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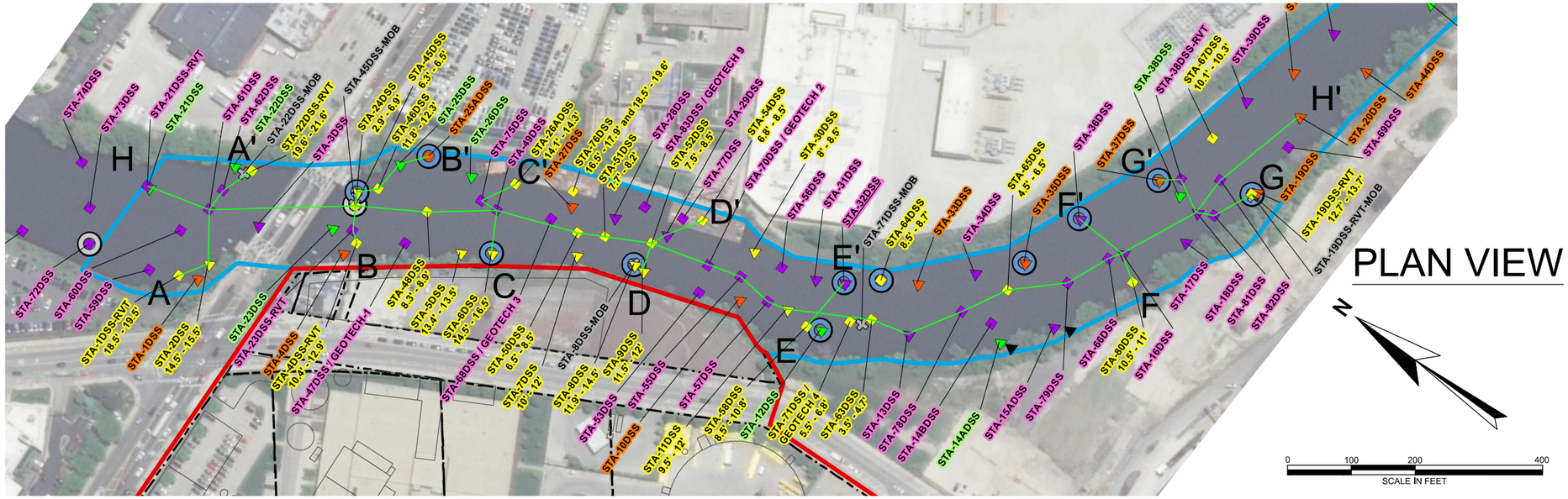

PLAN VIEW

STEP I (2012) LOCATIONS

- SEDIMENT BORING LOCATION WITH NO RECOVERY
- STA-1DSS — SEDIMENT BORING LOCATION WITH NO SIGNIFICANT OBSERVATIONS OF MGP EFFECTS
- STA-1DSS — SEDIMENT BORING LOCATION OBSERVATIONS OF SHEEN ON SEDIMENT OR WATER
- STA-1DSS — SEDIMENT BORING LOCATION; PID RESPONSE GREATER THAN 2 PARTS PER MILLION (PPM), AND/OR STAINING, AND/OR ODOR
- STA-1DSS — SEDIMENT BORING LOCATION OBSERVATIONS OF NAPL OR OIL-COATED / OIL-WETTED SEDIMENT

STEP II (2013) LOCATIONS

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- STA-1DSS — SEDIMENT BORING LOCATION OBSERVATIONS OF SHEEN ON SEDIMENT OR WATER
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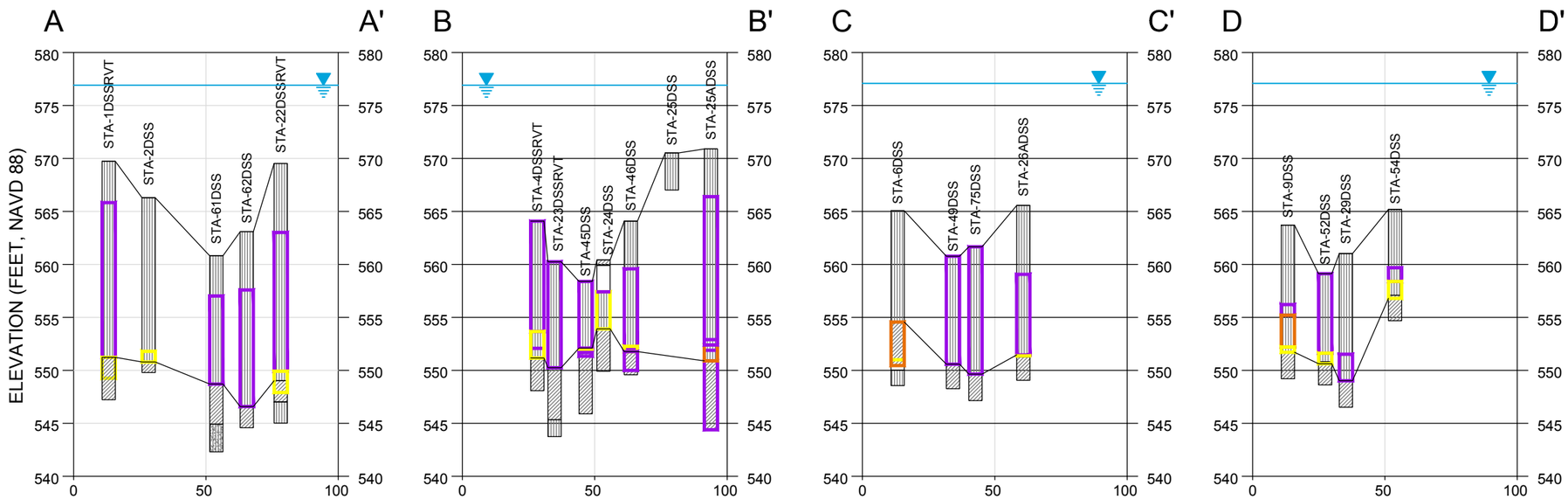
- STA-1DSS — SEDIMENT BORING LOCATION OBSERVATIONS OF NAPL OR OIL-COATED / OIL-WETTED SEDIMENT
- 8.5' - 14.5' — DEPTH OF NAPL
- STA-1DSS — LOCATION WITH TOTAL PAH EXCEEDANCE OF UTL AT SUBSURFACE (> 1.5') - NON-AMBIENT DERIVED*
- STA-1DSS — LOCATION WITH TOTAL PAH EXCEEDANCE OF UTL AT SUBSURFACE (> 1.5') - AMBIENT DERIVED*

* = FROM EXPONENT FORENSIC EVALUATION 2014

- UPLAND SITE BOUNDARY
- ADJACENT RIVER AREA
- PARCEL BOUNDARY
- FORMER MGP STRUCTURE
- A' — A CROSS SECTION LINE
- CLAY
- GRAVEL
- NO RECOVERY
- SILT
- SAND
- APPROXIMATE WATER SURFACE ELEVATION



CROSS-SECTIONS

VERTICAL SCALE IN FEET: 12.5

HORIZONTAL SCALE IN FEET: 50

VERTICAL EXAGGERATION = 4

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, IL

DIVISION STREET
SEDIMENT CROSS SECTIONS
A-A', B-B', C-C', D-D'

AUGUST 2018

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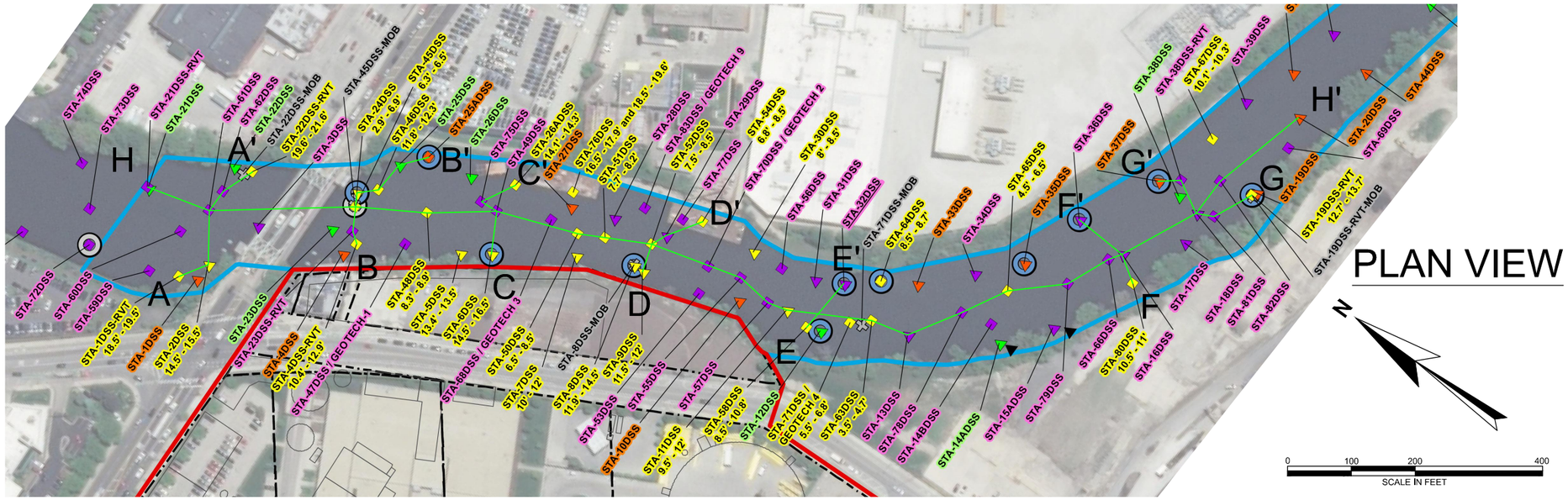

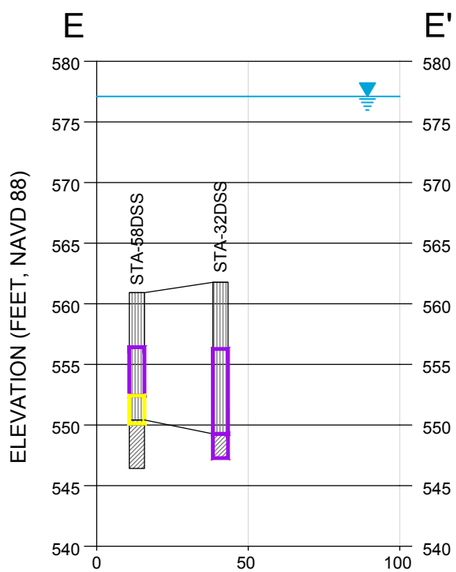

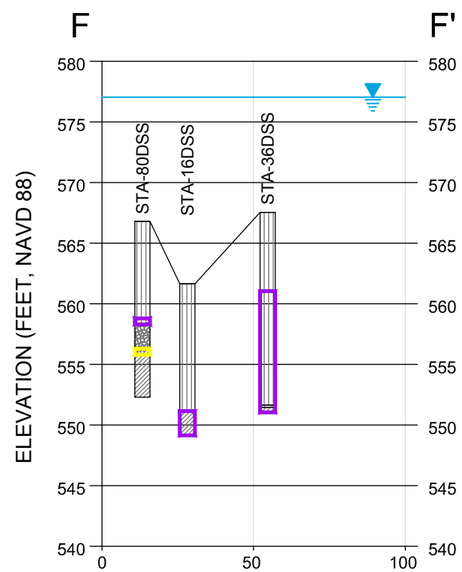

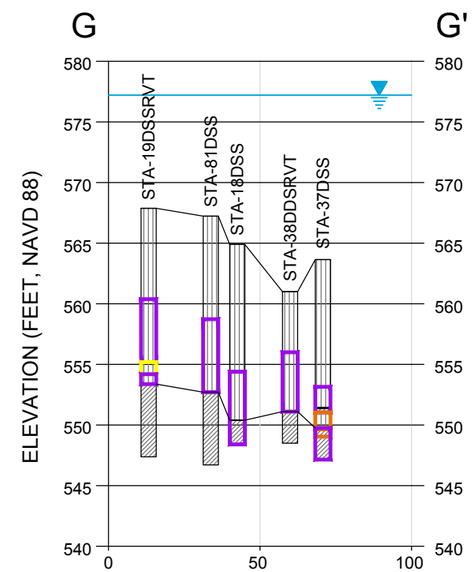

CROSS-SECTIONS

VERTICAL SCALE IN FEET 12.5

HORIZONTAL SCALE IN FEET 50

VERTICAL EXAGGERATION = 4

STEP I (2012) LOCATIONS

- SEDIMENT BORING LOCATION WITH NO RECOVERY
- STA-1DSS — SEDIMENT BORING LOCATION WITH NO SIGNIFICANT OBSERVATIONS OF MGP EFFECTS
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* = FROM EXPONENT FORENSIC EVALUATION 2014

- UPLAND SITE BOUNDARY
- ADJACENT RIVER AREA
- PARCEL BOUNDARY
- FORMER MGP STRUCTURE
- A' — A CROSS SECTION LINE
- CLAY
- GRAVEL
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- SILT
- SAND
- APPROXIMATE WATER SURFACE ELEVATION

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, IL

DIVISION STREET
SEDIMENT CROSS SECTIONS
E-E', F-F', G-G'

AUGUST 2018

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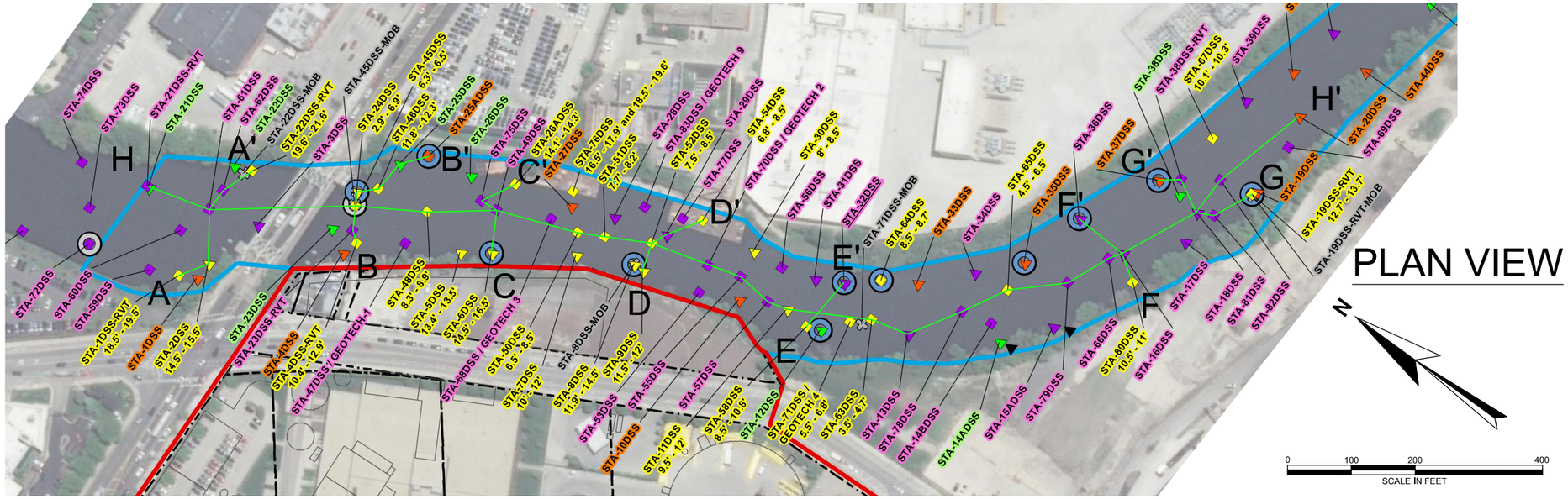

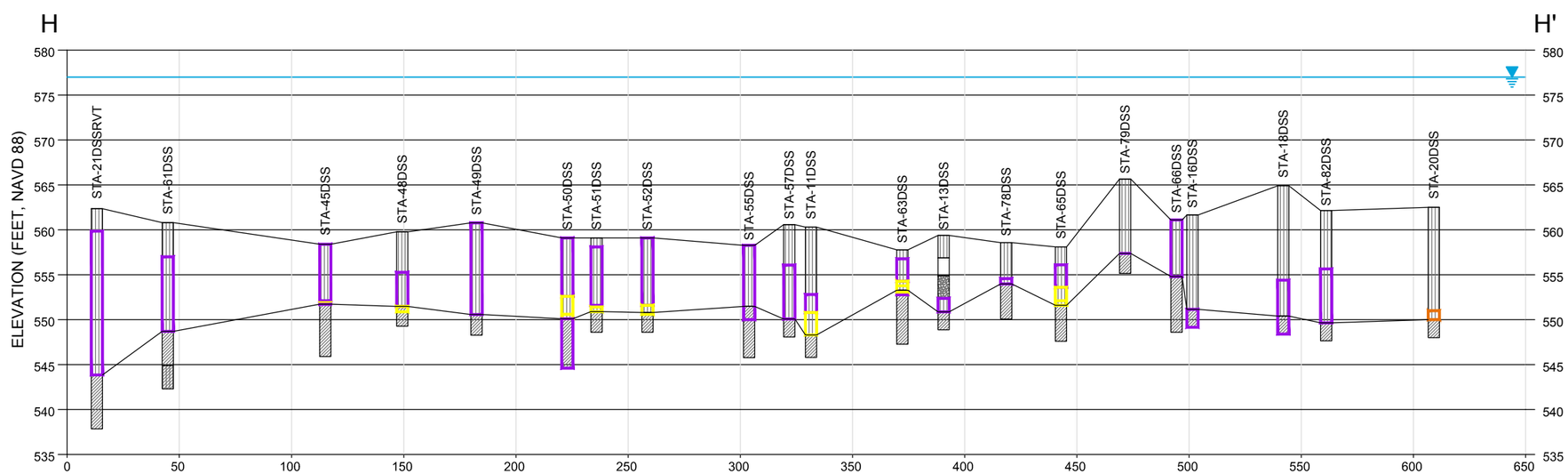

CROSS-SECTION

VERTICAL SCALE IN FEET: 15

HORIZONTAL SCALE IN FEET: 60

VERTICAL EXAGGERATION = 4

STEP I (2012) LOCATIONS

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- APPROXIMATE WATER SURFACE ELEVATION

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, IL

DIVISION STREET
SEDIMENT CROSS SECTION
H-H'

AUGUST 2018

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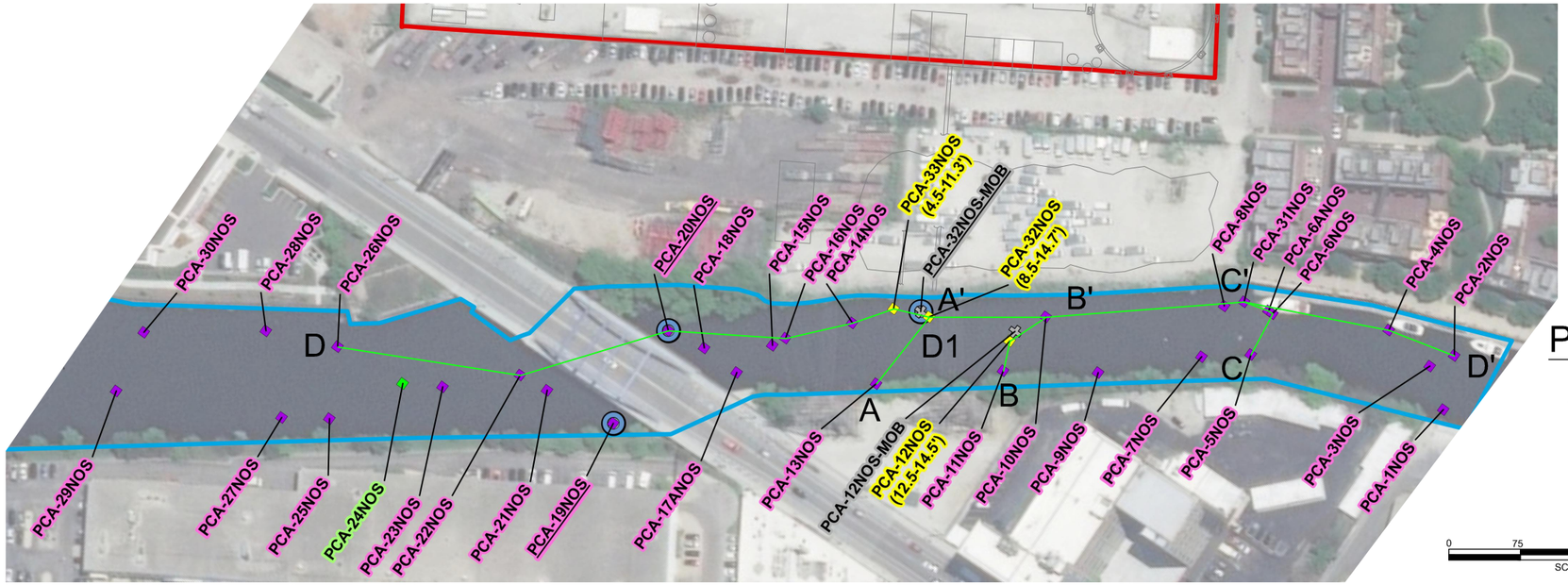

PLAN VIEW

STEP I (2013) LOCATIONS

- SDS-MOB — MOBILITY STUDY LOCATION
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- 8.5' - 14.5' — DEPTH OF NAPL
- PCA-20NOS — LOCATION WITH TOTAL POLYAROMATIC HYDROCARBONS (TPAH) EXCEEDANCE OF UPPER TOLERANCE LIMIT (UTL) AT SUBSURFACE (> 1.5') - NON-AMBIENT DERIVED*

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- GRAVEL
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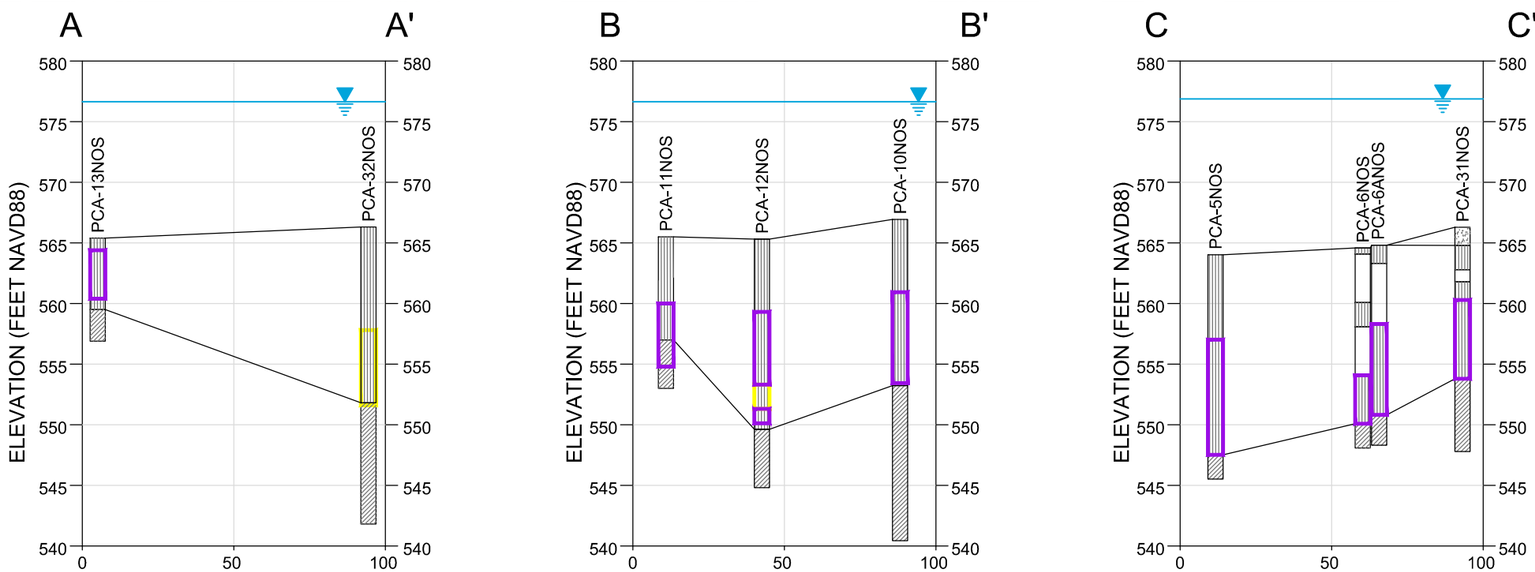
- SAND
- SILT
- APPROXIMATE WATER SURFACE ELEVATION



CROSS-SECTIONS

NOTES:

1. TOTAL PAH UTL EXCEEDANCE SHOWN AT PCA-32NOS WAS ACTUALLY OBSERVED IN COLLOCATED BORING PCA-32NOS-MOBILITY.
2. NORTH BRANCH CANAL NAVIGATIONAL DEPTH IS 557.0 NAVD88.

VERTICAL SCALE IN FEET: 12.5
HORIZONTAL SCALE IN FEET: 50

VERTICAL EXAGGERATION = 4

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, IL

NORTH STATION
SEDIMENT CROSS SECTIONS
A-A', B-B', C-C'

AUGUST 2018

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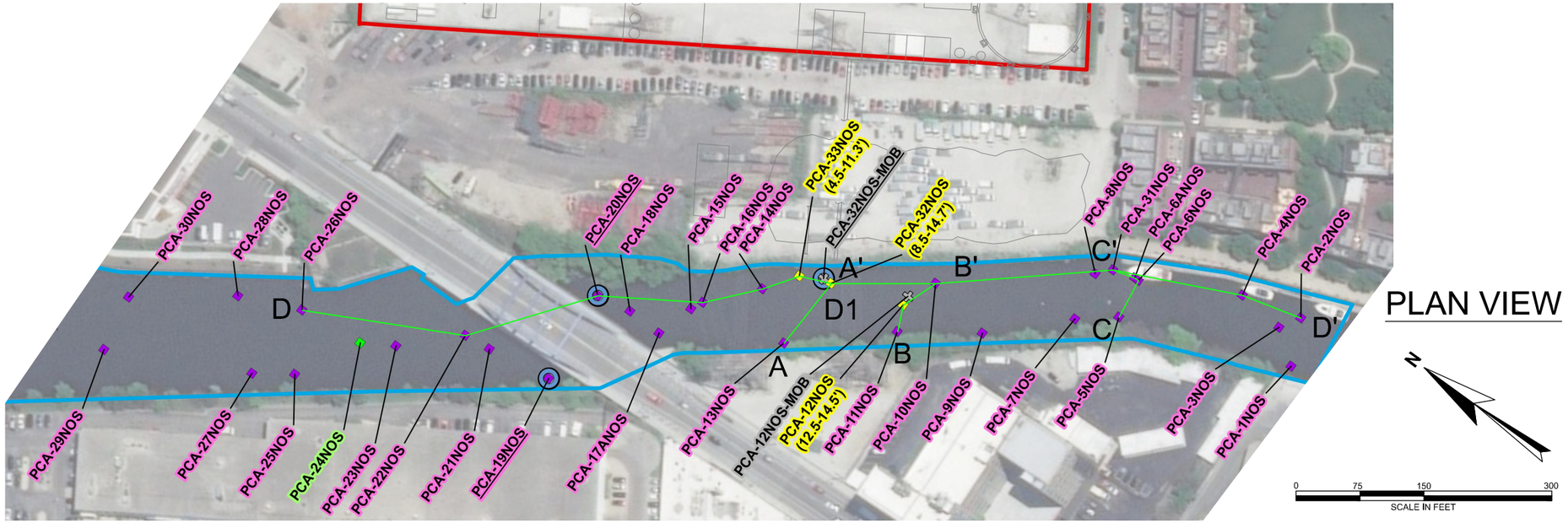

PLAN VIEW

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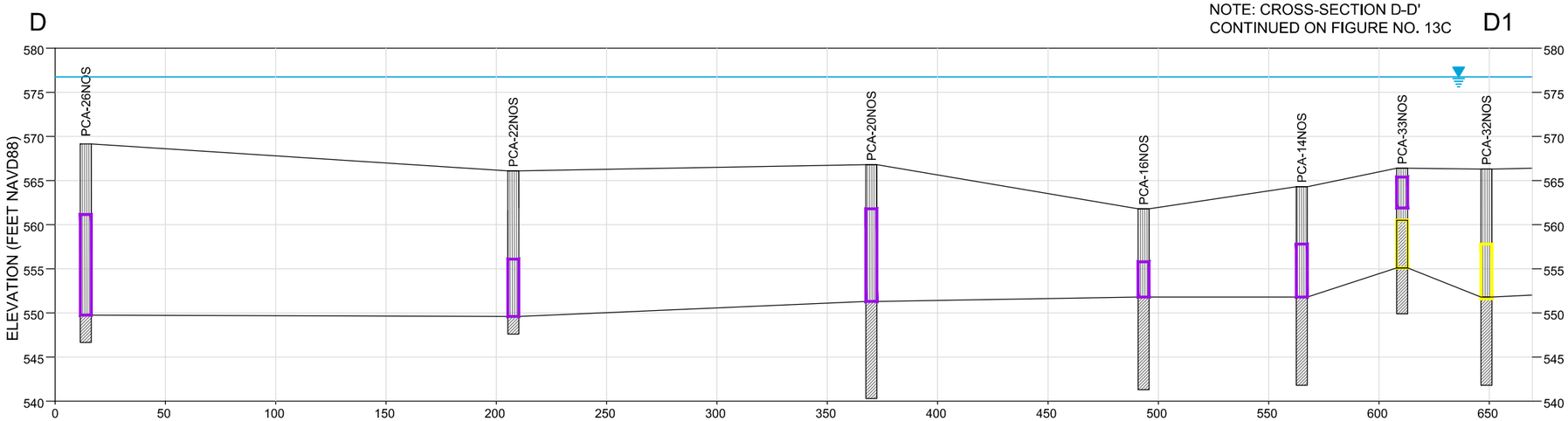

CROSS-SECTIONS

VERTICAL SCALE IN FEET: 15
HORIZONTAL SCALE IN FEET: 60

VERTICAL EXAGGERATION = 4

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, IL

NORTH STATION
SEDIMENT CROSS SECTION
D-D1

AUGUST 2018

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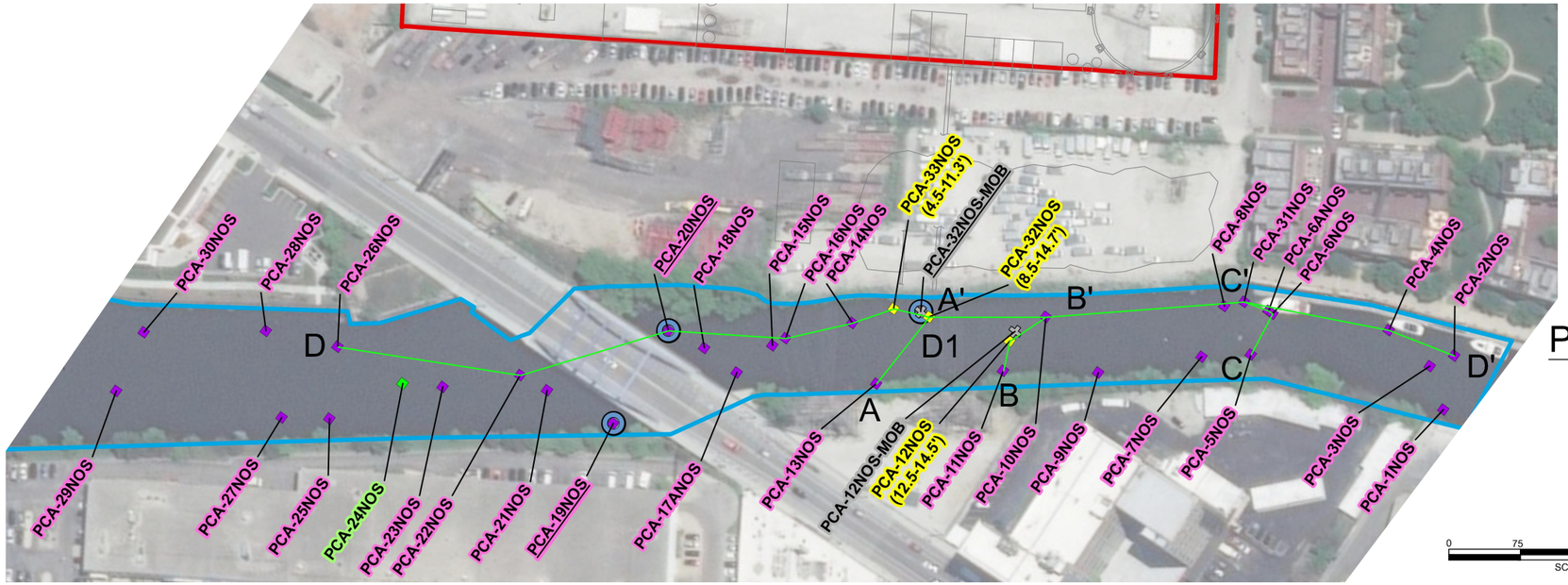

PLAN VIEW

N

0 75 150 300
SCALE IN FEET

STEP I (2013) LOCATIONS

- SDS-MOB — MOBILITY STUDY LOCATION
- STA-1DSS — SEDIMENT BORING LOCATION WITH NO SIGNIFICANT OBSERVATIONS OF MGP IMPACTS
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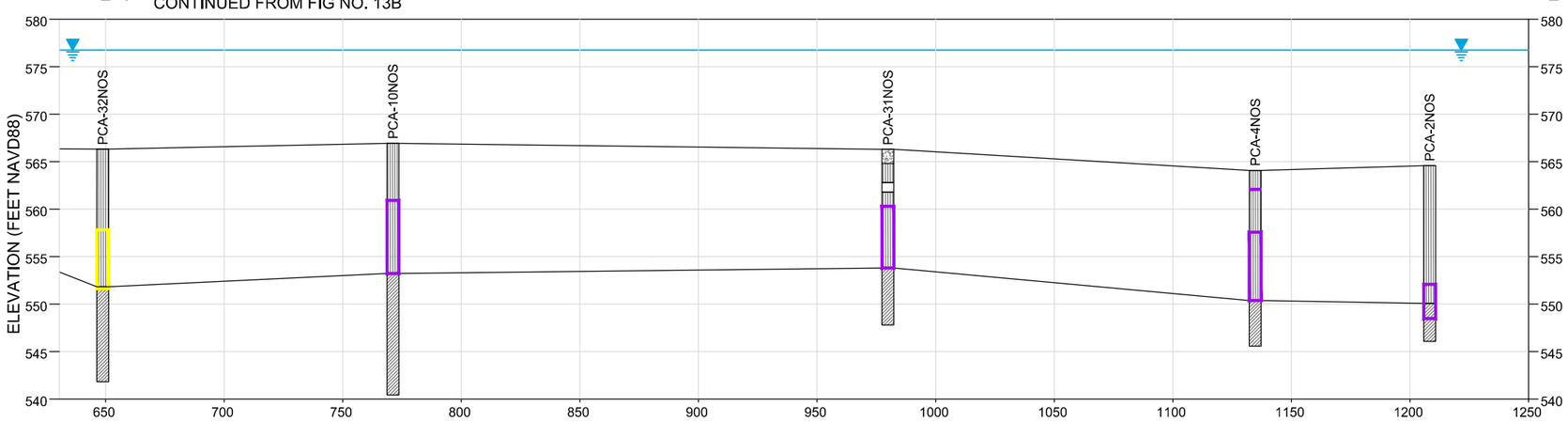
- CLAY
- GRAVEL
- NO RECOVERY
- SAND
- SILT
- APPROXIMATE WATER SURFACE ELEVATION

D1 NOTE: CROSS-SECTION D-D'
CONTINUED FROM FIG NO. 13B

D'



CROSS-SECTIONS

VERTICAL SCALE IN FEET: 15
HORIZONTAL SCALE IN FEET: 60

VERTICAL EXAGGERATION = 4

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, IL

NORTH STATION
SEDIMENT CROSS SECTION
D1-D'

AUGUST 2018

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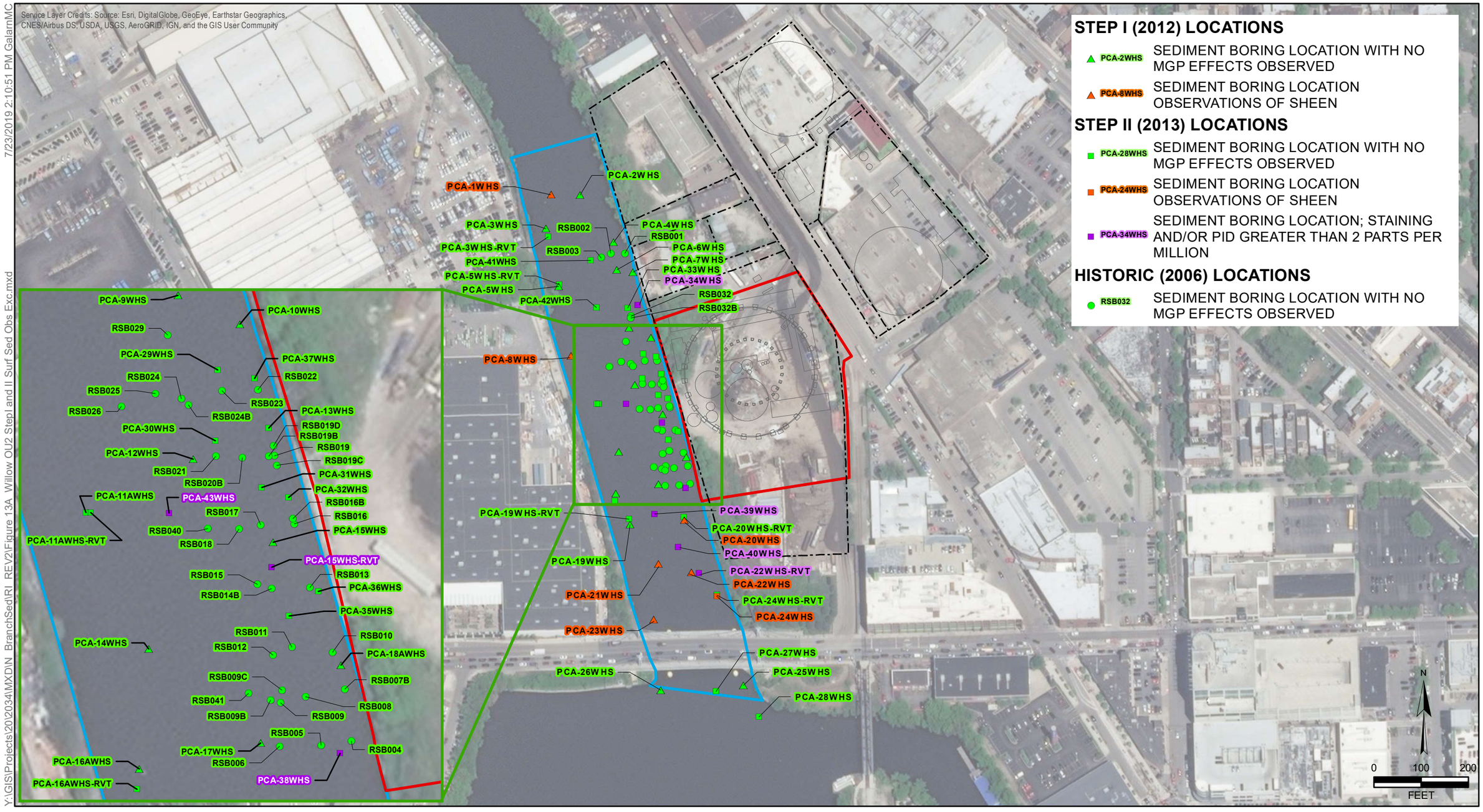


HISTORICAL MGP STRUCTURE

APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)

APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

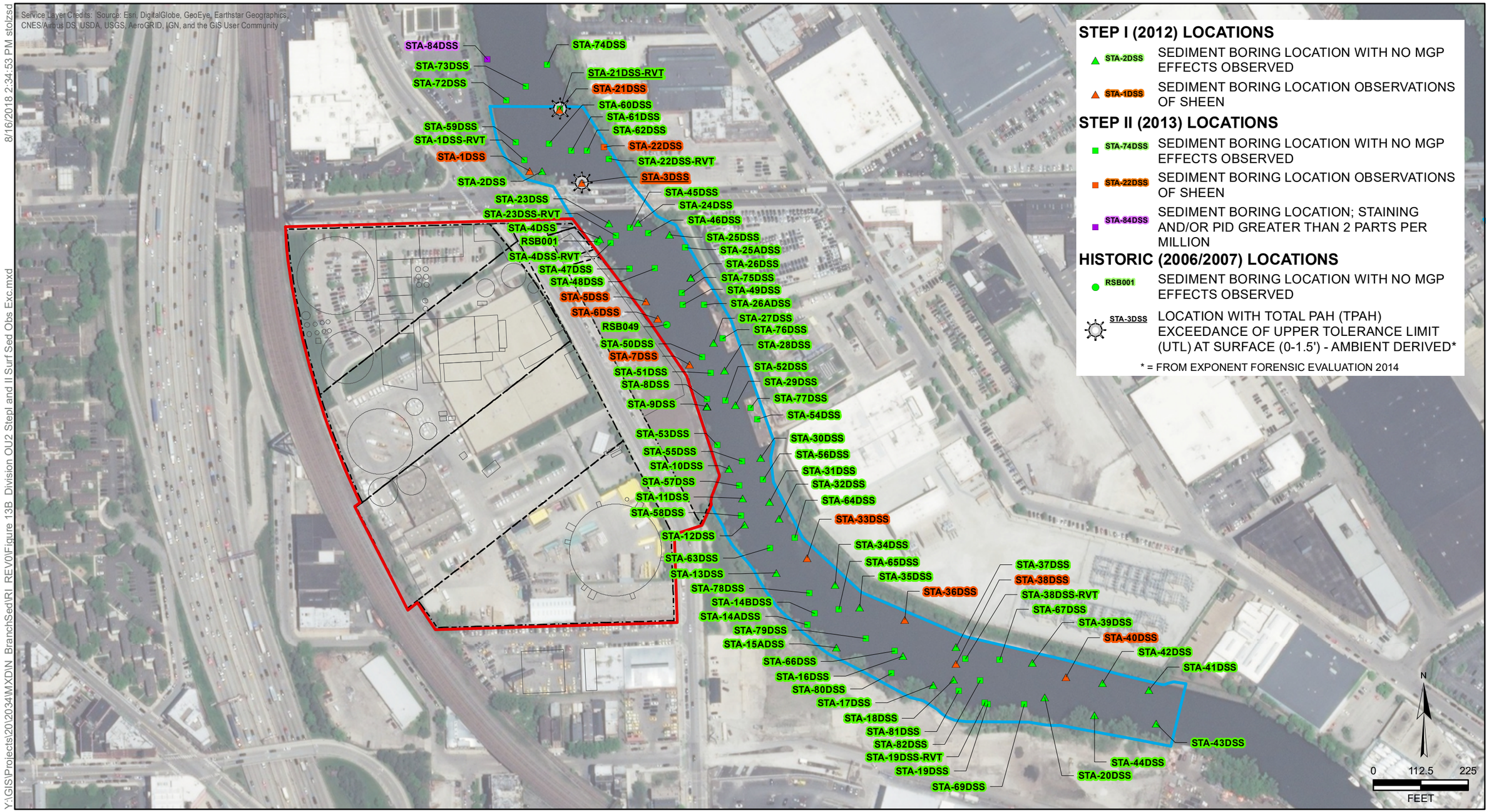
PROPERTY BOUNDARY

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

WILLOW STREET OU2 SURFACE SEDIMENT SAMPLING LOCATIONS, OBSERVATIONS AND TPAH UTL EXCEEDANCES

O'BRIEN & GERE ENGINEERS, INC.

Y:\GIS\Projects\20\20341\MXD\N_BranchSed\RI_REV2\Figure 13A_Willow OU2 Step I and II Surf Sed Obs Exc.mxd 7/23/2019 2:10:51 PM GalarnMC



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Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV0\Figure 13B_Division OU2 Stepl and II Surf Sed Obs Exc.mxd

APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)

APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

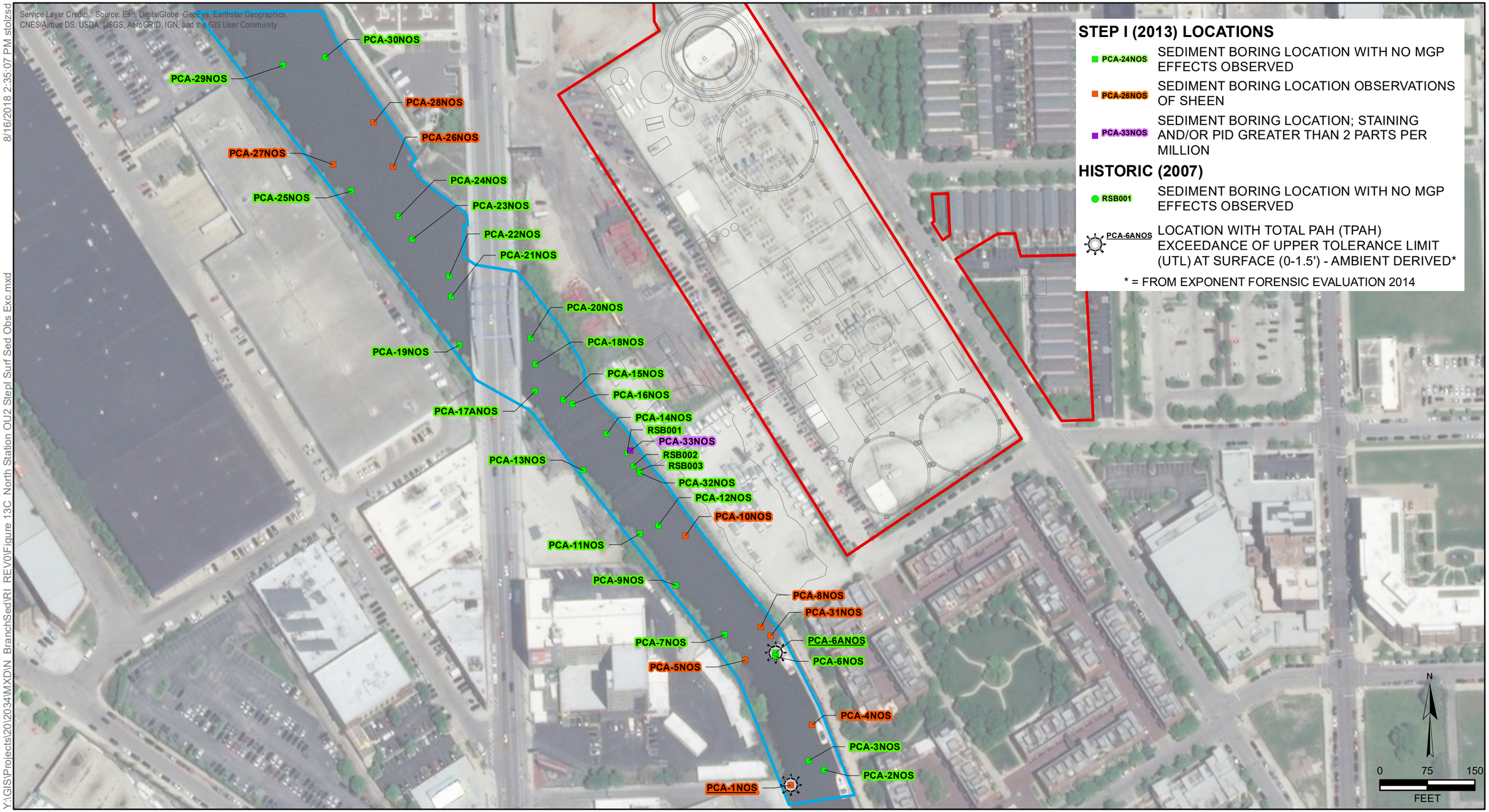
HISTORICAL SITE FEATURES

PROPERTY BOUNDARY

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

DIVISION STREET OU2 SURFACE SEDIMENT SAMPLING LOCATIONS OBSERVATIONS AND TPAH UTL EXCEEDANCES

O'BRIEN & GERE ENGINEERS, INC.



Y:\GIS\Projects\2012034\MXD\N_BranchSed\RI_REV0\Figure 13C_North Station OU2 Stepl Surf Sed Obs Exc.mxd 8/16/2018 2:35:07 PM stolzsd

HISTORICAL SITE FEATURES

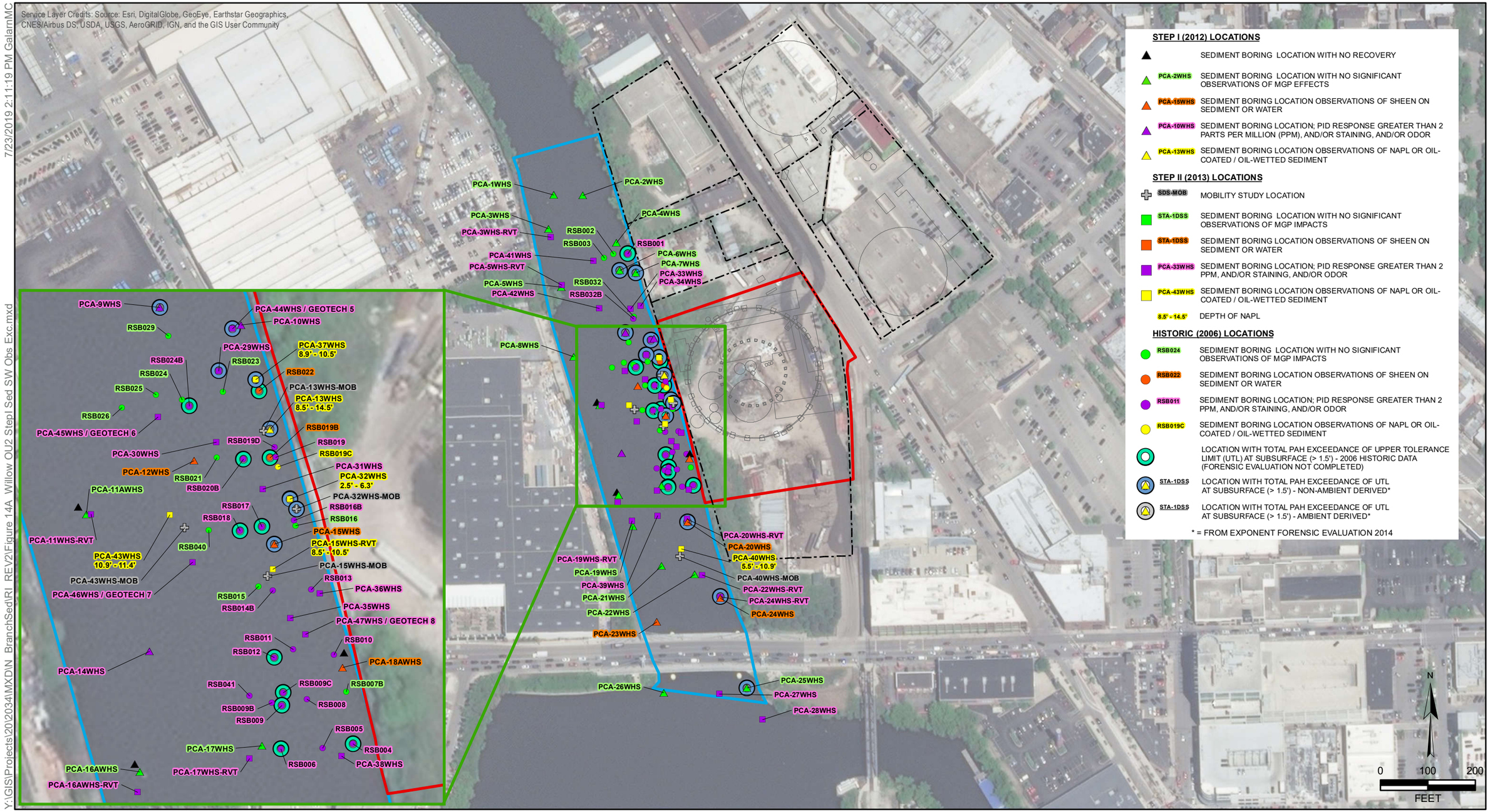
APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)

APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

NORTH STATION OU2 SURFACE SEDIMENT SAMPLING LOCATIONS OBSERVATIONS AND TPAH UTL EXCEEDANCES

O'BRIEN & GERE ENGINEERS, INC.



HISTORICAL MGP STRUCTURE

APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)

APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

PROPERTY BOUNDARY

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

WILLOW STREET OU2 SUBSURFACE SEDIMENT SAMPLING LOCATIONS, OBSERVATIONS AND TPAH UTL EXCEEDANCES

O'BRIEN & GERE ENGINEERS, INC.

Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV2\Figure 14A_Willow OU2 Step I Sed SW Obs_Exc.mxd
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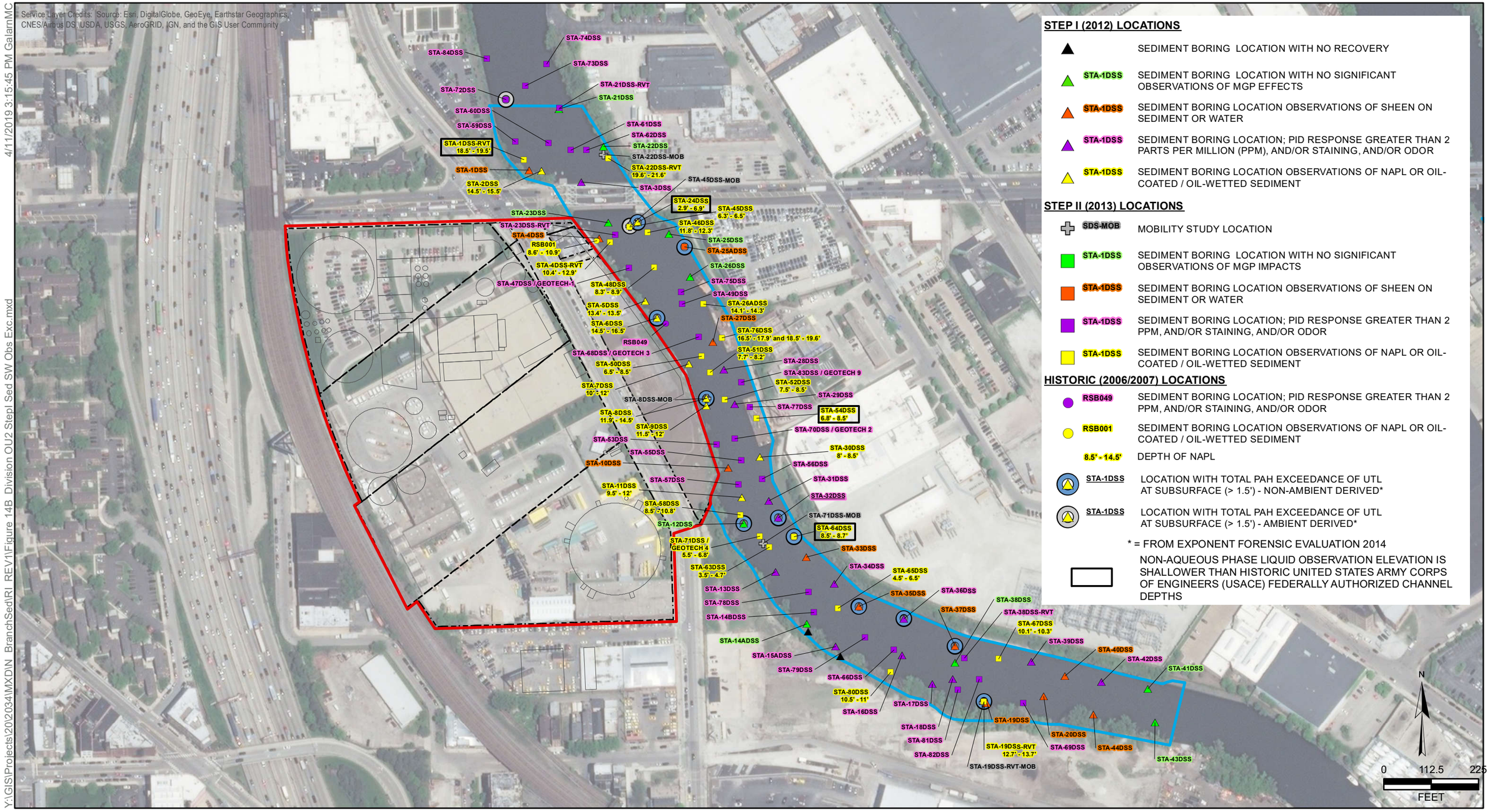


HISTORICAL SITE FEATURES

APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)

APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

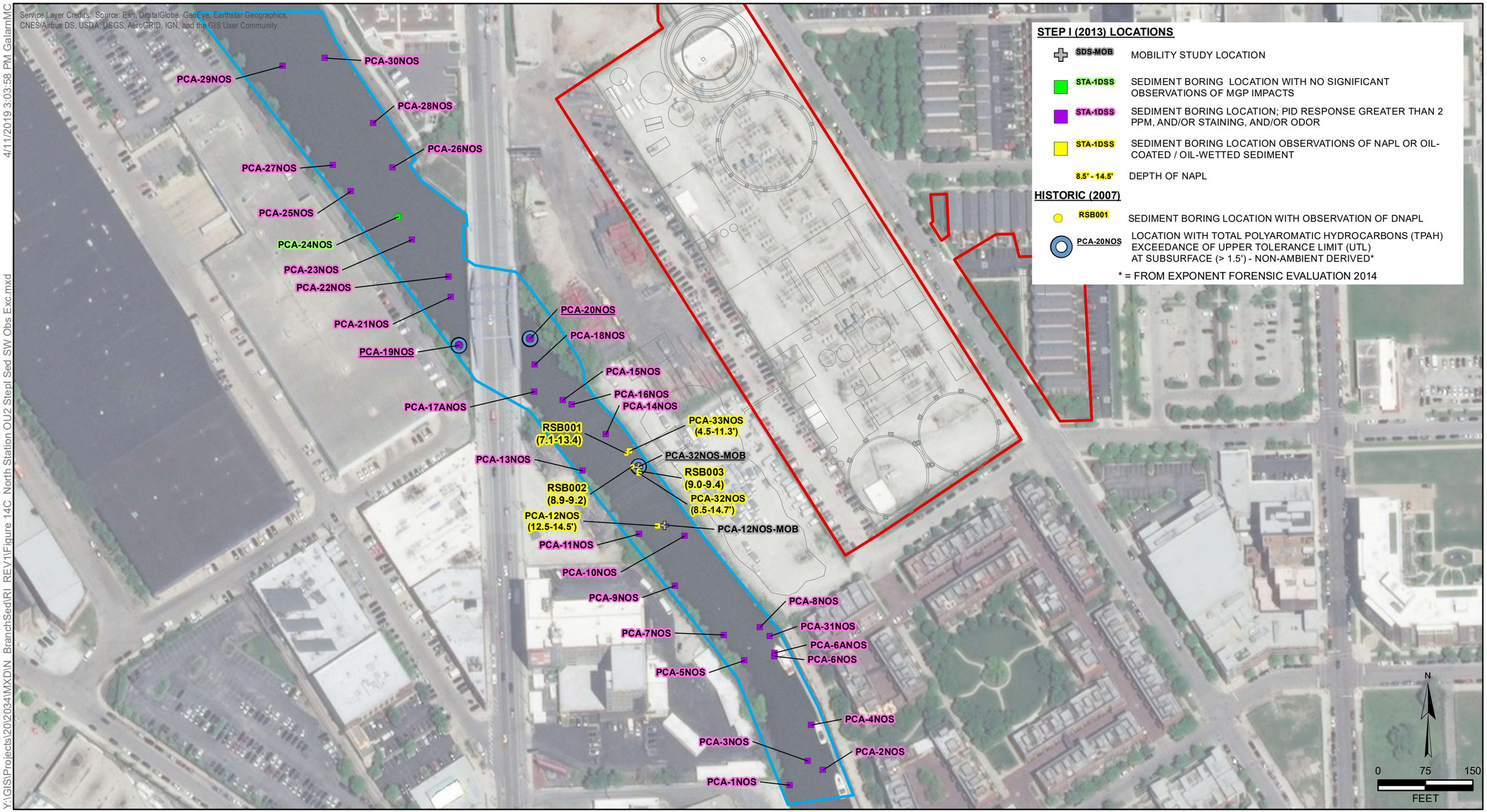
PROPERTY BOUNDARY

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

DIVISION STREET OU2 SUBSURFACE SEDIMENT SAMPLING LOCATIONS, OBSERVATIONS AND TPAH UTL EXCEEDANCES

O'BRIEN & GERE ENGINEERS, INC.

Y:\GIS\Projects\20\20341\MXD\N_BranchSed\RI_REV1\Figure 14B_Division OU2 Stepl Sed SW Obs Exc.mxd 4/11/2019 3:15:45 PM GalarnMC



HISTORICAL SITE FEATURES

APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)

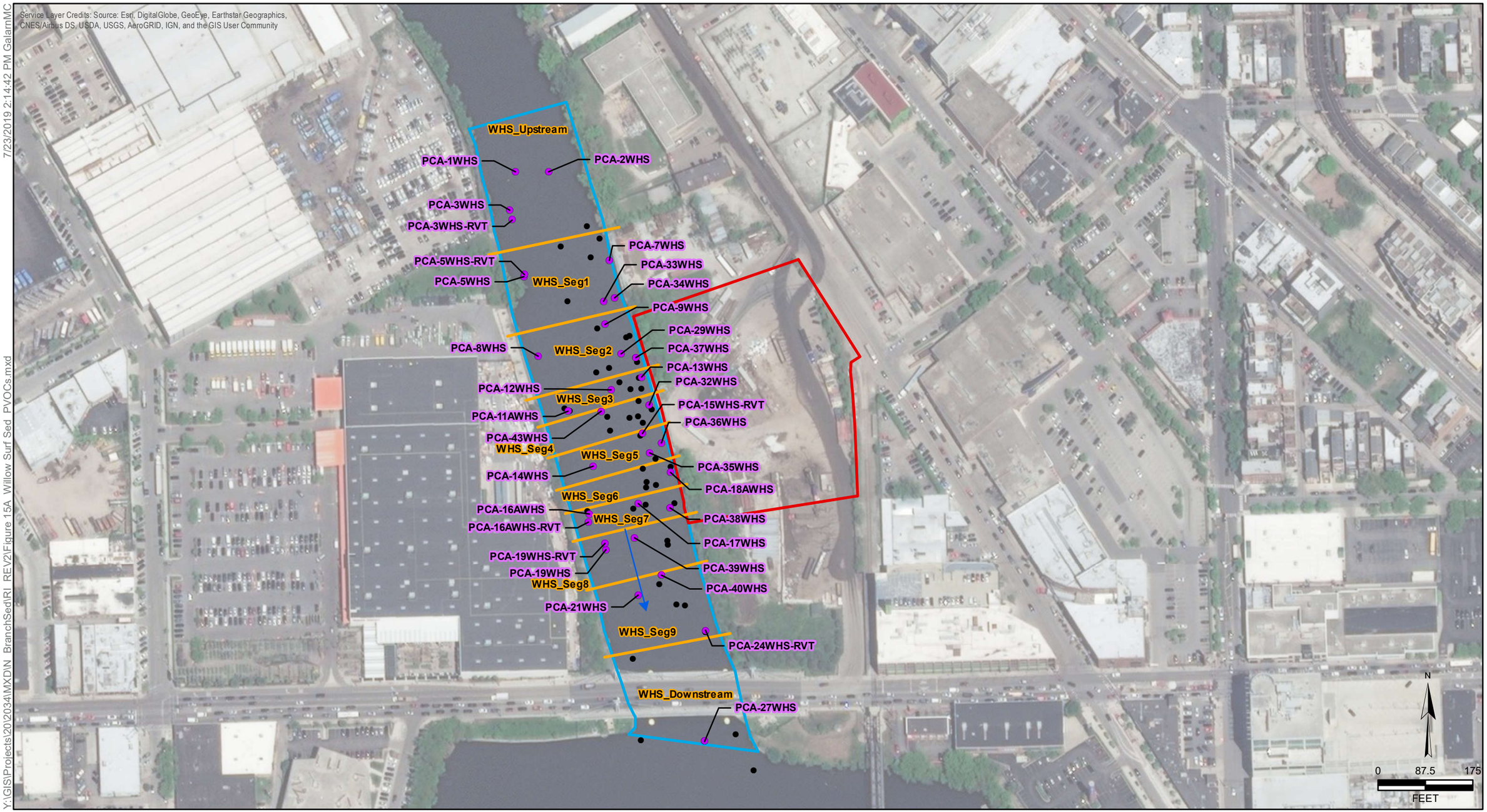
APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

NORTH STATION OU2 SUBSURFACE SEDIMENT SAMPLING LOCATIONS, OBSERVATIONS AND TPAH UTL EXCEEDANCES

O'BRIEN & GERE ENGINEERS, INC.

Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV1\Figure 14C_North Station OU2 Stepl Sed SW Obs Exc.mxd 4/11/2019 3:03:58 PM GalarnMC



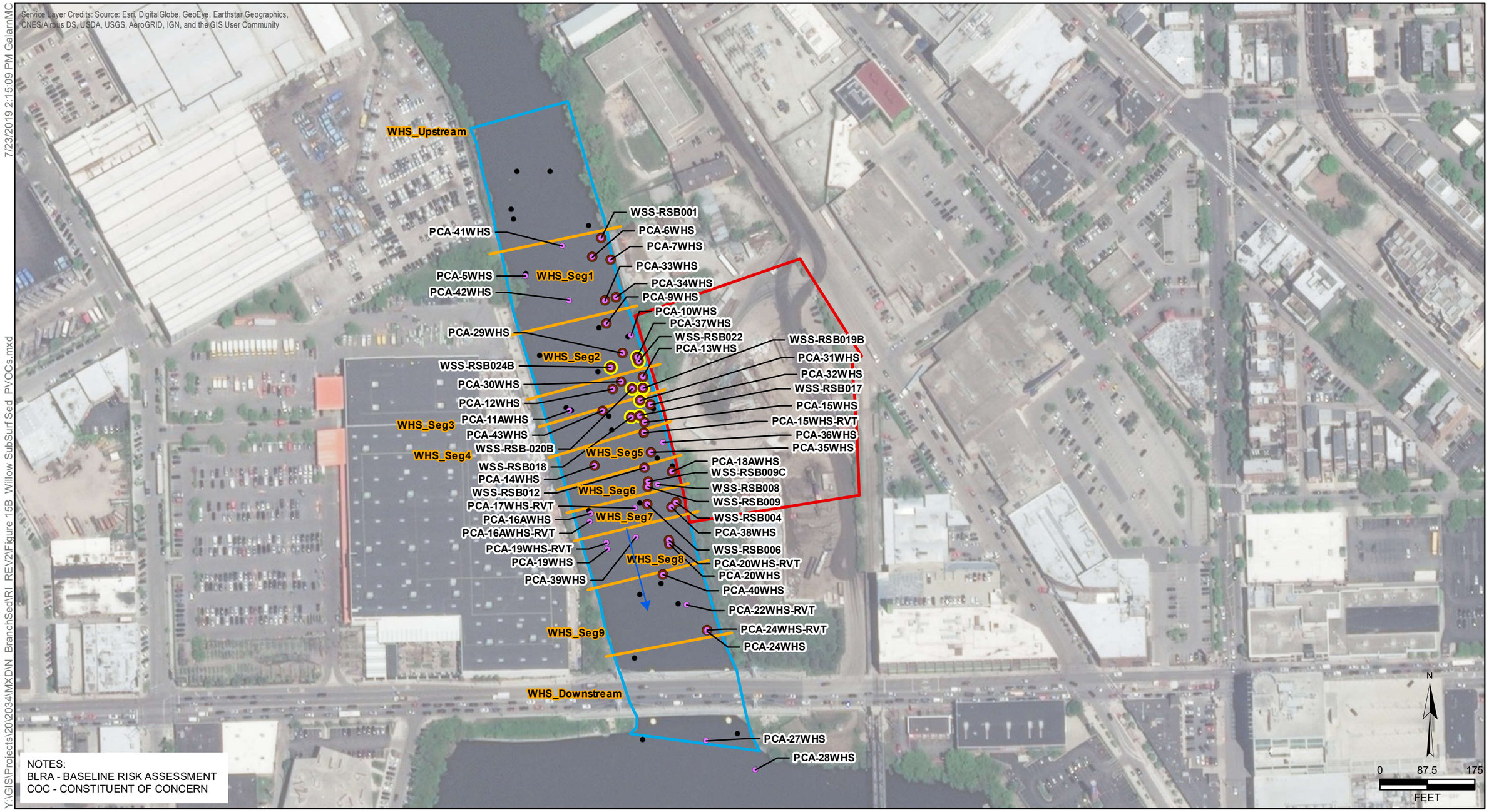
Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV2\Figure 15A_Willow Surf Sed_PVOCs.mxd 7/23/2019 2:14:42 PM GalarnMC

- SEDIMENT SAMPLE EXCEEDS APPLICABLE SEDIMENT ECOLOGICAL BENCHMARK SCREENING LEVELS
- SEDIMENT SAMPLING LOCATION
- RIVER SEGMENT DIVISIONS
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

WILLOW STREET OU2 SCREENING LEVEL EXCEEDANCES OF PETROLEUM VOLATILE ORGANIC COMPOUNDS IN SURFACE SEDIMENT

O'BRIEN & GERE ENGINEERS, INC.



NOTES:
BLRA - BASELINE RISK ASSESSMENT
COC - CONSTITUENT OF CONCERN

Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV2\Figure 15B_Willow SubSurf Sed_PVOCs.mxd

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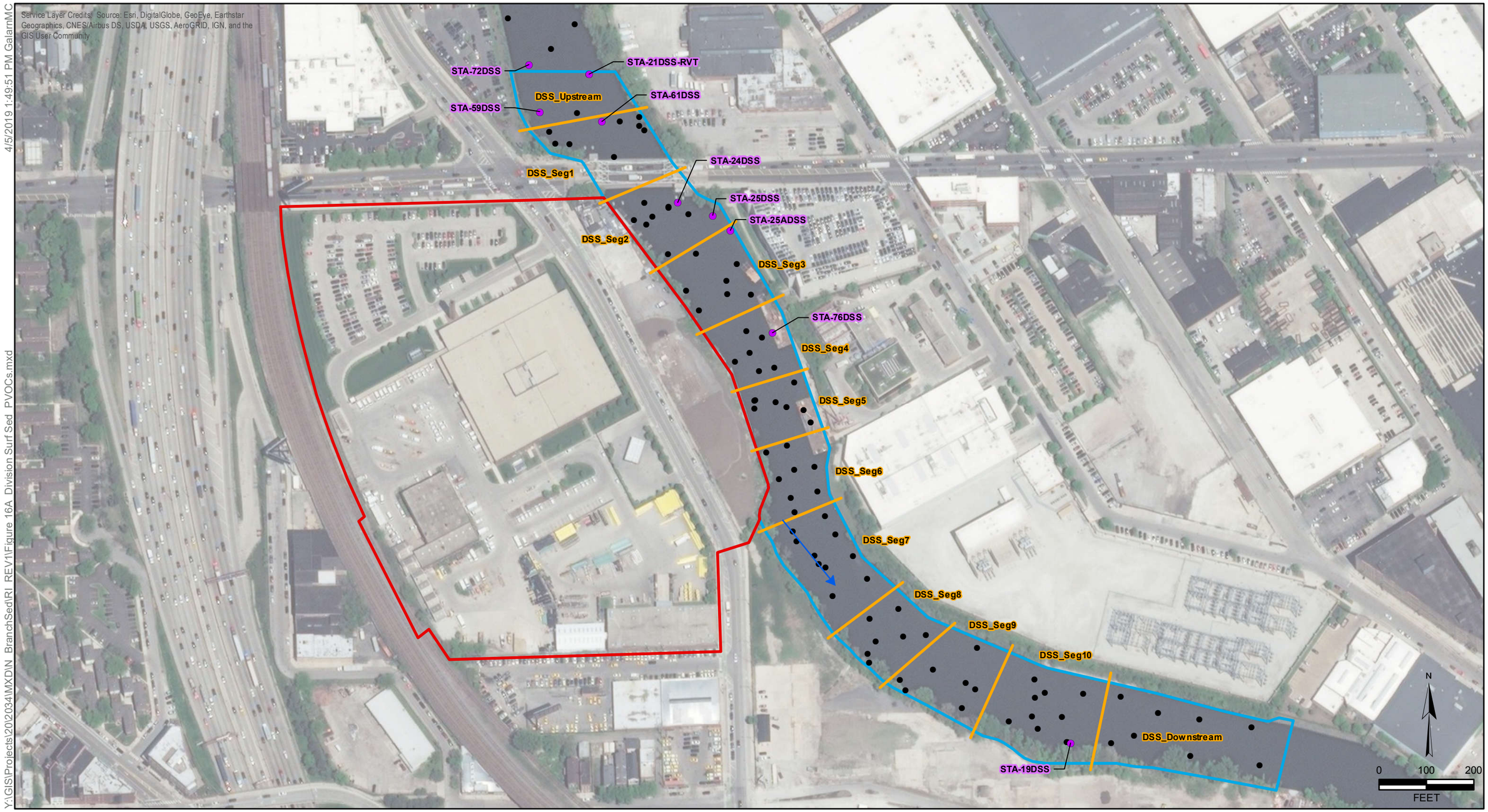
- SEDIMENT SAMPLE EXCEEDS APPLICABLE SEDIMENT ECOLOGICAL BENCHMARK SCREENING LEVELS
- SEDIMENT SAMPLE EXCEEDS APPLICABLE CONSTRUCTION WORKER SELECTED SOIL SCREENING LEVELS
- BLRA ECOLOGICAL COC SAMPLE LOCATION
- SEDIMENT SAMPLING LOCATION
- RIVER SEGMENT DIVISIONS
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

WILLOW STREET OU2 SCREENING LEVEL EXCEEDANCES OF PETROLEUM VOLATILE ORGANIC COMPOUNDS IN SUBSURFACE SEDIMENT

O'BRIEN & GERE ENGINEERS, INC.



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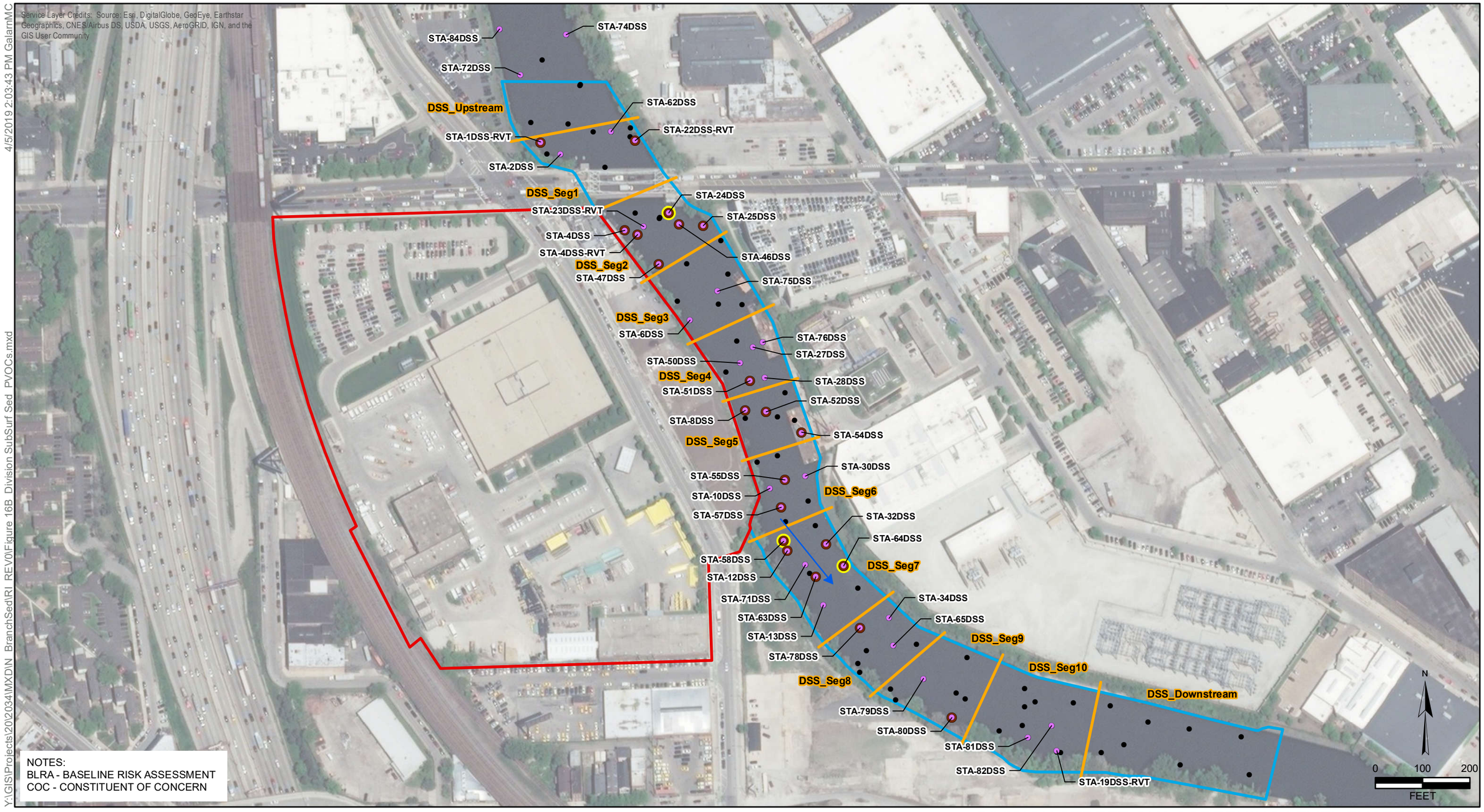
Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV1\Figure 16A_Division Surf Sed_PVOCs.mxd

- SEDIMENT SAMPLE EXCEEDS APPLICABLE SEDIMENT ECOLOGICAL BENCHMARK SCREENING LEVELS
- SEDIMENT SAMPLING LOCATION
- RIVER SEGMENT DIVISIONS
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

DIVISION STREET OU2 SCREENING LEVEL EXCEEDANCES OF PETROLEUM VOLATILE ORGANIC COMPOUNDS IN SURFACE SEDIMENT

O'BRIEN & GERE ENGINEERS, INC.



NOTES:
BLRA - BASELINE RISK ASSESSMENT
COC - CONSTITUENT OF CONCERN

- SEDIMENT SAMPLE EXCEEDS APPLICABLE SEDIMENT ECOLOGICAL BENCHMARK SCREENING LEVELS
- SEDIMENT SAMPLE EXCEEDS APPLICABLE CONSTRUCTION WORKER SELECTED SOIL SCREENING LEVELS
- BLRA ECOLOGICAL COC SAMPLE LOCATION
- SEDIMENT SAMPLING LOCATION
- RIVER SEGMENT DIVISIONS
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

DIVISION STREET OU2 SCREENING LEVEL EXCEEDANCES OF PETROLEUM VOLATILE ORGANIC COMPOUNDS IN SUBSURFACE SEDIMENT

O'BRIEN & GERE ENGINEERS, INC.

Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV0\Figure 16B_Division SubSurf Sed_PVOCs.mxd 4/5/2019 2:03:43 PM GalarnMC

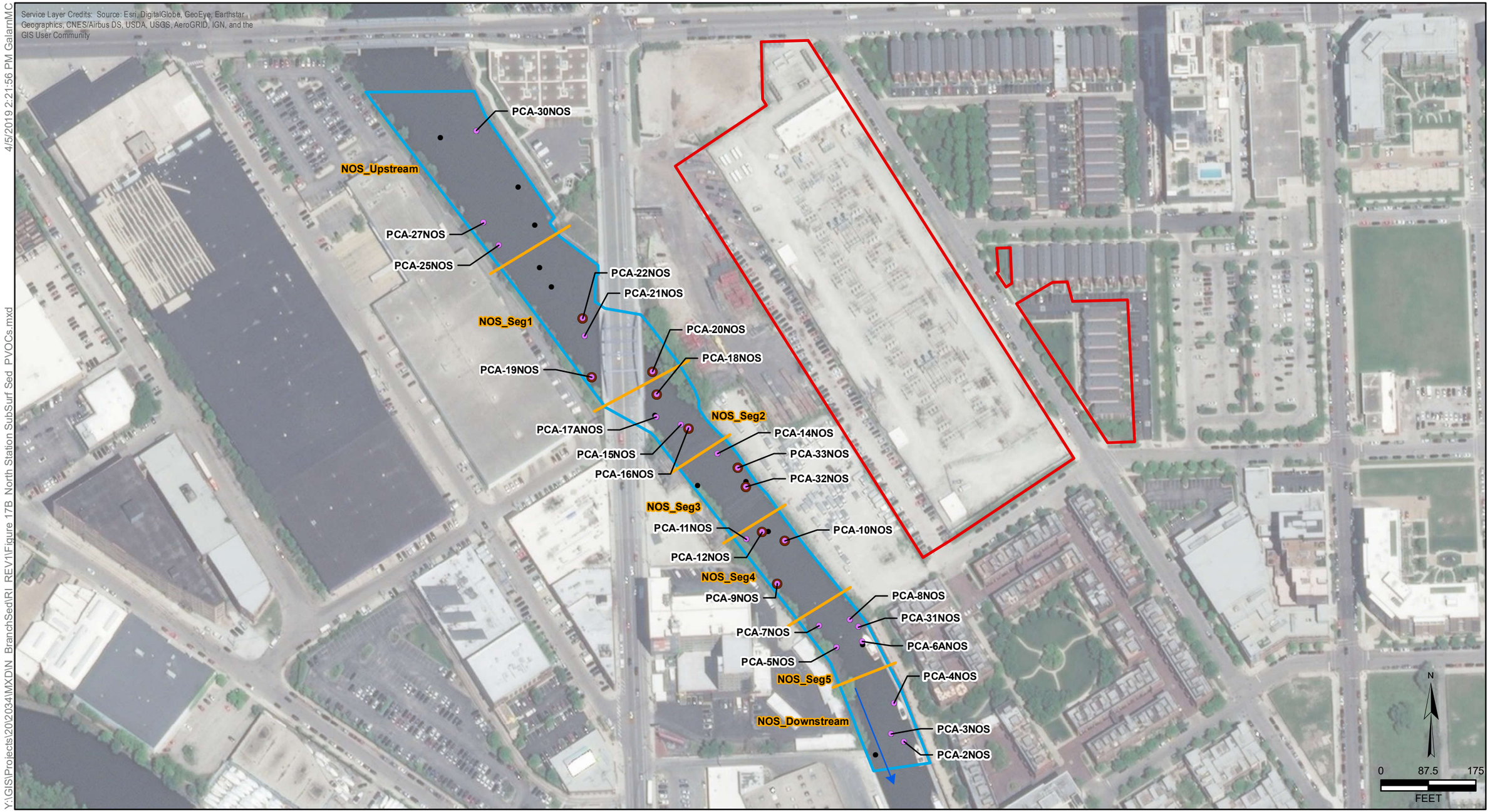
Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV1\Figure 17A_North Station Surf Sed_PVOCs.mxd 4/5/2019 2:17:44 PM GalarnMC

- SEDIMENT SAMPLE EXCEEDS APPLICABLE SEDIMENT ECOLOGICAL BENCHMARK SCREENING LEVELS
- SEDIMENT SAMPLING LOCATION
- RIVER SEGMENT DIVISIONS
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

NORTH STATION OU2 SCREENING LEVEL EXCEEDANCES OF PETROLEUM VOLATILE ORGANIC COMPOUNDS IN SURFACE SEDIMENT

O'BRIEN & GERE ENGINEERS, INC.



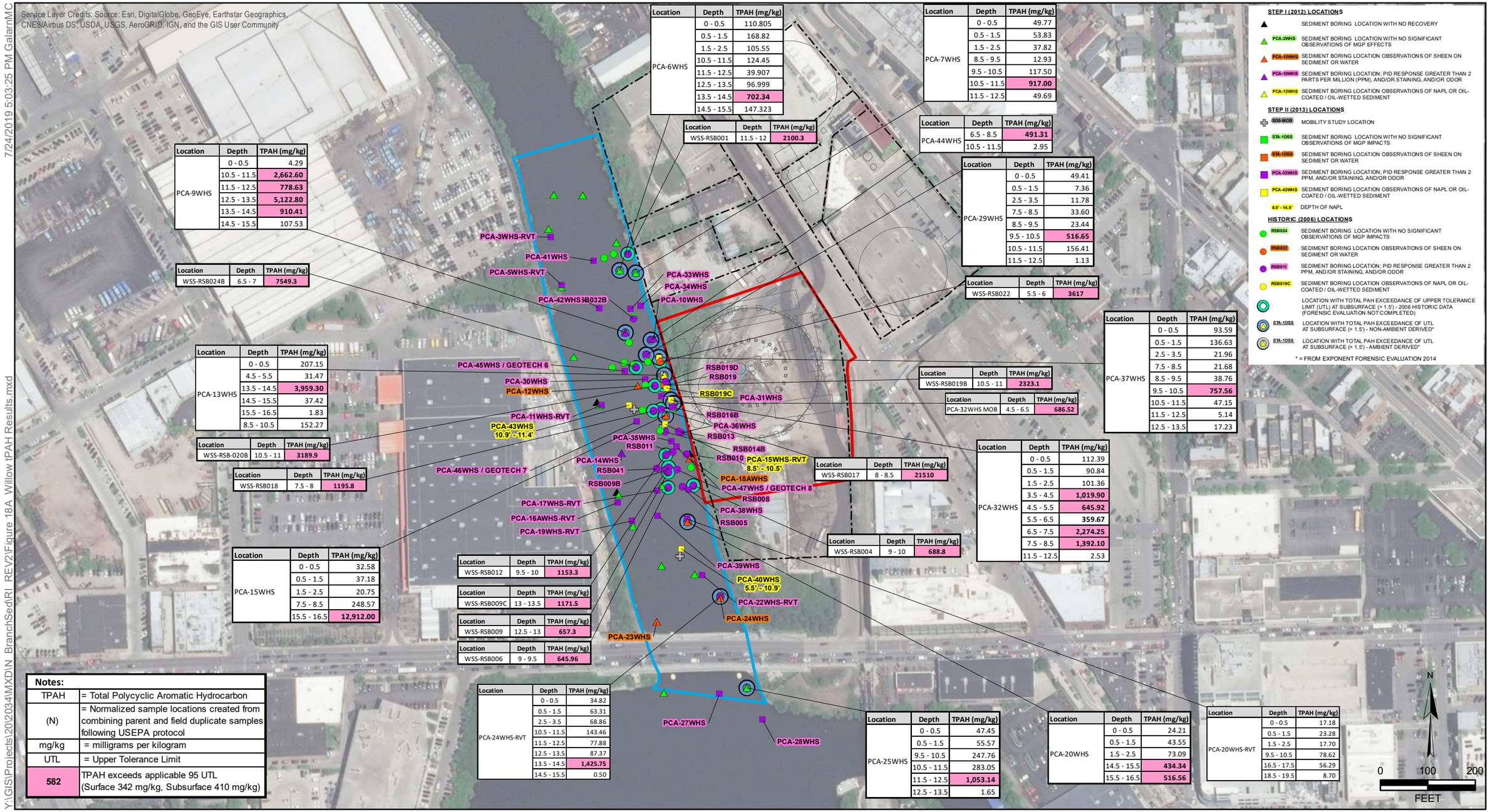
Y:\GIS\Projects\2012034\MXD\N_BranchSed\RI_REV1\Figure 17B_North Station SubSurf Sed_PVOCs.mxd 4/5/2019 2:21:56 PM GalarnMC

- SEDIMENT SAMPLE EXCEEDS APPLICABLE SEDIMENT ECOLOGICAL BENCHMARK SCREENING LEVELS
- SEDIMENT SAMPLE EXCEEDS APPLICABLE CONSTRUCTION WORKER SELECTED SOIL SCREENING LEVELS
- SEDIMENT SAMPLING LOCATION
- RIVER SEGMENT DIVISIONS
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

NORTH STATION OU2 SCREENING LEVEL EXCEEDANCES OF PETROLEUM VOLATILE ORGANIC COMPOUNDS IN SUBSURFACE SEDIMENT

O'BRIEN & GERE ENGINEERS, INC.



Location	Depth	TPAH (mg/kg)
PCA-6WHS	0 - 0.5	110.805
	0.5 - 1.5	168.82
	1.5 - 2.5	105.55
	10.5 - 11.5	124.45
	11.5 - 12.5	39.907
	12.5 - 13.5	96.999
	13.5 - 14.5	702.34
	14.5 - 15.5	147.323

Location	Depth	TPAH (mg/kg)
PCA-7WHS	0 - 0.5	49.77
	0.5 - 1.5	53.83
	1.5 - 2.5	37.82
	8.5 - 9.5	12.93
	9.5 - 10.5	117.50
	10.5 - 11.5	917.00
	11.5 - 12.5	49.69

Location	Depth	TPAH (mg/kg)
WSS-RSB001	11.5 - 12	2100.3

Location	Depth	TPAH (mg/kg)
PCA-44WHS	6.5 - 8.5	491.31
	10.5 - 11.5	2.95

Location	Depth	TPAH (mg/kg)
PCA-29WHS	0 - 0.5	49.41
	0.5 - 1.5	7.36
	2.5 - 3.5	11.78
	7.5 - 8.5	33.60
	8.5 - 9.5	23.44
	9.5 - 10.5	516.65
	10.5 - 11.5	156.41
	11.5 - 12.5	1.13

Location	Depth	TPAH (mg/kg)
PCA-9WHS	0 - 0.5	4.29
	10.5 - 11.5	2,662.60
	11.5 - 12.5	778.63
	12.5 - 13.5	5,122.80
	13.5 - 14.5	910.41
	14.5 - 15.5	107.53

Location	Depth	TPAH (mg/kg)
WSS-RSB024B	6.5 - 7	7549.3

Location	Depth	TPAH (mg/kg)
WSS-RSB022	5.5 - 6	3617

Location	Depth	TPAH (mg/kg)
PCA-37WHS	0 - 0.5	93.59
	0.5 - 1.5	136.63
	2.5 - 3.5	21.96
	7.5 - 8.5	21.68
	8.5 - 9.5	38.76
	9.5 - 10.5	757.56
	10.5 - 11.5	47.15
	11.5 - 12.5	5.14
	12.5 - 13.5	17.23

Location	Depth	TPAH (mg/kg)
WSS-RSB019B	10.5 - 11	2323.1

Location	Depth	TPAH (mg/kg)
PCA-32WHS MOB	4.5 - 6.5	686.52

Location	Depth	TPAH (mg/kg)
PCA-13WHS	0 - 0.5	207.15
	4.5 - 5.5	31.47
	13.5 - 14.5	3,959.30
	14.5 - 15.5	37.42
	15.5 - 16.5	1.83
	8.5 - 10.5	152.27

Location	Depth	TPAH (mg/kg)
WSS-RSB-020B	10.5 - 11	3189.9

Location	Depth	TPAH (mg/kg)
WSS-RSB018	7.5 - 8	1195.8

Location	Depth	TPAH (mg/kg)
WSS-RSB017	8 - 8.5	21510

Location	Depth	TPAH (mg/kg)
PCA-32WHS	0 - 0.5	112.39
	0.5 - 1.5	90.84
	1.5 - 2.5	101.36
	3.5 - 4.5	1,019.90
	4.5 - 5.5	645.92
	5.5 - 6.5	359.67
	6.5 - 7.5	2,274.25
	7.5 - 8.5	1,392.10
	11.5 - 12.5	2.53

Location	Depth	TPAH (mg/kg)
WSS-RSB004	9 - 10	688.8

Location	Depth	TPAH (mg/kg)
PCA-15WHS	0 - 0.5	32.58
	0.5 - 1.5	37.18
	1.5 - 2.5	20.75
	7.5 - 8.5	248.57
	15.5 - 16.5	12,912.00

Location	Depth	TPAH (mg/kg)
WSS-RSB012	9.5 - 10	1153.3

Location	Depth	TPAH (mg/kg)
WSS-RSB009C	13 - 13.5	1171.5

Location	Depth	TPAH (mg/kg)
WSS-RSB009	12.5 - 13	657.3

Location	Depth	TPAH (mg/kg)
WSS-RSB006	9 - 9.5	645.96

Location	Depth	TPAH (mg/kg)
PCA-24WHS-RVT	0 - 0.5	34.82
	0.5 - 1.5	63.31
	2.5 - 3.5	68.86
	10.5 - 11.5	143.46
	11.5 - 12.5	77.88
	12.5 - 13.5	87.37
	13.5 - 14.5	1,425.75
	14.5 - 15.5	0.50

Location	Depth	TPAH (mg/kg)
PCA-25WHS	0 - 0.5	47.45
	0.5 - 1.5	55.57
	9.5 - 10.5	247.76
	10.5 - 11.5	283.05
	11.5 - 12.5	1,053.14
	12.5 - 13.5	1.65

Location	Depth	TPAH (mg/kg)
PCA-20WHS	0 - 0.5	24.21
	0.5 - 1.5	43.55
	1.5 - 2.5	73.09
	14.5 - 15.5	434.34
	15.5 - 16.5	516.56

Location	Depth	TPAH (mg/kg)
PCA-20WHS-RVT	0 - 0.5	17.18
	0.5 - 1.5	23.28
	1.5 - 2.5	17.70
	9.5 - 10.5	78.62
	16.5 - 17.5	56.29
	18.5 - 19.5	8.70

STEP I (2012) LOCATIONS

- SEDIMENT BORING LOCATION WITH NO RECOVERY
- PCA-2WHS: SEDIMENT BORING LOCATION WITH NO SIGNIFICANT OBSERVATIONS OF MGP EFFECTS
- PCA-15WHS: SEDIMENT BORING LOCATION OBSERVATIONS OF SHEEN ON SEDIMENT OR WATER
- PCA-16WHS: SEDIMENT BORING LOCATION; PID RESPONSE GREATER THAN 2 PARTS PER MILLION (PPM), AND/OR STAINING, AND/OR ODOR
- PCA-13WHS: SEDIMENT BORING LOCATION OBSERVATIONS OF NAPL OR OIL-COATED / OIL-WETTED SEDIMENT

STEP II (2013) LOCATIONS

- SDS-MOB: MOBILITY STUDY LOCATION
- STA-1DSS: SEDIMENT BORING LOCATION WITH NO SIGNIFICANT OBSERVATIONS OF MGP IMPACTS
- STA-1DSS: SEDIMENT BORING LOCATION OBSERVATIONS OF SHEEN ON SEDIMENT OR WATER
- PCA-33WHS: SEDIMENT BORING LOCATION; PID RESPONSE GREATER THAN 2 PPM, AND/OR STAINING, AND/OR ODOR
- PCA-43WHS: SEDIMENT BORING LOCATION OBSERVATIONS OF NAPL OR OIL-COATED / OIL-WETTED SEDIMENT
- 8.5' - 14.5': DEPTH OF NAPL

HISTORIC (2006) LOCATIONS

- RSB024: SEDIMENT BORING LOCATION WITH NO SIGNIFICANT OBSERVATIONS OF MGP IMPACTS
- RSB022: SEDIMENT BORING LOCATION OBSERVATIONS OF SHEEN ON SEDIMENT OR WATER
- RSB011: SEDIMENT BORING LOCATION; PID RESPONSE GREATER THAN 2 PPM, AND/OR STAINING, AND/OR ODOR
- RSB019C: SEDIMENT BORING LOCATION OBSERVATIONS OF NAPL OR OIL-COATED / OIL-WETTED SEDIMENT
- LOCATION WITH TOTAL PAH EXCEEDANCE OF UPPER TOLERANCE LIMIT (UTL) AT SUBSURFACE (> 1.5') - 2006 HISTORIC DATA (FORENSIC EVALUATION NOT COMPLETED)
- STA-1DSS: LOCATION WITH TOTAL PAH EXCEEDANCE OF UTL AT SUBSURFACE (> 1.5') - NON-AMBIENT DERIVED*
- STA-1DSS: LOCATION WITH TOTAL PAH EXCEEDANCE OF UTL AT SUBSURFACE (> 1.5') - AMBIENT DERIVED*

* = FROM EXPONENT FORENSIC EVALUATION 2014

Notes:

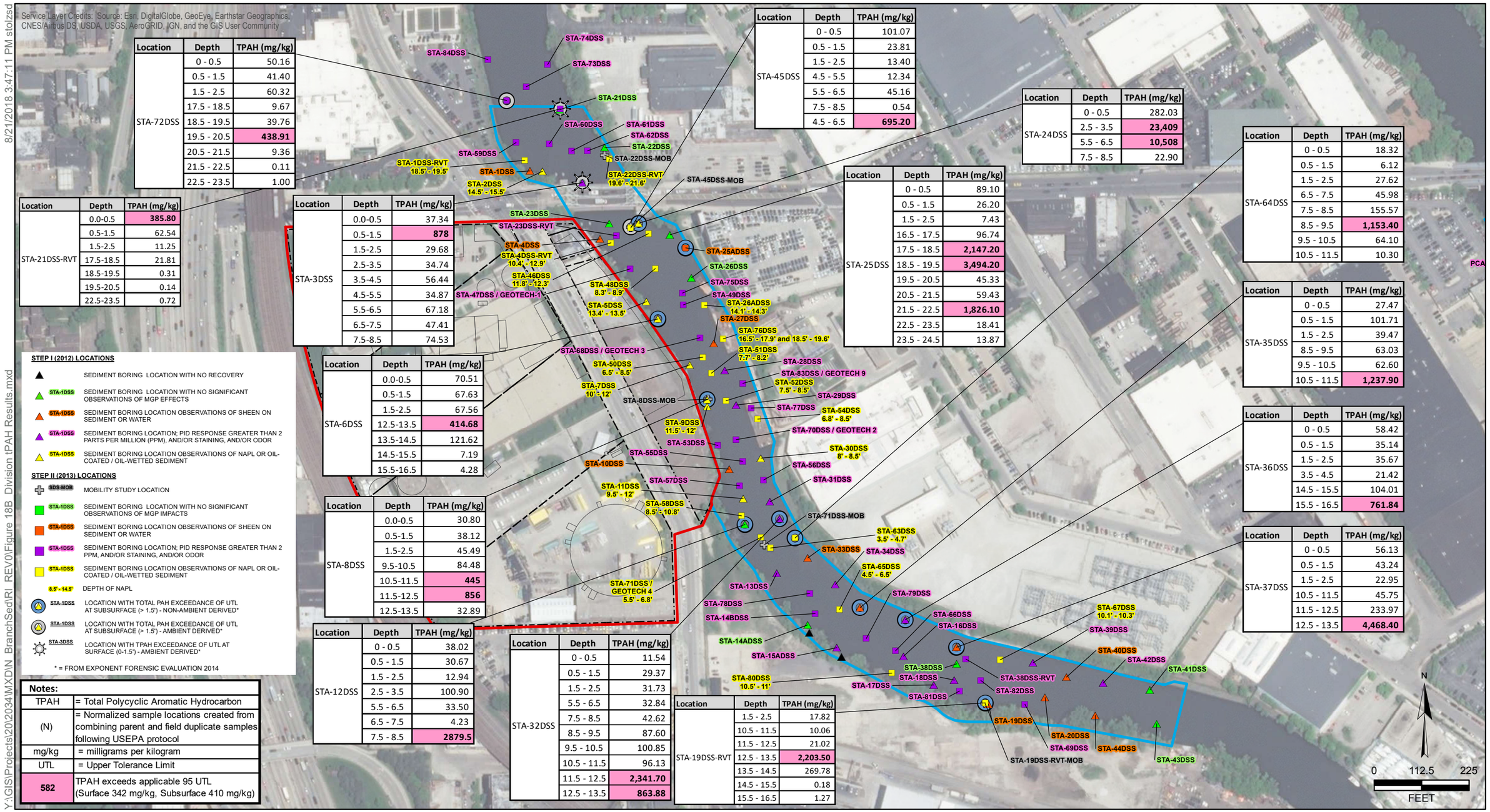
TPAH	= Total Polycyclic Aromatic Hydrocarbon
(N)	= Normalized sample locations created from combining parent and field duplicate samples following USEPA protocol
mg/kg	= milligrams per kilogram
UTL	= Upper Tolerance Limit
582	TPAH exceeds applicable 95 UTL (Surface 342 mg/kg, Subsurface 410 mg/kg)

- HISTORICAL MGP STRUCTURE
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)
- PROPERTY BOUNDARY

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

WILLOW STREET OU2 SEDIMENT SAMPLING LOCATIONS AND TPAH UTL EXCEEDANCES

O'BRIEN & GERE ENGINEERS, INC.



Location	Depth	TPAH (mg/kg)
STA-72DSS	0 - 0.5	50.16
	0.5 - 1.5	41.40
	1.5 - 2.5	60.32
	17.5 - 18.5	9.67
	18.5 - 19.5	39.76
	19.5 - 20.5	**438.91**
	20.5 - 21.5	9.36
	21.5 - 22.5	0.11
	22.5 - 23.5	1.00

Location	Depth	TPAH (mg/kg)
STA-21DSS-RVT	0.0-0.5	**385.80**
	0.5-1.5	62.54
	1.5-2.5	11.25
	17.5-18.5	21.81
	18.5-19.5	0.31
	19.5-20.5	0.14
	22.5-23.5	0.72

Location	Depth	TPAH (mg/kg)
STA-3DSS	0.0-0.5	37.34
	0.5-1.5	**878**
	1.5-2.5	29.68
	2.5-3.5	34.74
	3.5-4.5	56.44
	4.5-5.5	34.87
	5.5-6.5	67.18
	6.5-7.5	47.41
	7.5-8.5	74.53

Location	Depth	TPAH (mg/kg)
STA-6DSS	0.0-0.5	70.51
	0.5-1.5	67.63
	1.5-2.5	67.56
	12.5-13.5	**414.68**
	13.5-14.5	121.62
	14.5-15.5	7.19
	15.5-16.5	4.28

Location	Depth	TPAH (mg/kg)
STA-8DSS	0.0-0.5	30.80
	0.5-1.5	38.12
	1.5-2.5	45.49
	9.5-10.5	84.48
	10.5-11.5	**445**
	11.5-12.5	**856**
	12.5-13.5	32.89

Location	Depth	TPAH (mg/kg)
STA-12DSS	0 - 0.5	38.02
	0.5 - 1.5	30.67
	1.5 - 2.5	12.94
	2.5 - 3.5	100.90
	5.5 - 6.5	33.50
	6.5 - 7.5	4.23
	7.5 - 8.5	**2879.5**

Location	Depth	TPAH (mg/kg)
STA-32DSS	0 - 0.5	11.54
	0.5 - 1.5	29.37
	1.5 - 2.5	31.73
	5.5 - 6.5	32.84
	7.5 - 8.5	42.62
	8.5 - 9.5	87.60
	9.5 - 10.5	100.85
	10.5 - 11.5	96.13
	11.5 - 12.5	**2,341.70**
	12.5 - 13.5	**863.88**

Location	Depth	TPAH (mg/kg)
STA-19DSS-RVT	1.5 - 2.5	17.82
	10.5 - 11.5	10.06
	11.5 - 12.5	21.02
	12.5 - 13.5	**2,203.50**
	13.5 - 14.5	269.78
	14.5 - 15.5	0.18
	15.5 - 16.5	1.27

Location	Depth	TPAH (mg/kg)
STA-45DSS	0 - 0.5	101.07
	0.5 - 1.5	23.81
	1.5 - 2.5	13.40
	4.5 - 5.5	12.34
	5.5 - 6.5	45.16
	7.5 - 8.5	0.54
	4.5 - 6.5	**695.20**

Location	Depth	TPAH (mg/kg)
STA-24DSS	0 - 0.5	282.03
	2.5 - 3.5	**23,409**
	5.5 - 6.5	**10,508**
	7.5 - 8.5	22.90

Location	Depth	TPAH (mg/kg)
STA-25DSS	0 - 0.5	89.10
	0.5 - 1.5	26.20
	1.5 - 2.5	7.43
	16.5 - 17.5	96.74
	17.5 - 18.5	**2,147.20**
	18.5 - 19.5	**3,494.20**
	19.5 - 20.5	45.33
	20.5 - 21.5	59.43
	21.5 - 22.5	**1,826.10**
	22.5 - 23.5	18.41
	23.5 - 24.5	13.87

Location	Depth	TPAH (mg/kg)
STA-64DSS	0 - 0.5	18.32
	0.5 - 1.5	6.12
	1.5 - 2.5	27.62
	6.5 - 7.5	45.98
	7.5 - 8.5	155.57
	8.5 - 9.5	**1,153.40**
	9.5 - 10.5	64.10
	10.5 - 11.5	10.30

Location	Depth	TPAH (mg/kg)
STA-35DSS	0 - 0.5	27.47
	0.5 - 1.5	101.71
	1.5 - 2.5	39.47
	8.5 - 9.5	63.03
	9.5 - 10.5	62.60
	10.5 - 11.5	**1,237.90**

Location	Depth	TPAH (mg/kg)
STA-36DSS	0 - 0.5	58.42
	0.5 - 1.5	35.14
	1.5 - 2.5	35.67
	3.5 - 4.5	21.42
	14.5 - 15.5	104.01
	15.5 - 16.5	**761.84**

Location	Depth	TPAH (mg/kg)
STA-37DSS	0 - 0.5	56.13
	0.5 - 1.5	43.24
	1.5 - 2.5	22.95
	10.5 - 11.5	45.75
	11.5 - 12.5	233.97
	12.5 - 13.5	**4,468.40**

STEP I (2012) LOCATIONS

- SEDIMENT BORING LOCATION WITH NO RECOVERY
- STA-1DSS — SEDIMENT BORING LOCATION WITH NO SIGNIFICANT OBSERVATIONS OF MGP EFFECTS
- STA-1DSS — SEDIMENT BORING LOCATION OBSERVATIONS OF SHEEN ON SEDIMENT OR WATER
- STA-1DSS — SEDIMENT BORING LOCATION; PID RESPONSE GREATER THAN 2 PARTS PER MILLION (PPM), AND/OR STAINING, AND/OR ODOR
- STA-1DSS — SEDIMENT BORING LOCATION OBSERVATIONS OF NAPL OR OIL-COATED / OIL-WETTED SEDIMENT

STEP II (2013) LOCATIONS

- SDS-MOB — MOBILITY STUDY LOCATION
- STA-1DSS — SEDIMENT BORING LOCATION WITH NO SIGNIFICANT OBSERVATIONS OF MGP IMPACTS
- STA-1DSS — SEDIMENT BORING LOCATION OBSERVATIONS OF SHEEN ON SEDIMENT OR WATER
- STA-1DSS — SEDIMENT BORING LOCATION; PID RESPONSE GREATER THAN 2 PPM, AND/OR STAINING, AND/OR ODOR
- STA-1DSS — SEDIMENT BORING LOCATION OBSERVATIONS OF NAPL OR OIL-COATED / OIL-WETTED SEDIMENT
- 8.5' - 14.5' — DEPTH OF NAPL
- STA-1DSS — LOCATION WITH TOTAL PAH EXCEEDANCE OF UTL AT SUBSURFACE (> 1.5') - NON-AMBIENT DERIVED*
- STA-1DSS — LOCATION WITH TOTAL PAH EXCEEDANCE OF UTL AT SUBSURFACE (> 1.5') - AMBIENT DERIVED*
- STA-3DSS — LOCATION WITH TPAH EXCEEDANCE OF UTL AT SURFACE (0-1.5') - AMBIENT DERIVED*

* = FROM EXPONENT FORENSIC EVALUATION 2014

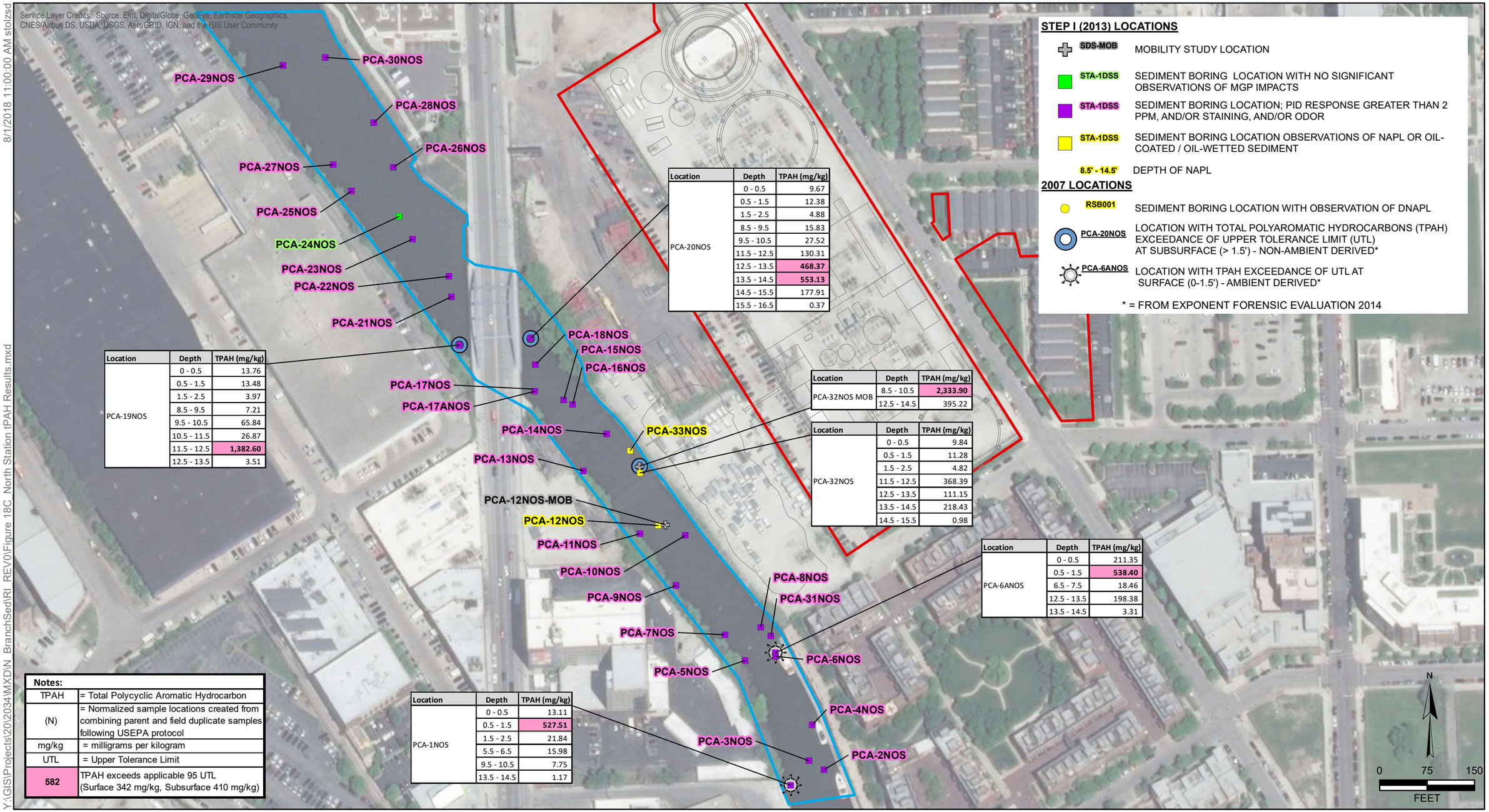
Notes:	
TPAH	= Total Polycyclic Aromatic Hydrocarbon
(N)	= Normalized sample locations created from combining parent and field duplicate samples following USEPA protocol
mg/kg	= milligrams per kilogram
UTL	= Upper Tolerance Limit
582	TPAH exceeds applicable 95 UTL (Surface 342 mg/kg, Subsurface 410 mg/kg)

- HISTORICAL SITE FEATURES
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)
- PROPERTY BOUNDARY

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

DIVISION STREET OU2 SEDIMENT SAMPLING LOCATIONS AND TPAH UTL EXCEEDANCES

O'BRIEN & GERE ENGINEERS, INC.



Location	Depth	TPAH (mg/kg)
PCA-20NOS	0 - 0.5	9.67
	0.5 - 1.5	12.38
	1.5 - 2.5	4.88
	8.5 - 9.5	15.83
	9.5 - 10.5	27.52
	11.5 - 12.5	130.31
	12.5 - 13.5	**468.37**
	13.5 - 14.5	**553.13**
	14.5 - 15.5	177.91
	15.5 - 16.5	0.37

Location	Depth	TPAH (mg/kg)
PCA-19NOS	0 - 0.5	13.76
	0.5 - 1.5	13.48
	1.5 - 2.5	3.97
	8.5 - 9.5	7.21
	9.5 - 10.5	65.84
	10.5 - 11.5	26.87
	11.5 - 12.5	**1,382.60**
	12.5 - 13.5	3.51

Location	Depth	TPAH (mg/kg)
PCA-32NOS MOB	8.5 - 10.5	**2,333.90**
	12.5 - 14.5	395.22

Location	Depth	TPAH (mg/kg)
PCA-32NOS	0 - 0.5	9.84
	0.5 - 1.5	11.28
	1.5 - 2.5	4.82
	11.5 - 12.5	368.39
	12.5 - 13.5	111.15
	13.5 - 14.5	218.43
	14.5 - 15.5	0.98

Location	Depth	TPAH (mg/kg)
PCA-6ANOS	0 - 0.5	211.35
	0.5 - 1.5	**538.40**
	6.5 - 7.5	18.46
	12.5 - 13.5	198.38
	13.5 - 14.5	3.31

Location	Depth	TPAH (mg/kg)
PCA-1NOS	0 - 0.5	13.11
	0.5 - 1.5	**527.51**
	1.5 - 2.5	21.84
	5.5 - 6.5	15.98
	9.5 - 10.5	7.75
	13.5 - 14.5	1.17

Notes:	
TPAH	= Total Polycyclic Aromatic Hydrocarbon
(N)	= Normalized sample locations created from combining parent and field duplicate samples following USEPA protocol
mg/kg	= milligrams per kilogram
UTL	= Upper Tolerance Limit
582	TPAH exceeds applicable 95 UTL (Surface 342 mg/kg, Subsurface 410 mg/kg)

HISTORICAL SITE FEATURES

APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)

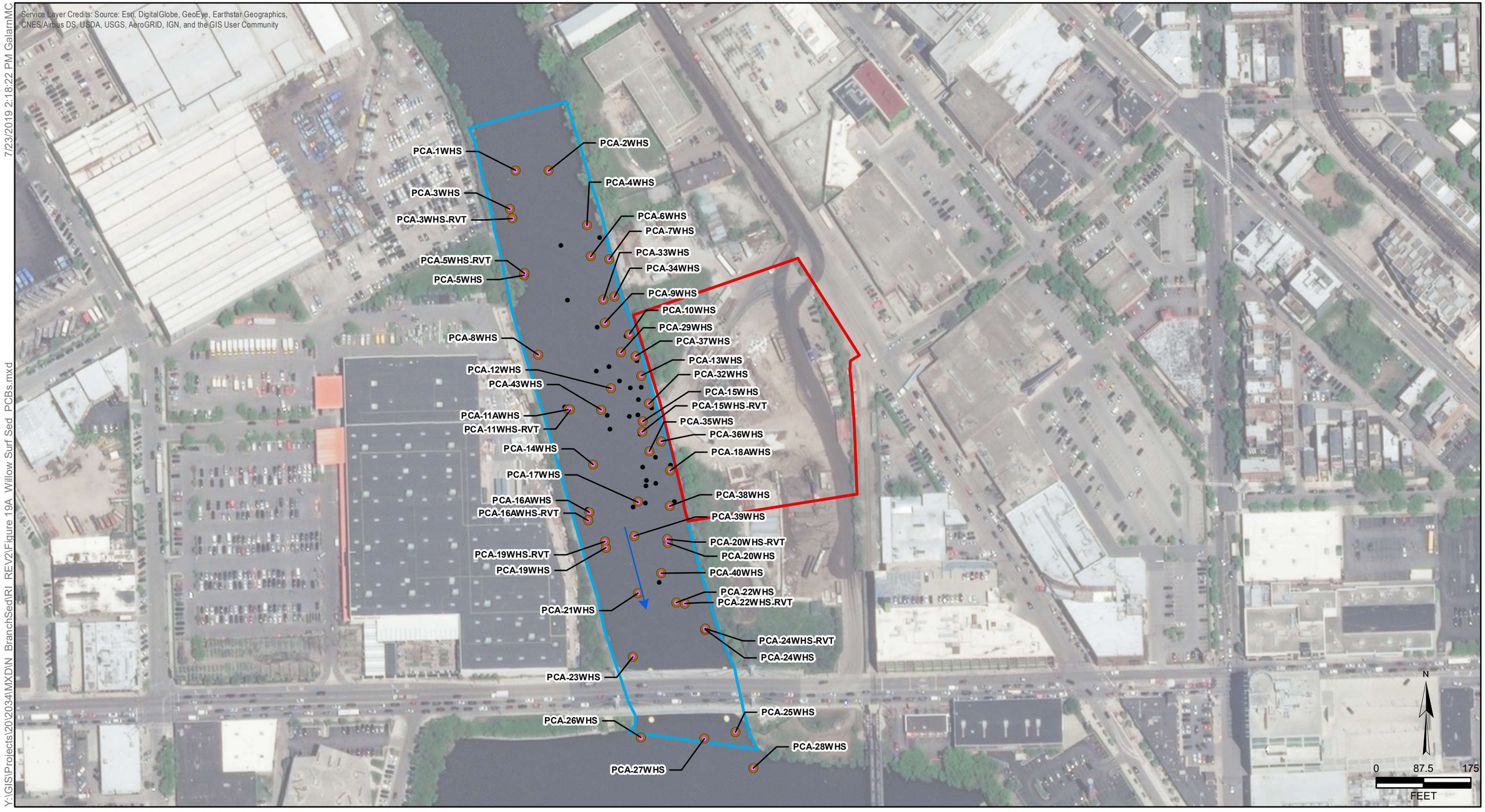
APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

NORTH STATION OU2 SEDIMENT SAMPLING LOCATIONS AND TPAH UTL EXCEEDANCES

O'BRIEN & GERE ENGINEERS, INC.

Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV0\Figure 18C_North Station tPAH Results.mxd 8/1/2018 11:00:00 AM stolzsd



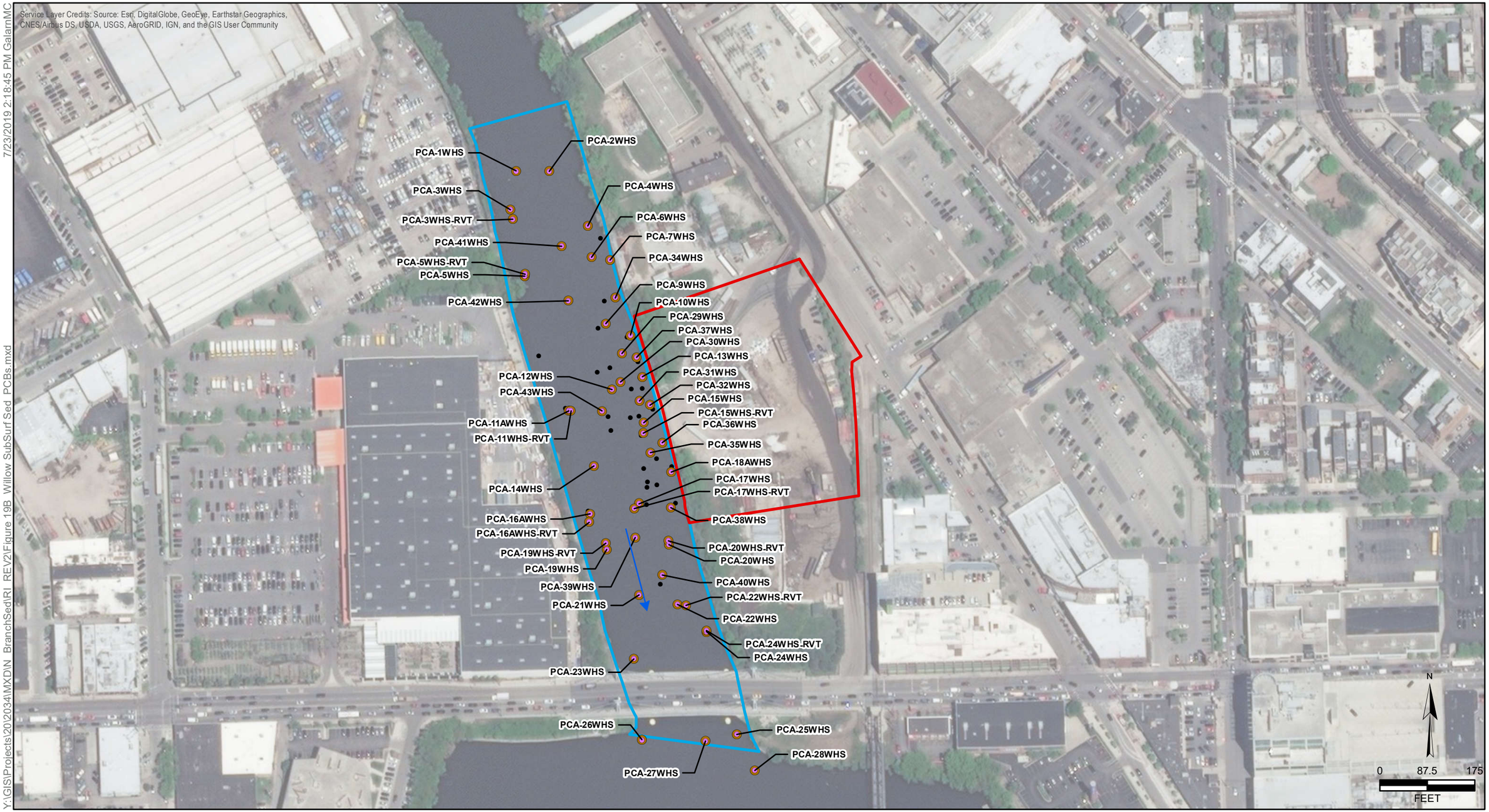
Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV2\Figure 19A_Willow Surf Sed_PCBs.mxd 7/23/2019 2:18:22 PM GalarnMC

- SEDIMENT SAMPLE EXCEEDS APPLICABLE SEDIMENT ECOLOGICAL BENCHMARK SCREENING LEVELS
- SEDIMENT SAMPLE EXCEEDS APPLICABLE CONSTRUCTION WORKER SELECTED SOIL SCREENING LEVELS
- SEDIMENT SAMPLING LOCATION
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

WILLOW STREET OU2 SCREENING LEVEL EXCEEDANCES OF POLYCHLORINATED BIPHENYLS IN SURFACE SEDIMENT

O'BRIEN & GERE ENGINEERS, INC.



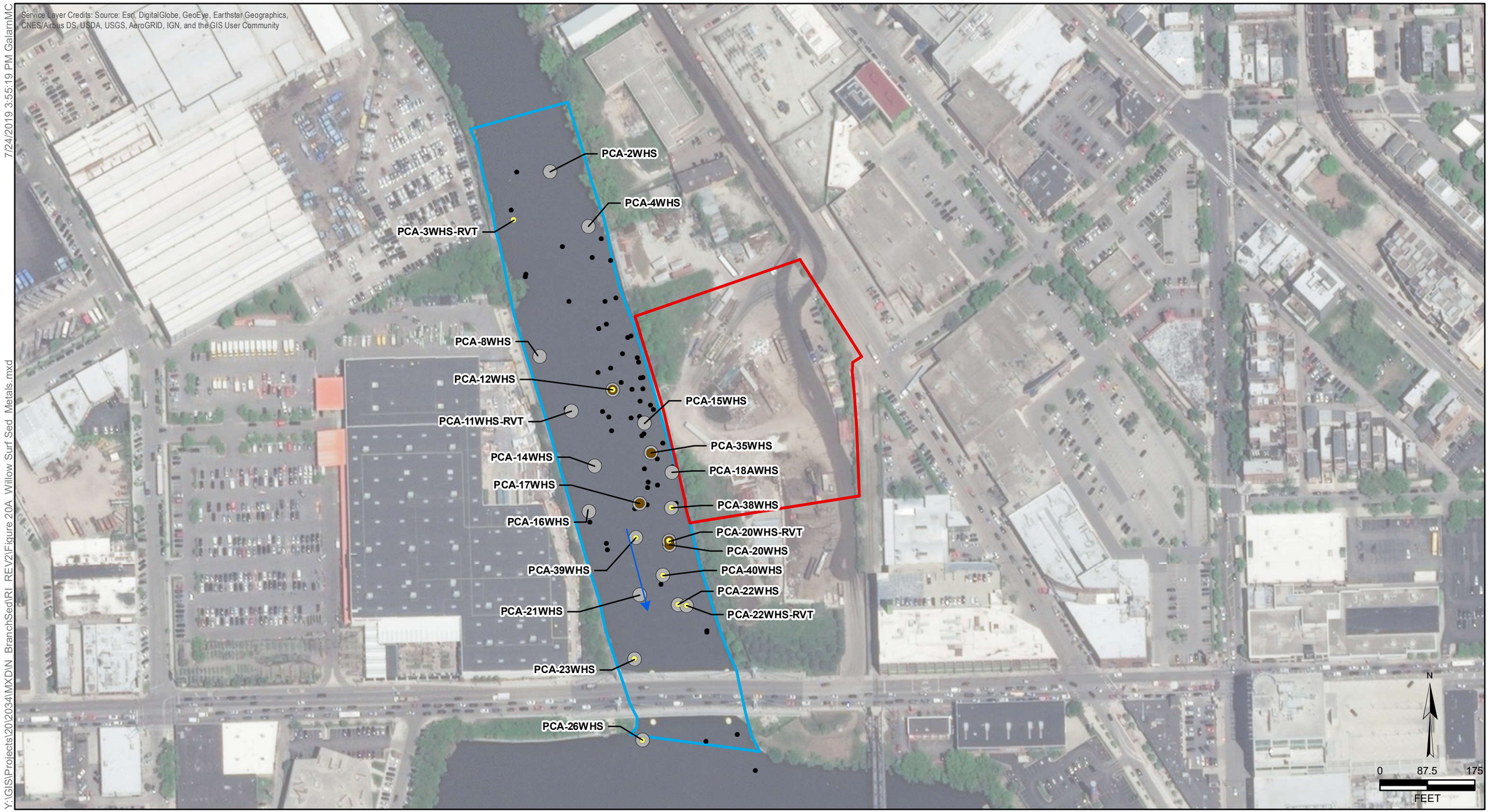
Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV2\Figure 19B_Willow SubSurf Sed_PCBs.mxd 7/23/2019 2:18:45 PM GalarnMC

- SEDIMENT SAMPLE EXCEEDS APPLICABLE SEDIMENT ECOLOGICAL BENCHMARK SCREENING LEVELS
- SEDIMENT SAMPLE EXCEEDS APPLICABLE CONSTRUCTION WORKER SELECTED SOIL SCREENING LEVELS
- SEDIMENT SAMPLING LOCATION
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

WILLOW STREET OU2 SCREENING LEVEL EXCEEDANCES OF POLYCHLORINATED BIPHENYLS IN SUBSURFACE SEDIMENT

O'BRIEN & GERE ENGINEERS, INC.



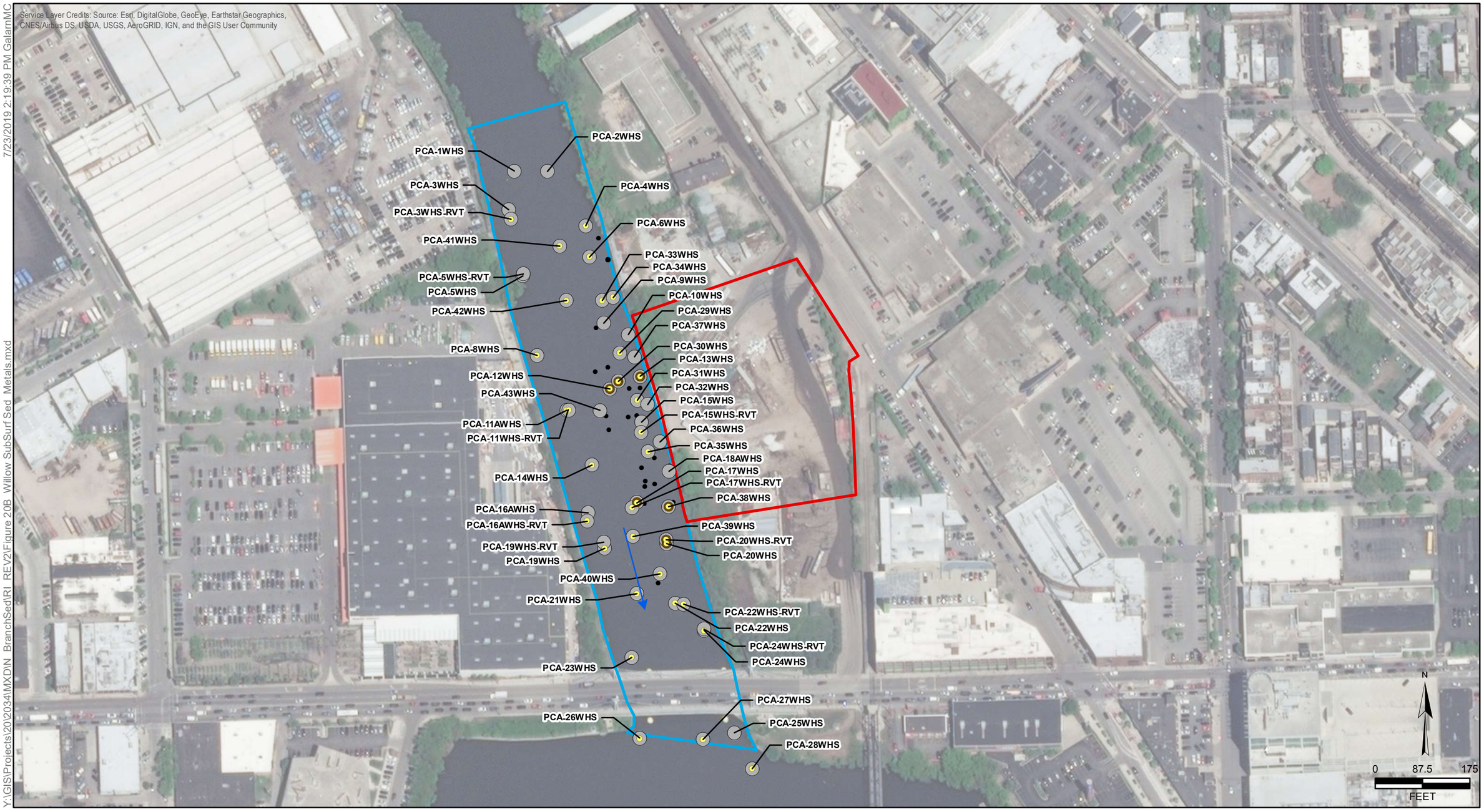
Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV2\Figure 20A_Willow Surf Sed_Metals.mxd 7/24/2019 3:55:19 PM GalarnMC

- SEDIMENT SAMPLE EXCEEDS APPLICABLE UTL VALUE FOR SILVER
- SEDIMENT SAMPLE EXCEEDS APPLICABLE UTL VALUE FOR TOTAL CYANIDE (13 MG/KG)
- SEDIMENT SAMPLE EXCEEDS APPLICABLE UPPER TOLERANCE LEVEL (UTL) VALUES (SILVER UTL EXCEEDANCES NOT INCLUDED)
- SEDIMENT SAMPLING LOCATION
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

WILLOW STREET OU2 SCREENING LEVEL EXCEEDANCES OF INORGANICS & TOTAL CYANIDE IN SURFACE SEDIMENT

O'BRIEN & GERE ENGINEERS, INC.



7/23/2019 2:19:39 PM GalarnMC

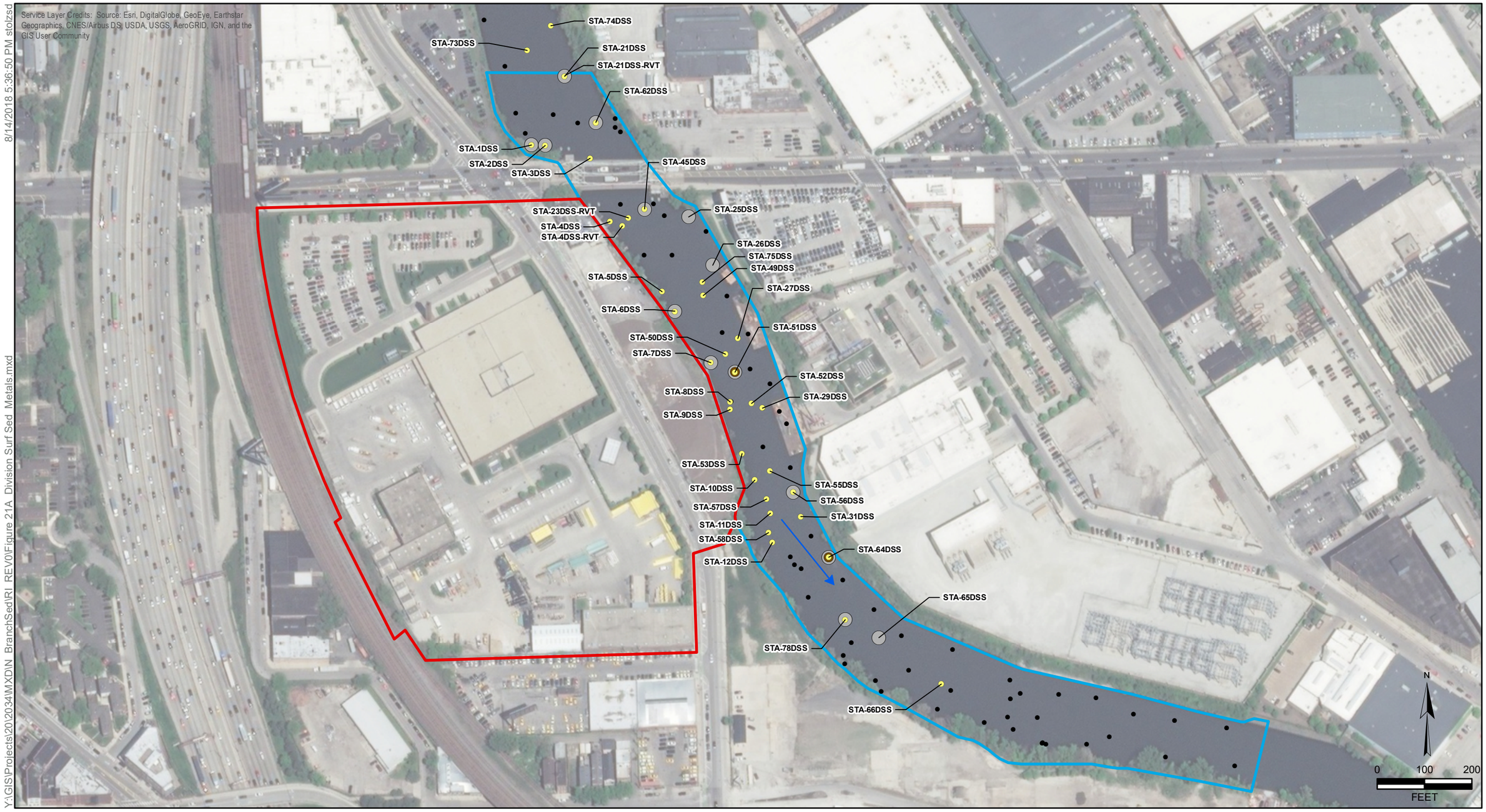
Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV2\Figure 20B_Willow SubSurf Sed_Metals.mxd

- SEDIMENT SAMPLE EXCEEDS APPLICABLE UTL VALUE FOR SILVER
- SEDIMENT SAMPLE EXCEEDS APPLICABLE UTL VALUE FOR TOTAL CYANIDE (13 MG/KG)
- SEDIMENT SAMPLE EXCEEDS APPLICABLE UPPER TOLERANCE LEVEL (UTL) VALUES (SILVER UTL EXCEEDANCES NOT INCLUDED)
- SEDIMENT SAMPLING LOCATION
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

WILLOW STREET OU2 SCREENING LEVEL EXCEEDANCES OF INORGANICS & TOTAL CYANIDE IN SUBSURFACE SEDIMENT

O'BRIEN & GERE ENGINEERS, INC.



8/14/2018 5:36:50 PM stolzsd

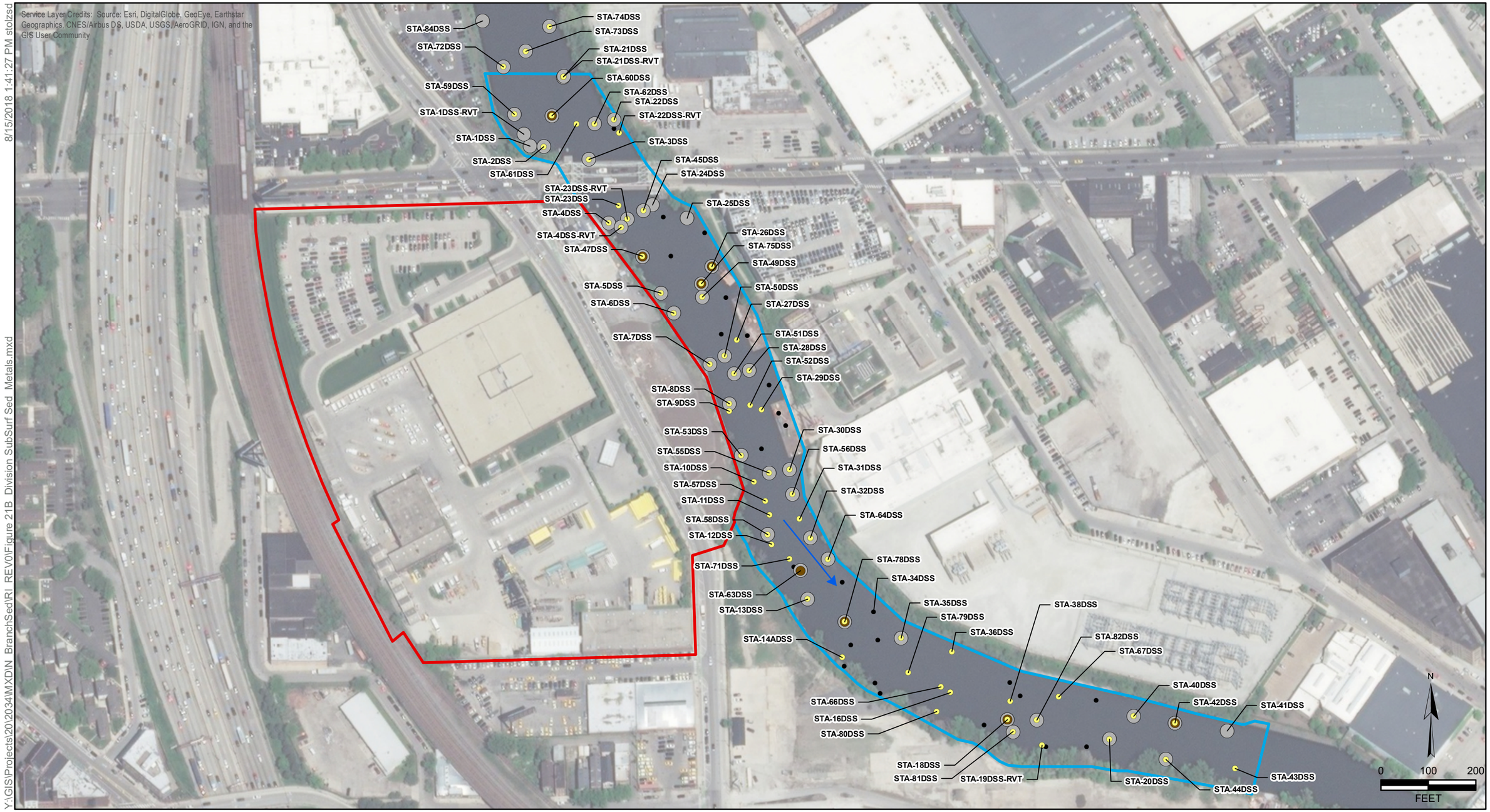
Y:\GIS\Projects\20\20341\MXD\N_BranchSed\RI_REV0\Figure 21A_Division Surf Sed_Metals.mxd

- SEDIMENT SAMPLE EXCEEDS APPLICABLE UTL VALUE FOR SILVER
- SEDIMENT SAMPLE EXCEEDS APPLICABLE UTL VALUE FOR TOTAL CYANIDE (13 MG/KG)
- SEDIMENT SAMPLE EXCEEDS APPLICABLE UPPER TOLERANCE LEVEL (UTL) VALUES (SILVER UTL EXCEEDANCES NOT INCLUDED)
- SEDIMENT SAMPLING LOCATION
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

DIVISION STREET OU2 SCREENING LEVEL EXCEEDANCES OF INORGANICS & TOTAL CYANIDE IN SURFACE SEDIMENT

O'BRIEN & GERE ENGINEERS, INC.



- SEDIMENT SAMPLE EXCEEDS APPLICABLE UTL VALUE FOR SILVER
- SEDIMENT SAMPLE EXCEEDS APPLICABLE UTL VALUE FOR TOTAL CYANIDE (13 MG/KG)
- SEDIMENT SAMPLE EXCEEDS APPLICABLE UPPER TOLERANCE LEVEL (UTL) VALUES (SILVER UTL EXCEEDANCES NOT INCLUDED)
- SEDIMENT SAMPLING LOCATION
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

DIVISION STREET OU2 SCREENING LEVEL EXCEEDANCES OF INORGANICS & TOTAL CYANIDE IN SUBSURFACE SEDIMENT

O'BRIEN & GERE ENGINEERS, INC.

8/14/2018 5:36:36 PM stolzsd

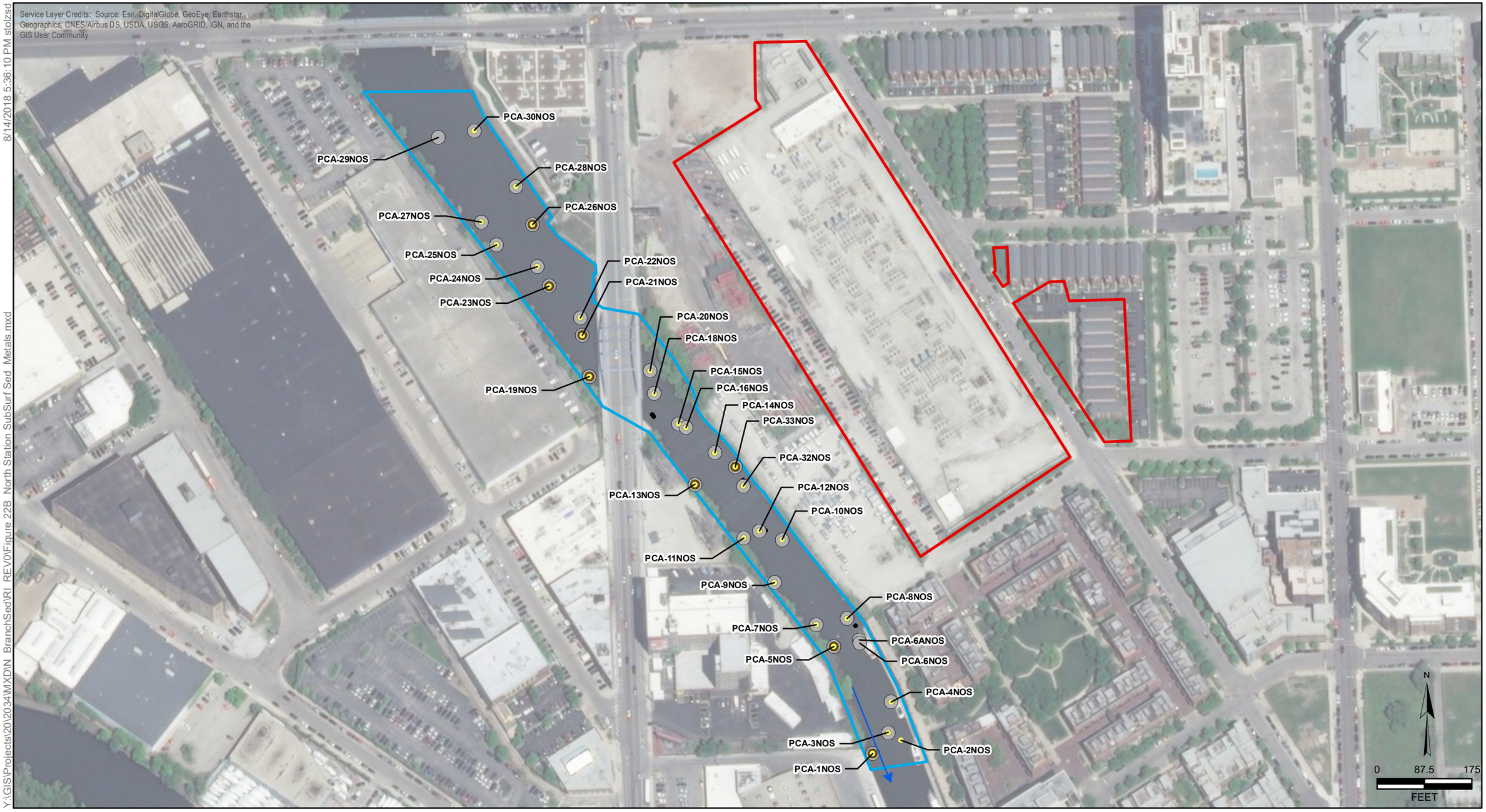
Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV0\Figure 22A_North Station Surf Sed_Metals.mxd

- SEDIMENT SAMPLE EXCEEDS APPLICABLE UTL VALUE FOR SILVER
- SEDIMENT SAMPLE EXCEEDS APPLICABLE UTL VALUE FOR TOTAL CYANIDE (13 MG/KG)
- SEDIMENT SAMPLE EXCEEDS APPLICABLE UPPER TOLERANCE LEVEL (UTL) VALUES (SILVER UTL EXCEEDANCES NOT INCLUDED)
- SEDIMENT SAMPLING LOCATION
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

NORTH STATION OU2 SCREENING LEVEL EXCEEDANCES OF INORGANICS & TOTAL CYANIDE IN SURFACE SEDIMENT

O'BRIEN & GERE ENGINEERS, INC.



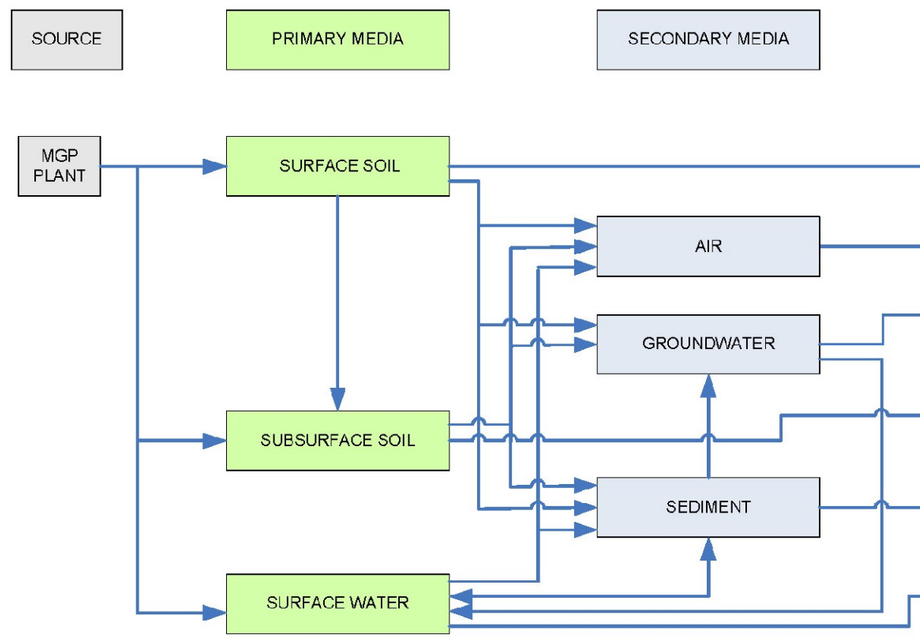
Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV0\Figure 22B_North Station SubSurf Sed_Metals.mxd 8/14/2018 5:36:10 PM stolzsd

- SEDIMENT SAMPLE EXCEEDS APPLICABLE UTL VALUE FOR SILVER
- SEDIMENT SAMPLE EXCEEDS APPLICABLE UTL VALUE FOR TOTAL CYANIDE (13 MG/KG)
- SEDIMENT SAMPLE EXCEEDS APPLICABLE UPPER TOLERANCE LEVEL (UTL) VALUES (SILVER UTL EXCEEDANCES NOT INCLUDED)
- SEDIMENT SAMPLING LOCATION
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 1 (UPLAND OU)
- APPROXIMATE BOUNDARY OF OPERABLE UNIT 2 (ADJACENT RIVER AREA)

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

NORTH STATION OU2 SCREENING LEVEL EXCEEDANCES OF INORGANICS & TOTAL CYANIDE IN SUBSURFACE SEDIMENT

O'BRIEN & GERE ENGINEERS, INC.



EXPOSURE ROUTE	HUMAN RECEPTORS				ECOLOGICAL RECEPTORS			
	INDUSTRIAL/ COMMERCIAL WORKER	CONSTRUCTION WORKER	RECREATIONAL	RESIDENTIAL	BIRDS	MAMMALS	FISH	BENTHIC INVERTEBRATES
INGESTION*	NA	NA	NA	NA	NA	NA	NA	NA
DERMAL*	NA	NA	NA	NA	NA	NA	NA	NA
INHALATION	○	○	○	○	○	○	NA	NA
INGESTION*	NA	NA	NA	NA	NA	NA	NA	NA
DERMAL*	NA	NA	NA	NA	NA	NA	NA	NA
INGESTION*	NA	NA	NA	NA	NA	NA	NA	NA
DERMAL*	NA	NA	NA	NA	NA	NA	NA	NA
INGESTION	○	●	○	○	●	○	●	●
DERMAL	○	●	○	○	●	○	●	●
INGESTION	○	●	●	○	●	○	●	●
DERMAL	○	●	●	○	●	○	●	●

LEGEND

● Pathway potentially complete and warrants further evaluation within the Baseline Risk Assessment. The level of evaluation will depend upon site conditions.

○ Pathway not complete or considered insignificant. No further evaluation is recommended unless warranted based on site-specific conditions.

NA Not Applicable

NOTES

* Surface soil, subsurface soil, and groundwater exposure routes not considered here, but will be evaluated as separate operable units.

The arrows linking different media are used to convey which media can potentially affect another media via different potential transport mechanisms. Refer to Section 5.3.1 of the RI Report for more details about the potential transport mechanism(s) that may be applicable for each medium evaluated.

Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV2\Figure 23_Site Specific Conceptual Site Model.mxd 7/23/2019 1:32:18 PM GalarnMC

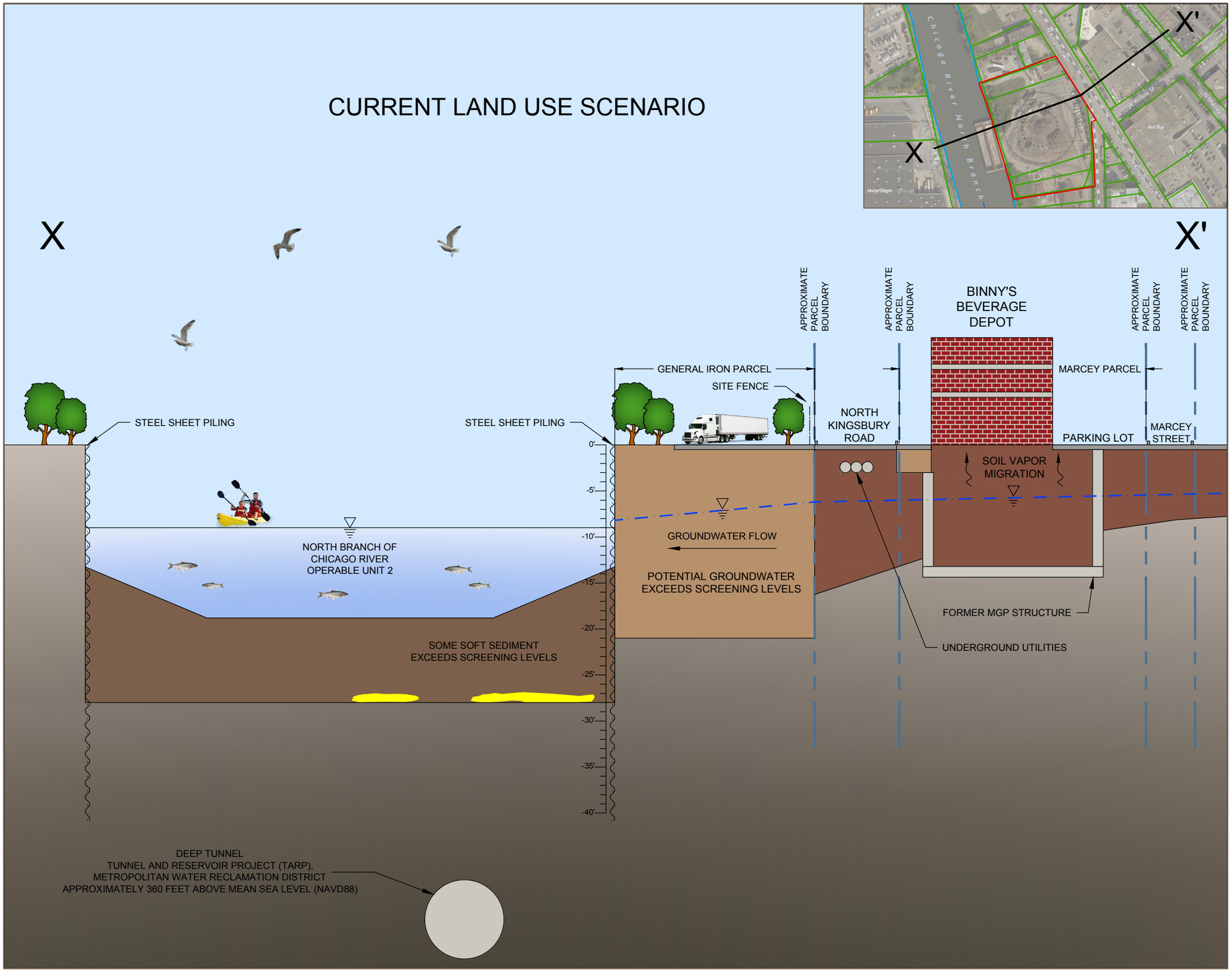
SITE-SPECIFIC CONCEPTUAL SITE MODEL

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

O'BRIEN & GERE ENGINEERS, INC.

8/10/2018 12:55 PM

I:\WBS.31060\67862.2034-WBS - PGL\Docs\DWG\Sheets\Figure 24A - Willow CSM.dwg



- CITY OF CHICAGO PARCEL
- APPROXIMATE BOUNDARY OF OPERABLE UNIT
- OPERABLE UNIT ADJACENT RIVER AREA
- CROSS SECTION LINE
- APPROXIMATE PRIOR REMEDIAL EXCAVATION AREA
- FILL
- NATIVE MATERIAL (CLAY)
- SOFT SEDIMENT
- ASPHALT PAVEMENT
- ESTIMATED LOCATION OF NAPL OR OIL-COATED / OIL-WETTED SEDIMENT
- GROUNDWATER TABLE/ WATER LEVEL

SOURCE: PROPERTY LINE INFORMATION OBTAINED FROM COOK COUNTY, ILLINOIS 1:1200-SCALE PARCEL DIGITAL DATA SET, VERSION 1.0. JUNE 2012. OPERABLE UNIT BOUNDARY PROVIDED BY BURNS & MCDONNEL, PROJECT NUMBER 51893, DATED SEPTEMBER 21,2009

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, IL

WILLOW STREET
GRAPHICAL CONCEPTUAL SITE MODEL

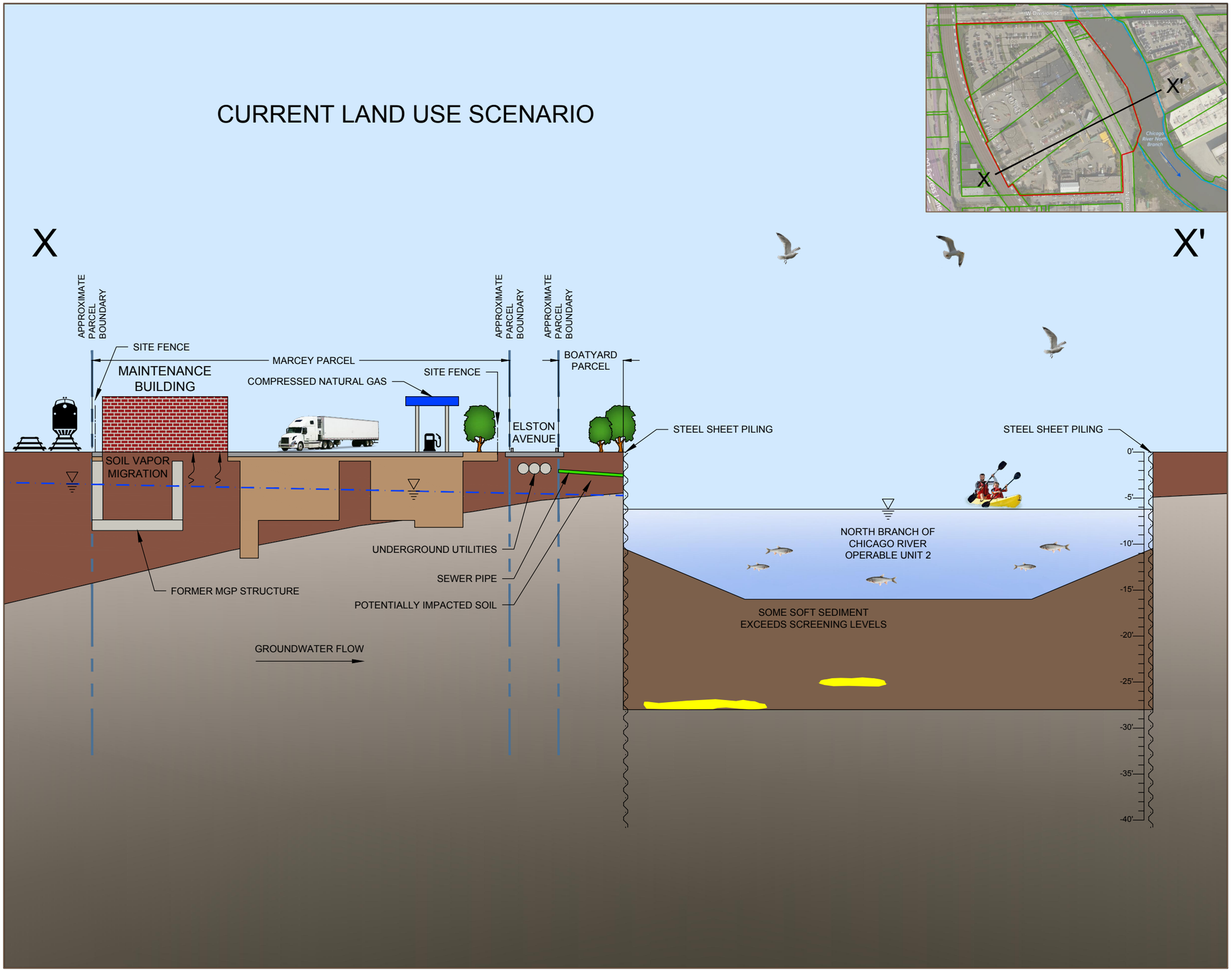
NOT TO SCALE

AUGUST 2018

O'BRIEN & GERE ENGINEERS, INC.

8/10/2018 12:57 PM

I:\WBS.31060\67862.2034-WBS - PGL\Docs\DWG\Sheets\Figure 24B - Division CSM.dwg



N

- CITY OF CHICAGO PARCEL
- APPROXIMATE BOUNDARY OF OPERABLE UNIT
- OPERABLE UNIT ADJACENT RIVER AREA
- CROSS SECTION LINE
- APPROXIMATE PRIOR REMEDIAL EXCAVATION AREA
- FILL
- NATIVE MATERIAL (CLAY)
- SOFT SEDIMENT
- ASPHALT PAVEMENT
- ESTIMATED LOCATION OF NAPL OR OIL-COATED / OIL-WETTED SEDIMENT
- GROUNDWATER TABLE/ WATER LEVEL

SOURCE: PROPERTY LINE INFORMATION OBTAINED FROM COOK COUNTY, ILLINOIS 1:1200-SCALE PARCEL DIGITAL DATA SET, VERSION 1.0, JUNE 2012. OPERABLE UNIT BOUNDARY PROVIDED BY BURNS & MCDONNEL, PROJECT NUMBER 51893, DATED SEPTEMBER 21,2009

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, IL

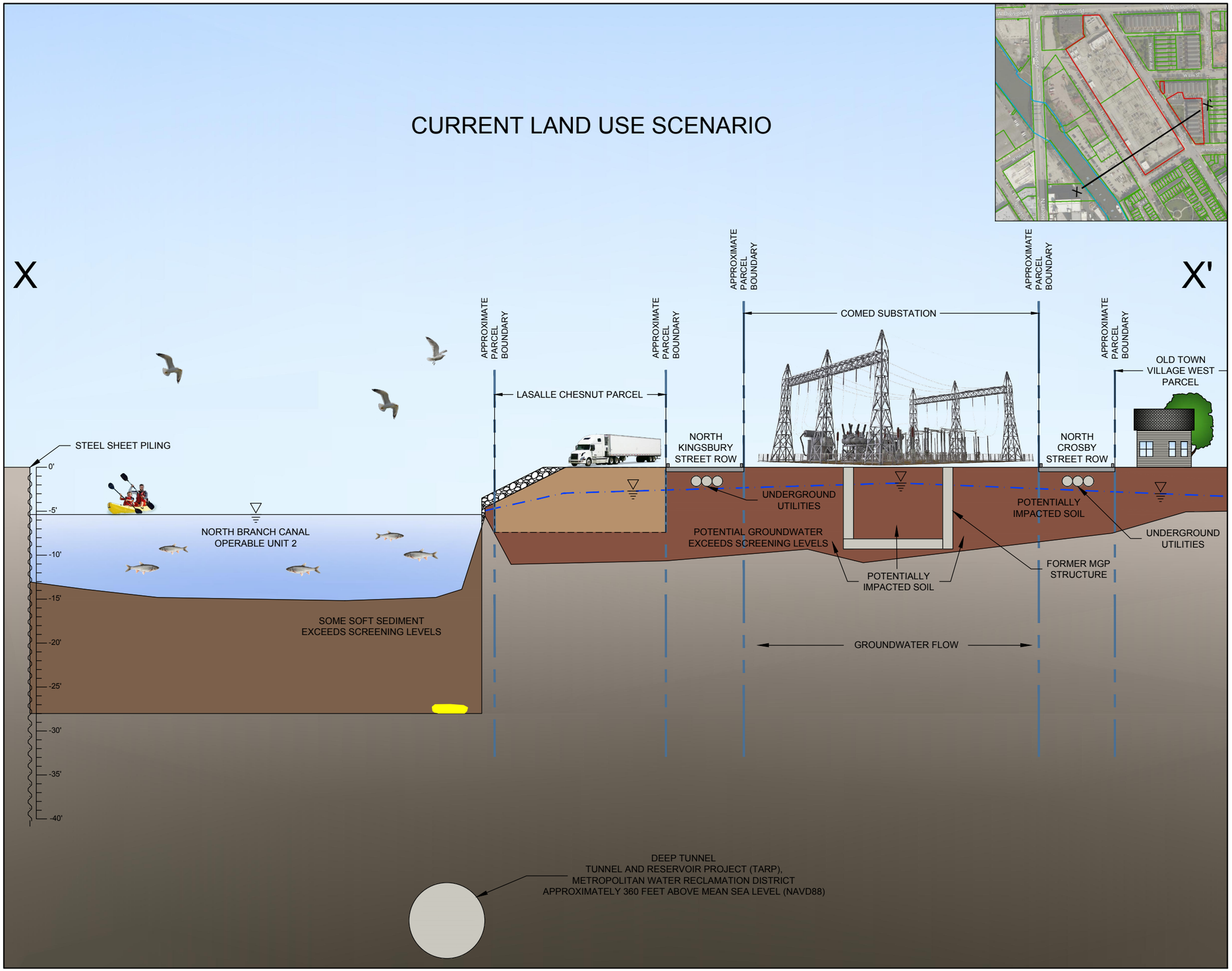
DIVISION STREET
GRAPHICAL CONCEPTUAL SITE MODEL

NOT TO SCALE

AUGUST 2018

O'BRIEN & GERE ENGINEERS, INC.

8/10/2018 1:01 PM
I:\WBS.31060\67862.2034-WBS - PGL\Docs\DWG\Sheets\Figure 24C - North Branch CSM.dwg



N

- CITY OF CHICAGO PARCEL
- APPROXIMATE BOUNDARY OF OPERABLE UNIT
- OPERABLE UNIT ADJACENT RIVER AREA
- CROSS SECTION LINE
- RIP RAP
- APPROXIMATE PRIOR REMEDIAL EXCAVATION AREA
- FILL
- NATIVE MATERIAL (CLAY)
- SOFT SEDIMENT
- ESTIMATED LOCATION OF NAPL OR OIL-COATED / OIL-WETTED SEDIMENT
- GROUNDWATER TABLE/ WATER LEVEL

SOURCE: PROPERTY LINE INFORMATION OBTAINED FROM COOK COUNTY, ILLINOIS 1:1200-SCALE PARCEL DIGITAL DATA SET, VERSION 1.0, JUNE 2012. OPERABLE UNIT BOUNDARY PROVIDED BY BURNS & MCDONNEL, PROJECT NUMBER 51893, DATED SEPTEMBER 21,2009

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, IL

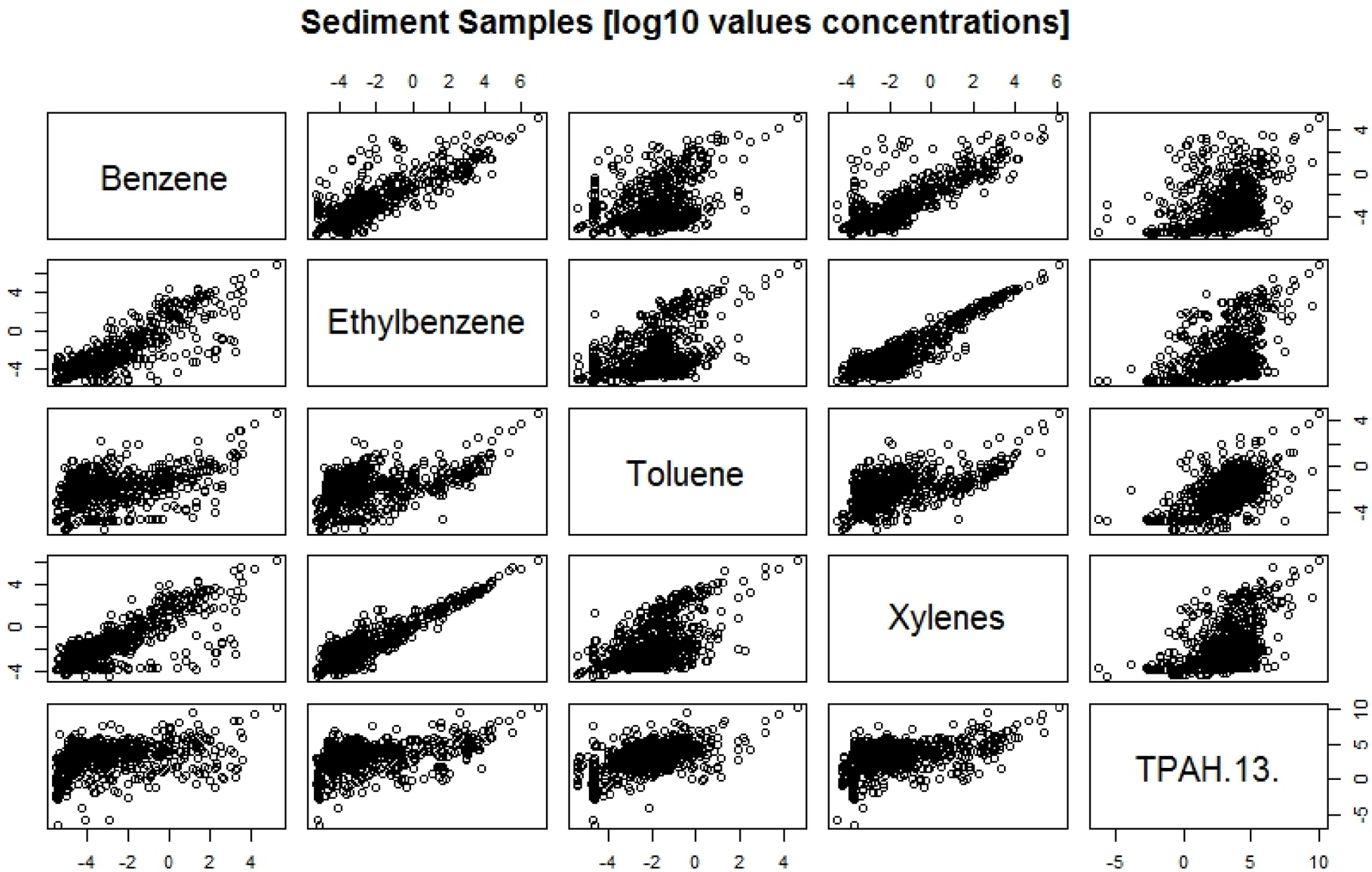
NORTH STATION
GRAPHICAL CONCEPTUAL SITE MODEL

NOT TO SCALE

AUGUST 2018

O'BRIEN & GERE ENGINEERS, INC.

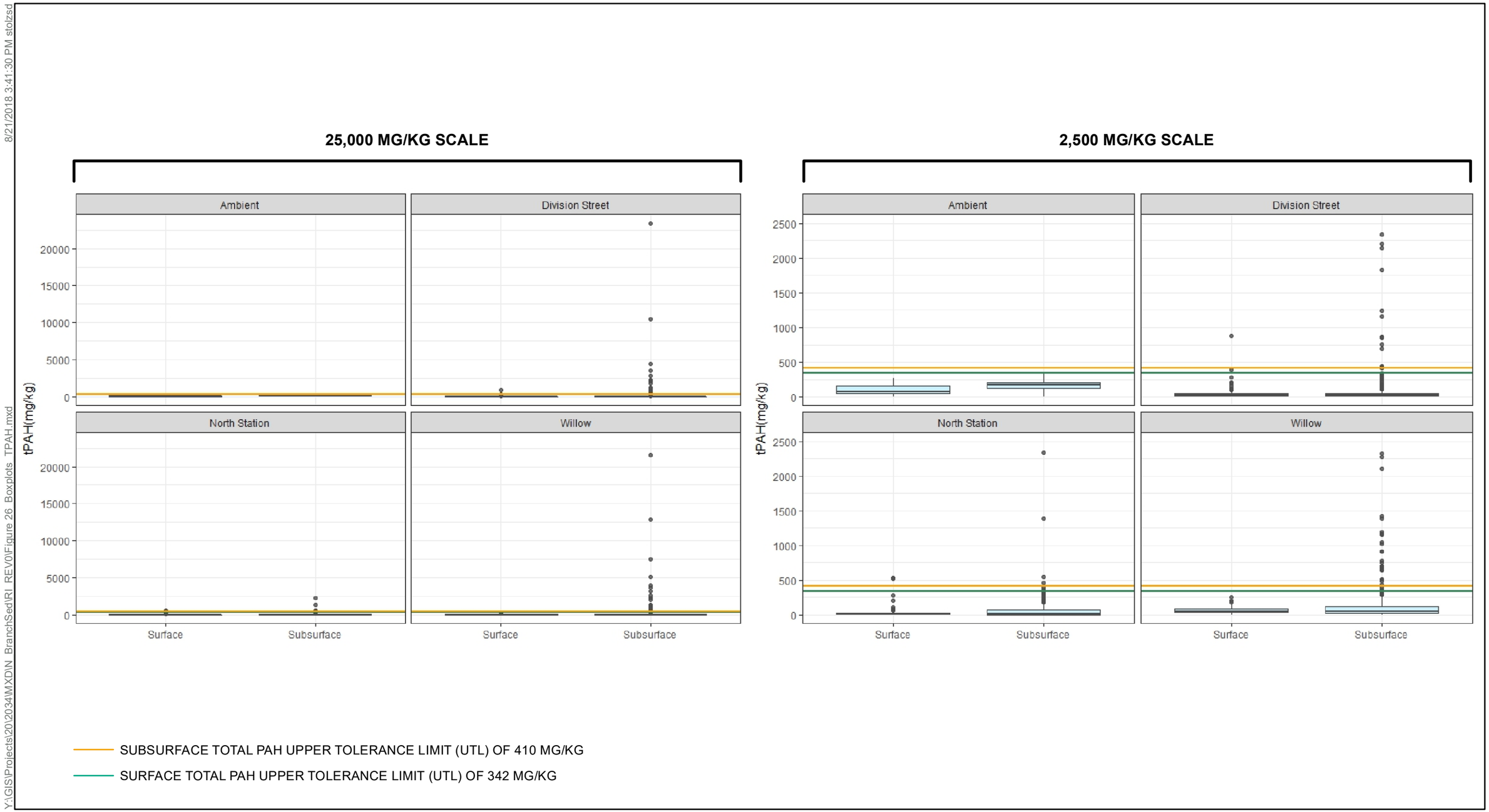
Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV0\Figure 25_PVOC Correlation TPAH in Sed.mxd 8/21/2018 3:41:08 PM stolzsd



REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

PVOC CORRELATION WITH TOTAL PAHS
WITHIN SEDIMENT

O'BRIEN & GERE ENGINEERS, INC.



Y:\GIS\Projects\2012034\MXD\N_BranchSed\RI_REV0\Figure 26_Boxplots_TPAH.mxd
8/21/2018 3:41:30 PM stolzsd

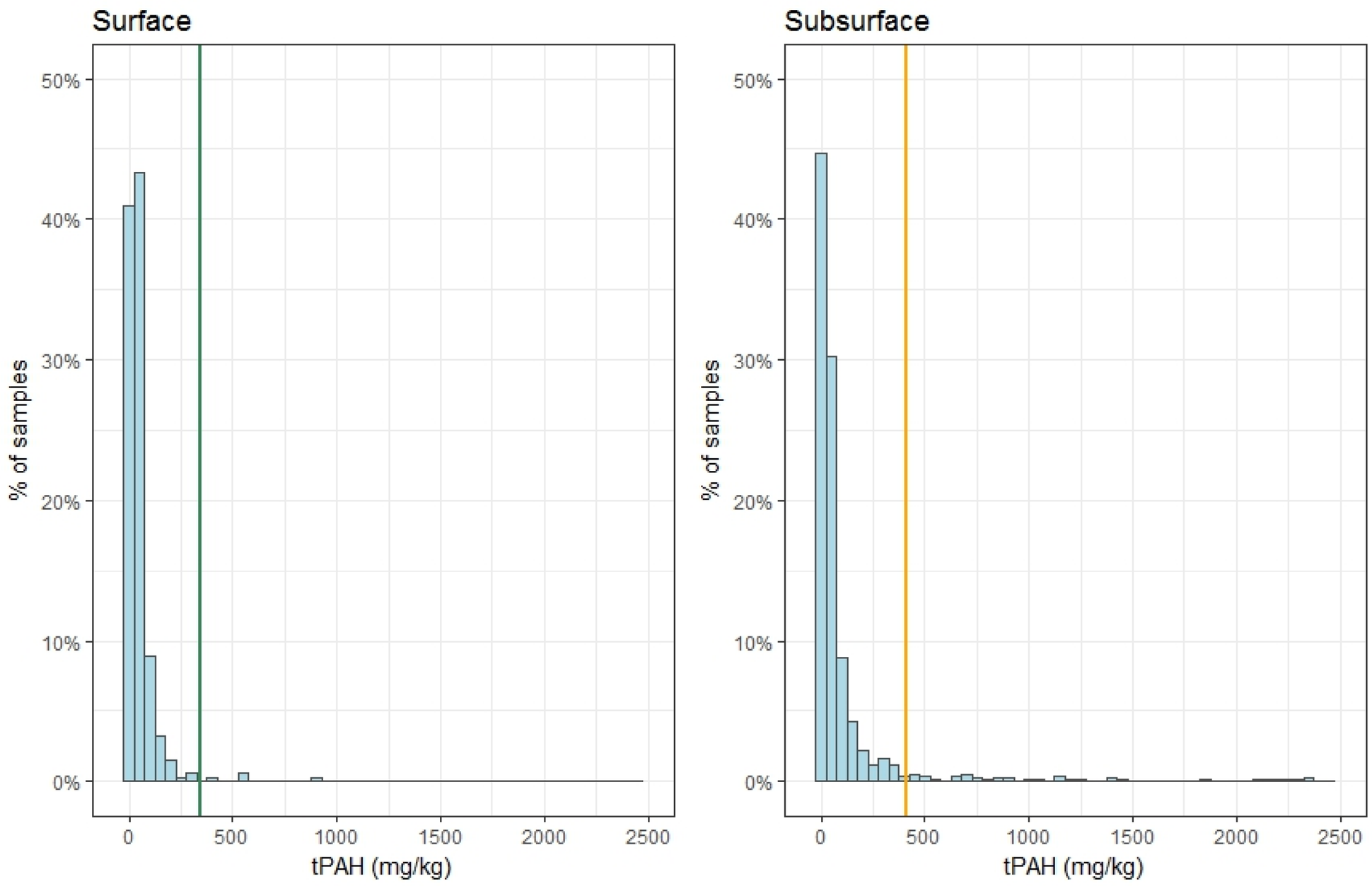
NOTES
TPAH - TOTAL POLYCYCLIC AROMATIC HYDROCARBON
MG/KG - MILLIGRAM PER KILOGRAM
OU2 - OPERABLE UNIT 2

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

BOX PLOT TOTAL PAH DISTRIBUTION WITHIN THE AMBIENT AREA AND OU2S

O'BRIEN & GERE ENGINEERS, INC.

Y:\GIS\Projects\20\20341\MXD\N_BranchSed\RI_REV0\Figure 27_Histogram of OU2 TPAH.mxd
8/21/2018 3:41:48 PM stolzsd



SUBSURFACE TOTAL PAH UPPER TOLERANCE LIMIT (UTL) OF 410 MG/KG

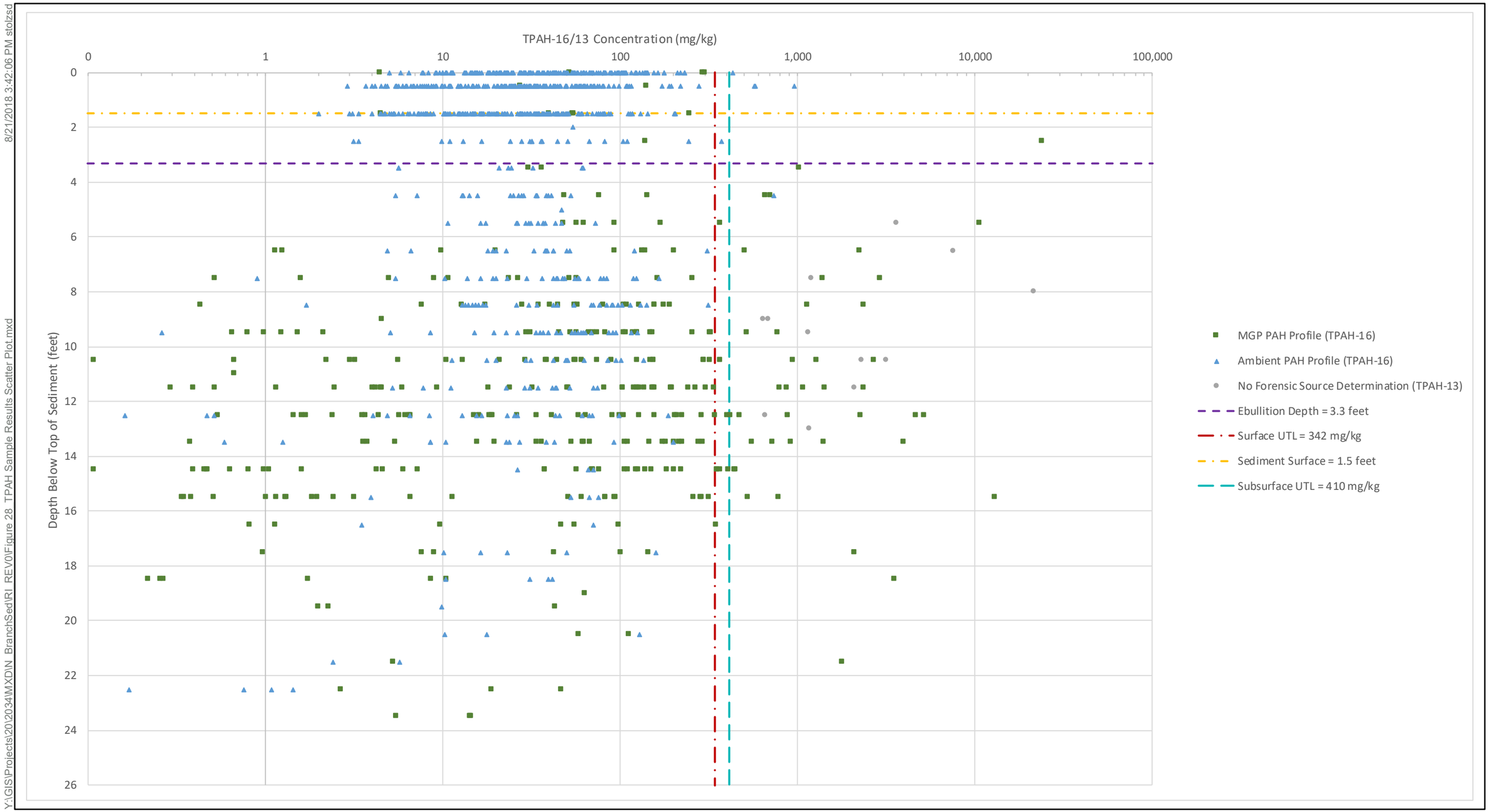
SURFACE TOTAL PAH UPPER TOLERANCE LIMIT (UTL) OF 342 MG/KG

NOTES
TPAH - TOTAL POLYCYCLIC AROMATIC HYDROCARBON
MG/KG - MILLIGRAM PER KILOGRAM
OU2 - OPERABLE UNIT 2

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

HISTOGRAM OF OU2 TOTAL PAH DISTRIBUTION

O'BRIEN & GERE ENGINEERS, INC.



Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV0\Figure 28_TPAH Sample Results Scatter Plot.mxd
8/21/2018 3:42:06 PM stolzsd

NOTES
MG/KG - MILLIGRAM PER KILOGRAM
UTL - UPPER TOLERANCE LIMIT
- SAMPLES PLOTTED AT THE TOP AND OF EACH SAMPLE INTERVAL
- SURFACE IS ANY SAMPLE BETWEEN 0 AND 1.5 FEET BELOW TOP OF SEDIMENT
- SUBSURFACE IS ANY SAMPLE COLLECTED FROM 1.5 FEET ONWARDS

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

TPAH-16/13 CONCENTRATION
SCATTER PLOT DIAGRAM

O'BRIEN & GERE ENGINEERS, INC.

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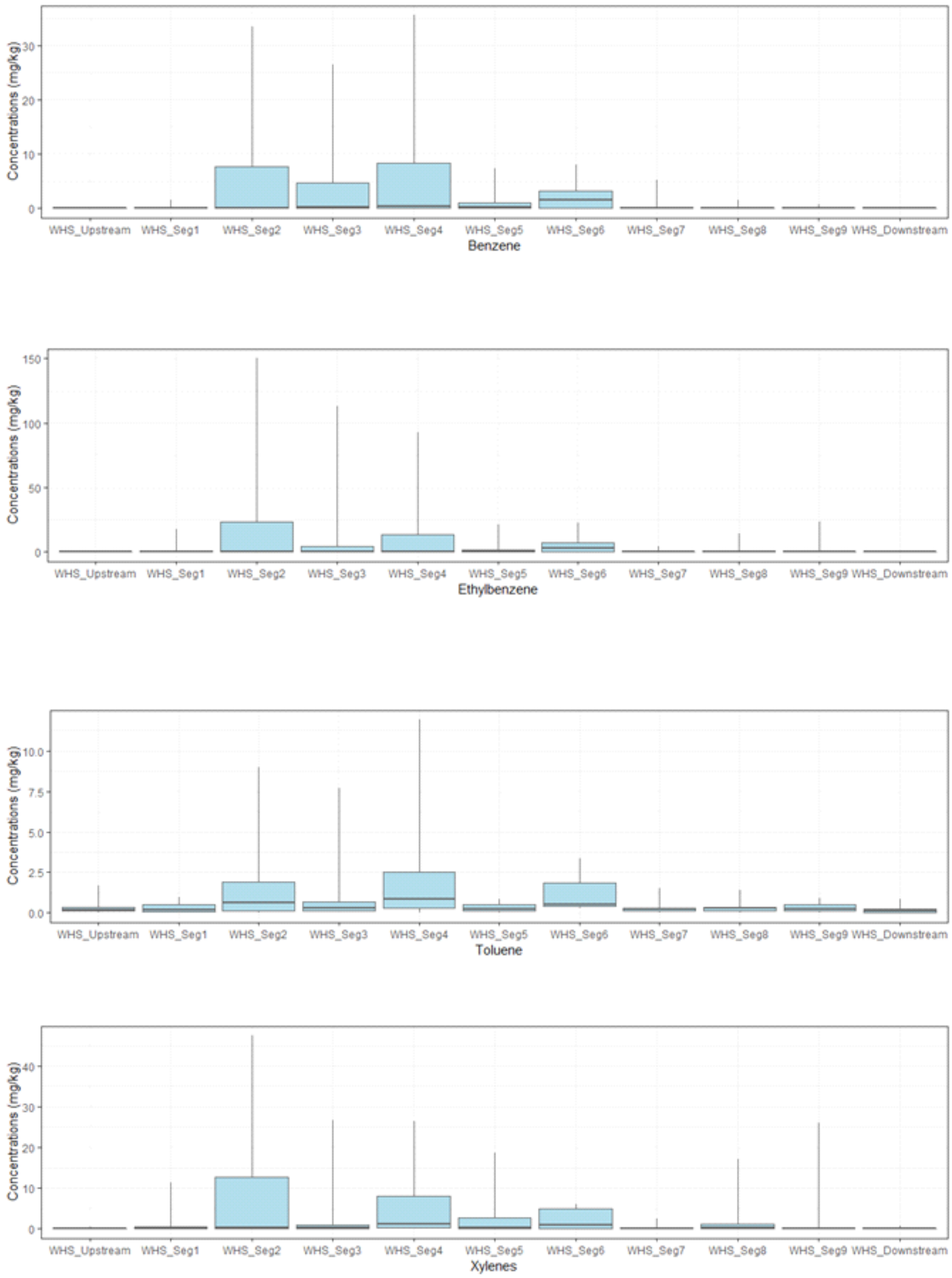

NOTE: UPPER AND LOWER WHISKERS REPRESENT THE 95 AND 5 PERCENTILES RESPECTIVELY.
UPPER AND LOWER BOXES REPRESENT THE 75 AND 25 PERCENTILES RESPECTIVELY.
BLACK BAR IN BOX REPRESENTS THE MEDIAN (50 PERCENTILE).

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

WILLOW STREET
OU2 SEGMENTS BTEX
BOX-WHISKER PLOTS

Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV1\Figure 29A_Willow Box-Whisker Plots.mxd

O'BRIEN & GERE ENGINEERS, INC.

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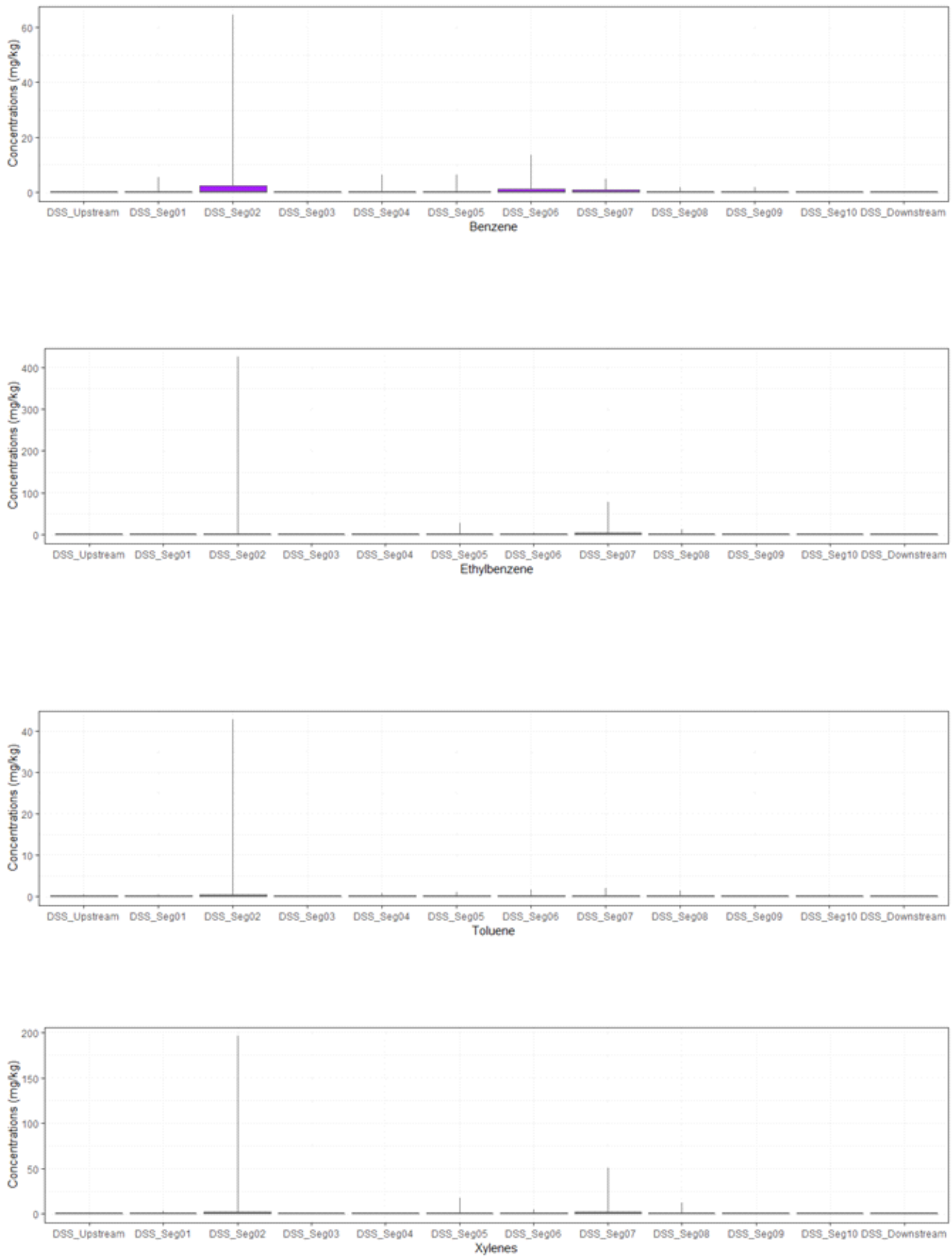

NOTE: UPPER AND LOWER WHISKERS REPRESENT THE 95 AND 5 PERCENTILES RESPECTIVELY.
UPPER AND LOWER BOXES REPRESENT THE 75 AND 25 PERCENTILES RESPECTIVELY.
BLACK BAR IN BOX REPRESENTS THE MEDIAN (50 PERCENTILE).

REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

DIVISION STREET
OU2 SEGMENTS BTEX
BOX-WHISKER PLOTS

O'BRIEN & GERE ENGINEERS, INC.

Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV1\Figure 29B_Division Box-Whisker Plots.mxd

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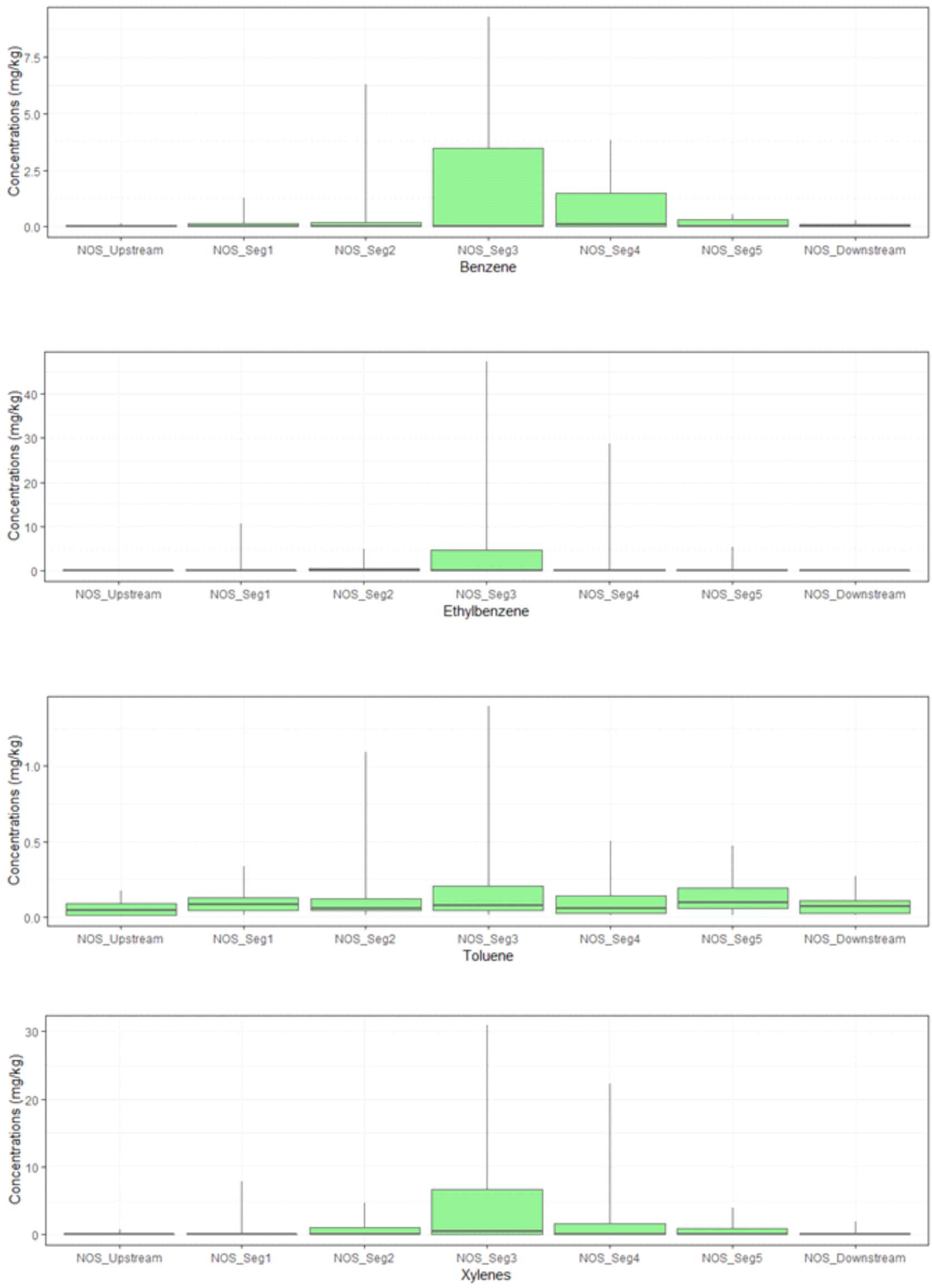

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REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

NORTH STATION
OU2 SEGMENTS BTEX
BOX-WHISKER PLOTS

Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV1\Figure 29C_North Station Box-Whisker Plots.mxd

O'BRIEN & GERE ENGINEERS, INC.

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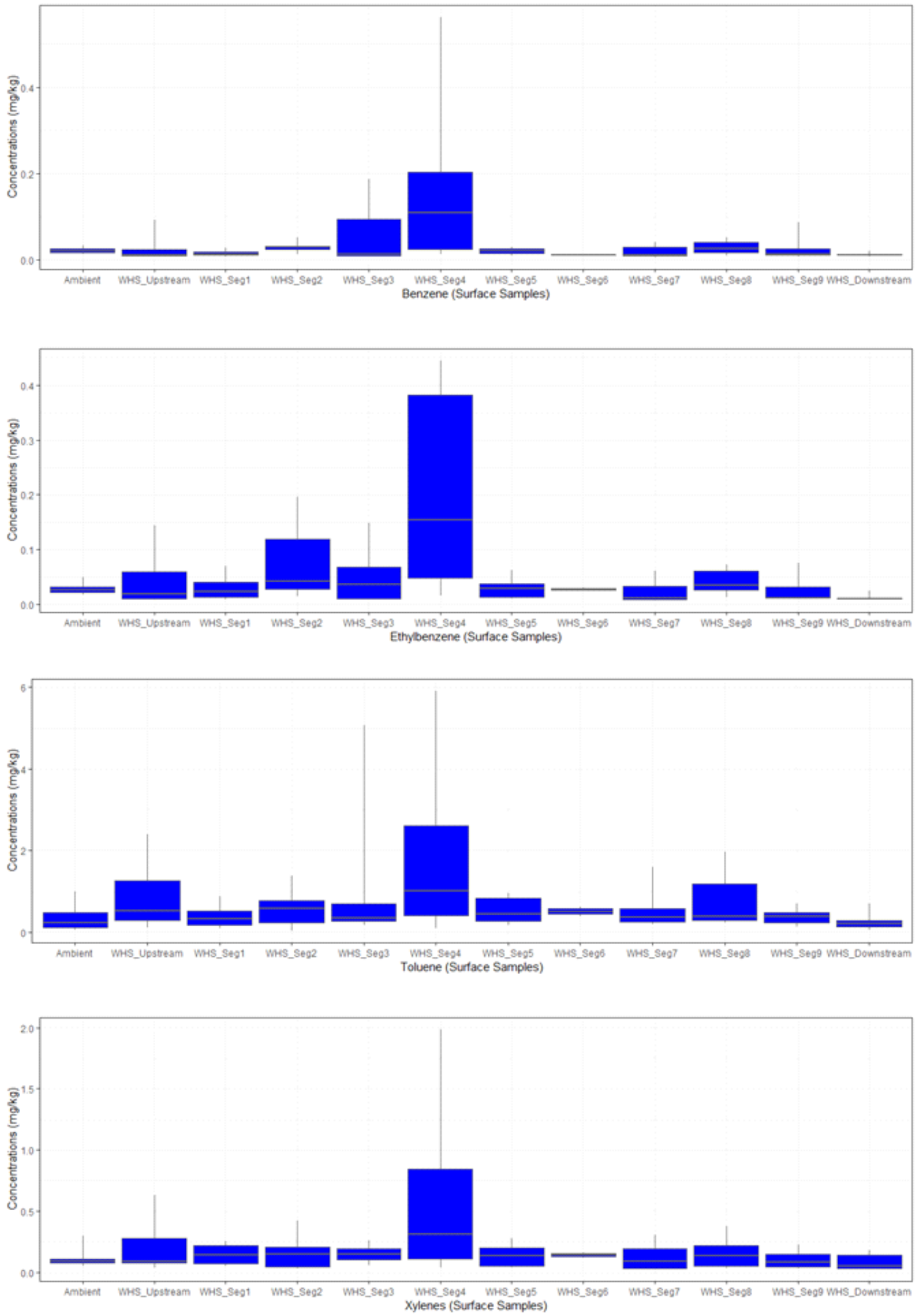

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REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

WILLOW STREET OU2 SURFACE AND AMBIENT SAMPLE SEGMENTS BTEX BOX-WHISKER PLOT DIAGRAM

Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV1\Figure 30A_Willow Surface Ambient Box-Whisker Plots.mxd

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NOTE: UPPER AND LOWER WHISKERS REPRESENT THE 95 AND 5 PERCENTILES RESPECTIVELY.
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REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

DIVISION STREET OU2 SURFACE AND AMBIENT SAMPLE SEGMENTS BTEX BOX-WHISKER PLOT DIAGRAM

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Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV1\Figure 30B_Division Surface Ambient Box-Whisker Plots.mxd

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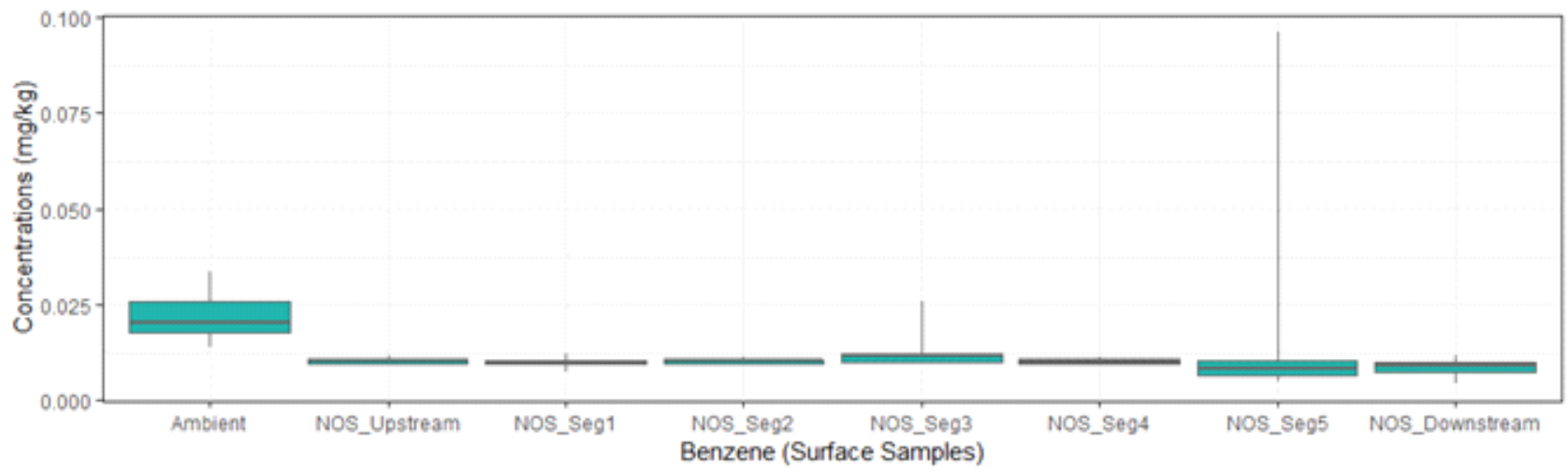

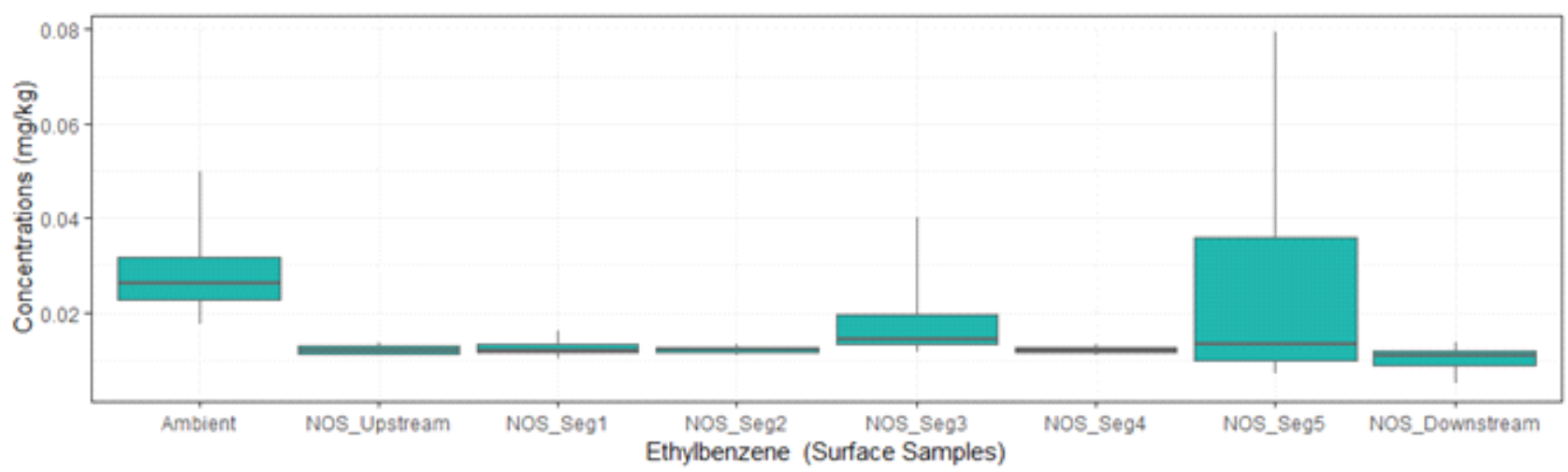

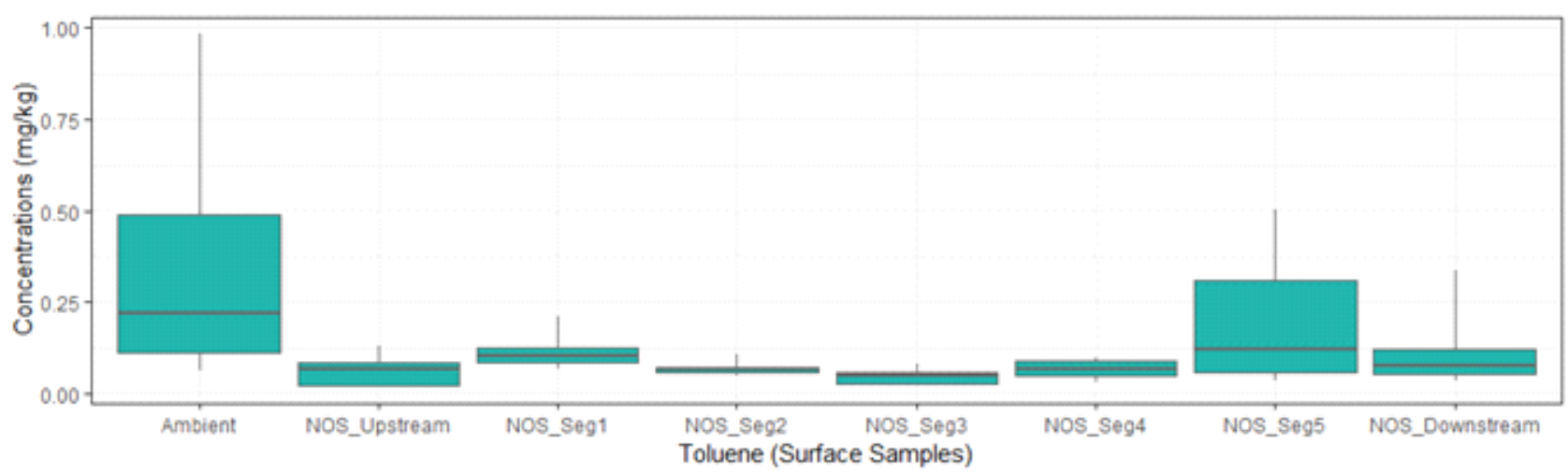

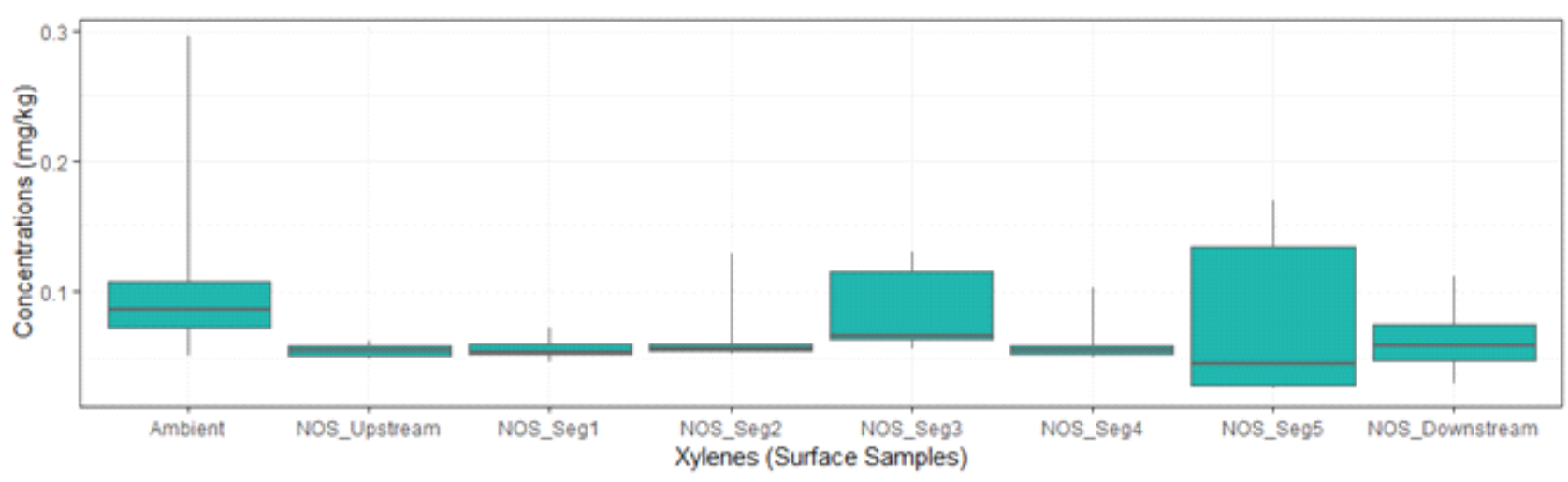

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REMEDIAL INVESTIGATION REPORT
NORTH BRANCH SEDIMENT INVESTIGATION
CHICAGO, ILLINOIS

NORTH STATION OU2 SURFACE AND AMBIENT SAMPLE SEGMENTS BTEX BOX-WHISKER PLOT DIAGRAM

Y:\GIS\Projects\20\2034\MXD\N_BranchSed\RI_REV1\Figure 30C_North Station Surface Ambient Box-Whisker Plots.mxd

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Appendix A Historical and Site Characteristics Documents
- A1 MWRD TARP Boring Logs
- A2 Historical Chicago River Dredging Figures
- A3 Historical Sediment Investigation Reports
- A4 Cultural and Natural Resource Database Results
- A5 Groundwater to Surface Water Decision Matrix

Appendix B North Branch Site Current and Future Land Use and Reuse Assessment

Appendix C Bathymetry and OU2 Survey Data
- C1 Sonar QC Doc
- C2 Bathymetric Survey
- C3 Sidescan Sonar Imagery
- C4 River Water Level Measurements

Appendix D Sediment and Surface Water Sampling Field Forms
- D1 Ambient Sediment Sample Collection and Processing Log
- D2 OU2 Sediment Thickness Evaluation Forms
- D3 Ambient Reach Sediment Boring Logs
- D4 OU2 Sediment Boring Logs
- D5 Surface Water Sampling Forms
- D6 OU2 Historical Sediment Boring Logs

Appendix E Sediment Laboratory Analytical Reports and Supportive Documents
- E1 Step 1 Data Evaluation of North Branch Sediment Sampling, Rev 2 (NRT 2013)
- E2 North Branch Chicago River DNAPL Mobility Analysis
- E3 OU2 Sediment Laboratory Analytical Reports
- E4 Sediment Geotechnical Laboratory Analytical Reports
- E5 Ambient Sediment Laboratory Analytical Reports
- E6 Sediment Product Mobility Testing Laboratory Report
- E7 Sediment Forensic Evaluation
- E8 Sediment Waste Manifests
- E9 Surface Sediment Autocorrelation Assessment
- E10 Updated Supplemental Statistical Analysis

Appendix F Surface Water Analytical Reports

Appendix G Laboratory Validation Summaries
- G1 OU2 Sediment Data Validation Summaries
- G2 Ambient Sediment Data Validation Summaries
- G3 Surface Water Data Validation Summaries

Appendix H Relative Percent Differences Tables
- H1 Surface Water Analytical Duplicate Results with RPD (Relative Percent Difference)
- H2 Sediment Analytical Duplicate Results with RPD (Relative Percent Difference)

Appendix I Baseline Risk Assessment Revision 2

Appendix J Chemical Properties and Persistence of COPCs

Appendices

(Provided Separately)

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