -- | -- | √ | -- | -- | -- | -- | √ | √ | -- | √ | √ | √ |
| Benzo(g,h,i)perylene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ | -- | √ | √ | √ |
| Benzo(k)fluoranthene | -- | √ | -- | -- | -- | √ | -- | -- | -- | -- | √ | √ | -- | √ | √ | √ |
| Chrysene | -- | -- | -- | -- | -- | √ | -- | √ | -- | -- | -- | √ | -- | -- | -- | √ |
| Dibenzo(a,h)anthracene | -- | √ | √ | -- | -- | √ | -- | -- | -- | -- | √ | √ | -- | √ | √ | √ |
| Fluoranthene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ | -- | √ | √ | √ |
| Fluorene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ | -- | √ | √ | √ |
| Indeno(1,2,3-cd)pyrene | -- | √ | √ | -- | -- | √ | -- | -- | -- | -- | √ | √ | -- | √ | √ | √ |
| Naphthalene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ | -- | √ | √ | √ |
| Phenanthrene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ | -- | √ | √ | √ |
| Pyrene | -- | -- | -- | -- | -- | -- | -- | √ | -- | -- | -- | √ | -- | -- | -- | √ |
| Total PAHs | -- | -- | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- | -- | -- | -- | -- |
| **Phthalate esters** | | | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | √ | -- | -- | -- | -- | -- | -- | -- | √ | -- | √ | -- | -- | -- | √ | -- |
| Dibutyl phthalate | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- | √ | -- | √ | -- |
| **SVOCs** | | | | | | | | | | | | | | | | |
| 1,2-Dichlorobenzene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ |
| 1,4-Dichlorobenzene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ |
| Hexachlorobenzene | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- | -- | -- | √ | -- |
| Pentachlorophenol | -- | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |



BZTO104(e)033360

Table 7.1-1. Summary of iCOCs, Potential iCOCs, and Select TZW Analytes.

| | Human Health iCOCs | | | Human Health Potential TZW iCOCs | | Human Health Select TZW Analytes | | Ecological iCOCs | | | Ecological Potential iCOCs | | | | | Ecological Select TZW Analytes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Anlayte** | Fish Consumption | Shellfish Consumption | Sediment Direct Contact | TZW -Drinking Water Scenario | TZW - Fish/Shellfish Consumption | TZW - AWQC EF>10 [a] | TZW - MCL EF>100 [b] | Benthic Invertebrates [c] | Fish [d] | Wildlife [e] | Benthic Invertebrates [d] | Fish [f] | Benthic Invertebrates - FPM [g] | Benthic Invertebrates - TZW [h] | Benthic Invertebrates - Other (High) Uncertainties [i] | TZW - Chronic Eco SL EF > 10 [j] |
| **VOCs** | | | | | | | | | | | | | | | | |
| 1,1,2-Trichloroethane | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1,2-Dichloroethane | -- | -- | -- | -- | -- | √ | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzene | -- | -- | -- | -- | -- | √ | √ | -- | -- | -- | -- | -- | -- | -- | -- | √ |
| Bromodichloromethane | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Carbon disulfide | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ |
| Chlorobenzene | -- | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- | -- | -- | -- | -- | √ |
| Chloroform | -- | -- | -- | √ | -- | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| cis-1,2-Dichloroethene | -- | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- | -- | -- | -- | -- | √ |
| Ethylbenzene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ |
| Methylene chloride | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| o-Xylene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ |
| Tetrachloroethene | -- | -- | -- | -- | -- | √ | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Toluene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ |
| Total Xylenes | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ |
| Trichloroethene | -- | -- | -- | √ | -- | √ | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Vinyl chloride | -- | -- | -- | -- | -- | √ | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Petroleum** | | | | | | | | | | | | | | | | |
| TPH-DRH | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- | √ | -- | -- | -- |
| TPH-RRH | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- | √ | -- | -- | -- |

**Notes:**

[a] At least one TZW sample exceeds the AWQC screening criteria for fish consumption (17.5 g/day) by a factor of 10.

[b] At least one TZW sample exceeds the drinking water MCL screening criteria by a factor of 100.

[c] Based on tissue and surface water LOEs

[d] Based on tissue, surface water, and dietary LOEs

[e] Based on dietary and bird egg LOEs

[f] Potential ecological iCOC for fish were identified as those chemicals with potential risk estimates from the TZW LOE that were not supported by any other LOEs (i.e., in tissue, surface water, or dietary LOEs).

[g] Potential ecological iCOC for benthic invertebrates based on the floating percentile method (FPM) LOE.

[h] Potential ecological iCOC for benthic invertebrates based on the TZW benthic invertebrate LOE.

[i] Potential ecological iCOC for benthic invertebrates based on high uncertainty.

[j] At least one TZW sample exceeds the chronic ecological water screening level by a factor of 10.



BZTO104(e)033361

Table 7.1-2. Anlayte Summary for Loading Estimates - Surface Water.

| Analyte | Relevant iCOC or Potential iCOC | Actual Load Estimate Analyte List |
|---|---|---|
| **Metals** | | |
| Arsenic | √ | √ |
| Cadmium | √ | √ |
| Copper | √ | √ |
| Lead | √ | √ |
| Mercury | √ | √ |
| Silver | √ | √ |
| Zinc | √ | √ |
| **Butyltins** | | |
| Tributyltin | √ | √ |
| **PCBs** | | |
| PCB TEQ | √ | √ |
| Total PCBs | √ | √ |
| **Dioxins/Furans** | | |
| Dioxin TEQ | √ | √ |
| **Pesticides** | | |
| 2,4'-DDD | √ | √ |
| 2,4'-DDT | √ | √ |
| 4,4'-DDD | √ | √ |
| 4,4'-DDE | √ | √ |
| 4,4'-DDT | √ | √ |
| Aldrin | √ | √ |
| alpha-Hexachlorocyclohexane | √ | √ |
| beta-Hexachlorocyclohexane | √ | √ |
| delta-Hexachlorocyclohexane | √ | √ |
| Dieldrin | √ | √ |
| Endrin | √ | √ |
| Endrin Keytone | √ | √ |
| gamma-Hexachlorocyclohexane | √ | √ |
| Heptachlor | √ | √ |
| Heptachlor Epoxide | √ | √ |
| Total Chlordanes | √ | √ |
| Total of 2,4' and 4,4'-DDD | √ | √ |
| Total of 2,4' and 4,4'-DDE | √ | √ |
| Total of 2,4' and 4,4'-DDT | √ | √ |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | √ | √ |
| **Polycyclic Aromatic Hydrocarbons** | | |
| 2-Methylnaphthalene | √ | √ |
| Acenaphthene | √ | √ |
| Anthracene | √ | √ |
| Benzo(a)anthracene | √ | √ |
| Benzo(a)pyrene | √ | √ |
| Benzo(b)fluoranthene | √ | √ |
| Benzo(g,h,i)perylene | √ | √ |
| Benzo(k)fluoranthene | √ | √ |
| Chrysene | √ | √ |
| Dibenzo(a,h)anthracene | √ | √ |

BZTO104(e)033363

Table 7.1-2. Anlayte Summary for Loading Estimates - Surface Water.

| Analyte | Relevant iCOC or Potential iCOC | Actual Load Estimate Analyte List |
|---|---|---|
| Fluoranthene | √ | √ |
| Fluorene | √ | √ |
| Indeno(1,2,3-cd)pyrene | √ | √ |
| Naphthalene | √ | √ |
| Phenanthrene | √ | √ |
| Pyrene | √ | √ |
| Total PAHs | √ | √ |
| **Phthalate esters** | | |
| Bis(2-ethylhexyl) phthalate | √ | √ |
| Dibutyl phthalate | √ | NS |
| **Semivolatile Organic Compounds** | | |
| Hexachlorobenzene | √ | √ |
| Pentachlorophenol | √ | √ |

**Notes:**
NS Not sampled.

BZTO104(e)033364

Table 7.1-3. Summary of Upland Sites with Existing or DEQ Expected Stormwater Data.

| Site | ECSI No. | River Mile and Bank | | | Existing Stormwater Data | DEQ Expecting to Collect Stormwater Data |
|---|---|---|---|---|---|---|
| Lakeside Industries | 2372 | 8.4 W | 4850 NW Front | Bill Robertson | No | No |
| Anderson Brothers Property | 970 | 8.9 | 5275 & 5315 NW St. Helens Rd. | Bob Schwarz | No | No |
| ACF Industries | 794 | 3.6 W | 12160 NW St Helens | Dan Hafley | No | No |
| Arkema | 398 | 7.2 W | 6400 NW Front | Matt McClincy | Yes | Yes |
| BP Terminal 22T (ARCO) | 1528 | 5.3 W | 9930 NW St Helens | Tom Gainer | Yes | Yes, screening |
| Brix Maritime (aka Foss) | 2364 | 5.7 W | 9030 NW St Helens | Dana Bayuk | No | Yes, screening |
| Calbag Metals | 2454 | 8.5 W | 4927 NW Front | Tom Gainer | Yes | No |
| Gould Electronics, Inc aka GA-TEK | 49 | 7.5W | 5909 NW 61st Ave | EPA lead; Chip Humphrey | | |
| Chevron Asphalt | 1281 | 8.0 W | 5501 NW Front | Mark Pugh | No | Yes, screening |
| Vanwater and Rogers | 330 | 9 | 3950 NW Yeon Ave | EPA lead; Kristine Koch | | |
| Christensen Oil | 2426 | 8.9 W | 3821 NW St Helens | Tom Gainer | Yes | Yes, screening |
| City of Portland Outfalls | various | 3.5 to 9.2 | various | Tom Roick | No | Yes |
| Triangle Park (N PDX Yard) | 277 | 7.5 E | 5828 N Van Houten | Jim Anderson | No | No |
| McCormick & Baxter | 74 | 7 | 6900 N Edgewater Street | Kevin Parrett | No | No |
| Consolidated Meteo | 3295 | 2.8 E | 3940 N Rivergate | Mike Romero | No | Yes, screening |
| Crawford Street Corp | 2363 | 6.3 E | 84248 N Crawford | Tom Gainer | No | Yes, screening |
| Columbia American Plating | 29 | 9.3 | 3003 NW 35th Ave | Mark Pugh | No | No |
| Fred Devine | 2365 | 8.3 E | 6211 N Ensign | Mark Pugh | Yes | Maybe[a] |
| Freightliner (Parts Mfg Plant) | 115 | 9.2 E | 5400 N Basin | Mike Romero | No | Yes, special |
| Shaver Transportation | 2377 | 8.4 W | 4900 NW Front | Mark Pugh | No | No |
| Freightliner Truck Plant | 2366 | 8.4 E | 6936 N Fathom | Mike Romero | No | Yes, special |
| Front Ave LP | 1239 | 8.1 W | 4950, 5034 & 5200 NW Front | Mike Romero | No | Yes, screening |
| Container Recovery | 4015 | 8.8W | 3900 NW Yeon | Matt McClincy | ?? | No |
| Exxon Mobil | 137 | 5.1 W | 9420 NW St Helens | Matt McClincy | ?? | ?? |
| Galvanizers Company | 1196 | 9.6 W | 2406 NW 30h | Dana Bayuk | Yes | Yes, screening |
| Jefferson Smurfit | 2371 | 3.7 E | 9930 N Burgard | Matt McClincy | ?? | No |
| Gasco (NW Natural) | 84 | 6.4 W | 7900 NW St Helens | position currently vacant | Yes | Probably |
| Linnton Plywood | 2373 | 4.6 W | 10504 NW St Helens | Matt McClincy | ?? | No |
| Olympic Pipeline Portland Facility within ExxonMobil | 3342 | 5.2W | 9420 NW St Helens | Matt McClincy | ?? | ?? |
| Gasco (Siltronic Operable Unit). | 183 | 6.6 W | 7700 NW Front | Matt McClincy | Yes | Probably |
| PGE Harborton | 2353 | 3.2 W | NW Marina Way | Matt McClincy | ?? | No |
| Riverscape (aka Port of Portland T1S) | 2642 | 10.9 | 2100 NW Front | Matt McClincy | ?? | No |
| Schnitzer Kittridge | 2442 | 8.3 W | 4959 NW Front | Matt McClincy | ?? | No |
| Texaco Product Pipeline | 2117 | 8.7 | 4500 Block Front Ave. | Matt McClincy | No | No |
| GE Decommissioning | 4003 | 9.5 W | 2727 NW 29th | Tom Gainer | Yes (CB only) | Yes, uncertain |
| Glacier Northwest Inc. | 2378 | | 5034 NW Front Ave | Mike Romero | No | Yes, screening |
| GS Roofing | 117 | 7.5 W | 6350 NW Front | Mike Romero | No | Maybe, screening |
| Guilds Lake RR Yard | 100 | 9.0 W | 3500 NW Yeon | Mike Romero | Yes | Yes, screening |
| Gunderson | 1155 | 9.0 W | 4350 SW Front | Dana Bayuk | Yes | Yes |
| Kinder Morgan (Aka GATX) | 1096 | 4.2 W | 11400 NW St Helens | Mike Romero | Yes (but not JSCS) | Yes, screening |
| Koppers Inc | 2348 | 7 | 7540 NW St. Helens Rd. | Matt McClincy | Yes | No |
| Linnton Oil Fire Training Grounds | 1189 | 4 | NW Marina Way | Tom Gainer | Yes, surface water | No |
| MarCom (S Parcel) | 2350 | 5.8 E | 8790 N Bradford | Mike Romero | No | Yes, screening |
| Marine Finance | 2352 | 5.8 W | 8444 NW St Helens | Mark Pugh | Yes | Yes[a] |
| Mar Com Marine (N Parcel) | 2350 | 5.6 E | 8790 N Bradford | Mike Romero | No | No (IP) |
| McCall Oil | 134 | 7.4 W | 5550 NW Front | Tom Gainer | Yes | Maybe, screening |
| Premier Edible Oils | 2013 | 3.6 E | 10400 N Burgard | Mike Romero | No | No (IP) |
| NW Pipe | 138 | 3.9 E | 12005 N Burgard | Mike Romero | Yes | No |
| Oregon Steel Mills | 141 | 2.2 E | 14400 N Rivergate | Matt McClincy | ?? | Not this year |
| Esco Landfill Sauive Island | 4409 | 2.6 | 14444 NW Gillihan Loop | No PM Assigned | No | No |
| Owens-Corning Fiberglass (Trumbull Asp) | 1036 | 3.8 W | 11444 NW St Helens | Tom Gainer | No | Maybe, screening |
| PGE Forest Park | 2406 | 8.5 | 4400 Block Street | Tom Roick | No | Yes, screening |
| Port of Portland Terminal 1 North | 3377 | 10.6 W | 2200 NW Front | Tom Gainer | No | Maybe, screening |
| Port of Portland Terminal 2 | 2769 | 10.0 W | 3556 NW Front | Tom Gainer | No | Maybe, screening |
| Portland Shipyard | 271 | 8.4 E | Swan Island | Jennifer Sutter | No | Yes |
| Rhone Poulenc | 155 | 6.9 W | 6200 NW St Helens | Tom Roick | Yes | Yes, special |
| Georgia Pacific Linnton | 2370 | 3.9 W | 12222 NW Marina | Tom Gainer | No | No |
| Goldendale Aluminum | 2440 | 9.8 E | 2600 N River | Tom Gainer | No | No |
| RoMar Realty of Oregon | 2437 | 3.7 | 9333 N Time Oil | Tom Gainer | Yes (CB only) | No |
| Schnitzer Burgard | 2355 | 4.1 E | 12005 N Burgard | Mike Romero | No | Maybe, screening |
| Schnitzer Steel | | 3.8E | | | ?? | Maybe[a] |
| Siltronic Corp. TCE Investigation | 183 | 6.5 W | 7200 NW Front | Dana Bayuk | No | Yes, screening |
| PGE Substation E | 3976 | 10.4 | 2635 NW Front Ave. | Tom Gainer | No | No |
| Sulzer Pump | 1235 | 10.4 W | 2800 NW Front | Mark Pugh | Yes | Yes, special |
| Terminal 4 Slip 1 | 2356 | 4.3 E | 11040 N Lombard | Tom Gainer | Yes | Yes |
| Port of Portland Auto Storage Area (ASA) | 2642 | 5.0 E | 10400 Lombard | Tom Gainer | No | No |
| Terminal 4 Slip 3 | 272 | 4.6 E | 10400 Lombard | Tom Roick | Yes | Yes, special |
| Terminal 5 | 1686 | 1.5 E | 15540, 15550, & 15560 N Lombard | Tom Gainer | No | Maybe[a] |
| Texaco Terminal | 169 | 8.9 W | 3800 NW St Helens | Matt McClincy | No | Probably |
| Time Oil | 170 | 3.4 E | 10350 Time Oil Rd | Tom Roick | Yes | Maybe[a] |
| UPRR Albina | 178 | 10.3 E | 2745 N Interstate | Mike Romero | Yes (CB only) | Yes, special |
| US Moorings | 1641 | 6.2 | 8010 NW St. Helens Rd. | EPA lead; Kristine Koch | ?? | No, EPA lead |
| USCG | 1338 | 8.2 E | 6767 N Basin Ave. | Tom Gainer | Yes | No |
| Willamette Cove | 2066 | 6.8 E | Foot of N Edgewater | Kevin Parrett | Yes | No |
| Willbridge (Kinder Morgan, Chevron, Conoco Phillips) | 1549 | 7.7 W | Front Ave & NW Doane | No PM currently assigned | ?? | Yes[a] |
| UPRR St Johns Tank Farm | 2017 | 4.6 E | 6908 N Roberts | Tom Roick | No | No |
| **Total Sites with Existing Data** | | | | | **0** | **NA** |
| **Total Sites Data Collection Expected or Possible[b]** | | | | | **NA** | **0** |

[a]As indicated in table provide by DEQ's Karen Tarnow no November 2, 2006
[b]Possible includes sites shown as "maybe" or "probably."



BZTO104(e)033365

Table 7.1-4. Anlayte Summary for Loading Estimates - Stormwater Runoff.

| Analyte | Relevant iCOC or Potential iCOC | Actual Load Estimate Analyte List |
|---|---|---|
| **Metals** | | |
| Arsenic | √ | √ |
| Cadmium | √ | -- [a] |
| Copper | √ | √ |
| Lead | √ | √ |
| Mercury | √ | √ |
| Zinc | √ | √ |
| **Butyltins** | | |
| Tributyltin | √ | -- [a] |
| **PCBs** | | |
| PCB TEQ | √ | -- [a] |
| Total PCBs | √ | √ |
| **Dioxins/Furans** | | |
| Dioxin TEQ | √ | -- [a] |
| **Pesticides** | | |
| 2,4'-DDD | √ | -- [a] |
| 2,4'-DDT | √ | -- [a] |
| 4,4'-DDD | √ | -- [a] |
| 4,4'-DDE | √ | -- [a] |
| 4,4'-DDT | √ | -- [a] |
| Aldrin | √ | -- [a] |
| alpha-Hexachlorocyclohexane | √ | -- [a] |
| beta-Hexachlorocyclohexane | √ | -- [a] |
| delta-Hexachlorocyclohexane | √ | -- [a] |
| Dieldrin | √ | -- [a] |
| Endrin | √ | -- [a] |
| Endrin Keytone | √ | -- [a] |
| gamma-Hexachlorocyclohexane | √ | -- [a] |
| Heptachlor | √ | -- [a] |
| Heptachlor Epoxide | √ | -- [a] |
| Total Chlordanes | √ | -- [a] |
| Total of 2,4' and 4,4'-DDD | √ | -- [a] |
| Total of 2,4' and 4,4'-DDE | √ | -- [a] |
| Total of 2,4' and 4,4'-DDT | √ | √ |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | √ | -- [a] |
| **Polycyclic Aromatic Hydrocarbons** | | |
| 2-Methylnaphthalene | √ | -- [a] |
| Acenaphthene | √ | -- [a] |
| Anthracene | √ | -- [a] |
| Benzo(a)anthracene | √ | -- [a] |
| Benzo(a)pyrene | √ | -- [a] |

BZTO104(e)033367

Table 7.1-4. Anlayte Summary for Loading Estimates - Stormwater Runoff.

| Analyte | Relevant iCOC or Potential iCOC | Actual Load Estimate Analyte List |
|---|---|---|
| Benzo(b)fluoranthene | √ | -- [a] |
| Benzo(g,h,i)perylene | √ | -- [a] |
| Benzo(k)fluoranthene | √ | -- [a] |
| Chrysene | √ | -- [a] |
| Dibenzo(a,h)anthracene | √ | -- [a] |
| Fluoranthene | √ | -- [a] |
| Fluorene | √ | -- [a] |
| Indeno(1,2,3-cd)pyrene | √ | -- [a] |
| Naphthalene | √ | -- [a] |
| Phenanthrene | √ | -- [a] |
| Pyrene | √ | -- [a] |
| Total PAHs | √ | √ |
| **Phthalate esters** | | |
| Bis(2-ethylhexyl)phthalate | √ | √ |
| Dibutyl phthalate | √ | -- [a] |
| **Semivolatile Organic Compounds** | | |
| Hexachlorobenzene | √ | -- [a] |
| Pentachlorophenol | √ | -- [a] |

**Notes:**

[a] Literature data could not be found for this analyte.

BZTO104(e)033368

Table 7.1-5. Anlayte Summary for Loading Estimates - Groundwater Plume.

| Analyte | TZW Select Analyte, Relevant iCOCs, or Potential iCOCs[a] | Actual Load Estimate Analyte List |
|---|---|---|
| **Conventionals** | | |
| Cyanide | √ | √ |
| Perchlorate | √ | √ |
| **Metals** | | |
| Aluminum | √ | √ |
| Arsenic | √ | √ |
| Barium | √ | √ |
| Cadmium | √ | √ |
| Cobalt | √ | -- [c] |
| Copper | √ | √ |
| Iron | √ | √ |
| Lead | √ | √ |
| Manganese | √ | √ |
| Mercury | √ | √ |
| Silver | √ | √ |
| Sodium | √ | √ |
| Vanadium | √ | -- [c] |
| Zinc | √ | √ |
| **Butyltins** | | |
| Tributyltin | √ | NS |
| **PCBs** | | |
| PCB TEQ | √ | NS |
| Total PCBs | √ | NS |
| **Dioxins/Furans** | | |
| Dioxin TEQ | √ | -- [b] |
| **Pesticides** | | |
| 2,4'-DDD | √ | √ |
| 2,4'-DDT | √ | √ |
| 4,4'-DDD | √ | √ |
| 4,4'-DDE | √ | √ |
| 4,4'-DDT | √ | √ |
| Aldrin | √ | NS |
| alpha-Hexachlorocyclohexane | √ | NS |
| beta-Hexachlorocyclohexane | √ | NS |
| delta-Hexachlorocyclohexane | √ | NS |
| Dieldrin | √ | NS |
| Endrin | √ | NS |
| Endrin Keytone | √ | NS |
| gamma-Hexachlorocyclohexane | √ | NS |
| Heptachlor | √ | NS |
| Heptachlor Epoxide | √ | NS |
| Total Chlordanes | √ | NS |
| Total of 2,4' and 4,4'-DDD | √ | √ |
| Total of 2,4' and 4,4'-DDE | √ | √ |
| Total of 2,4' and 4,4'-DDT | √ | √ |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | √ | √ |
| **Polycyclic Aromatic Hydrocarbons** | | |
| 2-Methylnaphthalene | √ | √ |
| Acenaphthene | √ | √ |
| Anthracene | √ | √ |

BZTO104(e)033369

Table 7.1-5. Anlayte Summary for Loading Estimates - Groundwater Plume.

| Analyte | TZW Select Analyte, Relevant iCOCs, or Potential iCOCs[a] | Actual Load Estimate Analyte List |
|---|---|---|
| Benzo(a)anthracene | √ | √ |
| Benzo(a)pyrene | √ | √ |
| Benzo(b)fluoranthene | √ | √ |
| Benzo(g,h,i)perylene | √ | √ |
| Benzo(k)fluoranthene | √ | √ |
| Chrysene | √ | √ |
| Dibenzo(a,h)anthracene | √ | √ |
| Fluoranthene | √ | √ |
| Fluorene | √ | √ |
| Indeno(1,2,3-cd)pyrene | √ | √ |
| Naphthalene | √ | √ |
| Phenanthrene | √ | √ |
| Pyrene | √ | √ |
| Total PAHs | √ | √ |
| **Phthalate esters** | | |
| Bis(2-ethylhexyl) phthalate | √ | NS |
| Dibutyl phthalate | √ | NS |
| **Semivolatile Organic Compounds** | | |
| 1,2-Dichlorobenzene | √ | √ |
| 1,4-Dichlorobenzene | √ | √ |
| Hexachlorobenzene | √ | NS |
| Pentachlorophenol | √ | NS |
| **Volatile Organic Compounds** | | |
| 1,1,2-Trichloroethane | √ | √ |
| 1,2-Dichloroethane | √ | √ |
| Benzene | √ | √ |
| Bromodichloromethane | √ | √ |
| Carbon disulfide | √ | √ |
| Chlorobenzene | √ | √ |
| Chloroform | √ | √ |
| cis-1,2-Dichloroethene | √ | √ |
| Ethylbenzene | √ | √ |
| Methylene chloride | √ | √ |
| o-Xylene | √ | √ |
| Tetrachloroethene | √ | √ |
| Toluene | √ | √ |
| Total Xylenes | √ | √ |
| Trichloroethene | √ | √ |
| Vinyl chloride | √ | √ |

**Notes:**

NS Not sampled.

[a] Analyte list includes COPCs in addition to iCOCs and potential iCOCs in recognition of the limited lines of evidence associated with many of these chemicals.

[b] Sampled at Rhone Poulenc only (2 or fewer sample locations).

[c] Sampled by Siltronic only.

BZTO104(e)033370

Table 7.1-6. Anlayte Summary for Loading Estimates - Air Deposition.

| Analyte | Relevant iCOC or Potential iCOC | Actual Load Estimate Analyte List |
|---|---|---|
| **Metals** | | |
| Arsenic | √ | √ |
| Cadmium | √ | √ |
| Copper | √ | √ |
| Mercury | √ | √ |
| Zinc | √ | √ |
| **Butyltins** | | |
| Tributyltin | √ | -- [a] |
| **PCBs** | | |
| PCB TEQ | √ | √ |
| Total PCBs | √ | √ |
| **Dioxins/Furans** | | |
| Dioxin TEQ | √ | √ |
| **Pesticides** | | |
| 2,4'-DDD | √ | -- [b] |
| 2,4'-DDT | √ | -- [a] |
| 4,4'-DDD | √ | -- [a] |
| 4,4'-DDE | √ | -- [b] |
| 4,4'-DDT | √ | -- [a] |
| Aldrin | √ | -- [a] |
| alpha-Hexachlorocyclohexane | √ | -- [a] |
| beta-Hexachlorocyclohexane | √ | -- [a] |
| delta-Hexachlorocyclohexane | √ | -- [a] |
| Dieldrin | √ | √ |
| Endrin | √ | -- [b] |
| Endrin Keytone | √ | -- [b] |
| gamma-Hexachlorocyclohexane | √ | -- [a] |
| Heptachlor | √ | √ |
| Heptachlor Epoxide | √ | -- [b] |
| Total Chlordanes | √ | √ |
| Total of 2,4' and 4,4'-DDD | √ | -- [a] |
| Total of 2,4' and 4,4'-DDE | √ | √ |
| Total of 2,4' and 4,4'-DDT | √ | √ |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | √ | -- [b] |
| **Polycyclic Aromatic Hydrocarbons** | | |
| 2-Methylnaphthalene | √ | -- [b] |
| Acenaphthene | √ | -- [b] |
| Anthracene | √ | -- [b] |
| Benzo(a)anthracene | √ | √ |
| Benzo(a)pyrene | √ | √ |
| Benzo(b)fluoranthene | √ | -- [a] |
| Benzo(g,h,i)perylene | √ | √ |
| Benzo(k)fluoranthene | √ | √ |

BZTO104(e)033371

Table 7.1-6. Anlayte Summary for Loading Estimates - Air Deposition.

| Analyte | Relevant iCOC or Potential iCOC | Actual Load Estimate Analyte List |
|---|---|---|
| Chrysene | √ | -- [a] |
| Dibenzo(a,h)anthracene | √ | √ |
| Fluoranthene | √ | -- [b] |
| Fluorene | √ | -- [b] |
| Indeno(1,2,3-cd)pyrene | √ | √ |
| Naphthalene | √ | -- [b] |
| Phenanthrene | √ | -- [b] |
| Pyrene | √ | -- [b] |
| Total PAHs | √ | -- [c] |
| **Phthalate esters** | | |
| Bis(2-ethylhexyl) phthalate | √ | √ |
| Dibutyl phthalate | √ | √ |
| **Semivolatile Organic Compounds** | | |
| Hexachlorobenzene | √ | √ |
| Pentachlorophenol | √ | -- [b] |

**Notes:**

[a] Literature data could not be found for this analyte.

[b] Not included in original literature search, which was based on preliminary iCOC analyte lists.

[c] List of 7 carcinogenic PAHs found in literature and used as a surrogate for total PAHs.

BZTO104(e)033372

Table 7.1-7. Anlayte Summary for Loading Estimates - Groundwater Advection.

| Analyte | Relevant iCOC or Potential iCOC | Actual Load Estimate Analyte List |
|---|---|---|
| **Metals** | | |
| Arsenic | √ | √ |
| Cadmium | √ | -- a |
| Copper | √ | -- a |
| Mercury | √ | -- a |
| Zinc | √ | -- a |
| **Butyltins** | | |
| Tributyltin | √ | -- [a] |
| **PCBs** | | |
| PCB TEQ | √ | -- a |
| Total PCBs | √ | √ |
| **Dioxins/Furans** | | |
| Dioxin TEQ | √ | -- a |
| **Pesticides** | | |
| 2,4'-DDD | √ | -- a |
| 2,4'-DDT | √ | -- a |
| 4,4'-DDD | √ | √ |
| 4,4'-DDE | √ | -- a |
| 4,4'-DDT | √ | √ |
| Aldrin | √ | √ |
| alpha-Hexachlorocyclohexane | √ | √ |
| beta-Hexachlorocyclohexane | √ | √ |
| delta-Hexachlorocyclohexane | √ | -- a |
| Dieldrin | √ | √ |
| Endrin | √ | -- a |
| Endrin Keytone | √ | -- a |
| gamma-Hexachlorocyclohexane | √ | √ |
| Heptachlor | √ | √ |
| Heptachlor Epoxide | √ | -- a |
| Total Chlordanes | √ | √ |
| Total of 2,4' and 4,4'-DDD | √ | √ |
| Total of 2,4' and 4,4'-DDE | √ | √ |
| Total of 2,4' and 4,4'-DDT | √ | √ |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | √ | √ |
| **Polycyclic Aromatic Hydrocarbons** | | |
| 2-Methylnaphthalene | √ | -- a |
| Acenaphthene | √ | -- a |
| Anthracene | √ | -- a |
| Benzo(a)anthracene | √ | -- a |
| Benzo(a)pyrene | √ | √ |
| Benzo(b)fluoranthene | √ | -- a |
| Benzo(g,h,i)perylene | √ | -- a |
| Benzo(k)fluoranthene | √ | -- a |
| Chrysene | √ | -- a |
| Dibenzo(a,h)anthracene | √ | -- a |
| Fluoranthene | √ | -- a |
| Fluorene | √ | -- a |
| Indeno(1,2,3-cd)pyrene | √ | -- a |
| Naphthalene | √ | -- a |
| Phenanthrene | √ | -- a |
| Pyrene | √ | -- a |
| Total PAHs | √ | √ |

BZTO104(e)033373

Table 7.1-7. Anlayte Summary for Loading Estimates - Groundwater Advection.

| Analyte | Relevant iCOC or Potential iCOC | Actual Load Estimate Analyte List |
|---|---|---|
| **Phthalate esters** | | |
| Bis(2-ethylhexyl) phthalate | √ | √ |
| Dibutyl phthalate | √ | -- a |
| **Semivolatile Organic Compounds** | | |
| Hexachlorobenzene | √ | √ |
| Pentachlorophenol | √ | -- a |

**Notes:**

[a] Polygons were not generated for the specific analyte and/or equilibrium partitioning approach not appropriate for the specific analyte.

BZTO104(e)033374

Table 8.4-1. Ranges of Estimated Cumulative Excess Lifetime Cancer Risks and Hazard Indices for Portland Harbor Human Health Scenarios.

| Receptor | Exposure Scenario | Estimated Cancer Risk | | Estimated Hazard Index | |
|---|---|---|---|---|---|
| | | Min | Max | Min | Max |
| Dockside Worker | Direct Exposure to Beach Sediment | 4.E-08 | **9.E-05** | 5.E-04 | 5.E-02 |
| Inwater Worker | Direct Exposure to Inwater Sediment | 6.E-09 | **3.E-05** | 3.E-04 | 1.E-01 |
| Transient | Direct Exposure to Beach Sediment | 8.E-09 | 6.E-07 | 6.E-03 | 1.E-01 |
| | Direct Exposure to Surface Water | 9.E-08 | 7.E-07 | 1.E-02 | 5.E-02 |
| | Direct Exposure to Groundwater Seep | 6.E-10 | 5.E-09 | 7.E-04 | 3.E-03 |
| Adult Recreational Beach User | Direct Exposure to Beach Sediment | 2.E-08 | **4.E-06** | 2.E-03 | 3.E-02 |
| | Direct Exposure to Surface Water | 2.E-09 | 2.E-08 | 3.E-05 | 1.E-04 |
| Child Recreational Beach User | Direct Exposure to Beach Sediment | 1.E-07 | **1.E-05** | 1.E-02 | 4.E-01 |
| | Direct Exposure to Surface Water | 9.E-09 | 5.E-08 | 2.E-04 | 1.E-03 |
| Native American Fisher | Direct Exposure to Beach Sediment | 1.E-07 | **2.E-05** | 3.E-03 | 8.E-02 |
| | Direct Exposure to Inwater Sediment | 7.E-08 | **4.E-04** | 4.E-04 | 3.E-01 |
| Recreational Fisher | Direct Exposure to Beach Sediment | 2.E-08 | **6.E-06** | 2.E-03 | 5.E-02 |
| | Direct Exposure to Inwater Sediment | 1.E-08 | **1.E-04** | 2.E-04 | 2.E-01 |
| Non-Recreational Fisher | Direct Exposure to Beach Sediment | 1.E-08 | **4.E-06** | 8.E-04 | 3.E-02 |
| | Direct Exposure to Inwater Sediment | 5.E-09 | **8.E-05** | 1.E-04 | 1.E-01 |
| Nontribal Adult Consumer | Shellfish Ingestion | 1.E-06 | **8.E-04** | 5.E-02 | **2.E+01** |
| Nontribal Adult Consumer | Fish Ingestion, Single-Species Diet | **7.E-06** | **2.E-02** | 5.E-01 | **7.E+02** |
| | Fish Ingestion, Multiple-Species Diet | **8.E-05** | **7.E-03** | **4.E+00** | **2.E+02** |
| Nontribal Child Consumer | Fish Ingestion, Single-Species Diet | **3.E-06** | **8.E-03** | 1.E+00 | **1.E+03** |
| | Fish Ingestion, Multiple-Species Diet | **3.E-05** | **3.E-03** | **8.E+00** | **5.E+02** |
| Native American Adult Consumer | Fish Ingestion, Multiple-Species Diet | **4.E-04** | **1.E-02** | **3.E+01** | **2.E+02** |
| Native American Child Consumer | Fish Ingestion, Multiple-Species Diet | **6.E-05** | **2.E-03** | **5.E+01** | **3.E+02** |

**Notes:**

Bolded cells exceed the minimum EPA target cancer risk level of 1 x $10^{6}$ or the target hazard index of 1.

Highlighted cells exceed the minimum EPA target cancer risk level of 1 x $10^{4}$ or the target hazard index of 1.



BZTO104(e)033375

Table 8.4-2. Initial Chemicals of Concern for Human Health.

| Initial Chemical of Concern | Exposure Medium and Scenario | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Beach Sediment | | | | | | | In-Water Sediment | | | | Fish | | | | Shellfish |
| | Adult Recreational Beach User | Child Recreational Beach User | Dockside Worker | Non-tribal, Recreational Fisher | Non-tribal, Non-recreational Fisher | Native American Fisher | Transient | In-water Worker | Non-tribal, Recreational Fisher | Non-tribal, Non-recreational Fisher | Native American Fisher | Adult Non-tribal Consumption | Child Non-tribal Consumption | Adult Native American Consumption | Child Native American Consumption | Adult Non-tribal Consumption |
| Arsenic | X[a,b] | X[b] | | X[b] | X | X | | | X[a,b] | X[a,b] | X[b] | X | X | X | X | X |
| Mercury | | | | | | | | | | | | X[d] | X[d] | X | X | |
| Benzo(a)anthracene | | | X[a,b] | | | | | | X[a,b] | X[a,b] | X[a,b] | | | | | X |
| Benzo(a)pyrene | | X[b] | X[a] | X[a,b] | | X[b] | | X[a,b] | X[b] | X[b] | X | | | | | X |
| Benzo(b)fluoranthene | | | X[a,b] | | | | | | X[a,b] | | X[b] | | | | | X |
| Benzo(k)fluoranthene | | | | | | | | | | | | | | | | X[a,c] |
| Dibenzo(a,h)anthracene | | | X[a,b] | | | | | | X[a,b] | X[a,b] | X[b] | | | | | X |
| Indeno(1,2,3-cd)pyrene | | | X[a,b] | | | | | | X[a,b] | | X[b] | | | | | X |
| Bis(2-ethylhexyl)phthalate | | | | | | | | | | | | X | X | X | X | |
| Hexachlorobenzene | | | | | | | | | | | | X | X[a] | X | X | |
| Pentachlorophenol | | | | | | | | | | | | | | | | X[a,c] |
| Total PCBs | | | | | | | | | X[a,b] | X[a,b] | X[b] | X | X | X[d] | X[d] | X |
| Total PCB TEQ | | | | | | | | | | | X[b] | X | X | X | X | X |
| Total Dioxin TEQ | | | | | | | | X[a,b] | X[a,b] | X[a,b] | X | X | X | X | X | X |
| Aldrin | | | | | | | | | | | | | | | | X[a] |
| Dieldrin | | | | | | | | | | | | X | X | X | X | X[c] |
| Heptachlor | | | | | | | | | | | | X | X[a,c] | X | X[d] | |
| Heptachlor Epoxide | | | | | | | | | | | | | | | | X[c] |
| alpha-Hexachlorocyclohexane | | | | | | | | | | | | X | X | X[d] | | |
| beta-Hexachlorocyclohexane | | | | | | | | | | | | X | X[a,c] | | | |
| gamma-Hexachlorocyclohexane | | | | | | | | | | | | X | | | | |
| Total Chlordane | | | | | | | | | | | | X | X | X | X | |
| Total DDD | | | | | | | | | | | | X | X | X | X | X[c] |
| Total DDE | | | | | | | | | | | | X | X | X | X | X[c] |
| Total DDT | | | | | | | | | | | | X | X | X | X | X[c] |

**Notes:**

[a]iCOC status is result of target risk or hazard exceedance for two or fewer exposure points.

[b]iCOC status is result of target risk or hazard exceedance for RME scenario only.

[c]iCOC status is result of target risk or hazard exceedance only for the high ingestion rate.

[d]iCOC status is result of target risk or hazard exceedance for UCL/max EPCs, but not for mean EPCs.

**Abbreviations:**

iCOC = initial Chemical of Concern
EPC = Exposure Point Concentration
RME = Reasonable Maximum Exposure

BZTO104(e)033376

Table 9.3-1. Round 2 COPCs for Ecological Receptors Based on the Screening Level ERA.

| | Benthic Invertebrates | | | | | | | | | | | | | | | Fish | | | | | | | | | | | | | | | | | | | | Wildlife | | | | | | | | Amphib-ians | Aquatic Plants | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FPM | LRM | Field Tissue LOE | | | Lab Tissue LOE | | Predicted Tissue LOE | | | | | Surface Water LOE | TZW LOE | EqP Approach LOE | Field Tissue LOE | | | | | | | Predicted Tissue LOE | Dietary Dose LOE | | | | | | | Surface Water LOE | Surface Water Conc. And Olfactory Function LOE | TZW LOE | Incidence of Lesions LOE | Diet Dose LOE | | | | | | | Bird Egg LOE | | Surface Water LOE | Surface Water LOE | TZW LOE |
| **Round 2 COPC** | Benthic Community | Benthic Community | Benthic Community: shellfish (clams) | Benthic Community: Crayfish | Benthic Community (multiplate tissue) | Benthic Community (lab worms) | Benthic Community: shellfish (lab clams) | Benthic Community: shellfish (field clams) | Benthic Community: shellfish (lab clams) | Benthic Community: crayfish | Benthic Community (lab worms) | All Benthic Receptors | All Benthic Receptors | All Benthic Receptors | | Largescale Sucker | Carp (dioxin and dioxin-like PCBs only) | Sculpin | Peamouth | Juvenile Chinook Salmon | Smallmouth Bass | Northern Pikeminnow | Sculpin | Largescale Sucker | Pre-breeding White Sturgeon | Sculpin | Peamouth | Juvenile Chinook Salmon | Smallmouth Bass | Northern Pikeminnow | All Fish | Adult Chinook Salmon | Benthic Fish | Benthic Fish | Spotted Sandpiper | Hooded Merganser | Bald Eagle | Osprey | Mink | River Otter | Bald Eagle | Osprey | Amphibian Populations | Aquatic Plants | Aquatic Plants |
| **Metals** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | | X | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | |
| Arsenic | X | X | | | | X | | | | | X | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | |
| Barium | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Cadmium | X | X | X | | | X | | X | | | | | | X | | | | | | | | | X | X | X | X | X | X | X | | | X | | X | | | | | | | | | X |
| Chromium | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | |
| Copper | | X | X | X | X | X | X | | X | | | | | X | | | | | | | | | X | X | X | X | X | X | X | | | X | | X | X | | X | | | | | | X |
| Lead | X | X | | | | | | | | | | | | X | | | | | X | | | | | | | | | | | | | X | | X | X | X | X | | | | | | X |
| Mercury | X | X | | | | | | | | | | | | | | | | | | | | X | | X | | | | | | X | | | | X | X | X | X | X | | X | X | | | |
| Nickel | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Selenium | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | X | | | X | | | | | | |
| Silver | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sodium | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Thallium | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | |
| Vanadium | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Zinc | X | X | X | | | X | | X | | | | X | | X | | | | | | X | | | | | | | | | | X | | | | X | | | | | | | | X | X | X |
| **Butyltins** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Butyltin ion | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | |
| Tributyltin ion | | X | X | | | X | X | X | X | | X | | | | | | | | | | | | | X | X | X | X | X | X | X | | | | X | | | | | | | | | |
| **PAHs** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Acenaphthene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Acenaphthylene | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Anthracene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Benzo(a)anthracene | | | | | | X | | | | | | X | | X | | | | | | | | | | | | | | | | X | | | | X | | | | | | | | | X |
| Benzo(a)pyrene | | | | | | X | | | | | X | X | | X | | | | | | | | | | | X | | | | | X | | | | X | X | | X | | | | | | X |
| Benzo(b)fluoranthene | | | | | | X | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Benzo(g,h,i)perylene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Benzo(k)fluoranthene | | | | | | X | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Chrysene | | | | | | X | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Dibenzo(a,h)anthracene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Fluoranthene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Fluorene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Indeno(1,2,3-cd)pyrene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Naphthalene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Phenanthrene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Pyrene | | | | | | X | | | X | | X | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Total PAHs | | X | X | | | X | X | X | X | | X | | | | | | | | | | | | | | X | | | | | | | | | X | | | X | X | | | | | |
| **Phthalates** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | | | | | | | X | | | | | | | | | X | | | X | | | X | | X | | | | | | | | | | | X | X | X | X | | | | | | |
| Dibutyl phthalate | X | | X | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | |
| **SVOCs** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2-Dichlorobenzene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| 1,4-Dichlorobenzene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Dibenzofuran | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| **TPH** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Diesel-range hydrocarbons | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Residual-range hydrocarbons | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Phenols** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4-Chloro-3-methylphenol | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X | X | |
| Phenol | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **PCBs** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



BZTO104(e)033377

Table 9.3-1. Round 2 COPCs for Ecological Receptors Based on the Screening Level ERA.

| | Benthic Invertebrates | | | | | | | | | | | | | | | Fish | | | | | | | | | | | | | | | | | | | | Wildlife | | | | | | | | Amphib-ians | Aquatic Plants | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FPM | LRM | Field Tissue LOE | | | Lab Tissue LOE | | Predicted Tissue LOE | | | | | Surface Water LOE | TZW LOE | EqP Approach LOE | Field Tissue LOE | | | | | | | Predicted Tissue LOE | Dietary Dose LOE | | | | | | | Surface Water LOE | Surface Water Conc. And Olfactory Function LOE | TZW LOE | Incidence of Lesions LOE | Diet Dose LOE | | | | | | | Bird Egg LOE | | Surface Water LOE | Surface Water LOE | TZW LOE |
| **Round 2 COPC** | Benthic Community | Benthic Community | Benthic Community: shellfish (clams) | Benthic Community: Crayfish | Benthic Community (multiplate tissue) | Benthic Community (lab worms) | Benthic Community: shellfish (lab. clams) | Benthic Community: shellfish (field clams) | Benthic Community: shellfish (lab. clams) | Benthic Community: crayfish | Benthic Community (lab worms) | All Benthic Receptors | All Benthic Receptors | All Benthic Receptors | | Largescale Sucker | Carp (dioxins and dioxin-like PCBs only) | Sculpin | Peamouth | Juvenile Chinook Salmon | Smallmouth Bass | Northern Pikeminnow | Sculpin | Largescale Sucker | Pre-breeding White Sturgeon | Sculpin | Peamouth | Juvenile Chinook Salmon | Smallmouth Bass | Northern Pikeminnow | All Fish | Adult Chinook Salmon | Benthic Fish | Benthic Fish | Spotted Sandpiper | Hooded Merganser | Bald Eagle | Osprey | Mink | River Otter | Bald Eagle | Osprey | Amphibian Populations | Aquatic Plants | Aquatic Plants |
| PCB TEQ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | X | X | X | X | X | X | | | |
| Total PCBs | X | | X | | | X | | | | | | X | | | | X | | X | | | X | X | | X | X | X | X | X | X | X | | | | X | X | X | X | X | X | X | X | X | X | |
| **Dioxins/Furans** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dioxin TEQ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | X | X | X | X | X | X | | | |
| **Pesticides** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,4-DDD | | | | | | | | | | | | X | X | | | | | | | | | | | | | | | | | X | | X | | | | | | | | | | | | X |
| 2,4-DDT | | | | | | | | | | | | X | X | | | | | | | | | | | | | | | | | X | | X | | | | | | | | | | X | X | X |
| 4,4-DDD | | | X | | | X | X | | | | | X | X | | | X | | X | | X | X | | | | | | | | | X | | X | | | | | | | | | | | | X |
| 4,4-DDE | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| 4,4-DDT | | | | | | | | | | | | X | X | | | | | X | | | | | | | | | | | | X | | X | | | | | | | | | | X | X | X |
| Sum DDD | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | |
| Sum DDE | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | X | X | | | X | X | | | | |
| Sum DDT | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | X | X | | | | | | | | |
| Total DDTs | | X | X | | | X | X | | | | | X | X | | | X | | X | | | X | X | X | X | X | X | | X | X | X | | X | | X | X | | | X | X | | X | X | X |
| Aldrin | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | |
| alpha-Hexachlorocyclohexane | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| beta-Hexachlorocyclohexane | X | X | | | | | | | X | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| delta-Hexachlorocyclohexane | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| alpha-Chlordane | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| gamma-Chlordane | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total chlordane | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dieldrin | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endrin | | | | | | | | | X | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endrin ketone | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Herbicides** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dalapon | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| Silvex™ | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| **VOCs** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| 1,2,4-Trimethylbenzene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| 1,3,5-Trimethylbenzene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| Acetone | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| Carbon disulfide | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| Chlorobenzene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| Chloroethane | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| cis-1,2-Dichloroethene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| Ethylbenzene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| Isopropylbenzene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| m,p-Xylene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| o-Xylene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| Total xylenes | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| Toluene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| Trichloroethene | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| Vinyl chloride | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| **Conventionals** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ammonia | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cyanide | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| Fines, percent (silt + clay) | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Perchlorate | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X |
| Sulfides | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



BZTO104(e)033378

Table 9.4-1. iCOCs for Ecological Receptors Based on the Round 2 ERA.

| Chemical | iCOC | | | | | Potential iCOC | |
|---|---|---|---|---|---|---|---|
| | Benthic Invertebrates | Fish | Wildlife | Amphibians | Aquatic Plants | Benthic Invertebrates[a] | Fish[b] |
| **Metals** | | | | | | | |
| Arsenic | | | | | | X[c] | |
| Cadmium | X | | | | | | |
| Copper | X | | | | | | |
| Lead | | | | | | X[c] | |
| Mercury | | X | | | | X[c] | |
| Silver | | | | | | X[c] | |
| Zinc | X | | | | | | |
| **Butyltins** | | | | | | | |
| Tributyltin | | X | | | | X | |
| **PAHs** | | | | | | | |
| 2-Methylnaphthalene | | | | | | X | X |
| Acenaphthene | | | | | | X | X |
| Anthracene | | | | | | X | X |
| Benzo(a)anthracene | | | | | | X | X |
| Benzo(a)pyrene | X | | | | | | X |
| Benzo(b)fluoranthene | | | | | | X | X |
| Benzo(g,h,i)perylene | | | | | | X | X |
| Benzo(k)fluoranthene | | | | | | X | X |
| Chrysene | X | | | | | | X |
| Dibenzo(a,h)anthracene | | | | | | X | X |
| Fluoranthene | | | | | | X | X |
| Fluorene | | | | | | X | X |
| Indeno(1,2,3-cd)pyrene | | | | | | X | X |
| Naphthalene | | | | | | X | X |
| Phenanthrene | | | | | | X | X |
| Pyrene | X | | | | | | X |
| Total PAHs | X | | | | | | |
| **Phthalates** | | | | | | | |
| BEHP | | X | | | | X | |
| Dibutyl phthalate | | | | | | X | |
| **PCBs** | | | | | | | |
| PCB TEQ | | | X | | | | |
| Total PCBs | X | X | X | | | | |

BZTO104(e)033379

Table 9.4-1. iCOCs for Ecological Receptors Based on the Round 2 ERA.

| Chemical | iCOC | | | | | Potential iCOC | |
|---|---|---|---|---|---|---|---|
| | Benthic Invertebrates | Fish | Wildlife | Amphibians | Aquatic Plants | Benthic Invertebrates[a] | Fish[b] |
| **Dioxins/Furans** | | | | | | | |
| Dioxin TEQ | | | X | | | | |
| **Pesticides** | | | | | | | |
| DDTs | X[d] | X[e] | X[f] | | | | |
| Aldrin | | | X | | | | |
| Total chlordane | | | | | | X[c] | |
| Dieldrin | | | | | | X[c] | |
| Endrin ketone | | | | | | X[c] | |
| alpha-HCH | | | | | | X[c] | |
| beta-HCH | | | | | | X[c] | |
| delta-HCH | | | | | | X[c] | |
| **TPH** | | | | | | | |
| Diesel-range hydrocarbons | | | | | | X[c] | |
| Residual-range hydrocarbons | | | | | | X[c] | |
| **Conventionals** | | | | | | | |
| Ammonia | | | | | | X[c] | |
| Percent fines | | | | | | X[c] | |
| Sulfides | | | | | | X[c] | |
| **Cyanide** | | | | | | | |
| Cyanide | | | | | | X | X |
| **Perchlorate** | | | | | | | |
| Perchlorate | | | | | | X | X |

[a] Potential ecological iCOC for benthic invertebrates were identified as those chemicals with potential risk estimates from the TZW LOE, FPM LOE that were not supported by any other LOEs (i.e., in tissue or surface water LOEs), or based on high uncertainty.

[b] Potential ecological iCOC for fish were identified as those chemicals with potential risk estimates from the TZW LOE that were not supported by any other LOEs (i.e., in tissue, surface water, or dietary LOEs).

[c] These potential ecological iCOCs were identified exclusively based on the FPM, and are considered uncertain potential iCOCs, recognizing that the FPM does not prove causality.

[d] DDTs identified as iCOCs for benthic invertebrates based on the tissue, surface water, and TZW LOEs included 2,4′-DDD, 2,4′-DDT, 4,4′-DDD, 4,4′-DDE, 4,4′-DDT, and total DDTs. DDTs were identified as potential iCOCs for benthic invertebrates based on the FPM included: sum DDD, sum DDE, and sum DDT.

[e] DDTs identified as iCOCs for fish included 2,4′-DDD, 2,4′-DDT, 4,4′-DDD, 4,4′-DDE, 4,4′-DDT, and total DDTs.

[f] DDTs identified as iCOCs for wildlife included sum DDD and sum DDE.

BZTO104(e)033380

Table 9.4-1. iCOCs for Ecological Receptors Based on the Round 2 ERA.

BEHP – bis(2-ethylhexyl) phthalate
ERA – ecological risk assessment
FPM – floating percentile model
HCH – hexachlorocyclohexane
iCOC – initial chemical of concern
LOE – line of evidence
PAH – polycyclic aromatic hydrocarbon
PCB – polychlorinated biphenyls
TEQ – toxic equivalent
TPH – total petroleum hydrocarbons

BZTO104(e)033381

Table 9.5-1. Data Needs for the BERA

| ERA Data Need | Receptor Group | Notes |
|---|---|---|
| **Round 3 Sampling** | | |
| If warranted based on further analysis, conduct additional toxicity testing in areas identified as indeterminate or where additional data may be needed to delineate AOPCs in the BERA. Other LOEs were used to assess risks to benthic invertebrates in these areas; however, additional toxicity testing may be warranted in areas where the additional LOEs did not alter the indeterminate status. | Benthic invertebrates | Discussions between LWG and EPA will determine whether and within which areas additional toxicity testing will be necessary to assess risk to benthic invertebrates in the BERA. |
| Collect lamprey ammocoete tissue for analysis and comparison to tissue-based TRVs. | Fish | Round 3 sampling event was conducted in fall 2006 to fill this LWG-identified data need. |
| Conduct lamprey ammocoete toxicity tests in water to determine appropriate toxicological thresholds. | Fish | Round 3 sampling event was initiated in fall 2006 to fill this EPA-identified data need. |
| Collect pre-breeding sturgeon tissue for analysis and comparison to tissue-based TRVs. This analysis will include the analysis of TBT in whole-body tissue. Observations on external/physical conditions of pre-breeding sturgeon collected in the field will be made. | Fish | Round 3 sampling event to be conducted in winter/spring 2007 to fill this LWG-identified data need. |
| Collect additional surface water to better understand any influence of flow conditions on surface water concentrations. | Fish, benthic invertebrates, amphibians/reptiles, and aquatic plants | Round 3 sampling event to be conducted in early 2007. |
| **BERA Information** | | |
| The uncertainties associated with any correlation of the available TPH measures (diesel- and residual-range hydrocarbons) to toxicity in the FPM have been well-documented and submitted to EPA under separate cover (LWG 2006b). In particular, the existing TPH measures represent mixtures of hydrocarbons with an unknown composition of constituents of variable toxicities and cannot be used reliably to establish a sediment quality value. If, despite this analysis, EPA's recommendation is to use a TPH correlation in the ERA (in the FPM or other approach), it is critical that appropriate data be collected and that a scientifically robust analysis addressing the merits of this application be completed. | Benthic invertebrates | This analysis will occur prior to the BERA. |
| Conduct a TRV search for benthic invertebrates. The TRVs used in the tissue-residue LOEs (both empirical and predicted) were based on the aquatic TRVs provided by EPA. The majority of these TRVs are calculated from AWQC and BCFs and therefore best suited as conservative screening values. | Benthic invertebrates | This analysis will occur prior to the BERA. |



BZTO104(e)033383

Table 9.5-1. Data Needs for the BERA

| ERA Data Need | Receptor Group | Notes |
|---|---|---|
| Re-evaluate Round 2 fish and wildlife TRVs to determine whether they are appropriate for the BERA. | Fish, wildlife | This analysis will occur prior to the BERA. |
| Conduct additional literature investigations as part of the BERA to evaluate the significance of exposure of populations to individual iCOCs. | Fish, wildlife | This analysis will occur prior to the BERA. |
| Evaluate ecological relevance of dietary assumptions for wildlife receptors (e.g., SUF, spatial scale, use of laboratory-exposed worm tissue to represent shorebird prey). Additional literature will be reviewed to determine appropriate assumptions to be used in the BERA. | Wildlife | This analysis will occur prior to the BERA to reduce uncertainties in estimates for wildlife. |

AOPC – area of potential concern
AWQC – ambient water quality criteria
BCF – bioaccumulation factor
BERA – baseline ecological risk assessment
EPA – US Environmental Protection Agency
ERA – ecological risk assessment
iCOC – initial chemical of concern
LOE – line of evidence
LWG – Lower Willamette Group
SUF – site use factor
TBT – tributyltin
TPH – total petroleum hydrocarbons
TRV – toxicity reference value



BZTO104(e)033384

Table 10.1-1. Sediment Spatial Scales for the Application of iPRGs to Development of iAOPCs for Human Health and Ecological Exposure Scenarios.

| Exposure Scenario | Site-wide Spatial Scale | Area-specific Spatial Scale (Hill Topping Method 1) | Area-specific Spatial Scale (Hill Topping Method 2) | Location-specific Spatial Scale |
|---|---|---|---|---|
| Human Health | | | | |
| Direct contact with beach sediment | | | | ●* |
| Direct contact with in-water sediment | | ● | | |
| Fish ingestion (carp, crappie, bullhead) | ● | | | |
| Fish ingestion (bass) | | ● | | |
| Shellfish ingestion (clams, crayfish) | | | | ● |
| Ecological | | | | |
| Benthic invertebrates (clams, crayfish) exposure | | | | ●* |
| Sculpin exposure | | | | ● |
| Smallmouth bass exposure | | | ● | |
| Site-wide ranging fish receptors exposure | ● | | | |
| Spotted sandpiper (shorebird) exposure to beach areas | | | | ● |
| Site-wide ranging wildlife receptor exposure (foraging in sediment <20 ft MLLW) | | ● | | |

Note:
These scales are relevant to the application of iPRGs and may differ from the scale over which risk is assessed in the Human Health and Ecological Risk Assessments.
* In these cases iPRGs are either not developed or not used in the delineation of iAOPCs. Rather, for Ecological exposure scenarios, the FPM and toxicity tests are used to delineate areas; and for Human Health exposure scenarios, risk thresholds for arsenic background are used.



BZTO104(e)033385

Table 10.1-2. Initial Chemicals of Concern for Direct Exposure to Sediment.

| Initial Chemical of Concern | Exposure Medium | Exposure Scenario |
|---|---|---|
| Arsenic | Beach Sediment | Child Recreational Beach User |
| | | Adult Recreational Beach User |
| | | Nontribal, Recreational Fisher |
| | | Nontribal, Non-Recreational Fisher |
| | | Native American Fisher* |
| | In-Water Sediment | Nontribal, Recreational Fisher |
| | | Nontribal, Non-Recreational Fisher |
| | | Native American Fisher* |
| Benzo(a)anthracene | Beach Sediment | Dockside Worker* |
| | In-Water Sediment | Nontribal, Recreational Fisher |
| | | Nontribal, Non-Recreational Fisher |
| | | Native American Fisher* |
| Benzo(a)pyrene | Beach Sediment | Dockside Worker |
| | | Child Recreational Beach User |
| | | Nontribal, Recreational Fisher |
| | | Native American Fisher* |
| | In-Water Sediment | In-Water Worker |
| | | Nontribal, Recreational Fisher |
| | | Nontribal, Non-Recreational Fisher |
| | | Native American Fisher* |
| Benzo(b)fluoranthene | Beach Sediment | Dockside Worker* |
| | In-Water Sediment | Nontribal, Recreational Fisher |
| | | Native American Fisher* |
| Dibenzo(a,h)anthracene | Beach Sediment | Dockside Worker* |
| | In-Water Sediment | Nontribal, Recreational Fisher |
| | | Nontribal, Non-Recreational Fisher |
| | | Native American Fisher* |
| Indeno(1,2,3-cd)pyrene | Beach Sediment | Dockside Worker* |
| | In-Water Sediment | Nontribal, Recreational Fisher |
| | | Native American Fisher* |
| Total PCBs | In-Water Sediment | Nontribal, Recreational Fisher |
| | | Nontribal, Non-Recreational Fisher |
| | | Native American Fisher* |
| Total PCB TEQ | In-Water Sediment | Native American Fisher* |
| Total Dioxin TEQ | In-Water Sediment | In-Water Worker |
| | | Nontribal, Recreational Fisher |
| | | Nontribal, Non-Recreational Fisher |
| | | Native American Fisher* |

* = exposure scenario resulting in lowest iPRG



BZTO104(e)033386

Table 10.1-3. Initial Chemicals of Concern for Fish and Shellfish Consumption.

| Initial Chemical of Concern | Exposure Medium | Exposure Scenario |
|---|---|---|
| Arsenic | Fish | Adult Nontribal Consumption |
| | | Child Nontribal Consumption |
| | | Adult Native American Consumption |
| | | Child Native American Consumption |
| | Shellfish | Adult Nontribal Consumption |
| Mercury | Fish | Adult Nontribal Consumption |
| | | Child Nontribal Consumption |
| | | Adult Native American Consumption |
| | | Child Native American Consumption |
| Benzo(a)anthracene | Shellfish | Adult Nontribal Consumption |
| Benzo(a)pyrene | Shellfish | Adult Nontribal Consumption |
| Benzo(b)fluoranthene | Shellfish | Adult Nontribal Consumption |
| Benzo(k)fluoranthene | Shellfish | Adult Nontribal Consumption |
| Dibenzo(a,h)anthracene | Shellfish | Adult Nontribal Consumption |
| Indeno(1,2,3-cd)pyrene | Shellfish | Adult Nontribal Consumption |
| Bis(2-ethylhexyl)phthalate | Fish | Adult Nontribal Consumption |
| | | Child Nontribal Consumption |
| | | Adult Native American Consumption |
| | | Child Native American Consumption |
| Hexachlorobenzene | Fish | Adult Nontribal Consumption |
| | | Child Nontribal Consumption |
| | | Adult Native American Consumption |
| | | Child Native American Consumption |
| Pentachlorophenol | Shellfish | Adult Nontribal Consumption |
| Total PCBs | Fish | Adult Nontribal Consumption |
| | | Child Nontribal Consumption |
| | | Adult Native American Consumption |
| | | Child Native American Consumption |
| | Shellfish | Adult Nontribal Consumption |
| Total PCB TEQ | Fish | Adult Nontribal Consumption |
| | | Child Nontribal Consumption |
| | | Adult Native American Consumption |
| | | Child Native American Consumption |
| | Shellfish | Adult Nontribal Consumption |
| Total Dioxin TEQ | Fish | Adult Nontribal Consumption |
| | | Child Nontribal Consumption |
| | | Adult Native American Consumption |
| | | Child Native American Consumption |
| | Shellfish | Adult Nontribal Consumption |
| Aldrin | Shellfish | Adult Nontribal Consumption |

BZTO104(e)033387

Table 10.1-3. Initial Chemicals of Concern for Fish and Shellfish Consumption.

| Initial Chemical of Concern | Exposure Medium | Exposure Scenario |
|---|---|---|
| Dieldrin | Fish | Adult Nontribal Consumption |
| | | Child Nontribal Consumption |
| | | Adult Native American Consumption |
| | | Child Native American Consumption |
| | Shellfish | Adult Nontribal Consumption |
| Heptachlor | Fish | Adult Nontribal Consumption |
| | | Child Nontribal Consumption |
| | | Adult Native American Consumption |
| | | Child Native American Consumption |
| Heptachlor Epoxide | Shellfish | Adult Nontribal Consumption |
| alpha-Hexachlorocyclohexane | Fish | Adult Nontribal Consumption |
| | | Child Nontribal Consumption |
| | | Adult Native American Consumption |
| beta-Hexachlorocyclohexane | Fish | Adult Nontribal Consumption |
| | | Child Nontribal Consumption |
| gamma-Hexachlorocyclohexane | Fish | Adult Nontribal Consumption |
| Total Chlordane | Fish | Adult Nontribal Consumption |
| | | Child Nontribal Consumption |
| | | Adult Native American Consumption |
| | | Child Native American Consumption |
| Total DDD | Fish | Adult Nontribal Consumption |
| | | Child Nontribal Consumption |
| | | Adult Native American Consumption |
| | | Child Native American Consumption |
| | Shellfish | Adult Nontribal Consumption |
| Total DDE | Fish | Adult Nontribal Consumption |
| | | Child Nontribal Consumption |
| | | Adult Native American Consumption |
| | | Child Native American Consumption |
| | Shellfish | Adult Nontribal Consumption |
| Total DDT | Fish | Adult Nontribal Consumption |
| | | Child Nontribal Consumption |
| | | Adult Native American Consumption |
| | | Child Native American Consumption |
| | Shellfish | Adult Nontribal Consumption |

BZTO104(e)033388

Table 10.1-4. Target Tissue Levels for Nontribal Adult Fish Ingestion.

| Ingestion Rate (g/day): | 142.0 | | | | 73.5 | | | | 17.5 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Target Excess Cancer Risk or Hazard Quotient: | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 |
| Initial Chemical of Concern | TTL for target risk (mg/kg) | TTL for target risk (mg/kg) | TTL for target risk (mg/kg) | TTL for target HQ (mg/kg) | TTL for target risk (mg/kg) | TTL for target risk (mg/kg) | TTL for target risk (mg/kg) | TTL for target HQ (mg/kg) | TTL for target risk (mg/kg) | TTL for target risk (mg/kg) | TTL for target risk (mg/kg) | TTL for target HQ (mg/kg) |
| Arsenic, inorganic | 7.7E-02 | 7.7E-03 | 7.7E-04 | 1.5E-01 | 1.5E-01 | 1.5E-02 | 1.5E-03 | 2.9E-01 | 6.2E-01 | 6.2E-02 | 6.2E-03 | 1.2E+00 |
| Mercury | -- | -- | -- | 4.9E-02 | -- | -- | -- | 9.5E-02 | -- | -- | -- | 4.0E-01 |
| Bis(2-ethylhexyl) phthalate | 8.2E+00 | 8.2E-01 | 8.2E-02 | 9.9E+00 | 1.6E+01 | 1.6E+00 | 1.6E-01 | 1.9E+01 | 6.7E+01 | 6.7E+00 | 6.7E-01 | 8.0E+01 |
| Hexachlorobenzene | 7.2E-02 | 7.2E-03 | 7.2E-04 | 3.9E-01 | 1.4E-01 | 1.4E-02 | 1.4E-03 | 7.6E-01 | 5.8E-01 | 5.8E-02 | 5.8E-03 | 3.2E+00 |
| Total PCBs | 5.8E-02 | 5.8E-03 | 5.8E-04 | 9.9E-03 | 1.1E-01 | 1.1E-02 | 1.1E-03 | 1.9E-02 | 4.7E-01 | 4.7E-02 | 4.7E-03 | 8.0E-02 |
| Total PCB TEQ | 7.7E-07 | 7.7E-08 | 7.7E-09 | -- | 1.5E-06 | 1.5E-07 | 1.5E-08 | -- | 6.2E-06 | 6.2E-07 | 6.2E-08 | -- |
| Total Dioxin TEQ | 7.7E-07 | 7.7E-08 | 7.7E-09 | -- | 1.5E-06 | 1.5E-07 | 1.5E-08 | -- | 6.2E-06 | 6.2E-07 | 6.2E-08 | -- |
| Dieldrin | 7.2E-03 | 7.2E-04 | 7.2E-05 | 2.5E-02 | 1.4E-02 | 1.4E-03 | 1.4E-04 | 4.8E-02 | 5.8E-02 | 5.8E-03 | 5.8E-04 | 2.0E-01 |
| Heptachlor | 2.6E-02 | 2.6E-03 | 2.6E-04 | 2.5E-01 | 4.9E-02 | 4.9E-03 | 4.9E-04 | 4.8E-01 | 2.1E-01 | 2.1E-02 | 2.1E-03 | 2.0E+00 |
| alpha-Hexachlorocyclohexane | 1.8E-02 | 1.8E-03 | 1.8E-04 | 3.9E+00 | 3.5E-02 | 3.5E-03 | 3.5E-04 | 7.6E+00 | 1.5E-01 | 1.5E-02 | 1.5E-03 | 3.2E+01 |
| beta-Hexachlorocyclohexane | 6.4E-02 | 6.4E-03 | 6.4E-04 | 3.0E-01 | 1.2E-01 | 1.2E-02 | 1.2E-03 | 5.7E-01 | 5.2E-01 | 5.2E-02 | 5.2E-03 | 2.4E+00 |
| gamma-Hexachlorocyclohexane | 8.8E-02 | 8.8E-03 | 8.8E-04 | 1.5E-01 | 1.7E-01 | 1.7E-02 | 1.7E-03 | 2.9E-01 | 7.2E-01 | 7.2E-02 | 7.2E-03 | 1.2E+00 |
| Total Chlordane | 3.3E-01 | 3.3E-02 | 3.3E-03 | 2.5E-01 | 6.3E-01 | 6.3E-02 | 6.3E-03 | 4.8E-01 | 2.7E+00 | 2.7E-01 | 2.7E-02 | 2.0E+00 |
| Total DDD | 4.8E-01 | 4.8E-02 | 4.8E-03 | 2.5E-01 | 9.3E-01 | 9.3E-02 | 9.3E-03 | 4.8E-01 | 3.9E+00 | 3.9E-01 | 3.9E-02 | 2.0E+00 |
| Total DDE | 3.4E-01 | 3.4E-02 | 3.4E-03 | 2.5E-01 | 6.5E-01 | 6.5E-02 | 6.5E-03 | 4.8E-01 | 2.7E+00 | 2.7E-01 | 2.7E-02 | 2.0E+00 |
| Total DDT | 3.4E-01 | 3.4E-02 | 3.4E-03 | 2.5E-01 | 6.5E-01 | 6.5E-02 | 6.5E-03 | 4.8E-01 | 2.7E+00 | 2.7E-01 | 2.7E-02 | 2.0E+00 |

Notes:

TTL = Target tissue level

HQ = Hazard Quotient

-- = Chemical is not evaluated for this toxicity endpoint.

g = Gram

mg = Milligram

kg = Kilogram



BZTO104(e)033389

Table 10.1-5. Target Tissue Levels for Nontribal Child Fish Ingestion.

| Ingestion Rate (g/day): | 60.0 | | | | 31.0 | | | | 7.0 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Target Excess Cancer Risk or Hazard Quotient:** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1** |
| **Initial Chemical of Concern** | **target risk (mg/kg)** | **target risk (mg/kg)** | **target risk (mg/kg)** | **target HQ (mg/kg)** | **target risk (mg/kg)** | **target risk (mg/kg)** | **target risk (mg/kg)** | **target HQ (mg/kg)** | **target risk (mg/kg)** | **target risk (mg/kg)** | **target risk (mg/kg)** | **target HQ (mg/kg)** |
| Arsenic, inorganic | 1.9E-01 | 1.9E-02 | 1.9E-03 | 7.5E-02 | 3.8E-01 | 3.8E-02 | 3.8E-03 | 1.5E-01 | 1.7E+00 | 1.7E-01 | 1.7E-02 | 6.4E-01 |
| Mercury | -- | -- | -- | 2.5E-02 | -- | -- | -- | 4.8E-02 | -- | -- | -- | 2.1E-01 |
| Bis(2-ethylhexyl) phthalate | 2.1E+01 | 2.1E+00 | 2.1E-01 | 5.0E+00 | 4.0E+01 | 4.0E+00 | 4.0E-01 | 9.7E+00 | 1.8E+02 | 1.8E+01 | 1.8E+00 | 4.3E+01 |
| Hexachlorobenzene | 1.8E-01 | 1.8E-02 | 1.8E-03 | 2.0E-01 | 3.5E-01 | 3.5E-02 | 3.5E-03 | 3.9E-01 | 1.6E+00 | 1.6E-01 | 1.6E-02 | 1.7E+00 |
| Total PCBs | 1.5E-01 | 1.5E-02 | 1.5E-03 | 5.0E-03 | 2.8E-01 | 2.8E-02 | 2.8E-03 | 9.7E-03 | 1.3E+00 | 1.3E-01 | 1.3E-02 | 4.3E-02 |
| Total PCB TEQ | 1.9E-06 | 1.9E-07 | 1.9E-08 | -- | 3.8E-06 | 3.8E-07 | 3.8E-08 | -- | 1.7E-05 | 1.7E-06 | 1.7E-07 | -- |
| Total Dioxin TEQ | 1.9E-06 | 1.9E-07 | 1.9E-08 | -- | 3.8E-06 | 3.8E-07 | 3.8E-08 | -- | 1.7E-05 | 1.7E-06 | 1.7E-07 | -- |
| Dieldrin | 1.8E-02 | 1.8E-03 | 1.8E-04 | 1.3E-02 | 3.5E-02 | 3.5E-03 | 3.5E-04 | 2.4E-02 | 1.6E-01 | 1.6E-02 | 1.6E-03 | 1.1E-01 |
| Heptachlor | 6.5E-02 | 6.5E-03 | 6.5E-04 | 1.3E-01 | 1.3E-01 | 1.3E-02 | 1.3E-03 | 2.4E-01 | 5.6E-01 | 5.6E-02 | 5.6E-03 | 1.1E+00 |
| alpha-Hexachlorocyclohexane | 4.6E-02 | 4.6E-03 | 4.6E-04 | 2.0E+00 | 9.0E-02 | 9.0E-03 | 9.0E-04 | 3.9E+00 | 4.0E-01 | 4.0E-02 | 4.0E-03 | 1.7E+01 |
| beta-Hexachlorocyclohexane | 1.6E-01 | 1.6E-02 | 1.6E-03 | 1.5E-01 | 3.1E-01 | 3.1E-02 | 3.1E-03 | 2.9E-01 | 1.4E+00 | 1.4E-01 | 1.4E-02 | 1.3E+00 |
| Total Chlordane | 8.3E-01 | 8.3E-02 | 8.3E-03 | 1.3E-01 | 1.6E+00 | 1.6E-01 | 1.6E-02 | 2.4E-01 | 7.1E+00 | 7.1E-01 | 7.1E-02 | 1.1E+00 |
| Total DDD | 1.2E+00 | 1.2E-01 | 1.2E-02 | 1.3E-01 | 2.4E+00 | 2.4E-01 | 2.4E-02 | 2.4E-01 | 1.0E+01 | 1.0E+00 | 1.0E-01 | 1.1E+00 |
| Total DDE | 8.6E-01 | 8.6E-02 | 8.6E-03 | 1.3E-01 | 1.7E+00 | 1.7E-01 | 1.7E-02 | 2.4E-01 | 7.4E+00 | 7.4E-01 | 7.4E-02 | 1.1E+00 |
| Total DDT | 8.6E-01 | 8.6E-02 | 8.6E-03 | 1.3E-01 | 1.7E+00 | 1.7E-01 | 1.7E-02 | 2.4E-01 | 7.4E+00 | 7.4E-01 | 7.4E-02 | 1.1E+00 |

Notes:

TTL = Target tissue level

HQ = Hazard Quotient

-- = Chemical is not evaluated for this toxicity endpoint.

g = Gram

mg = Milligram

kg = Kilogram



BZTO104(e)033390

Table 10.1-6. Target Tissue Levels for Native American Adult and Child Fish Ingestion.

| **Exposure Scenario:** | **Native American Adult** | | | | **Native American Child** | | | |
|---|---|---|---|---|---|---|---|---|
| **Ingestion Rate (g/day):** | **175.0 g/day total, 21.7 g/day per resident species** | | | | **73.0 g/day total, 9.1 g/day per resident species** | | | |
| **Target Excess Cancer Risk or Hazard Quotient:** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1** |
| **Initial Chemical of Concern** | TTL for target risk (mg/kg) | TTL for target risk (mg/kg) | TTL for target risk (mg/kg) | TTL for target HQ (mg/kg) | TTL for target risk (mg/kg) | TTL for target risk (mg/kg) | TTL for target risk (mg/kg) | TTL for target HQ (mg/kg) |
| Arsenic, inorganic | 2.2E-01 | 2.2E-02 | 2.2E-03 | 9.7E-01 | 1.3E+00 | 1.3E-01 | 1.3E-02 | 4.9E-01 |
| Mercury | -- | -- | -- | 3.2E-01 | -- | -- | -- | 1.6E-01 |
| Bis(2-ethylhexyl) phthalate | 2.3E+01 | 2.3E+00 | 2.3E-01 | 6.5E+01 | 1.4E+02 | 1.4E+01 | 1.4E+00 | 3.3E+01 |
| Hexachlorobenzene | 2.0E-01 | 2.0E-02 | 2.0E-03 | 2.6E+00 | 1.2E+00 | 1.2E-01 | 1.2E-02 | 1.3E+00 |
| Total PCBs | 1.6E-01 | 1.6E-02 | 1.6E-03 | 6.5E-02 | 9.6E-01 | 9.6E-02 | 9.6E-03 | 3.3E-02 |
| Total PCB TEQ | 2.2E-06 | 2.2E-07 | 2.2E-08 | -- | 1.3E-05 | 1.3E-06 | 1.3E-07 | -- |
| Total Dioxin TEQ | 2.2E-06 | 2.2E-07 | 2.2E-08 | -- | 1.3E-05 | 1.3E-06 | 1.3E-07 | -- |
| Dieldrin | 2.0E-02 | 2.0E-03 | 2.0E-04 | 1.6E-01 | 1.2E-01 | 1.2E-02 | 1.2E-03 | 8.2E-02 |
| Heptachlor | 7.2E-02 | 7.2E-03 | 7.2E-04 | 1.6E+00 | 4.3E-01 | 4.3E-02 | 4.3E-03 | 8.2E-01 |
| alpha-Hexachlorocyclohexane | 5.1E-02 | 5.1E-03 | 5.1E-04 | 2.6E+01 | NA | NA | NA | NA |
| Total Chlordane | 9.2E-01 | 9.2E-02 | 9.2E-03 | 1.6E+00 | 5.5E+00 | 5.5E-01 | 5.5E-02 | 8.2E-01 |
| Total DDD | 1.3E+00 | 1.3E-01 | 1.3E-02 | 1.6E+00 | 8.0E+00 | 8.0E-01 | 8.0E-02 | 8.2E-01 |
| Total DDE | 9.5E-01 | 9.5E-02 | 9.5E-03 | 1.6E+00 | 5.7E+00 | 5.7E-01 | 5.7E-02 | 8.2E-01 |
| Total DDT | 9.5E-01 | 9.5E-02 | 9.5E-03 | 1.6E+00 | 5.7E+00 | 5.7E-01 | 5.7E-02 | 8.2E-01 |

Notes:

TTL = Target tissue level

HQ = Hazard Quotient

-- = Chemical is not evaluated for this toxicity endpoint.

NA = Not applicable. iPRG was not derived because chemical is not an iCOC for the exposure scenario.

g = Gram

mg = Milligram

kg = Kilogram



BZTO104(e)033391

Table 10.1-7. Target Tissue Levels for Shellfish Ingestion.

| Ingestion Rate (g/day): | 1.8E+01 | | | | 3.3E+00 | | | |
|---|---|---|---|---|---|---|---|---|
| **Target Excess Cancer Risk or Hazard Quotient:** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1.0E+00** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1.0E+00** |
| **Initial Chemical of Concern** | **TTL for target risk (mg/kg)** | **TTL for target risk (mg/kg)** | **TTL for target risk (mg/kg)** | **TTL for target HQ (mg/kg)** | **TTL for target risk (mg/kg)** | **TTL for target risk (mg/kg)** | **TTL for target risk (mg/kg)** | **TTL for target HQ (mg/kg)** |
| Arsenic, inorganic | 6.0E-01 | 6.0E-02 | 6.0E-03 | 1.2E+00 | 3.3E+00 | 3.3E-01 | 3.3E-02 | 6.4E+00 |
| Benzo(a)anthracene | 1.2E+00 | 1.2E-01 | 1.2E-02 | -- | 6.8E+00 | 6.8E-01 | 6.8E-02 | -- |
| Benzo(a)pyrene | 1.2E-01 | 1.2E-02 | 1.2E-03 | -- | 6.8E-01 | 6.8E-02 | 6.8E-03 | -- |
| Benzo(b)fluoranthene | 1.2E+00 | 1.2E-01 | 1.2E-02 | -- | 6.8E+00 | 6.8E-01 | 6.8E-02 | -- |
| Benzo(k)fluoranthene | 1.2E+01 | 1.2E+00 | 1.2E-01 | -- | 6.8E+01 | 6.8E+00 | 6.8E-01 | -- |
| Dibenzo(a,h)anthracene | 1.2E-01 | 1.2E-02 | 1.2E-03 | -- | 6.8E-01 | 6.8E-02 | 6.8E-03 | -- |
| Indeno(1,2,3-cd)pyrene | 1.2E+00 | 1.2E-01 | 1.2E-02 | -- | 6.8E+00 | 6.8E-01 | 6.8E-02 | -- |
| Pentachlorophenol | 7.6E+00 | 7.6E-01 | 7.6E-02 | 1.2E+02 | 4.1E+01 | 4.1E+00 | 4.1E-01 | 6.4E+02 |
| Total PCBs | 4.5E-01 | 4.5E-02 | 4.5E-03 | 7.8E-02 | 2.5E+00 | 2.5E-01 | 2.5E-02 | 4.2E-01 |
| Total PCB TEQ | 6.0E-06 | 6.0E-07 | 6.0E-08 | -- | 3.3E-05 | 3.3E-06 | 3.3E-07 | -- |
| Total Dioxin TEQ | 6.0E-06 | 6.0E-07 | 6.0E-08 | -- | 3.3E-05 | 3.3E-06 | 3.3E-07 | -- |
| Aldrin | 5.3E-02 | 5.3E-03 | 5.3E-04 | 1.2E-01 | 2.9E-01 | 2.9E-02 | 2.9E-03 | 6.4E-01 |
| Dieldrin | 5.7E-02 | 5.7E-03 | 5.7E-04 | 1.9E-01 | 3.1E-01 | 3.1E-02 | 3.1E-03 | 1.1E+00 |
| Heptachlor Epoxide | 1.0E-01 | 1.0E-02 | 1.0E-03 | 5.1E-02 | 5.4E-01 | 5.4E-02 | 5.4E-03 | 2.8E-01 |
| Total DDD | 3.8E+00 | 3.8E-01 | 3.8E-02 | 1.9E+00 | 2.1E+01 | 2.1E+00 | 2.1E-01 | 1.1E+01 |
| Total DDE | 2.7E+00 | 2.7E-01 | 2.7E-02 | 1.9E+00 | 1.5E+01 | 1.5E+00 | 1.5E-01 | 1.1E+01 |
| Total DDT | 2.7E+00 | 2.7E-01 | 2.7E-02 | 1.9E+00 | 1.5E+01 | 1.5E+00 | 1.5E-01 | 1.1E+01 |

Notes

TTL = Target tissue level

HQ = Hazard quotient

-- = Chemical is not evaluated for this toxicity endpoint.

g = Gram

mg = Milligram

kg = Kilogram



BZTO104(e)033392

Table 10.1-8. Comparison of Fish Tissue Metals Concentrations in ISA and Upstream Samples.

| | | ISA | | | | Upstream | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Species** | **Analyte** | **N** | **Minimum** | **Maximum** | **Mean** | **N** | **Minimum** | **Maximum** | **Mean** |
| Brown bullhead | Arsenic | 6 | 0.04 | 0.08 | 0.056 | 3 | 0.07 | 0.09 | 0.08 |
| Smallmouth bass | Arsenic | 14 | 0.17 | 0.39 | 0.272 | 6 | 0.1 | 0.36 | 0.233 |
| Brown bullhead | Mercury | 6 | 0.025 | 0.054 | 0.037 | 3 | 0.05 | 0.09 | 0.072 |
| Smallmouth bass | Mercury | 14 | 0.052 | 0.114 | 0.087 | 6 | 0.167 | 0.549 | 0.322 |



BZTO104(e)033393

Table 10.1-9. Risk Thresholds for Beach Sediment Exceedances (a).

| Scenario | Risk Threshold |
|---|---|
| Dockside Worker | 1.6E-06 |
| Transient | 1.1E-06 |
| Adult Recreational Beach User | 2.5E-06 |
| Child Recreational Beach User | 7.4E-06 |
| Native American Fisher | 1.6E-05 |
| Non-Tribal Fisher, Recreational | 4.2E-06 |
| Non-Tribal Fisher, Non-Recreational | 2.8E-06 |

Notes:
(a) Risk threshold is based on naturally occuring background concentration for arsenic in soil (7 mg/kg).

BZTO104(e)033394

Table 10.1-10. Human Health iPRG development for iCOCs.

| Initial Chemical of Concern | Exposure Medium and Scenario | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Beach Sediment | | | | | | | In-Water Sediment | | | | Fish | | | | Shellfish |
| | Adult Recreational Beach User | Child Recreational Beach User | Dockside Worker | Non-tribal, Recreational Fisher | Non-tribal, Non-Recreational Fisher | Native American Fisher | Transient | In-Water Worker | Non-tribal, Recreational Fisher | Non-tribal, Non-Recreational Fisher | Native American Fisher | Adult Non-tribal Consumption | Child Non-tribal Consumption | Adult Native American Consumption | Child Native American Consumption | Adult Non-tribal Consumption |
| Arsenic | ● | ● | | ● | ● | ● | | | ● | ● | ● | # | # | # | # | # |
| Mercury | | | | | | | | | | | | # | # | # | # | |
| Benzo(a)anthracene | | | ● | | | | | | ● | ● | ● | | | | | ● |
| Benzo(a)pyrene | | ● | ● | ● | | ● | | ● | ● | ● | ● | | | | | ● |
| Benzo(b)fluoranthene | | | ● | | | | | | ● | | ● | | | | | ● |
| Benzo(k)fluoranthene | | | | | | | | | | | | | | | | ● |
| Dibenzo(a,h)anthracene | | | ● | | | | | | ● | ● | ● | | | | | # |
| Indeno(1,2,3-cd)pyrene | | | ● | | | | | | ● | | ● | | | | | ● |
| Bis(2-ethylhexyl)phthalate | | | | | | | | | | | | ● | ● | ● | ● | |
| Hexachlorobenzene | | | | | | | | | | | | ○# | ○# | ● | ● | |
| Pentachlorophenol | | | | | | | | | | | | | | | | # |
| Total PCBs | | | | | | | | | ● | ● | ● | ○x | ○x | x | ○x | ○x |
| Total PCB TEQ | | | | | | | | | | | ● | x | ○x | x | x | ○x |
| Total Dioxin TEQ | | | | | | | | ● | ● | ● | ● | ○x | ○x | ○x | ○x | ○x |
| Aldrin | | | | | | | | | | | | | | | | ● |
| Dieldrin | | | | | | | | | | | | ● | ● | ● | ● | # |
| Heptachlor | | | | | | | | | | | | ● | ● | ● | ● | |
| Heptachlor Epoxide | | | | | | | | | | | | | | | | # |
| alpha-Hexachlorocyclohexane | | | | | | | | | | | | ● | ● | ● | | |
| beta-Hexachlorocyclohexane | | | | | | | | | | | | # | # | | | |
| gamma-Hexachlorocyclohexane | | | | | | | | | | | | ● | | | | |
| Total Chlordane | | | | | | | | | | | | ● | ● | ● | ● | |
| Total DDD | | | | | | | | | | | | ○x | ○x | ● | ● | ● |
| Total DDE | | | | | | | | | | | | ○x | ○x | ○x | ● | ● |
| Total DDT | | | | | | | | | | | | ● | ● | ● | ● | ● |

**Notes:**

(blank) = chemical not an iCOC for specified exposure scenario.

● = iPRG developed for iCOC for $10^{-4}$ to $10^{-6}$ risks and/or a hazard quotient of 1.

x = iPRG not developed because modeled tissue concentrations based on water exposure alone (i.e. sediment concentration = 0) exceeded target tissue concentrations.

# = iPRG not developed because of lack of significant relationship between tissue and sediment concentrations.

○ = iPRG developed for at least one diet and risk level for specified iCOC. iPRG could not be developed for all diets and risk levels because of one of the reasons stated above.

**Abbreviations:**

iCOC = initial Chemical of Concern
iPRG = initial Preliminary Remediation Goal



BZTO104(e)033395

Table 10.1-11. Human Health iPRGs used for iAOPC development.

| Initial Chemical of Concern | Exposure Medium and Scenario | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Beach Sediment[a] | | | | | | | In-Water Sediment[b] | | | | Fish | | | | Shellfish |
| | Adult Recreational Beach User | Child Recreational Beach User | Dockside Worker | Non-tribal, Recreational Fisher | Non-tribal, Non-Recreational Fisher | Native American Fisher | Transient | In-Water Worker | Non-tribal, Recreational Fisher | Non-tribal, Non-Recreational Fisher | Native American Fisher | Adult Non-tribal Consumption | Child Non-tribal Consumption | Adult Native American Consumption | Child Native American Consumption | Adult Non-tribal Consumption |
| Arsenic | | | | | | | | | | | | | | | | |
| Mercury | | | | | | | | | | | | | | | | |
| Benzo(a)anthracene | | | | | | | | | c | | | | | | | |
| Benzo(a)pyrene | | | | | | | | | c | | | | | | | |
| Benzo(b)fluoranthene | | | | | | | | | c | | | | | | | |
| Benzo(k)fluoranthene | | | | | | | | | | | | | | | | |
| Dibenzo(a,h)anthracene | | | | | | | | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | | | | | | | | | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | | | | | | | | | | | | | | | | |
| Hexachlorobenzene | | | | | | | | | | | | | | | | |
| Pentachlorophenol | | | | | | | | | | | | | | | | |
| Total PCBs | | | | | | | | | | | | d, e | | | | f |
| Total PCB TEQ | | | | | | | | | | | | | | | | f |
| Total Dioxin TEQ | | | | | | | | | c | | | e | | | | f |
| Aldrin | | | | | | | | | | | | | | | | f |
| Dieldrin | | | | | | | | | | | | | | | | |
| Heptachlor | | | | | | | | | | | | | | | | |
| Heptachlor Epoxide | | | | | | | | | | | | | | | | |
| alpha-Hexachlorocyclohexane | | | | | | | | | | | | | | | | |
| beta-Hexachlorocyclohexane | | | | | | | | | | | | | | | | |
| gamma-Hexachlorocyclohexane | | | | | | | | | | | | | | | | |
| Total Chlordane | | | | | | | | | | | | | | | | |
| Total DDD | | | | | | | | | | | | | | | | |
| Total DDE | | | | | | | | | | | | | | | | |
| Total DDT | | | | | | | | | | | | | | | | f |

**Notes:**

Blank, unshaded cells indicate chemical not an iCOC for specified exposure scenario.

**Striped cells indicated chemicals that are iCOCs for which iPRGs were not developed.**

Shaded cells indicate that an iPRG exists for at least one scenario/risk level for specified medium and receptor, but only those indicated with a footnote were used to develop iAOPCs.

a = Beach Sediment iAOPCs were identified for risks greater than risk from background arsenic in soil (7 mg/kg).

b = The Native American fisher scenario was not used to identify AOPCs because the iPRG for arsenic is below background, so a target risk level of 10-6 cannot be achieved. The recreational non-tribal fisher scenario is protective of other in-water sediment scenarios.

c = iAOPCs were identified using the iPRG based on a target risk of 10-6.

d = iAOPCs were identified using the iPRG based on a target risk level of 10-4 for the low ingestion rate, site-wide, adult mixed-species diet. Due to water column contribution of PCBs, target risk of 10-4 cannot be achieved through sediment remediation for medium or high ingestion rate diets.

e = Bass iAOPCs were identified using the iPRG based on a target risk level of 10-4 for the adult, low ingestion rate, bass diet. Due to water column contribution of PCBs, target risk of 10-4 cannot be achieved through sediment remediation for medium or high ingestion rate diets.

f = Due to uncertainties in scenario and site-wide exceedances for target risk of 10-6, iAOPCs were identified based on a target risk of 10-4, low ingestion rate diet.

**Abbreviations:**

iCOC = initial Chemical of Concern

iPRG = initial Preliminary Remediation Goal



BZTO104(e)033396

Table 10.1-12. Details of Ecological iPRG Development Model Runs.

| Chemical | Approx HHRA Target Tissue Range (µg/kg) | Sediment Range (ng/g) | Number of Crystal Ball runs |
|---|---|---|---|
| 4,4'-DDD | 54 | 0 - 150 | 5,000 |
| Sum DDD | 900 | 1,400 - 1,800 | 5,000 |
| Sum DDE | 40 | 0 - 5 | 5,000 |
| 4,4'-DDT | 470 | 100 – 1,225 | 10,000 |
| Sum DDT | 150 | 100 - 200 | 5,000 |
| Total DDT's | 1,800 | 0 - 700 | 7,000 |
| Total PCBs | 0.28 - 4020 | 0 - 1,600 | 10,000 |
| PCB TEQ - Bird | 0.0032 - 0.14 | 0 – 0.5 | 5,000 |
| Dioxin TEQ – Bird | 0.0032 - 0.14 | 0 - 4 | 5,000 |
| PCB TEQ - Mammal | 0.00224 | 0 - 0.05 | 5,000 |
| Dioxin TEQ – Mammal | 0.00224 | 0 - 1 | 6,000 |

BZTO104(e)033397

Table 10.1-13. Summary of SWAC Calculations for Ecological iCOCs .

| Chemical | Unit | Summary Statistics | | | | Spatially Weighted Calculations | | Eco |
|---|---|---|---|---|---|---|---|---|
| | | N | Mean | Minimum | Maximum | Polygon N | SWAC | |
| Mercury | mg/kg | 1,116 | 0.095 | 0.0035 | 2.01 | 1,114 | 0.08 | yes |
| Total PAHs | mg/kg | 1,170 | 31,129.602 | 5.0 | 7,258,000 | 1,168 | 24,285.07 | yes |
| BEHP | mg/kg OC | 1,082 | 48.087 | 0.00000 | 23,000 | 1,080 | 34.20 | yes |
| PCB TEQ (birds) | pg/g | 158 | 78.03 | 0.15 | 5,610 | 158 | 21.32 | yes |
| PCB TEQ (mammals) | pg/g | 158 | 9.54 | 0.03 | 324 | 158 | 3.47 | yes |
| Total PCBs | µg/kg | 869 | 168.63 | 0.85 | 30,822 | 869 | 72.10 | yes |
| Dioxin TEQ (birds) | pg/g | 152 | 261.1 | 0.06 | 35,300 | 152 | 55.70 | yes |
| Dioxin TEQ (mammals) | pg/g | 152 | 124.05 | 0.03 | 16,600 | 152 | 27.45 | yes |
| 4,4′-DDD | µg/kg | 895 | 27.27 | 0.02 | 2,780 | 893 | 7.87 | yes |
| 4,4′-DDE | µg/kg | 892 | 13.35 | 0.02 | 2,240 | 890 | 3.85 | yes |
| 4,4′-DDT | µg/kg | 880 | 85.41 | 0.02 | 12,000 | 878 | 15.35 | yes |
| Sum DDD | µg/kg | 895 | 36.15 | 0.02 | 3,044 | 893 | 10.58 | yes |
| Sum DDE | µg/kg | 892 | 16.64 | 0.02 | 2,528 | 890 | 4.63 | yes |
| Sum DDT | µg/kg | 894 | 95.7 | 0.02 | 12,536 | 892 | 17.40 | yes |
| Total DDTs | µg/kg | 895 | 148.18 | 0.03 | 16,171 | 893 | 32.57 | yes |
| Aldrin | mg/kg OC | 789 | 0.194 | 0.00022 | 27.4 | 787 | 0.04 | yes |



BZTO104(e)033398

Table 10.1-14. Initial Ecological COCs for Round 2 Report and iPRG/iAOPC Development[k].

| Ecological iCOC | Wildlife Receptors[a] | | | | | Fish Receptors[b] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Spotted Sandpiper[c] | Hooded Merganser[d] | Bald Eagle[e] | Osprey[e] | Mink[f] | River Otter[g] | Largescale Sucker[h] | Juvenile Chinook Salmon[h] | Sculpin[i] | Peamouth[h] | Smallmouth Bass[j] | Northern Pikeminnow[h] | Carp[h] |
| Mercury | | | | | | | | | | | | O[l] | |
| TBT | | | | | | | | O[m] | | | O[m] | O[m] | |
| BEHP | | | | | | | O[n] | | O[n] | | O[n] | | |
| PCB TEQ | X | | O | O | O | X | | | | | | | |
| Total PCBs | X | | O | O | O | X | O[o] | | X[p] | | X[p] | O[o] | O[o] |
| Dioxin TEQ | X | | O | O | O[o] | | | | | | | | |
| 4,4′-DDD | | | | | | | O[q] | O[q] | O[q] | | O[q] | | |
| 4,4′-DDT | | | | | | | | | O[q] | | | | |
| Sum DDD | X | | | | | | | | | | | | |
| Sum DDE | | | O | O | | | | | | | | | |
| Total DDTs | | | | | | | | | X[p] | | X[p] | O[o] | |
| Aldrin | X | | | | | | | | | | | | |

Note:

iCOCs for benthos based on receptor/COPC exceedance of 5th percentile LOAEL TRV; however, no iAOPC maps were developed based on the tissue line of evidence (LOE) for benthos; the benthic predictive toxicity model and toxicity test results were used to develop iAOPCs for benthos.

X – An iAOPC map was developed for this iCOC/receptor pair

O – No iAOPC map was developed for this iCOC/receptor pair

Cells without an X or O are not iCOC/receptor pairs

[a] iCOCs for wildlife are based on COPC/receptor exceedance of LOAEL TRV.

[b] iCOCs for fish are based on COPC/receptor exceedance of 5th percentile LOAEL TRV (for those tissue COPCs) and exceedance of a dietary LOAEL TRV (for dietary COPCs).

[c] iAOPCs for shorebirds (spotted sandpiper) are based on empirical data at each individual shorebird beach area where HQs are > 1 at each individual beach area; where empirical tissue data not available; iAOPCs were modeled using the FWM.



BZTO104(e)033399

Table 10.1-14. Initial Ecological COCs for Round 2 Report and iPRG/iAOPC Development[k].

[d] No iCOCs were identified for hooded merganser in the wildlife ERA.

[e] iAOPC maps were not developed based on bird egg LOEs due to the high uncertainty of bird egg TRVs and egg modeling risk assessment approach.

[f] iAOPC maps were not developed for mink, because iPRGs for river otter where lower, and therefore, more conservative and protective of mink.

[g] iAOPCs based on surface sediment exceedances of iPRGs for river otter; iPRGs were developed using LOAEL TRVs and dietary assumptions (as presented in the wildlife ERA), and the FWM.

[h] iPRGs based on FWM or BSAFs.

[i] iAOPCs for sculpin are based on surface sediment exceedances of sculpin iPRGs at each individual sediment polygon.

[j] iAOPCs for smallmouth bass are based on surface sediment exceedances of bass iPRGs at each moving home range area.

[k] iAOPC were not developed for mercury; iCOC expected to be river-wide chemical.

[l] iAOPC were not developed for TBT and the fish dietary line of evidence; LOAEL HQs were 1.1 and limited prey tissue available to assess risks.

[m] iAOPC were not developed for BEHP due to uncertainty of TRVs, and BSAFs (due to low detection frequency in tissue and sediment)

[n] iAOPC maps were not developed for these iCOC/receptor pairs because iPRGs > SWACs.

[o] iPRGs are based on LWG-recommended LOAEL TRV for fish and FWM.

[p] iAOPCs were not developed for DDT metabolites due to the uncertainties associated with selected TRVs; DDTs AOPCs for fish were evaluated as total DDTs.

iAOPC – initial area of potential concern

iCOC – initial chemical of concern

iPRG – initial preliminary remediation goal

PAH – polycyclic aromatic hydrocarbon

PCB – polychlorinated biphenyl

TEQ – toxic equivalent



BZTO104(e)033400

Table 10.1-15. Chemicals Statistically Associated with Benthic Toxicity in the Floating Percentile Model[a].

| **Chemical** |
|---|
| arsenic |
| cadmium |
| lead |
| mercury |
| silver |
| zinc |
| alpha–hexachlorocyclohexane |
| beta-hexachlorocyclohexane, |
| delta-hexachlorocyclohexane |
| dieldrin |
| endrin ketone |
| sum DDEs |
| sum DDDs |
| sum DDTs |
| total chlordanes |
| total PCBs |
| dibutyl phthalate |
| diesel range hydrocarbons |
| residual range hydrocarbons |
| ammonia |
| sulfides |

[a] For details on the Floating Percentile Model and associated chemicals, see Appendix G, Section 3.0

BZTO104(e)033401

Table 10.2-1. Background Concentrations Used in Hill Topping Procedure.

| Analyte | Units | 95% UCL |
|---|---|---|
| 2,4'-DDT | µg/kg | 0.199314368 |
| 4,4'-DDD | µg/kg | 0.529814332 |
| 4,4'-DDE | µg/kg | 0.778007786 |
| 4,4'-DDT | µg/kg | 0.357523386 |
| Total of 2,4' and 4,4'-DDD (U=0) | µg/kg | 0.703576588 |
| Total of 2,4' and 4,4'-DDD (U=1/2RL) | ug/kg | 0.715098064 |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT (U=0) | µg/kg | 1.914942095 |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT (U=1/2RL) | µg/kg | 2.102967552 |
| Total of 2,4' and 4,4'-DDE (U=0) | µg/kg | 1.092263396 |
| Total of 2,4' and 4,4'-DDE (U=1/2RL) | µg/kg | 1.064557963 |
| Total of 2,4' and 4,4'-DDT (U=0) | µg/kg | 0.385585697 |
| Total of 2,4' and 4,4'-DDT (U=1/2RL) | µg/kg | 0.602616488 |
| Total of 4,4'-DDD, -DDE, -DDT (U=0) | µg/kg | 1.509557942 |
| Total of 4,4'-DDD, -DDE, -DDT (U=1/2RL) | µg/kg | 5.20975891 |
| Aluminum | mg/kg | 23368.68621 |
| Arsenic | mg/kg | 3.183982614 |
| Benzo(a)anthracene | µg/kg | 7.926992354 |
| Benzo(a)pyrene | µg/kg | 11.16202132 |
| Benzo(b)fluoranthene | µg/kg | 8.941983978 |
| Benzo(k)fluoranthene | µg/kg | 3.53343904 |
| beta-Hexachlorocyclohexane | µg/kg | 0.835125632 |
| Bis(2-ethylhexyl) phthalate | µg/kg | 212.4572452 |
| Cadmium | mg/kg | 0.160378286 |
| Chromium | mg/kg | 27.75877012 |
| Chrysene | µg/kg | 10.91695313 |
| Copper | mg/kg | 25.84551 |
| delta-Hexachlorocyclohexane | µg/kg | 0.200542817 |
| Dibenzo(a,h)anthracene | µg/kg | 1.086229933 |
| Dibutyl phthalate | µg/kg | 6.51449182 |
| Dioxin/furan TCDD toxicity equivalent: Birds (U=0) | pg/g | 0.143275172 |
| Dioxin/furan TCDD toxicity equivalent: Birds (U=1/2RL) | pg/g | 0.197353449 |
| Dioxin/furan TCDD toxicity equivalent: Mammals (U=0) | pg/g | 0.206221965 |
| Dioxin/furan TCDD toxicity equivalent: Mammals (U=1/2R | pg/g | 0.233280578 |
| Hexachlorobenzene | µg/kg | 0.758674866 |
| Indeno(1,2,3-cd)pyrene | µg/kg | 6.364041395 |
| Lead | mg/kg | 8.841919995 |
| Mercury | mg/kg | 0.033637548 |
| Phenanthrene | µg/kg | 11.28858256 |
| Polychlorinated biphenyls (as Aroclors) (U=0) | µg/kg | 7.674988263 |
| Polychlorinated biphenyls (as Aroclors) (U=1/2RL) | µg/kg | 13.45051718 |

BZTO104(e)033403

Table 10.2-1. Background Concentrations Used in Hill Topping Procedure.

| Analyte | Units | 95% UCL |
|---|---|---|
| Polycyclic Aromatic Hydrocarbons (U=0) | µg/kg | 88.16368143 |
| Polycyclic Aromatic Hydrocarbons (U=1/2RL) | µg/kg | 128.3753613 |
| Pyrene | µg/kg | 19.48234957 |
| Selenium | µg/kg | 0.086530801 |
| Silver | mg/kg | 0.105304166 |
| Total Chlordanes (U=0) | µg/kg | 0.355623839 |
| Total Chlordanes (U=1/2RL) | µg/kg | 0.614361815 |
| Diesel Range Hydrocarbons | µg/kg | 26.48323669 |
| Residual Range Hydrocarbons | mg/kg | 207.6993706 |
| Total Petroleum Hydrocarbons (U=0) | mg/kg | 180.57085 |
| Total Petroleum Hydrocarbons (U=1/2RL) | mg/kg | 227.8245977 |
| Zinc | mg/kg | 78.38791055 |

BZTO104(e)033404

Table 10.3-1. Initial Preliminary Remediation Goals for Direct Exposure to Beach Sediment.

| Exposure Scenario | Dockside Worker | | | | Child Recreational Beach User | | | | Adult Recreational Beach User | | | | Nontribal, Recreational Fisher | | | | Nontribal, Non-Recreational Fisher | | | | Native American Fisher | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Target Excess Cancer Risk or Noncancer Hazard | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 |
| Initial Chemical of Concern | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) |
| Arsenic | NA | NA | NA | NA | 9.5E+01 | 9.5E+00 | 9.5E-01 | 3.7E+01 | 2.8E+02 | 2.8E+01 | 2.8E+00 | 5.4E+02 | 1.7E+02 | 1.7E+01 | 1.7E+00 | 3.2E+02 | 2.5E+02 | 2.5E+01 | 2.5E+00 | 4.9E+02 | 4.3E+01 | 4.3E+00 | 4.3E-01 | 1.9E+02 |
| Benzo(a)anthracene | 6.9E+02 | 6.9E+01 | 6.9E+00 | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo(a)pyrene | 6.9E+01 | 6.9E+00 | 6.9E-01 | -- | 6.6E+00 | 6.6E-01 | 6.6E-02 | -- | NA | NA | NA | NA | 1.6E+01 | 1.6E+00 | 1.6E-01 | -- | NA | NA | NA | NA | 4.2E+00 | 4.2E-01 | 4.2E-02 | -- |
| Benzo(b)fluoranthene | 6.9E+02 | 6.9E+01 | 6.9E+00 | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Dibenzo(a,h)anthracene | 6.9E+01 | 6.9E+00 | 6.9E-01 | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Indeno(1,2,3-cd)pyrene | 6.9E+02 | 6.9E+01 | 6.9E+00 | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |



BZTO104(e)033405

Table 10.3-2. Initial Preliminary Remediation Goals for Direct Exposure to In-Water Sediment.

| Exposure Scenario | In-Water Worker | | | | Nontribal, Recreational Fisher | | | | Nontribal, Non-Recreational Fisher | | | | Native American Fisher | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Target Excess Cancer Risk or Noncancer Hazard** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1** |
| **Initial Chemical of Concern** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target HQ (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target HQ (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target HQ (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target HQ (mg/kg)** |
| Arsenic | NA | NA | NA | NA | 1.5E+03 | 1.5E+02 | 1.5E+01 | 2.9E+03 | 2.3E+03 | 2.3E+02 | 2.3E+01 | 4.3E+03 | 3.9E+02 | 3.9E+01 | 3.9E+00 | 1.7E+03 |
| Benzo(a)anthracene | NA | NA | NA | NA | 1.6E+03 | 1.6E+02 | 1.6E+01 | -- | 2.5E+03 | 2.5E+02 | 2.5E+01 | -- | 4.2E+02 | 4.2E+01 | 4.2E+00 | -- |
| Benzo(a)pyrene | 8.6E+02 | 8.6E+01 | 8.6E+00 | -- | 1.6E+02 | 1.6E+01 | 1.6E+00 | -- | 2.5E+02 | 2.5E+01 | 2.5E+00 | -- | 4.2E+01 | 4.2E+00 | 4.2E-01 | -- |
| Benzo(b)fluoranthene | NA | NA | NA | NA | 1.6E+03 | 1.6E+02 | 1.6E+01 | -- | NA | NA | NA | NA | 4.2E+02 | 4.2E+01 | 4.2E+00 | -- |
| Dibenzo(a,h)anthracene | NA | NA | NA | NA | 1.6E+02 | 1.6E+01 | 1.6E+00 | -- | 2.5E+02 | 2.5E+01 | 2.5E+00 | -- | 4.2E+01 | 4.2E+00 | 4.2E-01 | -- |
| Indeno(1,2,3-cd)pyrene | NA | NA | NA | NA | 1.6E+03 | 1.6E+02 | 1.6E+01 | -- | NA | NA | NA | NA | 4.2E+02 | 4.2E+01 | 4.2E+00 | -- |
| Total PCBs | NA | NA | NA | NA | 5.7E+02 | 5.7E+01 | 5.7E+00 | 9.8E+01 | 8.6E+02 | 8.6E+01 | 8.6E+00 | 1.5E+02 | 1.5E+02 | 1.5E+01 | 1.5E+00 | 5.9E+01 |
| Total PCB TEQ | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 3.9E-03 | 3.9E-04 | 3.9E-05 | -- |
| Total Dioxin TEQ | 5.4E-02 | 5.4E-03 | 5.4E-04 | -- | 1.5E-02 | 1.5E-03 | 1.5E-04 | -- | 2.3E-02 | 2.3E-03 | 2.3E-04 | -- | 3.9E-03 | 3.9E-04 | 3.9E-05 | -- |

Notes:

iPRG = Initial preliminary remediation goal

iCOC = Initial chemical of concern

-- = Chemical is not evaluated for this toxicity endpoint.

NA = Not applicable. iPRG was not derived because chemical is not an iCOC for the exposure scenario.

mg = Milligram

kg = Kilogram



BZTO104(e)033406

Table 10.3-3. Initial Preliminary Remediation Goals for Nontribal Adult Fish Ingestion.

| Diet: | Single Species: Smallmouth Bass | | | | | | | | | | | | Single Species: Black Crappie | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ingestion Rate (g/day): | 142.0 | | | | 73.5 | | | | 17.5 | | | | 142.0 | | | | 73.5 | | | | 17.5 | | | |
| Target Excess Cancer Risk or Hazard Quotient: | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 |
| Initial Chemical of Concern | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) |
| Arsenic, inorganic | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Mercury | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Bis(2-ethylhexyl) phthalate | 1.7E-01 | 1.7E-02 | 1.7E-03 | 2.0E-01 | 3.3E-01 | 3.3E-02 | 3.3E-03 | 3.9E-01 | 1.4E+00 | 1.4E-01 | 1.4E-02 | 1.6E+00 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Hexachlorobenzene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.0E-01 | 2.0E-02 | 2.0E-03 | 1.1E+00 | 3.8E-01 | 3.8E-02 | 3.8E-03 | 2.1E+00 | 1.6E+00 | 1.6E-01 | 1.6E-02 | 8.8E+00 |
| Total PCBs | N/A | -- | N/A | N/A | N/A | -- | N/A | N/A | 2.4E-03 | -- | N/A | N/A | N/A | -- | N/A | N/A | 5.5E-03 | -- | N/A | N/A | 5.0E-02 | -- | N/A | 1.6E-03 |
| Total PCB TEQ | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- |
| Total Dioxin TEQ | 3.4E-06 | -- | N/A | -- | 6.8E-06 | -- | N/A | -- | 3.3E-05 | -- | N/A | -- | 1.8E-06 | -- | N/A | -- | 4.8E-06 | -- | N/A | -- | 2.3E-05 | -- | N/A | -- |
| Dieldrin | 9.9E-04 | 9.9E-05 | 9.9E-06 | 3.4E-03 | 1.9E-03 | 1.9E-04 | 1.9E-05 | 6.5E-03 | 8.0E-03 | 8.0E-04 | 8.0E-05 | 2.7E-02 | 2.5E-03 | 2.5E-04 | 2.5E-05 | 8.7E-03 | 4.9E-03 | 4.9E-04 | 4.9E-05 | 1.7E-02 | 2.0E-02 | 2.0E-03 | 2.0E-04 | 7.0E-02 |
| Heptachlor | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8.1E-03 | 8.1E-04 | 8.1E-05 | 7.8E-02 | 1.6E-02 | 1.6E-03 | 1.6E-04 | 1.5E-01 | 6.6E-02 | 6.6E-03 | 6.6E-04 | 6.3E-01 |
| alpha-Hexachlorocyclohexane | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.7E-02 | 1.7E-03 | 1.7E-04 | 3.7E+00 | 3.3E-02 | 3.3E-03 | 3.3E-04 | 7.1E+00 | 1.4E-01 | 1.4E-02 | 1.4E-03 | 3.0E+01 |
| beta-Hexachlorocyclohexane | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| gamma-Hexachlorocyclohexane | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Chlordane | 6.2E-02 | 6.2E-03 | 6.2E-04 | 4.7E-02 | 1.2E-01 | 1.2E-02 | 1.2E-03 | 9.1E-02 | 5.1E-01 | 5.1E-02 | 5.1E-03 | 3.8E-01 | 1.4E-01 | 1.4E-02 | 1.4E-03 | 1.0E-01 | 2.7E-01 | 2.7E-02 | 2.7E-03 | 2.0E-01 | 1.1E+00 | 1.1E-01 | 1.1E-02 | 8.4E-01 |
| Total DDD | 7.4E-02 | -- | N/A | 3.7E-02 | 1.4E-01 | -- | N/A | 7.3E-02 | 6.2E-01 | -- | 3.4E-03 | 3.2E-01 | 2.7E-01 | -- | 2.5E-04 | 1.4E-01 | 5.3E-01 | -- | 2.7E-03 | 2.7E-01 | 2.2E+00 | -- | 2.0E-02 | 1.1E+00 |
| Total DDE | 5.5E-03 | -- | N/A | 3.6E-03 | 1.2E-02 | -- | N/A | 8.2E-03 | 5.4E-02 | -- | N/A | 3.9E-02 | 3.5E-02 | -- | N/A | 2.5E-02 | 6.9E-02 | -- | N/A | 5.0E-02 | 2.9E-01 | -- | 1.6E-03 | 2.1E-01 |
| Total DDT | 4.0E-02 | -- | 1.0E-06 | 2.9E-02 | 7.9E-02 | -- | 3.6E-04 | 5.7E-02 | 3.3E-01 | -- | 2.7E-03 | 2.4E-01 | 7.9E-02 | -- | 3.6E-04 | 5.8E-02 | 1.5E-01 | -- | 1.2E-03 | 1.1E-01 | 6.5E-01 | -- | 6.1E-03 | 4.7E-01 |



BZTO104(e)033408

Table 10.3-3. Initial Preliminary

| Diet: | Single Species: Brown Bullhead | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ingestion Rate (g/day): | 142.0 | | | | 73.5 | | | | 17.5 | | | |
| Target Excess Cancer Risk or Hazard Quotient: | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 |
| Initial Chemical of Concern | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) |
| Arsenic, inorganic | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Mercury | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Bis(2-ethylhexyl) phthalate | 2.6E+00 | 2.6E-01 | 2.6E-02 | 3.1E+00 | 5.1E+00 | 5.1E-01 | 5.1E-02 | 6.1E+00 | 2.1E+01 | 2.1E+00 | 2.1E-01 | 2.6E+01 |
| Hexachlorobenzene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total PCBs | N/A | -- | N/A | N/A | N/A | -- | N/A | N/A | 4.1E-02 | -- | N/A | N/A |
| Total PCB TEQ | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- |
| Total Dioxin TEQ | 3.4E-06 | -- | N/A | -- | 8.2E-06 | -- | N/A | -- | 4.0E-05 | -- | N/A | -- |
| Dieldrin | 1.7E-03 | 1.7E-04 | 1.7E-05 | 6.0E-03 | 3.4E-03 | 3.4E-04 | 3.4E-05 | 1.2E-02 | 1.4E-02 | 1.4E-03 | 1.4E-04 | 4.9E-02 |
| Heptachlor | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| alpha-Hexachlorocyclohexane | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| beta-Hexachlorocyclohexane | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| gamma-Hexachlorocyclohexane | 6.0E-02 | 6.0E-03 | 6.0E-04 | 9.9E-02 | 1.1E-01 | 1.1E-02 | 1.1E-03 | 1.9E-01 | 4.8E-01 | 4.8E-02 | 4.8E-03 | 8.1E-01 |
| Total Chlordane | 3.7E-02 | 3.7E-03 | 3.7E-04 | 2.8E-02 | 7.2E-02 | 7.2E-03 | 7.2E-04 | 5.4E-02 | 3.0E-01 | 3.0E-02 | 3.0E-03 | 2.3E-01 |
| Total DDD | 1.8E-01 | -- | N/A | 9.2E-02 | 3.6E-01 | -- | N/A | 1.8E-01 | 1.5E+00 | -- | 1.1E-02 | 7.7E-01 |
| Total DDE | 3.5E-02 | -- | N/A | 2.5E-02 | 7.0E-02 | -- | N/A | 5.0E-02 | 3.0E-01 | -- | 5.5E-04 | 2.2E-01 |
| Total DDT | 2.1E-01 | -- | 1.5E-03 | 1.5E-01 | 4.1E-01 | -- | 3.3E-03 | 3.0E-01 | 1.7E+00 | -- | 1.6E-02 | 1.3E+00 |



BZTO104(e)033409

Table 10.3-3. Initial Preliminary

| Diet: | Single Species: Carp | | | | | | | | | | | | Mixed Species (Smallmouth Bass, Black Crappie, Brown Bullhead, and Carp) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ingestion Rate (g/day):** | **142.0** | | | | **73.5** | | | | **17.5** | | | | **142.0** | | | | **73.5** | | | | **17.5** | | | |
| **Target Excess Cancer Risk or Hazard Quotient:** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1** |
| **Initial Chemical of Concern** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target HQ (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target HQ (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target HQ (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target HQ (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target HQ (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target HQ (mg/kg)** |
| Arsenic, inorganic | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Mercury | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Bis(2-ethylhexyl) phthalate | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 6.0E-01 | 6.0E-02 | 6.0E-03 | 7.2E-01 | 1.2E+00 | 1.2E-01 | 1.2E-02 | 1.4E+00 | 4.9E+00 | 4.9E-01 | 4.9E-02 | 5.8E+00 |
| Hexachlorobenzene | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | 5.8E-01 | 5.8E-02 | 5.8E-03 | 3.2E+00 | 1.1E+00 | 1.1E-01 | 1.1E-02 | 6.2E+00 | 4.7E+00 | 4.7E-01 | 4.7E-02 | 2.6E+01 |
| Total PCBs | N/A | -- | N/A | N/A | N/A | -- | N/A | N/A | 3.1E-02 | -- | N/A | N/A | N/A | -- | N/A | N/A | N/A | -- | N/A | N/A | 1.7E-02 | -- | N/A | N/A |
| Total PCB TEQ | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- |
| Total Dioxin TEQ | 2.9E-06 | -- | N/A | -- | 5.7E-06 | -- | N/A | -- | 2.5E-05 | -- | N/A | -- | 2.9E-06 | -- | N/A | -- | 5.7E-06 | -- | N/A | -- | 3.0E-05 | -- | N/A | -- |
| Dieldrin | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.8E-03 | 1.8E-04 | 1.8E-05 | 6.1E-03 | 3.5E-03 | 3.5E-04 | 3.5E-05 | 1.2E-02 | 1.5E-02 | 1.5E-03 | 1.5E-04 | 5.0E-02 |
| Heptachlor | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.4E-02 | 2.4E-03 | 2.4E-04 | 2.3E-01 | 4.6E-02 | 4.6E-03 | 4.6E-04 | 4.4E-01 | 1.9E-01 | 1.9E-02 | 1.9E-03 | 1.9E+00 |
| alpha-Hexachlorocyclohexane | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 5.0E-02 | 5.0E-03 | 5.0E-04 | 1.1E+01 | 9.7E-02 | 9.7E-03 | 9.7E-04 | 2.1E+01 | 4.1E-01 | 4.1E-02 | 4.1E-03 | 8.8E+01 |
| beta-Hexachlorocyclohexane | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| gamma-Hexachlorocyclohexane | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Chlordane | 8.6E-02 | 8.6E-03 | 8.6E-04 | 6.4E-02 | 1.7E-01 | 1.7E-02 | 1.7E-03 | 1.2E-01 | 6.9E-01 | 6.9E-02 | 6.9E-03 | 5.2E-01 | 6.2E-02 | 6.2E-03 | 6.2E-04 | 4.6E-02 | 1.2E-01 | 1.2E-02 | 1.2E-03 | 9.0E-02 | 5.0E-01 | 5.0E-02 | 5.0E-03 | 3.8E-01 |
| Total DDD | 1.3E-01 | -- | N/A | 6.5E-02 | 2.5E-01 | -- | N/A | 1.3E-01 | 1.1E+00 | -- | 7.9E-03 | 5.5E-01 | 1.3E-01 | -- | N/A | 6.7E-02 | 2.6E-01 | -- | N/A | 1.3E-01 | 1.1E+00 | -- | 7.9E-03 | 5.6E-01 |
| Total DDE | 2.6E-02 | -- | N/A | 1.9E-02 | 5.2E-02 | -- | N/A | 3.7E-02 | 2.2E-01 | -- | 5.5E-04 | 1.6E-01 | 1.5E-02 | -- | N/A | 1.1E-02 | 3.1E-02 | -- | N/A | 2.2E-02 | 1.4E-01 | -- | N/A | 9.8E-02 |
| Total DDT | 1.9E-01 | -- | 1.2E-03 | 1.4E-01 | 3.7E-01 | -- | 3.2E-03 | 2.7E-01 | 1.5E+00 | -- | 1.5E-02 | 1.1E+00 | 8.5E-02 | -- | 3.6E-04 | 6.2E-02 | 1.6E-01 | -- | 1.2E-03 | 1.2E-01 | 6.9E-01 | -- | 6.3E-03 | 5.0E-01 |

**Notes:**

Initial preliminary remediation goal

Hazard quotient

Not applicable. Chemical not evaluated for this toxicity endpoint, or iPRG was not derived because chemical is not an iCOC for this diet.

N/A indicates that modeled tissue concentrations based on water exposure alone (i.e. sediment concentration = 0) exceeded target tissue concentrations.

Milligram

Kilogram

iPRG not evaluated because of lack of significant relationship between tissue and sediment concentrations.



BZTO104(e)033410

Table 10.3-4. Initial Preliminary Remediation Goals for Nontribal Child Fish Ingestion.

| Diet: | Single Species: Smallmouth Bass | | | | | | | | | | | | Single Species: Black Crappie | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ingestion Rate (g/day): | 60.0 | | | | 31.0 | | | | 7.0 | | | | 60.0 | | | | 31.0 | | | | 7.0 | | | |
| Target Excess Cancer Risk or Hazard Quotient: | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 |
| Initial Chemical of Concern | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) |
| Arsenic, inorganic | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Mercury | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Bis(2-ethylhexyl) phthalate | 4.3E-01 | 4.3E-02 | 4.3E-03 | 1.0E-01 | 8.3E-01 | 8.3E-02 | 8.3E-03 | 2.0E-01 | 3.7E+00 | 3.7E-01 | 3.7E-02 | 8.8E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Hexachlorobenzene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 5.0E-01 | 5.0E-02 | 5.0E-03 | 5.5E-01 | 9.7E-01 | 9.7E-02 | 9.7E-03 | 1.1E+00 | 4.3E+00 | 4.3E-01 | 4.3E-02 | 4.7E+00 |
| Total PCBs | N/A | -- | N/A | N/A | N/A | -- | N/A | N/A | 2.1E-02 | -- | N/A | N/A | 9.9E-03 | -- | N/A | N/A | 2.7E-02 | -- | N/A | N/A | 1.5E-01 | -- | N/A | N/A |
| Total PCB TEQ | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | 1.1E-06 | -- | N/A | -- |
| Total Dioxin TEQ | 9.8E-06 | -- | N/A | -- | 1.9E-05 | -- | N/A | -- | 9.0E-05 | -- | N/A | -- | 6.8E-06 | -- | N/A | -- | 1.4E-05 | -- | N/A | -- | 6.3E-05 | -- | N/A | -- |
| Dieldrin | 2.5E-03 | 2.5E-04 | 2.5E-05 | 1.7E-03 | 4.8E-03 | 4.8E-04 | 4.8E-05 | 3.3E-03 | 2.1E-02 | 2.1E-03 | 2.1E-04 | 1.5E-02 | 6.4E-03 | 6.4E-04 | 6.4E-05 | 4.4E-03 | 1.2E-02 | 1.2E-03 | 1.2E-04 | 8.5E-03 | 5.5E-02 | 5.5E-03 | 5.5E-04 | 3.8E-02 |
| Heptachlor | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.0E-02 | 2.0E-03 | 2.0E-04 | 4.0E-02 | 4.0E-02 | 4.0E-03 | 4.0E-04 | 7.7E-02 | 1.8E-01 | 1.8E-02 | 1.8E-03 | 3.4E-01 |
| alpha-Hexachlorocyclohexane | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 4.3E-02 | 4.3E-03 | 4.3E-04 | 1.9E+00 | 8.3E-02 | 8.3E-03 | 8.3E-04 | 3.6E+00 | 3.7E-01 | 3.7E-02 | 3.7E-03 | 1.6E+01 |
| beta-Hexachlorocyclohexane | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Chlordane | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total DDD | 1.9E-01 | -- | N/A | 1.7E-02 | 3.7E-01 | -- | 1.1E-03 | 3.6E-02 | 1.7E+00 | -- | 1.4E-02 | 1.7E-01 | 7.0E-01 | -- | 4.6E-03 | 6.9E-02 | 1.3E+00 | -- | 1.1E-02 | 1.4E-01 | 5.0E+00 | -- | 5.7E-02 | 6.1E-01 |
| Total DDE | 1.6E-02 | -- | N/A | 1.1E-03 | 3.2E-02 | -- | N/A | 3.5E-03 | 1.5E-01 | -- | 1.1E-04 | 2.0E-02 | 9.1E-02 | -- | N/A | 1.2E-02 | 1.8E-01 | -- | 4.7E-04 | 2.5E-02 | 7.9E-01 | -- | 6.6E-03 | 1.1E-01 |
| Total DDT | 1.0E-01 | -- | 6.7E-04 | 1.5E-02 | 2.0E-01 | -- | 1.5E-03 | 2.9E-02 | 8.9E-01 | -- | 8.4E-03 | 1.3E-01 | 2.0E-01 | -- | 1.5E-03 | 2.9E-02 | 3.9E-01 | -- | 3.5E-03 | 5.6E-02 | 1.7E+00 | -- | 1.7E-02 | 2.5E-01 |



BZTO104(e)033412

Table 10.3-4. Initial Preliminary Remediation Goals for Nontribal Child Fish Ingestion.

| Diet: | Single Species: Brown Bullhead | | | | | | | | | | | | Single Species: Carp | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ingestion Rate (g/day): | 60.0 | | | | 31.0 | | | | 7.0 | | | | 60.0 | | | | 31.0 | | | | 7.0 | | | |
| Target Excess Cancer Risk or Hazard Quotient: | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 |
| Initial Chemical of Concern | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) |
| Arsenic, inorganic | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Mercury | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Bis(2-ethylhexyl) phthalate | 6.7E+00 | 6.7E-01 | 6.7E-02 | 1.6E+00 | 1.3E+01 | 1.3E+00 | 1.3E-01 | 3.1E+00 | 5.7E+01 | 5.7E+00 | 5.7E-01 | 1.4E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Hexachlorobenzene | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Total PCBs | 2.5E-03 | -- | N/A | N/A | 1.9E-02 | -- | N/A | N/A | 1.4E-01 | -- | N/A | N/A | 2.6E-03 | -- | N/A | N/A | 1.5E-02 | -- | N/A | N/A | 1.0E-01 | -- | N/A | N/A |
| Total PCB TEQ | N/A | -- | N/A | -- | N/A | -- | N/A | -- | 1.1E-06 | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | 1.1E-06 | -- | N/A | -- |
| Total Dioxin TEQ | 1.2E-05 | -- | N/A | -- | 2.3E-05 | -- | N/A | -- | 1.1E-04 | -- | N/A | -- | 7.6E-06 | -- | N/A | -- | 1.6E-05 | -- | N/A | -- | 7.1E-05 | -- | N/A | -- |
| Dieldrin | 4.4E-03 | 4.4E-04 | 4.4E-05 | 3.0E-03 | 8.6E-03 | 8.6E-04 | 8.6E-05 | 5.9E-03 | 3.8E-02 | 3.8E-03 | 3.8E-04 | 2.6E-02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Heptachlor | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| alpha-Hexachlorocyclohexane | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| beta-Hexachlorocyclohexane | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Chlordane | 9.5E-02 | 9.5E-03 | 9.5E-04 | 1.4E-02 | 1.8E-01 | 1.8E-02 | 1.8E-03 | 2.7E-02 | 8.1E-01 | 8.1E-02 | 8.1E-03 | 1.2E-01 | 2.2E-01 | 2.2E-02 | 2.2E-03 | 3.3E-02 | 4.2E-01 | 4.2E-02 | 4.2E-03 | 6.3E-02 | 1.9E+00 | 1.9E-01 | 1.9E-02 | 2.8E-01 |
| Total DDD | 4.7E-01 | -- | 1.1E-03 | 4.5E-02 | 9.1E-01 | -- | 5.5E-03 | 9.0E-02 | 4.0E+00 | -- | 3.7E-02 | 4.1E-01 | 3.3E-01 | -- | 5.7E-04 | 3.2E-02 | 6.5E-01 | -- | 3.6E-03 | 6.4E-02 | 2.9E+00 | -- | 2.6E-02 | 2.9E-01 |
| Total DDE | 9.2E-02 | -- | N/A | 1.1E-02 | 1.8E-01 | -- | N/A | 2.4E-02 | 8.1E-01 | -- | 5.6E-03 | 1.2E-01 | 6.9E-02 | -- | N/A | 8.5E-03 | 1.3E-01 | -- | N/A | 1.8E-02 | 6.0E-01 | -- | 4.3E-03 | 8.6E-02 |
| Total DDT | 5.4E-01 | -- | 4.7E-03 | 7.8E-02 | 1.0E+00 | -- | 9.7E-03 | 1.5E-01 | 4.6E+00 | -- | 4.5E-02 | 6.7E-01 | 4.8E-01 | -- | 4.3E-03 | 6.9E-02 | 9.3E-01 | -- | 8.7E-03 | 1.3E-01 | 4.1E+00 | -- | 4.1E-02 | 6.0E-01 |



BZTO104(e)033413

Table 10.3-4. Initial Preliminary Remediation Goals for Nontribal Child Fish Ingestion.

| Diet: | Mixed Species (Smallmouth Bass, Black Crappie, Brown Bullhead, and Carp) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ingestion Rate (g/day): | 60.0 | | | | 31.0 | | | | 7.0 | | | |
| Target Excess Cancer Risk or Hazard Quotient: | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 |
| Initial Chemical of Concern | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) |
| Arsenic, inorganic | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Mercury | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
| Bis(2-ethylhexyl) phthalate | 1.5E+00 | 1.5E-01 | 1.5E-02 | 3.6E-01 | 2.9E+00 | 2.9E-01 | 2.9E-02 | 7.0E-01 | 1.3E+01 | 1.3E+00 | 1.3E-01 | 3.1E+00 |
| Hexachlorobenzene | 1.5E+00 | 1.5E-01 | 1.5E-02 | 1.6E+00 | 2.9E+00 | 2.9E-01 | 2.9E-02 | 3.1E+00 | 1.3E+01 | 1.3E+00 | 1.3E-01 | 1.4E+01 |
| Total PCBs | N/A | -- | N/A | N/A | 6.5E-03 | -- | N/A | N/A | 6.2E-02 | -- | N/A | N/A |
| Total PCB TEQ | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- | N/A | -- |
| Total Dioxin TEQ | 8.2E-06 | -- | N/A | -- | 1.7E-05 | -- | N/A | -- | 8.0E-05 | -- | N/A | -- |
| Dieldrin | 4.5E-03 | 4.5E-04 | 4.5E-05 | 3.1E-03 | 8.8E-03 | 8.8E-04 | 8.8E-05 | 6.0E-03 | 3.9E-02 | 3.9E-03 | 3.9E-04 | 2.7E-02 |
| Heptachlor | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| alpha-Hexachlorocyclohexane | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| beta-Hexachlorocyclohexane | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Chlordane | 1.6E-01 | 1.6E-02 | 1.6E-03 | 2.4E-02 | 3.0E-01 | 3.0E-02 | 3.0E-03 | 4.6E-02 | 1.3E+00 | 1.3E-01 | 1.3E-02 | 2.0E-01 |
| Total DDD | 3.4E-01 | -- | 5.7E-04 | 3.2E-02 | 6.6E-01 | -- | 3.6E-03 | 6.5E-02 | 2.9E+00 | -- | 2.6E-02 | 3.0E-01 |
| Total DDE | 4.1E-02 | -- | N/A | 4.7E-03 | 8.1E-02 | -- | N/A | 1.0E-02 | 3.7E-01 | -- | 2.2E-03 | 5.2E-02 |
| Total DDT | 2.2E-01 | -- | 1.5E-03 | 3.1E-02 | 4.2E-01 | -- | 3.6E-03 | 6.0E-02 | 1.9E+00 | -- | 1.8E-02 | 2.7E-01 |

**Notes:**
Initial preliminary remediation goal
Hazard quotient
Not applicable. Chemical not evaluated for this toxicity endpoint, or iPRG was not derived because chemical is not an iCOC for this diet.
N/A indicates that modeled tissue concentrations based on water exposure alone (i.e. sediment concentration = 0) exceeded target tissue concentrations.
Milligram
Kilogram
iPRG not evaluated because of lack of significant relationship between tissue and sediment concentrations.



BZTO104(e)033414

Table 10.3-5. Initial Preliminary Remediation Goals for Native American Adult and Child Fish Ingestion.

| Exposure Scenario: | Native American Adult | | | | Native American Child | | | |
|---|---|---|---|---|---|---|---|---|
| Ingestion Rate (g/day): | 175.0 g/day total, 21.7 g/day per resident species | | | | 73.0 g/day total, 9.1 g/day per resident species | | | |
| Target Excess Cancer Risk or Hazard Quotient: | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 | 1.0E-04 | 1.0E-05 | 1.0E-06 | 1 |
| Initial Chemical of Concern | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target risk (mg/kg) | iPRG for target HQ (mg/kg) |
| Arsenic, inorganic | NE | NE | NE | NE | NE | NE | NE | NE |
| Mercury | NE | NE | NE | NE | NE | NE | NE | NE |
| Bis(2-ethylhexyl) phthalate | 1.7E+00 | 1.7E-01 | 1.7E-02 | 4.7E+00 | 1.0E+01 | 1.0E+00 | 1.0E-01 | 2.4E+00 |
| Hexachlorobenzene | 1.6E+00 | 1.6E-01 | 1.6E-02 | 2.1E+01 | 9.7E+00 | 9.7E-01 | 9.7E-02 | 1.1E+01 |
| Total PCBs | N/A | -- | N/A | N/A | 4.5E-02 | -- | N/A | N/A |
| Total PCB TEQ | N/A | -- | N/A | -- | N/A | -- | N/A | -- |
| Total Dioxin TEQ | 9.8E-06 | -- | N/A | -- | 6.1E-05 | -- | N/A | -- |
| Dieldrin | 5.0E-03 | 5.0E-04 | 5.0E-05 | 4.0E-02 | 3.0E-02 | 3.0E-03 | 3.0E-04 | 2.0E-02 |
| Heptachlor | 6.7E-02 | 6.7E-03 | 6.7E-04 | 1.5E+00 | 4.0E-01 | 4.0E-02 | 4.0E-03 | 7.7E-01 |
| alpha-Hexachlorocyclohexane | 1.4E-01 | 1.4E-02 | 1.4E-03 | 1.4E-02 | -- | -- | -- | -- |
| Total Chlordane | 1.7E-01 | 1.7E-02 | 1.7E-03 | 3.0E-01 | 1.0E+00 | 1.0E-01 | 1.0E-02 | 1.6E-01 |
| Total DDD | 3.8E-01 | -- | 8.3E-04 | 4.5E-01 | 2.3E+00 | -- | 2.0E-02 | 2.3E-01 |
| Total DDE | 4.6E-02 | -- | N/A | 7.9E-02 | 2.8E-01 | -- | 1.3E-03 | 4.0E-02 |
| Total DDT | 2.4E-01 | -- | 2.0E-03 | 4.1E-01 | 1.4E+00 | -- | 1.4E-02 | 2.1E-01 |

Notes:
iPRG = Initial preliminary remediation goal
HQ = Hazard Quotient
-- = Not applicable. Chemical not evaluated for this toxicity endpoint, or iPRG was not derived because chemical is not an iCOC for this diet
N/A = Indicates that modeled tissue concentrations based on water exposure alone (i.e. sediment concentration = 0) exceeded target tissue concentrations.
mg = Milligram
kg = Kilogram
NE = iPRG not evaluated because of lack of significant relationship between tissue and sediment concentrations



BZTO104(e)033415

Table 10.3-6. Initial Preliminary Remediation Goals for Shellfish Ingestion.

| Ingestion Rate (g/day): | 18.0 | | | | 3.3 | | | |
|---|---|---|---|---|---|---|---|---|
| **Target Excess Cancer Risk or Hazard Quotient:** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1** | **1.0E-04** | **1.0E-05** | **1.0E-06** | **1** |
| **Initial Chemical of Concern** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target HQ (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target risk (mg/kg)** | **iPRG for target HQ (mg/kg)** |
| Arsenic, inorganic | NE | NE | NE | NE | NE | NE | NE | NE |
| Benzo(a)anthracene | 6.1E+01 | 7.3E-01 | 8.7E-03 | -- | 1.6E+03 | 1.9E+01 | 2.3E-01 | -- |
| Benzo(a)pyrene | 1.5E+01 | 1.7E-01 | 1.9E-03 | -- | 4.1E+02 | 4.6E+00 | 5.2E-02 | -- |
| Benzo(b)fluoranthene | 8.2E+02 | 7.2E+00 | 6.3E-02 | -- | 2.7E+04 | 2.4E+02 | 2.1E+00 | -- |
| Benzo(k)fluoranthene[1] | 2.0E+05 | 1.9E+03 | 1.8E+01 | -- | 6.0E+06 | 5.8E+04 | 5.5E+02 | -- |
| Dibenzo(a,h)anthracene | NE | NE | NE | NE | NE | NE | NE | NE |
| Indeno(1,2,3-cd)pyrene[1,2] | 1.3E+03 | 1.5E+01 | 1.7E-01 | -- | 3.6E+04 | 4.1E+02 | 4.6E+00 | -- |
| Pentachlorophenol | NE | NE | NE | NE | NE | NE | NE | NE |
| Total PCBs | 3.7E-01 | -- | N/A | 5.2E-02 | 2.0E+00 | -- | 8.0E-03 | 3.4E-01 |
| Total PCB TEQ | 4.3E-06 | -- | N/A | -- | 2.4E-05 | -- | 1.3E-07 | -- |
| Total Dioxin TEQ | 4.4E-05 | -- | N/A | -- | 2.4E-04 | -- | 1.7E-06 | -- |
| Aldrin[1] | 7.3E-02 | 7.1E-03 | 4.6E-04 | 1.6E-01 | 4.0E-01 | 4.0E-02 | 3.7E-03 | 8.7E-01 |
| Dieldrin | NE | NE | NE | NE | NE | NE | NE | NE |
| Heptachlor Epoxide | NE | NE | NE | NE | NE | NE | NE | NE |
| Total DDD | 9.0E+00 | -- | 8.8E-02 | 4.6E+00 | 4.9E+01 | -- | 4.9E-01 | 2.5E+01 |
| Total DDE | 1.9E+00 | -- | 1.6E-02 | 1.4E+00 | 1.1E+01 | -- | 1.0E-01 | 7.8E+00 |
| Total DDT | 2.0E+00 | -- | 1.9E-02 | 1.4E+00 | 1.1E+01 | -- | 1.1E-01 | 7.8E+00 |

Notes:
iPRG = Initial preliminary remediation goal
HQ = Hazard Quotient
-- = Not applicable. Chemical not evaluated for this toxicity endpoint, or iPRG was not derived because chemical is not an iCOC for this diet
N/A = Modeled tissue concentrations based on water exposure alone (i.e. sediment concentration = 0) exceeded target tissue concentrations.
mg = Milligram
kg = Kilogram
NE = iPRG not evaluated because of lack of significant relationship between tissue and sediment concentrations.
1 - Regression equation applied to target tissue level outside of range of significance
2 - Statistically significant regression equation not available. Regression equation for benzo(a)pyrene used as surrogate
Target tissue concentrations used in calculations of iPRGs for non-food web model chemicals are lipid-normalized on wet weight basis.
iPRGS listed are the minimum concentration of crayfish and clam iPRGs.



BZTO104(e)033416

Table 10.3-7. Fish Sediment iPRG Values for Development of Ecological iAOPCs.

| iCOC | Background Sediment Value (µg/kg)[a] | Site-Wide SWAC Concentration (µg/kg) | Target Tissue Level (µg/kg) | iPRG Value (µg/kg) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Sucker | Sculpin[b] | Carp | Smallmouth Bass[c] | Pikeminnow |
| Total PCBs | 13.451 | 72.1 | 4,020[d] | 472.07[e] | 493.5 | 350.4[e] | 86.28[e] | 188.8[e] |
| 4,4′-DDD | 0.530 | 7.9 | 54 | 14.1[e] | 22.2 | 10[e] | 4.1 | 8.59[e] |
| 4,4′-DDT | 0.358 | 15.346 | 470 | 837[e] | 219.0 | 741[e] | 297[e] | 357[e] |
| Total DDTs | 2.103 | 32.6 | 1,800[d] | 276.86[e] | 322.2 | 203.6[e] | 62.18[e] | 126.9[e] |

Notes:

[a] Background values were used as replacement values in the hill topping exercise.

[b] Because they are not site-wide receptors, sculpin iAOPCs were developed by comparing Thiessen polygons to iPRGs.

[c] Smallmouth bass SWAC for total PCBs is 107 µg/kg and total DDTs is 62.2 µg/kg due to exclusion of the navigation channel.

[d] Target tissue levels are based on LWG recommended LOAEL TRVs for baseline ERA.

[e] In cases where the iPRG > SWAC, no figures were created.

iCOC – initial chemical of concern

iPRG – initial preliminary remediation goal

PCB – polychlorinated biphenyl

SWAC – spatially weighted average concentration



BZTO104(e)033417

Table 10.3-8. Wildlife Sediment iPRG Values for Development of Ecological iAOPCs.

| iCOC | Background Sediment Value (µg/kg)[a] | Site-Wide SWAC Concentration (µg/kg) | Target Dose Level (µg/kg bw/day)[b] | iPRG Value (µg/kg) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Mink | River Otter[c] | Sandpiper (Clam Diet)[d] | Sandpiper (Worm Diet)[d] | Merganser |
| PCB TEQ (birds) | 0.000548[e] | 0.021 | 0.14 | -- | -- | 2.40E-01 | 8.08E-02 | -- |
| PCB TEQ (mammals) | 0.000548[e] | 0.003 | 2.24E-03 | 0.009[c] | 1.96E-03 | -- | -- | -- |
| Total PCBs | 13.5 | 72.1 | 37.0 | 164.2[c] | 27.8 | 986 | 367 | -- |
| Dioxin TEQ (birds) | 0.000197 | 0.056 | 0.14 | -- | -- | 1.90 | 0.265 | -- |
| Dioxin TEQ (mammals) | 0.000233 | 0.027 | 2.24E-03 | 0.689[f] | -- | -- | -- | -- |
| Sum DDT | 0.603 | 17.40 | 150 | -- | -- | -- | -- | 128[f] |

Notes:

[a] Background values are used as replacement values in the hill topping exercise.

[b] Target dose levels are based on LOAEL TRVs.

[c] The iPRGs for river otter are considered protective of mink for total PCBs and PCB TEQ.

[d] Sandpiper iAOPCs were developed using an HQ approach to estimate risks at individual beach areas.

[e] PCB TEQ values represent an average of the two available background samples.

[f] In cases where the iPRG > SWAC, no figures were created.

iCOC – initial chemical of concern

iPRG – initial preliminary remediation goal

PCB – polychlorinated biphenyl

SWAC – spatially weighted average concentration

TEQ – toxic equivalent



BZTO104(e)033418

Table 10.5-1. Initial Areas of Potential Concern Summary of Human Health and Ecological Risks Lower Willamette Group.

| iAOPC | Risk | Receptor/Scenario | Analyte(s) |
|---|---|---|---|
| 1 | Human Health | Shellfish Consumption | PCB TEQ (calc'd), Total PCBs (calc'd) |
| | | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Fish - Bass, Sculpin | Total PCBs (calc'd) |
| | | Wildlife - Otter, Shorebirds | PCBs TEQ (calc'd), Total PCBs (calc'd) |
| | | Benthic Toxicity[a] | Dibutyl phthalate, Total PCB Aroclors (calc'd), Zinc |
| 2 | Human Health | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Wildlife - Otter | Total PCBs (calc'd) |
| 3 | Human Health | Shellfish Consumption | PCB TEQ (calc'd), Total PCBs (calc'd) |
| | | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Fish - Bass, Sculpin | Total PCBs (calc'd) |
| | | Wildlife - Otter | PCBs TEQ (calc'd), Total PCBs (calc'd) |
| | | Benthic Toxicity[a] | Dibutyl phthalate, Diesel Range Hydrocarbons, Residual Range Hydrocarbons, Endrin ketone, Total PCBs (calc'd), Zinc |
| | | Benthic Toxicity | False negative prediction(s), actual toxicity unknown |
| 4 | Human Health | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Fish - Bass | Total PCBs (calc'd) |
| | | Wildlife - Otter | Total PCBs (calc'd) |
| T4 | Human Health | Direct Exposure In-Water Sediments | Benzo(a)pyrene |
| | | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Dioxin TEQ (calc'd), Total PCBs (calc'd) |
| | Ecology | Fish - Bass, Sculpin | Total PCBs (calc'd) |
| | | Wildlife - Otter | Total PCBs (calc'd) |
| | | Benthic Toxicity[a] | Cadmium, Lead, Silver, Zinc, Diesel Range Hydrocarbons |
| 5 | Human Health | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Fish - Bass, Sculpin | Total PCBs (calc'd) |
| | | Wildlife - Otter | Total PCBs (calc'd) |
| 6 | Ecology | Benthic Toxicity[a] | Mercury, Silver, Diesel Range Hydrocarbons |

BZTO104(e)033419

Table 10.5-1. Initial Areas of Potential Concern Summary of Human Health and Ecological Risks Lower Willamette Group.

| iAOPC | Risk | Receptor/Scenario | Analyte(s) |
|---|---|---|---|
| 7 | Human Health | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Fish - Bass | Total PCBs (calc'd) |
| | | Wildlife - Otter | Total PCBs (calc'd) |
| | | Benthic Toxicity[a] | Silver, Diesel Range Hydrocarbons |
| 8 | Human Health | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Wildlife - Otter | Total PCBs (calc'd) |
| 9 | Human Health | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Fish - Sculpin | Sum DDT (calc'd) |
| 10 | Human Health | Beach Exposure | Arsenic |
| | | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Wildlife - Otter | Total PCBs (calc'd) |
| 11 | Human Health | Beach Exposure | Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene |
| | | Direct Exposure In-Water Sediments | Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene |
| | | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Fish - Bass, Sculpin | Sum DDT (calc'd) |
| | | Wildlife - Otter | Total PCBs (calc'd) |
| | | Benthic Toxicity[a] | Ammonia, Sulfide, beta-BHC, delta-BHC, Endrin Ketone, Sum DDD (calc'd), Diesel Range Hydrocarbons, Residual Range Hydrocarbons |
| 12 | Human Health | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Wildlife - Otter | Total PCBs (calc'd) |
| 13 | Human Health | Shellfish Consumption | PCB TEQ (calc'd), Total PCBs (calc'd) |
| | | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Dioxin TEQ (calc'd), Total PCBs (calc'd) |
| | Ecology | Fish - Bass, Sculpin | Total PCBs (calc'd) |
| | | Fish - Sculpin | Sum DDT (calc'd) |
| | | Wildlife - Otter | PCBs TEQ (calc'd) |
| | | Wildlife - Otter, Shorebirds | Total PCBs (calc'd) |



BZTO104(e)033420

Table 10.5-1. Initial Areas of Potential Concern Summary of Human Health and Ecological Risks Lower Willamette Group.

| iAOPC | Risk | Receptor/Scenario | Analyte(s) |
|---|---|---|---|
| 13 (cont.) | Ecology | Benthic Toxicity[a] | Mercury, Diesel Range Hydrocarbons, Residual Range Hydrocarbons |
| | | Benthic Toxicity[a] | False negative prediction(s), actual toxicity unknown |
| 14 | Human Health | Direct Exposure In-Water Sediments | Dioxin TEQ (calc'd) |
| | | Shellfish Consumption | Aldrin, Dioxin TEQ (calc'd), PCB TEQ (calc'd), Sum DDT (calc'd) |
| | | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Dioxin TEQ (calc'd), Total PCBs (calc'd) |
| | Ecology | Fish - Bass, Sculpin | Sum DDT (calc'd), Total PCBs (calc'd) |
| | | Wildlife - Otter, Shorebirds | Total PCBs (calc'd) |
| | | Wildlife - Shorebirds | Dioxin, PCB TEQ (calc'd), Sum DDD (calc'd) |
| | | Benthic Toxicity[a] | Sulfide, Arsenic, Mercury, Silver, beta-BHC, delta-BHC, Sum DDD (calc'd), Sum DDE (calc'd), Sum DDT (calc'd), Dibutyl phthalate |
| | | Benthic Toxicity[a] | False negative prediction(s), actual toxicity unknown |
| 15 | Human Health | Area-Specific Fish Consumption | Dioxin TEQ (calc'd) |
| | Ecology | Benthic Toxicity[a] | Arsenic |
| 16 | Human Health | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Wildlife - Otter | Total PCBs (calc'd) |
| 17 | Human Health | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Fish - Bass, Sculpin | Sum DDT (calc'd), Total PCBs (calc'd) |
| | | Wildlife - Otter | Total PCBs (calc'd) |
| | | Wildlife - Shorebirds | Dioxin, Sum DDD (calc'd) |
| | | Benthic Toxicity[a] | False negative prediction(s), actual toxicity unknown |
| 18 | Human Health | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Fish - Bass, Sculpin | Total PCBs (calc'd) |
| | | Wildlife - Otter | Total PCBs (calc'd) |
| | | Benthic Toxicity[a] | Ammonia |

BZTO104(e)033421

Table 10.5-1. Initial Areas of Potential Concern Summary of Human Health and Ecological Risks Lower Willamette Group.

| iAOPC | Risk | Receptor/Scenario | Analyte(s) |
|---|---|---|---|
| 19 | Human Health | Shellfish Consumption | PCB TEQ (calc'd), Total PCBs (calc'd) |
| | | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Fish - Bass, Sculpin | Sum DDT (calc'd), Total PCBs (calc'd) |
| | | Wildlife - Otter | PCBs TEQ (calc'd), Total PCBs (calc'd) |
| | | Wildlife - Shorebirds | Aldrin, PCB TEQ (calc'd), Total PCBs (calc'd) |
| | | Benthic Toxicity[a] | Ammonia, Cadmium, Mercury, Silver, Total PCB Aroclors (calc'd), alpha-BHC, Dieldrin, Endrin ketone, Dibutyl phthalate, Sum DDD (calc'd), Sum DDE (calc'd), Diesel Range Hydrocarbons, Residual Range Hydrocarbons |
| | | Benthic Toxicity[a] | False negative prediction(s), actual toxicity unknown |
| 20 | Human Health | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Wildlife - Otter | Total PCBs (calc'd) |
| 21 | Human Health | Shellfish Consumption | Total PCBs (calc'd) |
| | | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Fish - Bass, Sculpin | Total PCBs (calc'd) |
| | | Wildlife - Otter | Total PCBs (calc'd) |
| | | Benthic Toxicity[a] | Arsenic, Zinc, Total PCB Aroclors (calc'd), Dibutyl phthalate, Diesel Range Hydrocarbons |
| | | Benthic Toxicity[a] | False negative prediction(s), actual toxicity unknown |
| 22 | Human Health | Shellfish Consumption | Total PCBs (calc'd) |
| | | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Fish - Bass, Sculpin | Total PCBs (calc'd) |
| | | Wildlife - Otter, Shorebirds | Total PCBs (calc'd) |
| 23 | Human Health | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Fish - Bass, Sculpin | Total PCBs (calc'd) |
| | | Wildlife - Otter, Shorebirds | Total PCBs (calc'd) |
| | | Benthic Toxicity[a] | False negative prediction(s), actual toxicity unknown |

BZTO104(e)033422

Table 10.5-1. Initial Areas of Potential Concern Summary of Human Health and Ecological Risks Lower Willamette Group.

| iAOPC | Risk | Receptor/Scenario | Analyte(s) |
|---|---|---|---|
| 24 | Human Health | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Fish - Bass, Sculpin | Total PCBs (calc'd) |
| | | Wildlife - Otter, Shorebirds | Total PCBs (calc'd) |
| 25 | Human Health | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Wildlife - Otter | Total PCBs (calc'd) |
| 26 | Human Health | Site-Wide Fish Consumption | Total PCBs (calc'd) |
| | | Area-Specific Fish Consumption | Total PCBs (calc'd) |
| | Ecology | Fish - Bass, Sculpin | Total PCBs (calc'd) |
| | | Wildlife - Otter | Total PCBs (calc'd) |
| 27 | Human | Area-Specific Fish | Total PCBs (calc'd) |
| | Ecology | Wildlife - Otter | Total PCBs (calc'd) |
| Site-Wide | Human Health | Site-Wide Fish Consumption | Total PCBs (calc'd) |

[a] Benthic toxicity for the iAOPC identification process is based solely on the FPM. Because this model cannot establish causality the chemicals are identified as potential ecological iCOCs. (Note: iAOPCs were not identified based on tissue or surface water lines of evidence.)

BZTO104(e)033423

Table 11.1-1. Summary of iCOCs and Potential iCOCs.

| | Human Health iCOCs | | | Human Health Potential TZW iCOCs | | Ecological iCOCs | | | Ecological Potential iCOCs | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anlayte** | Fish Consumption | Shellfish Consumption | Sediment Direct Contact | TZW -Drinking Water Scenario | TZW - Fish/Shellfish Consumption | Benthic Invertebrates [a] | Fish [b] | Wildlife [c] | Benthic Invertebrates [d] | Fish [c] |
| **Other** | | | | | | | | | | |
| Cyanide | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ |
| Perchlorate | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ |
| **Conventionals** | | | | | | | | | | |
| Ammonia | -- | -- | -- | -- | -- | -- | -- | -- | √[f] | -- |
| Sulfides | -- | -- | -- | -- | -- | -- | -- | -- | √[f] | -- |
| **Metals** | | | | | | | | | | |
| Arsenic | √ | √ | √ | -- | -- | -- | -- | -- | √ | -- |
| Cadmium | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- |
| Copper | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- |
| Lead | -- | -- | -- | -- | -- | -- | -- | -- | √[f] | -- |
| Mercury | √ | -- | -- | -- | -- | -- | √ | -- | √ | -- |
| Silver | -- | -- | -- | -- | -- | -- | -- | -- | √[f] | -- |
| Zinc | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- |
| **Butyltins** | | | | | | | | | | |
| Tributyltin | -- | -- | -- | -- | -- | -- | √ | -- | √ | -- |
| **PCBs** | | | | | | | | | | |
| PCB TEQ | √ | √ | √ | -- | -- | -- | -- | √ | -- | -- |
| Total PCBs | √ | √ | √ | -- | -- | √ | √ | √ | -- | -- |
| **Dioxins/Furans** | | | | | | | | | | |
| Dioxin TEQ | √ | √ | √ | -- | -- | -- | -- | √ | -- | -- |
| **Pesticides** | | | | | | | | | | |
| 2,4'-DDD | -- | -- | -- | -- | -- | √ | √ | -- | -- | -- |
| 2,4'-DDT | -- | -- | -- | -- | -- | √ | √ | -- | -- | -- |
| 4,4'-DDD | -- | -- | -- | -- | -- | √ | √ | -- | -- | -- |
| 4,4'-DDE | -- | -- | -- | -- | -- | -- | √ | -- | √ | -- |
| 4,4'-DDT | -- | -- | -- | -- | -- | √ | √ | -- | -- | -- |
| Total of 2,4' and 4,4'-DDD | √ | √ | -- | -- | √ | -- | -- | √ | √ | -- |
| Total of 2,4' and 4,4'-DDE | √ | √ | -- | -- | -- | -- | -- | √ | √ | -- |
| Total of 2,4' and 4,4'-DDT | √ | √ | -- | -- | √ | -- | -- | -- | √ | -- |
| Total of 2,4' and 4,4'-DDD, -DDE, -DDT | -- | -- | -- | -- | -- | √ | √ | -- | -- | -- |
| Aldrin | -- | √ | -- | -- | -- | -- | -- | √ | -- | -- |
| alpha-Hexachlorocyclohexane | √ | -- | -- | -- | -- | -- | -- | -- | √ | -- |
| beta-Hexachlorocyclohexane | √ | -- | -- | -- | -- | -- | -- | -- | √ | -- |
| delta-Hexachlorocyclohexane | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- |
| Dieldrin | √ | √ | -- | -- | -- | -- | -- | -- | √ | -- |
| Endrin | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- |
| Endrin Keytone | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- |
| gamma-Hexachlorocyclohexane | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Heptachlor | √ | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Heptachlor Epoxide | -- | √ | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Chlordanes | √ | -- | -- | -- | -- | -- | -- | -- | √ | √ |
| **PAHs** | | | | | | | | | | |
| 2-Methylnaphthalene | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ |
| Acenaphthene | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ |
| Anthracene | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ |

BZTO104(e)033425

Table 11.1-1. Summary of iCOCs and Potential iCOCs.

| | Human Health iCOCs | | | Human Health Potential TZW iCOCs | | Ecological iCOCs | | | Ecological Potential iCOCs | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Anlayte** | Fish Consumption | Shellfish Consumption | Sediment Direct Contact | TZW -Drinking Water Scenario | TZW - Fish/Shellfish Consumption | Benthic Invertebrates [a] | Fish [b] | Wildlife [c] | Benthic Invertebrates [d] | Fish [e] |
| Benzo(a)anthracene | -- | √ | √ | -- | -- | -- | -- | -- | √ | √ |
| Benzo(a)pyrene | -- | √ | √ | -- | -- | √ | -- | -- | -- | √ |
| Benzo(b)fluoranthene | -- | √ | √ | -- | -- | -- | -- | -- | √ | √ |
| Benzo(g,h,i)perylene | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ |
| Benzo(k)fluoranthene | -- | √ | -- | -- | -- | -- | -- | -- | √ | √ |
| Chrysene | -- | -- | -- | -- | -- | √ | -- | -- | -- | √ |
| Dibenzo(a,h)anthracene | -- | √ | √ | -- | -- | -- | -- | -- | √ | √ |
| Fluoranthene | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ |
| Fluorene | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ |
| Indeno(1,2,3-cd)pyrene | -- | √ | √ | -- | -- | -- | -- | -- | √ | √ |
| Naphthalene | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ |
| Phenanthrene | -- | -- | -- | -- | -- | -- | -- | -- | √ | √ |
| Pyrene | -- | -- | -- | -- | -- | √ | -- | -- | -- | √ |
| Total PAHs | -- | -- | -- | -- | -- | √ | -- | -- | -- | -- |
| **Phthalate esters** | | | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | √ | -- | -- | -- | -- | -- | √ | -- | √ | -- |
| Dibutyl phthalate | -- | -- | -- | -- | -- | -- | -- | -- | √ | -- |
| **SVOCs** | | | | | | | | | | |
| Hexachlorobenzene | √ | -- | -- | -- | -- | -- | -- | -- | √ | -- |
| Pentachlorophenol | -- | √ | -- | -- | -- | -- | -- | -- | -- | -- |
| **VOCs** | | | | | | | | | | |
| Chloroform | -- | -- | -- | √ | -- | -- | -- | -- | -- | -- |
| Trichloroethene | -- | -- | -- | √ | -- | -- | -- | -- | -- | -- |
| **Petroleum** | | | | | | | | | | |
| TPH-DRH | -- | -- | -- | -- | -- | -- | -- | -- | √[f] | -- |
| TPH-RRH | -- | -- | -- | -- | -- | -- | -- | -- | √[f] | -- |

**Notes:**

-- Chemical not identified as an iCOC or potential iCOC, or not assessed, for the specific pathway/receptor.

[a] Based on tissue and surface water Lines of Evidence (LOEs). Note: Analytes identified as iCOCs for benthic invertebrates may have also been identified by less certain LOEs, such as the floating percentile method (FPM) or TZW, in addition to tissue and SW LOEs. For these cases, the analyte is only designated as an iCOC and not also as a potential iCOC for benthic invertebrates in this table.

[b] Based on tissue, surface water, and dietary LOEs.

[c] Based on dietary and bird egg LOEs.

[d] Potential ecological iCOC for benthic invertebrates were identified based only on one or more of the following LOEs: (1) TZW, (2) the floating percentile method (FPM), and/or (3) other highly uncertain LOEs.

[e] Potential ecological iCOC for fish were identified based on the TZW LOE, and not supported by any other LOEs (i.e., in tissue, surface water, or dietary LOEs).

[f] This potential ecological iCOCs for benthic invertebrates were identified exclusively based on the FPM, and are considered highly uncertain potential iCOCs, recognizing that the FPM does not demonstrate causality.

BZTO104(e)033426

Table 11.2-1. Summary Statistics for Total Aroclor and Total PCB Congener Results in Study Area (RM 2-11) Sediment.

| Analyte | Units | N | N Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median | 95th | Minimum | Maximum | Mean | Median | 95th |
| ***Surface*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 945 | 710 | 75.1 | 0.851 JT | 27400 JT | 200 | 33.8 JT | 810 T | 0.851 JT | 27400 JT | 163 | 20 UT | 606 T |
| Total PCB Congeners | µg/kg | 233 | 218 | 93.6 | 0.0324 T | 35400 | 411 | 29.9 JT | 972 | 0.0324 T | 35400 | 385 | 26.7 | 849 |
| ***Subsurface*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 1002 | 607 | 60.6 | 0.906 T | 26000 T | 328 | 78 T | 843 JT | 0.906 T | 150000 UT | 296 | 26 JT | 568 JT |
| Total PCB Congeners | µg/kg | 27 | 27 | 100 | 13.6 | 36800 | 2030 | 338 T | 2830 | 13.6 | 36800 | 2030 | 338 T | 2830 |

Notes: J - estimated value; T - calculated or selected value from multiple results



BZTO104(e)033427

Table 11.2-2. Summary Statistics for Total Aroclor and Total PCB Congener Results in Study Area (RM 2-11) Surface Water.

| Analyte | Units | N | N Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median | 95th | Minimum | Maximum | Mean | Median | 95th |
| *XAD column* | | | | | | | | | | | | | | |
| Total PCB Aroclors | pg/l | 18 | 18 | 100 | 75.2 JT | 1603 JT | 468 | 171 JT | 1550 JT | 75.2 JT | 1603 JT | 468 | 171 JT | 1550 JT |
| Total PCB Congeners | pg/l | 18 | 18 | 100 | 136 | 2420 | 685 | 295 | 2160 | 136 | 2420 | 685 | 295 | 2160 |
| *XAD filter* | | | | | | | | | | | | | | |
| Total PCB Aroclors | pg/l | 17 | 17 | 100 | 76.2 JT | 9950 JT | 1470 | 228 JT | 5660 JT | 76.2 JT | 9950 JT | 1470 | 228 JT | 5660 JT |
| Total PCB Congeners | pg/l | 17 | 17 | 100 | 92.9 | 9550 | 1500 | 285 | 5920 | 92.9 | 9550 | 1500 | 285 | 5920 |
| *Surface Water* | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/l | 48 | 6 | 12.5 | 0.00467 JT | 0.0154 T | 0.00946 | 0.0063 JT | 0.0136 JT | 0.0025 UJT | 0.0154 T | 0.00229 | 0.00125 UT | 0.0063 JT |

Notes: J - estimated value; T - calculated or selected value from multiple results



BZTO104(e)033428

Table 11.2-3. Summary Statistics for Total Aroclor and Total PCB Congener Results in Study Area (RM 2-11) Vertebrate Tissue.

| Species (tissue) | Analyte | Units | N | N Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Minimum | Maximum | Mean | Median | 95th | Minimum | Maximum | Mean | Median | 95th |
| | **Aroclors** | | | | | | | | | | | | | | |
| black crappie (fillet) | Total PCB Aroclors | µg/kg-Wet | 4 | 4 | 100 | 19.6 T | 32 T | 24.1 | 22.2 T | 22.6 T | 19.6 T | 32 T | 24.1 | 22.2 T | 22.6 T |
| black crappie (whole body) | Total PCB Aroclors | µg/kg-Wet | 4 | 4 | 100 | 85 T | 250 T | 134 | 90 T | 109 T | 85 T | 250 T | 134 | 90 T | 109 T |
| brown bullhead (fillet without skin) | Total PCB Aroclors | µg/kg-Wet | 6 | 6 | 100 | 37 T | 1300 JT | 354 | 56 T | 560 T | 37 T | 1300 JT | 354 | 56 T | 560 T |
| brown bullhead (whole body) | Total PCB Aroclors | µg/kg-Wet | 6 | 6 | 100 | 67 T | 1700 T | 404 | 125 T | 314 JT | 67 T | 1700 T | 404 | 125 T | 314 JT |
| carp (fillet) | Total PCB Aroclors | µg/kg-Wet | 6 | 6 | 100 | 350 T | 1200 JT | 812 | 670 T | 1200 JT | 350 T | 1200 JT | 812 | 670 T | 1200 JT |
| carp (whole body) | Total PCB Aroclors | µg/kg-Wet | 6 | 6 | 100 | 230 T | 6500 JT | 1640 | 690 T | 1100 T | 230 T | 6500 JT | 1640 | 690 T | 1100 T |
| chinook (whole body) | Total PCB Aroclors | µg/kg-Wet | 15 | 15 | 100 | 30 JT | 309 JT | 113 | 92.8 JT | 253 JT | 30 JT | 309 JT | 113 | 92.8 JT | 253 JT |
| largescale sucker (whole body) | Total PCB Aroclors | µg/kg-Wet | 6 | 6 | 100 | 95 T | 2020 JT | 819 | 350 T | 1400 T | 95 T | 2020 JT | 819 | 350 T | 1400 T |
| northern pikeminnow (whole body) | Total PCB Aroclors | µg/kg-Wet | 6 | 6 | 100 | 370 T | 1800 T | 833 | 670 T | 1010 T | 370 T | 1800 T | 833 | 670 T | 1010 T |
| peamouth (whole body) | Total PCB Aroclors | µg/kg-Wet | 4 | 4 | 100 | 138 T | 290 T | 187 | 147 T | 174 T | 138 T | 290 T | 187 | 147 T | 174 T |
| sculpin (whole body) | Total PCB Aroclors | µg/kg-Wet | 26 | 26 | 100 | 62 JT | 3360 T | 562 | 226 JT | 2300 T | 62 JT | 3360 T | 562 | 226 JT | 2300 T |
| smallmouth bass (fillet) | Total PCB Aroclors | µg/kg-Wet | 5 | 5 | 100 | 39 T | 93 T | 62 | 60 T | 72 T | 39 T | 93 T | 62 | 60 T | 72 T |
| smallmouth bass (whole body) | Total PCB Aroclors | µg/kg-Wet | 14 | 14 | 100 | 90 JT | 4500 JT | 1110 | 780 T | 3300 JT | 90 JT | 4500 JT | 1110 | 780 T | 3300 JT |
| sturgeon (fillet without skin) | Total PCB Aroclors | µg/kg-Dry | 5 | 5 | 100 | 43 | 430 JT | 133 | 51.5 JT | 90 | 43 | 430 JT | 133 | 51.5 JT | 90 |
| | **PCB Congeners** | | | | | | | | | | | | | | |
| black crappie (whole body) | Total PCB Congeners | µg/kg-Wet | 4 | 4 | 100 | 103 JT | 301 JT | 164 | 106 JT | 146 JT | 103 JT | 301 JT | 164 | 106 JT | 146 JT |
| brown bullhead (whole body) | Total PCB Congeners | µg/kg-Wet | 6 | 6 | 100 | 83.3 JT | 1950 JT | 511 | 236 JT | 354 JT | 83.3 JT | 1950 JT | 511 | 236 JT | 354 JT |
| carp (whole body) | Total PCB Congeners | µg/kg-Wet | 6 | 6 | 100 | 343 JT | 8150 JT | 1920 | 574 JT | 1380 JT | 343 JT | 8150 JT | 1920 | 574 JT | 1380 JT |
| chinook (whole body) | Total PCB Congeners | µg/kg-Wet | 9 | 9 | 100 | 72.3 | 277 | 147 | 111 | 246 | 72.3 | 277 | 147 | 111 | 246 |
| sculpin (whole body) | Total PCB Congeners | µg/kg-Wet | 9 | 9 | 100 | 203 JT | 2450 JT | 934 | 758 JT | 1930 JT | 203 JT | 2450 JT | 934 | 758 JT | 1930 JT |
| smallmouth bass (whole body) | Total PCB Congeners | µg/kg-Wet | 14 | 14 | 100 | 344 JT | 4530 JT | 1120 | 549 JT | 3480 JT | 344 JT | 4530 JT | 1120 | 549 JT | 3480 JT |
| sturgeon (fillet without skin) | Total PCB Congeners | µg/kg-Wet | 5 | 5 | 100 | 84.7 | 964 | 289 | 96.2 | 206 | 84.7 | 964 | 289 | 96.2 | 206 |

Notes: J - estimated value; T - calculated or selected value from multiple results



BZTO104(e)033429

Table 11.2-4. Summary Statistics for Total Aroclor and Total PCB Congener Results in Study Area (RM 2-11) Invertebrate Tissue.

| | | | | N | % | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Species (tissue)** | **Analyte** | **Units** | **N** | **Detected** | **Detected** | **Minimum** | **Maximum** | **Mean** | **Median** | **95th** | **Minimum** | **Maximum** | **Mean** | **Median** | **95th** |
| | **Aroclors** | | | | | | | | | | | | | | |
| chinook (stomach contents) | Total PCB Aroclors | µg/kg-Wet | 5 | 5 | 100 | 43 JT | 163 JT | 80.3 | 55.1 JT | 88.2 JT | 43 JT | 163 JT | 80.3 | 55.1 JT | 88.2 JT |
| clam (body without shell) | Total PCB Aroclors | µg/kg-Wet | 32 | 32 | 100 | 30.2 JT | 1470 JT | 161 | 77 JT | 299 JT | 30.2 JT | 1470 JT | 161 | 77 JT | 299 JT |
| crayfish (whole body) | Total PCB Aroclors | µg/kg-Wet | 27 | 12 | 44.4 | 16 T | 280 T | 63.6 | 43 T | 110 T | 1.7 UT | 280 T | 29.5 | 3.5 UT | 59 T |
| lab clam (body without shell) | Total PCB Aroclors | µg/kg-Wet | 43 | 43 | 100 | 11 T | 128 JT | 29.7 | 21.5 JT | 60.1 JT | 11 T | 128 JT | 29.7 | 21.5 JT | 60.1 JT |
| Lumbriculus variegatus (whole body) | Total PCB Aroclors | µg/kg-Wet | 43 | 43 | 100 | 30.1 JT | 3230 JT | 377 | 114 JT | 1860 JT | 30.1 JT | 3230 JT | 377 | 114 JT | 1860 JT |
| multiplate invertebrates (whole body) | Total PCB Aroclors | µg/kg-Wet | 7 | 7 | 100 | 25.2 JT | 490 JT | 103 | 34.8 JT | 73.8 JT | 25.2 JT | 490 JT | 103 | 34.8 JT | 73.8 JT |
| | **PCB_Congeners** | | | | | | | | | | | | | | |
| chinook (stomach contents) | Total PCB Congeners | µg/kg-Wet | 5 | 5 | 100 | 53.8 | 162 | 83.9 | 59.8 | 87 | 53.8 | 162 | 83.9 | 59.8 | 87 |
| clam (body without shell) | Total PCB Congeners | µg/kg-Wet | 29 | 29 | 100 | 50.1 | 2660 | 265 | 111 | 459 | 50.1 | 2660 | 265 | 111 | 459 |
| crayfish (whole body) | Total PCB Congeners | µg/kg-Wet | 10 | 10 | 100 | 14.2 JT | 207 JT | 60.5 | 38.2 JT | 82.6 JT | 14.2 JT | 207 JT | 60.5 | 38.2 JT | 82.6 JT |
| lab clam (body without shell) | Total PCB Congeners | µg/kg-Wet | 43 | 43 | 100 | 10.6 JT | 189 | 37.8 | 25.2 | 74.4 | 10.6 JT | 189 | 37.8 | 25.2 | 74.4 |
| Lumbriculus variegatus (whole body) | Total PCB Congeners | µg/kg-Wet | 43 | 43 | 100 | 44.8 | 4310 | 528 | 166 | 1890 | 44.8 | 4310 | 528 | 166 | 1890 |
| multiplate invertebrates (whole body) | Total PCB Congeners | µg/kg-Wet | 7 | 7 | 100 | 33.1 | 498 | 112 | 45.6 | 78.7 | 33.1 | 498 | 112 | 45.6 | 78.7 |

Notes: J - estimated value; T - calculated or selected value from multiple results



BZTO104(e)033430

Table 11.2-5. Upland Site Pathway Assessment Summary for Site-wide AOPC.

| Site Name | ECSI # | River Mile | River Bank | Potential Upland and Over-Water Sources | Is PCB a Potential Upland or Over-Water COI? | Pathway Summary[1] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Direct Discharge | | | | |
| | | | | | | Groundwater | | Storm/Wastewater | | Overwater Discharge | Overland Transport | Riverbank Erosion |
| | | | | | | Potentially Complete Pathway | NAPL | Potentially Complete Pathway | Stormwater (SW), Wastewater (WW), Catchbasin sediment (CB) | Potentially Complete Pathway | Potentially Complete Pathway | Potentially Complete Pathway |
| **Burgard Ind. Park - Boydstun Metals, Portland Blast Media** | 2362 | 4.1 | East | Oil storage area, contaminated soils, stormwater outfall | Yes | -- | N | c (H) | SW | -- | -- | -- |
| **Burgard Ind. Park - Schnitzer Steel, Calbag Metals** | 2355 | 4 | East | Former NW Oil Co. tanks, former sanitary sewer and stormwater discharges, former shipyard shipways, ASR on ground surface, storm drains and outfalls, overwater activities | Yes | c (H,C) | N | b (H,C) | SW | -- | -- | -- |
| **Calbag Metals - Front Ave.** | 2454 | 8.5 | West | Historic metal recycling operations, sediment in stormwater conveyance system | Yes | -- | N | a (H) | SW pipe sediment | -- | -- | -- |
| **Crawford Street Corp.** | 2363 | 6.5 | West | Historical and current manufacturing operations, historical and current site runoff, sandblast fill material, former UST, electrical transformer, railroad right-of-way, historical dock operations, historical private outfalls, beach metal debris | Yes | -- | N | c (?) | SW/WW | c (H) | b (H,C) | b (H,C) |
| **Front Avenue LP Properties (CMI NW, Hampton, Lonestar NW/Glacier NW, Tube Forging)** | 1239 | 8.3 | West | Slag fill material, Parcels 1,2, and 3 former and current operations, caustic-lube oil and graphic lube oil discharges to stormdrain, overwater dock, in-water spills | Yes | c (H,C) | Y | c (H,C?) | SW | -- | -- | -- |
| **GE Decommissioning** | 4003 | 9.5 | West | Former equipment handling and pressure washing areas, report of subsurface oil in storage yard, former transformer pit outlet drain, catch basins and storm drains | Yes | -- | ? | a (H) | SW/WW | -- | -- | -- |
| **Goldendale Aluminum** | 2440 | 10 | East | Former alumini and pitch handling operations, ASTs, former USTs, storage buildings, transformers, outfalls, overland runoff areas, historical grain shipment facility, dock operations and spills | Yes | -- | N | -- | -- | -- | c (H) | -- |
| **GS Roofing** | 117 | 7.5 | West | Facility operations, former USTs, storm sewer catch basins/drains, and O/W separators, former wastewater discharge, landfilled materials, railroad spur, finished products storage area | Yes | c (H,C) | Y (H) | -- | -- | -- | -- | -- |
| **Gunderson** | 1155 | 8.8 | West | Former TCE tank, marine paint and blast areas, launchways, former salvage yard, hazardous materials storage areas, marine barge launchways, railcar storage on outfitting dock | Yes | a (H, C) | N | c (H,C?) | SW,CB | -- | a (H,C) | a (H,C) |



BZTO104(e)033431

Table 11.2-5. Upland Site Pathway Assessment Summary for Site-wide AOPC.

| Site Name | ECSI # | River Mile | River Bank | Potential Upland and Over-Water Sources | Is PCB a Potential Upland or Over-Water COI? | Pathway Summary[1] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Direct Discharge | | | | |
| | | | | | | Groundwater | | Storm/Wastewater | | Overwater Discharge | Overland Transport | Riverbank Erosion |
| | | | | | | Potentially Complete Pathway | NAPL | Potentially Complete Pathway | Stormwater (SW), Wastewater (WW), Catchbasin sediment (CB) | Potentially Complete Pathway | Potentially Complete Pathway | Potentially Complete Pathway |
| **Linnton Plywood (Columbia River Sand and Gravel)** | 2373, 2351 | 4.7 | West | Eroded bank at maintenace shop area; the pale oil application, edge sealer application, and sander dust burner scrubber overflow activities area; tug and barge operations; private outfalls; historical lumber mill operations; historical overwater log activity | Yes | -- | N | -- | -- | c (H) | -- | -- |
| **Oregon Steel Mills** | 141 | 2.4 | East | Former Ramsey Lake sump, riverbank fill area, stormwater collection system, historical overwater spills from oil sump transfers | Yes | -- | Y (H) | d (H) | CB | -- | -- | a (H,C) |
| **Port of Portland - Terminal 4, Slip 1** | 2356 | 4.7 | East | Railroad tracks in western portion of OU1, former paint storage area in OU2, riverbank of Wheeler Bay | Yes | -- | N | c (H,C) | SW | -- | -- | -- |
| **Port of Portland - Terminal 4, Slip 3** | 272 | 5 | East | East end of Slip 3, pencil pitch in limited area of riverbank and Slip 3 bank | Yes | -- | Y | c (H,C) | SW | -- | -- | -- |
| **Rhone Poulenc** | 155 | 7.2 | West | Former insecticide and herbicide areas, former lake area, former East Doane Lake | Yes | a (H,C) | Y | -- | -- | -- | c (H) | -- |
| **Sulzer Bingham Pumps** | 1235 | 10.3 | West | Former and existing USTs, historical sandblasting areas, hazardous waste storage area (including radioisotopes), electrical substations, catch basins and storm sewers, historical welding and machine operations on piers, metal slag along riverbank | Yes | -- | ? | -- | -- | -- | c (H,C) | -- |
| **Triangle Park (Riedel Env.)** | 277 | 7.4 | East | Former lumber mills, wood-processing, rail-car servicing, oil and fuel storage, former concrete plant, former sludge disposal pond, former ASTs and USTs, former power plant, possible underground fuel storage vault, former chemical storage areas, oil spill areas, former transformer building and storage, former sandblasting and spray-painting area, former shipbuilding shops and warehouse, former steam-cleaning and lumber planing and drying area, former tug and barge operations, former equipment storage yard, former dock operations and fueling | Yes | a (H,C) | N | b (H,C) | SW/WW | c (H) | b (H,C) | b (H,C) |



BZTO104(e)033432

Table 11.2-5. Upland Site Pathway Assessment Summary for Site-wide AOPC.

| Site Name | ECSI # | River Mile | River Bank | Potential Upland and Over-Water Sources | Is PCB a Potential Upland or Over-Water COI? | Pathway Summary[1] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Direct Discharge | | | | |
| | | | | | | Groundwater | | Storm/Wastewater | | Overwater Discharge | Overland Transport | Riverbank Erosion |
| | | | | | | Potentially Complete Pathway | NAPL | Potentially Complete Pathway | Stormwater (SW), Wastewater (WW), Catchbasin sediment (CB) | Potentially Complete Pathway | Potentially Complete Pathway | Potentially Complete Pathway |
| **Willamette Cove** | 272 | 5 | East | Spills and historical waste disposal practices on the west, central, and east parcels, slag and beach debris, contaminated groundwater and seeps, riverbank soil, historical drydock activities | Yes | -- | N | -- | -- | -- | -- | c (H,C) |

**Notes:**
ECSI number: DEQ Environmental Cleanup Site Inventory number
COI - Contaminants of interest

Pathway: The potential for affecting in-water media rated as follows:
a: Documented evidence of a complete pathway
b: Likely a complete pathway
c: Insufficient data to make determination
d: Not a complete pathway

Historical/Current: Available information indicates whether the predominant impact to in-water media is historical (H) or current (C).
NAPL: Available information indicates the historical or current presence of NAPL (Y/N).
? = Unknown, typically due to lack of information.
"--" = PCBs were not detected in media related to the pathway



BZTO104(e)033433

Table 11.2-6. Relative Contribution of PCBs from Individual iAOPCs to the Site-wide iAOPC.

| iAOPC | Category[1] | Area (acres) | Total PCB Concentration (µg/kg) | | |
|---|---|---|---|---|---|
| | | | Maximum | Mean | Median |
| iAOPC 01 | 1 | 19.13 | 9,300 | 1,060 | 550 |
| iAOPC 03 | 1 | 7.86 | 3,370 | 925 | 353 |
| iAOPC 05 | 1 | 9.89 | 1,530 | 273 | 207 |
| iAOPC 14 | 1 | 40.78 | 322 | 81 | 37 |
| iAOPC 19 | 1 | 40.57 | 27,400 | 1,060 | 142 |
| iAOPC 21 | 1 | 30.57 | 1,430 | 255 | 116 |
| iAOPC 22 | 1 | 36.00 | 2,500 | 397 | 191 |
| iAOPC 23 | 1 | 36.59 | 880 | 141 | 107 |
| iAOPC 04 | 2 | 6.55 | 302 | 213 | 150 |
| iAOPC 07 | 2 | 12.37 | 270 | 116 | 66 |
| iAOPC 10 | 2 | 9.82 | 220 | 132 | 157 |
| iAOPC 12 | 2 | 13.43 | 303 | 270 | 142 |
| iAOPC 13 (12) | 2 | 16.68 | 3,130 | 467 | 112 |
| iAOPC 17 | 2 | 10.40 | 703 | 165 | 33 |
| iAOPC 18 | 2 | 7.08 | 590 | 205 | 119 |
| iAOPC 20 | 2 | 10.14 | 183 | 170 | 156 |
| iAOPC 24 | 2 | 5.30 | 600 | 264 | 233 |
| iAOPC 26 | 2 | 8.02 | 898 | 362 | 146 |
| iAOPC T4 | 2 | 28.85 | 1,000 | 97 | 59 |
| iAOPC 08 | 3 | 0.18 | 220 | 220 | 220 |
| iAOPC 09 | 3 | 0.97 | 98 | 59 | 19 |
| iAOPC 11 | 3 | 17.56 | 170 | 68 | 51 |
| iAOPC 16 | 3 | 0.95 | 200 | 200 | 200 |
| iAOPC 2 | 3 | 0.87 | 163 | 163 | 163 |
| iAOPC 25 | 3 | 6.00 | 109 | 78 | 46 |
| iAOPC 27 | 3 | 5.30 | 190 | 77 | 28 |
| **Overall** | | 382 | 27,400 | 59 | 142 |

[1] - Category 1 iAOPCs each contain more than 5 percent of the total PCB mass present in surface sediment in the iAOPCs; category 2 iAOPCs contain 1 to 5 percent; and category 3 iAOPCs contain less than 1 percent.

BZTO104(e)033435

Table 11.2-7. Preliminary Relative Contribution of Migration Pathways to the Site-Wide iAOPC.

| CURRENT | | Relative Contribution |
|---|---|---|
| **Pathway** | **Data Quality/Quantity** | ***PCBs*** |
| Groundwater | Med | Low |
| Overwater Release | Low | Low |
| Stormwater/Wastewater/ Overland Transport | Med | High |
| Bank/Soil Erosion | Low | Med |
| Sediment Transport | Med | Med |

| HISTORICAL | | Relative Contribution |
|---|---|---|
| **Pathway** | **Data Quality/Quantity** | ***PCBs*** |
| Groundwater | Med | Low |
| Overwater Release | Med | High |
| Stormwater/Wastewater/ Overland Transport | Med | High |
| Bank/Soil Erosion | Low | Med |
| Sediment Transport | Med | Med |

**Notes:**

Data Quality/Quantity. The degree of confidence in the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).

Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.

BZTO104(e)033436

Table 11.3.1-1a. iCOC Summary Statistics for Sediment - iAOPC 1.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg | 34 | 32 | 94.1 | 58 T | 9300 T | 1060 | 550 T | 1770 T | 58 T | 9300 T | 1000 | 440 T | 1770 T |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 9 | 9 | 100 | 4.56 T | 149 JT | 36.4 | 22 JT | 59 T | 4.56 T | 149 JT | 36.4 | 22 JT | 59 T |
| **Metals** | | | | | | | | | | | | | | |
| Zinc[b] | mg/kg | 34 | 34 | 100 | 43.1 | 823 | 282 | 212 | 703 | 43.1 | 823 | 282 | 212 | 703 |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | ug/kg | 9 | 9 | 100 | 9.46 T | 9780 | 1620 | 544 JT | 2020 | 9.46 T | 9780 | 1620 | 544 JT | 2020 |
| **Phthalates** | | | | | | | | | | | | | | |
| Dibutyl phthalate[b] | ug/kg | 34 | 8 | 23.5 | 3.5 J | 180 J | 33.4 | 8.2 J | 41 | 3.5 J | 180 J | 14.3 | 9.5 U | 29 U |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg | 30 | 23 | 76.7 | 1.8 JT | 7900 JT | 1460 | 577 JT | 4080 JT | 1.6 UT | 7900 JT | 1120 | 102 JT | 4080 JT |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 2 | 2 | 100 | 2.39 T | 18.3 T | 10.3 | 2.39 T | 2.39 T | 2.39 T | 18.3 T | 10.3 | 2.39 T | 2.39 T |
| **Metals** | | | | | | | | | | | | | | |
| Zinc[b] | mg/kg | 25 | 25 | 100 | 65.4 | 479 | 147 | 113 T | 234 | 65.4 | 479 | 147 | 113 T | 234 |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | ug/kg | 2 | 2 | 100 | 162 | 1100 | 631 | 162 | 162 | 162 | 1100 | 631 | 162 | 162 |
| **Phthalates** | | | | | | | | | | | | | | |
| Dibutyl phthalate[b] | ug/kg | 27 | 2 | 7.41 | 7.1 JT | 11 | 9.05 | 7.1 JT | 7.1 JT | 3.1 U | 45 U | 6.44 | 3.5 U | 18.5 UT |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95$^{th}$ percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033437

Table 11.3.1-1b. iCOC Summary Statistics for Surface Water - iAOPC 1.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **Collection Method: Bottle** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/l | 3 | 1 | 33.3 | 0.0063 JT | 0.0063 JT | 0.0063 | 0.0063 JT | 0.0063 JT | 0.0025 UJT | 0.0063 JT | 0.00293 | 0.00125 UT | 0.00125 UT |
| **Metals** | | | | | | | | | | | | | | |
| Zinc (dissolved)[b] | mg/l | 3 | 2 | 66.7 | 0.0014 | 0.0014 T | 0.0014 | 0.0014 | 0.0014 | 0.00121 UJ | 0.0014 T | 0.00114 | 0.0014 | 0.0014 |
| Zinc[b] | mg/l | 3 | 3 | 100 | 0.00165 T | 0.00347 JT | 0.00247 | 0.0023 T | 0.0023 T | 0.00165 T | 0.00347 JT | 0.00247 | 0.0023 T | 0.0023 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Dibutyl phthalate[b] | µg/l | 3 | 0 | 0 | | | | | | 0.084 U | 0.15 U | 0.0607 | 0.065 U | 0.065 U |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95 $^{th}$ percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033438

Table 11.3.1-1e. iCOC Summary Statistics for Biota - iAOPC 1.

| Analyte | Units | # | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 2 | 2 | 100 | 118 JT | 240 JT | 179 | 118 JT | 118 JT | 118 JT | 240 JT | 179 | 118 JT | 118 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 2.89 T | 5.52 T | 4.21 | 2.89 T | 2.89 T | 2.89 T | 5.52 T | 4.21 | 2.89 T | 2.89 T |
| Zinc[b] | mg/kg-Wet | 2 | 2 | 100 | 33.2 | 40.3 | 36.8 | 33.2 | 33.2 | 33.2 | 40.3 | 36.8 | 33.2 | 33.2 |
| Total PCB Congeners | ug/kg-Wet | 2 | 2 | 100 | 157 | 327 | 242 | 157 | 157 | 157 | 327 | 242 | 157 | 157 |
| Dibutyl phthalate[b] | ug/kg-Wet | 2 | 0 | 0 | | | | | | 16 U | 16 U | 8 | 8 U | 8 U |
| ***Crayfish (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 2 | 2 | 100 | 21 JT | 28 JT | 24.5 | 21 JT | 21 JT | 21 JT | 28 JT | 24.5 | 21 JT | 21 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 4.55 T | 4.55 T | 4.55 | 4.55 T | 4.55 T | 4.55 T | 4.55 T | 4.55 | 4.55 T | 4.55 T |
| Zinc[b] | mg/kg-Wet | 2 | 2 | 100 | 15.9 J | 16.6 J | 16.3 | 15.9 J | 15.9 J | 15.9 J | 16.6 J | 16.3 | 15.9 J | 15.9 J |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 60.7 JT | 60.7 JT | 60.7 | 60.7 JT | 60.7 JT | 60.7 JT | 60.7 JT | 60.7 | 60.7 JT | 60.7 JT |
| Dibutyl phthalate[b] | ug/kg-Wet | 2 | 0 | 0 | | | | | | 330 U | 330 U | 165 | 165 U | 165 U |
| ***Lab Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 53.5 JT | 53.5 JT | 53.5 | 53.5 JT | 53.5 JT | 53.5 JT | 53.5 JT | 53.5 | 53.5 JT | 53.5 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 1.07 T | 1.07 T | 1.07 | 1.07 T | 1.07 T | 1.07 T | 1.07 T | 1.07 | 1.07 T | 1.07 T |
| Zinc[b] | mg/kg-Wet | 1 | 1 | 100 | 14.8 | 14.8 | 14.8 | 14.8 | 14.8 | 14.8 | 14.8 | 14.8 | 14.8 | 14.8 |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 73.4 | 73.4 | 73.4 | 73.4 | 73.4 | 73.4 | 73.4 | 73.4 | 73.4 | 73.4 |
| Dibutyl phthalate[b] | ug/kg-Wet | 1 | 0 | 0 | | | | | | 210 U | 210 U | 105 | 105 U | 105 U |
| ***Lumbriculus variegatus (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 2120 JT | 2120 JT | 2120 | 2120 JT | 2120 JT | 2120 JT | 2120 JT | 2120 | 2120 JT | 2120 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 48.8 JT | 48.8 JT | 48.8 | 48.8 JT | 48.8 JT | 48.8 JT | 48.8 JT | 48.8 | 48.8 JT | 48.8 JT |
| Zinc[b] | mg/kg-Wet | 1 | 1 | 100 | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 2970 | 2970 | 2970 | 2970 | 2970 | 2970 | 2970 | 2970 | 2970 | 2970 |
| Dibutyl phthalate[b] | ug/kg-Wet | 1 | 0 | 0 | | | | | | 16 U | 16 U | 8 | 8 U | 8 U |
| ***Multiplate Invertebrates (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 37.4 JT | 37.4 JT | 37.4 | 37.4 JT | 37.4 JT | 37.4 JT | 37.4 JT | 37.4 | 37.4 JT | 37.4 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.796 JT | 0.796 JT | 0.796 | 0.796 JT | 0.796 JT | 0.796 JT | 0.796 JT | 0.796 | 0.796 JT | 0.796 JT |
| Zinc[b] | mg/kg-Wet | 1 | 1 | 100 | 12.6 J | 12.6 J | 12.6 | 12.6 J | 12.6 J | 12.6 J | 12.6 J | 12.6 | 12.6 J | 12.6 J |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 |
| ***Sculpin (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 2 | 2 | 100 | 2330 JT | 3360 T | 2850 | 2330 JT | 2330 JT | 2330 JT | 3360 T | 2850 | 2330 JT | 2330 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 43.7 T | 43.7 T | 43.7 | 43.7 T | 43.7 T | 43.7 T | 43.7 T | 43.7 | 43.7 T | 43.7 T |
| Zinc[b] | mg/kg-Wet | 2 | 2 | 100 | 14.1 | 16.3 | 15.2 | 14.1 | 14.1 | 14.1 | 16.3 | 15.2 | 14.1 | 14.1 |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 1930 JT | 1930 JT | 1930 | 1930 JT | 1930 JT | 1930 JT | 1930 JT | 1930 | 1930 JT | 1930 JT |
| Dibutyl phthalate[b] | ug/kg-Wet | 2 | 0 | 0 | | | | | | 310 U | 330 U | 160 | 155 U | 155 U |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033439

Table 11.3.1-2 Potential Sources and Transport Pathways Assessment - AOPC 1.

| Potential Sources | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | | | | | Potential Complete Pathway | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | | | | | |
| Description of Potential Source | Surface Soil | Subsurface Soil | Groundwater | Catch Basin Solids | River Sediment | Gasoline-Range | Diesel - Range | Heavier - Range | Petroleum-Related (e.g. BTEX) | VOCs | Chlorinated VOCs | SVOCs | PAHs | Phthalates | Phenolics | Metals | PCBs | Herbicides and Pesticides | Dioxins/Furans | Butyltins | Non-Petroleum Hydrocarbons | Ammonia | Urea | Overland Transport | Groundwater | Direct Discharge - Overwater | Direct Discharge - Storm/Wastewater | Riverbank Erosion |
| ***Upland Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Oregon Steel Mills #141** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former oil sump | | ✓ | ✓ | | | ✓ | ✓ | ✓ | | | | | ✓ | | | ✓ | | | | | ✓ | | | | | | ✓ | |
| Riverbank fill area | ✓ | ✓ | | | ? | | | | | | | | | | | ✓ | ✓ | | | | | | | | | | | ✓ |
| Storm water collection system | | | | ✓ | | | ✓ | ✓ | | | | | ✓ | | | ✓ | ✓ | | | | | | | | | | ✓ | |
| **JR Simplot** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Warehouse storage and transfer of urea | ? | ? | ? | ? | | | | | | | | | | | | | | | | | | | ✓ | | ? | ✓ | ✓ | |
| Tank storage and transfer of anhydrous ammonia | ? | ? | ? | ? | | | | | | | | | | | | | | | | | | ✓ | | | | ✓ | | |
| Tank storage and transfer of diesel oil | ? | ? | ? | ? | | | ✓ | | | | | | | | | | | | | | | | | | | ✓ | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ***Overwater Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Oregon Steel Mills #141** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Spillage from historical transfer to oil sump | | | | | ✓ | | ✓ | ✓ | | | | | | | | | | | | | | | | | | ✓ | | |
| **JR Simplot** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transfer of urea, anhydrous ammonia, diesel | | | | | ? | | ✓ | ✓ | | | | | | | | | | | | | | | | | | | ✓ | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ***Other Areas/Other Issues*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Notes:**

All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ = Source, COI are present or current or historic pathway is determined to be complete or potentially complete.

? = There is not enough information to determine if source or COI is present or if pathway is complete.

UST Underground storage tank
AST Above-ground storage tank
TPH Total petroleum hydrocarbons
VOCs Volatile organic compounds
SVOCs Semivolatile organic compounds
PAHs Polycyclic aromatic hydrocarbons
BTEX Benzene, toluene, ethylbenzene, and xylenes
PCBs Polychlorinated biphenyls



BZTO104(e)033440

Table 11.3.1-3. Preliminary Evaluaton of Relative Contribution of Migration Pathways to iAOPC 1.

| **CURRENT Pathway** | **Data Quality/ Quantity** | **Relative Contribution** | | |
|---|---|---|---|---|
| | | *PCBs* | *Zinc* | *DBP* |
| Groundwater | High | Low | Low | Low |
| Overwater Release | Med | Low | Low | Low |
| Stormwater/Wastewater/Overland Transport | Med | Med | Med | Med |
| Bank/Soil Erosion | High | High | High | Low |
| Sediment Transport | Med | Low | Low | Low |

| **HISTORIC Pathway** | **Data Quality/ Quantity** | **Relative Contribution** | | |
|---|---|---|---|---|
| | | *PCBs* | *Zinc* | *DBP* |
| Groundwater | Med | Low | Low | Low |
| Overwater Release | Low | High | Med | Low |
| Stormwater/Wastewater/Overland Transport | Low | High | High | Med |
| Bank/Soil Erosion | Med | High | High | Low |
| Sediment Transport | Med | Low | Low | Low |

**Notes:**

Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).

Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.

NE - Not Estimated. The data quality/quantity is inadequate to make a determination of relative contribution.

DBP - Dibutyl phthalate

BZTO104(e)033441

Table 11.3.2-1. iCOC Summary Statistics for Sediment – iAOPC 2.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **AOPC 2** | | | | | | | | | | | | | | |
| ***Surface*** | | | | | | | | | | | | | | |
| **PCBs** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 1 | 1 | 100 | 163 T | 163 T | 163 | 163 T | 163 T | 163 T | 163 T | 163 | 163 T | 163 T |
| PCB congener TEQ | pg/g | 1 | 1 | 100 | 1.29 T | 1.29 T | 1.29 | 1.29 T | 1.29 T | 1.29 T | 1.29 T | 1.29 | 1.29 T | 1.29 T |
| Total PCB Congeners | µg/kg | 1 | 1 | 100 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **PCBs** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 3 | 1 | 33.3 | 49.4 JT | 49.4 JT | 49.4 | 49.4 JT | 49.4 JT | 2.32 UT | 49.4 JT | 17.3 | 1.37 UT | 1.37 UT |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95$^{th}$ percentile) or n * 0.50 (median) is presented.



BZTO104(e)033443

Table 11.3.2-2. Preliminary Assessment of Relative Contribution of Migration Pathways to iAOPC 2.

| **CURRENT** | | **Relative Contribution** |
|---|---|---|
| **Pathway** | **Data Quality/Quantity** | ***PCBs*** |
| Groundwater | Low | Low |
| Overwater Release | Low | Low |
| Stormwater/Wastewater/ Overland Transport | Med | Low |
| Bank/Soil Erosion | Low | Low |
| Sediment Transport | Low | Low |

| **HISTORICAL** | | **Relative Contribution** |
|---|---|---|
| **Pathway** | **Data Quality/Quantity** | ***PCBs*** |
| Groundwater | Low | Low |
| Overwater Release | Low | Low |
| Stormwater/Wastewater/ Overland Transport | Med | High |
| Bank/Soil Erosion | Low | Low |
| Sediment Transport | Low | Low |

**Notes:**

Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).

Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.

NE - Not Estimated. The data quality/quantity is inadequate to make a determination of relative contribution.



BZTO104(e)033444

Table 11.3.3-1a. iCOC Summary Statistics for Sediment – iAOPC 3,4,5.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **iAOPC 3** | | | | | | | | | | | | | | |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 16 | 15 | 93.8 | 18 T | 3370 T | 925 | 353 JT | 2230 JT | 2.5 UT | 3370 T | 867 | 247 T | 2230 JT |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 6 | 6 | 100 | 307 | 4340 | 2380 | 2160 | 3490 | 307 | 4340 | 2380 | 2160 | 3490 |
| **PCB Congener TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalen | pg/g | 6 | 6 | 100 | 7.73 JT | 161 JT | 77.5 | 58.7 JT | 155 T | 7.73 JT | 161 JT | 77.5 | 58.7 JT | 155 T |
| **Metals** | | | | | | | | | | | | | | |
| Zinc[b] | mg/kg | 18 | 18 | 100 | 62 | 717 | 242 | 143 | 630 | 62 | 717 | 242 | 143 | 630 |
| **Pesticides** | | | | | | | | | | | | | | |
| Endrin ketone[b] | µg/kg | 19 | 12 | 63.2 | 0.099 NJ | 12 NJ | 3.3 | 1.8 NJ | 8.54 NJ | 0.0294 U | 15 U | 2.6 | 1 U | 8.54 NJ |
| **Petroleum** | | | | | | | | | | | | | | |
| Diesel Range Hydrocarbons[b] | mg/kg | 13 | 13 | 100 | 8 J | 1300 J | 372 | 120 J | 1300 J | 8 J | 1300 J | 372 | 120 J | 1300 J |
| Residual Range Hydrocarbons[b] | mg/kg | 13 | 13 | 100 | 34 J | 6700 J | 1420 | 540 J | 3600 J | 34 J | 6700 J | 1420 | 540 J | 3600 J |
| **Phthalates** | | | | | | | | | | | | | | |
| Dibutyl phthalate[b] | µg/kg | 18 | 10 | 55.6 | 4.6 J | 1800 | 280 | 67 J | 450 | 3.5 U | 1800 | 160 | 9.1 J | 450 |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 35 | 23 | 65.7 | 2.2 JT | 26000 T | 2270 | 234 JT | 3200 T | 1.5 UT | 26000 T | 1490 | 42 JT | 3200 T |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 1 | 1 | 100 | 730 | 730 | 730 | 730 | 730 | 730 | 730 | 730 | 730 | 730 |
| **PCB Congener TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalen | pg/g | 1 | 1 | 100 | 11.4 T | 11.4 T | 11.4 | 11.4 T | 11.4 T | 11.4 T | 11.4 T | 11.4 | 11.4 T | 11.4 T |
| **Metals** | | | | | | | | | | | | | | |
| Zinc[b] | mg/kg | 35 | 35 | 100 | 33 | 672 | 139 | 74.3 | 450 | 33 | 672 | 139 | 74.3 | 450 |
| **Pesticides** | | | | | | | | | | | | | | |
| Endrin ketone[b] | µg/kg | 31 | 2 | 6.45 | 1.5 NJ | 16 J | 8.75 | 1.5 NJ | 1.5 NJ | 0.0266 UJ | 19 UJ | 1.01 | 0.0495 U | 1.6 U |
| **Petroleum** | | | | | | | | | | | | | | |
| Diesel Range Hydrocarbons[b] | mg/kg | 30 | 21 | 70 | 7.1 J | 3500 J | 660 | 150 J | 2300 JT | 4.2 U | 3500 J | 463 | 59 J | 2300 JT |
| Residual Range Hydrocarbons[b] | mg/kg | 30 | 26 | 86.7 | 6.1 JT | 11000 J | 1380 | 350 J | 5500 JT | 4.9 U | 11000 J | 1200 | 110 J | 5500 JT |
| **Phthalates** | | | | | | | | | | | | | | |
| Dibutyl phthalate[b] | µg/kg | 35 | 2 | 5.71 | 7.8 J | 28 J | 17.9 | 7.8 J | 7.8 J | 3.2 U | 100 U | 10 | 3.85 U | 38 U |
| **iAOPC 4** | | | | | | | | | | | | | | |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 4 | 4 | 100 | 104 JT | 302 T | 213 | 150 JT | 294 JT | 104 JT | 302 T | 213 | 150 JT | 294 JT |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 2 | 2 | 100 | 66.1 | 258 | 162 | 66.1 | 66.1 | 66.1 | 258 | 162 | 66.1 | 66.1 |
| **PCB Congener TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalen | pg/g | 2 | 2 | 100 | 2 JT | 7.75 JT | 4.88 | 2 JT | 2 JT | 2 JT | 7.75 JT | 4.88 | 2 JT | 2 JT |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 16 | 10 | 62.5 | 7.8 JT | 630 JT | 158 | 67 JT | 330 T | 1.3 UT | 630 JT | 98.8 | 13 T | 330 T |
| **iAOPC 5** | | | | | | | | | | | | | | |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 14 | 14 | 100 | 17.9 T | 1530 T | 273 | 207 JT | 346 T | 17.9 T | 1530 T | 273 | 207 JT | 346 T |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 4 | 4 | 100 | 55.3 | 699 JT | 312 | 219 | 274 | 55.3 | 699 JT | 312 | 219 | 274 |
| **PCB Congener TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalen | pg/g | 4 | 4 | 100 | 1.13 JT | 5.66 T | 3.65 | 3.42 JT | 4.37 JT | 1.13 JT | 5.66 T | 3.65 | 3.42 JT | 4.37 JT |
| ***Subsurface*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 16 | 13 | 81.3 | 16.1 JT | 407 T | 202 | 185 JT | 290 JT | 1.5 UT | 407 T | 164 | 183 JT | 290 JT |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 1 | 1 | 100 | 338 T | 338 T | 338 | 338 T | 338 T | 338 T | 338 T | 338 | 338 T | 338 T |
| **PCB Congener TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalen | pg/g | 1 | 1 | 100 | 6.38 T | 6.38 T | 6.38 | 6.38 T | 6.38 T | 6.38 T | 6.38 T | 6.38 | 6.38 T | 6.38 T |

DL–Dectection Limit

[a]This value was selected from an ascending ranked list of all results. Where n – the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95 percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033445

Table 11.3.3-1b. iCOC Summary Statistics for Biota – iAOPC 3,4,5.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **iAOPC 3** | | | | | | | | | | | | | | |
| ***Crayfish (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 280 T | 280 T | 280 | 280 T | 280 T | 280 T | 280 T | 280 | 280 T | 280 T |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 207 JT | 207 JT | 207 | 207 JT | 207 JT | 207 JT | 207 JT | 207 | 207 JT | 207 JT |
| PCB Congener TEQ | pg/g-Wet | 1 | 1 | 100 | 4.42 T | 4.42 T | 4.42 | 4.42 T | 4.42 T | 4.42 T | 4.42 T | 4.42 | 4.42 T | 4.42 T |
| Zinc[b] | mg/kg-Wet | 1 | 1 | 100 | 14.8 J | 14.8 J | 14.8 | 14.8 J | 14.8 J | 14.8 J | 14.8 J | 14.8 | 14.8 J | 14.8 J |
| Endrin ketone[b] | ug/kg-Wet | 1 | 0 | 0 | | | | | | 1 U | 1 U | 0.5 | 0.5 U | 0.5 U |
| Dibutyl phthalate[b] | ug/kg-Wet | 1 | 0 | 0 | | | | | | 330 U | 330 U | 165 | 165 U | 165 U |
| ***Sculpin (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 360 T | 360 T | 360 | 360 T | 360 T | 360 T | 360 T | 360 | 360 T | 360 T |
| PCB Congener TEQ | pg/g-Wet | 1 | 1 | 100 | 13.8 T | 13.8 T | 13.8 | 13.8 T | 13.8 T | 13.8 T | 13.8 T | 13.8 | 13.8 T | 13.8 T |
| Zinc[b] | mg/kg-Wet | 1 | 1 | 100 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 | 15.9 |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 758 JT | 758 JT | 758 | 758 JT | 758 JT | 758 JT | 758 JT | 758 | 758 JT | 758 JT |
| Endrin ketone[b] | ug/kg-Wet | 1 | 0 | 0 | | | | | | 1 UJ | 1 UJ | 0.5 | 0.5 UJ | 0.5 UJ |
| Dibutyl phthalate[b] | ug/kg-Wet | 1 | 0 | 0 | | | | | | 300 U | 300 U | 150 | 150 U | 150 U |
| **iAOPC 4** | | | | | | | | | | | | | | |
| ***Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 234 JT | 234 JT | 234 | 234 JT | 234 JT | 234 JT | 234 JT | 234 | 234 JT | 234 JT |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 306 | 306 | 306 | 306 | 306 | 306 | 306 | 306 | 306 | 306 |
| PCB Congener TEQ | pg/g-Wet | 1 | 1 | 100 | 4.2 T | 4.2 T | 4.2 | 4.2 T | 4.2 T | 4.2 T | 4.2 T | 4.2 | 4.2 T | 4.2 T |
| **iAOPC 5** | | | | | | | | | | | | | | |
| ***Crayfish (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 0 | 0 | | | | | | 7 UT | 7 UT | 3.5 | 3.5 UT | 3.5 UT |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 31.5 JT | 31.5 JT | 31.5 | 31.5 JT | 31.5 JT | 31.5 JT | 31.5 JT | 31.5 | 31.5 JT | 31.5 JT |
| PCB Congener TEQ | pg/g-Wet | 1 | 1 | 100 | 1.66 T | 1.66 T | 1.66 | 1.66 T | 1.66 T | 1.66 T | 1.66 T | 1.66 | 1.66 T | 1.66 T |
| ***Sculpin (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 2 | 2 | 100 | 305 T | 324 T | 315 | 305 T | 305 T | 305 T | 324 T | 315 | 305 T | 305 T |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 818 JT | 818 JT | 818 | 818 JT | 818 JT | 818 JT | 818 JT | 818 | 818 JT | 818 JT |
| PCB Congener TEQ | pg/g-Wet | 1 | 1 | 100 | 15.4 T | 15.4 T | 15.4 | 15.4 T | 15.4 T | 15.4 T | 15.4 T | 15.4 | 15.4 T | 15.4 T |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95 [th] percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033446

Table 11.3.3-2. Potential Sources and Transport Pathways Assessment - iAOPCs 3, 4, and 5.

| Potential Sources | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | | Potential Complete Pathway | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | |
| Description of Potential Source | Surface Soil | Subsurface Soil | Groundwater | Catch Basin Solids | River Sediment | Gasoline-Range | Diesel - Range | Heavier - Range | Petroleum-Related (e.g. BTEX) | VOCs | Chlorinated VOCs | SVOCs | PAHs | Phthalates | Phenolics | Metals | PCBs | Herbicides and Pesticides | Dioxins/Furans | Butyltins | Overland Transport | Groundwater | Direct Discharge - Overwater | Direct Discharge - Storm/Wastewater | Riverbank Erosion |
| ***Upland Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Boydstun Metal Works (and Western Machine Works, Portland Blast Media) #2362** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Oil storage area along eastern boundary | ✓ | ? | | | | | ✓ | ✓ | | | | | ✓ | | | | | | | | | | | | | |
| Contaminated soils near Western Machine and PBM | ✓ | | | ✓ | | | | ✓ | | | | | ✓ | | | ✓ | | | | | | | | | | |
| Stormwater private outfall 18 | | | | | ✓ | | | | | | | | ✓ | | | ✓ | ✓ | | | | | | | | | |
| Unknown source | | | ✓ | | | | | | | | ✓ | | | | | | | | | | | ? | | | | |
| **Jefferson Smurfit #2371** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Stormwater outfalls (3 on north side of slip) | | | | ✓ | ✓ | | | ✓ | | | | | | | | ✓ | | | | | | | | | ✓ | |
| Area of leaks from former AST subsurface piping | | ✓ | ✓ | | | | ? | ? | | | | | | | | ? | | | | | | ? | | | | |
| **Joseph T. Ryerson & Son #2441** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Historic stormwater trench to slip | ? | ? | | | ✓ | ? | ? | ? | | | | | ? | | | ? | | | | | | | | | ✓ | |
| USTs | ? | ? | | | | ? | ? | | | | | | | | | | | | | | | | | | | |
| **Noncontiguous Burgard Industrial Park Properties (Boydstun NE, Morgan CFS, NW Pipe Leases, Schnitzer Remnants)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former shipyard sanitary sewer and stormwater discharges | | | | ? | ? | | | | ? | ? | ? | | | | | | ? | | | | | | | | ? | |
| Northwest Pipe Property 2 | | | ✓ | | | | | | | | ✓ | | | | | | | | | | | ✓ | | | | |
| **Northwest Pipe Company #138** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aboveground waste oil tank and ten 55-gallon drums | ✓ | ✓ | ✓ | | | ✓ | | ✓ | ✓ | | ✓ | | ✓ | | | ✓ | | | | | | ? | | | | |
| Pipe lining and coating building - northwest corner | ✓ | ✓ | ✓ | | | | | ? | | ✓ | ✓ | | ✓ | ✓ | | | | | | | | ? | | | | |
| Pipe lining and coating building - southeast corner | ✓ | ✓ | ✓ | | | | | ? | | ✓ | ✓ | | ✓ | ✓ | | | | | | | | ? | | | | |
| 2,000-gallon diesel AST and pumps | | ✓ | ✓ | | | ✓ | ✓ | | ✓ | | | | ✓ | | | | | | | | | | | | | |
| Transformer storage | ✓ | | | ? | | | | ✓ | | | ? | | | | | | ✓ | | | | | ? | | | | |
| Sixteen 55-gallon drums of solvent with no containment | ✓ | | ✓ | | | | | | | ✓ | ✓ | | | | | | | | | | | ? | | | | |
| Industrial well | | | ✓ | | | ✓ | | | | | ✓ | | ✓ | | | | | | | | | | | | | |
| 1,000-gallon gasoline UST | | ✓ | ✓ | | | ✓ | | | ✓ | | | | | | | | | | | | | ? | | | | |
| Bay 9 asphalt dipper tank | | | ? | | | | | ✓ | | ? | ? | | | | | | | | | | | | | | | |
| Railroad spur | ✓ | | ✓ | | | | | ✓ | | | | | ✓ | | | | | | | | | ? | | | | |
| Dust suppressant use and storage | ? | | ? | | | | | ? | | | ? | | | | | | | | | | | | | | | |
| Transformer area | ✓ | | ? | | | | | ✓ | | | ? | | | | | | ✓ | | | | | | | | | |
| Alleged solvent dumping area | ✓ | | ✓ | | | | | ✓ | | ✓ | ✓ | | | | | | | | | | | ? | | | | |
| Alleged petroleum dumping area | ✓ | | ? | | | | | ✓ | | | | | ✓ | | | | | | | | | | | | | |
| Onsite catch basin/wash pad and stormwater system | | | | ✓ | | | | ✓ | | ✓ | ✓ | | ✓ | | | | | | | | | | | | ✓ | |
| **Portland Container Repair #2375** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fuel truck parking area | ? | ? | | | | | ? | | | | | | | | | | | | | | | | | | | |
| Stormwater outfalls | | | | ? | | | | ? | | | | | | | | | | | | | | | | | | |
| Unknown source | | | ✓ | | | | | | | | ✓ | | | | | | | | | | | ? | | | | |
| Wash pad | ✓ | ? | | | | | ? | ? | | | | | ? | | | | | | | | | | | | | |
| **Premier Edible Oils #2013** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Near-surface and smear zone contaminated soil in these areas: | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Southeast corner in area of former NW Oil Company tank farm | ✓ | ✓ | ✓ | | | ✓ | ✓ | | ✓ | ✓ | ✓ | | ✓ | | | | | | | | ? | ✓ | | | | |
| 2. Southern shoreline | ✓ | ✓ | | | | ✓ | ✓ | | ✓ | ✓ | | | ✓ | | | | | | | | ? | ✓ | | | | ? |
| 3. Vicinity of former PEO diesel storage tanks | | ✓ | ✓ | | | ✓ | ✓ | | ✓ | ✓ | | | ✓ | | ✓ | | | | | | | ✓ | | | | |
| 4. PEO wastewater treatment plant (WWTP) | ✓ | ✓ | ✓ | | | | | | ✓ | ✓ | ✓ | | ✓ | | ✓ | | | | | | | ✓ | | | | |
| 5. Former PEO process buildings and truck-loading area | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | | ✓ | | | ✓ | | | | | | ✓ | | | | |
| Historical outfalls | | | | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | | ✓ | | | | | | | | | ? | | | ✓ | |
| **RoMar Transportation Systems #2437** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Historic releases form stored scrap metal equipment and parts | ✓ | ✓ | | | ? | | | | | | | | | | | | ✓ | | | | | | | | ? | |



BZTO104(e)033447

Table 11.3.3-2. Potential Sources and Transport Pathways Assessment - iAOPCs 3, 4, and 5.

| Potential Sources | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | | Potential Complete Pathway | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | |
| Description of Potential Source | Surface Soil | Subsurface Soil | Groundwater | Catch Basin Solids | River Sediment | Gasoline-Range | Diesel - Range | Heavier - Range | Petroleum-Related (e.g. BTEX) | VOCs | Chlorinated VOCs | SVOCs | PAHs | Phthalates | Phenolics | Metals | PCBs | Herbicides and Pesticides | Dioxins/Furans | Butyltins | Overland Transport | Groundwater | Direct Discharge - Overwater | Direct Discharge - Storm/Wastewater | Riverbank Erosion |
| **Schnitzer Steel Industries (and Calbag Metals) #2355** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Location of former Northwest Oil Co. tanks | ✓ | ✓ | ✓ | | | | | ✓ | ✓ | | ✓ | | | | | | ✓ | | | | | ? | | | |
| Former shipyard sanitary sewer and stormwater discharges | | | | ✓ | ? | | | | ? | ? | ? | | | | | | ? | | | | | | | ✓ | |
| Former shipyard shipways | ✓ | ✓ | ? | | | | | | | ? | ✓ | | | | | | ✓ | | | | | ? | | | |
| ASR on ground surface in SW area | ✓ | ? | | | | | | | | | | | | | | | ? | ? | | | | | | ✓ | |
| Stormwater outfalls | | | | | ✓ | | | ✓ | | | | | | | | ✓ | | | | | | | | | |
| *Overwater Areas* | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Premier Edible Oils #2013** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dock operations | | | | | ✓ | ? | ? | | | | | | | | | ? | | | | | | | ? | | |
| **Schnitzer Steel Industries (and Calbag Metals) #2355** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dock operations | | | | | ✓ | | | ✓ | ✓ | | | | | | | | | | | | | | ✓ | | |
| *Other Areas/Other Issues* | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Northwest Pipe Company #138** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Groundwater plume potentially originating from offsite | | | ✓ | | | | | | | | ? | | | | | | | | | | | ? | | | |

**Notes:**

All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ – Source, COI are present or currentor historic pathway is determined to be complete or potentially complete.

? – There is not enough information to determine if source or COI is present or if pathway is complete.

UST Underground storage tank
AST Above-ground storage tank
TPH Total petroleum hydrocarbons
VOCs Volatile organic compounds
SVOCs Semivolatile organic compounds
PAHs Polycyclic aromatic hydrocarbons
BTEX Benzene, toluene, ethylbenzene, and xylenes
PCBs Polychlorinated biphenyls



BZTO104(e)033448

Table 11.3.3-3. Preliminary Evaluation of Relative Contribution of Migration Pathways to iAOPCs 3, 4, and 5.

| | | | Relative Contribution | | | | |
|---|---|---|---|---|---|---|---|
| | **Current Pathway** | **Data Quality/ Quantity** | ***PCBs*** | ***DBP*** | ***DRH*** | ***Endrin Ketone*** | ***Zinc*** |
| **iAOPC 3** | Groundwater | Med | Low | Low | Low | Low | Low |
| | Overwater Release | Low | Med | Med | Med | Med | Med |
| | Storm/Wastewater/ Overland Transport | Low | High | High | High | High | High |
| | Bank/Soil Erosion | Low | Low | Low | Low | Low | Low |
| | Sediment Transport | Low | NE | NE | NE | NE | NE |

| | | | Relative Contribution | | | | |
|---|---|---|---|---|---|---|---|
| | **Historical Pathway** | **Data Quality/ Quantity** | ***PCBs*** | ***DBP*** | ***DRH*** | ***Endrin Ketone*** | ***Zinc*** |
| **iAOPC 3** | Groundwater | Low | Low | Low | Low | Low | Low |
| | Overwater Release | Low | High | High | High | High | High |
| | Storm/Wastewater/ Overland Transport | Low | High | High | High | High | High |
| | Bank/Soil Erosion | Low | Low | Low | Low | Low | Low |
| | Sediment Transport | Low | NE | NE | NE | NE | NE |

| | | | Relative Contribution | | | | |
|---|---|---|---|---|---|---|---|
| | **Current Pathway** | **Data Quality/ Quantity** | ***PCBs*** | ***DBP*** | ***DRH*** | ***Endrin Ketone*** | ***Zinc*** |
| **iAOPC 4** | Groundwater | Med | Low | -- | -- | -- | -- |
| | Overwater Release | Low | Low | -- | -- | -- | -- |
| | Storm/Wastewater/ Overland Transport | Low | Med | -- | -- | -- | -- |
| | Bank/Soil Erosion | Low | Low | -- | -- | -- | -- |
| | Sediment Transport | Low | NE | -- | -- | -- | -- |

| | | | Relative Contribution | | | | |
|---|---|---|---|---|---|---|---|
| | **Historical Pathway** | **Data Quality/ Quantity** | ***PCBs*** | ***DBP*** | ***DRH*** | ***Endrin Ketone*** | ***Zinc*** |
| **iAOPC 4** | Groundwater | Low | Low | -- | -- | -- | -- |
| | Overwater Release | Low | Med | -- | -- | -- | -- |
| | Storm/Wastewater/ Overland Transport | Low | Med | -- | -- | -- | -- |
| | Bank/Soil Erosion | Low | Low | -- | -- | -- | -- |
| | Sediment Transport | Low | NE | -- | -- | -- | -- |

BZTO104(e)033449

Table 11.3.3-3. Preliminary Evaluation of Relative Contribution of Migration Pathways to iAOPCs 3, 4, and 5.

| | | | Relative Contribution | | | | |
|---|---|---|---|---|---|---|---|
| | **Current Pathway** | **Data Quality/ Quantity** | ***PCBs*** | ***DBP*** | ***DRH*** | ***Endrin Ketone*** | ***Zinc*** |
| **iAOPC 5** | Groundwater | Low | Low | -- | -- | -- | -- |
| | Overwater Release | Low | Low | -- | -- | -- | -- |
| | Storm/Wastewater/ Overland Transport | Low | Med | -- | -- | -- | -- |
| | Bank/Soil Erosion | Low | Low | -- | -- | -- | -- |
| | Sediment Transport | Low | NE | -- | -- | -- | -- |

| | | | Relative Contribution | | | | |
|---|---|---|---|---|---|---|---|
| | **Historical Pathway** | **Data Quality/ Quantity** | ***PCBs*** | ***DBP*** | ***DRH*** | ***Endrin Ketone*** | ***Zinc*** |
| **iAOPC 5** | Groundwater | Low | Low | -- | -- | -- | -- |
| | Overwater Release | Low | Low | -- | -- | -- | -- |
| | Storm/Wastewater/ Overland Transport | Low | Med | -- | -- | -- | -- |
| | Bank/Soil Erosion | Low | Low | -- | -- | -- | -- |
| | Sediment Transport | Low | NE | -- | -- | -- | -- |

Data Quality/Quantity – The relative nature of the information available (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations)

Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPCs.

NE - Not Estimated

BZTO104(e)033450

Table 11.3.4-1a. iCOC Summary Statistics for Sediment - iAOPC T4.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 35 | 31 | 88.6 | 5.3 | 820 | 66.5 | 39 | 91 | 2 UT | 820 | 60.6 | 36 | 91 |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g | 3 | 3 | 100 | 0.0638 JT | 11.8 JT | 5.37 | 4.25 JT | 4.25 JT | 0.0638 JT | 11.8 JT | 5.37 | 4.25 JT | 4.25 JT |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 2 | 2 | 100 | 0.773 JT | 2.51 T | 1.64 | 0.773 JT | 0.773 JT | 0.773 JT | 2.51 T | 1.64 | 0.773 JT | 0.773 JT |
| **Metals** | | | | | | | | | | | | | | |
| Cadmium[b] | mg/kg | 63 | 62 | 98.4 | 0.09 | 6.6 G | 1.4 | 0.9 G | 4.44 | 0.00182 U | 6.6 G | 1.38 | 0.9 G | 4.44 |
| Lead[b] | mg/kg | 63 | 63 | 100 | 2.72 | 1950 | 192 | 77 | 681 | 2.72 | 1950 | 192 | 77 | 681 |
| Silver[b] | mg/kg | 63 | 63 | 100 | 0.027 | 2.1 | 0.489 | 0.3 | 1.3 | 0.027 | 2.1 | 0.489 | 0.3 | 1.3 |
| Zinc[b] | mg/kg | 63 | 63 | 100 | 38.6 J | 1330 G | 281 | 191 J | 798 G | 38.6 J | 1330 G | 281 | 191 J | 798 G |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)pyrene | µg/kg | 70 | 69 | 98.6 | 3 J | 94000 | 10700 | 2700 G | 55000 | 0.24 U | 94000 | 10500 | 2300 | 55000 |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 3 | 3 | 100 | 0.54 JT | 69.2 | 34.9 | 34.9 | 34.9 | 0.54 JT | 69.2 | 34.9 | 34.9 | 34.9 |
| **Petroleum** | | | | | | | | | | | | | | |
| Diesel Range Hydrocarbons[b] | mg/kg | 71 | 40 | 56.3 | 9.1 J | 2100 | 259 | 140 J | 640 E | 9.1 J | 2100 | 166 | 50 U | 480 |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 133 | 58 | 43.6 | 3.3 J | 1000 | 96.5 | 59 | 232 | 3.3 J | 1000 | 45 | 5.5 U | 183 |
| **Metals** | | | | | | | | | | | | | | |
| Cadmium[b] | mg/kg | 145 | 144 | 99.3 | 0.046 B | 3.4 | 0.454 | 0.2 G | 1.23 | 0.046 B | 3.4 | 0.451 | 0.2 G | 1.23 |
| Lead[b] | mg/kg | 145 | 145 | 100 | 2.08 | 3130 J | 62.2 | 7.24 | 169 | 2.08 | 3130 J | 62.2 | 7.24 | 169 |
| Silver[b] | mg/kg | 145 | 131 | 90.3 | 0.02 | 1.6 | 0.22 | 0.08 | 0.69 | 0.02 | 1.6 | 0.201 | 0.07 | 0.6 |
| Zinc[b] | mg/kg | 145 | 145 | 100 | 30.4 J | 656 G | 108 | 59.4 J | 273 G | 30.4 J | 656 G | 108 | 59.4 J | 273 G |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)pyrene | µg/kg | 149 | 106 | 71.1 | 0.2 J | 23000 | 1530 | 220 J | 8200 | 0.2 J | 23000 | 1090 | 58 | 6500 |
| **Petroleum** | | | | | | | | | | | | | | |
| Diesel Range Hydrocarbons[b] | mg/kg | 133 | 57 | 42.9 | 15 J | 620 J | 185 | 160 J | 430 J | 13 U | 620 J | 85.6 | 12 U | 340 J |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033451

Table 11.3.4-1b. iCOC Summary Statistics for Surface Water - iAOPC T4.

| | | | Detected Concentrations | | | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Collection Method: Bottle*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/l | 3 | 0 | 0 | | | | | | 0.0025 UT | 0.0025 UT | 0.00125 | 0.00125 UT | 0.00125 UT |
| **Metals** | | | | | | | | | | | | | | |
| Cadmium (dissolved)[b] | mg/l | 3 | 0 | 0 | | | | | | 0.00002 U | 0.00004 U | 0.0000138 | 0.0000115 U | 0.0000115 U |
| Cadmium[b] | mg/l | 3 | 1 | 33.3 | 0.000029 T | 0.000029 T | 0.000029 | 0.000029 T | 0.000029 T | 0.00002 U | 0.00006 U | 0.000023 | 0.000029 T | 0.000029 T |
| Lead (dissolved)[b] | mg/l | 3 | 3 | 100 | 0.000036 J | 0.000152 | 0.0000783 | 0.000047 | 0.000047 | 0.000036 J | 0.000152 | 0.0000783 | 0.000047 | 0.000047 |
| Lead[b] | mg/l | 3 | 3 | 100 | 0.000369 | 0.0018 | 0.00101 | 0.0008565 T | 0.0008565 T | 0.000369 | 0.0018 | 0.00101 | 0.0008565 T | 0.0008565 T |
| Silver (dissolved)[b] | mg/l | 3 | 0 | 0 | | | | | | 0.000005 UJ | 0.000009 U | 0.00000383 | 0.0000045 U | 0.0000045 U |
| Silver[b] | mg/l | 3 | 0 | 0 | | | | | | 0.000005 UJ | 0.000009 U | 0.00000383 | 0.0000045 UT | 0.0000045 UT |
| Zinc (dissolved)[b] | mg/l | 3 | 3 | 100 | 0.0019 | 0.0047 J | 0.0036 | 0.0042 | 0.0042 | 0.0019 | 0.0047 J | 0.0036 | 0.0042 | 0.0042 |
| Zinc[b] | mg/l | 3 | 3 | 100 | 0.0029 T | 0.0061 J | 0.0046 | 0.0048 | 0.0048 | 0.0029 T | 0.0061 J | 0.0046 | 0.0048 | 0.0048 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)pyrene | µg/l | 3 | 2 | 66.7 | 0.0033 J | 0.0075 J | 0.0054 | 0.0033 J | 0.0033 J | 0.0032 U | 0.0075 J | 0.00413 | 0.0033 J | 0.0033 J |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033452

Table 11.3.4-1c. iCOC Summary Statistics for Tissue - iAOPC T4.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Clam - body without shell*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 1 | 1 | 100 | 68.4 JT | 68.4 JT | 68.4 | 68.4 JT | 68.4 JT | 68.4 JT | 68.4 JT | 68.4 | 68.4 JT | 68.4 JT |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 0.285 JT | 4.37 T | 2.33 | 0.285 JT | 0.285 JT | 0.285 JT | 4.37 T | 2.33 | 0.285 JT | 0.285 JT |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 1.98 T | 1.98 T | 1.98 | 1.98 T | 1.98 T | 1.98 T | 1.98 T | 1.98 | 1.98 T | 1.98 T |
| **Metals** | | | | | | | | | | | | | | |
| Cadmium[b] | mg/kg-Wet | 2 | 2 | 100 | 0.0953 | 0.154 J | 0.125 | 0.0953 | 0.0953 | 0.0953 | 0.154 J | 0.125 | 0.0953 | 0.0953 |
| Lead[b] | mg/kg-Wet | 2 | 2 | 100 | 0.122 | 0.261 | 0.192 | 0.122 | 0.122 | 0.122 | 0.261 | 0.192 | 0.122 | 0.122 |
| Silver[b] | mg/kg-Wet | 2 | 2 | 100 | 0.05 | 0.0564 | 0.0532 | 0.05 | 0.05 | 0.05 | 0.0564 | 0.0532 | 0.05 | 0.05 |
| Zinc[b] | mg/kg-Wet | 2 | 2 | 100 | 29 | 33.5 | 31.3 | 29 | 29 | 29 | 33.5 | 31.3 | 29 | 29 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)pyrene | µg/kg-Wet | 2 | 2 | 100 | 7.7 | 9.8 | 8.75 | 7.7 | 7.7 | 7.7 | 9.8 | 8.75 | 7.7 | 7.7 |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg-Wet | 1 | 1 | 100 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 |
| ***Crayfish - whole body*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 2 | 0 | 0 | | | | | | 4 UT | 5 UT | 2.25 | 2 UT | 2 UT |
| **Metals** | | | | | | | | | | | | | | |
| Cadmium[b] | mg/kg-Wet | 2 | 2 | 100 | 0.022 JT | 0.025 J | 0.0235 | 0.022 JT | 0.022 JT | 0.022 JT | 0.025 J | 0.0235 | 0.022 JT | 0.022 JT |
| Lead[b] | mg/kg-Wet | 2 | 2 | 100 | 0.229 J | 1.3 JT | 0.765 | 0.229 J | 0.229 J | 0.229 J | 1.3 JT | 0.765 | 0.229 J | 0.229 J |
| Silver[b] | mg/kg-Wet | 2 | 2 | 100 | 0.0434 JT | 0.0472 J | 0.0453 | 0.0434 JT | 0.0434 JT | 0.0434 JT | 0.0472 J | 0.0453 | 0.0434 JT | 0.0434 JT |
| Zinc[b] | mg/kg-Wet | 2 | 2 | 100 | 17 JT | 17 J | 17 | 17 JT | 17 JT | 17 JT | 17 J | 17 | 17 JT | 17 JT |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)pyrene | µg/kg-Wet | 2 | 0 | 0 | | | | | | 33 UT | 33 UT | 16.5 | 16.5 UT | 16.5 UT |
| ***Lab Clam - body without shell*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 2 | 2 | 100 | 17.1 JT | 38.7 JT | 27.9 | 17.1 JT | 17.1 JT | 17.1 JT | 38.7 JT | 27.9 | 17.1 JT | 17.1 JT |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 0.118 JT | 0.28 T | 0.199 | 0.118 JT | 0.118 JT | 0.118 JT | 0.28 T | 0.199 | 0.118 JT | 0.118 JT |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 0.265 JT | 1.01 T | 0.638 | 0.265 JT | 0.265 JT | 0.265 JT | 1.01 T | 0.638 | 0.265 JT | 0.265 JT |
| **Metals** | | | | | | | | | | | | | | |
| Cadmium[b] | mg/kg-Wet | 2 | 2 | 100 | 0.0488 | 0.057 | 0.0529 | 0.0488 | 0.0488 | 0.0488 | 0.057 | 0.0529 | 0.0488 | 0.0488 |
| Lead[b] | mg/kg-Wet | 2 | 2 | 100 | 0.082 | 0.136 | 0.109 | 0.082 | 0.082 | 0.082 | 0.136 | 0.109 | 0.082 | 0.082 |
| Silver[b] | mg/kg-Wet | 2 | 2 | 100 | 0.0096 | 0.0175 | 0.0136 | 0.0096 | 0.0096 | 0.0096 | 0.0175 | 0.0136 | 0.0096 | 0.0096 |
| Zinc[b] | mg/kg-Wet | 2 | 2 | 100 | 11.6 | 15.7 | 13.7 | 11.6 | 11.6 | 11.6 | 15.7 | 13.7 | 11.6 | 11.6 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)pyrene | µg/kg-Wet | 2 | 2 | 100 | 1.4 | 1.5 | 1.45 | 1.4 | 1.4 | 1.4 | 1.5 | 1.45 | 1.4 | 1.4 |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg-Wet | 2 | 2 | 100 | 21.2 | 45.5 | 33.4 | 21.2 | 21.2 | 21.2 | 45.5 | 33.4 | 21.2 | 21.2 |
| ***Lumbriculus variegatus - whole body*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 2 | 2 | 100 | 89.2 JT | 101 JT | 95.1 | 89.2 JT | 89.2 JT | 89.2 JT | 101 JT | 95.1 | 89.2 JT | 89.2 JT |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 6.7 JT | 21.9 JT | 14.3 | 6.7 JT | 6.7 JT | 6.7 JT | 21.9 JT | 14.3 | 6.7 JT | 6.7 JT |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 1.78 JT | 2.98 JT | 2.38 | 1.78 JT | 1.78 JT | 1.78 JT | 2.98 JT | 2.38 | 1.78 JT | 1.78 JT |
| **Metals** | | | | | | | | | | | | | | |
| Cadmium[b] | mg/kg-Wet | 2 | 2 | 100 | 0.0494 T | 0.0631 J | 0.0563 | 0.0494 T | 0.0494 T | 0.0494 T | 0.0631 J | 0.0563 | 0.0494 T | 0.0494 T |
| Lead[b] | mg/kg-Wet | 2 | 2 | 100 | 0.689 | 0.847 T | 0.768 | 0.689 | 0.689 | 0.689 | 0.847 T | 0.768 | 0.689 | 0.689 |
| Silver[b] | mg/kg-Wet | 2 | 2 | 100 | 0.0068 T | 0.0079 | 0.00735 | 0.0068 T | 0.0068 T | 0.0068 T | 0.0079 | 0.00735 | 0.0068 T | 0.0068 T |
| Zinc[b] | mg/kg-Wet | 2 | 2 | 100 | 23.3 T | 24 | 23.7 | 23.3 T | 23.3 T | 23.3 T | 24 | 23.7 | 23.3 T | 23.3 T |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)pyrene | µg/kg-Wet | 2 | 2 | 100 | 24 | 79 | 51.5 | 24 | 24 | 24 | 79 | 51.5 | 24 | 24 |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg-Wet | 2 | 2 | 100 | 131 | 147 | 139 | 131 | 131 | 131 | 147 | 139 | 131 | 131 |
| ***Sculpin - whole body*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 2 | 2 | 100 | 156 JT | 196 JT | 176 | 156 JT | 156 JT | 156 JT | 196 JT | 176 | 156 JT | 156 JT |
| **Metals** | | | | | | | | | | | | | | |
| Cadmium[b] | mg/kg-Wet | 2 | 2 | 100 | 0.012 J | 0.017 | 0.0145 | 0.012 J | 0.012 J | 0.012 J | 0.017 | 0.0145 | 0.012 J | 0.012 J |
| Lead[b] | mg/kg-Wet | 2 | 2 | 100 | 0.255 J | 0.96 J | 0.608 | 0.255 J | 0.255 J | 0.255 J | 0.96 J | 0.608 | 0.255 J | 0.255 J |
| Silver[b] | mg/kg-Wet | 2 | 0 | 0 | | | | | | 0.002 U | 0.002 U | 0.001 | 0.001 U | 0.001 U |
| Zinc[b] | mg/kg-Wet | 2 | 2 | 100 | 16.4 | 18 | 17.2 | 16.4 | 16.4 | 16.4 | 18 | 17.2 | 16.4 | 16.4 |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)pyrene | µg/kg-Wet | 2 | 0 | 0 | | | | | | 30 UT | 32 UT | 15.5 | 15 UT | 15 UT |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.
[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033453

Table 11.3.4-2 . Potential Sources and Transport Pathways Assessment - iAOPC T4.

| Potential Sources | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | Potential Complete | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | |
| Description of Potential Source | Surface Soil | Subsurface Soil | Groundwater | Catch Basin Solids | River Sediment | Gasoline-Range | Diesel - Range | Heavier - Range | Petroleum-Related (e.g. BTEX) | VOCs | Chlorinated VOCs | SVOCs | PAHs | Phthalates | Phenolics | Metals (lead) | PCBs | Herbicides and Pesticides | Dioxins/Furans | Butyltins | Overland Transport | Groundwater | Direct Discharge - Overwater | Direct Discharge - Storm/Wastewater | Riverbank Erosion |
| ***Upland Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Port of Portland Terminal 4, Slip 1 #2356** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Railroad track area in western portion of OU1 | ✓ | | | | | | | | | | | | ✓ | | | | | | | | | | | | |
| Former paint storage area on OU2 | ✓ | | | | | | | | | | | | | | | ✓ | | | | | | | | | |
| Riverbank of Wheeler Bay | ✓ | | | | | | | | | | | | ✓ | | | ✓ | | | | | | | | | ✓ |
| **Port of Portland Terminal 4, Slip 3 #272** | | | | | | | | | | | | | | | | | | | | | | | | | |
| East end of Slip 3 | | | ✓ | | | | ✓ | | | | | | ✓ | | | | | | | | | ✓ | | | |
| Pencil pitch in limited area of riverbank | ✓ | | | | | | | | | | | | ✓ | | | | | | | | | | | | ✓ |
| Pencil pitch in limited area of Slip3 bank | ✓ | | | | | | | | | | | | ✓ | | | | | | | | | | | | ✓ |
| ***Overwater Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| ***Other Areas/Other Issues*** | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |

**Notes:**

All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ = Source, COI are present or current or historic pathway is determined to be complete or potentially complete.

? = There is not enough information to determine if source or COI is present or if pathway is complete.

| | |
|---|---|
| UST | Underground storage tank |
| AST | Above-ground storage tank |
| TPH | Total petroleum hydrocarbons |
| VOCs | Volatile organic compounds |
| SVOCs | Semivolatile organic compounds |
| PAHs | Polycyclic aromatic hydrocarbons |
| BTEX | Benzene, toluene, ethylbenzene, and xylenes |
| PCBs | Polychlorinated biphenyls |



BZTO104(e)033454

Table 11.3.4-3. Preliminary Evaluation of Relative Contribution of Migration Pathways to iAOPC T4.

| **CURRENT** Pathway | **Data Quality/ Quantity** | **Relative Contribution** | | | |
|---|---|---|---|---|---|
| | | *PCBs* | *DRH* | *BAP* | *Zinc* |
| Groundwater | High | Low | Low | Low | Low |
| Overwater Release | Med | Low | Low | Low | Low |
| Stormwater/Wastewater/ Overland Transport | High | Low | Low | Low | Low |
| Bank/Soil Erosion | High | Low | Med | Med | Med |
| Sediment Transport | Med | Low | Low | Low | Low |

| **HISTORICAL** Pathway | **Data Quality/ Quantity** | **Relative Contribution** | | | |
|---|---|---|---|---|---|
| | | *PCBs* | *DRH* | *BAP* | *Zinc* |
| Groundwater | Med | Low | High | High | Low |
| Overwater Release | Med | Low | High | High | High |
| Stormwater/Wastewater/ Overland Transport | Med | High | Med | Med | Med |
| Bank/Soil Erosion | Low | Low | Med | Med | Med |
| Sediment Transport | Low | Low | Low | Low | Low |

**Notes:**

Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).

Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.

NE - Not Estimated. The data quality/quantity is inadequate to make a determination of relative contribution.

BZTO104(e)033455

Table 11.3.5-1a. iCOC Summary Statistics for Sediment – iAOPC 6.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte** | **Units** | **#** | **# Detected** | **% Detected** | **Minimum** | **Maximum** | **Mean** | **Median[a]** | **95th[a]** | **Minimum (full DL)** | **Maximum (full DL)** | **Mean (half DL)** | **Median[a] (half DL)** | **95th[a] (half DL)** |
| ***Surface*** | | | | | | | | | | | | | | |
| **Metals** | | | | | | | | | | | | | | |
| Mercury[b] | µg/kg | 2 | 2 | 100 | 0.022 | 0.74 | 0.381 | 0.022 | 0.022 | 0.022 | 0.74 | 0.381 | 0.022 | 0.022 |
| Silver[b] | mg/kg | 2 | 2 | 100 | 0.09 | 0.174 J | 0.132 | 0.09 | 0.09 | 0.09 | 0.174 J | 0.132 | 0.09 | 0.09 |
| **Petroleum** | | | | | | | | | | | | | | |
| Diesel Range Hydrocarbons[b] | mg/kg | 1 | 1 | 100 | 400 J | 400 J | 400 | 400 J | 400 J | 400 J | 400 J | 400 | 400 J | 400 J |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Metals** | | | | | | | | | | | | | | |
| Mercury[b] | mg/kg | 2 | 2 | 100 | 0.152 | 0.194 | 0.173 | 0.152 | 0.152 | 0.152 | 0.194 | 0.173 | 0.152 | 0.152 |
| Silver[b] | mg/kg | 2 | 2 | 100 | 0.276 | 0.357 | 0.317 | 0.276 | 0.276 | 0.276 | 0.357 | 0.317 | 0.276 | 0.276 |
| **Petroleum** | | | | | | | | | | | | | | |
| Diesel Range Hydrocarbons[b] | mg/kg | 2 | 2 | 100 | 470 J | 800 J | 635 | 470 J | 470 J | 470 J | 800 J | 635 | 470 J | 470 J |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95 $^{th}$ percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033457

Table 11.3.5-1b. iCOC Summary Statistics for TZW – iAOPC 6.

| Sampling Method and Analyte | Units | # | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Unfiltered Trident*** | | | | | | | | | | | | | | |
| Benzo(a)pyrene | µg/L | 11 | 6 | 54.5 | 0.01 | 0.21 | 0.0725 | 0.045 | 0.086 | 0.0021 U | 0.21 | 0.0451 | 0.0155 U | 0.086 |
| Chloroform[b] | µg/L | 11 | 0 | 0 | | | | | | 0.056 U | 0.14 U | 0.0547 | 0.07 U | 0.07 U |
| Trichloroethene[b] | µg/L | 11 | 1 | 9.09 | 0.46 J | 0.46 J | 0.46 | 0.46 J | 0.46 J | 0.062 U | 0.46 J | 0.0913 | 0.07 U | 0.07 U |
| ***Filtered Trident*** | | | | | | | | | | | | | | |
| Benzo(a)pyrene | µg/L | 11 | 1 | 9.09 | 0.0064 J | 0.0064 J | 0.0064 | 0.0064 J | 0.0064 J | 0.002 U | 0.0064 J | 0.00195 | 0.0012 U | 0.00205 U |
| ***Small Volume Peeper*** | | | | | | | | | | | | | | |
| Benzo(a)pyrene | µg/L | 6 | 0 | 0 | | | | | | 0.0032 U | 0.012 U | 0.00446 | 0.0055 U | 0.006 U |
| Chloroform[b] | µg/L | 2 | 0 | 0 | | | | | | 0.14 U | 0.14 U | 0.07 | 0.07 U | 0.07 U |
| Trichloroethene[b] | µg/L | 2 | 0 | 0 | | | | | | 0.14 U | 0.14 U | 0.07 | 0.07 U | 0.07 U |
| ***All Methods*** | | | | | | | | | | | | | | |
| Benzo(a)pyrene | µg/L | 28 | 7 | 25 | 0.0064 J | 0.21 | 0.0631 | 0.045 | 0.086 | 0.002 U | 0.21 | 0.0195 | 0.0055 U | 0.07 |
| Chloroform[b] | µg/L | 13 | 0 | 0 | | | | | | 0.056 U | 0.14 U | 0.0571 | 0.07 U | 0.07 U |
| Trichloroethene[b] | µg/L | 13 | 1 | 7.69 | 0.46 J | 0.46 J | 0.46 | 0.46 J | 0.46 J | 0.062 U | 0.46 J | 0.088 | 0.07 U | 0.07 U |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033458

Table 11.3.5-2. Potential Sources and Transport Pathways Assessment - iAOPC 6.

| Potential Sources | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | | Potential Complete | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | |
| Description of Potential Source | Surface Soil | Subsurface Soil | Groundwater | Catch Basin Solids | River Sediment | Gasoline-Range | Diesel - Range | Heavier - Range | Petroleum-Related (e.g. BTEX) | VOCs | Chlorinated VOCs | SVOCs | PAHs | Phthalates | Phenolics | Metals | PCBs | Herbicides and Pesticides | Dioxins/Furans | Butyltins | Overland Transport | Groundwater | Direct Discharge - Overwater | Direct Discharge - Storm/Wastewater | Riverbank Erosion |
| ***Upland Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **ARCO Bulk Terminal #1528** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Truck-loading rack area (SECOR 2002) | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ? | | ✓ | | | | | | ✓ | | ✓ | |
| Remanufacturing warehouse (SECOR 2002) | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ? | | ✓ | | | | | | ✓ | | ✓ | |
| Tank farms (SECOR 2002) | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | ? | | ✓ | | | | | | | | ✓ | |
| Historic spill areas (SECOR 2002) | ✓ | ? | ? | | | | ✓ | | | | | | ? | | | ? | | | | | | ? | | ✓ | |
| Groundwater plume (SECOR 2002) | | | ✓ | | ✓ | ✓ | ✓ | | ✓ | | | | ✓ | | | ✓ | | | | | | ✓ | | | |
| Seepage from interceptor well system and seawall (SECOR 2002; DEQ 2004) | | | | | ✓ | | | | ✓ | | | | | | | ? | | | | | | ✓ | | | |
| ***Overwater Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **ARCO Bulk Terminal #1528** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dock operations | | | | | ✓ | | ✓ | ✓ | ✓ | | | | ✓ | | | ✓ | | | | | | | ? | | |
| ***Other Areas/Other Issues*** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Notes:**

All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ = Source, COI are present or current or historical pathway is determined to be complete or potentially complete.

? = There is not enough information to determine if source or COI is present or if pathway is complete.

| | |
|---|---|
| UST | Underground storage tank |
| AST | Above-ground storage tank |
| TPH | Total petroleum hydrocarbons |
| VOCs | Volatile organic compounds |
| SVOCs | Semivolatile organic compounds |
| PAHs | Polycyclic aromatic hydrocarbons |
| BTEX | Benzene, toluene, ethylbenzene, and xylenes |
| PCBs | Polychlorinated biphenyls |



BZTO104(e)033459

Table 11.3.5-3. Preliminary Evaluaton of Relative Contribution of Migration Pathways to iAOPC 6.

| **CURRENT Pathway** | **Data Quality/ Quantity** | **Relative Contribution** | | |
|---|---|---|---|---|
| | | *DRH* | *Silver* | *Mercury* |
| Groundwater | High | Med | NE | NE |
| Overwater Release | Low | Low | NE | NE |
| Stormwater/Wastewater/ Overland Transport | Low | Low | NE | NE |
| Bank/Soil Erosion | High | Low | NE | NE |
| Sediment Transport | Med | Low | NE | NE |

| **HISTORIC Pathway** | **Data Quality/ Quantity** | **Relative Contribution** | | |
|---|---|---|---|---|
| | | *DRH* | *Silver* | *Mercury* |
| Groundwater | High | High | NE | NE |
| Overwater Release | Low | Med | NE | NE |
| Stormwater/Wastewater/ Overland Transport | Low | Med | NE | NE |
| Bank/Soil Erosion | Low | Low | NE | NE |
| Sediment Transport | Med | Low | NE | NE |

**Notes:**
Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).
Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.
NE - Not Estimated. The data quality/quantity is inadequate to make a determination of relative contribution.

BZTO104(e)033460

Table 11.3.6-1a. iCOC Summary Statistics for Sediment – iAOPC 7.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg | 21 | 21 | 100 | 23 JT | 270 JT | 116 | 66 JT | 250 T | 23 JT | 270 JT | 116 | 66 JT | 250 T |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 4 | 4 | 100 | 1.65 JT | 8.25 T | 4.42 | 2.1 T | 5.67 JT | 1.65 JT | 8.25 T | 4.42 | 2.1 T | 5.67 JT |
| **Metals** | | | | | | | | | | | | | | |
| Silver[b] | mg/kg | 34 | 33 | 97.1 | 0.05 | 5.65 J | 0.793 | 0.277 JT | 3.71 J | 0.05 | 5.65 J | 0.785 | 0.277 JT | 3.71 J |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | ug/kg | 12 | 12 | 100 | 3.24 JT | 250 | 56.6 | 14.3 JT | 180 JT | 3.24 JT | 250 | 56.6 | 14.3 JT | 180 JT |
| **Petroleum** | | | | | | | | | | | | | | |
| Diesel Range Hydrocarbons[b] | mg/kg | 25 | 25 | 100 | 19.9 | 360 J | 138 | 110 J | 290 J | 19.9 | 360 J | 138 | 110 J | 290 J |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg | 23 | 13 | 56.5 | 36.4 JT | 1110 JT | 359 | 232 JT | 668 JT | 1.4 UT | 1110 JT | 203 | 146 T | 642 JT |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 2 | 2 | 100 | 5.56 T | 86.7 T | 46.1 | 5.56 T | 5.56 T | 5.56 T | 86.7 T | 46.1 | 5.56 T | 5.56 T |
| **Metals** | | | | | | | | | | | | | | |
| Silver[b] | mg/kg | 24 | 24 | 100 | 0.021 | 1.2 | 0.337 | 0.251 | 0.626 T | 0.021 | 1.2 | 0.337 | 0.251 | 0.626 T |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | ug/kg | 2 | 2 | 100 | 486 | 2830 | 1660 | 486 | 486 | 486 | 2830 | 1660 | 486 | 486 |
| **Petroleum** | | | | | | | | | | | | | | |
| Diesel Range Hydrocarbons[b] | mg/kg | 23 | 19 | 82.6 | 28 J | 3500 J | 1270 | 830 J | 3400 J | 11 U | 3500 J | 1050 | 530 J | 3200 J |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95$^{th}$ percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033461

Table 11.3.6-1b. iCOC Summary Statistics for Surface Water – iAOPC 7.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Collection Method: Bottle*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/l | 3 | 0 | 0 | | | | | | 0.0025 UT | 0.00267 UT | 0.00128 | 0.00125 UT | 0.00125 UT |
| **Metals** | | | | | | | | | | | | | | |
| Silver (dissolved)[b] | mg/l | 3 | 0 | 0 | | | | | | 0.000005 UJ | 0.000009 U | 0.00000383 | 0.0000045 U | 0.0000045 U |
| Silver[b] | mg/l | 3 | 0 | 0 | | | | | | 0.000005 UJ | 0.000009 U | 0.00000383 | 0.0000045 U | 0.0000045 U |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95 [th] percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033462

Table 11.3.6-1c. iCOC Summary Statistics for Biota - iAOPC 7.

| Analyte | Units | # | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Clam - body without shell*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 109 JT | 109 JT | 109 | 109 JT | 109 JT | 109 JT | 109 JT | 109 | 109 JT | 109 JT |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 2.04 T | 2.04 T | 2.04 | 2.04 T | 2.04 T | 2.04 T | 2.04 T | 2.04 | 2.04 T | 2.04 T |
| **Metals** | | | | | | | | | | | | | | |
| Silver[h] | mg/kg-Wet | 1 | 1 | 100 | 0.0623 T | 0.0623 T | 0.0623 | 0.0623 T | 0.0623 T | 0.0623 T | 0.0623 T | 0.0623 | 0.0623 T | 0.0623 T |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 153 | 153 | 153 | 153 | 153 | 153 | 153 | 153 | 153 | 153 |
| ***Crayfish - whole body*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 27 T | 27 T | 27 | 27 T | 27 T | 27 T | 27 T | 27 | 27 T | 27 T |
| **Metals** | | | | | | | | | | | | | | |
| Silver[h] | mg/kg-Wet | 1 | 1 | 100 | 0.0238 J | 0.0238 J | 0.0238 | 0.0238 J | 0.0238 J | 0.0238 J | 0.0238 J | 0.0238 | 0.0238 J | 0.0238 J |
| **Lab Clam - body without shell** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 21.5 JT | 21.5 JT | 21.5 | 21.5 JT | 21.5 JT | 21.5 JT | 21.5 JT | 21.5 | 21.5 JT | 21.5 JT |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.653 T | 0.653 T | 0.653 | 0.653 T | 0.653 T | 0.653 T | 0.653 T | 0.653 | 0.653 T | 0.653 T |
| **Metals** | | | | | | | | | | | | | | |
| Silver[h] | mg/kg-Wet | 1 | 1 | 100 | 0.0129 | 0.0129 | 0.0129 | 0.0129 | 0.0129 | 0.0129 | 0.0129 | 0.0129 | 0.0129 | 0.0129 |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 27.1 | 27.1 | 27.1 | 27.1 | 27.1 | 27.1 | 27.1 | 27.1 | 27.1 | 27.1 |
| ***Lumbriculus variegatus - whole body*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 187 JT | 187 JT | 187 | 187 JT | 187 JT | 187 JT | 187 JT | 187 | 187 JT | 187 JT |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 4.36 JT | 4.36 JT | 4.36 | 4.36 JT | 4.36 JT | 4.36 JT | 4.36 JT | 4.36 | 4.36 JT | 4.36 JT |
| **Metals** | | | | | | | | | | | | | | |
| Silver[h] | mg/kg-Wet | 1 | 1 | 100 | 0.0068 | 0.0068 | 0.0068 | 0.0068 | 0.0068 | 0.0068 | 0.0068 | 0.0068 | 0.0068 | 0.0068 |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 282 | 282 | 282 | 282 | 282 | 282 | 282 | 282 | 282 | 282 |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95[th] percentile) or n * 0.50 (median) is presented.

[h] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033463

Table 11.3.6-1d. iCOC Summary Statistics for Porewater - iAOPC 7.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | N | N Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| Silver[b] | mg/l | 2 | 0 | 0 | | | | | | 0 U | 0 U | 0 | 0 U | 0 U |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95 $^{th}$ percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033464

Table 11.3.6-2. Potential Sources and Transport Pathways Assessment - iAOPC 7.

Last Updated: February 11, 2006

| Potential Sources | | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | | Potential Complete Pathway | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | | |
| Map Location | Description of Potential Source | Surface Soil | Subsurface Soil | Groundwater | Catch Basin Solids | River Sediment | Gasoline-Range | Diesel - Range | Heavier - Range | Petroleum-Related (e.g. BTEX) | VOCs | Chlorinated VOCs | SVOCs | PAHs | Phthalates | Phenolics | Metals | PCBs | Herbicides and Pesticides | Dioxins/Furans | Butyltins | Overland Transport | Groundwater | Direct Discharge - Overwater | Direct Discharge - Storm/Wastewater | Riverbank Erosion |
| *Upland Areas* | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Mar Com #2350** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **North Parcel** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Quonset Hut | Stained soil | ✓ | | | | | | ✓ | ✓ | | | | | ✓ | | | | | | | | ? | | | | |
| Southwest corner | Stained soil | ✓ | | | | | | ✓ | ✓ | | ✓ | | | ✓ | | | ✓ | | | | | ✓ | | | ? | |
| Northeast of City's outfall and east of Quonset Hut | 2 spent sandblast grit piles | ✓ | | | | | | | | | | | | | ✓ | | ✓ | | | | ✓ | ? | | | | |
| Riverbank | Soil | ? | ? | | | | | | | | | | | | | | | | | | | | | | | | ? |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **South Parcel** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former Sawmill (NE corner) | Soil | ✓ | ✓ | ? | | | | ✓ | ✓ | | ✓ | | | ✓ | | | ✓ | | | | ✓ | | ? | | ? | |
| Building C | Soil | ✓ | ✓ | ✓ | | | | | ✓ | | ✓ | ✓ | | ✓ | | | ✓ | | | | ✓ | | ? | | ? | |
| Steel fabrication bldg | Soil | ✓ | ✓ | ✓ | | | | | ✓ | | ✓ | ✓ | | ✓ | | | ✓ | | | | ✓ | | ? | | ? | |
| Former Warehouse/Break bldg. | Soil | ✓ | ✓ | ? | | | | ✓ | | | | | | ✓ | | | ✓ | ✓ | | | ✓ | | ? | | ? | |
| Machine Shop | | | ✓ | ✓ | | | | | ✓ | | ✓ | ✓ | | | | | | | | | | | ? | | ? | |
| Compressor shed | Soil | ✓ | ✓ | ✓ | | | | | | | | | | | | | ✓ | | | | ✓ | | ? | | ? | |
| Paint Booth | | ✓ | ✓ | ✓ | | | | | | | ✓ | ✓ | ✓ | | ✓ | | ✓ | | | | | | ? | | ? | |
| Knoll (SE corner) | Soil | ✓ | ✓ | ✓ | | | | ✓ | ✓ | ✓ | | | | ✓ | | | ✓ | | | | ✓ | | ? | | ? | |
| South's SW corner | Soil | ✓ | ✓ | ? | | | | | ✓ | | ✓ | | | ✓ | | | ✓ | | | | | ✓ | ? | | ? | |
| Upland drydocks | Soil | ✓ | ✓ | ? | | ✓ | | | | | | | ✓ | | ✓ | | ✓ | | | | ✓ | ✓ | ? | | ? | ✓ |
| Riverbank | | ✍ | ✍ | | | | | | | | | | | | | | | | | | | | | | | | ✍ |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OF-52 | | | | | | ✍ | | | | | | | | | | | | | | | | | | | | ? | |
| OF-52A | | | | | | ✍ | | | | | | | | | | | | | | | | | | | | ? | |
| *Overwater Areas* | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Mar Com #2350** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mar Com Floating Drydock | Overwater activities | | | | | ✓ | | ✓ | ✓ | | ✓ | | ✓ | ✓ | ✓ | | ✓ | | | | ✓ | | | ✓ | | | ✓ |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Notes:**

[1] All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ – Source, COI are present or current<u>or</u> historic pathway is determined to be complete or potentially complete.

? – There is not enough information to determine if source or COI is present or if pathway is complete

UST Underground storage Tank

AST Above-ground Storage Tank

TPH Total Petroleum Hydrocarbons

VOCs Volatile Organic Compounds

SVOCs Semi-volatile Organic Compounds

PAHs Polycyclic aromatic hydrocarbons

BTEX Benzene, toluene, ethylbenzene, and xylenes

PCBs Polychorinated biphenyls



BZTO104(e)033465

Table 11.3.6-3. Preliminary Evaluation of Relative Contribution of Migration Pathways to iAOPC 7.

| **CURRENT** | | **Relative Contribution** | | |
|---|---|---|---|---|
| **Pathway** | **Data Quality/Quantity** | ***PCBs*** | ***DRH*** | ***Silver*** |
| Groundwater | Low | Low | Low | Low |
| Overwater Release | Med | Low | Low | Low |
| Stormwater/Wastewater/ Overland Transport | Low | Med | Med | Med |
| Bank/Soil Erosion | Med | Med | Med | Med |
| Sediment Transport | Low | Low | Low | Low |

| **HISTORICAL** | | **Relative Contribution** | | |
|---|---|---|---|---|
| **Pathway** | **Data Quality/Quantity** | ***PCBs*** | ***DRH*** | ***Silver*** |
| Groundwater | Low | Low | Low | Low |
| Overwater Release | Med | High | High | High |
| Stormwater/Wastewater/ Overland Transport | Low | High | High | High |
| Bank/Soil Erosion | Med | Med | Med | Med |
| Sediment Transport | Low | Low | Low | Low |

**Notes:**

Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).

Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.

BZTO104(e)033466

Table 11.3.7-1a. iCOC Summary Statistics for Sediment - iAOPCs 8 and 9.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 1 | 1 | 100 | 220 T | 220 T | 220 | 220 T | 220 T | 220 T | 220 T | 220 | 220 T | 220 T |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 1 | 1 | 100 | 1.37 JT | 1.37 JT | 1.37 | 1.37 JT | 1.37 JT | 1.37 JT | 1.37 JT | 1.37 | 1.37 JT | 1.37 JT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 1 | 1 | 100 | 31.7 | 31.7 | 31.7 | 31.7 | 31.7 | 31.7 | 31.7 | 31.7 | 31.7 | 31.7 |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 1 | 0 | 0 | | | | | | 350 UT | 350 UT | 175 | 175 UT | 175 UT |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95 $^{th}$ percentile) or n * 0.50 (median) is presented.



BZTO104(e)033467

Table 11.3.7-1b. iCOC Summary Statistics for Sediment - iAOPCs 8 and 9.

| Analyte | Units | # | # Detected | % Detected | Detected Concentrations Minimum | Maximum | Mean | Median[a] | 95th[a] | Detected and Nondetected Concentrations Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 3 | 2 | 66.7 | 19 T | 98 T | 58.5 | 19 T | 19 T | 3.5 UJT | 98 T | 39.6 | 19 T | 19 T |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 1 | 1 | 100 | 0.436 JT | 0.436 JT | 0.436 | 0.436 JT | 0.436 JT | 0.436 JT | 0.436 JT | 0.436 | 0.436 JT | 0.436 JT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 1 | 1 | 100 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 |
| **Pesticides** | | | | | | | | | | | | | | |
| Total of 2,4' and 4,4'-DDT | µg/kg | 2 | 2 | 100 | 13 JT | 276 JT | 145 | 13 JT | 13 JT | 13 JT | 276 JT | 145 | 13 JT | 13 JT |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 1 | 1 | 100 | 76 T | 76 T | 76 | 76 T | 76 T | 76 T | 76 T | 76 | 76 T | 76 T |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95$^{th}$ percentile) or n * 0.50 (median) is presented.



BZTO104(e)033468

Table 11.3.7-1c. iCOC Summary Statistics for Tissue - iAOPCs 8 and 9.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Sculpin (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 132 JT | 132 JT | 132 | 132 JT | 132 JT | 132 JT | 132 JT | 132 | 132 JT | 132 JT |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.



BZTO104(e)033469

Table 11.3.7-2. Potential Sources and Transport Pathways Assessment - iAOPCs 8 and 9.

Last Updated: June 30, 2006

| Potential Sources | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | | Potential Complete Pathway | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | | |
| Description of Potential Source | Surface Soil | Subsurface Soil | Groundwater | Catch Basin Solids | River Sediment | Gasoline-Range | Diesel - Range | Heavier - Range | Petroleum-Related (e.g. BTEX) | VOCs | Chlorinated VOCs | SVOCs | PAHs | Phthalates | Phenolics | Metals | PCBs | Herbicides and Pesticides | Dioxins/Furans | Butyltins | Overland Transport | Groundwater | Direct Discharge - Overwater | Direct Discharge - Storm/Wastewater | Riverbank Erosion |
| ***Upland Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Marine Finance Company # 2352** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former scrap metal storage yards (Jacobs Eng. 2000) | ✓ | ✓ | ? | | | | | ✓ | ? | | | | ✓ | | | ✓ | | | | ✓ | ✓ | ? | | | |
| Former UST locations (including fuel lines) (Jacobs Eng. 2000) | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ | | | | ✓ | ✓ | | | ✓ | | | | ✓ | ✓ | ? | | | |
| Former warehouse (Jacobs Eng. 2000) | ✓ | ✓ | ✓ | | | | | | | | | | ✓ | | | ✓ | | | | ✓ | ✓ | ? | | | |
| Former drum storage areas (Jacobs Eng. 2000) | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ | ? | | | | ✓ | | | ✓ | | | | ✓ | ✓ | ? | | | |
| ***Overwater Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Marine Finance Company # 2352** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current and historic dock operations (DEQ 1999, PBS 2000) | | | | | ✓ | | ✓ | ✓ | | | | ✓ | ✓ | | | ✓ | | | | | | | ✓ | | |
| ***Other Areas/Other Issues*** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Marine Finance Company # 2352** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sediment in pooled water below drain (Jacobs Eng., GeoDesign 2003) | | | | | ✓ | | ✓ | ✓ | | | | ✓ | ✓ | | | | | | | | | | | ✓ | |

**Notes:**

[1] All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ = Source, COI are present or current or historic pathway is determined to be complete or potentially complete.

? = There is not enough information to determine if source or COI is present or if pathway is complete.

UST Underground storage tank
AST Above-ground storage tank
TPH Total petroleum hydrocarbons
VOCs Volatile organic compounds
SVOCs Semivolatile organic compounds
PAHs Polycyclic aromatic hydrocarbons
BTEX Benzene, toluene, ethylbenzene, and xylenes
PCBs Polychorinated biphenyls



BZTO104(e)033470

Table 11.3.7-3. Preliminary Evaluation of Relative Contribution of Migration Pathways to iAOPCs 8 and 9.

| | CURRENT | | Relative Contribution | |
|---|---|---|---|---|
| | **Pathway** | **Data Quality/Quantity** | ***PCBs*** | ***DDT*** |
| **iAOPC 8** | Groundwater | Low | Low | -- |
| | Overwater Release | Low | Low | -- |
| | Stormwater/Wastewater/ Overland Transport | Low | Low | -- |
| | Bank/Soil Erosion | Low | Low | -- |
| | Sediment Transport | Low | High | -- |

| | HISTORICAL | | Relative Contribution | |
|---|---|---|---|---|
| | **Pathway** | **Data Quality/Quantity** | ***PCBs*** | ***DDT*** |
| **iAOPC 8** | Groundwater | Low | Low | -- |
| | Overwater Release | Med | Low | -- |
| | Stormwater/Wastewater/ Overland Transport | Low | Low | -- |
| | Bank/Soil Erosion | Low | NE | -- |
| | Sediment Transport | Low | High | -- |

| | CURRENT | | Relative Contribution | |
|---|---|---|---|---|
| | **Pathway** | **Data Quality/Quantity** | ***PCBs*** | ***DDT*** |
| **iAOPC 9** | Groundwater | Low | Low | Low |
| | Overwater Release | Low | Med | Med |
| | Stormwater/Wastewater/ Overland Transport | Low | Med | Med |
| | Bank/Soil Erosion | Low | Low | Low |
| | Sediment Transport | Low | High | NE |

| | HISTORICAL | | Relative Contribution | |
|---|---|---|---|---|
| | **Pathway** | **Data Quality/Quantity** | ***PCBs*** | ***DDT*** |
| **iAOPC 9** | Groundwater | Low | Low | Low |
| | Overwater Release | Low | Med | Med |
| | Stormwater/Wastewater/ Overland Transport | Low | Med | Med |
| | Bank/Soil Erosion | Low | NE | NE |
| | Sediment Transport | Low | High | NE |

**Notes:**

Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).

Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.

"--" - Chemical is not an iCOC for this iAOPC.

NE - Not Estimated. The data quality/quantity is inadequate to make a determination of relative contribution.

BZTO104(e)033471

Table 11.3.8-1. iCOC Summary Statistics for Sediment - iAOPC 10.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 7 | 7 | 100 | 16 T | 220 T | 132 | 157 T | 182 JT | 16 T | 220 T | 132 | 157 T | 182 JT |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 1 | 1 | 100 | 4.17 T | 4.17 T | 4.17 | 4.17 T | 4.17 T | 4.17 T | 4.17 T | 4.17 | 4.17 T | 4.17 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 14 | 14 | 100 | 2.96 | 22 | 10.5 | 9.9 | 21.5 | 2.96 | 22 | 10.5 | 9.9 | 21.5 |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 7 | 7 | 100 | 2.35 JT | 111 | 24.9 | 9.16 JT | 29.3 T | 2.35 JT | 111 | 24.9 | 9.16 JT | 29.3 T |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 7 | 2 | 28.6 | 133 JT | 219 JT | 176 | 133 JT | 133 JT | 2.21 UT | 219 JT | 51.2 | 1.3 UT | 133 JT |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 7 | 7 | 100 | 1.49 | 9.18 J | 5.3 | 5.58 | 7.62 JT | 1.49 | 9.18 J | 5.3 | 5.58 | 7.62 JT |

**Notes:**
[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.
DL - Detection Limit.
J - The associated numerical value is an estimated quantity.
T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.



BZTO104(e)033473

Table 11.3.8-2. Potential Sources and Transport Pathways Assessment - iAOPC 10.

| Potential Sources | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | Potential Complete Pathway | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | |
| Description of Potential Source | Surface Soil | Subsurface Soil | Groundwater | Catch Basin Solids | River Sediment | Gasoline-Range | Diesel - Range | Heavier - Range | Petroleum-Related (e.g. BTEX) | VOCs | Chlorinated VOCs | SVOCs | PAHs | Phthalates | Phenolics | Metals | PCBs | Herbicides and Pesticides | Dioxins/Furans | Butyltins | Overland Transport | Groundwater | Direct Discharge - Overwater | Direct Discharge - Storm/Wastewater | Riverbank Erosion |
| ***Upland Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Crawford Street Corporation #2363** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Current site manufacturing and maintenance operations | ✓ | ? | ? | ? | ? | | ✓ | ✓ | | ✓ | ✓ | | ✓ | | | ✓ | | | | | | ? | | ? | |
| Current and former site runoff | ✓ | ? | ? | ? | ? | | | ✓ | | ✓ | | | ✓ | | | ✓ | | | | | ✓ | ? | ? | ✓ | ✓ |
| Imported sandblast fill material | ✓ | ? | ? | | | | | ✓ | ✓ | ✓ | | | ✓ | | | ✓ | ✓ | | | | ✓ | ? | ✓ | ✓ | ✓ |
| Former USTs | | ? | ? | | ? | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | ✓ | | | | | | | | | |
| Railroad right-of-way | ✓ | ? | ? | ? | ? | | ✓ | ✓ | | | | | | | | | ✓ | | | | ✓ | ? | | ? | |
| Electrical transformer | ? | ? | ? | ? | ? | | | | | | | | | | | | ✓ | | | | ? | ? | ? | ? | ? |
| Historical facility operations | ? | ? | ? | ? | ? | | | ✓ | | | | | | | ✓ | | ✓ | ✓ | | ✓ | ✓ | ? | ? | ✓ | ? |
| **BES Water Pollution Control Laboratory #2452** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Historic Operations | ✓ | | | | | | | | | | | | | | | | | | | | | | | | |
| Lumber mill operations | ? | ? | | | | ? | ? | ? | | | | | | | | | | | | | ? | | | | |
| Box manufacturing operations | ? | ? | | | | ? | ? | ? | | | | | | | | | | | | | ? | | | | |
| Fill material (including black sand fill) | ✓ | ✓ | | | ? | ✓ | ✓ | ✓ | | | | | | | | ✓ | | | | | ? | | | | |
| Subsurface electrical conduit | | ✓ | | | | | | | | | | | | | | | ✓ | | | | | | | | |
| Current Operations | | | | | | | | | | | | | | | | | | | | | | | | | |
| WPCL | | | | | | | | | | | | | | | | | | | | | | | | | |
| ***Overwater Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Crawford Street Corporation #2363** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Imported sandblast fill material | | | | | | | | ✓ | ✓ | ✓ | | | ✓ | | | ✓ | ✓ | | | | ✓ | | ✓ | ✓ | ✓ |
| Historical dock operations (unknown) | | | | | | ✓ | ✓ | ✓ | | | | | ✓ | | | ✓ | | | | | | | ? | ? | |
| Outfalls | | | | | | ✓ | ✓ | ✓ | | | | | ✓ | | | ✓ | | | | | ? | | ✓ | ✓ | ✓ |
| Beach metal debris | | | | | | | | | | | | | | | | ✓ | | | | | ✓ | | ✓ | ✓ | ✓ |
| **BES Water Pollution Control Laboratory #2452** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Historic Operations | | | | | | | | | | | | | | | | | | | | | | | | | |
| Portland Lumber Co. dock | | | ? | | | | | | | | | | | | ? | | | | | | | ? | ? | | |
| ***Other Areas/Other Issues*** | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |

**Notes:**

All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ – Source, COI are present or currentor historic pathway is determined to be complete or potentially complete.

? – There is not enough information to determine if source or COI is present or if pathway is complete.

| | |
|---|---|
| UST | Underground storage tank |
| AST | Above-ground storage tank |
| TPH | Total petroleum hydrocarbons |
| VOCs | Volatile organic compounds |
| SVOCs | Semivolatile organic compounds |
| PAHs | Polycyclic aromatic hydrocarbons |
| BTEX | Benzene, toluene, ethylbenzene, and xylenes |
| PCBs | Polychlorinated biphenyls |



BZTO104(e)033474

Table 11.3.8-3. Preliminary Evaluation of Relative Contribution of Migration Pathways to iAOPC 10.

| **CURRENT Pathway** | **Data Quality/ Quantity** | **Relative Contribution** | |
|---|---|---|---|
| | | *Arsenic* | *PCBs* |
| Groundwater | Low | Low | Low |
| Overwater Release* | NA | NA | NA |
| Storm/Wastewater/Overland Transport | Med | Med | Med |
| Bank/Soil Erosion | Med | Low | Low |
| Sediment Transport | Low | Low | Low |

| **HISTORICAL Pathway** | **Data Quality/ Quantity** | **Relative Contribution** | |
|---|---|---|---|
| | | *Arsenic* | *PCBs* |
| Groundwater | Low | NE | NE |
| Overwater Release* | Low | Low | Low |
| Storm/Wastewater/Overland Transport | Med | High | High |
| Bank/Soil Erosion | Med | High | High |
| Sediment Transport | Low | Low | Low |

**Notes:**

Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).

Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.

NE - Not Estimated. The data quality/quantity is inadequate to make a determination of relative contribution.

* - Historical Pathway only

NA - Not applicable

BZTO104(e)033475

Table 11-3.9-1a. iCOC Summary Statistics for Sediment - iAOPC 11.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 30 | 15 | 50 | 9.29 T | 170 JT | 68.4 | 51 T | 163 JT | 2.1 UT | 170 JT | 38.7 | 14 JT | 128 JT |
| **Conventionals** | | | | | | | | | | | | | | |
| Ammonia[b] | mg/kg | 30 | 30 | 100 | 3.4 J | 334 J | 146 | 152 J | 242 JT | 3.4 J | 334 J | 146 | 152 J | 242 JT |
| Sulfide[b] | mg/kg | 30 | 30 | 100 | 1.4 | 998 | 106 | 15.7 | 491 | 1.4 | 998 | 106 | 15.7 | 491 |
| **PCB Congener TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 3 | 3 | 100 | 0.257 JT | 3.67 T | 1.81 | 1.49 T | 1.49 T | 0.257 JT | 3.67 T | 1.81 | 1.49 T | 1.49 T |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg | 55 | 55 | 100 | 350 | 459601 | 35900 | 12000 | 120000 | 350 | 459601 | 35900 | 12000 | 120000 |
| Benzo(a)pyrene | µg/kg | 55 | 55 | 100 | 560 | 621300 | 44900 | 17000 | 140000 | 560 | 621300 | 44900 | 17000 | 140000 |
| Benzo(b)fluoranthene | µg/kg | 55 | 55 | 100 | 340 | 342877 | 31600 | 15000 | 120000 | 340 | 342877 | 31600 | 15000 | 120000 |
| Dibenzo(a,h)anthracene | µg/kg | 55 | 55 | 100 | 59 | 52802 | 4200 | 2000 | 14000 | 59 | 52802 | 4200 | 2000 | 14000 |
| Indeno(1,2,3-cd)pyrene | µg/kg | 55 | 55 | 100 | 405 T | 440201 | 31000 | 12000 | 100000 | 405 T | 440201 | 31000 | 12000 | 100000 |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 3 | 3 | 100 | 29.9 | 188 | 92.2 | 58.8 | 58.8 | 29.9 | 188 | 92.2 | 58.8 | 58.8 |
| **Pesticides** | | | | | | | | | | | | | | |
| beta-Hexachlorocyclohexane[b] | µg/kg | 30 | 16 | 53.3 | 1.09 J | 26.4 | 7.36 | 3.2 J | 20.3 J | 0.0305 U | 42 U | 4.81 | 2 NJ | 20.3 J |
| delta-Hexachlorocyclohexane[b] | µg/kg | 30 | 3 | 10 | 0.912 NJ | 21.2 NJ | 8.38 | 3.03 NJ | 3.03 NJ | 0.0644 UJ | 21.2 NJ | 1.25 | 0.347 U | 2.85 U |
| Endrin ketone[b] | µg/kg | 30 | 3 | 10 | 2.1 NJ | 28 | 11.6 | 4.57 NJT | 4.57 NJT | 0.0265 U | 28 | 1.68 | 0.143 U | 4.57 NJT |
| Total of 2,4' and 4,4'-DDD[b] | µg/kg | 30 | 29 | 96.7 | 6.85 JT | 2220 JT | 237 | 49.8 JT | 838 JT | 6.85 JT | 2220 JT | 229 | 42 JT | 838 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg | 30 | 29 | 96.7 | 1.47 JT | 271 JT | 48.6 | 25.5 T* | 193 JT | 1.47 JT | 271 JT | 47.2 | 23.9 JT | 193 JT |
| **Petroleum** | | | | | | | | | | | | | | |
| Diesel Range Hydrocarbons[b] | mg/kg | 36 | 36 | 100 | 100 J | 39000 J | 4110 | 1050 JT | 14000 J | 100 J | 39000 J | 4110 | 1050 JT | 14000 J |
| Residual Range Hydrocarbons[b] | mg/kg | 36 | 36 | 100 | 250 J | 18000 J | 3870 | 1550 JT | 13000 J | 250 J | 18000 J | 3870 | 1550 JT | 13000 J |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 56 | 21 | 37.5 | 20 JT | 542 JT | 139 | 105 JT | 253 JT | 1.4 UT | 846 UJT | 70.1 | 15.85 UJT | 253 JT |
| **Conventionals** | | | | | | | | | | | | | | |
| Ammonia[b] | mg/kg | 2 | 2 | 100 | 204 | 283 | 244 | 204 | 204 | 204 | 283 | 244 | 204 | 204 |
| Sulfide[b] | mg/kg | 2 | 2 | 100 | 7.1 | 33.9 | 20.5 | 7.1 | 7.1 | 7.1 | 33.9 | 20.5 | 7.1 | 7.1 |
| **Dioxins Furans** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 3 | 3 | 100 | 0.117 T | 7.43 T | 4.99 | 7.43 JT | 7.43 JT | 0.117 T | 7.43 T | 4.99 | 7.43 JT | 7.43 JT |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/kg | 92 | 92 | 100 | 1.8 J | 760000 | 65500 | 17000 | 310000 | 1.8 J | 760000 | 65500 | 17000 | 310000 |
| Benzo(a)pyrene | µg/kg | 92 | 92 | 100 | 2.7 | 940000 | 80300 | 21000 | 370000 | 2.7 | 940000 | 80300 | 21000 | 370000 |
| Benzo(b)fluoranthene | µg/kg | 92 | 92 | 100 | 1.6 J | 590000 J | 58800 | 14000 | 230000 | 1.6 J | 590000 J | 58800 | 14000 | 230000 |
| Dibenzo(a,h)anthracene | µg/kg | 92 | 90 | 97.8 | 0.94 J | 67000 | 6780 | 1800 | 30000 | 0.33 U | 67000 | 6640 | 1600 | 30000 |
| Indeno(1,2,3-cd)pyrene | µg/kg | 92 | 92 | 100 | 1.7 J | 610000 | 54800 | 14000 | 270000 | 1.7 J | 610000 | 54800 | 14000 | 270000 |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 3 | 3 | 100 | 13.6 | 223 | 95.7 | 50.5 | 50.5 | 13.6 | 223 | 95.7 | 50.5 | 50.5 |
| **Pesticides** | | | | | | | | | | | | | | |
| beta-Hexachlorocyclohexane[b] | µg/kg | 59 | 27 | 45.8 | 0.38 | 318 NJ | 24.5 | 8.97 NJ | 45.8 J | 0.0365 U | 318 NJ | 12.3 | 2.17 J | 43.4 J |
| delta-Hexachlorocyclohexane[b] | µg/kg | 58 | 6 | 10.3 | 0.59 | 45.4 NJ | 15.8 | 3.8 J | 24.8 NJ | 0.073 U | 45.4 NJ | 3.16 | 0.55 U | 16 UJ |
| Endrin ketone[b] | µg/kg | 59 | 6 | 10.2 | 1.3 J | 263 NJ | 47.4 | 5.6 | 6.6 J | 0.0318 U | 263 NJ | 7.65 | 0.2385 U | 6.6 J |
| Total of 2,4' and 4,4'-DDD[b] | µg/kg | 59 | 52 | 88.1 | 0.128 JT | 1110 JT | 182 | 61.6 JT | 588 JT | 0.0521 UT | 1110 JT | 160 | 48 T | 588 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg | 59 | 44 | 74.6 | 0.273 JT | 1110 JT | 105 | 27 * | 283 JT | 0.0602 UJT | 1110 JT | 81 | 23.9 JT | 283 JT |
| **Petroleum** | | | | | | | | | | | | | | |
| Diesel Range Hydrocarbons[b] | mg/kg | 71 | 66 | 93 | 17 J | 190000 J | 12600 | 2900 J | 38000 J | 4.3 UT | 190000 J | 11700 | 2850 JT | 38000 J |
| Residual Range Hydrocarbons[b] | mg/kg | 70 | 69 | 98.6 | 13.5 JT | 110000 J | 7280 | 2700 | 20000 J | 4 UT | 110000 J | 7170 | 2600 J | 20000 J |

[a]This value was selected from an ascending ranked list of all results. Where n – the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b]Potential iCOC. These chemicals are identified through less certain and/or less rigorous evaluations based on fewer lines of evidence, including TZW results, floatig percentile model (FPM) results, or other high uncertainty lines of evidence (see Sections 8 and 9).



BZTO104(e)033477

Table 11-3.9-1b. iCOC Summay Statistics for Surface Water - iAOPC 11.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte** | **Units** | **#** | **# Detected** | **% Detected** | **Minimum** | **Maximum** | **Mean** | **Median[a]** | **95th[a]** | **Minimum (full DL)** | **Maximum (full DL)** | **Mean (half DL)** | **Median[a] (half DL)** | **95th[a] (half DL)** |
| **Collection Method: Bottle** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/l | 3 | 0 | 0 | | | | | | 0.0025 UJT | 0.0026 UT | 0.00127 | 0.00125 UT | 0.00125 UT |
| **PAHs** | | | | | | | | | | | | | | |
| Benzo(a)anthracene | µg/l | 3 | 2 | 66.7 | 0.019 | 0.11 | 0.0645 | 0.019 | 0.019 | 0.006 U | 0.11 | 0.044 | 0.019 | 0.019 |
| Benzo(a)pyrene | µg/l | 3 | 2 | 66.7 | 0.02 | 0.15 | 0.085 | 0.02 | 0.02 | 0.0082 U | 0.15 | 0.058 | 0.02 | 0.02 |
| Benzo(b)fluoranthene | µg/l | 3 | 2 | 66.7 | 0.021 | 0.11 | 0.0655 | 0.021 | 0.021 | 0.0073 U | 0.11 | 0.0449 | 0.021 | 0.021 |
| Dibenzo(a,h)anthracene | µg/l | 3 | 1 | 33.3 | 0.011 J | 0.011 J | 0.011 | 0.011 J | 0.011 J | 0.0033 U | 0.011 J | 0.00477 | 0.00165 U | 0.00165 U |
| Indeno(1,2,3-cd)pyrene | µg/l | 3 | 3 | 100 | 0.0094 J | 0.11 | 0.0461 | 0.019 | 0.019 | 0.0094 J | 0.11 | 0.0461 | 0.019 | 0.019 |
| **Pesticides** | | | | | | | | | | | | | | |
| beta-Hexachlorocyclohexane[b] | µg/l | 3 | 0 | 0 | | | | | | 0.000481 U | 0.00051 U | 0.000249 | 0.00025 U | 0.00025 U |
| delta-Hexachlorocyclohexane[b] | µg/l | 3 | 0 | 0 | | | | | | 0.000481 U | 0.00051 U | 0.000249 | 0.00025 U | 0.00025 U |
| Endrin ketone[b] | µg/l | 3 | 0 | 0 | | | | | | 0.000481 U | 0.00051 U | 0.000249 | 0.00025 U | 0.00025 U |
| Total of 2,4' and 4,4'-DDD[b] | µg/l | 3 | 1 | 33.3 | 0.000839 T | 0.000839 T | 0.000839 | 0.000839 T | 0.000839 T | 0.0005 UT | 0.000839 T | 0.000448 | 0.000255 UT | 0.000255 UT |
| Total of 2,4' and 4,4'-DDT | µg/l | 3 | 0 | 0 | | | | | | 0.000481 UT | 0.00051 UT | 0.000249 | 0.00025 UT | 0.00025 UT |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b]Potential iCOC. These chemicals are identified through less certain and/or less rigorous evaluations based on fewer lines of evidence, including TZW results, floatig percentile model (FPM) results, or other high uncertainty lines of evidence (see Sections 8 and 9).



BZTO104(e)033478

Table 11.3.9-1c. iCOC Summary Statistics for Tissue - iAOPC 11.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 52.8 JT | 52.8 JT | 52.8 | 52.8 JT | 52.8 JT | 52.8 JT | 52.8 JT | 52.8 | 52.8 JT | 52.8 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 1.55 T | 1.55 T | 1.55 | 1.55 T | 1.55 T | 1.55 T | 1.55 T | 1.55 | 1.55 T | 1.55 T |
| 2-Methylnaphthalene | ug/kg-Wet | 1 | 1 | 100 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Acenaphthene | ug/kg-Wet | 1 | 1 | 100 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 |
| Anthracene | ug/kg-Wet | 1 | 1 | 100 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Benzo(a)anthracene | ug/kg-Wet | 1 | 1 | 100 | 630 | 630 | 630 | 630 | 630 | 630 | 630 | 630 | 630 | 630 |
| Benzo(a)pyrene | ug/kg-Wet | 1 | 1 | 100 | 490 | 490 | 490 | 490 | 490 | 490 | 490 | 490 | 490 | 490 |
| Benzo(b)fluoranthene | ug/kg-Wet | 1 | 1 | 100 | 460 | 460 | 460 | 460 | 460 | 460 | 460 | 460 | 460 | 460 |
| Benzo(g,h,i)perylene | ug/kg-Wet | 1 | 1 | 100 | 230 | 230 | 230 | 230 | 230 | 230 | 230 | 230 | 230 | 230 |
| Benzo(k)fluoranthene | ug/kg-Wet | 1 | 1 | 100 | 310 | 310 | 310 | 310 | 310 | 310 | 310 | 310 | 310 | 310 |
| Chrysene | ug/kg-Wet | 1 | 1 | 100 | 560 | 560 | 560 | 560 | 560 | 560 | 560 | 560 | 560 | 560 |
| Dibenzo(a,h)anthracene | ug/kg-Wet | 1 | 1 | 100 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 | 43 |
| Fluoranthene | ug/kg-Wet | 1 | 1 | 100 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 | 720 |
| Fluorene | ug/kg-Wet | 1 | 1 | 100 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| Indeno(1,2,3-cd)pyrene | ug/kg-Wet | 1 | 1 | 100 | 170 | 170 | 170 | 170 | 170 | 170 | 170 | 170 | 170 | 170 |
| Naphthalene | ug/kg-Wet | 1 | 1 | 100 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| Phenanthrene | ug/kg-Wet | 1 | 1 | 100 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 |
| Pyrene | ug/kg-Wet | 1 | 1 | 100 | 820 | 820 | 820 | 820 | 820 | 820 | 820 | 820 | 820 | 820 |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 78.2 | 78.2 | 78.2 | 78.2 | 78.2 | 78.2 | 78.2 | 78.2 | 78.2 | 78.2 |
| beta-Hexachlorocyclohexane[b] | ug/kg-Wet | 1 | 0 | 0 | | | | | | 0.0437 U | 0.0437 U | 0.02185 | 0.02185 U | 0.02185 U |
| delta-Hexachlorocyclohexane[b] | ug/kg-Wet | 1 | 0 | 0 | | | | | | 0.00193 U | 0.00193 U | 0.000965 | 0.000965 U | 0.000965 U |
| Endrin ketone[b] | ug/kg-Wet | 1 | 1 | 100 | 0.00377 J | 0.00377 J | 0.00377 | 0.00377 J | 0.00377 J | 0.00377 J | 0.00377 J | 0.00377 | 0.00377 J | 0.00377 J |
| Total of 2,4' and 4,4'-DDD[b] | ug/kg-Wet | 1 | 1 | 100 | 37.6 T | 37.6 T | 37.6 | 37.6 T | 37.6 T | 37.6 T | 37.6 T | 37.6 | 37.6 T | 37.6 T |
| Total of 2,4' and 4,4'-DDT | ug/kg-Wet | 1 | 1 | 100 | 8.47 T | 8.47 T | 8.47 | 8.47 T | 8.47 T | 8.47 T | 8.47 T | 8.47 | 8.47 T | 8.47 T |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b]Potential iCOC. These chemicals are identified through less certain and/or less rigorous evaluations based on fewer lines of evidence, including TZW results, floatig percentile model (FPM) results, or other high uncertainty lines of evidence (see Sections 8 and 9).



BZTO104(e)033479

Table 11.3.9-1d. iCOC Summary Statistics for TZW – iAOPC 11.

| Sampling Method and Analyte | Units | # | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Unfiltered Trident*** | | | | | | | | | | | | | | |
| Cyanide[b] | mg/l | 11 | 11 | 100 | 0.01 | 23.1 J | 3.94 | 0.03 T | 19.7 J | 0.01 | 23.1 J | 3.94 | 0.03 T | 19.7 J |
| 2-Methylnaphthalene[b] | µg/l | 11 | 6 | 54.5 | 0.3 | 84 | 32.3 | 6.7 | 51 | 0.012 U | 84 | 17.6 | 0.3 | 51 |
| Acenaphthene[b] | µg/l | 11 | 11 | 100 | 3.1 | 120 | 49.2 | 58 | 110 | 3.1 | 120 | 49.2 | 58 | 110 |
| Anthracene[b] | µg/l | 11 | 9 | 81.8 | 0.2 | 9.3 | 3.14 | 2.6 | 4.8 | 0.061 U | 9.3 | 2.58 | 2.3 | 4.8 |
| Benzo(a)anthracene | µg/l | 11 | 4 | 36.4 | 0.21 | 3.2 | 1.9 | 1.8 | 2.4 | 0.048 U | 3.2 | 0.722 | 0.07 U | 2.4 |
| Benzo(a)pyrene | µg/l | 11 | 10 | 90.9 | 0.024 J | 3 | 0.736 | 0.076 | 2.7 | 0.024 J | 3 | 0.672 | 0.076 | 2.7 |
| Benzo(b)fluoranthene | µg/l | 11 | 4 | 36.4 | 0.073 | 2.1 | 1.15 | 0.93 | 1.5 | 0.02 U | 2.1 | 0.431 | 0.0265 U | 1.5 |
| Benzo(g,h,i)perylene[b] | µg/l | 11 | 11 | 100 | 0.021 J | 3.2 | 0.619 | 0.064 | 2.1 | 0.021 J | 3.2 | 0.619 | 0.064 | 2.1 |
| Benzo(k)fluoranthene | µg/l | 11 | 4 | 36.4 | 0.083 | 2 | 1.11 | 0.85 | 1.5 | 0.015 U | 2 | 0.415 | 0.023 U | 1.5 |
| Chrysene | µg/l | 11 | 5 | 45.5 | 0.078 | 4.4 | 2.18 | 2.5 | 3.6 | 0.078 | 4.4 | 1.03 | 0.085 U | 3.6 |
| Dibenzo(a,h)anthracene | µg/l | 11 | 5 | 45.5 | 0.0086 J | 0.34 | 0.137 | 0.12 | 0.21 | 0.0022 U | 0.34 | 0.0638 | 0.004 U | 0.21 |
| Fluoranthene[b] | µg/l | 11 | 9 | 81.8 | 0.78 | 17 | 7.48 | 4.3 | 15 | 0.36 U | 17 | 6.21 | 4 | 15 |
| Fluorene[b] | µg/l | 11 | 10 | 90.9 | 0.93 | 33 | 19.6 | 19 | 31 | 0.72 U | 33 | 17.8 | 19 | 31 |
| Indeno(1,2,3-cd)pyrene | µg/l | 11 | 11 | 100 | 0.015 J | 2.7 | 0.53 | 0.052 | 1.9 | 0.015 J | 2.7 | 0.53 | 0.052 | 1.9 |
| Naphthalene[b] | µg/l | 11 | 6 | 54.5 | 0.47 | 3100 | 868 | 6.5 | 1100 | 0.043 U | 3100 | 474 | 0.47 | 1100 |
| Phenanthrene[b] | µg/l | 11 | 10 | 90.9 | 1.7 | 79 | 29.9 | 18 | 50 | 0.69 U | 79 | 27.2 | 18 | 50 |
| Pyrene | µg/l | 11 | 8 | 72.7 | 0.87 | 32 | 12.9 | 2.9 | 31 | 0.42 U | 32 | 9.7 | 2.5 | 31 |
| Trichloroethene[b] | µg/l | 11 | 0 | 0 | | | | | | 0.14 U | 0.14 U | 0.07 | 0.07 U | 0.07 U |
| ***Filtered Trident*** | | | | | | | | | | | | | | |
| 2-Methylnaphthalene[b] | µg/l | 10 | 5 | 50 | 0.15 | 44 | 18.6 | 5.4 | 43 | 0.0089 U | 44 | 9.3 | 0.011 U | 43 |
| Acenaphthene[b] | µg/l | 10 | 10 | 100 | 1.8 | 64 | 25 | 14 | 45 | 1.8 | 64 | 25 | 14 | 45 |
| Anthracene[b] | µg/l | 10 | 9 | 90 | 0.063 | 1.1 | 0.568 | 0.77 | 0.96 | 0.012 U | 1.1 | 0.512 | 0.22 | 0.96 |
| Benzo(a)anthracene | µg/l | 10 | 4 | 40 | 0.01 J | 0.22 | 0.104 | 0.014 J | 0.17 | 0.0027 U | 0.22 | 0.0423 | 0.0016 U | 0.17 |
| Benzo(a)pyrene | µg/l | 10 | 3 | 30 | 0.0063 J | 0.11 | 0.0638 | 0.075 | 0.075 | 0.002 U | 0.11 | 0.0199 | 0.00115 U | 0.075 |
| Benzo(b)fluoranthene | µg/l | 10 | 3 | 30 | 0.0042 J | 0.081 | 0.0494 | 0.063 | 0.063 | 0.0025 U | 0.081 | 0.0158 | 0.0014 U | 0.063 |
| Benzo(g,h,i)perylene[b] | µg/l | 10 | 2 | 20 | 0.021 J | 0.028 | 0.0245 | 0.021 J | 0.021 J | 0.0046 U | 0.028 | 0.00698 | 0.00265 U | 0.021 J |
| Benzo(k)fluoranthene | µg/l | 10 | 3 | 30 | 0.004 J | 0.1 | 0.0583 | 0.071 | 0.071 | 0.0017 U | 0.1 | 0.0182 | 0.001 U | 0.071 |
| Chrysene | µg/l | 10 | 4 | 40 | 0.015 J | 0.31 | 0.146 | 0.018 J | 0.24 | 0.0016 U | 0.31 | 0.0592 | 0.00185 U | 0.24 |
| Dibenzo(a,h)anthracene | µg/l | 10 | 1 | 10 | 0.0024 J | 0.0024 J | 0.0024 | 0.0024 J | 0.0024 J | 0.0021 U | 0.0027 U | 0.00128 | 0.0011 U | 0.00135 U |
| Fluoranthene[b] | µg/l | 10 | 8 | 80 | 0.13 | 2.1 | 1.03 | 0.84 | 2.1 | 0.031 U | 2.1 | 0.845 | 0.64 | 2.1 |
| Fluorene[b] | µg/l | 10 | 9 | 90 | 0.44 | 17 | 9.66 | 11 | 13 | 0.29 U | 17 | 8.71 | 10 | 13 |
| Indeno(1,2,3-cd)pyrene | µg/l | 10 | 2 | 20 | 0.019 J | 0.023 J | 0.021 | 0.019 J | 0.019 J | 0.0026 U | 0.023 J | 0.00539 | 0.0015 U | 0.019 J |
| Naphthalene[b] | µg/l | 10 | 5 | 50 | 0.88 | 1100 | 441 | 3.5 | 1100 | 0.037 U | 1100 | 221 | 0.08 U | 1100 |
| Phenanthrene[b] | µg/l | 10 | 9 | 90 | 0.52 | 21 | 9.59 | 7 | 19 | 0.2 U | 21 | 8.64 | 5.1 | 19 |
| Pyrene | µg/l | 10 | 8 | 80 | 0.15 | 2.8 | 1.12 | 0.61 | 2.7 | 0.031 U | 2.8 | 0.92 | 0.46 | 2.7 |
| ***Small-Volume Peeper*** | | | | | | | | | | | | | | |
| Cyanide[b] | mg/l | 10 | 9 | 90 | 0.006 J | 0.69 | 0.24 | 0.2 | 0.64 | 0.006 J | 1.4 U | 0.286 | 0.2 | 0.69 |
| 2-Methylnaphthalene[b] | µg/l | 10 | 10 | 100 | 0.082 | 36 | 5.35 | 0.58 | 7.2 | 0.082 | 36 | 5.35 | 0.58 | 7.2 |
| Acenaphthene[b] | µg/l | 10 | 10 | 100 | 1.2 | 88 | 33.6 | 21 | 76 | 1.2 | 88 | 33.6 | 21 | 76 |
| Anthracene[b] | µg/l | 10 | 10 | 100 | 0.14 | 4.4 | 1.1 | 0.68 | 2 | 0.14 | 4.4 | 1.1 | 0.68 | 2 |
| Benzo(a)anthracene | µg/l | 10 | 10 | 100 | 0.0056 J | 0.13 | 0.0323 | 0.011 J | 0.047 | 0.0056 J | 0.13 | 0.0323 | 0.011 J | 0.047 |
| Benzo(a)pyrene | µg/l | 10 | 3 | 30 | 0.0076 J | 0.082 | 0.0352 | 0.016 J | 0.016 J | 0.0028 U | 0.082 | 0.0116 | 0.00145 U | 0.016 J |
| Benzo(b)fluoranthene | µg/l | 10 | 4 | 40 | 0.012 J | 0.054 | 0.0293 | 0.021 J | 0.03 J | 0.0035 U | 0.054 | 0.0128 | 0.00185 U | 0.03 J |
| Benzo(g,h,i)perylene[b] | µg/l | 10 | 4 | 40 | 0.0069 J | 0.066 | 0.026 | 0.014 J | 0.017 J | 0.0065 U | 0.066 | 0.0124 | 0.0035 U | 0.017 J |
| Benzo(k)fluoranthene | µg/l | 10 | 2 | 20 | 0.0071 J | 0.065 | 0.0361 | 0.0071 J | 0.0071 J | 0.0024 U | 0.065 | 0.0082 | 0.0012 U | 0.0071 J |
| Chrysene | µg/l | 10 | 10 | 100 | 0.0049 J | 0.18 | 0.0436 | 0.023 J | 0.068 | 0.0049 J | 0.18 | 0.0436 | 0.023 J | 0.068 |
| Dibenzo(a,h)anthracene | µg/l | 10 | 2 | 20 | 0.0029 J | 0.0047 J | 0.0038 | 0.0029 J | 0.0029 J | 0.0029 U | 0.0047 J | 0.00197 | 0.0015 U | 0.0029 J |
| Fluoranthene[b] | µg/l | 10 | 10 | 100 | 0.11 | 3.6 | 1.34 | 0.43 | 2.6 | 0.11 | 3.6 | 1.34 | 0.43 | 2.6 |



BZTO104(e)033480

Table 11.3.9-1d. iCOC Summary Statistics for TZW – iAOPC 11.

| Sampling Method and Analyte | Units | # | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| Fluorene[b] | µg/l | 10 | 10 | 100 | 0.43 | 25 | 9.58 | 6 | 24 | 0.43 | 25 | 9.58 | 6 | 24 |
| Indeno(1,2,3-cd)pyrene | µg/l | 10 | 3 | 30 | 0.0046 J | 0.051 | 0.0209 | 0.0071 J | 0.0071 J | 0.0037 U | 0.051 | 0.0079 | 0.002 U | 0.0071 J |
| Naphthalene[b] | µg/l | 10 | 10 | 100 | 0.52 J | 250 | 26.9 | 1.6 J | 4.7 | 0.52 J | 250 | 26.9 | 1.6 J | 4.7 |
| Phenanthrene[b] | µg/l | 10 | 10 | 100 | 0.86 | 34 | 10.2 | 7.2 | 16 | 0.86 | 34 | 10.2 | 7.2 | 16 |
| Pyrene | µg/l | 10 | 10 | 100 | 0.12 | 3.4 | 1.36 | 0.5 | 2.7 | 0.12 | 3.4 | 1.36 | 0.5 | 2.7 |
| Trichloroethene[b] | µg/l | 10 | 0 | 0 | | | | | | 0.14 U | 0.27 U | 0.0765 | 0.07 U | 0.07 U |
| *Geoprobe* | | | | | | | | | | | | | | |
| Cyanide[b] | mg/l | 13 | 12 | 92.3 | 0.026 | 0.46 | 0.166 | 0.0826 T | 0.356 | 0.01 U | 0.46 | 0.154 | 0.0826 T | 0.356 |
| Acenaphthene[b] | µg/l | 13 | 13 | 100 | 3.29 | 399 | 112 | 85.1 | 262 | 3.29 | 399 | 112 | 85.1 | 262 |
| Anthracene[b] | µg/l | 13 | 13 | 100 | 0.479 T | 63.8 | 15.9 | 9.33 | 32.2 | 0.479 T | 63.8 | 15.9 | 9.33 | 32.2 |
| Benzo(a)anthracene | µg/l | 13 | 13 | 100 | 0.0774 T | 32.3 | 7.09 | 2.59 | 21.7 | 0.0774 T | 32.3 | 7.09 | 2.59 | 21.7 |
| Benzo(a)pyrene | µg/l | 13 | 13 | 100 | 0.0484 T | 37.8 | 8.1 | 3.09 | 24.2 | 0.0484 T | 37.8 | 8.1 | 3.09 | 24.2 |
| Benzo(b)fluoranthene | µg/l | 13 | 13 | 100 | 0.0484 T | 33.3 | 7.18 | 2.76 | 22.5 | 0.0484 T | 33.3 | 7.18 | 2.76 | 22.5 |
| Benzo(g,h,i)perylene[b] | µg/l | 13 | 11 | 84.6 | 0.2 | 28.8 | 6.88 | 2.5 | 15 | 0.0479 U | 28.8 | 5.82 | 2.24 | 15 |
| Benzo(k)fluoranthene | µg/l | 13 | 11 | 84.6 | 0.124 | 9 | 2.36 | 0.836 | 5.2 | 0.0479 U | 9 | 2 | 0.826 | 5.2 |
| Chrysene | µg/l | 13 | 13 | 100 | 0.097 T | 34.5 | 7.1 | 2.6 | 15.5 | 0.097 T | 34.5 | 7.1 | 2.6 | 15.5 |
| Dibenzo(a,h)anthracene | µg/l | 13 | 10 | 76.9 | 0.0686 | 3.71 | 1.02 | 0.327 | 2.18 | 0.0476 U | 3.71 | 0.792 | 0.327 | 2.18 |
| Fluoranthene[b] | µg/l | 13 | 13 | 100 | 0.769 T | 106 | 27 | 11.8 | 76.7 | 0.769 T | 106 | 27 | 11.8 | 76.7 |
| Fluorene[b] | µg/l | 13 | 13 | 100 | 1.17 | 108 | 34.6 | 30.9 | 71.3 | 1.17 | 108 | 34.6 | 30.9 | 71.3 |
| Indeno(1,2,3-cd)pyrene | µg/l | 13 | 11 | 84.6 | 0.133 | 16.9 | 4.51 | 1.66 | 10.7 | 0.0479 U | 16.9 | 3.82 | 1.62 | 10.7 |
| Naphthalene[b] | µg/l | 41 | 33 | 80.5 | 0.0677 T | 13700 | 2640 | 44.9 | 12300 | 0.0677 T | 13700 | 2130 | 24.8 | 12200 |
| Phenanthrene[b] | µg/l | 13 | 13 | 100 | 3.13 T | 362 | 93.7 | 64.7 | 200 | 3.13 T | 362 | 93.7 | 64.7 | 200 |
| Pyrene | µg/l | 13 | 13 | 100 | 0.672 T | 148 | 35.4 | 16.2 | 92.1 | 0.672 T | 148 | 35.4 | 16.2 | 92.1 |
| Trichloroethene[b] | µg/l | 41 | 11 | 26.8 | 0.31 | 88500 | 8060 | 4.31 | 48.7 | 0.2 U | 88500 | 2160 | 0.1 U | 7 |
| *All Methods* | | | | | | | | | | | | | | |
| Cyanide[b] | mg/l | 34 | 32 | 94.1 | 0.006 J | 23.1 J | 1.48 | 0.0826 T | 0.69 | 0.006 J | 23.1 J | 1.42 | 0.0826 T | 0.7 U |
| 2-Methylnaphthalene[b] | µg/l | 31 | 21 | 67.7 | 0.082 | 84 | 16.2 | 4 | 51 | 0.0089 U | 84 | 11 | 0.3 | 51 |
| Acenaphthene[b] | µg/l | 44 | 44 | 100 | 1.2 | 399 | 58.7 | 26.4 T | 172 | 1.2 | 399 | 58.7 | 26.4 T | 172 |
| Anthracene[b] | µg/l | 44 | 41 | 93.2 | 0.063 | 63.8 | 6.12 | 1.1 | 25.5 | 0.012 U | 63.8 | 5.71 | 0.96 | 25.5 |
| Benzo(a)anthracene | µg/l | 44 | 31 | 70.5 | 0.0056 J | 32.3 | 3.24 | 0.21 | 12.5 | 0.0027 U | 32.3 | 2.29 | 0.047 | 10.9 |
| Benzo(a)pyrene | µg/l | 44 | 29 | 65.9 | 0.0063 J | 37.8 | 3.89 | 0.11 | 15.2 | 0.002 U | 37.8 | 2.57 | 0.066 | 13.5 |
| Benzo(b)fluoranthene | µg/l | 44 | 24 | 54.5 | 0.0042 J | 33.3 | 4.09 | 0.68 | 12.9 | 0.0025 U | 33.3 | 2.24 | 0.0265 U | 11.8 |
| Benzo(g,h,i)perylene[b] | µg/l | 44 | 28 | 63.6 | 0.0069 J | 28.8 | 2.95 | 0.079 | 11.2 | 0.0046 U | 28.8 | 1.88 | 0.028 | 9.76 |
| Benzo(k)fluoranthene | µg/l | 44 | 20 | 45.5 | 0.004 J | 9 | 1.53 | 0.33 | 5.2 | 0.0017 U | 9 | 0.702 | 0.0225 U | 3.64 |
| Chrysene | µg/l | 44 | 32 | 72.7 | 0.0049 J | 34.5 | 3.25 | 0.249 | 14.9 | 0.0016 U | 34.5 | 2.38 | 0.078 | 12.9 |
| Dibenzo(a,h)anthracene | µg/l | 44 | 18 | 40.9 | 0.0024 J | 3.71 | 0.607 | 0.14 | 2.18 | 0.0021 U | 3.71 | 0.251 | 0.00245 U | 1.35 |
| Fluoranthene[b] | µg/l | 44 | 40 | 90.9 | 0.11 | 106 | 11 | 2.6 | 50.5 | 0.031 U | 106 | 10 | 2.1 | 43.6 |
| Fluorene[b] | µg/l | 44 | 42 | 95.5 | 0.43 | 108 | 19.7 | 12 | 50.2 | 0.29 U | 108 | 18.8 | 12 | 50.2 |
| Indeno(1,2,3-cd)pyrene | µg/l | 44 | 27 | 61.4 | 0.0046 J | 16.9 | 2.06 | 0.133 | 7.72 | 0.0026 U | 16.9 | 1.26 | 0.023 J | 6.76 |
| Naphthalene[b] | µg/l | 72 | 54 | 75 | 0.0677 T | 13700 | 1760 | 22.9 | 12200 | 0.037 U | 13700 | 1320 | 2.9 | 11400 |
| Phenanthrene[b] | µg/l | 44 | 42 | 95.5 | 0.52 | 362 | 40.6 | 14 | 120 | 0.2 U | 362 | 38.8 | 13 | 120 |
| Pyrene | µg/l | 44 | 39 | 88.6 | 0.12 | 148 | 15 | 2.7 | 68.7 | 0.031 U | 148 | 13.4 | 2.2 | 61 |
| Trichloroethene[b] | µg/l | 62 | 11 | 17.7 | 0.31 | 88500 | 8060 | 4.31 | 48.7 | 0.14 U | 88500 | 1430 | 0.1 U | 5.63 |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b]Potential iCOC. These chemicals are identified through less certain and/or less rigorous evaluations based on fewer lines of evidence, including TZW results, floatig percentile model (FPM) results, or other high uncertainty lines of evidence (see Sections 8 and 9).



BZTO104(e)033481

Table 11.3.9-2. Potential Sources and Transport Pathways Assessment - iAOPC 11.

| Potential Sources | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | | Potential Complete | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | | |
| Description of Potential Source | Surface Soil | Subsurface Soil | Groundwater | Catch Basin Solids | River Sediment | Gasoline-Range | Diesel - Range | Heavier - Range | Petroleum-Related (e.g. BTEX) | VOCs | Chlorinated VOCs | SVOCs | PAHs | Phthalates | Phenolics | Metals | PCBs | Herbicides and Pesticides | Dioxins/Furans | Butyltins | Cyanide | Overland Transport | Groundwater | Direct Discharge - Overwater | Direct Discharge - Storm/Wastewater | Riverbank Erosion |
| ***Upland Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Gasco #84** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former resort area | | ✓ | ✓ | | | | | | ✓ | | | | ✓ | | | | | | | | | | ✓ | | | |
| Former tar processing area | | ✓ | ✓ | | | | | | ✓ | | | | ✓ | | | | | | | | | | ✓ | | | |
| Former light oil plant/Koppers Co. plant/current K1 tank farm | | ✓ | ✓ | | | | | | ✓ | | | | ✓ | | | | | | | | | | ✓ | | | |
| Former naphthalene plant | | ✓ | ✓ | | | | | | ✓ | | | | ✓ | | | | | | | | | | ✓ | | | |
| Former coke oven area | | ✓ | ✓ | | | | | | ✓ | | | | ✓ | | | | | | | | | | ✓ | | | |
| Former pitch plant/tar loading area | | ✓ | ✓ | | | | | | ✓ | | | | ✓ | | | | | | | | | | ✓ | | | |
| Former tar settling ponds | | ✓ | ✓ | | ? | | | | ✓ | | | | ✓ | | | | | | | | | | ✓ | | | |
| Former Koppers land disposal area | | ✓ | ✓ | | | | | | ✓ | | | | ✓ | | | | | | | | | | ✓ | | | |
| Former Koppers Co./current K1 pencil pitch storage area | ✓ | | | ? | ? | | | | | | | | ✓ | | | | | | | | | | | | | |
| Former spent oxide storage area | | ✓ | ✓ | | | | | | ✓ | | | | ✓ | | | ✓ | | | | | ✓ | | ✓ | | | ✓ |
| MGP by-product incorporation into fill | ✓ | ✓ | ✓ | ? | ? | | | | ✓ | | | | ✓ | | | ✓ | | | | | ✓ | | ✓ | | ✓ | ✓ |
| **Siltronic Corporation/Former PG&C Disposal Ponds #183** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PG&C Disposal Ponds and Adjacent Lowland Areas | ? | ✓ | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | ✓ | | | | | ✓ | ✓ | ✓ | ✓ | | |
| PG&C Disposal Piles | ? | ✓ | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | ✓ | | | | | ✓ | ✓ | ✓ | ✓ | | |
| Potential PG&C Waste Product Fill - WWTP Area | ? | ✓ | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | ✓ | | | | | ✓ | ✓ | ✓ | ✓ | | |
| Potential PG&C Waste Product Fill - Fab 1 and Parking Lot | ? | ✓ | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | ✓ | | | | | ✓ | ✓ | ✓ | ✓ | | |
| Potential Disposal Area | | ✓ | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | ✓ | | | | | ✓ | ✓ | ✓ | ✓ | | |
| North Drainage Ditch and COP Outfall 22 | ? | ✓ | ✓ | | ? | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | ✓ | | | | | ✓ | | ✓ | | ✓ | |
| Former Western Transportation Tanks | | ✓ | ✓ | | ? | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | ? | ✓ | | | |
| Olympic Pipeline | | ✓ | ✓ | | ? | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | | ✓ | | | |
| Former TCE USTs | | ✓ | ✓ | | ? | | | | | ✓ | ✓ | | | | | | | | | | | | ✓ | | | |
| Kinder Morgan Pumping Station | | ? | ✓ | | ? | | | | ✓ | | | | | | | | | | | | | | ? | | | |
| Rhône-Poulenc AG Company | ? | ✓ | ✓ | | ? | | | | | ✓ | ✓ | | | | | | | ✓ | | | | | ✓ | | | |
| Contaminated Fill | ? | ? | ? | | ? | | ? | ? | ? | | ? | ? | ? | | | ? | | | | | ? | | ? | | | ? |
| **USACE's U.S. Government Moorings Facility #1641** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sandblasting areas near LMO warehouses | ✓ | | | | | | | | | | | | | | | ✓ | | | | ✓ | | ? | | | ? | |
| Oil-stained soil in west end of property | ✓ | | | | | | ? | ? | | | | | ✓ | | | | | | | | | ? | | | ? | |
| ***Overwater Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Gasco #84** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Releases during product transfer from vessels | | | | | ? | | ✓ | ✓ | ✓ | | | | ✓ | | | | | | | | | | | ✓ | | |
| **Siltronic Corporation/Former PG&C Disposal Ponds #183** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former Western Transportation Dock | | | | | ✓ | ? | ? | ? | ? | | | ✓ | ✓ | | | | | | | | | | | ✓ | | |
| **USACE's U.S. Government Moorings Facility #1641** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Historical sunken barge (removed) | | | | | ✓ | | ✓ | ✓ | | | | | | | | | | | | | | | | ✓ | | |
| ***Other Areas/Other Issues*** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Gasco #84** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Historic direct discharge of tar to oil to river | | | | | ✓ | | | | ✓ | | | | ✓ | | | | | | | | | | | | | |

**Notes:**

All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ = Source, COI are present or current or historic pathway is determined to be complete or potentially complete.

? = There is not enough information to determine if source or COI is present or if pathway is complete.

UST Underground storage tank
AST Above-ground storage tank
TPH Total petroleum hydrocarbons
VOCs Volatile organic compounds
SVOCs Semivolatile organic compounds
PAHs Polycyclic aromatic hydrocarbons
BTEX Benzene, toluene, ethylbenzene, and xylenes
PCBs Polychlorinated biphenyls
N/A Not applicable



BZTO104(e)033482

Table 11.3.9-3. Preliminary Evaluation of Relative Contribution of Migration Pathways to iAOPC 11.

| CURRENT Pathway | Data Quality/Quantity | Relative Contribution | | | |
|---|---|---|---|---|---|
| | | *PCBs* | *DDD* | *DRH* | *Benzo(a)pyrene* |
| Groundwater | Med | Low | Low | High | High |
| Overwater Release | Low | Low | Low | Low | Low |
| Stormwater/Wastewater/ Overland Transport | Med | Low | Low | Low | Low |
| Bank/Soil Erosion | Med | Low | Low | Low | Low |
| Sediment Transport | Med | High | High | Low | Low |
| **HISTORICAL Pathway** | **Data Quality/Quantity** | **Relative Contribution** | | | |
| | | *PCBs* | *DDD* | *DRH* | *Benzo(a)pyrene* |
| Groundwater | Low | Low | Low | High | High |
| Overwater Release | Low | Low | Low | Low | Low |
| Stormwater/Wastewater/ Overland Transport | Low | Low | Low | High | High |
| Bank/Soil Erosion | Low | Low | Low | High | High |
| Sediment Transport | Low | High | High | Low | Low |

**Notes:**

Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).

Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.

NE - Not Estimated. The data quality/quantity is inadequate to make a determination of relative contribution.

BZTO104(e)033483

Table 11.3.10-1a. iCOC Summary Statistics for Sediment - iAOPCs 12 and 13.

| Analyte | Units | # | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***AOPC 12*** | | | | | | | | | | | | | | |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 3 | 3 | 100 | 237 JT | 303 JT | 270 | 270 JT | 270 JT | 237 JT | 303 JT | 270 | 270 JT | 270 JT |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 1 | 1 | 100 | 3.39 JT | 3.39 JT | 3.39 | 3.39 JT | 3.39 JT | 3.39 JT | 3.39 JT | 3.39 | 3.39 JT | 3.39 JT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 1 | 1 | 100 | 191 | 191 | 191 | 191 | 191 | 191 | 191 | 191 | 191 | 191 |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 5 | 4 | 80 | 1.9 JT | 204 JT | 83.1 | 48.5 JT | 78 T | 1.9 JT | 204 JT | 66.7 | 48.5 JT | 78 T |
| ***AOPC 13*** | | | | | | | | | | | | | | |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 16 | 11 | 68.8 | 2.5 JT | 3130 JT | 467 | 112 JT | 850 T | 2.5 JT | 3130 JT | 326 | 37.5 UT | 850 T |
| **Dioxins Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g | 5 | 5 | 100 | 1.69 JT | 102 JT | 43.2 | 45.1 JT | 57.5 JT | 1.69 JT | 102 JT | 43.2 | 45.1 JT | 57.5 JT |
| **Dioxins Furans** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 7 | 7 | 100 | 0.474 T | 69.1 T | 12.9 | 0.979 JT | 14.9 JT | 0.474 T | 69.1 T | 12.9 | 0.979 JT | 14.9 JT |
| **Metals** | | | | | | | | | | | | | | |
| Mercury[b] | mg/kg | 17 | 15 | 88.2 | 0.077 | 0.94 JT | 0.316 | 0.235 | 0.645 | 0.05 U | 0.94 JT | 0.283 | 0.176 J | 0.645 |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 7 | 7 | 100 | 41.6 | 8100 | 1420 | 80.8 JT | 1400 | 41.6 | 8100 | 1420 | 80.8 JT | 1400 |
| **Pesticides** | | | | | | | | | | | | | | |
| Total of 2,4' and 4,4'-DDT | µg/kg | 15 | 11 | 73.3 | 0.422 JT | 320 * | 35.3 | 3.41 JT | 42.1 T | 0.422 JT | 320 * | 26.5 | 2.9 UT | 42.1 T |
| **Petroleum** | | | | | | | | | | | | | | |
| Diesel Range Hydrocarbons[b] | mg/kg | 6 | 6 | 100 | 66 J | 2400 J | 859 | 100 J | 1900 J | 66 J | 2400 J | 859 | 100 J | 1900 J |
| **Petroleum** | | | | | | | | | | | | | | |
| Residual Range Hydrocarbons[b] | mg/kg | 6 | 6 | 100 | 280 J | 6000 J | 2200 | 500 J | 4500 J | 280 J | 6000 J | 2200 | 500 J | 4500 J |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 17 | 5 | 29.4 | 3.7 JT | 163 T | 102 | 119 JT | 141 JT | 1.5 UJT | 163 T | 32 | 1.265 UT | 141 JT |
| **Metals** | | | | | | | | | | | | | | |
| Mercury[b] | mg/kg | 19 | 18 | 94.7 | 0.011 J | 4.14 | 0.721 | 0.251 | 3.06 | 0.009 U | 4.14 | 0.683 | 0.251 | 3.06 |
| **Pesticides** | | | | | | | | | | | | | | |
| Total of 2,4' and 4,4'-DDT | µg/kg | 17 | 7 | 41.2 | 0.085 JT | 169 JT | 43.5 | 8.7 JT | 110 JT | 0.0505 UJT | 169 JT | 18 | 0.151 UT | 110 JT |
| **Petroleum** | | | | | | | | | | | | | | |
| Diesel Range Hydrocarbons[b] | mg/kg | 10 | 9 | 90 | 5.85 JT | 800 J | 235 | 120 J | 500 J | 4.4 UT | 800 J | 212 | 50 J | 500 J |
| **Petroleum** | | | | | | | | | | | | | | |
| Residual Range Hydrocarbons[b] | mg/kg | 10 | 8 | 80 | 26 J | 1500 J | 557 | 280 J | 1100 J | 4.1 UT | 1500 J | 446 | 140 J | 1100 J |

* = 4,4' DDx isomer only, 2,4' not analyzed

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033485

Table 11.3.10.1b. iCOC Summay Statistics for Surface Water - iAOPCs 12 and 13.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **Collection Method: Bottle** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/l | 5 | 1 | 20 | 0.0154 T | 0.0154 T | 0.0154 | 0.0154 T | 0.0154 T | 0.0025 UT | 0.0154 T | 0.00409 | 0.00125 UT | 0.0013 UT |
| **Metals** | | | | | | | | | | | | | | |
| Mercury (dissolved)[b] | mg/l | 8 | 0 | 0 | | | | | | 0.00004 U | 0.00008 U | 0.000025 | 0.00002 UJ | 0.00004 U |
| Mercury[b] | mg/l | 9 | 1 | 11.1 | 0.000187 | 0.000187 | 0.000187 | 0.000187 | 0.000187 | 0.00004 UT | 0.000187 | 0.000043 | 0.00002 UJ | 0.00004 U |
| **Pesticides** | | | | | | | | | | | | | | |
| Total of 2,4' and 4,4'-DDT | µg/l | 5 | 0 | 0 | | | | | | 0.000472 UT | 0.000526 UT | 0.000246 | 0.000245 UT | 0.000245 UT |
| **Collection Method: XAD column** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | pg/l | 6 | 6 | 100 | 395 JT | 1603 JT | 977 | 454 JT | 1550 JT | 395 JT | 1603 JT | 977 | 454 JT | 1550 JT |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/l | 6 | 6 | 100 | 0.000903 T | 0.0378 JT | 0.0105 | 0.00475 JT | 0.0113 JT | 0.000903 T | 0.0378 JT | 0.0105 | 0.00475 JT | 0.0113 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/l | 6 | 6 | 100 | 0.000564 JT | 0.00272 JT | 0.0014 | 0.000778 JT | 0.00212 T | 0.000564 JT | 0.00272 JT | 0.0014 | 0.000778 JT | 0.00212 T |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | pg/l | 6 | 6 | 100 | 624 | 2420 | 1440 | 720 | 2160 | 624 | 2420 | 1440 | 720 | 2160 |
| **Pesticides** | | | | | | | | | | | | | | |
| Total of 2,4' and 4,4'-DDT | pg/l | 6 | 6 | 100 | 0.744 JT | 10.6 JT | 4.94 | 3.89 JT | 6.03 T | 0.744 JT | 10.6 JT | 4.94 | 3.89 JT | 6.03 T |
| **Collection Method: XAD filter** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | pg/l | 5 | 5 | 100 | 1300 JT | 9950 JT | 4280 | 2620 JT | 5660 JT | 1300 JT | 9950 JT | 4280 | 2620 JT | 5660 JT |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/l | 6 | 6 | 100 | 0.103 JT | 0.91 JT | 0.282 | 0.114 JT | 0.337 JT | 0.103 JT | 0.91 JT | 0.282 | 0.114 JT | 0.337 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/l | 5 | 5 | 100 | 0.00431 JT | 0.0456 JT | 0.017 | 0.0109 JT | 0.0165 JT | 0.00431 JT | 0.0456 JT | 0.017 | 0.0109 JT | 0.0165 JT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | pg/l | 5 | 5 | 100 | 1380 | 9550 | 4270 | 2620 | 5920 | 1380 | 9550 | 4270 | 2620 | 5920 |
| **Pesticides** | | | | | | | | | | | | | | |
| Total of 2,4' and 4,4'-DDT | pg/l | 6 | 5 | 83.3 | 0.598 JT | 12.6 JT | 7.2 | 6.59 JT | 9.9 T | 0.294 UT | 12.6 JT | 6.03 | 6.33 JT | 9.9 T |



BZTO104(e)033486

Table 11.3.10-1c. iCOC Summary Statistics for Porewater - iAOPCs 12 and 13.

| | | | Detected Concentrations | | | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| Mercury[b] | mg/l | 1 | 0 | 0 | | | | | | 0.0001 U | 0.0001 U | 0.00005 | 0.00005 U | 0.00005 U |



BZTO104(e)033487

Table 11.3.10-1d. iCOC Summary Statistics for Tissue - iAOPCs 12 and 13.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Clam (body without shell)*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 2 | 2 | 100 | 77 T | 1470 JT | 774 | 77 T | 77 T | 77 T | 1470 JT | 774 | 77 T | 77 T |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.515 T | 0.515 T | 0.515 | 0.515 T | 0.515 T | 0.515 T | 0.515 T | 0.515 | 0.515 T | 0.515 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 6.96 T | 6.96 T | 6.96 | 6.96 T | 6.96 T | 6.96 T | 6.96 T | 6.96 | 6.96 T | 6.96 T |
| Mercury[b] | mg/kg-Wet | 2 | 2 | 100 | 0.011 | 0.012 | 0.0115 | 0.011 | 0.011 | 0.011 | 0.012 | 0.0115 | 0.011 | 0.011 |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 2660 | 2660 | 2660 | 2660 | 2660 | 2660 | 2660 | 2660 | 2660 | 2660 |
| Total of 2,4' and 4,4'-DDT | ug/kg-Wet | 2 | 1 | 50 | 1.6 T | 1.6 T | 1.6 | 1.6 T | 1.6 T | 1.6 T | 8.3 UT | 2.88 | 1.6 T | 1.6 T |
| ***Crayfish (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 0 | 0 | | | | | | 4.2 UT | 4.2 UT | 2.1 | 2.1 UT | 2.1 UT |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 2.16 T | 2.16 T | 2.16 | 2.16 T | 2.16 T | 2.16 T | 2.16 T | 2.16 | 2.16 T | 2.16 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.611 T | 0.611 T | 0.611 | 0.611 T | 0.611 T | 0.611 T | 0.611 T | 0.611 | 0.611 T | 0.611 T |
| Mercury[b] | mg/kg-Wet | 1 | 1 | 100 | 0.029 | 0.029 | 0.029 | 0.029 | 0.029 | 0.029 | 0.029 | 0.029 | 0.029 | 0.029 |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 50.7 JT | 50.7 JT | 50.7 | 50.7 JT | 50.7 JT | 50.7 JT | 50.7 JT | 50.7 | 50.7 JT | 50.7 JT |
| Total of 2,4' and 4,4'-DDT | ug/kg-Wet | 1 | 1 | 100 | 3 JT | 3 JT | 3 | 3 JT | 3 JT | 3 JT | 3 JT | 3 | 3 JT | 3 JT |
| ***Lab Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 43 JT | 43 JT | 43 | 43 JT | 43 JT | 43 JT | 43 JT | 43 | 43 JT | 43 JT |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.18 JT | 0.18 JT | 0.18 | 0.18 JT | 0.18 JT | 0.18 JT | 0.18 JT | 0.18 | 0.18 JT | 0.18 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.577 JT | 0.577 JT | 0.577 | 0.577 JT | 0.577 JT | 0.577 JT | 0.577 JT | 0.577 | 0.577 JT | 0.577 JT |
| Mercury[b] | mg/kg-Wet | 1 | 1 | 100 | 0.0103 | 0.0103 | 0.0103 | 0.0103 | 0.0103 | 0.0103 | 0.0103 | 0.0103 | 0.0103 | 0.0103 |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 81.8 | 81.8 | 81.8 | 81.8 | 81.8 | 81.8 | 81.8 | 81.8 | 81.8 | 81.8 |
| Total of 2,4' and 4,4'-DDT | ug/kg-Wet | 1 | 1 | 100 | 0.0927 JT | 0.0927 JT | 0.0927 | 0.0927 JT | 0.0927 JT | 0.0927 JT | 0.0927 JT | 0.0927 | 0.0927 JT | 0.0927 JT |
| ***Worm --(Lumbriculus variegatus, whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 1860 JT | 1860 JT | 1860 | 1860 JT | 1860 JT | 1860 JT | 1860 JT | 1860 | 1860 JT | 1860 JT |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 4.59 JT | 4.59 JT | 4.59 | 4.59 JT | 4.59 JT | 4.59 JT | 4.59 JT | 4.59 | 4.59 JT | 4.59 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 11.4 JT | 11.4 JT | 11.4 | 11.4 JT | 11.4 JT | 11.4 JT | 11.4 JT | 11.4 | 11.4 JT | 11.4 JT |
| Mercury[b] | mg/kg-Wet | 1 | 1 | 100 | 0.0105 | 0.0105 | 0.0105 | 0.0105 | 0.0105 | 0.0105 | 0.0105 | 0.0105 | 0.0105 | 0.0105 |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 3910 | 3910 | 3910 | 3910 | 3910 | 3910 | 3910 | 3910 | 3910 | 3910 |
| Total of 2,4' and 4,4'-DDT | ug/kg-Wet | 1 | 1 | 100 | 0.501 JT | 0.501 JT | 0.501 | 0.501 JT | 0.501 JT | 0.501 JT | 0.501 JT | 0.501 | 0.501 JT | 0.501 JT |
| ***Epibenthic Invertebrates (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 490 JT | 490 JT | 490 | 490 JT | 490 JT | 490 JT | 490 JT | 490 | 490 JT | 490 JT |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.323 JT | 0.323 JT | 0.323 | 0.323 JT | 0.323 JT | 0.323 JT | 0.323 JT | 0.323 | 0.323 JT | 0.323 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 1.48 JT | 1.48 JT | 1.48 | 1.48 JT | 1.48 JT | 1.48 JT | 1.48 JT | 1.48 | 1.48 JT | 1.48 JT |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 498 | 498 | 498 | 498 | 498 | 498 | 498 | 498 | 498 | 498 |
| Total of 2,4' and 4,4'-DDT | ug/kg-Wet | 1 | 1 | 100 | 0.356 JT | 0.356 JT | 0.356 | 0.356 JT | 0.356 JT | 0.356 JT | 0.356 JT | 0.356 | 0.356 JT | 0.356 JT |
| ***Sculpin (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 2 | 2 | 100 | 600 JT | 2300 T | 1450 | 600 JT | 600 JT | 600 JT | 2300 T | 1450 | 600 JT | 600 JT |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 2.84 T | 4.14 T | 3.49 | 2.84 T | 2.84 T | 2.84 T | 4.14 T | 3.49 | 2.84 T | 2.84 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 4.82 T | 15.4 T | 10.1 | 4.82 T | 4.82 T | 4.82 T | 15.4 T | 10.1 | 4.82 T | 4.82 T |
| Mercury[b] | mg/kg-Wet | 2 | 2 | 100 | 0.047 | 0.069 | 0.058 | 0.047 | 0.047 | 0.047 | 0.069 | 0.058 | 0.047 | 0.047 |
| Total PCB Congeners | ug/kg-Wet | 2 | 2 | 100 | 382 JT | 2450 JT | 1420 | 382 JT | 382 JT | 382 JT | 2450 JT | 1420 | 382 JT | 382 JT |
| Total of 2,4' and 4,4'-DDT | ug/kg-Wet | 2 | 1 | 50 | 11 JT | 11 JT | 11 | 11 JT | 11 JT | 6.9 UT | 11 JT | 7.23 | 3.45 UT | 3.45 UT |



BZTO104(e)033488

Table 11.3.10-2. Potential Sources and Transport Pathways Assessment - iAOPCs 12 and 13.

| Potential Sources | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | Potential Complete Pathway | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | |
| **Description of Potential Source** | **Surface Soil** | **Subsurface Soil** | **Groundwater** | **Catch Basin Solids** | **River Sediment** | **Gasoline-Range** | **Diesel - Range** | **Heavier - Range** | **Petroleum-Related (e.g. BTEX)** | **VOCs** | **Chlorinated VOCs** | **SVOCs** | **PAHs** | **Phthalates** | **Phenolics** | **Metals** | **PCBs** | **Herbicides and Pesticides** | **Dioxins/Furans** | **Butyltins** | **Overland Transport** | **Groundwater** | **Direct Discharge - Overwater** | **Direct Discharge - Storm/Wastewater** | **Riverbank Erosion** |
| ***Upland Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Willamette Cove #2066** | | | | | | | | | | | | | | | | | | | | | | | | | |
| West Parcel - spills and historic waste disposal practices | ✓ | | | | | | ✓ | ✓ | | | | | ✓ | | | ✓ | | | | | | | | | |
| Central Parcel - spills and historic waste disposal practices | ✓ | | | | | | ✓ | ✓ | | | | | ✓ | | | ✓ | | | | | | | | | |
| East Parcel - spills and historic waste disposal practices | ✓ | | | | | | ✓ | ✓ | | | | | | | | | | | | | | | | | |
| Slag and beach debris | | | | | ✓ | | | | | | | | | | | ✓ | | | | | | | | | |
| Contaminated groundwater and seeps (from adjacent site)[a] | | | ✓ | | ✓ | | | ✓ | | | | ✓ | ✓ | | | | | | | | | | | | |
| Riverbank soil | ✓ | | | | | | | | | | | | | | | | ✓ | | | | | | | | ✓ |
| ***Overwater Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Willamette Cove #2066** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Historic drydock activities[b] | | | | | ✓ | | | | | | | ✓ | ✓ | | | ✓ | | | | ✓ | | | | ✓ | | |
| ***Other Areas/Other Issues*** | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |

**Notes:**

All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ – Source, COI are present or current or historic pathway is determined to be complete or potentially complete.

? – There is not enough information to determine if source or COI is present or if pathway is complete.

[a] Due to releases and sources at the adjacent McCormick and Baxter site.

[b] Possible historic pathway. No specific information on historic discharges.

| | |
|---|---|
| UST | Underground storage tank |
| AST | Above-ground storage tank |
| TPH | Total petroleum hydrocarbons |
| VOCs | Volatile organic compounds |
| SVOCs | Semivolatile organic compounds |
| PAHs | Polycyclic aromatic hydrocarbons |
| BTEX | Benzene, toluene, ethylbenzene, and xylenes |
| PCBs | Polychlorinated biphenyls |



BZTO104(e)033489

Table 11.3.10-3. Preliminary Evaluation of Relative Contribution of Migration Pathways to iAOPCs 12 and 13.

Note: The low frequency of sampling at iAOPC 12 and distance from upland areas precludes an evaluation of potential sources.

| **CURRENT** Pathway | **Data Quality/ Quantity** | **Relative Contribution** | | | | |
|---|---|---|---|---|---|---|
| | | ***PCBs*** | ***Dioxins*** | ***DDT*** | ***DRH/ RRH*** | ***Mercury*** |
| Groundwater | High | Low | Low | Low | Low | Low |
| Overwater Release* | Med | Low | Low | Low | Low | Low |
| Storm/Wastewater/ Overland Transport** | Med | Med | Low | Low | Med | Low |
| Bank/Soil Erosion | Med | Med | Low | Low | Med | Low |
| Sediment Transport | Low | Med | Low | Low | Low | Low |

| **HISTORICAL** Pathway | **Data Quality/ Quantity** | **Relative Contribution** | | | | |
|---|---|---|---|---|---|---|
| | | ***PCBs*** | ***Dioxins*** | ***DDT*** | ***DRH/ RRH*** | ***Mercury*** |
| Groundwater | High | Low | High | Low | High | Low |
| Overwater Release | Low | Med | Low | Low | Low | Med |
| Storm/Wastewater/ Overland Transport | Low | Med | Med | Low | High | Med |
| Bank/Soil Erosion | Low | Med | Med | Low | High | Med |
| Sediment Transport | Low | Med | High | Low | High | High |

**Notes:**

Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).

Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.

NE - Not Estimated. The data quality/quantity is inadequate to make a determination of relative contribution.

* - Histoircal pathway only

** - Stormwater and wastewater are historical pathways only.

BZTO104(e)033490

Table 11.3.11-1a. iCOC Summary Statistics for Sediment – iAOPC 14.

| Analyte | Units | # | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 50 | 27 | 54 | 2.27 JT | 322 T | 80.8 | 37 JT | 246 JT | 2.27 JT | 4000 UT | 229 | 40 UT | 1000 UT |
| **Conventionals** | | | | | | | | | | | | | | |
| Sulfide[b] | mg/kg | 46 | 37 | 80.4 | 0.2 J | 445 J | 50.1 | 6.6 | 246 J | 0.07 UJ | 445 J | 40.3 | 4.9 | 166 |
| **Dioxins Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g | 27 | 27 | 100 | 1.15 JT | 16600 JT | 671 | 15.7 JT | 248 JT | 1.15 JT | 16600 JT | 671 | 15.7 JT | 248 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 15 | 15 | 100 | 0.738 T | 36.2 T | 5.22 | 2.6 JT | 10.7 JT | 0.738 T | 36.2 T | 5.22 | 2.6 JT | 10.7 JT |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic | mg/kg | 79 | 65 | 82.3 | 1.55 T | 27.7 | 5.45 | 4.18 | 8.37 | 1.55 T | 27.7 | 4.99 | 4 U | 8.37 |
| Mercury | mg/kg | 79 | 75 | 94.9 | 0.012 J | 0.722 | 0.0974 | 0.068 T | 0.313 J | 0.012 J | 0.722 | 0.094 | 0.066 | 0.313 J |
| Silver[b] | mg/kg | 79 | 76 | 96.2 | 0.028 | 4.24 | 0.489 | 0.223 | 1.3 | 0.02 UJT | 4.24 | 0.471 | 0.219 J | 1.3 |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 21 | 21 | 100 | 2.41 T | 972 | 152 | 47.6 | 480 | 2.41 T | 972 | 152 | 47.6 | 480 |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg | 87 | 26 | 29.9 | 0.047 J | 691 J | 33 | 2.89 J | 25.9 NJ | 0.0298 UJ | 691 J | 16.1 | 1.95 UJ | 33 U |
| beta-Hexachlorocyclohexane | µg/kg | 87 | 20 | 23 | 0.0932 J | 15.2 | 4.16 | 3.12 J | 12.4 NJ | 0.0348 UJ | 99 U | 7.07 | 1.45 U | 25 U |
| delta-Hexachlorocyclohexane[b] | µg/kg | 87 | 7 | 8.05 | 0.153 J | 3.7 J | 1.77 | 2.2 J | 2.6 NJ | 0.05 U | 99 U | 6.07 | 0.4845 U | 26 U |
| Total of 2,4' and 4,4'-DDD | µg/kg | 91 | 89 | 97.8 | 4.24 JT | 11000 * | 460 | 110 * | 1640 T | 4.24 JT | 11000 * | 451 | 110 * | 1640 T |
| Total of 2,4' and 4,4'-DDE | µg/kg | 91 | 79 | 86.8 | 0.84 JT | 1480 * | 157 | 34.9 JT | 912 JT | 0.84 JT | 1480 * | 143 | 38.8 JT | 906 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg | 91 | 91 | 100 | 1.3 JT | 81000 * | 2430 | 247 JT | 9990 T | 1.3 JT | 81000 * | 2430 | 247 JT | 9990 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Dibutyl phthalate[b] | µg/kg | 88 | 33 | 37.5 | 3.7 J | 1000 | 122 | 28 | 640 | 3.5 U | 1000 | 54.4 | 9.5 U | 230 |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 67 | 30 | 44.8 | 11.9 JT | 1180 JT | 163 | 69.7 JT | 446 T | 1.4 UT | 150000 UT | 1470 | 34.4 JT | 1180 JT |
| **Conventionals** | | | | | | | | | | | | | | |
| Sulfide[b] | mg/kg | 4 | 4 | 100 | 8.9 | 24.2 J | 18.5 | 18.4 J | 22.4 | 8.9 | 24.2 J | 18.5 | 18.4 J | 22.4 |
| **Dioxins Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/g | 39 | 37 | 94.9 | 0.0012 T | 9680 JT | 299 | 3.22 T | 200 T | 0 UT | 9680 JT | 283 | 3.18 T | 200 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 3 | 3 | 100 | 0.452 T | 15.4 T | 7.58 | 6.9 T | 6.9 T | 0.452 T | 15.4 T | 7.58 | 6.9 T | 6.9 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic[b] | mg/kg | 73 | 68 | 93.2 | 1.28 | 16.5 J | 4.17 | 3.7 | 7.21 | 1.28 | 16.5 J | 4.05 | 3.66 T | 7.21 |
| Mercury[b] | mg/kg | 73 | 71 | 97.3 | 0.008 J | 0.426 | 0.106 | 0.083 T | 0.257 | 0.007 U | 0.426 | 0.103 | 0.08 | 0.257 |
| Silver[b] | mg/kg | 73 | 73 | 100 | 0.019 JT | 1.5 | 0.31 | 0.205 | 1.07 | 0.019 JT | 1.5 | 0.31 | 0.205 | 1.07 |
| **PCB Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 3 | 3 | 100 | 35.1 T | 695 | 385 | 425 | 425 | 35.1 T | 695 | 385 | 425 | 425 |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg | 116 | 23 | 19.8 | 0.325 J | 1340 J | 82.2 | 8.87 J | 111 JT | 0.028 UJ | 3800 U | 75.1 | 3.3 U | 146 JT |
| beta-Hexachlorocyclohexane[b] | µg/kg | 116 | 34 | 29.3 | 0.076 J | 120 | 10.8 | 2.87 JT | 39.5 NJ | 0.0302 UJ | 3800 U | 45.8 | 3.2 U | 95 U |
| delta-Hexachlorocyclohexane[b] | µg/kg | 116 | 0 | 0 | | | | | | 0.0639 UJ | 3800 UJ | 43.4 | 0.278 U | 90 U |
| Total of 2,4' and 4,4'-DDD | µg/kg | 116 | 103 | 88.8 | 0.093 JT | 690000 * | 23200 | 89.3 JT | 44000 JT | 0.0431 UJT | 690000 * | 20600 | 43 T | 44000 JT |
| Total of 2,4' and 4,4'-DDE[b] | µg/kg | 116 | 75 | 64.7 | 0.069 JT | 24000 * | 783 | 16.2 JT | 1400 JT | 0.0404 UJT | 24000 * | 588 | 8.1 * | 1840 * |
| Total of 2,4' and 4,4'-DDT | µg/kg | 115 | 100 | 87 | 0.086 JT | 3500000 * | 69500 | 152 JT | 34000 * | 0.0498 UJT | 3500000 * | 60400 | 67 J* | 33500 T* |
| **Phthalates** | | | | | | | | | | | | | | |
| Dibutyl phthalate[b] | µg/kg | 84 | 25 | 29.8 | 3.7 J | 1500 | 96.4 | 8.1 J | 245 T | 3.4 U | 1500 | 32.9 | 5 U | 31 |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033491

Table 11.3.11-1b. iCOC Summary Statistics for Surface Water - iAOPC 14.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **Collection Method: Bottle** | | | | | | | | | | | | | | |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic (dissolved)[b] | mg/l | 7 | 7 | 100 | 0.00033 | 0.00045 | 0.000381 | 0.000372 | 0.00045 | 0.00033 | 0.00045 | 0.000381 | 0.000372 | 0.00045 |
| Arsenic[b] | mg/l | 7 | 7 | 100 | 0.000373 | 0.00052 | 0.000436 | 0.000435 | 0.0005 | 0.000373 | 0.00052 | 0.000436 | 0.000435 | 0.0005 |
| Mercury (dissolved)[b] | mg/l | 7 | 0 | 0 | | | | | | 0.00004 U | 0.00008 U | 0.0000257 | 0.00002 U | 0.00004 U |
| Mercury[b] | mg/l | 7 | 0 | 0 | | | | | | 0.00004 U | 0.00008 UT | 0.0000257 | 0.00002 U | 0.00004 U |
| Silver (dissolved)[b] | mg/l | 7 | 0 | 0 | | | | | | 0.000005 UJ | 0.000009 U | 0.00000393 | 0.0000045 U | 0.0000045 U |
| Silver[b] | mg/l | 7 | 0 | 0 | | | | | | 0.000005 UJ | 0.000009 U | 0.00000393 | 0.0000045 U | 0.0000045 U |
| **Phthalates** | | | | | | | | | | | | | | |
| Dibutyl phthalate[b] | µg/l | 7 | 0 | 0 | | | | | | 0.062 U | 0.17 U | 0.0426 | 0.0355 U | 0.043 UJ |
| **Collection Method: XAD column** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | pg/l | 6 | 6 | 100 | 112 JT | 604 JT | 299 | 171 JT | 516.3 JT | 112 JT | 604 JT | 299 | 171 JT | 516.3 JT |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/l | 3 | 3 | 100 | 0.0275 JT | 0.0404 JT | 0.0319 | 0.0278 JT | 0.0278 JT | 0.0275 JT | 0.0404 JT | 0.0319 | 0.0278 JT | 0.0278 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/l | 6 | 6 | 100 | 0.000605 T | 0.00401 JT | 0.00212 | 0.00141 JT | 0.00306 JT | 0.000605 T | 0.00401 JT | 0.00212 | 0.00141 JT | 0.00306 JT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | pg/l | 6 | 6 | 100 | 137 | 639 | 377 | 255 | 581 | 137 | 639 | 377 | 255 | 581 |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | pg/l | 6 | 5 | 83.3 | 0.702 J | 3.27 J | 1.59 | 1.4 J | 1.42 J | 0.702 J | 3.27 J | 1.44 | 1.15 J | 1.42 J |
| beta-Hexachlorocyclohexane | pg/l | 6 | 6 | 100 | 5.91 J | 33.7 | 17.9 | 15.9 | 23.4 | 5.91 J | 33.7 | 17.9 | 15.9 | 23.4 |
| delta-Hexachlorocyclohexane[b] | pg/l | 6 | 4 | 66.7 | 1.38 J | 6.25 | 3.55 | 3.24 J | 3.31 J | 1.38 J | 6.25 | 2.62 | 1.38 J | 3.31 J |
| Total of 2,4' and 4,4'-DDD | pg/l | 6 | 6 | 100 | 368 T | 2560 T | 1560 | 1750 T | 2380 T | 368 T | 2560 T | 1560 | 1750 T | 2380 T |
| Total of 2,4' and 4,4'-DDE[b] | pg/l | 6 | 6 | 100 | 55.8 JT | 349 T | 162 | 129 T | 233 T | 55.8 JT | 349 T | 162 | 129 T | 233 T |
| Total of 2,4' and 4,4'-DDT | pg/l | 6 | 6 | 100 | 70.2 T | 547 T | 241 | 171 T | 355 T | 70.2 T | 547 T | 241 | 171 T | 355 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Dibutyl phthalate[b] | pg/l | 6 | 3 | 50 | 1690 J | 5980 J | 3160 | 1810 J | 1810 J | 1420 U | 5980 J | 1950 | 800 U | 1810 J |
| **Collection Method: XAD filter** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | pg/l | 6 | 6 | 100 | 158 JT | 1030 JT | 433 | 228 JT | 647 JT | 158 JT | 1030 JT | 433 | 228 JT | 647 JT |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | pg/l | 3 | 3 | 100 | 0.373 JT | 0.528 JT | 0.459 | 0.476 JT | 0.476 JT | 0.373 JT | 0.528 JT | 0.459 | 0.476 JT | 0.476 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/l | 6 | 6 | 100 | 0.00535 T | 0.0193 JT | 0.0106 | 0.00777 JT | 0.0159 T | 0.00535 T | 0.0193 JT | 0.0106 | 0.00777 JT | 0.0159 T |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | pg/l | 6 | 6 | 100 | 201 | 1290 | 518 | 285 | 695 | 201 | 1290 | 518 | 285 | 695 |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | pg/l | 6 | 5 | 83.3 | 0.652 J | 13 | 3.32 | 0.979 J | 1.26 J | 0.504 UJ | 13 | 2.81 | 0.693 J | 1.26 J |
| beta-Hexachlorocyclohexane[b] | pg/l | 6 | 4 | 66.7 | 0.499 J | 1.24 J | 0.844 | 0.597 J | 1.04 J | 0.254 U | 1.24 J | 0.608 | 0.499 J | 1.04 J |
| delta-Hexachlorocyclohexane[b] | pg/l | 6 | 1 | 16.7 | 0.508 J | 0.508 J | 0.508 | 0.508 J | 0.508 J | 0.13 UJ | 1.58 U | 0.404 | 0.216 U | 0.76 U |
| Total of 2,4' and 4,4'-DDD | pg/l | 6 | 6 | 100 | 350 T | 2610 T | 1510 | 1420 T | 2240 T | 350 T | 2610 T | 1510 | 1420 T | 2240 T |
| Total of 2,4' and 4,4'-DDE[b] | pg/l | 6 | 6 | 100 | 117 JT | 520 T | 262 | 193 T | 299 T | 117 JT | 520 T | 262 | 193 T | 299 T |
| Total of 2,4' and 4,4'-DDT | pg/l | 6 | 5 | 83.3 | 277 T | 4030 T | 1610 | 1300 T | 1380 T | 0.982 UT | 4030 T | 1340 | 1070 T | 1380 T |
| **Phthalates** | | | | | | | | | | | | | | |
| Dibutyl phthalate[b] | pg/l | 6 | 0 | 0 | | | | | | 303 U | 801 U | 245 | 206.5 U | 275 U |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033492

Table 11.3.11-1e. iCOC Summary Statistics for Tissue - iAOPC 14.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 4 | 4 | 100 | 62 JT | 120 T | 80 | 63.1 JT | 75 JT | 62 JT | 120 T | 80 | 63.1 JT | 75 JT |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 4.65 T | 6.76 T | 5.71 | 4.65 T | 4.65 T | 4.65 T | 6.76 T | 5.71 | 4.65 T | 4.65 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 1.63 T | 1.98 T | 1.81 | 1.63 T | 1.63 T | 1.63 T | 1.98 T | 1.81 | 1.63 T | 1.63 T |
| Arsenic[b] | mg/kg-Wet | 3 | 3 | 100 | 0.802 | 1.05 | 0.925 | 0.923 | 0.923 | 0.802 | 1.05 | 0.925 | 0.923 | 0.923 |
| Mercury[b] | mg/kg-Wet | 3 | 3 | 100 | 0.006 T | 0.013 J | 0.01 | 0.011 | 0.011 | 0.006 T | 0.013 J | 0.01 | 0.011 | 0.011 |
| Silver[b] | mg/kg-Wet | 3 | 3 | 100 | 0.0371 | 0.0752 | 0.0507 | 0.0399 | 0.0399 | 0.0371 | 0.0752 | 0.0507 | 0.0399 | 0.0399 |
| Total PCB Congeners | µg/kg-Wet | 2 | 2 | 100 | 91 | 111 | 101 | 91 | 91 | 91 | 111 | 101 | 91 | 91 |
| Aldrin | µg/kg-Wet | 4 | 2 | 50 | 0.261 J | 0.36 | 0.311 | 0.261 J | 0.261 J | 0.261 J | 1.1 U | 0.418 | 0.36 | 0.5 UT |
| beta-Hexachlorocyclohexane[b] | µg/kg-Wet | 4 | 0 | 0 | | | | | | 0.00418 U | 8.5 UT | 1.19 | 0.02105 U | 0.5 UJ |
| delta-Hexachlorocyclohexane[b] | µg/kg-Wet | 4 | 1 | 25 | 0.00425 J | 0.00425 J | 0.00425 | 0.00425 J | 0.00425 J | 0.00153 U | 1 UT | 0.251 | 0.00425 J | 0.5 U |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 4 | 4 | 100 | 44 JT | 242 T | 150 | 116 T | 196 T | 44 JT | 242 T | 150 | 116 T | 196 T |
| Total of 2,4' and 4,4'-DDE[b] | µg/kg-Wet | 4 | 4 | 100 | 28.5 JT | 107 JT | 60 | 41.1 T | 63.2 T | 28.5 JT | 107 JT | 60 | 41.1 T | 63.2 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 4 | 4 | 100 | 24.4 T | 114 T | 63 | 44.4 T | 69 T | 24.4 T | 114 T | 63 | 44.4 T | 69 T |
| Dibutyl phthalate[b] | µg/kg-Wet | 3 | 0 | 0 | | | | | | 16 U | 480 U | 149 | 200 UT | 200 UT |
| ***Crayfish (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 4 | 2 | 50 | 39 T | 45 JT | 42 | 39 T | 39 T | 2.6 UT | 45 JT | 22.1 | 2.9 UT | 39 T |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 3 | 3 | 100 | 1.35 JT | 22.7 T | 8.58 | 1.69 T | 1.69 T | 1.35 JT | 22.7 T | 8.58 | 1.69 T | 1.69 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 3 | 3 | 100 | 0.488 T | 1.13 T | 0.736 | 0.59 T | 0.59 T | 0.488 T | 1.13 T | 0.736 | 0.59 T | 0.59 T |
| Arsenic[b] | mg/kg-Wet | 4 | 4 | 100 | 0.3 J | 0.38 J | 0.338 | 0.32 | 0.35 J | 0.3 J | 0.38 J | 0.338 | 0.32 | 0.35 J |
| Mercury[b] | mg/kg-Wet | 4 | 4 | 100 | 0.024 | 0.034 | 0.0293 | 0.029 | 0.03 | 0.024 | 0.034 | 0.0293 | 0.029 | 0.03 |
| Silver[b] | mg/kg-Wet | 4 | 4 | 100 | 0.019 J | 0.0315 | 0.0278 | 0.03 J | 0.0306 J | 0.019 J | 0.0315 | 0.0278 | 0.03 J | 0.0306 J |
| Total PCB Congeners | µg/kg-Wet | 3 | 3 | 100 | 14.2 JT | 27.8 JT | 19.5 | 16.5 JT | 16.5 JT | 14.2 JT | 27.8 JT | 19.5 | 16.5 JT | 16.5 JT |
| Aldrin | µg/kg-Wet | 4 | 0 | 0 | | | | | | 1 U | 2 U | 0.625 | 0.5 U | 0.5 U |
| beta-Hexachlorocyclohexane[b] | µg/kg-Wet | 4 | 0 | 0 | | | | | | 1 U | 2 UJ | 0.625 | 0.5 U | 0.5 UJ |
| delta-Hexachlorocyclohexane[b] | µg/kg-Wet | 4 | 0 | 0 | | | | | | 1 U | 2 U | 0.625 | 0.5 U | 0.5 U |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 4 | 4 | 100 | 2.9 JT | 21.3 JT | 9.23 | 3.1 JT | 9.6 JT | 2.9 JT | 21.3 JT | 9.23 | 3.1 JT | 9.6 JT |
| Total of 2,4' and 4,4'-DDE[b] | µg/kg-Wet | 4 | 4 | 100 | 3.3 T | 51 T | 19.5 | 8.8 T | 15 JT | 3.3 T | 51 T | 19.5 | 8.8 T | 15 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 4 | 4 | 100 | 1.1 JT | 17.5 JT | 8.58 | 3.1 T | 12.6 T | 1.1 JT | 17.5 JT | 8.58 | 3.1 T | 12.6 T |
| Dibutyl phthalate[b] | µg/kg-Wet | 4 | 0 | 0 | | | | | | 330 U | 330 U | 165 | 165 U | 165 U |
| ***Lab Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 2 | 2 | 100 | 19.7 JT | 124 JT | 71.9 | 19.7 JT | 19.7 JT | 19.7 JT | 124 JT | 71.9 | 19.7 JT | 19.7 JT |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 1.49 JT | 42.5 T | 22 | 1.49 JT | 1.49 JT | 1.49 JT | 42.5 T | 22 | 1.49 JT | 1.49 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 0.443 JT | 2.27 T | 1.36 | 0.443 JT | 0.443 JT | 0.443 JT | 2.27 T | 1.36 | 0.443 JT | 0.443 JT |
| Arsenic[b] | mg/kg-Wet | 2 | 2 | 100 | 0.421 J | 0.429 | 0.425 | 0.421 J | 0.421 J | 0.421 J | 0.429 | 0.425 | 0.421 J | 0.421 J |
| Mercury[b] | mg/kg-Wet | 2 | 2 | 100 | 0.0094 | 0.011 | 0.0102 | 0.0094 | 0.0094 | 0.0094 | 0.011 | 0.0102 | 0.0094 | 0.0094 |
| Silver[b] | mg/kg-Wet | 2 | 2 | 100 | 0.0108 | 0.014 | 0.0124 | 0.0108 | 0.0108 | 0.0108 | 0.014 | 0.0124 | 0.0108 | 0.0108 |
| Total PCB Congeners | µg/kg-Wet | 2 | 2 | 100 | 24.6 | 167 | 95.8 | 24.6 | 24.6 | 24.6 | 167 | 95.8 | 24.6 | 24.6 |
| Aldrin | µg/kg-Wet | 2 | 2 | 100 | 0.0146 J | 0.0399 J | 0.0273 | 0.0146 J | 0.0146 J | 0.0146 J | 0.0399 J | 0.0273 | 0.0146 J | 0.0146 J |
| beta-Hexachlorocyclohexane[b] | µg/kg-Wet | 2 | 0 | 0 | | | | | | 0.00318 U | 0.0441 U | 0.0118 | 0.00159 U | 0.00159 U |
| delta-Hexachlorocyclohexane[b] | µg/kg-Wet | 2 | 1 | 50 | 0.007 J | 0.007 J | 0.007 | 0.007 J | 0.007 J | 0.004 U | 0.007 J | 0.0045 | 0.002 U | 0.002 U |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 2 | 2 | 100 | 103 T | 941 T | 522 | 103 T | 103 T | 103 T | 941 T | 522 | 103 T | 103 T |
| Total of 2,4' and 4,4'-DDE[b] | µg/kg-Wet | 2 | 2 | 100 | 9.64 T | 11.2 T | 10.4 | 9.64 T | 9.64 T | 9.64 T | 11.2 T | 10.4 | 9.64 T | 9.64 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 2 | 2 | 100 | 3.34 T | 87.1 T | 45.2 | 3.34 T | 3.34 T | 3.34 T | 87.1 T | 45.2 | 3.34 T | 3.34 T |
| Dibutyl phthalate[b] | µg/kg-Wet | 2 | 0 | 0 | | | | | | 16 U | 170 U | 46.5 | 8 U | 8 U |
| ***Lumbriculus variegatus (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 2 | 2 | 100 | 136 JT | 1870 JT | 1000 | 136 JT | 136 JT | 136 JT | 1870 JT | 1000 | 136 JT | 136 JT |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 29.5 JT | 472 JT | 251 | 29.5 JT | 29.5 JT | 29.5 JT | 472 JT | 251 | 29.5 JT | 29.5 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 2.61 JT | 21.5 JT | 12.1 | 2.61 JT | 2.61 JT | 2.61 JT | 21.5 JT | 12.1 | 2.61 JT | 2.61 JT |
| Arsenic[b] | mg/kg-Wet | 2 | 2 | 100 | 1.13 | 1.7 | 1.42 | 1.13 | 1.13 | 1.13 | 1.7 | 1.42 | 1.13 | 1.13 |
| Mercury[b] | mg/kg-Wet | 2 | 2 | 100 | 0.006 J | 0.0063 | 0.00615 | 0.006 J | 0.006 J | 0.006 J | 0.0063 | 0.00615 | 0.006 J | 0.006 J |
| Silver[b] | mg/kg-Wet | 2 | 2 | 100 | 0.0062 | 0.0069 | 0.00655 | 0.0062 | 0.0062 | 0.0062 | 0.0069 | 0.00655 | 0.0062 | 0.0062 |
| Total PCB Congeners | µg/kg-Wet | 2 | 2 | 100 | 208 | 1890 | 1050 | 208 | 208 | 208 | 1890 | 1050 | 208 | 208 |
| Aldrin | µg/kg-Wet | 2 | 2 | 100 | 0.34 J | 0.555 | 0.448 | 0.34 J | 0.34 J | 0.34 J | 0.555 | 0.448 | 0.34 J | 0.34 J |



BZTO104(e)033493

Table 11.3.11-1c. iCOC Summary Statistics for Tissue - iAOPC 14.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| beta-Hexachlorocyclohexane[b] | µg/kg-Wet | 2 | 1 | 50 | 0.0493 J | 0.0493 J | 0.0493 | 0.0493 J | 0.0493 J | 0.0415 U | 0.0493 J | 0.035 | 0.02075 U | 0.02075 U |
| delta-Hexachlorocyclohexane[b] | µg/kg-Wet | 2 | 1 | 50 | 0.0161 J | 0.0161 J | 0.0161 | 0.0161 J | 0.0161 J | 0.0161 J | 0.0181 U | 0.0126 | 0.00905 U | 0.00905 U |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 2 | 2 | 100 | 896 T | 1260 T | 1080 | 896 T | 896 T | 896 T | 1260 T | 1080 | 896 T | 896 T |
| Total of 2,4' and 4,4'-DDE[b] | µg/kg-Wet | 2 | 2 | 100 | 83.9 JT | 188 T | 136 | 83.9 JT | 83.9 JT | 83.9 JT | 188 T | 136 | 83.9 JT | 83.9 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 2 | 2 | 100 | 34.2 T | 37.9 T | 36.1 | 34.2 T | 34.2 T | 34.2 T | 37.9 T | 36.1 | 34.2 T | 34.2 T |
| Dibutyl phthalate[b] | µg/kg-Wet | 2 | 0 | 0 | | | | | | 16 U | 280 U | 74 | 8 U | 8 U |
| ***Multiplate Invertebrates (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 1 | 1 | 100 | 34.8 JT | 34.8 JT | 34.8 | 34.8 JT | 34.8 JT | 34.8 JT | 34.8 JT | 34.8 | 34.8 JT | 34.8 JT |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 4 JT | 4 JT | 4 | 4 JT | 4 JT | 4 JT | 4 JT | 4 | 4 JT | 4 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.296 JT | 0.296 JT | 0.296 | 0.296 JT | 0.296 JT | 0.296 JT | 0.296 JT | 0.296 | 0.296 JT | 0.296 JT |
| Total PCB Congeners | µg/kg-Wet | 1 | 1 | 100 | 45.6 | 45.6 | 45.6 | 45.6 | 45.6 | 45.6 | 45.6 | 45.6 | 45.6 | 45.6 |
| Aldrin | µg/kg-Wet | 1 | 1 | 100 | 0.0828 | 0.0828 | 0.0828 | 0.0828 | 0.0828 | 0.0828 | 0.0828 | 0.0828 | 0.0828 | 0.0828 |
| beta-Hexachlorocyclohexane[b] | µg/kg-Wet | 1 | 0 | 0 | | | | | | 0.00933 U | 0.00933 U | 0.00467 | 0.004665 U | 0.004665 U |
| delta-Hexachlorocyclohexane[b] | µg/kg-Wet | 1 | 0 | 0 | | | | | | 0.004 U | 0.004 U | 0.002 | 0.002 U | 0.002 U |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 1 | 1 | 100 | 44.4 T | 44.4 T | 44.4 | 44.4 T | 44.4 T | 44.4 T | 44.4 T | 44.4 | 44.4 T | 44.4 T |
| Total of 2,4' and 4,4'-DDE[b] | µg/kg-Wet | 1 | 1 | 100 | 30.7 T | 30.7 T | 30.7 | 30.7 T | 30.7 T | 30.7 T | 30.7 T | 30.7 | 30.7 T | 30.7 T |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 1 | 1 | 100 | 19.7 T | 19.7 T | 19.7 | 19.7 T | 19.7 T | 19.7 T | 19.7 T | 19.7 | 19.7 T | 19.7 T |
| ***Sculpin (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 3 | 3 | 100 | 226 JT | 430 JT | 352 | 400 JT | 400 JT | 226 JT | 430 JT | 352 | 400 JT | 400 JT |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 5.52 JT | 38.6 T | 22.1 | 5.52 JT | 5.52 JT | 5.52 JT | 38.6 T | 22.1 | 5.52 JT | 5.52 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 4.98 T | 15.5 T | 10.2 | 4.98 T | 4.98 T | 4.98 T | 15.5 T | 10.2 | 4.98 T | 4.98 T |
| Arsenic[b] | mg/kg-Wet | 3 | 3 | 100 | 0.17 | 0.28 | 0.21 | 0.18 | 0.18 | 0.17 | 0.28 | 0.21 | 0.18 | 0.18 |
| Mercury[b] | mg/kg-Wet | 3 | 3 | 100 | 0.031 | 0.086 | 0.061 | 0.066 | 0.066 | 0.031 | 0.086 | 0.061 | 0.066 | 0.066 |
| Silver[b] | mg/kg-Wet | 3 | 0 | 0 | | | | | | 0.0009 U | 0.0015 U | 0.000583 | 0.00055 U | 0.00055 U |
| Total PCB Congeners | µg/kg-Wet | 2 | 2 | 100 | 203 JT | 692 JT | 448 | 203 JT | 203 JT | 203 JT | 692 JT | 448 | 203 JT | 203 JT |
| Aldrin | µg/kg-Wet | 3 | 0 | 0 | | | | | | 1 UT | 4 UJT | 1 | 0.5 UT | 0.5 UT |
| beta-Hexachlorocyclohexane[b] | µg/kg-Wet | 3 | 0 | 0 | | | | | | 1 UJT | 8.5 UT | 3 | 4.25 UT | 4.25 UT |
| delta-Hexachlorocyclohexane[b] | µg/kg-Wet | 3 | 0 | 0 | | | | | | 1 UT | 4 UT | 1 | 0.5 UT | 0.5 UT |
| Total of 2,4' and 4,4'-DDD | µg/kg-Wet | 3 | 3 | 100 | 102 JT | 376 T | 217 | 173 JT | 173 JT | 102 JT | 376 T | 217 | 173 JT | 173 JT |
| Total of 2,4' and 4,4'-DDE[b] | µg/kg-Wet | 3 | 3 | 100 | 168 JT | 657 T | 356 | 244 JT | 244 JT | 168 JT | 657 T | 356 | 244 JT | 244 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg-Wet | 3 | 3 | 100 | 153 JT | 2030 T | 832 | 313 T | 313 T | 153 JT | 2030 T | 832 | 313 T | 313 T |
| Dibutyl phthalate[b] | µg/kg-Wet | 3 | 0 | 0 | | | | | | 290 U | 300 U | 148 | 150 U | 150 U |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033494

Table 11.3.11-1d. iCOC Summary Statistics for Porewater - iAOPC 14.

| | | | Detected Concentrations | | | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| Arsenic[b] | mg/l | 1 | 1 | 100 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| Mercury[b] | mg/l | 1 | 0 | 0 | | | | | | 0.0001 U | 0.0001 U | 0.00005 | 0.00005 U | 0.00005 U |
| Silver[b] | mg/l | 1 | 0 | 0 | | | | | | 0.0002 U | 0.0002 U | 0.0001 | 0.0001 U | 0.0001 U |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033495

Table 11.3.11-1e. iCOC Summary Statistics for TZW - iAOPC 14.

| Sampling Method and Analyte | Units | # | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Unfiltered Trident*** | | | | | | | | | | | | | | |
| 2,4'-DDD | µg/l | 6 | 6 | 100 | 0.066 J | 1.1 J | 0.321 | 0.17 | 0.32 | 0.066 J | 1.1 J | 0.321 | 0.17 | 0.32 |
| 2,4'-DDT | µg/l | 6 | 2 | 33.3 | 0.0098 J | 0.093 J | 0.0514 | 0.0098 J | 0.0098 J | 0.0098 J | 0.15 U | 0.0358 | 0.0098 J | 0.075 U |
| 4,4'-DDD | µg/l | 10 | 7 | 70 | 0.015 J | 1.3 | 0.565 | 0.49 | 0.88 | 0.0019 U | 1.3 | 0.404 | 0.13 J | 0.88 |
| 4,4'-DDE[b] | µg/l | 10 | 6 | 60 | 0.015 J | 0.24 | 0.088 | 0.043 J | 0.12 J | 0.0015 U | 0.93 U | 0.104 | 0.0225 U | 0.24 |
| 4,4'-DDT | µg/l | 10 | 7 | 70 | 0.0075 J | 1.8 | 0.973 | 1.1 J | 1.3 | 0.0063 U | 1.8 | 0.691 | 0.66 | 1.3 |
| Total of 2,4' and 4,4'-DDD | µg/l | 6 | 6 | 100 | 0.066 JT | 2.4 JT | 0.764 | 0.2 JT | 1.04 T | 0.066 JT | 2.4 JT | 0.764 | 0.2 JT | 1.04 T |
| Total of 2,4' and 4,4'-DDT | µg/l | 6 | 4 | 66.7 | 0.0098 JT | 1.89 JT | 0.96 | 0.84 T | 1.1 JT | 0.0098 JT | 1.89 JT | 0.657 | 0.075 UT | 1.1 JT |
| Chloroform[b] | µg/l | 24 | 11 | 45.8 | 0.24 J | 17000 | 1900 | 88 | 2800 | 0.056 U | 17000 | 871 | 0.34 U | 580 |
| Trichloroethene[b] | µg/l | 24 | 10 | 41.7 | 0.14 J | 48 | 8.92 | 0.25 J | 33 | 0.062 U | 48 | 3.76 | 0.07 U | 5.4 |
| ***Filtered Trident*** | | | | | | | | | | | | | | |
| 2,4'-DDD | µg/l | 4 | 4 | 100 | 0.011 J | 0.15 | 0.0575 | 0.029 J | 0.04 J | 0.011 J | 0.15 | 0.0575 | 0.029 J | 0.04 J |
| 2,4'-DDT | µg/l | 4 | 1 | 25 | 0.0078 NJ | 0.0078 NJ | 0.0078 | 0.0078 NJ | 0.0078 NJ | 0.0036 U | 0.015 U | 0.00578 | 0.006 U | 0.0075 U |
| 4,4'-DDD | µg/l | 8 | 1 | 12.5 | 0.025 J | 0.025 J | 0.025 | 0.025 J | 0.025 J | 0.0019 U | 0.077 U | 0.0162 | 0.0085 U | 0.034 U |
| 4,4'-DDE[b] | µg/l | 8 | 1 | 12.5 | 0.0084 NJ | 0.0084 NJ | 0.0084 | 0.0084 NJ | 0.0084 NJ | 0.0015 U | 0.024 U | 0.00467 | 0.00195 U | 0.0105 U |
| 4,4'-DDT | µg/l | 8 | 0 | 0 | | | | | | 0.0042 U | 0.035 U | 0.00786 | 0.0036 U | 0.0155 U |
| Total of 2,4' and 4,4'-DDD | µg/l | 4 | 4 | 100 | 0.029 JT | 0.15 T | 0.0638 | 0.036 JT | 0.04 JT | 0.029 JT | 0.15 T | 0.0638 | 0.036 JT | 0.04 JT |
| Total of 2,4' and 4,4'-DDT | µg/l | 4 | 1 | 25 | 0.0078 JT | 0.0078 JT | 0.0078 | 0.0078 JT | 0.0078 JT | 0.0078 JT | 0.031 UT | 0.0112 | 0.0078 JT | 0.014 UT |
| ***Small Volume Peeper*** | | | | | | | | | | | | | | |
| 2,4'-DDD | µg/l | 4 | 0 | 0 | | | | | | 0.0033 UJ | 0.004 UJ | 0.00184 | 0.0017 UJ | 0.002 UJ |
| 2,4'-DDT | µg/l | 4 | 0 | 0 | | | | | | 0.00089 UJ | 0.016 UJ | 0.00236 | 0.00046 UJ | 0.00055 UJ |
| 4,4'-DDD | µg/l | 8 | 1 | 12.5 | 0.032 NJ | 0.032 NJ | 0.032 | 0.032 NJ | 0.032 NJ | 0.0015 U | 0.032 NJ | 0.00705 | 0.0036 U | 0.0085 U |
| 4,4'-DDE[b] | µg/l | 8 | 1 | 12.5 | 0.0039 NJ | 0.0039 NJ | 0.0039 | 0.0039 NJ | 0.0039 NJ | 0.0012 U | 0.0091 U | 0.00279 | 0.003 U | 0.0039 NJ |
| 4,4'-DDT | µg/l | 8 | 1 | 12.5 | 0.0096 J | 0.0096 J | 0.0096 | 0.0096 J | 0.0096 J | 0.0059 U | 0.026 U | 0.00689 | 0.0047 U | 0.0096 J |
| Total of 2,4' and 4,4'-DDD | µg/l | 4 | 0 | 0 | | | | | | 0.0055 UT | 0.0087 UT | 0.0036 | 0.0036 UT | 0.0037 UT |
| Total of 2,4' and 4,4'-DDT | µg/l | 4 | 0 | 0 | | | | | | 0.0077 UT | 0.016 UJT | 0.00514 | 0.004 UT | 0.0047 UT |
| Chloroform[b] | µg/l | 13 | 3 | 23.1 | 1.7 | 770000 | 257000 | 5.5 J | 5.5 J | 0.14 U | 770000 | 59200 | 0.15 U | 65 U |
| Trichloroethene[b] | µg/l | 13 | 3 | 23.1 | 0.14 J | 2300 | 767 | 0.24 J | 0.24 J | 0.14 U | 2300 | 177 | 0.07 U | 1.7 U |
| ***All Methods*** | | | | | | | | | | | | | | |
| 2,4'-DDD | µg/l | 14 | 10 | 71.4 | 0.011 J | 1.1 J | 0.216 | 0.07 J | 0.32 | 0.0033 UJ | 1.1 J | 0.155 | 0.04 J | 0.32 |
| 2,4'-DDT | µg/l | 14 | 3 | 21.4 | 0.0078 NJ | 0.093 J | 0.0369 | 0.0098 J | 0.0098 J | 0.00089 UJ | 0.15 U | 0.0177 | 0.007 U | 0.075 U |
| 4,4'-DDD | µg/l | 26 | 9 | 34.6 | 0.015 J | 1.3 | 0.446 | 0.42 | 0.88 | 0.0015 U | 1.3 | 0.162 | 0.0085 U | 0.72 |
| 4,4'-DDE[b] | µg/l | 26 | 8 | 30.8 | 0.0039 NJ | 0.24 | 0.0675 | 0.018 | 0.12 J | 0.0012 U | 0.93 U | 0.0421 | 0.0039 NJ | 0.12 J |
| 4,4'-DDT | µg/l | 26 | 8 | 30.8 | 0.0075 J | 1.8 | 0.852 | 0.84 | 1.3 | 0.0042 U | 1.8 | 0.27 | 0.0095 U | 1.1 |
| Total of 2,4' and 4,4'-DDD | µg/l | 14 | 10 | 71.4 | 0.029 JT | 2.4 JT | 0.484 | 0.15 T | 1.04 T | 0.0055 UT | 2.4 JT | 0.346 | 0.04 JT | 1.04 T |
| Total of 2,4' and 4,4'-DDT | µg/l | 14 | 5 | 35.7 | 0.0078 JT | 1.89 JT | 0.77 | 0.84 T | 1.1 JT | 0.0077 UT | 1.89 JT | 0.286 | 0.0098 JT | 1.1 JT |
| Chloroform[b] | µg/l | 37 | 14 | 37.8 | 0.24 J | 770000 | 56500 | 13 | 17000 | 0.056 U | 770000 | 21400 | 0.24 J | 2800 |
| Trichloroethene[b] | µg/l | 37 | 13 | 35.1 | 0.14 J | 2300 | 184 | 0.25 J | 48 | 0.062 U | 2300 | 64.7 | 0.07 U | 33 |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033496

Table 11.3.11-2. Potential Sources and Transport Pathways Assessment - iAOPC 14.

| Potential Sources | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | | | | | | Potential Complete | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | | | | | | |
| Description of Potential Source | Surface Soil | Subsurface Soil | Groundwater | Catch Basin Solids | River Sediment | Gasoline-Range | Diesel - Range | Heavier - Range | Petroleum-Related (e.g. BTEX) | VOCs | Chlorinated VOCs | SVOCs | PAHs | Phthalates | Phenolics | Metals | PCBs | Herbicides and Pesticides | Dioxins/Furans | Butyltins | Cyanide | Calcium Hydroxide Waste | Acetone and MEK | Ammonia | Perchlorate | Overland Transport | Groundwater | Direct Discharge - Overwater | Direct Discharge - Storm/Wastewater | Riverbank Erosion |
| *Upland Areas* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Arkema #398** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former unlined MPR pond and trench | ✓ | ✓ | ✓ | | | | | | | | ✓ | | | | | | | ✓ | | | | | | | | | ✓ | | | |
| Historic discharge through pipe | | | | | ✓ | | | | | | ✓ | | | | | | | ✓ | | | | | | | | | | ✓ | |
| Unpaved areas with contaminated soils | ✓ | ✓ | | | | | | | | | | | | | | ✓ | | ✓ | | | | | | | | ? | | | ? | ? |
| Historic spill areas | ✓ | ✓ | ✓ | | | | | | | | | | | | | ✓ | | | | | | | | ✓ | | | | | | |
| Stormwater discharge outfalls | | | | ✓ | | | | | | | | | | | | | | ✓ | | | | | | | ✓ | | | | ✓ | |
| Contaminated groundwater plume | | | ✓ | | | | | | | | ✓ | ✓ | | | | ✓ | | ✓ | | | | | | | ✓ | | ✓ | | | |
| **Gould Electronics, Inc. (NL Industries) #49** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Historical smelter and other site operations | ✓ | ✓ | ✓ | | ? | | | | | | | | | | | ✓ | | | | | | | | | | | | | | |
| Historical adjacent industries | ✓ | ✓ | ✓ | | ? | | | | | | | | | | ✓ | | | ✓ | | | | | | | | | | | | |
| Historical landfilling operations | ✓ | ✓ | ✓ | | ? | | | | | ✓ | | | | ✓ | | ✓ | | | | | | | | | | | | | | |
| Historical contaminated surface soil (secondary source) | ✓ | | | | ? | | | | | | | | | | | ✓ | | | | | | | | | | | | | | |
| Historical contaminated subsurface soil (secondary source) | | ✓ | ✓ | | ? | | | | | ✓ | | | | | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | | |
| Historical contaminated E. Doane Lake sediment (secondary source) | | | | | ? | | | | | ✓ | | | | | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | | |
| Current onsite containment facility | | | ✓ | | | | | | | ✓ | | | | | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | | |
| **GS Roofing Products #117** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Drainage Basin 001 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Facility operations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment and materials | ? | ? | ? | ? | ? | | | ? | ? | ? | | | ? | | | | | | | | | | | | | | | | | |
| ASTs | ? | ? | ? | ? | ? | | ? | ? | | ? | | | ? | | | | | | | | | | | | | | | | | |
| Former USTs | | ✓ | ✓ | | | ✓ | | | ✓ | | | ✓ | | | | ? | ? | | | | | | | | | | ✓ | | | |
| Zinc granule bins | ? | ? | ? | ? | ? | | | | | | | | | | | ? | | | | | | | | | | | | | | |
| Drum storage shed | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | | | ? | | | ? | | | | | | | | | | | | | | |
| Asphalt loading and product storage areas | ? | ? | ? | ? | ? | | | ? | ? | ? | | | ? | | | | | | | | | | | | | | | | | |
| Storm sewer catch basins/drains and oil/water separators | | | | ? | ? | ? | ? | ? | ? | ? | | | ? | | | ? | | | | | | | | | | | | | | |
| Railroad spur | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | | | ? | | | ? | | | | | | | | | | | | | | |
| Landfilled materials | ? | ? | ? | | ? | | | ? | ? | ? | | | ? | | | | | | | | | | | | | | | | | |
| Drainage Basin 002 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Finished product storage area | ? | ? | ? | ? | ? | | | ? | ? | ? | | | ? | | | | | | | | | | | | | | | | | |
| Railroad spur | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | | | ? | | | ? | | | | | | | | | | | | | | |
| **Rhône-Poulenc Site #155** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former insecticide area | ✓ | ✓ | ✓ | | ? | | | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | ✓ | | | N/A |
| Former herbicide area | ✓ | ✓ | ✓ | | ? | | ✓ | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | ✓ | | | N/A |
| Lake area | ✓ | ✓ | ✓ | N/A | ? | | ✓ | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | ✓ | | | N/A |
| West Doane Lake | N/A | N/A | ✓ | N/A | ? | | | | | ✓ | ✓ | | | | | ✓ | ✓ | ✓ | ✓ | | | | | | | ✓ | ✓ | ? | | N/A |
| **Siltronic Corporation/Former PG&C Disposal Ponds #183** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PG&C Disposal Ponds and Adjacent Lowland Areas | ? | ✓ | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | ✓ | | | | | ✓ | | | | | ✓ | ✓ | ✓ | | |
| PG&C Disposal Piles | ? | ✓ | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | ✓ | | | | | ✓ | | | | | ✓ | ✓ | ✓ | | |
| Potential PG&C Waste Product Fill - WWTP Area | ? | ✓ | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | ✓ | | | | | ✓ | | | | | ✓ | ✓ | ✓ | | |
| Potential PG&C Waste Product Fill - Fab 1 and Parking Lot | ? | ✓ | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | ✓ | | | | | ✓ | | | | | ✓ | ✓ | ✓ | | |
| Potential Disposal Area | | ✓ | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | ✓ | | | | | ✓ | | | | | ✓ | ✓ | ✓ | | |
| North Drainage Ditch and COP Outfall 22 | ? | ✓ | ✓ | | ? | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | ✓ | | | | | ✓ | | | | | | ✓ | | ✓ | |
| Former Western Transportation Tanks | | ✓ | ✓ | | ? | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | | | | | ? | ✓ | | | |
| Olympic Pipeline | | ✓ | ✓ | | ? | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | | | | | | ✓ | | | |
| Former TCE USTs | | ✓ | ✓ | | ? | | | | | ✓ | ✓ | | | | | | | | | | | | | | | | ✓ | | | |
| Kinder Morgan Pumping Station | | ? | ✓ | | ? | | | | ✓ | | | | | | | | | | | | | | | | | | ? | | | |
| Rhône-Poulenc AG Company | ? | ✓ | ✓ | | ? | | | | | ✓ | ✓ | | | | | | | ✓ | | | | | | | | | ✓ | | | |
| Contaminated Fill | ? | ? | ? | | ? | | ? | ? | ? | | ? | ? | ? | | | ? | | | | | ? | | | | | | ? | | | ? |
| **Schnitzer-Doane Lake (Air Liquide) #395** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Discharge of calcium hydroxide waste into Doane Lake | ✓ | ✓ | ✓ | | | | | | | | | | | | | | | | | | | ✓ | | | | | ? | | ✓ | |
| 1,500-gallon acetone UST | | ✓ | ✓ | | | | | | | | ✓ | | | | | | | | | | | | ✓ | | | | | | | |
| Unknown source of subsurface contamination | | ✓ | | | | | | | | | ✓ | | | | | | ✓ | | | | | | | | | | | | | |
| Compressor oil spill | ✓ | ✓ | | | | | | | ✓ | | | | | | | | | | | | | | | | | | | | | |



BZTO104(e)033497

Table 11.3.11-2. Potential Sources and Transport Pathways Assessment - iAOPC 14.

| Potential Sources | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | | | | | | | Potential Complete | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | | | | | | |
| Description of Potential Source | Surface Soil | Subsurface Soil | Groundwater | Catch Basin Solids | River Sediment | Gasoline-Range | Diesel - Range | Heavier - Range | Petroleum-Related (e.g. BTEX) | VOCs | Chlorinated VOCs | SVOCs | PAHs | Phthalates | Phenolics | Metals | PCBs | Herbicides and Pesticides | Dioxins/Furans | Butyltins | Cyanide | Calcium Hydroxide Waste | Acetone and MEK | Ammonia | Perchlorate | Overland Transport | Groundwater | Direct Discharge - Overwater | Direct Discharge - Storm/Wastewater | Riverbank Erosion |
| ***Overwater Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Siltronic Corporation/Former PG&C Disposal Ponds #183** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former Western Transportation Dock | | | | | ✓ | ? | ? | ? | ? | | | ✓ | ✓ | | | | | | | | | | | | | | | ✓ | | |
| **OF-22B/22C** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Outfalls 22B/22C | | | | | ✓ | ? | ? | ? | | | | | ? | | | ? | ? | | | | | | | | | | | | | |
| ***Other Areas/Other Issues*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Gould Electronics, Inc. (NL Industries) #49** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former East Doane Lake discharge | | | | | | | | | | ✓ | | | | | ✓ | ✓ | | ✓ | ✓ | | | | | | | | | | ✓ | |
| **Schnitzer-Doane Lake (Air Liquide) #395** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adjacent NL/Gould Superfund site | ✓ | ✓ | ✓ | | | | | | | | | | | | | ✓ | | | | | | | | | | | | | ? | |

**Notes:**

All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ – Source, COI are present or current or historic pathway is determined to be complete or potentially complete.

? – There is not enough information to determine if source or COI is present or if pathway is complete.

UST Underground storage tank
AST Above-ground storage tank
TPH Total petroleum hydrocarbons
VOCs Volatile organic compounds
SVOCs Semivolatile organic compounds
PAHs Polycyclic aromatic hydrocarbons
BTEX Benzene, toluene, ethylbenzene, and xylenes
PCBs Polychlorinated biphenyls
N/A Not applicable



BZTO104(e)033498

Table 11.3.11-3. Preliminary Evaluation of Relative Contribution of Migration Pathways to iAOPC 14.

| CURRENT | | Relative Contribution | | | | | |
|---|---|---|---|---|---|---|---|
| **Pathway** | **Data Quality/Quantity** | ***PCBs*** | ***Arsenic*** | ***DDD*** | ***delta-HCH*** | ***DBP*** | ***Dioxin TEQ*** |
| Groundwater | High | Low | Low | Low | Low | Low | Low |
| Overwater Release | High | Low | Low | Low | NE | NE | NE |
| Stormwater /Wastewater/ Overland Transport | Med | Med | High | High | NE | NE | NE |
| Bank/Soil Erosion | Med | High | Low | Med | NE | NE | NE |
| Sediment Transport | Low | Low | Low | Med | NE | NE | NE |

| HISTORICAL | | Relative Contribution | | | | | |
|---|---|---|---|---|---|---|---|
| **Pathway** | **Data Quality/Quantity** | ***PCBs*** | ***Arsenic*** | ***DDD*** | ***delta-HCH*** | ***DBP*** | ***Dioxin TEQ*** |
| Groundwater | Med | Low | Low | Med | Low | Low | Low |
| Overwater Release | Med | Low | Low | Low | NE | NE | NE |
| Stormwater/Wastewater/ Overland Transport | Med | High | High | High | NE | NE | NE |
| Bank/Soil Erosion | Low | High | Low | Med | NE | NE | NE |
| Sediment Transport | Low | Low | Low | Med | NE | NE | NE |

**Notes:**

Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).

Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.

NE - Not Estimated. The data quality/quantity is inadequate to make a determination of relative contribution.

BZTO104(e)033499

Table 11.3.12-1a. iCOC Summary Statistics for Sediment - iAOPCs 15 and 16.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **AOCP 15** | | | | | | | | | | | | | | |
| ***Surface*** | | | | | | | | | | | | | | |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalent | µg/kg | 2 | 2 | 100 | 28 JT | 39 T* | 33.5 | 28 JT | 28 JT | 28 JT | 39 T* | 33.5 | 28 JT | 28 JT |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic[b] | mg/kg | 10 | 9 | 90 | 4 | 83.5 | 30 | 7.8 | 75.6 | 4 | 83.5 | 27.3 | 6.1 | 75.6 |
| **AOPC 16** | | | | | | | | | | | | | | |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 1 | 1 | 100 | 200 T | 200 T | 200 | 200 T | 200 T | 200 T | 200 T | 200 | 200 T | 200 T |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 1 | 1 | 100 | 230 T | 230 T | 230 | 230 T | 230 T | 230 T | 230 T | 230 | 230 T | 230 T |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.



BZTO104(e)033501

Table 11.3.12-1b. iCOC Summary Statistics for Tissue - iAOPC 15 .

| Analyte | Units | # | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Crayfish (whole body)*** | | | | | | | | | | | | | | |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic[b] | mg/kg-Wet | 1 | 1 | 100 | 0.5 J | 0.5 J | 0.5 | 0.5 J | 0.5 J | 0.5 J | 0.5 J | 0.5 | 0.5 J | 0.5 J |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.



BZTO104(e)033502

Table 11.3.12-2. Potential Sources and Transport Pathways Assessment - iAOPCs 15 and 16.

| | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | | | Potential Complete Pathway | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | | | |
| **Description of Potential Source** | **Surface Soil** | **Subsurface Soil** | **Groundwater** | **Storm Sewer Sediment** | **River Sediment** | **Gasoline-Range** | **Diesel - Range** | **Heavier - Range** | **Petroleum-Related (e.g. BTEX)** | **VOCs** | **Chlorinated VOCs** | **SVOCs** | **PAHs** | **Phthalates** | **Phenolics** | **Metals** | **PCBs** | **Herbicides and Pesticides** | **Dioxins/Furans** | **Butyltins** | **Pentachlorophenol** | **Overland Transport** | **Groundwater** | **Direct Discharge - Overwater** | **Direct Discharge - Storm/Wastewater** | **Riverbank Erosion** |
| ***Upland Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ***McCormick & Baxter #74*** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former onsite waste disposal area | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | ✓ | | ✓ | ✓ | | | ✓ | | | ? | ✓ | | ✓ | ? |
| Former central processing area | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | ✓ | | ✓ | ✓ | | | ✓ | | | ? | ✓ | | ✓ | ? |
| Former tank farm area | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | ✓ | | ✓ | ✓ | | | ✓ | | | ? | ✓ | | ✓ | ? |
| Other former small waste disposal areas and trench | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | | | ✓ | | ✓ | ✓ | | | ✓ | | | ? | ✓ | | ✓ | ? |
| ***Triangle Park #277*** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former lumber mill, wood-processing, rail-car servicing, oil and fuel storage | ✓ | ✓ | ? | | | ✓ | ✓ | | | ✓ | | | ✓ | | | ✓ | | | | | | ? | ? | | ? | ? |
| Former concrete plant, sludge disposal pond | ✓ | ✓ | ? | | | ✓ | ✓ | | | ✓ | | | ✓ | | | ✓ | | | | | | ? | ? | | ? | ? |
| Fueling area with ASTs and USTs | ✓ | ✓ | ✓ | | | ✓ | ✓ | | | ✓ | | | ✓ | | | ✓ | ✓ | | | | | ? | ? | | ? | ? |
| Former power plant, warehouses, underground fuel tanks, possible underground fuel-storage vault, former concrete plant in 1950s | ✓ | ✓ | ✓ | | | ✓ | ✓ | | | ✓ | | | ✓ | | | ✓ | ✓ | | | | | ? | ? | | ? | ? |
| Concrete plant and former sawmill, chemical storage | ✓ | ✓ | ✓ | | | ✓ | ✓ | | | ✓ | | | ✓ | | | ✓ | ✓ | | | | | ? | ? | | ? | ? |
| Warehouse: oil spill, chemical storage, transformer rebuilding and storage | ✓ | ✓ | ✓ | | | ✓ | ✓ | | | ✓ | | | ✓ | ✓ | | ✓ | ✓ | | ✓ | | | ? | ? | | ? | ? |
| Sandblasting and spray-painting, shipbuilding shops, warehouse, bulk petroleum storage | ✓ | ✓ | ✓ | | | ✓ | ✓ | | | ✓ | | | ✓ | | | ✓ | ✓ | | | | | ? | ? | | ? | ? |
| Fuel pump station, decommissioned UST storage | ✓ | ✓ | ✓ | | | ✓ | ✓ | | | ✓ | | | ✓ | | | ✓ | ✓ | | | | | ? | ? | | ? | ? |
| Former steam-cleaning and lumber-planing and drying area | ✓ | ✓ | ✓ | | | ✓ | ✓ | | | ✓ | | | ✓ | | | | ✓ | | | | ✓ | ? | ? | | ? | ? |
| Possibly shipbuilding, tug and barge operations, UST | ✓ | ✓ | ✓ | | | ✓ | ✓ | | | ✓ | | | ✓ | | | | ✓ | | | | ✓ | ? | ? | | ? | ? |
| Former lumber mill and drying kilns, sandblasting, equipment storage yard | ✓ | ✓ | ✓ | | | ✓ | ✓ | | | ✓ | | ✓ | ✓ | ✓ | | | ✓ | | ✓ | | ✓ | ? | ? | | ? | ? |
| ***Overwater Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ***McCormick & Baxter #74*** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former Dock Operations | | | | | ✓ | | | | | | | | ✓ | | ✓ | ✓ | | | ✓ | | | | | ? | | ? |
| ***Triangle Park #277*** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dock Operations | | | | | ✓ | ? | ? | | | | | | ? | | | | ? | | | | | | | ? | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ***Other Areas/Other Issues*** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Notes:**

All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ = Source, COI are present or current or historic pathway is determined to be complete or potentially complete.

? = There is not enough information to determine if source or COI is present or if pathway is complete.

UST Underground storage tank
AST Above-ground storage tank
TPH Total petroleum hydrocarbons
VOCs Volatile organic compounds
SVOCs Semivolatile organic compounds
PAHs Polycyclic aromatic hydrocarbons
BTEX Benzene, toluene, ethylbenzene, and xylenes
PCBs Polychlorinated biphenyls



BZTO104(e)033503

Table 11.3.12-3. Preliminary Evaluation of Relative Contribution of Migration Pathways to iAOPCs 15 and 16.

| | CURRENT Pathway | Data Quality/ Quantity | Relative Contribution | | |
|---|---|---|---|---|---|
| | | | *Dioxin TEQ* | *Arsenic* | *PCBs* |
| **AOPC 15** | Groundwater | Med | Low | Low | -- |
| | Overwater Release | Low | Low | Low | -- |
| | Storm/Wastewater/ Overland Transport | Med | Low | Low | -- |
| | Bank/Soil Erosion | Low | Low | Med | -- |
| | Sediment Transport | Low | Low | Low | -- |
| | **HISTORICAL Pathway** | **Data Quality/ Quantity** | **Relative Contribution** | | |
| | | | *Dioxin TEQ* | *Arsenic* | *PCBs* |
| **AOPC 15** | Groundwater | Med | Med | Med | -- |
| | Overwater Release | Low | Med | Med | -- |
| | Storm/Wastewater/ Overland Transport | Med | Med | Med | -- |
| | Bank/Soil Erosion | Low | Med | Med | -- |
| | Sediment Transport | Low | High | Low | -- |

| | CURRENT Pathway | Data Quality/ Quantity | Relative Contribution | | |
|---|---|---|---|---|---|
| | | | *Dioxin TEQ* | *Arsenic* | *PCBs* |
| **AOPC 16** | Groundwater | Med | -- | -- | Low |
| | Overwater Release | Low | -- | -- | Low |
| | Storm/Wastewater/ Overland Transport | Low | -- | -- | Med |
| | Bank/Soil Erosion | Low | -- | -- | Med |
| | Sediment Transport | Low | -- | -- | Low |
| | **HISTORICAL Pathway** | **Data Quality/ Quantity** | **Relative Contribution** | | |
| | | | *Dioxin TEQ* | *Arsenic* | *PCBs* |
| **AOPC 16** | Groundwater | Med | -- | -- | Low |
| | Overwater Release | Low | -- | -- | Low |
| | Storm/Wastewater/ Overland Transport | Low | -- | -- | Med |
| | Bank/Soil Erosion | Low | -- | -- | Med |
| | Sediment Transport | Low | -- | -- | Low |

Notes:
Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).
Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.
"--" - Chemical is not an iCOC for this iAOPC.
NE - Not Estimated. The data quality/quantity is inadequate to make a determination of relative contribution.

BZTO104(e)033504

Table 11.3.13-1a. iCOC Summary Statistics for Sediment - iAOPC 17.

| Analyte | Units | # | # Detected | % Detected | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Surface*** | | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 7 | 5 | 71.4 | 36 | 0.851 JT | 703 T | 165 | 33 T | 79.1 T | 0.851 JT | 703 T | 119 | 8.4 T | 79.1 T |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalen | pg/g | 1 | 1 | 100 | | 0.598 JT | 0.598 JT | 0.598 | 0.598 JT | 0.598 JT | 0.598 JT | 0.598 JT | 0.598 | 0.598 JT | 0.598 JT |
| **PCB_Congeners** | | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 1 | 1 | 100 | 30 | 19.4 | 19.4 | 19.4 | 19.4 | 19.4 | 19.4 | 19.4 | 19.4 | 19.4 | 19.4 |
| **Pesticides** | | | | | | | | | | | | | | | |
| Total of 2,4' and 4,4'-DDD | µg/kg | 16 | 7 | 43.8 | 14 | 0.233 JT | 385 JT | 64 | 10.6 * | 23.8 T | 0.233 JT | 385 JT | 29.1 | 1.675 U* | 23.8 T |
| Total of 2,4' and 4,4'-DDT | µg/kg | 16 | 5 | 31.3 | | 0.501 JT | 125 T | 26.5 | 0.84 T | 5.12 JT | 0.501 JT | 125 T | 9.37 | 1.675 U* | 5.12 JT |
| **Dioxins_Furans** | | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalen | pg/g | 2 | 2 | 100 | 1 | 0.771 JT | 3.48 JT | 2.13 | 0.771 JT | 0.771 JT | 0.771 JT | 3.48 JT | 2.13 | 0.771 JT | 0.771 JT |
| ***Subsurface*** | | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 16 | 11 | 68.8 | 812 | 12.4 T | 324 T | 114 | 49.6 T | 267 T | 12 UT | 324 T | 80.8 | 19.1 T | 267 T |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalen | pg/g | 1 | 1 | 100 | | 1.14 T | 1.14 T | 1.14 | 1.14 T | 1.14 T | 1.14 T | 1.14 T | 1.14 | 1.14 T | 1.14 T |
| **PCB_Congeners** | | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 1 | 1 | 100 | 888 | 64.3 | 64.3 | 64.3 | 64.3 | 64.3 | 64.3 | 64.3 | 64.3 | 64.3 | 64.3 |
| **Pesticides** | | | | | | | | | | | | | | | |
| Total of 2,4' and 4,4'-DDD | µg/kg | 16 | 5 | 31.3 | 3 | 11 E* | 241 JT | 72.4 | 29.1 JT | 69 JT | 0.8 U* | 241 JT | 23 | 0.4 U* | 69 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg | 16 | 4 | 25 | | 2.9 JT | 27.7 JT | 15.8 | 13 EG* | 19.7 JT | 0.8 U* | 27.7 JT | 4.35 | 0.4 U* | 19.7 JT |
| **Dioxins_Furans** | | | | | | | | | | | | | | | |
| Dioxin/furan TCDD toxicity equivalen | pg/g | 4 | 4 | 100 | | 0.41 T | 15.2 T | 7.79 | 1.86 T | 13.7 T | 0.41 T | 15.2 T | 7.79 | 1.86 T | 13.7 T |

[a]This value was selected from an ascending ranked list of all results. Where n – the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.



BZTO104(e)033505

Table 11.3.13-1b. iCOC Summary Statistics for Surface Water - iAOPC 17.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **Collection Method: Bottle** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/l | 2 | 0 | 0 | | | | | | 0.0025 UT | 0.00256 UT | 0.00127 | 0.00125 UT | 0.00125 UT |
| **Pesticides** | | | | | | | | | | | | | | |
| Total of 2,4' and 4,4'-DDD | µg/l | 3 | 0 | 0 | | | | | | 0.000481 UT | 0.00051 UT | 0.00025 | 0.000255 UT | 0.000255 UT |
| Total of 2,4' and 4,4'-DDT | µg/l | 3 | 1 | 33.3 | 0.000693 JT | 0.000693 JT | 0.000693 | 0.000693 JT | 0.000693 JT | 0.00051 UT | 0.000693 JT | 0.000401 | 0.000255 UT | 0.000255 UT |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.



BZTO104(e)033506

Table 11.3.13-1c. iCOC Summary Statistics for Tissue - iAOPC 17.

| Analyte | Units | # | # Detected | % Detected | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 71.1 JT | 71.1 JT | 71.1 | 71.1 JT | 71.1 JT | 71.1 JT | 71.1 JT | 71.1 | 71.1 JT | 71.1 JT |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.816 JT | 0.816 JT | 0.816 | 0.816 JT | 0.816 JT | 0.816 JT | 0.816 JT | 0.816 | 0.816 JT | 0.816 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 1.57 JT | 1.57 JT | 1.57 | 1.57 JT | 1.57 JT | 1.57 JT | 1.57 JT | 1.57 | 1.57 JT | 1.57 JT |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 |
| Total of 2,4' and 4,4'-DDD | ug/kg-Wet | 1 | 1 | 100 | 28.5 T | 28.5 T | 28.5 | 28.5 T | 28.5 T | 28.5 T | 28.5 T | 28.5 | 28.5 T | 28.5 T |
| Total of 2,4' and 4,4'-DDT | ug/kg-Wet | 1 | 1 | 100 | 11.6 T | 11.6 T | 11.6 | 11.6 T | 11.6 T | 11.6 T | 11.6 T | 11.6 | 11.6 T | 11.6 T |
| ***Lab Clam ( body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 44.3 JT | 44.3 JT | 44.3 | 44.3 JT | 44.3 JT | 44.3 JT | 44.3 JT | 44.3 | 44.3 JT | 44.3 JT |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.279 T | 0.279 T | 0.279 | 0.279 T | 0.279 T | 0.279 T | 0.279 T | 0.279 | 0.279 T | 0.279 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 1.36 T | 1.36 T | 1.36 | 1.36 T | 1.36 T | 1.36 T | 1.36 T | 1.36 | 1.36 T | 1.36 T |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 50.7 | 50.7 | 50.7 | 50.7 | 50.7 | 50.7 | 50.7 | 50.7 | 50.7 | 50.7 |
| Total of 2,4' and 4,4'-DDD | ug/kg-Wet | 1 | 1 | 100 | 6.26 T | 6.26 T | 6.26 | 6.26 T | 6.26 T | 6.26 T | 6.26 T | 6.26 | 6.26 T | 6.26 T |
| Total of 2,4' and 4,4'-DDT | ug/kg-Wet | 1 | 1 | 100 | 0.405 JT | 0.405 JT | 0.405 | 0.405 JT | 0.405 JT | 0.405 JT | 0.405 JT | 0.405 | 0.405 JT | 0.405 JT |
| ***Lumbriculus variegatus (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 60.8 JT | 60.8 JT | 60.8 | 60.8 JT | 60.8 JT | 60.8 JT | 60.8 JT | 60.8 | 60.8 JT | 60.8 JT |
| Dioxin/furan TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 2.35 T | 2.35 T | 2.35 | 2.35 T | 2.35 T | 2.35 T | 2.35 T | 2.35 | 2.35 T | 2.35 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 1.73 T | 1.73 T | 1.73 | 1.73 T | 1.73 T | 1.73 T | 1.73 T | 1.73 | 1.73 T | 1.73 T |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 91.4 | 91.4 | 91.4 | 91.4 | 91.4 | 91.4 | 91.4 | 91.4 | 91.4 | 91.4 |
| Total of 2,4' and 4,4'-DDD | ug/kg-Wet | 1 | 1 | 100 | 64.2 T | 64.2 T | 64.2 | 64.2 T | 64.2 T | 64.2 T | 64.2 T | 64.2 | 64.2 T | 64.2 T |
| Total of 2,4' and 4,4'-DDT | ug/kg-Wet | 1 | 1 | 100 | 0.831 JT | 0.831 JT | 0.831 | 0.831 JT | 0.831 JT | 0.831 JT | 0.831 JT | 0.831 | 0.831 JT | 0.831 JT |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.



BZTO104(e)033507

Table 11.3.13-2. Potential Sources and Transport Pathways Assessment - iAOPC 17.

| Potential Sources | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | | Potential Complete | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | |
| Description of Potential Source | Surface Soil | Subsurface Soil | Groundwater | Catch Basin Solids | River Sediment | Gasoline-Range | Diesel - Range | Heavier - Range | Petroleum-Related (e.g. BTEX) | VOCs | Chlorinated VOCs | SVOCs | PAHs | Phthalates | Phenolics | Metals | PCBs | Herbicides and Pesticides | Dioxins/Furans | Butyltins | Overland Transport | Groundwater | Direct Discharge - Overwater | Direct Discharge - Storm/Wastewater | Riverbank Erosion |
| ***Upland Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **GS Roofing Products #117** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Drainage Basin 001 | | | | | | | | | | | | | | | | | | | | | | | | ✓ | |
| Facility operations | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment and materials | ? | ? | ? | ? | ? | | | ? | ? | ? | | | ? | | | | | | | | | | | | |
| ASTs | ? | ? | ? | ? | ? | | ? | ? | | ? | | | ? | | | | | | | | | | | | |
| Former USTs | | ✓ | ✓ | | | ✓ | | | ✓ | | | ✓ | | | | ? | ? | | | | | ✓ | | | |
| Zinc granule bins | ? | ? | ? | ? | ? | | | | | | | | | | | ? | | | | | | | | | |
| Drum storage shed | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | | | ? | | | ? | | | | | | | | | |
| Asphalt loading and product storage areas | ? | ? | ? | ? | ? | | | ? | ? | ? | | | ? | | | | | | | | | | | | |
| Storm sewer catch basins/drains and oil/water separators | | | | ? | ? | ? | ? | ? | ? | ? | | | ? | | | ? | | | | | | | | ✓ | |
| Railroad spur | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | | | ? | | | ? | | | | | | | | | |
| Landfilled materials | ? | ? | ? | | ? | | | ? | ? | ? | | | ? | | | | | | | | | | | | |
| Drainage basin 002 | | | | | | | | | | | | | | | | | | | | | | | | ✓ | |
| Finished produce storage area | ? | ? | ? | ? | ? | | | ? | ? | ? | | | ? | | | | | | | | | | | | |
| Railroad spur | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | | | ? | | | ? | | | | | | | | | |
| **Willbridge Terminals #1549** | | | | | | | | | | | | | | | | | | | | | | | | | |
| ConocoPhillips | ✓ | ✓ | ✓ | | | ✓ | | | ✓ | | | | ✓ | | | ✓ | | | | | | ✓ | | ✓ | |
| Chevron Products | ✓ | ✓ | ✓ | | | ✓ | ✓ | | ✓ | | | | ✓ | | | ✓ | | | | | | ✓ | | ✓ | |
| Kinder Morgan Liquid Terminals | ✓ | ✓ | ✓ | | | ✓ | ✓ | | ✓ | | | | ✓ | | | ✓ | | | | | | ✓ | | ✓ | |
| ***Overwater Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Willbridge Terminals #1549** | | | | | | | | | | | | | | | | | | | | | | | | | |
| ConocoPhillips-Dock Operations | | | | | | ✓ | ✓ | | ✓ | | | | ✓ | | | | | | | | | | ✓ | | |
| Chevron Products-Dock Operations | | | | | | ✓ | ✓ | | ✓ | | | | ✓ | | | | | | | | | | ✓ | | |
| Kinder Morgan Liquid Terminals-Dock Operations | | | | | | ✓ | ✓ | | ✓ | | | | ✓ | | | | | | | | | | ✓ | | |
| ***Other Areas/Other Issues*** | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |

**Notes:**

All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ = Source, COI are present or current or historic pathway is determined to be complete or potentially complete.

? = There is not enough information to determine if source or COI is present or if pathway is complete.

UST Underground storage tank
AST Above-ground storage tank
TPH Total petroleum hydrocarbons
VOCs Volatile organic compounds
SVOCs Semivolatile organic compounds
PAHs Polycyclic aromatic hydrocarbons
BTEX Benzene, toluene, ethylbenzene, and xylenes
PCBs Polychlorinated biphenyls



BZTO104(e)033508

Table 11.3.13-3. Preliminary Evaluation of Relative Contribution of Migration Pathways to iAOPC 17.

| **CURRENT** Pathway | Data Quality/ Quantity | Relative Contribution | | | |
|---|---|---|---|---|---|
| | | *PCBs* | *DDD* | *DDT* | *Dioxin* |
| Groundwater | High | Low | Low | Low | Low |
| Overwater Release | Low | Low | Low | Low | Low |
| Stormwater/Wastewater/ Overland Transport | Low | Low | Low | Low | Low |
| Bank/Soil Erosion | Med | Low | Low | Low | Low |
| Sediment Transport | Low | Low | Med | Med | Low |

| **HISTORICAL** Pathway | Data Quality/ Quantity | Relative Contribution | | | |
|---|---|---|---|---|---|
| | | *PCBs* | *DDD* | *DDT* | *Dioxin* |
| Groundwater | Low | Low | Low | Low | Low |
| Overwater Release | Low | Med | Low | Low | Low |
| Stormwater/Wastewater/ Overland Transport | Low | High | Low | Low | Med |
| Bank/Soil Erosion | Low | Low | Low | Low | Low |
| Sediment Transport | Low | Med | Med | Med | Med |

**Notes:**
Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).
Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.
NE - Not Estimated. The data quality/quantity is inadequate to make a determination of relative contribution.

BZTO104(e)033509

Table 11.3.14-1. iCOC Summary Statistics for Sediment – iAOPC 18.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 6 | 6 | 100 | 71 JT | 590 JT | 205 | 119 T | 245 JT | 71 JT | 590 JT | 205 | 119 T | 245 JT |
| **Conventionals** | | | | | | | | | | | | | | |
| Ammonia[b] | mg/kg | 1 | 1 | 100 | 481 | 481 | 481 | 481 | 481 | 481 | 481 | 481 | 481 | 481 |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 3 | 3 | 100 | 2.51 T | 6.52 JT | 3.89 | 2.63 T | 2.63 T | 2.51 T | 6.52 JT | 3.89 | 2.63 T | 2.63 T |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 9 | 9 | 100 | 4.92 T | 164 T | 55.5 | 42.9 JT | 101 | 4.92 T | 164 T | 55.5 | 42.9 JT | 101 |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 6 | 3 | 50 | 2.01 JT | 1430 JT | 507 | 88.9 JT | 88.9 JT | 2.01 JT | 1430 JT | 254 | 1.315 UT | 88.9 JT |
| **Dioxins_Furans** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 1 | 1 | 100 | 11 T | 11 T | 11 | 11 T | 11 T | 11 T | 11 T | 11 | 11 T | 11 T |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 1 | 1 | 100 | 1120 | 1120 | 1120 | 1120 | 1120 | 1120 | 1120 | 1120 | 1120 | 1120 |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033511

11.3.14-2. Potential Sources and Transport Pathways Assessment - iAOPC 18.

| | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | | | | | | Potential Complete Pathway | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | | | | |
| **Description of Potential Source** | **Surface Soil** | **Subsurface Soil** | **Groundwater** | **Catch Basin Solids** | **River Sediment** | **TPH** | **Gasoline-Range** | **Diesel - Range** | **Heavier - Range** | **Petroleum-Related (e.g. BTEX)** | **VOCs** | **Chlorinated VOCs** | **SVOCs** | **PAHs** | **Phthalates** | **Phenolics** | **Metals** | **PCBs** | **Herbicides and Pesticides** | **Dioxins/Furans** | **Butyltins** | **Calcium hydroxide (lime)** | **Grease** | **Oils** | **Overland Transport** | **Groundwater** | **Direct Discharge - Overwater** | **Direct Discharge - Storm/Wastewater** | **Riverbank Erosion** |
| ***Upland Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Anderson Brothers Property #970** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pockets o remaining soil contamination | ✓ | ✓ | ? | ? | | | | ✓ | ? | | ? | | ? | | | | ? | | | | | | | | | ? | | ? | |
| **Calbag Metals #2454** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Stormwater runoff to Outfall 19/19A | | | | ✓ | ✓ | | | | | | | | | | | | ✓ | | | | | | ✓ | ✓ | | | | ✓ | |
| **Front Avenue LP Properties #1239** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Slag fill material | ✓ | ✓ | ✓ | | ? | | | | | | | | | | | | ✓ | | | | | | | | ? | ✓ | ? | | ? |
| Parcel 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maintenance shop operations | ? | ? | ? | ? | ? | | | | | | | | | | | | | | | | | | | | ? | ? | | | ? |
| 20,000-gallon diesel AST | | | | | | | | ✓ | | | | | | | | | | | | | | | | | ? | ? | | | |
| 275-gallon motor oil, hydraulic oil, and used oil ASTs | | | | | | | | | ✓ | ✓ | | | ✓ | ✓ | | | ✓ | | | | | | | | ? | ? | | | |
| Steam cleaning area | ? | ? | ? | ? | ? | ✓ | | | | ✓ | ✓ | | | | | | ✓* | | | | | | | | ? | ? | | | |
| Former settling pond | | ✓ | ? | | ? | | | | | | | | | | | | | ✓ | | | | | | | | ? | | ? | |
| Parcel 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former Bunker C USTs and piping | | ✓ | ✓ | | | | | | ✓ | | ✓ | | | ✓ | | | ✓ | | | | | | | | | | | | |
| TFA manufacturing and site operations | | | | | | | | | | | ✓ | | | | | | | | | | | | | | | | | | |
| AST storage area | ? | ? | ? | ? | ? | | | | | | | | | | | | | | | | | | | | | ? | | ? | |
| Current drum storage area | ✓ | ? | ? | ? | ? | ✓ | | | | ✓ | ✓ | | ✓ | | | | ✓* | | | | | | | | | ? | | ? | |
| Former battery storage area | ✓ | ? | ? | ? | ? | | | | | ✓ | ✓ | | ✓ | | | | ✓* | | | | | | | | | ? | | ? | |
| Former caustic (methylene chloride) tank | ✓ | ? | ? | ? | ? | | | | | | | ✓ | | | | | | | | | | | | | | ? | | ? | |
| Former drum storage area | ✓ | ? | ? | ? | ? | ✓ | | | | | ✓ | | ✓ | | | | ✓* | | | | | | | | | ? | | ? | |
| Former process tank storage area | ✓ | ? | ? | ? | ? | ✓ | | | | | ✓ | | ✓ | | | | ✓* | ✓ | | | | | | | | ? | | ? | |
| Former sand blast shed/shot blast material | ✓ | ? | ? | ? | ? | ✓ | | | | ✓ | ✓ | | ✓ | | | | ✓* | | | | | | | | | ? | | ? | |
| Former Smith OWS | ✓ | ✓ | ? | ? | ? | ✓ | | | | ✓ | ✓ | | | | | | | | | | | | | | | ? | | ? | |
| Former steam cleaning area | ✓ | ? | ? | ? | ? | ✓ | | | | ✓ | ✓ | | | | | | ✓* | | | | | | | | | ? | | ? | |
| Former waste oil tank | ✓ | ? | ? | ? | ? | ✓ | | | | | | | | | | | | | | | | | | | | ? | | ? | |
| Low carbon steel shavings pile | ✓ | ? | ? | ? | ? | ✓ | | | | | ✓ | | ✓ | | | | ✓* | | | | | | | | | ? | | ? | |
| Mandrel rack /electrical motor storage area | ✓ | ? | ? | ? | ? | ✓ | | | | ✓ | ✓ | | ✓ | | | | ✓* | | | | | | | | | ? | | ? | |
| Mandrel rack and craneway | ✓ | ? | ? | ? | ? | ✓ | | | | | ✓ | | | | | | ✓* | | | | | | | | | ? | | ? | |
| Current or historical transformers | ? | ? | ? | ? | ? | | | | ✓ | | | | | | | | | ✓ | | | | | | | | ? | | ✓ | |
| Historic steel mill air emissions | ? | | | ? | ? | | | | | | | | | | | | ✓ | | | | | | | | ? | | | ? | |
| Railroad spur | ? | ? | ? | ? | ? | | | ✓ | ✓ | | | | | | | | | ? | | | | | | | | | ? | | ? | |
| Parcel 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Vehicle maintenance operations | ? | ? | ? | ? | ? | ✓ | | | | | | | ✓ | | | | | | | | | | | | ? | ? | | ? | |
| Diesel AST | ? | ? | ? | ? | ? | | | ✓ | | | | | | | | | | | | | | | | | ? | ? | | ? | |
| Railroad spur | ? | ? | ? | ? | ? | | | ✓ | ✓ | | | | | | | | | | | | | | | | | ? | | ? | |
| **Schnitzer Investment - Kittridge Distribution Center #2442** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Historical acetylene production and lime recovery | ✓ | ✓ | ✓ | | | | | | ✓ | | ✓ | | | | | | ✓ | | | | | ✓ | | | | | | ✓ | |



BZTO104(e)033512

11.3.14-2. Potential Sources and Transport Pathways Assessment - iAOPC 18.

| | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | | | | | | Potential Complete Pathway | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | | | | |
| **Description of Potential Source** | **Surface Soil** | **Subsurface Soil** | **Groundwater** | **Catch Basin Solids** | **River Sediment** | **TPH** | **Gasoline-Range** | **Diesel - Range** | **Heavier - Range** | **Petroleum-Related (e.g. BTEX)** | **VOCs** | **Chlorinated VOCs** | **SVOCs** | **PAHs** | **Phthalates** | **Phenolics** | **Metals** | **PCBs** | **Herbicides and Pesticides** | **Dioxins/Furans** | **Butyltins** | **Calcium hydroxide (lime)** | **Grease** | **Oils** | **Overland Transport** | **Groundwater** | **Direct Discharge - Overwater** | **Direct Discharge - Storm/Wastewater** | **Riverbank Erosion** |
| ***Overwater Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Front Avenue LP Properties #12239** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Delivery vessel operations | | | | | ? | | | ✓ | ✓ | | | | | | | | | | | | | | | | | | ? | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ***Other Areas/Other Issues*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Notes:**

All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ = Source, COI are present or current or historic pathway is determined to be complete or potentially complete.

? = There is not enough information to determine if source or COI is present or if pathway is complete.

UST Underground storage tank

AST Above-ground storage tank

TPH Total petroleum hydrocarbons

VOCs Volatile organic compounds

SVOCs Semivolatile organic compounds

PAHs Polycyclic aromatic hydrocarbons

BTEX Benzene, toluene, ethylbenzene, and xylenes

PCBs Polychlorinated biphenyls

* TCLP data indicate leachable metals in soil (MFA 2002).

? Unknown



BZTO104(e)033513

Table 11.3.14-3. Preliminary Evaluation of Relative Contribution of Migration Pathways to iAOPC 18.

| Current Pathway | Data Quality/ Quantity | Relative Contribution *PCBs* |
|---|---|---|
| Groundwater | Low | Low |
| Overwater Release | Low | Med |
| Stormwater/Wastewater/ Overland Transport | Med | Med |
| Bank/Soil Erosion | Low | NE |
| Sediment Transport | Low | NE |

| Historical Pathway | Data Quality/ Quantity | Relative Contribution *PCBs* |
|---|---|---|
| Groundwater | Low | Low |
| Overwater Release | Low | Med |
| Stormwater/Wastewater/ Overland Transport | Low | Med |
| Bank/Soil Erosion | Low | NE |
| Sediment Transport | Low | NE |

Notes:
Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).
Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.
NE - Not Estimated. The data quality/quantity is inadequate to make a determination of relative contribution.

BZTO104(e)033514

Table 11.3.15-1a. iCOC Summary Statistics for Sediment - iAOPC 19.

| Analyte | Units | # | # Detected | % Detected | Detected Concentrations Minimum | Maximum | Mean | Median[a] | 95th[a] | Detected and Nondetected Concentrations Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 38 | 37 | 97.4 | 9.1 T | 27400 JT | 1060 | 142 JT | 1470 T | 9.1 T | 27400 JT | 1030 | 98 T | 1470 T |
| **Conventionals** | | | | | | | | | | | | | | |
| Ammonia[b] | mg/kg | 20 | 20 | 100 | 13.6 | 352 | 154 | 154 T | 240 | 13.6 | 352 | 154 | 154 T | 240 |
| **PCB Congener TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalen | pg/g | 8 | 8 | 100 | 1.3 T | 324 T | 57 | 2.38 JT | 61.6 T | 1.3 T | 324 T | 57 | 2.38 JT | 61.6 T |
| **Metals** | | | | | | | | | | | | | | |
| Cadmium[b] | mg/kg | 44 | 42 | 95.5 | 0.077 J | 5.41 | 0.592 | 0.352 J | 0.95 J | 0.077 J | 5.41 | 0.574 | 0.34 | 0.95 J |
| Mercury[b] | mg/kg | 44 | 43 | 97.7 | 0.039 | 2.01 | 0.182 | 0.086 | 0.407 T | 0.039 | 2.01 | 0.179 | 0.085 | 0.407 T |
| Silver[b] | mg/kg | 44 | 42 | 95.5 | 0.123 | 4.44 | 0.433 | 0.22 | 0.8 T | 0.123 | 4.44 | 0.423 | 0.22 | 0.8 T |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 8 | 8 | 100 | 50.4 | 35400 | 5210 | 115 | 2510 | 50.4 | 35400 | 5210 | 115 | 2510 |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg | 33 | 19 | 57.6 | 0.407 J | 132 J | 15 | 5.11 JT | 30 J | 0.0464 UJ | 132 J | 8.88 | 1.42 J | 28.6 P |
| alpha-Hexachlorocyclohexane[b] | µg/kg | 33 | 10 | 30.3 | 0.0361 J | 10 J | 1.82 | 0.427 J | 2.98 J | 0.0336 UJ | 10 J | 0.825 | 0.212 NJ | 2.98 J |
| Dieldrin[b] | µg/kg | 33 | 9 | 27.3 | 0.292 NJ | 356 J | 44 | 3.03 J | 21.5 J | 0.15 U | 356 J | 12.5 | 0.386 U | 9.5 UT |
| Endrin ketone[b] | µg/kg | 33 | 10 | 30.3 | 0.0195 J | 90.1 NJ | 11.1 | 1.18 NJ | 8.5 NJ | 0.0195 J | 90.1 NJ | 3.8 | 0.3305 U | 8.5 NJ |
| Total of 2,4' and 4,4'-DDD[b] | µg/kg | 32 | 31 | 96.9 | 0.915 JT | 1370 JT | 68.9 | 13.8 JT | 93.2 JT | 0.915 JT | 1370 JT | 66.7 | 10.7 JT | 93.2 JT |
| Total of 2,4' and 4,4'-DDE[b] | µg/kg | 32 | 32 | 100 | 1.09 JT | 2530 JT | 107 | 10.2 T | 123 JT | 1.09 JT | 2530 JT | 107 | 10.2 T | 123 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg | 32 | 21 | 65.6 | 0.734 JT | 66.8 JT | 7.71 | 2.43 JT | 10.6 JT | 0.0826 UJT | 66.8 JT | 5.78 | 2.355 UT | 10.6 JT |
| **Petroleum** | | | | | | | | | | | | | | |
| Diesel Range Hydrocarbons[b] | mg/kg | 24 | 22 | 91.7 | 16.2 JV | 8400 J | 577 | 160 J | 610 J | 16.2 JV | 8400 J | 530 | 150 J | 610 J |
| Residual Range Hydrocarbons[b] | mg/kg | 14 | 14 | 100 | 400 J | 18000 J | 2100 | 760 J | 2300 J | 400 J | 18000 J | 2100 | 760 J | 2300 J |
| **Phthalates** | | | | | | | | | | | | | | |
| Dibutyl phthalate[b] | µg/kg | 44 | 11 | 25 | 7.6 J | 185 J | 68.5 | 46 J | 160 | 5.2 UJ | 10000 U | 204 | 10 U | 160 |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 45 | 40 | 88.9 | 2.91 JT | 21900 JT | 837 | 79.5 JT | 2110 JT | 2.3 UT | 21900 JT | 744 | 65.5 JT | 755 JT |
| **PCB Congener TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalen | pg/g | 4 | 4 | 100 | 10.4 T | 318 T | 97.8 | 14 JT | 48.8 T | 10.4 T | 318 T | 97.8 | 14 JT | 48.8 T |
| **Metals** | | | | | | | | | | | | | | |
| Cadmium[b] | mg/kg | 42 | 42 | 100 | 0.088 | 5.3 | 0.605 | 0.314 J | 0.923 J | 0.088 | 5.3 | 0.605 | 0.314 J | 0.923 J |
| Mercury[b] | mg/kg | 39 | 39 | 100 | 0.019 | 1.3 | 0.224 | 0.11 | 1.01 | 0.019 | 1.3 | 0.224 | 0.11 | 1.01 |
| Silver[b] | mg/kg | 42 | 42 | 100 | 0.036 | 3.4 | 0.519 | 0.377 J | 1.01 | 0.036 | 3.4 | 0.519 | 0.377 J | 1.01 |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 4 | 4 | 100 | 506 | 36800 | 11000 | 591 | 5990 | 506 | 36800 | 11000 | 591 | 5990 |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/kg | 34 | 7 | 20.6 | 0.631 NJ | 637 J | 96.8 | 2.44 J | 31.3 | 0.0329 UJ | 637 J | 20 | 0.02575 UJ | 2.77 NJ |
| alpha-Hexachlorocyclohexane[b] | µg/kg | 34 | 6 | 17.6 | 1.47 NJ | 98.9 NJ | 19 | 1.83 J | 7.37 NJ | 0.0351 U | 98.9 NJ | 3.42 | 0.0275 U | 2.9 J |
| Dieldrin[b] | µg/kg | 34 | 2 | 5.88 | 0.828 NJ | 51 J | 25.9 | 0.828 NJ | 0.828 NJ | 0.0538 U | 51 J | 1.73 | 0.04145 UJ | 0.95 U |
| Endrin ketone[b] | µg/kg | 34 | 6 | 17.6 | 0.16 J | 55.9 NJ | 10 | 0.771 NJ | 1.5 NJ | 0.0381 U | 55.9 NJ | 1.85 | 0.0252 UJ | 1.1 UIJ |
| Total of 2,4' and 4,4'-DDD[b] | µg/kg | 33 | 31 | 93.9 | 0.349 JT | 2980 JT | 112 | 3.15 JT | 102 JT | 0.0625 UJT | 2980 JT | 105 | 3.14 JT | 102 JT |
| Total of 2,4' and 4,4'-DDE[b] | µg/kg | 33 | 31 | 93.9 | 0.382 JT | 2830 JT | 130 | 3.25 JT | 380 JT | 0.0586 UJT | 2830 JT | 122 | 3.19 JT | 380 JT |
| Total of 2,4' and 4,4'-DDT | µg/kg | 33 | 25 | 75.8 | 0.214 JT | 31.5 JT | 3.46 | 0.899 JT | 9.74 JT | 0.0604 UJT | 31.5 JT | 2.64 | 0.661 JT | 9.74 JT |
| **Petroleum** | | | | | | | | | | | | | | |
| Diesel Range Hydrocarbons[b] | mg/kg | 22 | 21 | 95.5 | 51 J | 12000 J | 1100 | 280 J | 2000 J | 14 U | 12000 J | 1050 | 180 J | 2000 J |
| Residual Range Hydrocarbons[b] | mg/kg | 22 | 22 | 100 | 68 J | 25000 J | 2240 | 580 J | 3500 J | 68 J | 25000 J | 2240 | 580 J | 3500 J |
| **Phthalates** | | | | | | | | | | | | | | |
| Dibutyl phthalate[b] | µg/kg | 45 | 12 | 26.7 | 4.5 J | 91 | 16.2 | 5.8 J | 30 J | 3.6 U | 910 U | 27.5 | 8.8 J | 91 |

**Notes:**

[a] This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.

DL - Detection Limit.

J - The associated numerical value is an estimated quantity.

N - Presumptive evidence of presence of material; identification of the compound is not definitive.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033515

Table 11.3.15-1b. iCOC Summary Statistics for Surface Water - iAOPC 19.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **Collection Method: Bottle** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/l | 3 | 0 | 0 | | | | | | 0.0025 UT | 0.00263 UT | 0.00128 | 0.001265 UT | 0.001265 UT |
| **Metals** | | | | | | | | | | | | | | |
| Cadmium (dissolved)[b] | mg/l | 3 | 2 | 66.7 | 0.00002 | 0.00003 | 0.000025 | 0.00002 | 0.00002 | 0.00002 U | 0.00003 | 0.00002 | 0.00002 | 0.00002 |
| Cadmium[b] | mg/l | 3 | 2 | 66.7 | 0.00002 | 0.00003 | 0.000025 | 0.00002 | 0.00002 | 0.00002 UT | 0.00003 | 0.00002 | 0.00002 | 0.00002 |
| Mercury (dissolved)[b] | mg/l | 3 | 0 | 0 | | | | | | 0.00004 U | 0.00008 U | 0.0000267 | 0.00002 U | 0.00002 U |
| Mercury[b] | mg/l | 3 | 0 | 0 | | | | | | 0.00004 U | 0.00008 U | 0.0000267 | 0.00002 UT | 0.00002 UT |
| Silver (dissolved)[b] | mg/l | 3 | 0 | 0 | | | | | | 0.000005 UJ | 0.000009 U | 3.83E-06 | 0.0000045 U | 0.0000045 U |
| Silver[b] | mg/l | 3 | 0 | 0 | | | | | | 0.000005 UJ | 0.000009 UT | 3.83E-06 | 0.0000045 U | 0.0000045 U |
| **Pesticides** | | | | | | | | | | | | | | |
| Aldrin | µg/l | 3 | 0 | 0 | | | | | | 0.000481 U | 0.0005 U | 0.000244 | 0.0002425 U | 0.0002425 U |
| alpha-Hexachlorocyclohexane[b] | µg/l | 3 | 0 | 0 | | | | | | 0.000481 U | 0.0005 U | 0.000244 | 0.0002425 U | 0.0002425 U |
| Dieldrin[b] | µg/l | 3 | 0 | 0 | | | | | | 0.000481 U | 0.0005 U | 0.000244 | 0.0002425 U | 0.0002425 U |
| Endrin ketone[b] | µg/l | 3 | 0 | 0 | | | | | | 0.000481 U | 0.0005 U | 0.000244 | 0.0002425 U | 0.0002425 U |
| Total of 2,4' and 4,4'-DDD[b] | µg/l | 3 | 0 | 0 | | | | | | 0.000481 UT | 0.0005 UT | 0.000244 | 0.0002425 UT | 0.0002425 UT |
| Total of 2,4' and 4,4'-DDE[b] | µg/l | 3 | 0 | 0 | | | | | | 0.000481 UT | 0.0005 UT | 0.000244 | 0.0002425 UT | 0.0002425 UT |
| Total of 2,4' and 4,4'-DDT | µg/l | 3 | 1 | 33.3 | 0.00115 T | 0.00115 T | 0.00115 | 0.00115 T | 0.00115 T | 0.000481 UT | 0.00115 T | 0.000544 | 0.0002425 UJT | 0.0002425 UJT |
| **Phthalates** | | | | | | | | | | | | | | |
| Dibutyl phthalate[b] | µg/l | 3 | 0 | 0 | | | | | | 0.067 U | 0.097 U | 0.0407 | 0.04 U | 0.04 U |

**Notes:**

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.

DL - Detection Limit.

J - The associated numerical value is an estimated quantity.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033516

Table 11.3.15-1c. iCOC Summary Statistics for Tissue - iAOPC 19.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 299 JT | 299 JT | 299 | 299 JT | 299 JT | 299 JT | 299 JT | 299 | 299 JT | 299 JT |
| Dioxin-like PCB congener TCDD toxicity equivalen | pg/g-Wet | 1 | 1 | 100 | 5.52 T | 5.52 T | 5.52 | 5.52 T | 5.52 T | 5.52 T | 5.52 T | 5.52 | 5.52 T | 5.52 T |
| Cadmium[b] | mg/kg-Wet | 1 | 1 | 100 | 0.0925 | 0.0925 | 0.0925 | 0.0925 | 0.0925 | 0.0925 | 0.0925 | 0.0925 | 0.0925 | 0.0925 |
| Mercury[b] | mg/kg-Wet | 1 | 1 | 100 | 0.011 J | 0.011 J | 0.011 | 0.011 J | 0.011 J | 0.011 J | 0.011 J | 0.011 | 0.011 J | 0.011 J |
| Silver[b] | mg/kg-Wet | 1 | 1 | 100 | 0.053 | 0.053 | 0.053 | 0.053 | 0.053 | 0.053 | 0.053 | 0.053 | 0.053 | 0.053 |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 421 | 421 | 421 | 421 | 421 | 421 | 421 | 421 | 421 | 421 |
| Aldrin | ug/kg-Wet | 1 | 1 | 100 | 5.07 | 5.07 | 5.07 | 5.07 | 5.07 | 5.07 | 5.07 | 5.07 | 5.07 | 5.07 |
| alpha-Hexachlorocyclohexane[b] | ug/kg-Wet | 1 | 1 | 100 | 0.0128 J | 0.0128 J | 0.0128 | 0.0128 J | 0.0128 J | 0.0128 J | 0.0128 J | 0.0128 | 0.0128 J | 0.0128 J |
| Dieldrin[b] | ug/kg-Wet | 1 | 1 | 100 | 2.62 | 2.62 | 2.62 | 2.62 | 2.62 | 2.62 | 2.62 | 2.62 | 2.62 | 2.62 |
| Endrin ketone[b] | ug/kg-Wet | 1 | 1 | 100 | 0.00464 J | 0.00464 J | 0.00464 | 0.00464 J | 0.00464 J | 0.00464 J | 0.00464 J | 0.00464 | 0.00464 J | 0.00464 J |
| Total of 2,4' and 4,4'-DDD[b] | ug/kg-Wet | 1 | 1 | 100 | 29.7 T | 29.7 T | 29.7 | 29.7 T | 29.7 T | 29.7 T | 29.7 T | 29.7 | 29.7 T | 29.7 T |
| Total of 2,4' and 4,4'-DDE[b] | ug/kg-Wet | 1 | 1 | 100 | 66.8 T | 66.8 T | 66.8 | 66.8 T | 66.8 T | 66.8 T | 66.8 T | 66.8 | 66.8 T | 66.8 T |
| Total of 2,4' and 4,4'-DDT | ug/kg-Wet | 1 | 1 | 100 | 1.63 T | 1.63 T | 1.63 | 1.63 T | 1.63 T | 1.63 T | 1.63 T | 1.63 | 1.63 T | 1.63 T |
| Dibutyl phthalate[b] | ug/kg-Wet | 1 | 0 | 0 | | | | | | 16 U | 16 U | 8 | 8 U | 8 U |
| ***Lab Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 128 JT | 128 JT | 128 | 128 JT | 128 JT | 128 JT | 128 JT | 128 | 128 JT | 128 JT |
| Dioxin-like PCB congener TCDD toxicity equivalen | pg/g-Wet | 1 | 1 | 100 | 1.82 JT | 1.82 JT | 1.82 | 1.82 JT | 1.82 JT | 1.82 JT | 1.82 JT | 1.82 | 1.82 JT | 1.82 JT |
| Cadmium[b] | mg/kg-Wet | 1 | 1 | 100 | 0.0582 | 0.0582 | 0.0582 | 0.0582 | 0.0582 | 0.0582 | 0.0582 | 0.0582 | 0.0582 | 0.0582 |
| Mercury[b] | mg/kg-Wet | 1 | 1 | 100 | 0.0116 | 0.0116 | 0.0116 | 0.0116 | 0.0116 | 0.0116 | 0.0116 | 0.0116 | 0.0116 | 0.0116 |
| Silver[b] | mg/kg-Wet | 1 | 1 | 100 | 0.0155 | 0.0155 | 0.0155 | 0.0155 | 0.0155 | 0.0155 | 0.0155 | 0.0155 | 0.0155 | 0.0155 |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 |
| Aldrin | ug/kg-Wet | 1 | 1 | 100 | 2.14 | 2.14 | 2.14 | 2.14 | 2.14 | 2.14 | 2.14 | 2.14 | 2.14 | 2.14 |
| alpha-Hexachlorocyclohexane[b] | ug/kg-Wet | 1 | 1 | 100 | 0.00798 J | 0.00798 J | 0.00798 | 0.00798 J | 0.00798 J | 0.00798 J | 0.00798 J | 0.00798 | 0.00798 J | 0.00798 J |
| Dieldrin[b] | ug/kg-Wet | 1 | 1 | 100 | 4.14 | 4.14 | 4.14 | 4.14 | 4.14 | 4.14 | 4.14 | 4.14 | 4.14 | 4.14 |
| Endrin ketone[b] | ug/kg-Wet | 1 | 1 | 100 | 0.0108 J | 0.0108 J | 0.0108 | 0.0108 J | 0.0108 J | 0.0108 J | 0.0108 J | 0.0108 | 0.0108 J | 0.0108 J |
| Total of 2,4' and 4,4'-DDD[b] | ug/kg-Wet | 1 | 1 | 100 | 10.6 T | 10.6 T | 10.6 | 10.6 T | 10.6 T | 10.6 T | 10.6 T | 10.6 | 10.6 T | 10.6 T |
| Total of 2,4' and 4,4'-DDE[b] | ug/kg-Wet | 1 | 1 | 100 | 7.11 T | 7.11 T | 7.11 | 7.11 T | 7.11 T | 7.11 T | 7.11 T | 7.11 | 7.11 T | 7.11 T |
| Total of 2,4' and 4,4'-DDT | ug/kg-Wet | 1 | 1 | 100 | 0.146 JT | 0.146 JT | 0.146 | 0.146 JT | 0.146 JT | 0.146 JT | 0.146 JT | 0.146 | 0.146 JT | 0.146 JT |
| Dibutyl phthalate[b] | ug/kg-Wet | 1 | 0 | 0 | | | | | | 16 U | 16 U | 8 | 8 U | 8 U |
| ***Lumbriculus variegatus (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 3230 JT | 3230 JT | 3230 | 3230 JT | 3230 JT | 3230 JT | 3230 JT | 3230 | 3230 JT | 3230 JT |
| Dioxin-like PCB congener TCDD toxicity equivalen | pg/g-Wet | 1 | 1 | 100 | 33.9 JT | 33.9 JT | 33.9 | 33.9 JT | 33.9 JT | 33.9 JT | 33.9 JT | 33.9 | 33.9 JT | 33.9 JT |
| Cadmium[b] | mg/kg-Wet | 1 | 1 | 100 | 0.0488 | 0.0488 | 0.0488 | 0.0488 | 0.0488 | 0.0488 | 0.0488 | 0.0488 | 0.0488 | 0.0488 |
| Mercury[b] | mg/kg-Wet | 1 | 1 | 100 | 0.01 J | 0.01 J | 0.01 | 0.01 J | 0.01 J | 0.01 J | 0.01 J | 0.01 | 0.01 J | 0.01 J |
| Silver[b] | mg/kg-Wet | 1 | 1 | 100 | 0.0133 | 0.0133 | 0.0133 | 0.0133 | 0.0133 | 0.0133 | 0.0133 | 0.0133 | 0.0133 | 0.0133 |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 4310 | 4310 | 4310 | 4310 | 4310 | 4310 | 4310 | 4310 | 4310 | 4310 |
| Aldrin | ug/kg-Wet | 1 | 1 | 100 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| alpha-Hexachlorocyclohexane[b] | ug/kg-Wet | 1 | 1 | 100 | 0.0149 J | 0.0149 J | 0.0149 | 0.0149 J | 0.0149 J | 0.0149 J | 0.0149 J | 0.0149 | 0.0149 J | 0.0149 J |
| Dieldrin[b] | ug/kg-Wet | 1 | 1 | 100 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 | 26.7 |
| Endrin ketone[b] | ug/kg-Wet | 1 | 1 | 100 | 0.0171 J | 0.0171 J | 0.0171 | 0.0171 J | 0.0171 J | 0.0171 J | 0.0171 J | 0.0171 | 0.0171 J | 0.0171 J |
| Total of 2,4' and 4,4'-DDD[b] | ug/kg-Wet | 1 | 1 | 100 | 131 T | 131 T | 131 | 131 T | 131 T | 131 T | 131 T | 131 | 131 T | 131 T |
| Total of 2,4' and 4,4'-DDE[b] | ug/kg-Wet | 1 | 1 | 100 | 153 T | 153 T | 153 | 153 T | 153 T | 153 T | 153 T | 153 | 153 T | 153 T |
| Total of 2,4' and 4,4'-DDT | ug/kg-Wet | 1 | 1 | 100 | 0.0873 JT | 0.0873 JT | 0.0873 | 0.0873 JT | 0.0873 JT | 0.0873 JT | 0.0873 JT | 0.0873 | 0.0873 JT | 0.0873 JT |
| Dibutyl phthalate[b] | ug/kg-Wet | 1 | 0 | 0 | | | | | | 320 U | 320 U | 160 | 160 U | 160 U |

Notes:

[a] This value was selected from an ascending ranked list of all results. Where n – the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.

DL - Detection Limit.

J - The associated numerical value is an estimated quantity.

T - The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods) for the Round 2 data.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033517

Table 11.3.15-1d. Summary Statistics for Pore Water - iAOPC 19.

| | | | Detected Concentrations | | | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| Cadmium[b] | mg/l | 2 | 0 | 0 | | | | | | 0.002 U | 0.002 U | 0.001 | 0.001 U | 0.001 U |
| Mercury[b] | mg/l | 2 | 0 | 0 | | | | | | 0.0001 U | 0.0001 U | 0.00005 | 0.00005 U | 0.00005 U |
| Silver[b] | mg/l | 2 | 0 | 0 | | | | | | 0.0002 U | 0.0002 U | 0.0001 | 0.0001 U | 0.0001 U |

**Notes:**

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.

DL - Detection Limit.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.



BZTO104(e)033518

Table 11.3.15-2. Potential Sources and Transport Pathways Assessment - iAOPC 19.

| Potential Sources | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | | | Potential Complete Pathway | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | | | |
| **Description of Potential Source** | **Surface Soil** | **Subsurface Soil** | **Groundwater** | **Catch Basin Solids** | **River Sediment** | **Gasoline-Range** | **Diesel - Range** | **Heavier - Range** | **Petroleum-Related (e.g. BTEX)** | **VOCs** | **Chlorinated VOCs** | **SVOCs** | **PAHs** | **Phthalates** | **Phenolics** | **Metals** | **PCBs** | **Herbicides and Pesticides** | **Dioxins/Furans** | **Butyltins** | **Cyanide** | **Overland Transport** | **Groundwater** | **Direct Discharge - Overwater** | **Direct Discharge - Storm/Wastewater** | **Riverbank Erosion** |
| ***Upland Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Gunderson, Inc. #1155** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former 1,1,1-Trichloroethane Tank | ✓ | ✓ | ✓ | | | | | | | | ✓ | | | | | | | | | | | | ✓ | | | | |
| Former Marine Barge Paint Storage | | ✓ | | | | | | | | ✓ | | | | | | ✓ | | | | | | | | | | | |
| Marine Barge Paint and Blast Area | ✓ | ✓ | ? | ✓ | ? | | | ✓ | | ✓ | | | | | | ✓ | ✓ | | | ✓ | | ✓ | ? | ✓ | ✓ | ? | |
| Marine Barge Launchways | ✓ | | | ✓ | ✓ | | | | | ✓ | | | | | | ✓ | | | | | | ✓ | | | ✓ | ✓ | |
| Former Ship Dismantlers Access Gully | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | | | | | | | | ✓ | ✓ | | | | | ✓ | ✓ | | ✓ | ✓ | |
| Former Auto Salvage Yard | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | | | | | ✓ | | | ✓ | ✓ | | | | | ✓ | ✓ | | ✓ | | |
| Hazardous Materials Storage Area | ✓ | | | | | | | | | ✓ | | | | | | | | | | | | | | | | | |
| **Equilon Property #169, #2117** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pipe containment | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | | | ✓ | | | | | | | | | | ? | | | | |
| ASTs | ✓ | ✓ | | | | | ✓ | ✓ | ✓ | | | | ✓ | | | | | | | | | | | | | | |
| Drainage ditch | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | | | | ✓ | | | | | | | | | | ? | | | | |
| Foundry sand | ✓ | ✓ | | | | | | | | | | | | | | ✓ | | | | | | | | | | | |
| **BNRR Lake Yard #100** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Creek sediment | ✓ | | | | ? | | ? | ✓ | | | | | | | | | | | | | | | | | | | |
| Buried solidified paint drums | ✓ | ✓ | ✓ | | | | | | | | ✓ | | | | ✓ | ✓ | | | | | | | ? | | ? | | |
| Underground mineral spirits pipeline release | | ✓ | ? | | | | | | ✓ | | | | | | | | | | | | | | | | | | |
| Lessee operations (Kleen Blast) | ✓ | | | | | | | | | | | | | | | ✓ | | | | | | | | | ? | | |
| Former hazardous waste storage (McClosky Varnish Leased | | | | | | ? | ✓ | ✓ | ✓ | | ✓ | | | | ✓ | | | | | | | | | | ✓ | | |
| Former locomotive fueling area | ✓ | ✓ | | | | | ✓ | ✓ | | | | | | | | | ✓ | | | | | | | | | | |
| Burn/drainage ditch | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hydraulic oil release to storm sewer catch basins | | | | ✓ | | | | ✓ | | | | | | | | | | | | | | | | | ? | | |
| **Christenson Oil #2426** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Miscellaneous surface contamination | ✓ | ? | ? | ✓ | ? | ? | ✓ | ✓ | ✓ | | | | ✓ | | | | | | | | | | ? | | ? | | |
| Intermittent creek | ? | ? | ? | | ? | ? | ? | ? | | | | | | | | | | | | | | | ? | | | | |
| Storm sewers | | | | ✓ | ? | | ✓ | ✓ | ✓ | | | | ✓ | | | ✓ | | | | | | | | | ✓ | | |
| **Columbia American Plating Co. #29** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Spills and releases | ✓ | ✓ | ✓ | | ? | | | | | | ✓ | ✓ | | | | ✓ | | | | | ✓ | | ? | | ✓ | | |
| **McWhoter, Inc. #135** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Historic spills or releases from tanks and pipelines | | ✓ | | ? | | | ✓ | | ✓ | | | ✓ | ✓ | ✓ | | | | | | | | ? | | | ✓ | | |
| Former creek | | | | | ? | | | | ✓ | | | | ? | ? | | | | | | | | | | | ? | | |
| **Trumbull Asphalt Plant #1160** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Asphalt tank farm | | ✓ | ? | | | ? | ✓ | ✓ | ✓ | | | | ? | | | | | | | | | | ? | | | | |
| Roofing production line[1] | | ✓ | | ? | ? | | ✓ | ✓ | | | | | ? | | | | | | | | | | | | ✓ | | |
| Fume line | ✓ | ✓ | ✓ | | | ? | ✓ | ✓ | ✓ | | | | ? | | | | | | | | | | ✓ | | | | |
| Boiler lines and fuel tank | | ✓ | ? | | | ? | ✓ | ✓ | ✓ | | | | ? | | | | | | | | | | ? | | | | |
| Maintenance shops[2] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Van Waters & Rogers #330** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former recycling area | ✓ | ✓ | ✓ | ? | | | | | ✓ | ✓ | ✓ | | | | | | | | | | | | ✓ | | ? | | |
| Loading dock areas (including drum fill area) | ✓ | ✓ | ✓ | ? | | | | | ✓ | ✓ | ✓ | | | | | | | | | | | | ✓ | | ? | | |
| ***Overwater Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Gunderson, Inc. #1155** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Marine barge launchways | | | | | ✓ | | | | | ✓ | | | | | | ✓ | | | | ✓ | | | | ✓ | | | |
| Railcar storage on outfitting dock | | | | | ? | | | | | ✓ | | | | | | | | | | | | | | ✓ | | | |
| **Equilon Property #169, #2117** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dock operations | | | | ✓ | ✓ | | ✓ | ✓ | ✓ | | | | ✓ | | | | | | | | | | | | ✓ | | |
| ***Other Areas/Other Issues*** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Columbia American Plating Co. #29** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | ✓ | | | | | | | ✓ | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Notes:**

All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ = Source, COI are present or current or historic pathway is determined to be complete or potentially complete.

? = There is not enough information to determine if source or COI is present or if pathway is complete.

| | |
|---|---|
| UST | Underground storage tank |
| AST | Above-ground storage tank |
| TPH | Total petroleum hydrocarbons |
| VOCs | Volatile organic compounds |
| SVOCs | Semivolatile organic compounds |
| PAHs | Polycyclic aromatic hydrocarbons |
| BTEX | Benzene, toluene, ethylbenzene, and xylenes |
| PCBs | Polychlorinated biphenyls |



BZTO104(e)033519

Table 11.3.15-3. Preliminary Evaluaton of Relative Contribution of Migration Pathways to iAOPC 19.

| CURRENT Pathway | Data Quality/ Quantity | Relative Contribution | | | | |
|---|---|---|---|---|---|---|
| | | PCBs | Cadmium | DBP | DDD | DRH |
| Groundwater | High | Low | Low | NE | Low | Low |
| Overwater Release | Low | High | High | NE | High | High |
| Storm/Wastewater/ Overland Transport | Med | High | High | NE | High | High |
| Bank/Soil Erosion | Low | Medium | Medium | NE | Low | Low |
| Sediment Transport | Low | Low | Low | NE | Low | Low |

| HISTORICAL Pathway | Data Quality/ Quantity | Relative Contribution | | | | |
|---|---|---|---|---|---|---|
| | | PCBs | Cadmium | DBP | DDD | DRH |
| Groundwater | High | Low | Low | NE | Low | Low |
| Overwater Release | Low | High | High | NE | High | High |
| Storm/Wastewater/ Overland Transport | Low | High | High | NE | High | High |
| Bank/Soil Erosion | Low | Medium | Medium | NE | Low | Low |
| Sediment Transport | Low | Low | Low | NE | Low | Low |

**Notes:**
Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).

Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.
NE - Not Estimated. The data quality/quantity is inadequate to make a
DBP = Dibutyl phthalate
DRH = Diesel-Range Hydrocarbons

BZTO104(e)033520

Table 11.3.16-1a. iCOC Summary Statistics for Sediment – iAOPCs 20, 21, 22, and 23.

| Analyte | Units | # | # Detected | % Detected | Detected Concentrations: Minimum | Maximum | Mean | Median[a] | 95th[a] | Detected and Nondetected Concentrations: Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **AOPC 20** | | | | | | | | | | | | | | |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 2 | 2 | 100 | 156 T | 183 JT | 170 | 156 T | 156 T | 156 T | 183 JT | 170 | 156 T | 156 T |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 1 | 1 | 100 | 0.916 JT | 0.916 JT | 0.916 | 0.916 JT | 0.916 JT | 0.916 JT | 0.916 JT | 0.916 | 0.916 JT | 0.916 JT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 1 | 1 | 100 | 108 | 108 | 108 | 108 | 108 | 108 | 108 | 108 | 108 | 108 |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 1 | 1 | 100 | 48 T | 48 T | 48 | 48 T | 48 T | 48 T | 48 T | 48 | 48 T | 48 T |
| **AOPC 21** | | | | | | | | | | | | | | |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 26 | 25 | 96.2 | 16 T | 1430 T | 255 | 116 T | 580 T | 16 T | 1430 T | 246 | 108 T | 580 T |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 7 | 7 | 100 | 0.845 T | 23.1 T | 5.78 | 2.92 JT | 7.2 T | 0.845 T | 23.1 T | 5.78 | 2.92 JT | 7.2 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic[b] | mg/kg | 29 | 28 | 96.6 | 0.7 | 17 | 7.15 | 6 | 16 | 0.7 | 17 | 7.01 | 6 | 16 |
| Zinc[b] | mg/kg | 29 | 29 | 100 | 68 G | 731 | 270 | 238 E | 539 | 68 G | 731 | 270 | 238 E | 539 |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 7 | 7 | 100 | 23.6 | 725 | 183 | 92.6 JT | 218 | 23.6 | 725 | 183 | 92.6 JT | 218 |
| **Petroleum** | | | | | | | | | | | | | | |
| Diesel Range Hydrocarbons[b] | mg/kg | 10 | 10 | 100 | 99.5 JT | 406 JT | 171 | 150 J | 180 J | 99.5 JT | 406 JT | 171 | 150 J | 180 J |
| **Phthalates** | | | | | | | | | | | | | | |
| Dibutyl phthalate[b] | µg/kg | 27 | 24 | 88.9 | 11 J | 350 | 55.1 | 29 | 103 | 9.3 U | 350 | 50.5 | 27 | 103 |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 28 | 13 | 46.4 | 19.8 JT | 3840 JT | 952 | 376 JT | 2379 T | 2.2 UT | 3840 JT | 446 | 5 UT | 2290 T |
| **Metals** | | | | | | | | | | | | | | |
| Arsenic[b] | mg/kg | 43 | 37 | 86 | 1.71 T | 44.5 J | 5.31 | 3 | 14 | 1.71 T | 44.5 J | 4.71 | 3 | 7 |
| Zinc[b] | mg/kg | 43 | 43 | 100 | 26 | 1930 | 199 | 53 | 598 | 26 | 1930 | 199 | 53 | 598 |
| **Petroleum** | | | | | | | | | | | | | | |
| Diesel Range Hydrocarbons[b] | mg/kg | 6 | 6 | 100 | 21 J | 880 J | 299 | 150 J | 440 J | 21 J | 880 J | 299 | 150 J | 440 J |
| **Phthalates** | | | | | | | | | | | | | | |
| Dibutyl phthalate[b] | µg/kg | 27 | 11 | 40.7 | 5.5 J | 230 | 56.1 | 24 | 135 | 3.5 U | 230 | 26 | 5 U | 88 |
| **AOPC 22** | | | | | | | | | | | | | | |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 31 | 28 | 90.3 | 8.79 T | 2500 T | 397 | 191.1 T | 983 T | 2.82 UT | 2500 T | 359 | 175 T | 983 T |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 4 | 4 | 100 | 4.19 T | 15.7 T | 10.9 | 11.8 T | 12 T | 4.19 T | 15.7 T | 10.9 | 11.8 T | 12 T |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 4 | 4 | 100 | 130 | 656 | 462 | 466 | 596 | 130 | 656 | 462 | 466 | 596 |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 29 | 13 | 44.8 | 6.24 JT | 1340 JT | 543 | 425 JT | 1220 JT | 2.28 UT | 1340 JT | 246 | 6.24 JT | 908 JT |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 2 | 2 | 100 | 7.47 T | 15.1 T | 11.3 | 7.47 T | 7.47 T | 7.47 T | 15.1 T | 11.3 | 7.47 T | 7.47 T |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 2 | 2 | 100 | 291 | 571 | 431 | 291 | 291 | 291 | 571 | 431 | 291 | 291 |



BZTO104(e)033521

Table 11.3.16-1a. iCOC Summary Statistics for Sediment – iAOPCs 20, 21, 22, and 23.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **AOPC 23** | | | | | | | | | | | | | | |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 28 | 25 | 89.3 | 2.39 JT | 880 JT | 141 | 107 T | 333 JT | 2.39 JT | 880 JT | 127 | 53 T | 333 JT |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 5 | 5 | 100 | 0.339 T | 10.5 T | 3.77 | 2.83 T | 3.37 JT | 0.339 T | 10.5 T | 3.77 | 2.83 T | 3.37 JT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 20 | 16 | 80 | 0.629 T | 256 T | 39 | 10.2 JT | 124 | 0.31 UT | 256 T | 31.2 | 4.24 JT | 124 |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 30 | 24 | 80 | 22.2 JT | 1230 JT | 245 | 167 JT | 479 JT | 1.7 UT | 1230 JT | 196 | 140 T | 479 JT |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033522

Table 11.3.16-1b. iCOC Summary Statistics for Surface Water – iAOPCs 20, 21, 22, and 23.

| Analyte | Units | # | # Detected | % Detected | Detected Concentrations Minimum | Maximum | Mean | Median[a] | 95th[a] | Detected and Nondetected Concentrations Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **AOPC 22** | | | | | | | | | | | | | | |
| **Collection Method: Bottle** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/l | 1 | 0 | 0 | | | | | | 0.0025 UT | 0.0025 UT | 0.00125 | 0.00125 UT | 0.00125 UT |
| **Collection Method: XAD Column** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | pg/l | 3 | 3 | 100 | 111 JT | 335 JT | 245 | 288.9 JT | 288.9 JT | 111 JT | 335 JT | 245 | 288.9 JT | 288.9 JT |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/l | 3 | 3 | 100 | 0.00165 T | 0.00385 JT | 0.00249 | 0.00197 JT | 0.00197 JT | 0.00165 T | 0.00385 JT | 0.00249 | 0.00197 JT | 0.00197 JT |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | pg/l | 3 | 3 | 100 | 162 | 567 | 405 | 487 | 487 | 162 | 567 | 405 | 487 | 487 |
| **Collection Method: XAD Filter** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | pg/l | 3 | 3 | 100 | 251 JT | 872 JT | 479 | 314.64 JT | 314.64 JT | 251 JT | 872 JT | 479 | 314.64 JT | 314.64 JT |
| **PCB Congeners TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/l | 3 | 3 | 100 | 0.00547 T | 0.0176 T | 0.0102 | 0.00765 T | 0.00765 T | 0.00547 T | 0.0176 T | 0.0102 | 0.00765 T | 0.00765 T |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | pg/l | 3 | 3 | 100 | 277 | 1120 | 579 | 341 | 341 | 277 | 1120 | 579 | 341 | 341 |
| **AOPC 23** | | | | | | | | | | | | | | |
| **Collection Method: Bottle** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/l | 6 | 0 | 0 | | | | | | 0.0025 UT | 0.0026 UT | 0.00126 | 0.00125 UT | 0.00125 UT |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.



BZTO104(e)033523

Table 11.3.16-1c. iCOC Summary Statistics for Porewater – iAOPCs 20, 21, 22, and 23.

| | | | Detected Concentrations | | | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| Arsenic[b] | mg/l | 2 | 2 | 100 | 0.004 | 0.007 | 0.0055 | 0.004 | 0.004 | 0.004 | 0.007 | 0.0055 | 0.004 | 0.004 |
| Zinc[b] | mg/l | 2 | 2 | 100 | 0.073 | 0.179 | 0.126 | 0.073 | 0.073 | 0.073 | 0.179 | 0.126 | 0.073 | 0.073 |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033524

Table 11.3.16-1d. iCOC Summary Statistics for Tissue – iAOPCs 20, 21, 22, and 23.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **AOPC 21** | | | | | | | | | | | | | | |
| ***Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 166 JT | 166 JT | 166 | 166 JT | 166 JT | 166 JT | 166 JT | 166 | 166 JT | 166 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 3 T | 3 T | 3 | 3 T | 3 T | 3 T | 3 T | 3 | 3 T | 3 T |
| Arsenic[h] | mg/kg-Wet | 2 | 2 | 100 | 0.694 | 0.83 | 0.762 | 0.694 | 0.694 | 0.694 | 0.83 | 0.762 | 0.694 | 0.694 |
| Zinc[h] | mg/kg-Wet | 2 | 2 | 100 | 42.4 | 54 | 48.2 | 42.4 | 42.4 | 42.4 | 54 | 48.2 | 42.4 | 42.4 |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 | 240 |
| Dibutyl phthalate[h] | ug/kg-Wet | 1 | 1 | 100 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 |
| ***Lab Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 2 | 2 | 100 | 26.8 JT | 63.7 JT | 45.3 | 26.8 JT | 26.8 JT | 26.8 JT | 63.7 JT | 45.3 | 26.8 JT | 26.8 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 0.358 JT | 1.63 JT | 0.994 | 0.358 JT | 0.358 JT | 0.358 JT | 1.63 JT | 0.994 | 0.358 JT | 0.358 JT |
| Arsenic[h] | mg/kg-Wet | 2 | 2 | 100 | 0.406 J | 0.548 | 0.477 | 0.406 J | 0.406 J | 0.406 J | 0.548 | 0.477 | 0.406 J | 0.406 J |
| Zinc[h] | mg/kg-Wet | 2 | 2 | 100 | 15.2 | 16.2 | 15.7 | 15.2 | 15.2 | 15.2 | 16.2 | 15.7 | 15.2 | 15.2 |
| Total PCB Congeners | ug/kg-Wet | 2 | 2 | 100 | 34.1 | 74.4 | 54.3 | 34.1 | 34.1 | 34.1 | 74.4 | 54.3 | 34.1 | 34.1 |
| Dibutyl phthalate[h] | ug/kg-Wet | 2 | 0 | 0 | | | | | | 16 U | 190 U | 51.5 | 8 U | 8 U |
| ***Lumbriculus variegatus (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 2 | 2 | 100 | 312 JT | 394 JT | 353 | 312 JT | 312 JT | 312 JT | 394 JT | 353 | 312 JT | 312 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 5.91 JT | 7.44 JT | 6.68 | 5.91 JT | 5.91 JT | 5.91 JT | 7.44 JT | 6.68 | 5.91 JT | 5.91 JT |
| Arsenic[h] | mg/kg-Wet | 2 | 2 | 100 | 0.659 | 0.985 | 0.822 | 0.659 | 0.659 | 0.659 | 0.985 | 0.822 | 0.659 | 0.659 |
| Zinc[h] | mg/kg-Wet | 2 | 2 | 100 | 25.1 | 29.4 | 27.3 | 25.1 | 25.1 | 25.1 | 29.4 | 27.3 | 25.1 | 25.1 |
| Total PCB Congeners | ug/kg-Wet | 2 | 2 | 100 | 449 | 475 | 462 | 449 | 449 | 449 | 475 | 462 | 449 | 449 |
| Dibutyl phthalate[h] | ug/kg-Wet | 2 | 0 | 0 | | | | | | 16 U | 280 U | 74 | 8 U | 8 U |
| ***Multiplate Invertebrates (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 29.4 JT | 29.4 JT | 29.4 | 29.4 JT | 29.4 JT | 29.4 JT | 29.4 JT | 29.4 | 29.4 JT | 29.4 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.425 JT | 0.425 JT | 0.425 | 0.425 JT | 0.425 JT | 0.425 JT | 0.425 JT | 0.425 | 0.425 JT | 0.425 JT |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 33.1 | 33.1 | 33.1 | 33.1 | 33.1 | 33.1 | 33.1 | 33.1 | 33.1 | 33.1 |
| ***Sculpin (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 480 JT | 480 JT | 480 | 480 JT | 480 JT | 480 JT | 480 JT | 480 | 480 JT | 480 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 6.06 T | 6.06 T | 6.06 | 6.06 T | 6.06 T | 6.06 T | 6.06 T | 6.06 | 6.06 T | 6.06 T |
| Arsenic[h] | mg/kg-Wet | 1 | 1 | 100 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| Zinc[h] | mg/kg-Wet | 1 | 1 | 100 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 352 JT | 352 JT | 352 | 352 JT | 352 JT | 352 JT | 352 JT | 352 | 352 JT | 352 JT |
| Dibutyl phthalate[h] | ug/kg-Wet | 1 | 0 | 0 | | | | | | 330 U | 330 U | 165 | 165 U | 165 U |
| **AOPC 22** | | | | | | | | | | | | | | |
| ***Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 246 JT | 246 JT | 246 | 246 JT | 246 JT | 246 JT | 246 JT | 246 | 246 JT | 246 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 3.48 T | 3.48 T | 3.48 | 3.48 T | 3.48 T | 3.48 T | 3.48 T | 3.48 | 3.48 T | 3.48 T |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 386 | 386 | 386 | 386 | 386 | 386 | 386 | 386 | 386 | 386 |
| ***Lab Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 23.9 JT | 23.9 JT | 23.9 | 23.9 JT | 23.9 JT | 23.9 JT | 23.9 JT | 23.9 | 23.9 JT | 23.9 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.62 T | 0.62 T | 0.62 | 0.62 T | 0.62 T | 0.62 T | 0.62 T | 0.62 | 0.62 T | 0.62 T |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 | 32.3 |
| ***Largescale Sucker (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 320 T | 320 T | 320 | 320 T | 320 T | 320 T | 320 T | 320 | 320 T | 320 T |
| ***Lumbriculus variegatus (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 413 JT | 413 JT | 413 | 413 JT | 413 JT | 413 JT | 413 JT | 413 | 413 JT | 413 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 6.51 JT | 6.51 JT | 6.51 | 6.51 JT | 6.51 JT | 6.51 JT | 6.51 JT | 6.51 | 6.51 JT | 6.51 JT |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 730 | 730 | 730 | 730 | 730 | 730 | 730 | 730 | 730 | 730 |



BZTO104(e)033525

Table 11.3.16-1d. iCOC Summary Statistics for Tissue – iAOPCs 20, 21, 22, and 23.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **AOPC 23** | | | | | | | | | | | | | | |
| ***Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 189 JT | 189 JT | 189 | 189 JT | 189 JT | 189 JT | 189 JT | 189 | 189 JT | 189 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 4.33 T | 4.33 T | 4.33 | 4.33 T | 4.33 T | 4.33 T | 4.33 T | 4.33 | 4.33 T | 4.33 T |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 |
| ***Crayfish (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 2 | 2 | 100 | 46 T | 49 T | 47.5 | 46 T | 46 T | 46 T | 49 T | 47.5 | 46 T | 46 T |
| ***Lab Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 20.8 JT | 20.8 JT | 20.8 | 20.8 JT | 20.8 JT | 20.8 JT | 20.8 JT | 20.8 | 20.8 JT | 20.8 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.644 T | 0.644 T | 0.644 | 0.644 T | 0.644 T | 0.644 T | 0.644 T | 0.644 | 0.644 T | 0.644 T |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| ***Lumbriculus variegatus (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 102 JT | 102 JT | 102 | 102 JT | 102 JT | 102 JT | 102 JT | 102 | 102 JT | 102 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 3.74 JT | 3.74 JT | 3.74 | 3.74 JT | 3.74 JT | 3.74 JT | 3.74 JT | 3.74 | 3.74 JT | 3.74 JT |
| Total PCB Congeners | ug/kg-Wet | 1 | 1 | 100 | 168 | 168 | 168 | 168 | 168 | 168 | 168 | 168 | 168 | 168 |
| ***Sculpin (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | ug/kg-Wet | 1 | 1 | 100 | 510 JT | 510 JT | 510 | 510 JT | 510 JT | 510 JT | 510 JT | 510 | 510 JT | 510 JT |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.

[b] Potential iCOC. This chemical was identified through less certain and/or less rigorous evaluations including the floating percentile model (FPM) or other high uncertainty line of evidence.



BZTO104(e)033526

Table 11.3.16-2. Potential Sources and Transport Pathways Assessment - iAOPCs 20, 21, 22, and 23.

| | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | Potential Complete Pathway | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | |
| Description of Potential Source | Surface Soil | Subsurface Soil | Groundwater | Catch Basin Solids | River Sediment | Gasoline-Range | Diesel - Range | Heavier - Range | Petroleum-Related (e.g. BTEX) | VOCs | Chlorinated VOCs | SVOCs | PAHs | Phthalates | Phenolics | Metals | PCBs | Herbicides and Pesticides | Dioxins/Furans | Butyltins | Overland Transport | Groundwater | Direct Discharge - Overwater | Direct Discharge - Storm/Wastewater | Riverbank Erosion |
| *Upland Areas* | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Cascade General (formerly Portland Shipyard) #271** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Paint shed/blast booth area | | √ | | | | | √ | √ | | | | | √ | | | √ | | | | | | | | | |
| BWTP | | √ | | | | | √ | √ | | | | | √ | | | √ | √ | | | | | ? | | | |
| Building 43, 50 and 80 area | | √ | | | | | | | | | | | √ | | | √ | | | | | | | | | |
| Building 73 | | √ | | | | | | | | | | | √ | | | √ | | | | | | | | | |
| Building 4 | | √ | | | | | | | | | | | | | | √ | | | | | | | | | |
| WSI storage area | | √ | | | | | | | | | | | √ | | | √ | | | | | | | | | |
| Substations | √ | √ | | | | | √ | √ | | | | | √ | | | | √ | | | | | | | | |
| Building 58 | | √ | | | | | | | | | | | √ | | | √ | | | | | | | | | |
| USTs | | √ | | | | | √ | √ | | | | | √ | | | | | | | | | | | | |
| N. Channel Avenue fabrication site | √ | √ | | | | | √ | √ | | √ | | | √ | | | √ | √ | | | | | | | ? | |
| **Fred Devine Diving and Salvage, Inc. #2365** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maintenance operations (warehouse) | ? | ? | | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | | | | √ | ? | | | ? | |
| Oil/water separators | | ? | | | | | √ | √ | √ | √ | √ | √ | √ | √ | ? | √ | | | | | | | | ? | |
| PGE transformers | ? | ? | | | ? | | | | | | | | | | | | √ | | | | | | | ? | |
| Former USTs | | ? | ? | | ? | √ | √ | √ | √ | | | | | | | | | | | | | ? | | | |
| Catch basins | | ? | | √ | ? | | | √ | | | | √ | √ | √ | ? | √ | | | | | | | | √ | |
| ASTs | ? | ? | ? | ? | ? | ? | √ | ? | ? | ? | ? | ? | ? | ? | | ? | | | | | ? | | | ? | |
| Storage Area NW of Warehouse | √ | ? | ? | ? | ? | | | √ | | | | ? | ? | √ | ? | √ | | | | | ? | | | ? | |
| **Freightliner Truck Manufacturing Plant #2366** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former USTs | | √ | √ | | | √ | √ | √ | | √ | √ | √ | | | | | | | | | | | | | |
| Former wet filter paint booths | | √ | √ | | | √ | | | | √ | √ | √ | | | | | | | | | | | | | |
| Stormwater discharges | | | | | | | | | | | | | | | | √ | | | | | | | | √ | |
| **Freightliner Truck Manufacturing Plant #2366** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former USTs | | √ | √ | | | | √ | √ | | √ | √ | √ | | | | | | | | | | | | | |
| Former wheel paint booth | | √ | √ | | | √ | | | | √ | | √ | | | | | | | | | | | | | |
| Stormwater discharges | | | | | | | | | | | | | | | | √ | | | | | | | | √ | |
| **US Coast Guard Marine Safety Station #1338** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Buoy storage | √ | √ | | ? | ? | | | | | √ | | | | | | √ | | | | | | | | | |
| Garage | √ | √ | | ? | ? | | | | | √ | | √ | √ | | | √ | | √ | | | | | | | |
| Fuel storage and buried product lines | √ | √ | | ? | ? | √ | √ | | | | | | √ | | | | | | | | | | | | |
| Mount Jefferson building | √ | √ | | ? | ? | | | | | √ | | √ | √ | | | √ | | | | | | | | | |
| Former drum storage area | √ | | | ? | ? | | | | | √ | | √ | √ | | | √ | | | | | | | | | |
| Catch basins | | | | ? | | ? | ? | | ? | | | ? | ? | | | ? | | ? | | ? | | | | ? | |



BZTO104(e)033527

Table 11.3.16-2. Potential Sources and Transport Pathways Assessment - iAOPCs 20, 21, 22, and 23.

| | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | Potential Complete Pathway | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | |
| **Description of Potential Source** | **Surface Soil** | **Subsurface Soil** | **Groundwater** | **Catch Basin Solids** | **River Sediment** | **Gasoline-Range** | **Diesel - Range** | **Heavier - Range** | **Petroleum-Related (e.g. BTEX)** | **VOCs** | **Chlorinated VOCs** | **SVOCs** | **PAHs** | **Phthalates** | **Phenolics** | **Metals** | **PCBs** | **Herbicides and Pesticides** | **Dioxins/Furans** | **Butyltins** | **Overland Transport** | **Groundwater** | **Direct Discharge - Overwater** | **Direct Discharge - Storm/Wastewater** | **Riverbank Erosion** |
| *Overwater Areas* | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Cascade General (formerly Portland Shipyard) #271** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dry docks | | | | | √ | | | | | | | | √ | √ | | √ | | | | √ | | | √ | | |
| Berths 302, 303, 304, 305, 312, 313, 314 and 315 | | | | | √ | | | | | | | | √ | √ | | √ | | | | √ | | | √ | | |
| **Fred Devine Diving and Salvage, Inc. #2365** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Spills from dock and vessel fueling operations | | | | | ? | | √ | √ | | | | √ | √ | √ | | √ | | | | | | | √ | | |
| Vessel emissions and/or discharges (unknown) | | | | | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | | √ | | | | | | | ? | | |
| **US Coast Guard Marine Safety Station #1338** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dock and overwater maintenance operations | | | | | √ | √ | √ | | √ | | | √ | √ | | | √ | | | | √ | | | ? | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Other Areas/Other Issues* | | | | | | | | | | | | | | | | | | | | | | | | | |
| **US Coast Guard Marine Safety Station #1338** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shoreline | ? | ? | ? | | | | | | | | | | | | | | | | | | | | | | |

**Notes:**
All information provided in this table is refereneed in the site summaries. If information is not available or inconclusive, a ? May be used, as appropriate. No new information is provided in this table.
√ = Source, COI are present or current or historical pathway is determined to be complete or potentially complete.
? = There is not enough information to determine if source or COI is present or if pathway is complete.

| | |
|---|---|
| UST | Underground storage Tank |
| AST | Above-ground Storage Tank |
| TPH | Total Petroleum Hydrocarbons |
| VOCs | Volatile Organic Compounds |
| SVOCs | Semi-volatile Organic Compounds |
| PAHs | Polycyclic aromatic hydrocarbons |
| BTEX | Benzene, toluene, ethylbenzene, and xylenes |
| PCBs | Polychlorinated biphenyls |



BZTO104(e)033528

Table 11.3.16-3. Preliminary Evaluation of Relative Contribution of Migration Pathways to iAOPCs 20, 21, 22, and 23.

| | | | | | | |
|---|---|---|---|---|---|---|
| **AOPC 20** | Migration pathways for iAOPC 20 are not evaluated due to lack of information. | | | | | |
| | **CURRENT Pathway** | **Data Quality/ Quantity** | **Relative Contribution** | | | |
| | | | ***PCBs*** | ***DBP*** | ***DRH*** | ***Arsenic*** |
| **AOPC 21** | Groundwater | Med | Low | Low | Low | Low |
| | Overwater Release | Low | Low | Med | Med | Low |
| | Stormwater/Wastewater/ Overland Transport | Med | Med | Med | Med | Med |
| | Bank/Soil Erosion | Low | Low | Low | Low | Low |
| | Sediment Transport | Low | NE | NE | NE | NE |
| | **HISTORICAL Pathway** | **Data Quality/ Quantity** | **Relative Contribution** | | | |
| | | | ***PCBs*** | ***DBP*** | ***DRH*** | ***Arsenic*** |
| **AOPC 21** | Groundwater | Low | Low | Low | Low | Low |
| | Overwater Release | Low | High | High | High | High |
| | Stormwater/Wastewater/ Overland Transport | Low | High | High | High | High |
| | Bank/Soil Erosion | Low | Low | Low | Low | Low |
| | Sediment Transport | Low | NE | NE | NE | NE |
| | **CURRENT Pathway** | **Data Quality/ Quantity** | **Relative Contribution** | | | |
| | | | ***PCBs*** | ***DBP*** | ***DRH*** | ***Arsenic*** |
| **AOPC 22** | Groundwater | Low | Low | -- | -- | -- |
| | Overwater Release | Low | Low | -- | -- | -- |
| | Stormwater/Wastewater/ Overland Transport | Med | Med | -- | -- | -- |
| | Bank/Soil Erosion | Low | Low | -- | -- | -- |
| | Sediment Transport | Low | NE | -- | -- | -- |
| | **HISTORICAL Pathway** | **Data Quality/ Quantity** | **Relative Contribution** | | | |
| | | | ***PCBs*** | ***DBP*** | ***DRH*** | ***Arsenic*** |
| **AOPC 22** | Groundwater | Low | Low | -- | -- | -- |
| | Overwater Release | Low | Low | -- | -- | -- |
| | Stormwater/Wastewater/ Overland Transport | Low | Med | -- | -- | -- |
| | Bank/Soil Erosion | Low | Low | -- | -- | -- |
| | Sediment Transport | Low | NE | -- | -- | -- |
| | **CURRENT Pathway** | **Data Quality/ Quantity** | **Relative Contribution** | | | |
| | | | ***PCBs*** | ***DBP*** | ***DRH*** | ***Arsenic*** |
| **AOPC 23** | Groundwater | Low | Low | -- | -- | -- |
| | Overwater Release | Low | Low | -- | -- | -- |
| | Stormwater/Wastewater/ Overland Transport | Med | Med | -- | -- | -- |
| | Bank/Soil Erosion | Low | Low | -- | -- | -- |
| | Sediment Transport | Low | NE | -- | -- | -- |
| | **HISTORICAL Pathway** | **Data Quality/ Quantity** | **Relative Contribution** | | | |
| | | | ***PCBs*** | ***DBP*** | ***DRH*** | ***Arsenic*** |
| **AOPC 23** | Groundwater | Low | Low | -- | -- | -- |
| | Overwater Release | Low | Low | -- | -- | -- |
| | Stormwater/Wastewater/ Overland Transport | Low | Med | -- | -- | -- |
| | Bank/Soil Erosion | Low | Low | -- | -- | -- |
| | Sediment Transport | Low | NE | -- | -- | -- |

Notes:

Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).

Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.

"--" - Chemical is not an iCOC for this iAOPC.

NE - Not Estimated. The data quality/quantity is inadequate to make a determination of relative contribution.

DBP- Dibutyl phthalate

DRH - Diesel-range hydrocarbons

BZTO104(e)033529

Table 11.3.17-1a. iCOC Summary Statistics for Sediment - AOPC 24.

| Analyte | Units | # | # Detected | % Detected | Detected Concentrations Minimum | Detected Concentrations Maximum | Detected Concentrations Mean | Detected Concentrations Median[a] | Detected Concentrations 95th[a] | Detected and Nondetected Concentrations Minimum (full DL) | Detected and Nondetected Concentrations Maximum (full DL) | Detected and Nondetected Concentrations Mean (half DL) | Detected and Nondetected Concentrations Median[a] (half DL) | Detected and Nondetected Concentrations 95th[a] (half DL) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **AOPC 24** | | | | | | | | | | | | | | |
| ***Surface*** | | | | | | | | | | | | | | |
| **PCBs** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 8 | 8 | 100 | 98 T | 600 JT | 264 | 233 JT | 322 T | 98 T | 600 JT | 264 | 233 JT | 322 T |
| PCB congener TEQ | pg/g | 5 | 5 | 100 | 2.61 T | 8.09 JT | 4.66 | 4.31 T | 4.4 T | 2.61 T | 8.09 JT | 4.66 | 4.31 T | 4.4 T |
| Total PCB Congeners | µg/kg | 5 | 5 | 100 | 7.01 T | 524 | 255 | 192 JT | 366 | 7.01 T | 524 | 255 | 192 JT | 366 |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **PCBs** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 10 | 8 | 80 | 26 T | 971 JT | 392 | 142 T | 770 T | 1.4 UT | 971 JT | 313 | 74 T | 770 T |
| PCB congener TEQ | pg/g | 1 | 1 | 100 | 16.3 T | 16.3 T | 16.3 | 16.3 T | 16.3 T | 16.3 T | 16.3 T | 16.3 | 16.3 T | 16.3 T |
| Total PCB Congeners | µg/kg | 1 | 1 | 100 | 953 | 953 | 953 | 953 | 953 | 953 | 953 | 953 | 953 | 953 |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.



BZTO104(e)033531

Table 11.3.17-1b. iCOC Summary Statistics for Surface Water - iAOPC 24

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **Collection Method: Bottle** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/l | 3 | 1 | 33.3 | 0.00467 JT | 0.00467 JT | 0.00467 | 0.00467 JT | 0.00467 JT | 0.0025 UT | 0.00467 JT | 0.00239 | 0.00125 UT | 0.00125 UT |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.



BZTO104(e)033532

Table 11.3.17-1c. iCOC Summary Statistics for Biota - iAOPC 24.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 1 | 1 | 100 | 243 JT | 243 JT | 243 | 243 JT | 243 JT | 243 JT | 243 JT | 243 | 243 JT | 243 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 4.29 T | 4.29 T | 4.29 | 4.29 T | 4.29 T | 4.29 T | 4.29 T | 4.29 | 4.29 T | 4.29 T |
| Total PCB Congeners | µg/kg-Wet | 1 | 1 | 100 | 459 | 459 | 459 | 459 | 459 | 459 | 459 | 459 | 459 | 459 |
| ***Crayfish (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 1 | 1 | 100 | 110 T | 110 T | 110 | 110 T | 110 T | 110 T | 110 T | 110 | 110 T | 110 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 1.41 T | 1.41 T | 1.41 | 1.41 T | 1.41 T | 1.41 T | 1.41 T | 1.41 | 1.41 T | 1.41 T |
| Total PCB Congeners | µg/kg-Wet | 1 | 1 | 100 | 82.6 JT | 82.6 JT | 82.6 | 82.6 JT | 82.6 JT | 82.6 JT | 82.6 JT | 82.6 | 82.6 JT | 82.6 JT |
| ***Lab Clam (body without shell)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 1 | 1 | 100 | 43.2 JT | 43.2 JT | 43.2 | 43.2 JT | 43.2 JT | 43.2 JT | 43.2 JT | 43.2 | 43.2 JT | 43.2 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 0.753 JT | 0.753 JT | 0.753 | 0.753 JT | 0.753 JT | 0.753 JT | 0.753 JT | 0.753 | 0.753 JT | 0.753 JT |
| Total PCB Congeners | µg/kg-Wet | 1 | 1 | 100 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| ***Lumbriculus variegatus (whole body worm)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 1 | 1 | 100 | 930 JT | 930 JT | 930 | 930 JT | 930 JT | 930 JT | 930 JT | 930 | 930 JT | 930 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 9.69 JT | 9.69 JT | 9.69 | 9.69 JT | 9.69 JT | 9.69 JT | 9.69 JT | 9.69 | 9.69 JT | 9.69 JT |
| Total PCB Congeners | µg/kg-Wet | 1 | 1 | 100 | 1450 | 1450 | 1450 | 1450 | 1450 | 1450 | 1450 | 1450 | 1450 | 1450 |
| ***Epibenthic Invertebrates (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 2 | 2 | 100 | 27.6 JT | 73.8 JT | 50.7 | 27.6 JT | 27.6 JT | 27.6 JT | 73.8 JT | 50.7 | 27.6 JT | 27.6 JT |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 2 | 2 | 100 | 0.524 JT | 0.776 JT | 0.65 | 0.524 JT | 0.524 JT | 0.524 JT | 0.776 JT | 0.65 | 0.524 JT | 0.524 JT |
| Total PCB Congeners | µg/kg-Wet | 2 | 2 | 100 | 37.1 | 78.7 | 57.9 | 37.1 | 37.1 | 37.1 | 78.7 | 57.9 | 37.1 | 37.1 |
| ***Sculpin (whole body)*** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg-Wet | 1 | 1 | 100 | 670 T | 670 T | 670 | 670 T | 670 T | 670 T | 670 T | 670 | 670 T | 670 T |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g-Wet | 1 | 1 | 100 | 13.9 T | 13.9 T | 13.9 | 13.9 T | 13.9 T | 13.9 T | 13.9 T | 13.9 | 13.9 T | 13.9 T |
| Total PCB Congeners | µg/kg-Wet | 1 | 1 | 100 | 818 JT | 818 JT | 818 | 818 JT | 818 JT | 818 JT | 818 JT | 818 | 818 JT | 818 JT |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.



BZTO104(e)033533

Table 11.3.17-2. Preliminary Evaluation of Relative Contribution of Migration Pathways to iAOPC 24.

| **CURRENT** | | **Relative Contribution** |
|---|---|---|
| **Pathway** | **Data Quality/Quantity** | ***PCBs*** |
| Groundwater | Low | Low |
| Overwater Release | Low | Low |
| Stormwater/Wastewater/ Overland Transport | Low | Med |
| Bank/Soil Erosion | Low | Low |
| Sediment Transport | Low | Low |

| **HISTORICAL** | | **Relative Contribution** |
|---|---|---|
| **Pathway** | **Data Quality/Quantity** | ***PCBs*** |
| Groundwater | Low | Low |
| Overwater Release | Low | Low |
| Stormwater/Wastewater/ Overland Transport | Low | High |
| Bank/Soil Erosion | Low | Low |
| Sediment Transport | Low | Low |

**Notes:**
Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).
Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.

BZTO104(e)033534

Table 11.3.18-1. iCOC Summary Statistics for Sediment – iAOPC 25.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte** | **Units** | **#** | **# Detected** | **% Detected** | **Minimum** | **Maximum** | **Mean** | **Median[a]** | **95th[a]** | **Minimum (full DL)** | **Maximum (full DL)** | **Mean (half DL)** | **Median[a] (half DL)** | **95th[a] (half DL)** |
| **AOPC 25** | | | | | | | | | | | | | | |
| ***Surface*** | | | | | | | | | | | | | | |
| **PCBs** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 2 | 2 | 100 | 46.1 JT | 109 T | 77.6 | 46.1 JT | 46.1 JT | 46.1 JT | 109 T | 77.6 | 46.1 JT | 46.1 JT |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **PCBs** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 1 | 1 | 100 | 60 T | 60 T | 60 | 60 T | 60 T | 60 T | 60 T | 60 | 60 T | 60 T |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.



BZTO104(e)033535

Table 11.3.18-2. Preliminary Evaluation of Relative Contribution of Migration Pathways to iAOPC 25.

| **CURRENT** | | **Relative Contribution** |
|---|---|---|
| **Pathway** | **Data Quality/Quantity** | ***PCBs*** |
| Groundwater | Low | Low |
| Overwater Release | Med | Low |
| Stormwater/Wastewater/ Overland Transport | Low | High |
| Bank/Soil Erosion | Low | Low |
| Sediment Transport | Low | Med |

| **HISTORICAL** | | **Relative Contribution** |
|---|---|---|
| **Pathway** | **Data Quality/Quantity** | ***PCBs*** |
| Groundwater | Low | Low |
| Overwater Release | Low | Low |
| Stormwater/Wastewater/ Overland Transport | Low | High |
| Bank/Soil Erosion | Low | Low |
| Sediment Transport | Low | Med |

**Notes:**

Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).

Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.

BZTO104(e)033536

Table 11.3.19-1. iCOC Summary Statistics for Sediment - AOPC 26.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| ***Surface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 3 | 3 | 100 | 41 T | 898 T | 362 | 146 T | 146 T | 41 T | 898 T | 362 | 146 T | 146 T |
| **PCB Congener TEQ** | | | | | | | | | | | | | | |
| Dioxin-like PCB congener TCDD toxicity equivalent | pg/g | 1 | 1 | 100 | 4.02 T | 4.02 T | 4.02 | 4.02 T | 4.02 T | 4.02 T | 4.02 T | 4.02 | 4.02 T | 4.02 T |
| **PCB_Congeners** | | | | | | | | | | | | | | |
| Total PCB Congeners | µg/kg | 1 | 1 | 100 | 338 | 338 | 338 | 338 | 338 | 338 | 338 | 338 | 338 | 338 |
| ***Subsurface*** | | | | | | | | | | | | | | |
| **Aroclors** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 1 | 1 | 100 | 880 T | 880 T | 880 | 880 T | 880 T | 880 T | 880 T | 880 | 880 T | 880 T |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.



BZTO104(e)033537

Table 11.3.19-2. Potential Sources and Transport Pathways Assessment - AOPC 26.

| Potential Sources | Media Impacted | | | | | COIs | | | | | | | | | | | | | | | | | | Potential Complete Pathway | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | TPH | | | VOCs | | | | | | | | | | | | | | | | | | | | |
| Description of Potential Source | Surface Soil | Subsurface Soil | Groundwater | Catch Basin Solids | River Sediment | Gasoline-Range | Diesel - Range | Heavier - Range | Petroleum-Related (e.g. BTEX) | VOCs | Chlorinated VOCs | SVOCs | PAHs | Phthalates | Phenolics | Metals | PCBs | Herbicides and Pesticides | Dioxins/Furans | Butyltins | Zinc | Radioactive Isotopes | Overland Transport | Groundwater | Direct Discharge - Overwater | Direct Discharge - Storm/Wastewater | Riverbank Erosion |
| ***Upland Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Port of Portland Terminal 2 #2769** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gearlocker, Former Building 3060 and Former Building 3070 | | ✓ | ✓ | | | | ✓ | ✓ | | | | | ✓ | | | | | | | | | | | | | | | |
| Former USTs | | ✓ | | | | | ✓ | ✓ | | | | | | | | | | | | | | | | | | | | |
| **Sulzer Bingham Pumps #1235** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Former gasoline UST | ✓ | ✓ | ✓ | | | ✓ | | | | | | | | | | | | | | | | | | ✓ | | | | |
| Former waste oil UST | | ✓ | ✓ | | | | | | ✓ | ✓ | | | | | | | | | | | | | | | | | | |
| Sandblasting areas - runoff | | | | ✓ | ✓ | | | | | | | | | | | | | | | | ✓ | | | | | ✓ | | |
| Subsurface soils (at historic ground surface) | | ✓ | | | | | | | | | | | | | | ✓ | | | | | | | | | | | | |
| Hazardous waste sotrage area | | ✓ | ✓ | | | | | | | | | | | | | | | | | | | ✓ | | ✓ | | | | |
| Existing USTs | | ✓ | ✓ | | | | ✓ | | | | | | | | | | | | | | | | | ✓ | | | | |
| Electrical substations | ✓ | | | | | | | | | | | | | | | | ✓ | | | | | | ✓ | | | | | |
| ***Overwater Areas*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sulzer Bingham Pumps #1235** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Historical welding and machine operations on piers | | | | | ✓ | | | | | | | | | | | ✓ | | | | | | | | | ✓ | | | |
| ***Other Areas/Other Issues*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sulzer Bingham Pumps #1235** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Metal slag (along bank) | | | | | ✓ | | | | | | | | | | | ✓ | | | | | | | | | ✓ | | | |
| Potential residual contmatination from historical operations | | | ✓ | ✓ | | | | | ✓ | ✓ | | | | | | ✓ | | | | | | | | ✓ | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Notes:**

All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a '?' may be used, as appropriate. No new information is provided in this table.

✓ = Source, COI are present or current or historical pathway is determined to be complete or potentially complete.

? = There is not enough information to determine if source or COI is present or if pathway is complete.

| | |
|---|---|
| UST | Underground storage tank |
| AST | Above-ground storage tank |
| TPH | Total petroleum hydrocarbons |
| VOCs | Volatile organic compounds |
| SVOCs | Semivolatile organic compounds |
| PAHs | Polycyclic aromatic hydrocarbons |
| BTEX | Benzene, toluene, ethylbenzene, and xylenes |
| PCBs | Polychlorinated biphenyls |



BZTO104(e)033538

Table 11.3.19-3. Preliminary Evaluation of Relative Contribution of Migration Pathways to iAOPC 26.

| Current Pathway | Data Quality/ Quantity | Relative Contribution *PCBs* |
|---|---|---|
| Groundwater | Low | Low |
| Overwater Release | Low | Low |
| Storm/Wastewater/ Overland Transport | Med | High |
| Bank/Soil Erosion | Low | Low |
| Sediment Transport | Low | Low |

| Historical Pathway | Data Quality/ Quantity | Relative Contribution *PCBs* |
|---|---|---|
| Groundwater | Low | Low |
| Overwater Release | Low | High |
| Storm/Wastewater/ Overland Transport | Low | High |
| Bank/Soil Erosion | Low | Low |
| Sediment Transport | Low | Low |

**Notes:**

Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).

Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.

BZTO104(e)033539

Table 11.3.20-1. iCOC Summary Statistics for Sediment - iAOPC 27.

| | | | | | Detected Concentrations | | | | | Detected and Nondetected Concentrations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | Units | # | # Detected | % Detected | Minimum | Maximum | Mean | Median[a] | 95th[a] | Minimum (full DL) | Maximum (full DL) | Mean (half DL) | Median[a] (half DL) | 95th[a] (half DL) |
| **AOPC 27** | | | | | | | | | | | | | | |
| *Surface* | | | | | | | | | | | | | | |
| **PCBS** | | | | | | | | | | | | | | |
| Total PCB Aroclors | µg/kg | 3 | 3 | 100 | 14 T | 190 T | 77.4 | 28.1 T | 28.1 T | 14 T | 190 T | 77.4 | 28.1 T | 28.1 T |
| PCB congener TEQ | pg/g | 1 | 1 | 100 | 0.512 JT | 0.512 JT | 0.512 | 0.512 JT | 0.512 JT | 0.512 JT | 0.512 JT | 0.512 | 0.512 JT | 0.512 JT |
| Total PCB Congeners | µg/kg | 1 | 1 | 100 | 32.2 | 32.2 | 32.2 | 32.2 | 32.2 | 32.2 | 32.2 | 32.2 | 32.2 | 32.2 |

[a]This value was selected from an ascending ranked list of all results. Where n = the number samples, the actual sample result corresponding to the rank of the closest integer to n * 0.95 (95th percentile) or n * 0.50 (median) is presented.



BZTO104(e)033541

Table 11.3.20-2. Preliminary Evaluation of Relative Contribution of Migration Pathways to iAOPC 27.

| CURRENT Pathway | Data Quality/Quantity | Relative Contribution *PCBs* |
|---|---|---|
| Groundwater | Low | Low |
| Overwater Release | Low | Med |
| Stormwater/Wastewater/ Overland Transport | Low | High |
| Bank/Soil Erosion | Low | Low |
| Sediment Transport | Low | Low |

| HISTORICAL Pathway | Data Quality/Quantity | Relative Contribution *PCBs* |
|---|---|---|
| Groundwater | Low | Low |
| Overwater Release | Low | Med |
| Stormwater/Wastewater/ Overland Transport | Low | High |
| Bank/Soil Erosion | Low | Low |
| Sediment Transport | Low | Low |

**Notes:**

Data Quality/Quantity. The degree of confidence of the relative nature of available information (e.g., completeness of site investigations, quantitative nature of fate and transport evaluations).

Relative Contribution – Estimated importance of pathway to sediment loading relative to other pathways to iAOPC.

NE - Not Estimated. The data quality/quantity is inadequate to make a determination of relative contribution.

BZTO104(e)033542

Table 12.0-1. Harbor-Wide Data Needs.

| Reason for Data Need | Media Type | | | | | | | Side Scan Sonar | Gathering/ Evaluation of Existing Data |
|---|---|---|---|---|---|---|---|---|---|
| | Sediment Trap Data | Surface Sediment | Subsurface Sediment | Surface Water | Stormwater | Biota Tissue | Toxicity | | |
| Site Boundary | | a | a | a | | | | | |
| Background Concentrations | a | a/b | | a | | | | | |
| Risk Management | | a | | a | a | | | | |
| Additional Remedial Investigation Data Needs | | | | | | | | | |
| Nature and Extent | (addressed by Site boundary and background data needs) | | | | | | | | |
| Human Health Risk Assessment | nbne | | | | | | | | |
| Ecological Risk Assessment | | | | a | | a | a | | x |
| Fate and Transport | | | | | | | | | |
| Hydrodynamic and Sediment Transport | nbne | | | | | | | | |
| Abiotic Chemical Fate and Transport | a | | | a | a | | | | a |
| Food Web Model | | | | | | | | | a |
| Other FS Data Needs | | | | | | | | | |
| FS Site Use | | | | | | | | | a |
| Treatability Studies | | | | | | | | | a |
| Presence of Debris | | | | | | | | b | |

[blank cells] = Data need not identified.
a = Data need being addressed in Round 3a.
b = Data need to be addressed in Round 3b.
x = Data need not associated with Round 3a or 3b.



BZTO104(e)033543

Table 12.0-2. Area-Specific Data Needs.

| Area | Surface Sediment Data Needed[a] | Subsurface Sediment Data Needed[a] | Benthic Toxicity Data Needed[b] | Observation/ Evaluation of Existing Data Needed | Analytes to Address Data Need |
|---|---|---|---|---|---|
| *Non-iAOPC Data Needs* | | | | | |
| RM 10.5-11 | | | 4 | | |
| RM 10-10.5 | | | 3 | | |
| RM 9 | | | 2 | | |
| RM 8-9 | | | 3 | | |
| *iAOPC Data Needs* | | | | | |
| iAOPC 1 | x | x | | c | PCBs |
| iAOPC 2 | x | | | d | PCBs |
| iAOPC 3 | | | none | | |
| iAOPC 4 | x | | | c | iCOCs present |
| iAOPC 5 | x | | | d | PCBs |
| iAOPC 6 | | x | | | iCOCs present |
| iAOPC 7 | x | x | | d | iCOCs present |
| iAOPC 8 | | x | | | PCBs |
| iAOPC 9 | | | | d | -- |
| iAOPC 10 | x | x | | d | PCBs |
| iAOPC 11 | x | x | | d | iCOCs present |
| iAOPC 12 | x | | | | PCBs |
| iAOPC 13 | x | x | | | iCOCs present |
| iAOPC 14 | x | x | | | iCOCs present |
| iAOPC 15 | x | x | | | iCOCs present |
| iAOPC 16 | x | x | | | PCBs |
| iAOPC 17 | x | x | | | iCOCs present |
| iAOPC 18 | x | x | | d | iCOCs present |
| iAOPC 19 | x | x | | d | iCOCs present |
| iAOPC 20 | x | x | | d | PCBs |
| iAOPC 21-23 | | x | | | iCOCs present |
| iAOPC 24 | x | x | | | PCBs |
| iAOPC 25 | x | x | | d | PCBs |
| iAOPC 26 | x | x | | d | PCBs |
| iAOPC 27 | x | x | | d | PCBs |
| T-4 iAOPC | e | e | e | e | e |

**Abbreviations:**
iAOPC = initial area of potential concern.
iCOCs = initial chemicals of concern.
RM = river mile.
x = Additional sampling required to satisify data need.

**Notes:**
[blank cell] = Data need not identified.
a = Associated physical and/or geotechnical data needs addressed through sediment sampling plans.
b = The additional number of benthic toxicity tests is indicated. The specific locations of the additional tests are described in Section 12.3.1.3.2.
c = Shellfish habitat assessment is needed.
d = Additional analysis of existing chemistry data and hill topping results is needed.
e = All data needs being met as result of the Early Action



BZTO104(e)033544