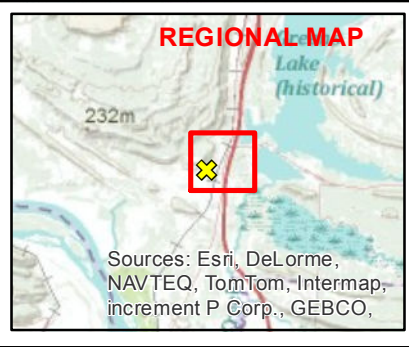
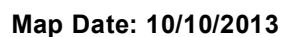
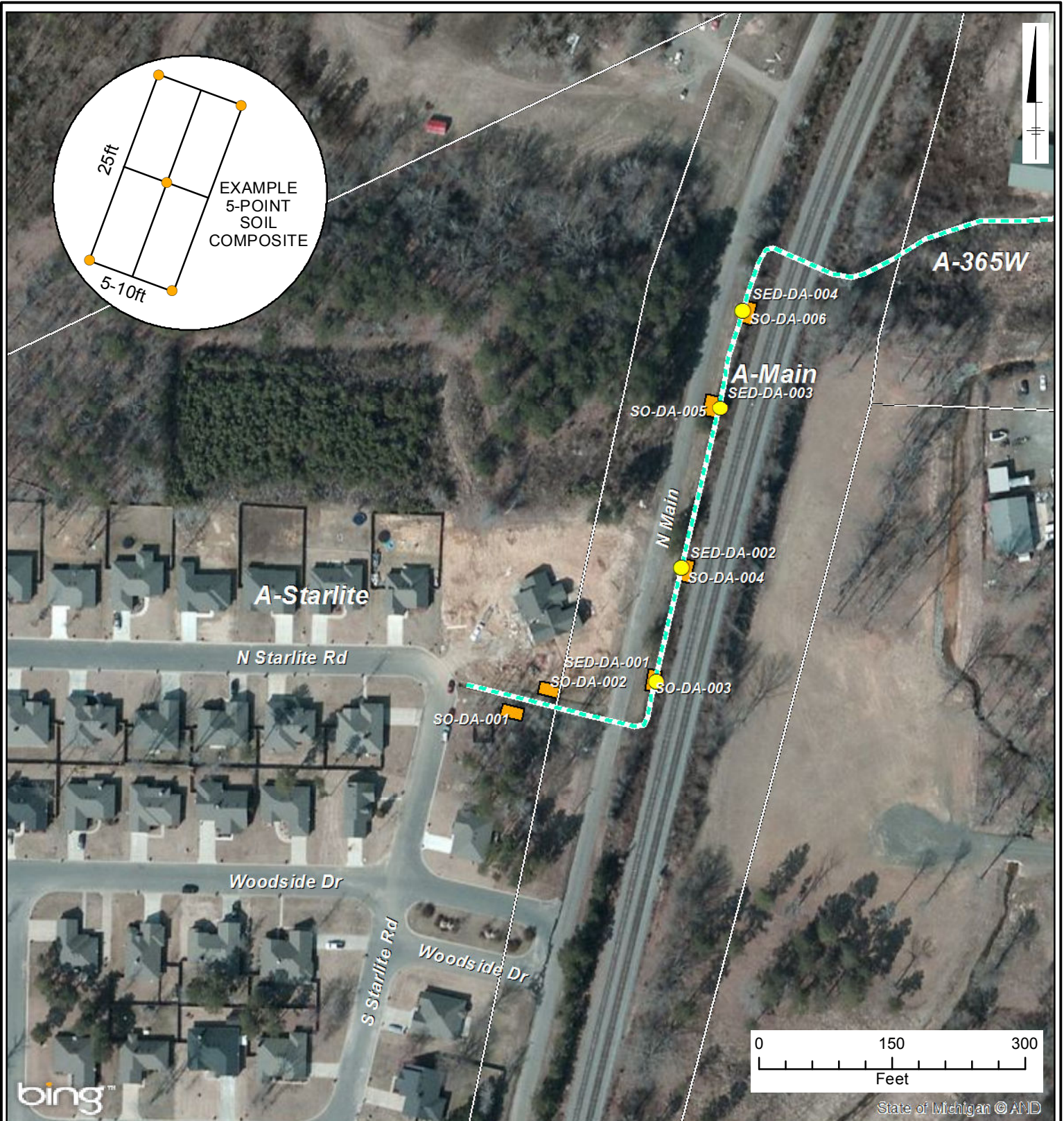




LEGEND ✕ Source Point ▭ Operations Areas Map Date: 10/10/2013	REGIONAL MAP  Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO,	MAYFLOWER PIPELINE INCIDENT RESPONSE EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY DOWNSTREAM AREAS DATA ASSESSMENT REPORT SITE LOCATION MAP  FIGURE 1-1
---	---	--





LEGEND

- Sediment Sample
- Soil Sample
- Drainage Path
- Operations Areas

NOTE:

1. Surface soil samples were collected as five-point composite samples at locations shown. Example composite grid layout shown for illustrative purposes only; see Table 2-1 for actual sample grid dimensions at each location.

Map Date: 10/10/2013

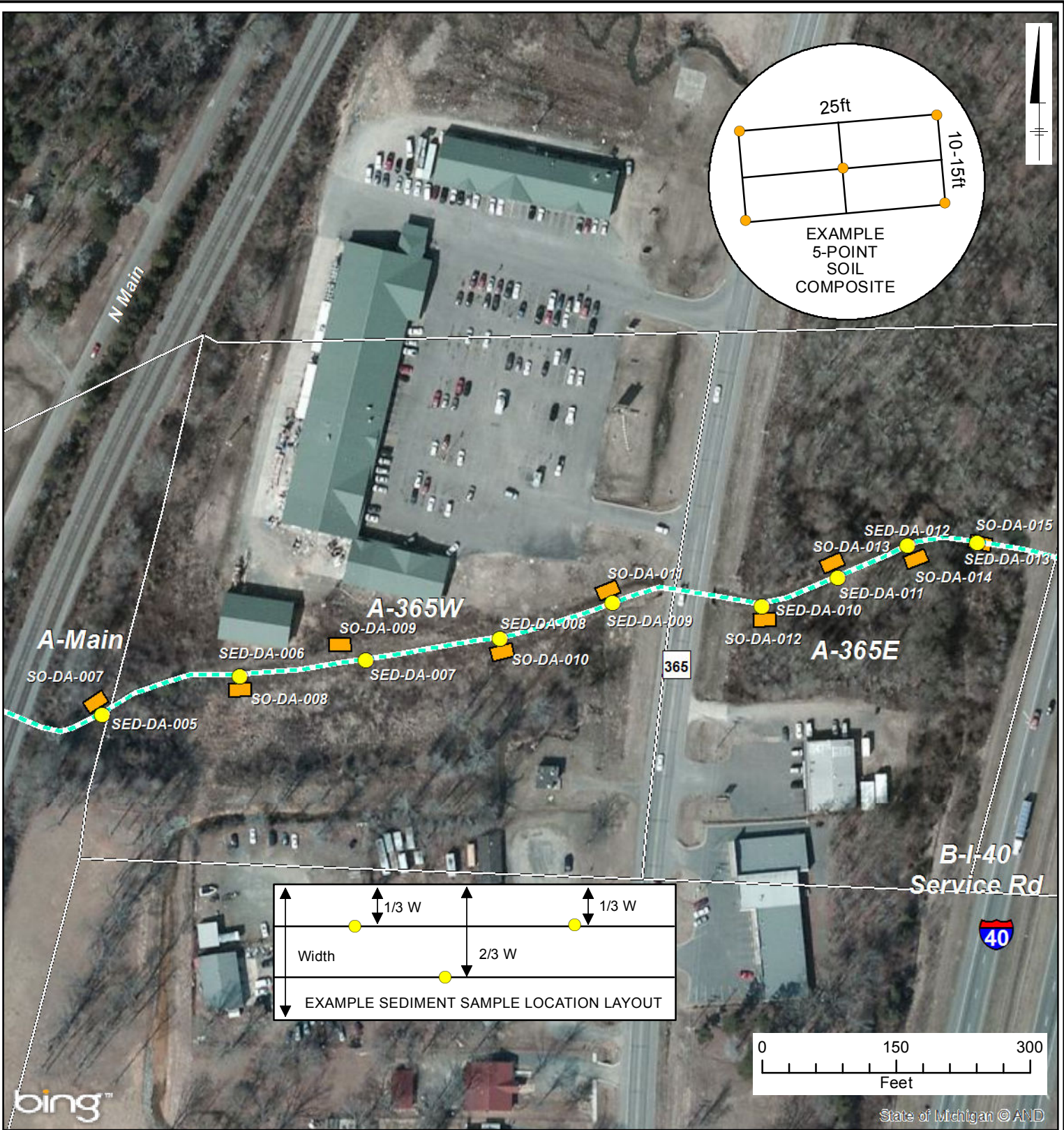


MAYFLOWER PIPELINE INCIDENT RESPONSE EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY DOWNSTREAM AREAS DATA ASSESSMENT REPORT

SOIL AND SEDIMENT SAMPLE LOCATIONS IN A-MAIN



**FIGURE
 2-1**



LEGEND

- Sediment Sample
- Soil Sample
- Drainage Path
- Operations Areas

NOTE:

1. Surface soil samples were collected as five-point composite samples at locations shown. Example composite grid layout shown for illustrative purposes only; see Table 2-1 for actual sample grid dimensions at each location.

Map Date: 10/10/2013

REGIONAL MAP

232m

Lake (historical)

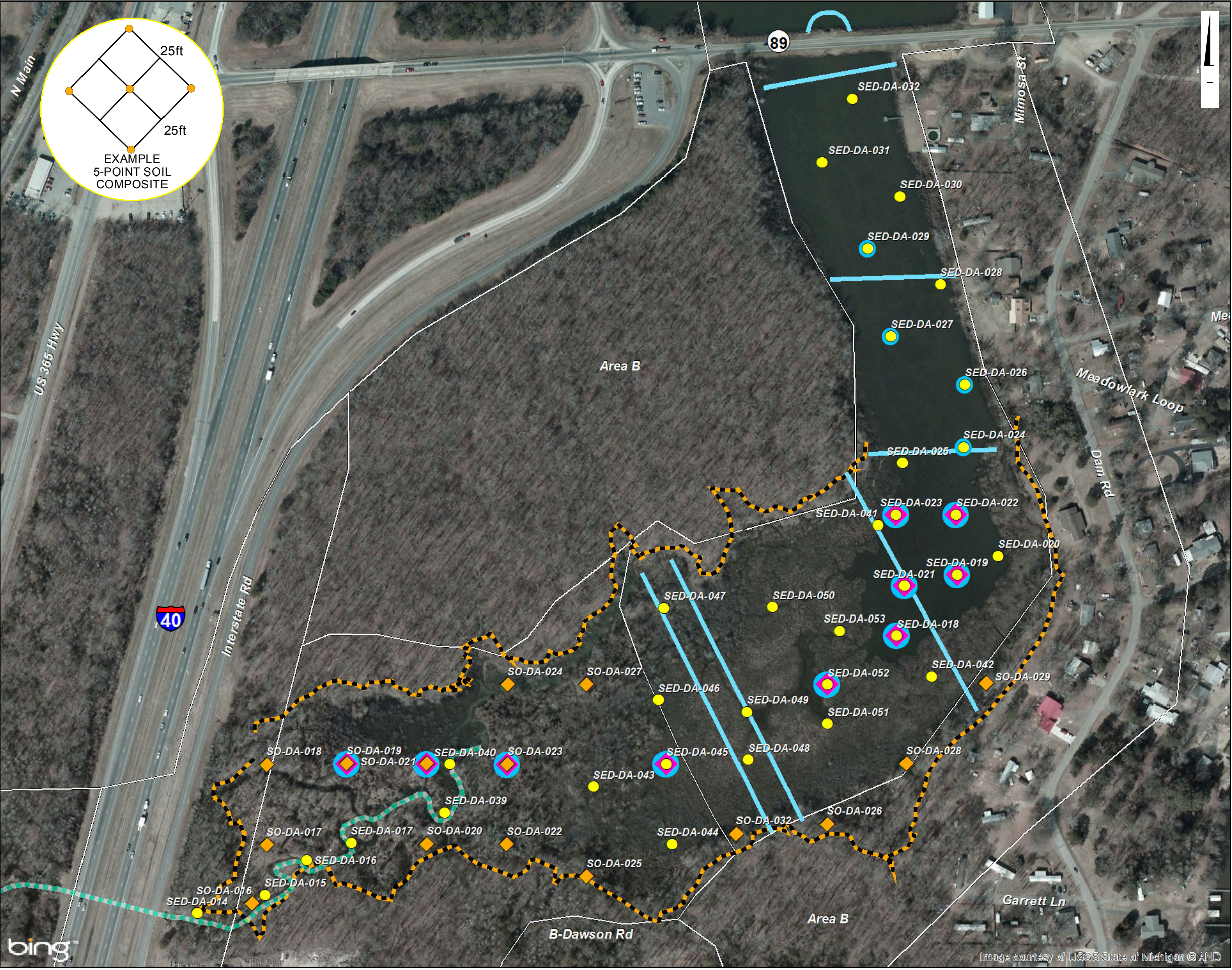
Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO,

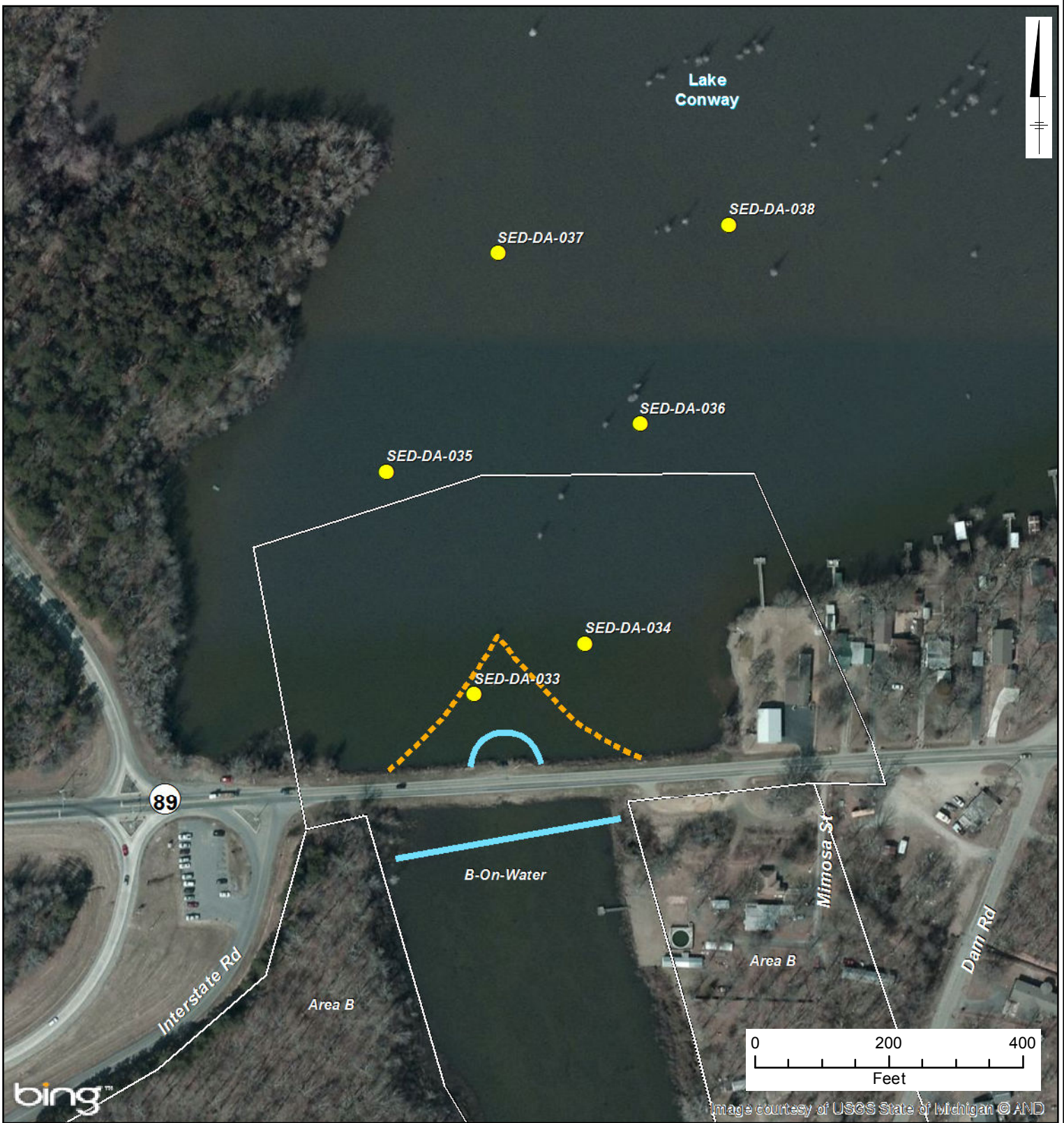
**MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT**

**SOIL AND SEDIMENT SAMPLE
LOCATIONS IN A-365E & A-365W**

ARCADIS

**FIGURE
2-2**





LEGEND

- Sediment Sample
- Approximate location of containment boom during sampling activities
- Approximate locations of turbidity curtain during sampling activities
- Operations Areas

Map Date: 10/10/2013

REGIONAL MAP

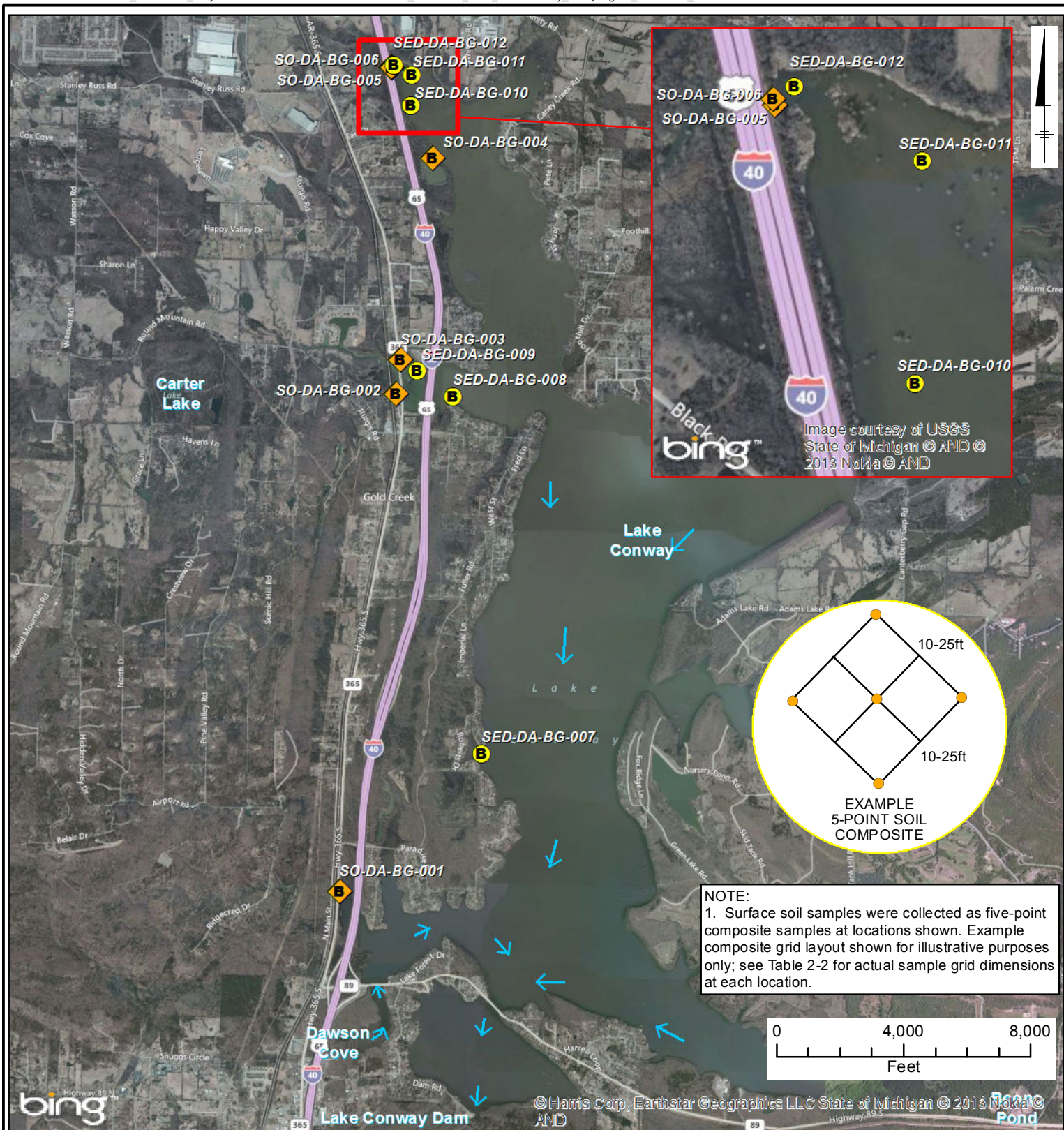
Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO,

**MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT**

**SEDIMENT SAMPLE LOCATIONS
IN LAKE CONWAY**

ARCADIS

**FIGURE
2-4**

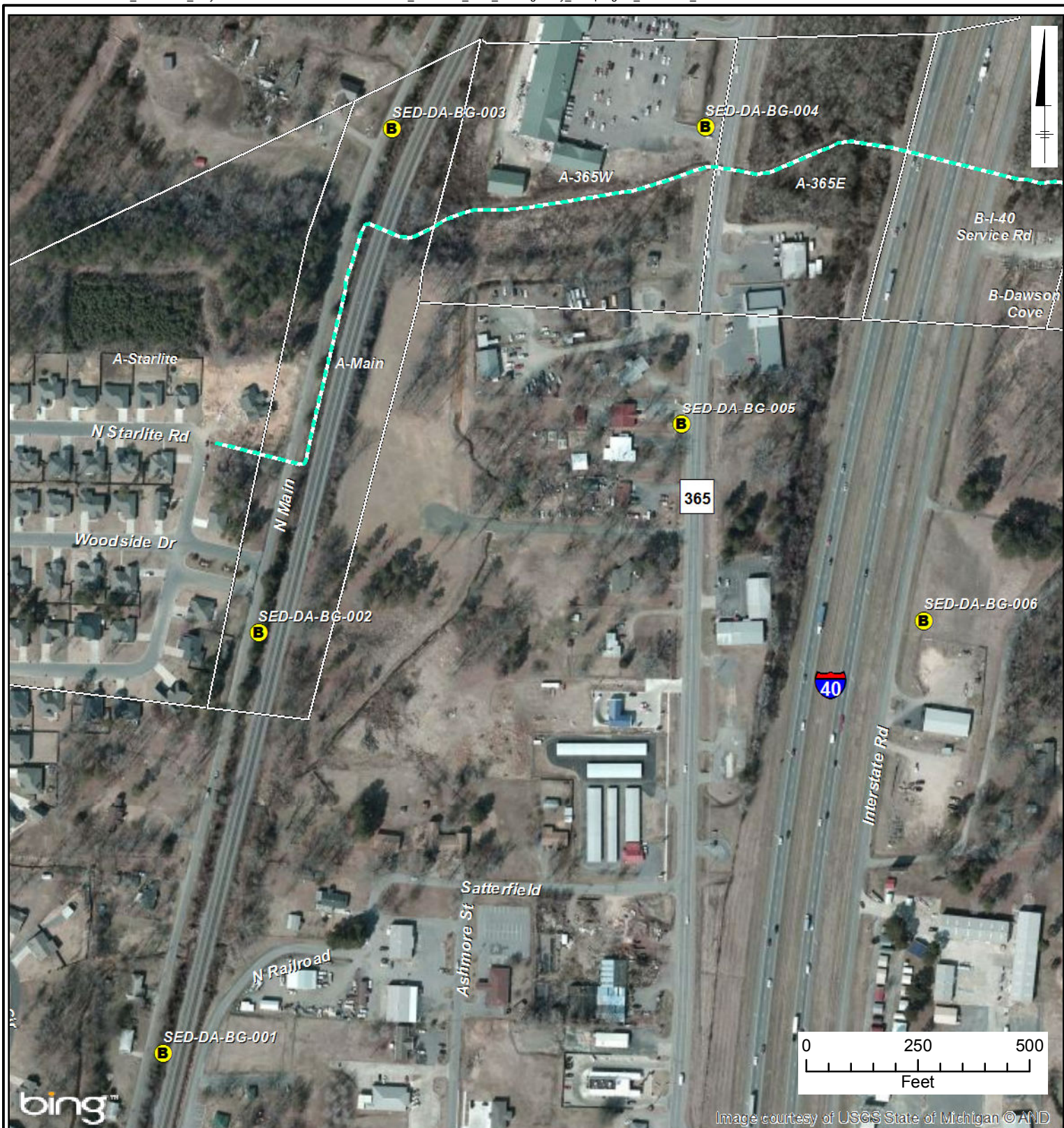


**MAYFLOWER PIPELINE INCIDENT RESPONSE
 EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
 DOWNSTREAM AREAS DATA ASSESSMENT REPORT**

**BACKGROUND SOIL AND SEDIMENT
 SAMPLE LOCATIONS IN LAKE CONWAY**



**FIGURE
 2-5**



LEGEND

- B Background Sediment Sample
- Drainage Path
- Operations Areas

Map Date: 10/10/2013

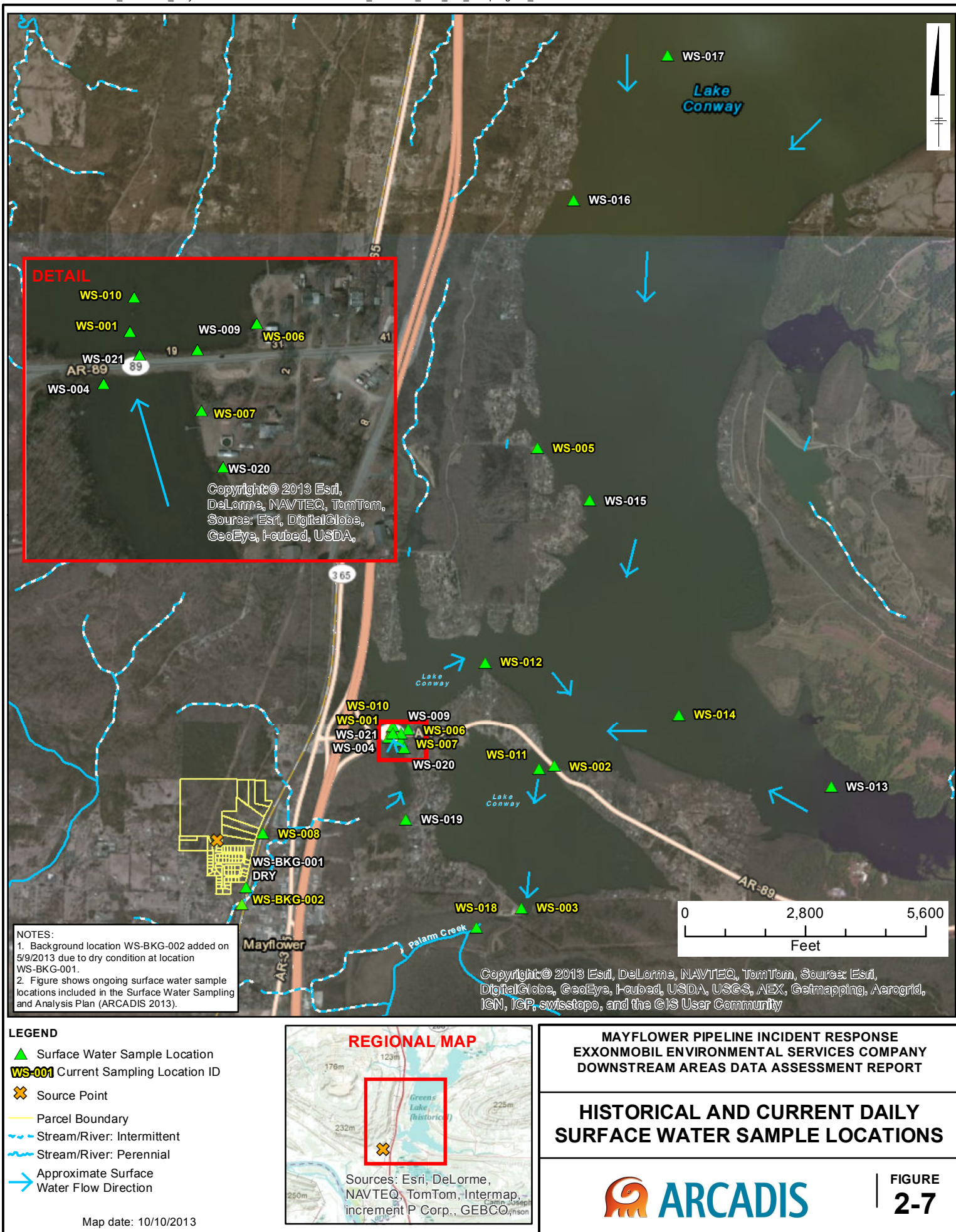


MAYFLOWER PIPELINE INCIDENT RESPONSE EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY DOWNSTREAM AREAS DATA ASSESSMENT REPORT

BACKGROUND SEDIMENT SAMPLE LOCATIONS UPSTREAM OF DRAINAGE WAY

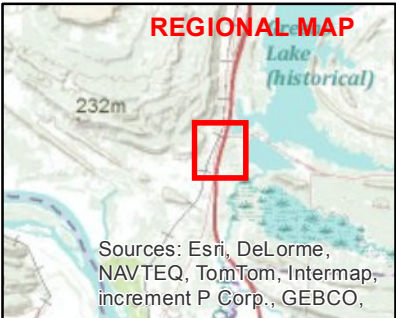


FIGURE
2-6





- LEGEND**
- ▲ One-time Surface Water Sample
 - Drainage Path
 - Approximate location of containment boom during sampling activities
 - Operations Areas



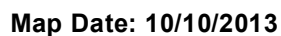
**MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT**

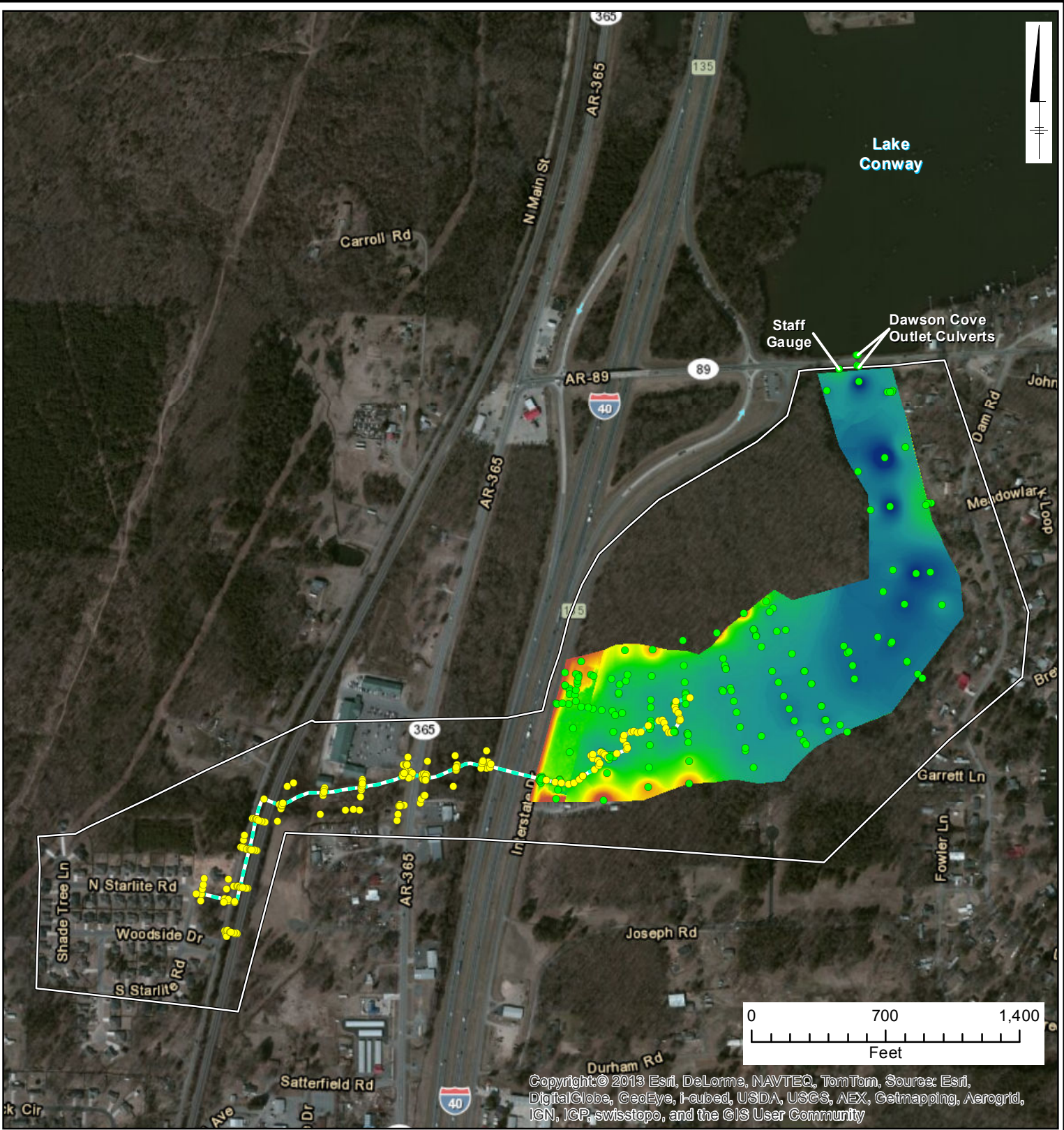
**DARSP SURFACE
WATER SAMPLE LOCATIONS**



**FIGURE
2-8**

Map Date: 10/11/2013





LEGEND

- Survey Point Used In Interpolation
- Survey Point
- Drainage Path
- Study Area

Elevation in Feet

279.6

257.9

NOTE:

1. Survey data collected during field activities interpolated by the Inverse Distance Weighting (IDW) method using an optimized power term to develop a digital elevation model (DEM) for the area shown.

Map Date: 10/10/2013

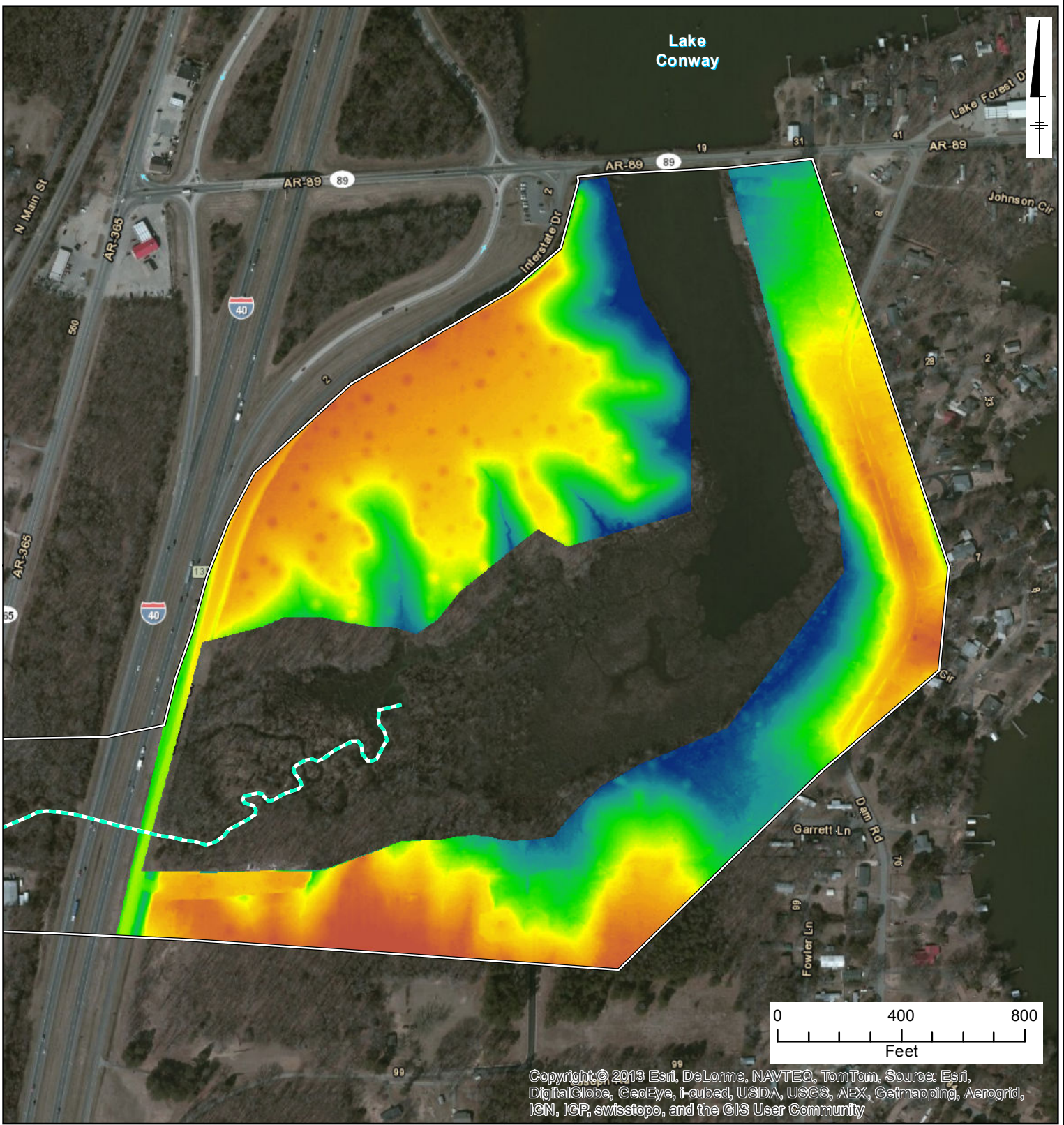
REGIONAL MAP

Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO,

**MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT**

SITE LOCATION TOPOGRAPHIC SURVEY

**FIGURE
3-1**



Copyright © 2013 Esri, DeLorme, NAVTEQ, TomTom, Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

LEGEND

Elevation in Feet

287.2

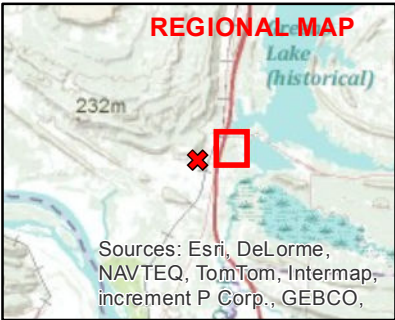
260.7

Drainage Path

Study Area

NOTE:
1. Topographic data from LIDAR dataset obtained from the United States Department of Agriculture (USDA) and supplemented by field survey information.

Map Date: 10/10/2013

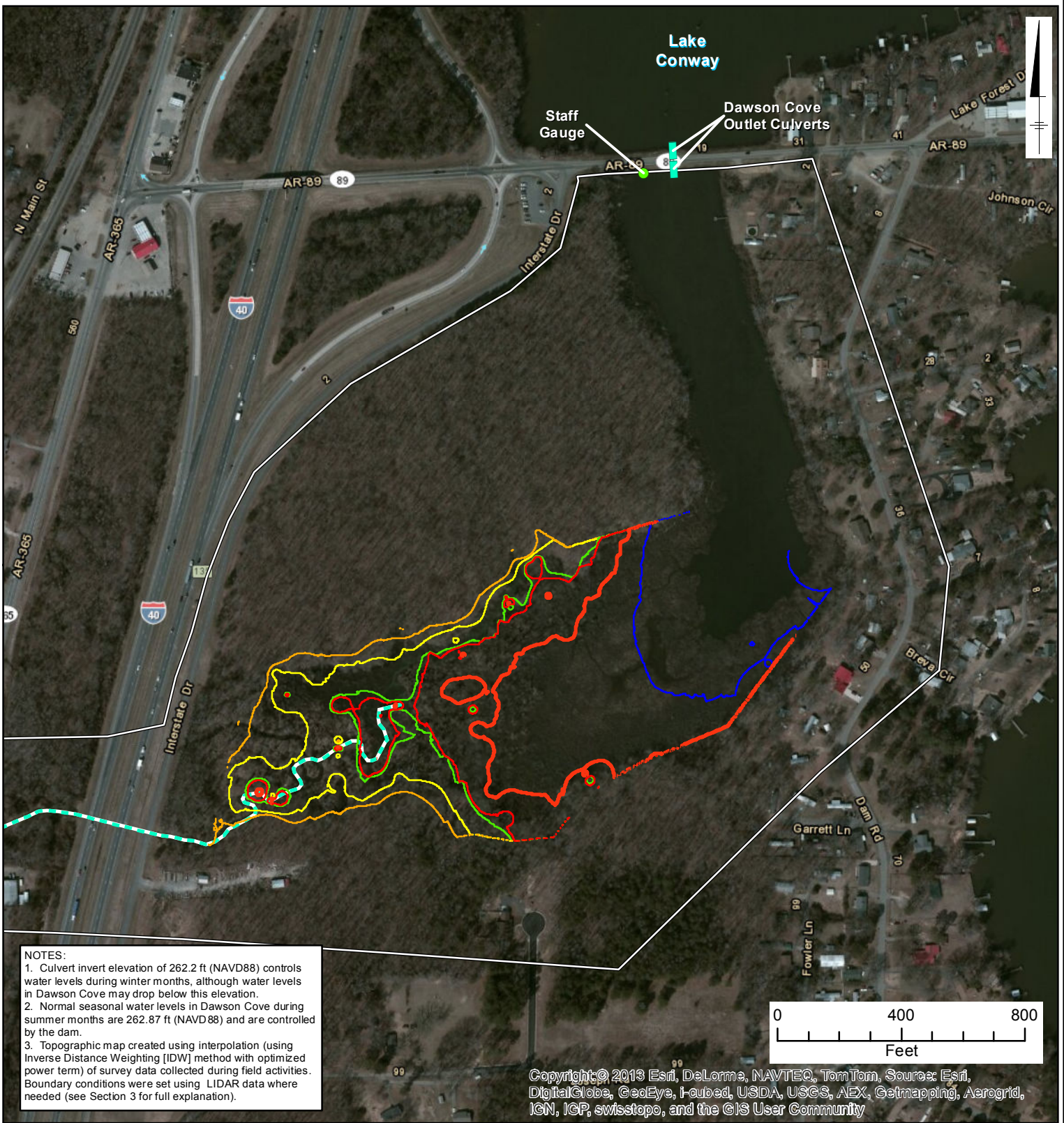


**MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT**

LIDAR DATA IN DAWSON COVE AREA



**FIGURE
3-2**

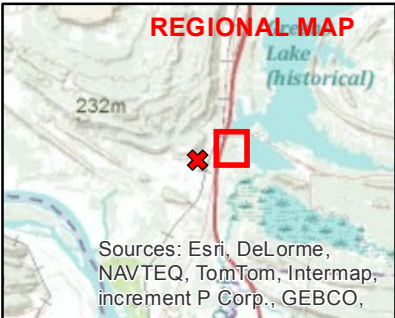


Legend

- Outlet Culvert
- Staff Gauge
- Drainage Path
- Study Area

Contour Elevations

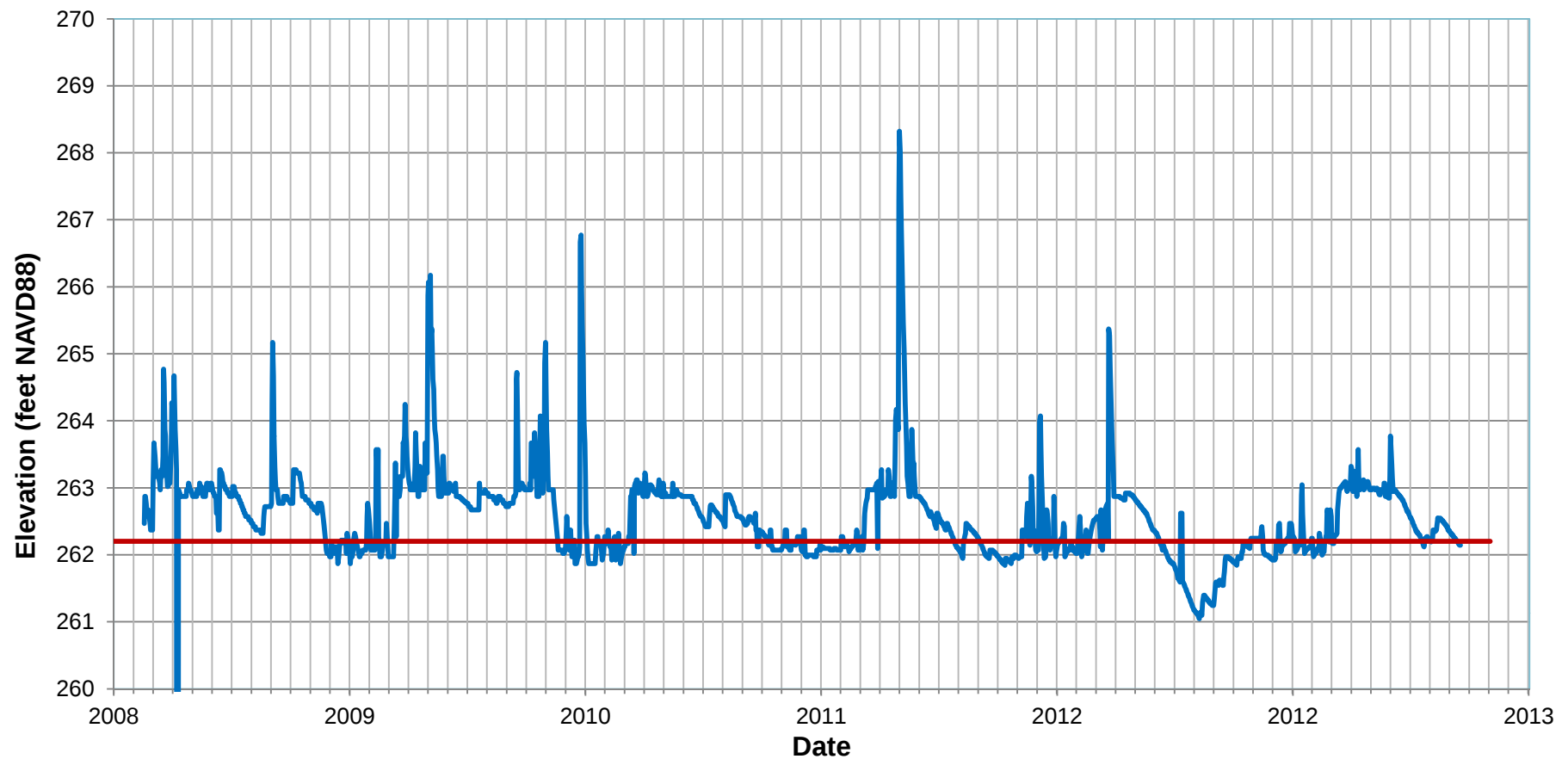
- 261 ft
- 262.2 ft
- 262.87 ft
- 263 ft
- 264 ft
- 265 ft



**MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT**

**TOPOGRAPHIC MAP OF
DAWSON COVE AREA**





— Lake Conway Peak Daily Water Elevation
— Dawson Cove Invert Elevation

Notes:

1. Water elevation data are available from February 18, 2008 through September 16, 2013. The data are provided by Lake Manager, Mr. Matthew Horton (Arkansas Game and Fish Commission [AGFC], District 10 Lake Manager).
2. Water surface elevations are recorded at the gauge located near the AGFC Mayflower Enforcement Training Center.
3. Lake Conway levels on April 9 and 10, 2008 were reported as 236.12 feet and 236.02 feet (NAVD88). No additional information related to this data point is available at this time.

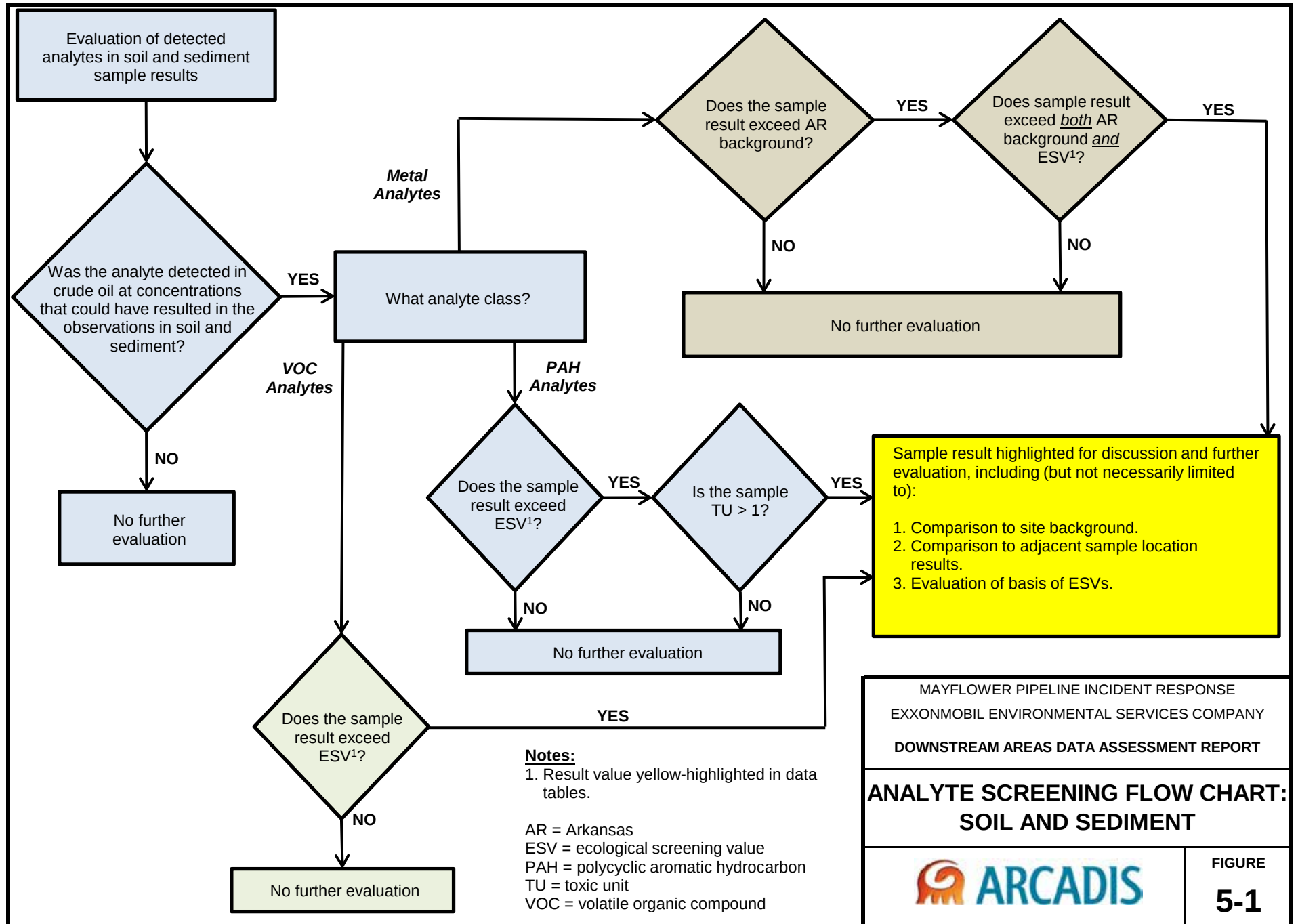
MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT

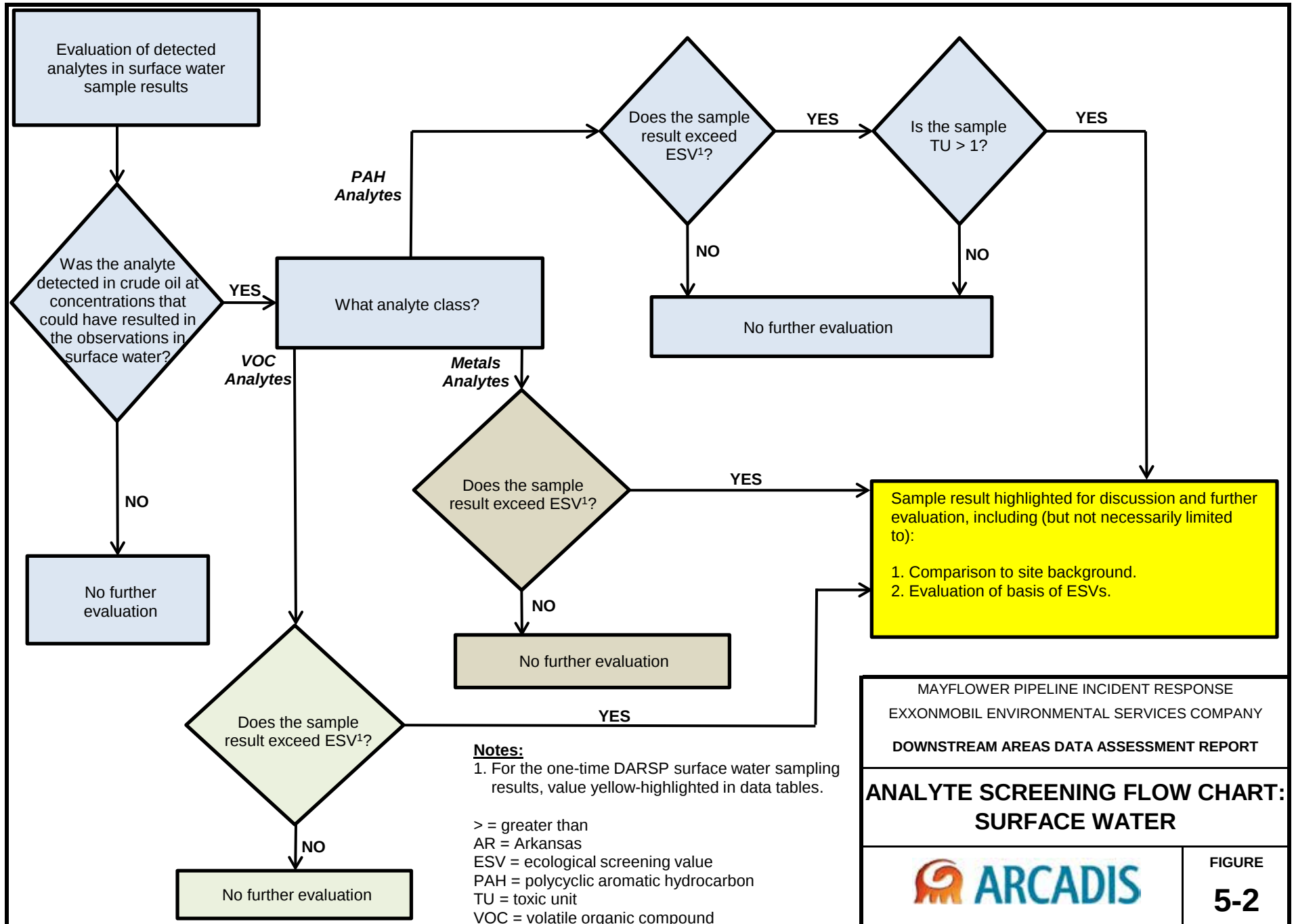
**Lake Conway Peak Daily Water
Elevation Data**



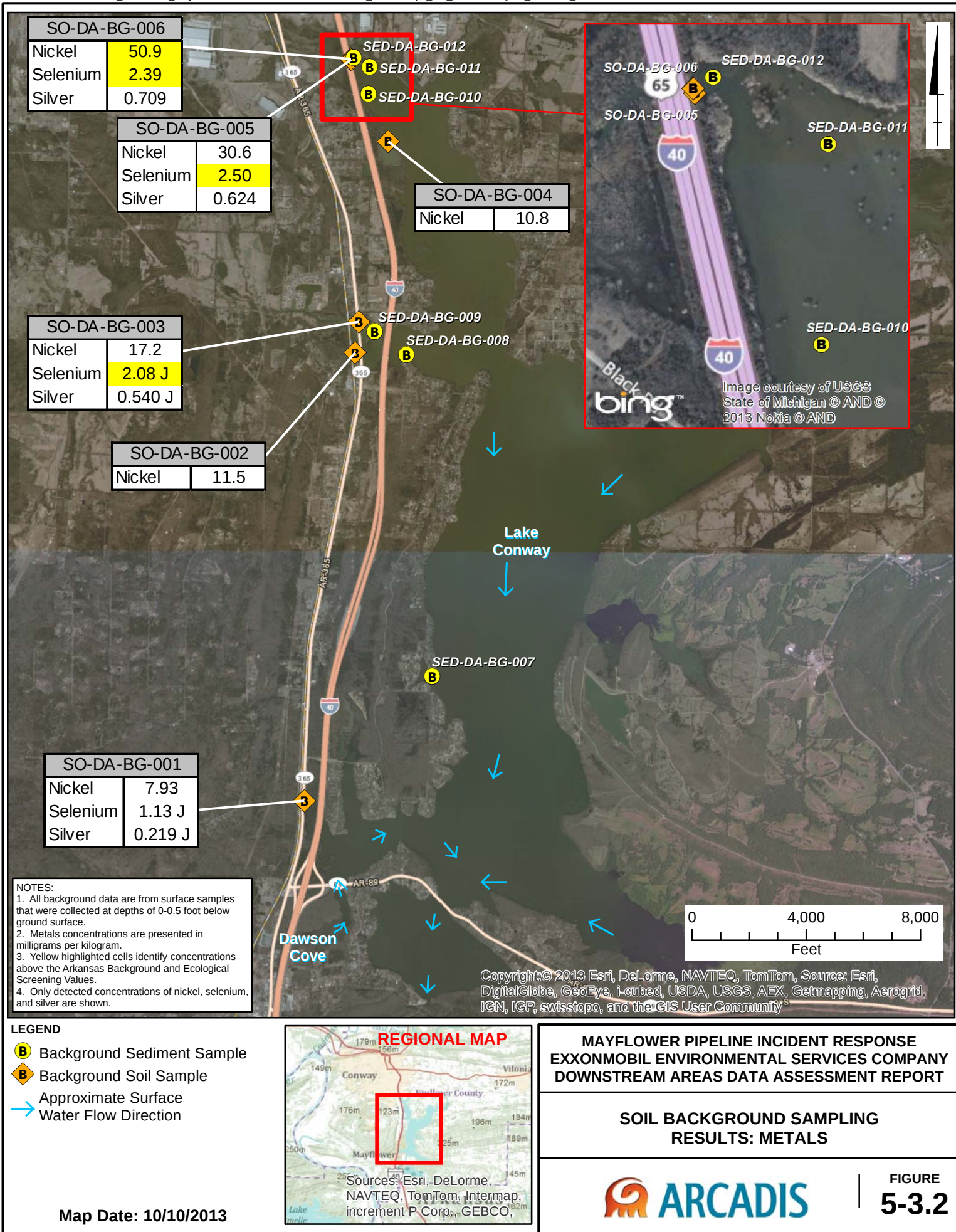
FIGURE

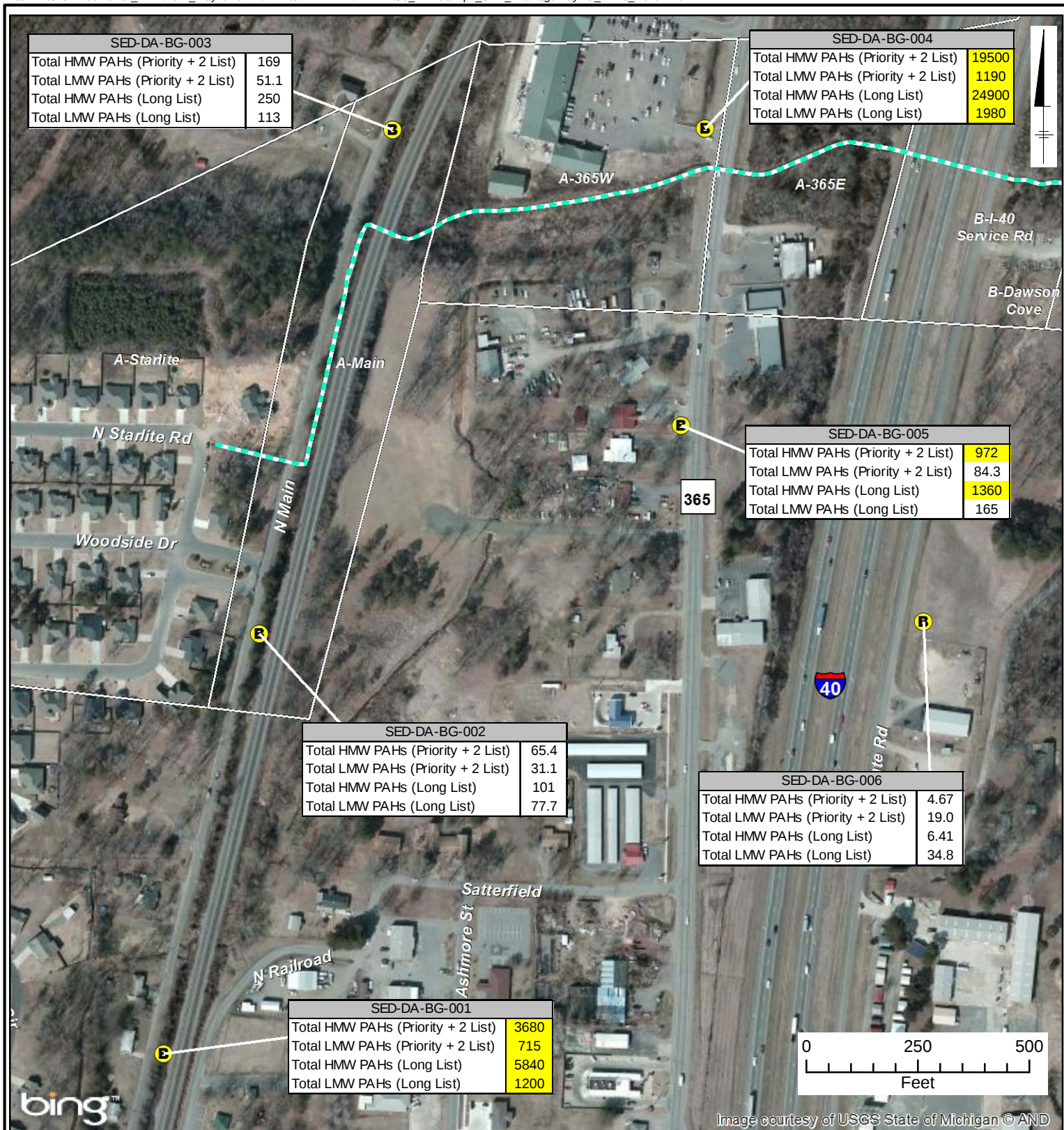
3-4











LEGEND

- Background Sediment Sample
- Drainage Path
- Operations Areas

NOTES:

1. All background data are from surface samples that were collected at depths of 0-0.5 foot below sediment surface.
2. Polycyclic Aromatic Hydrocarbon (PAH) concentrations are presented in micrograms per kilogram (µg/kg).
3. PAH summations are based on the Priority+2 List and the Long List of PAHs (Table 5-3).

Map Date: 10/11/2013

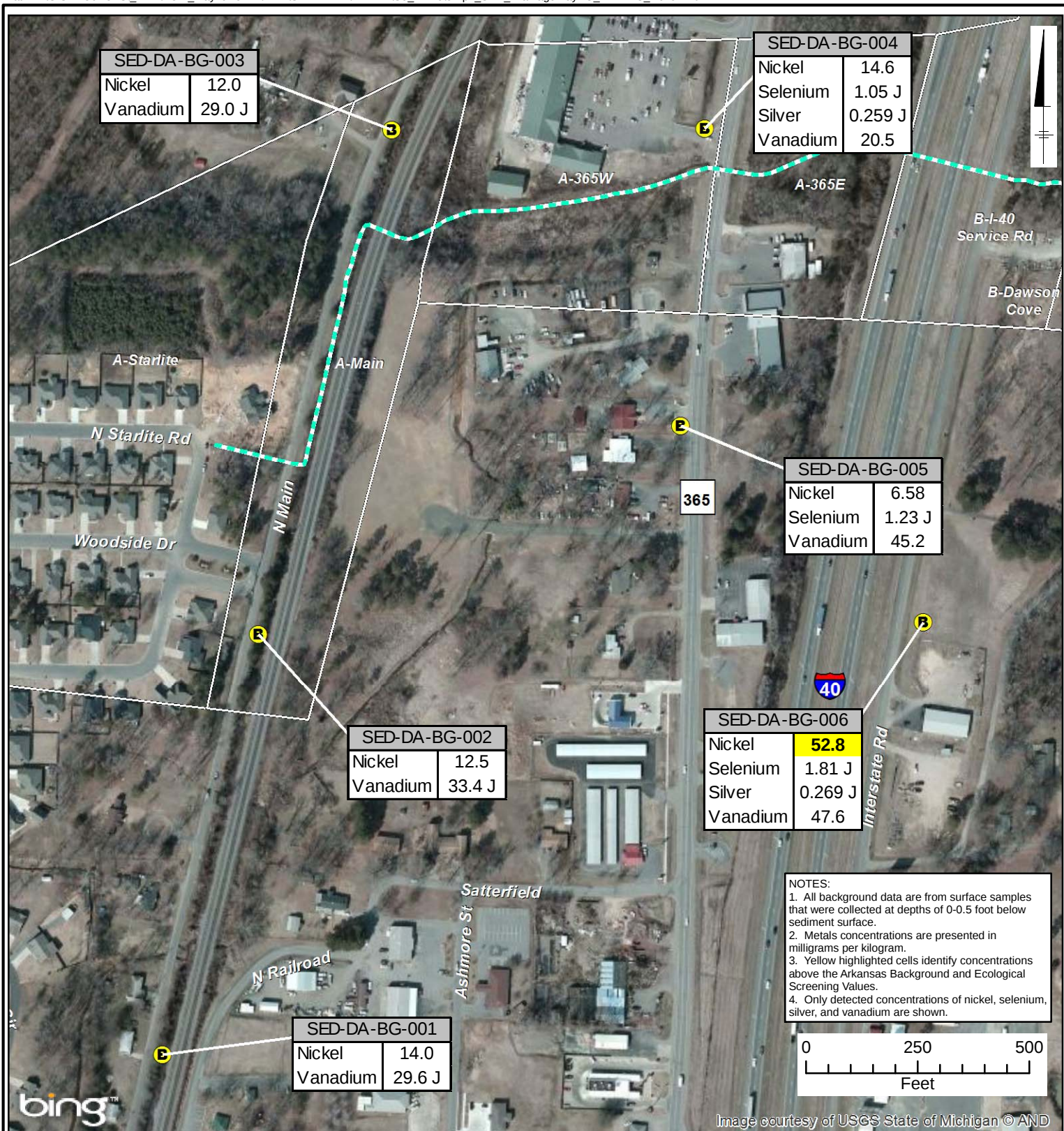


MAYFLOWER PIPELINE INCIDENT RESPONSE EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY DOWNSTREAM AREAS DATA ASSESSMENT REPORT

DRAINAGE WAY SEDIMENT BACKGROUND SAMPLING RESULTS: PAHs



FIGURE
 5-4.1



LEGEND

- B Background Sediment Sample
- Drainage Path
- Operations Areas



**MAYFLOWER PIPELINE INCIDENT RESPONSE
 EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
 DOWNSTREAM AREAS DATA ASSESSMENT REPORT**

**DRAINAGE WAY SEDIMENT BACKGROUND
 SAMPLING RESULTS: METALS**



**FIGURE
 5-4.2**

Map Date: 10/10/2013

SED-DA-BG-012	
Total HMW PAHs (Priority + 2 List)	901
Total LMW PAHs (Priority + 2 List)	164
Total HMW PAHs (Long List)	2150
Total LMW PAHs (Long List)	1460

SED-DA-BG-011	
Total HMW PAHs (Priority + 2 List)	653
Total LMW PAHs (Priority + 2 List)	182
Total HMW PAHs (Long List)	1140
Total LMW PAHs (Long List)	626

SED-DA-BG-010	
Total HMW PAHs (Priority + 2 List)	477
Total LMW PAHs (Priority + 2 List)	150
Total HMW PAHs (Long List)	1140
Total LMW PAHs (Long List)	668

SED-DA-BG-009	
Total HMW PAHs (Priority + 2 List)	124
Total LMW PAHs (Priority + 2 List)	67.1
Total HMW PAHs (Long List)	548
Total LMW PAHs (Long List)	227

SED-DA-BG-008	
Total HMW PAHs (Priority + 2 List)	220
Total LMW PAHs (Priority + 2 List)	118
Total HMW PAHs (Long List)	1210
Total LMW PAHs (Long List)	303

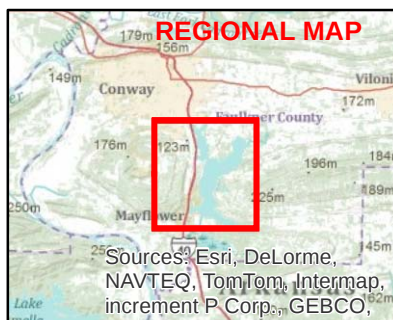
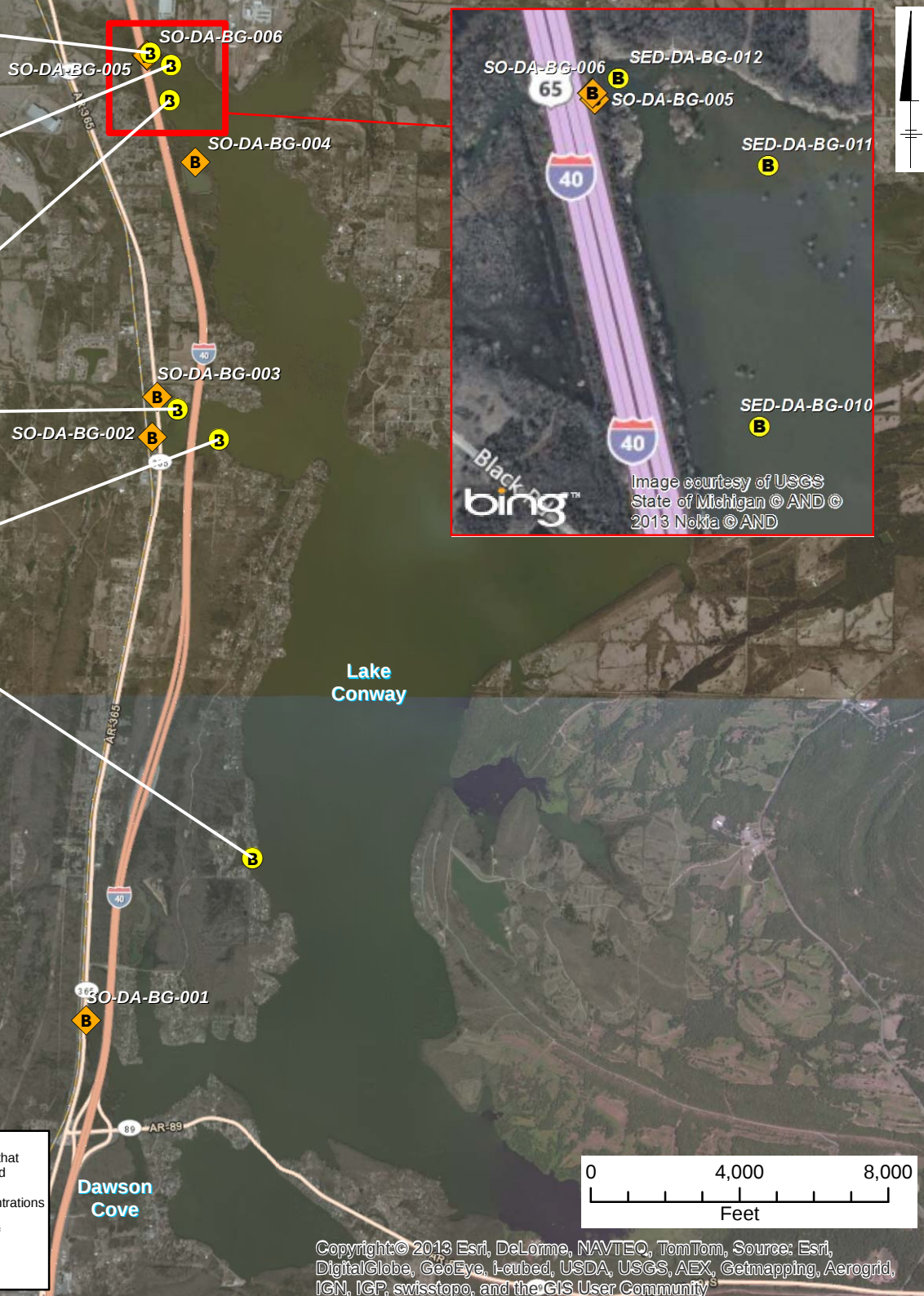
SED-DA-BG-007	
Total HMW PAHs (Priority + 2 List)	525
Total LMW PAHs (Priority + 2 List)	155
Total HMW PAHs (Long List)	1440
Total LMW PAHs (Long List)	398

NOTES:
 1. All background data are from surface samples that were collected at depths of 0-0.5 foot below ground surface.
 2. Polycyclic Aromatic Hydrocarbon (PAH) concentrations are presented in micrograms per kilogram ($\mu\text{g}/\text{kg}$).
 3. PAH summations are based on the Long List of PAHs (Table 5-3).
 4. Yellow highlighted cells identify concentrations above the Ecological Screening Values.

LEGEND

- B Background Sediment Sample
- B Background Soil Sample

Map Date: 10/11/2013

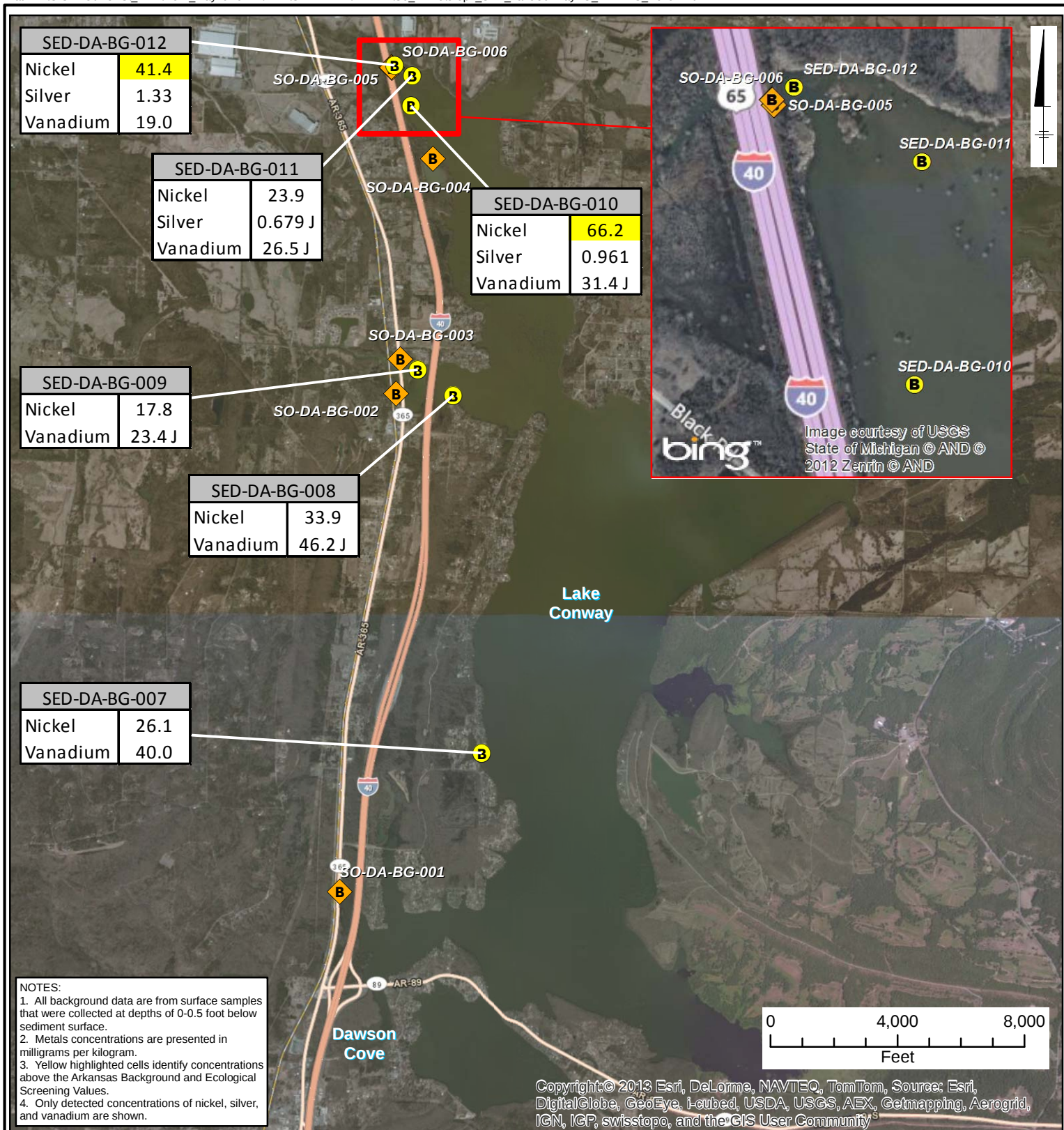


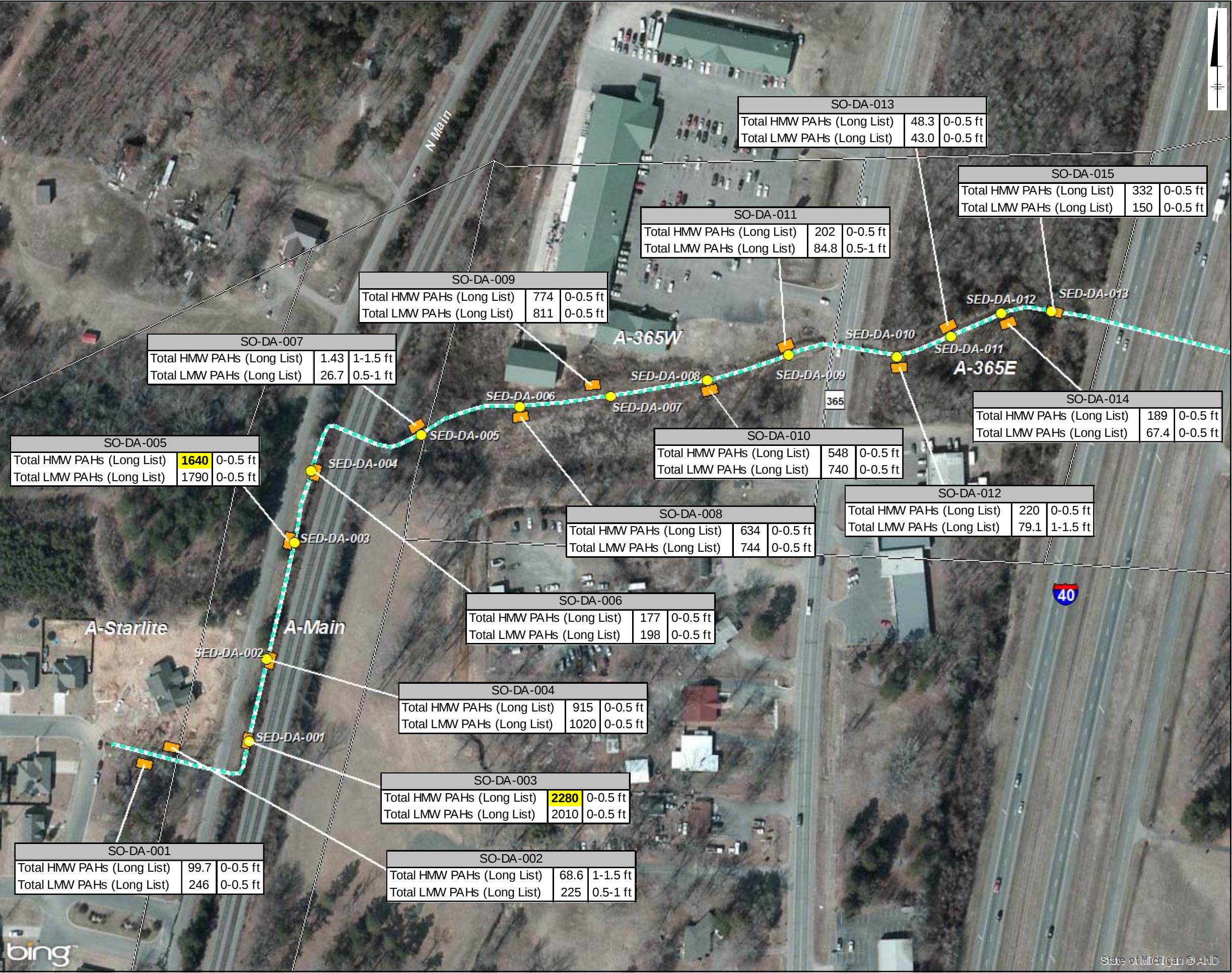
MAYFLOWER PIPELINE INCIDENT RESPONSE EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY DOWNSTREAM AREAS DATA ASSESSMENT REPORT

LAKE CONWAY SEDIMENT BACKGROUND SAMPLING RESULTS: PAHs



FIGURE
 5-5.1

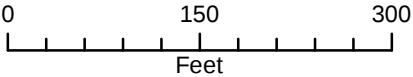




- LEGEND**
- Sediment Sample
 - Soil Sample
 - Drainage Path
 - Operations Areas

NOTES:

1. Data boxes present maximum detections for each analyte at each location, and the associated sample depth interval at which the maximum detection was recorded (i.e., 0-0.5 foot, 0.5-1.0 foot, or 1.0-1.5 feet).
2. Polycyclic Aromatic Hydrocarbon concentrations are presented in micrograms per kilogram ($\mu\text{g}/\text{kg}$).
3. Yellow highlighted cells identify concentrations above the Ecological Screening Values.
4. PAH summations are based on the Long List of PAHs (Table 5-3).

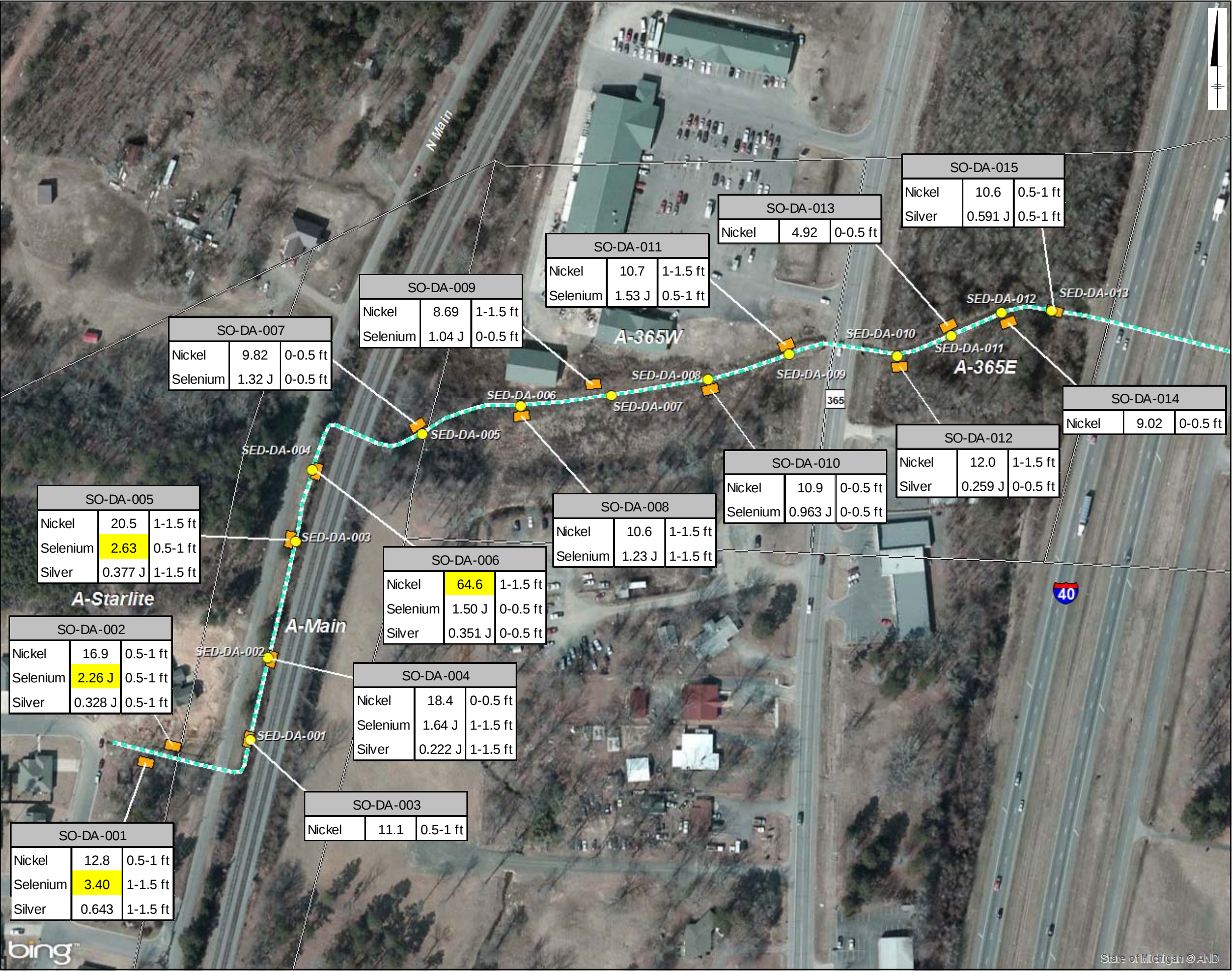


**MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT**

**SOIL SAMPLING RESULTS IN DRAINAGE
WAYS: PAHs**



**FIGURE
6-1.1**



LEGEND

- Sediment Sample
- Soil Sample
- Drainage Path
- Operations Areas

NOTE:

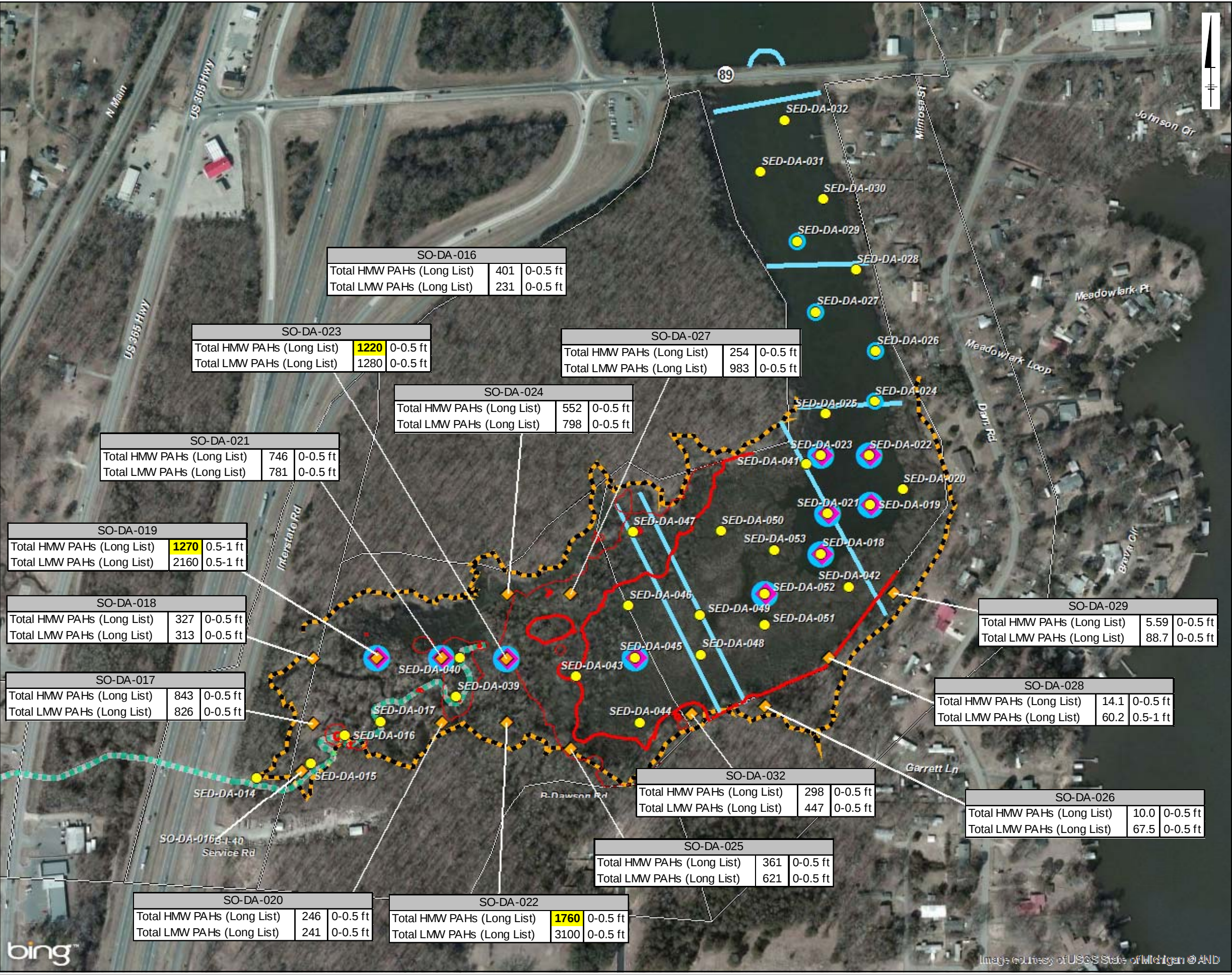
- Metals were analyzed in cores collected from 0-1.5 feet bgs; data boxes present maximum detections for each analyte at each location, and the associated sample depth interval at which the maximum detection was recorded (i.e., 0-0.5 foot, 0.5-1.0 foot, or 1.0-1.5 feet).
- Only detected concentrations of nickel, selenium, and silver are shown.
- Metals concentrations are presented in milligrams per kilogram.
- Yellow highlighted cells identify concentrations above the Arkansas Background and Ecological Screening Values.

MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT

SOIL SAMPLING RESULTS IN DRAINAGE
WAYS: METALS



FIGURE
6-1.2



LEGEND

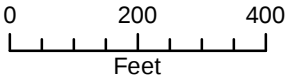
- Sediment Sample
- Soil Sample
- Dart Sample Location
- Deep Core Sample Location
- Operations Areas
- Approximate Oil Extent
- Drainage Path
- Approximate location of containment boom during sampling activities

Contour Elevation

- 262.2 ft
- 262.87 ft

NOTES:

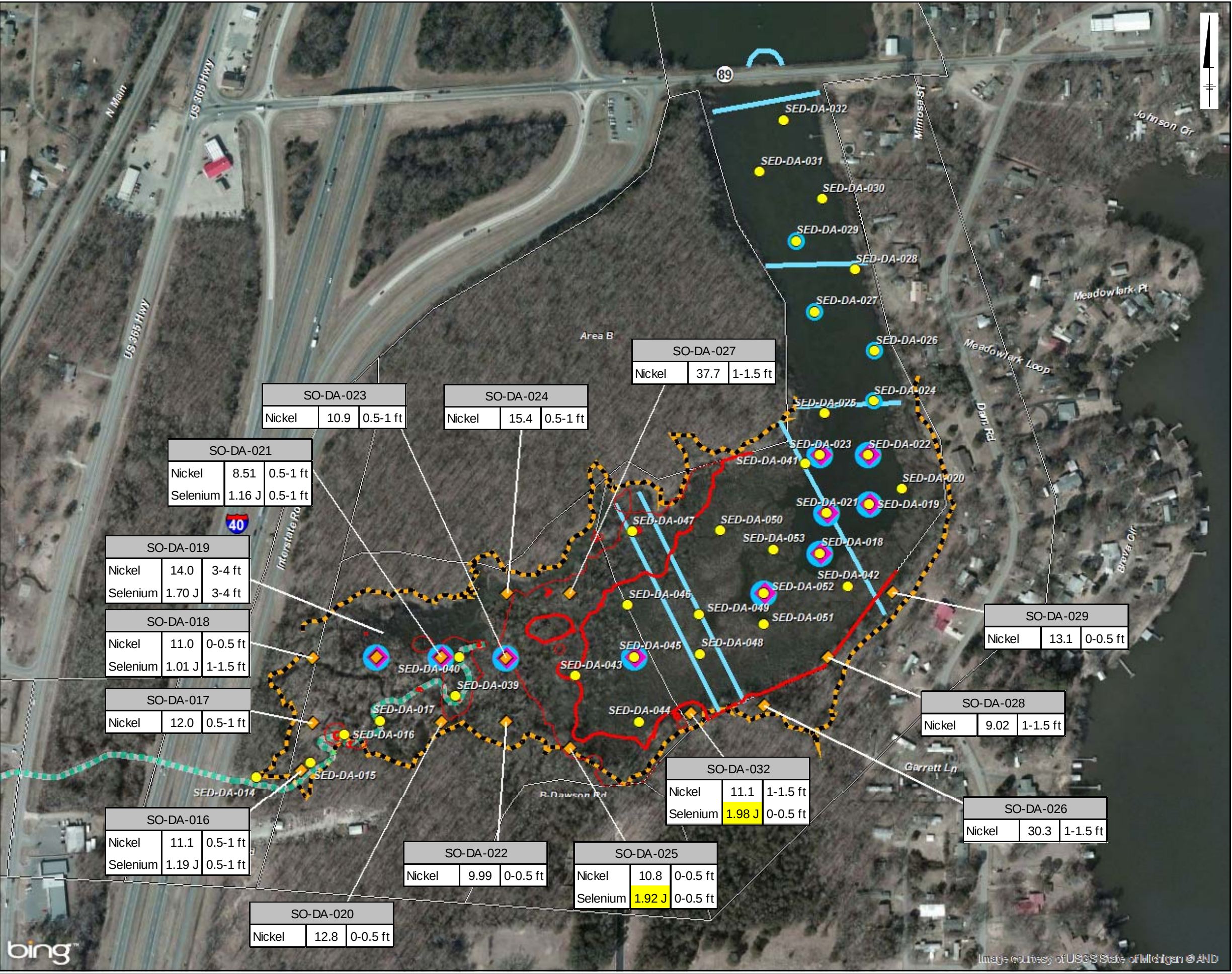
1. Data boxes present maximum detections for each analyte at each location, and the associated sample depth interval at which the maximum detection was recorded (i.e., 0-0.5 foot, 0.5-1.0 foot, or 1.0-1.5 feet).
2. Polycyclic Aromatic Hydrocarbon concentrations are presented in micrograms per kilogram ($\mu\text{g/kg}$).
3. Yellow highlighted cells identify concentrations above the Ecological Screening Values.
4. PAH summations are based on the Long List of PAHs (Table 5-3).



**MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT**

**SOIL SAMPLING RESULTS IN DAWSON COVE:
PAHs**

FIGURE 6-2.1



LEGEND

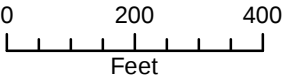
- Sediment Sample
- Soil Sample
- Dart Sample Location
- Deep Core Sample Location
- Operations Areas
- Approximate Oil Extent (Source: ARCADIS, May 2013)
- Drainage Path
- Approximate location of containment boom during sampling activities

Contour Elevation

- 262.2 ft
- 262.87 ft

NOTE:

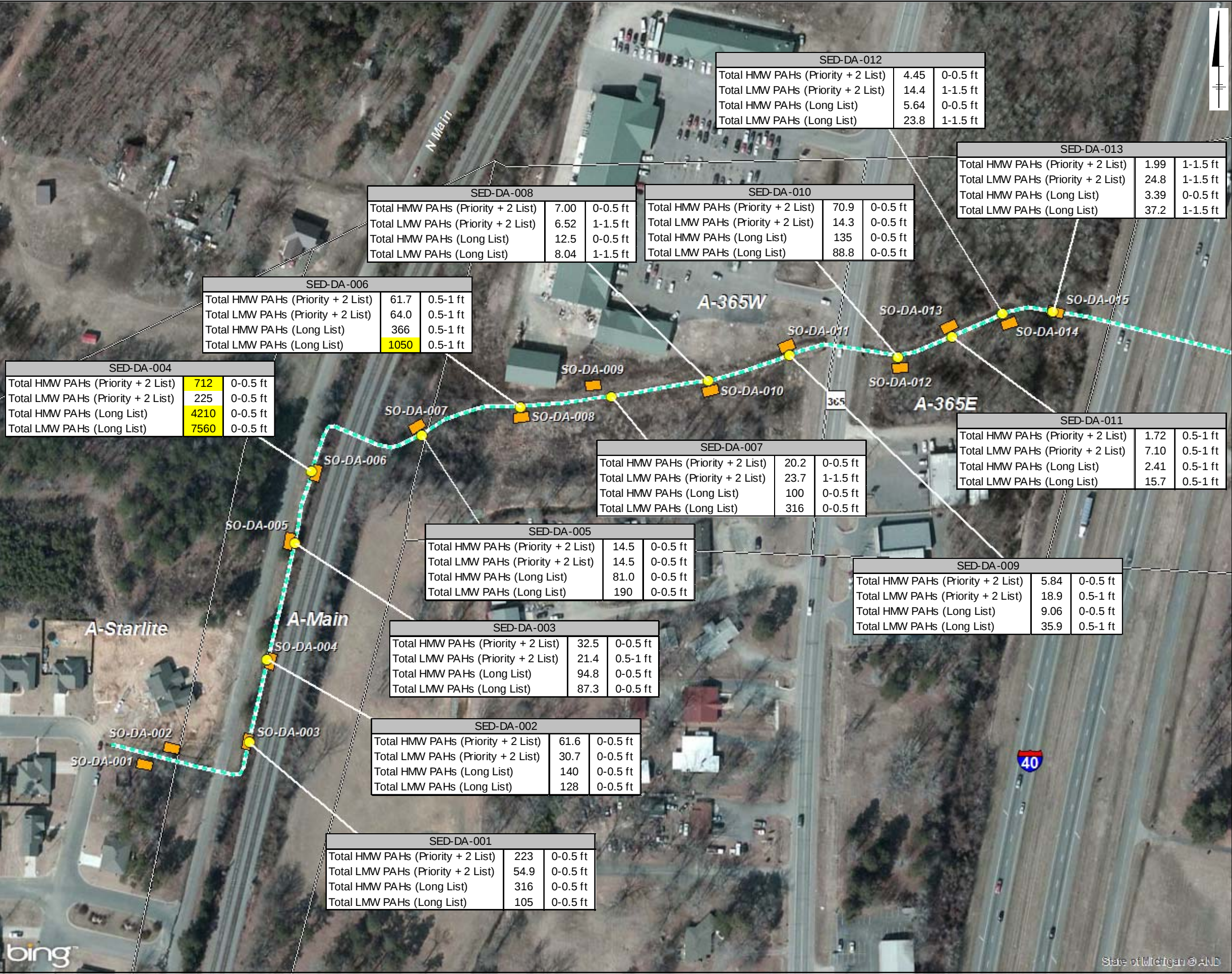
1. Metals were analyzed in cores collected from 0-1.5 feet bgs; data boxes present maximum detections for each analyte at each location, and the associated sample depth interval at which the maximum detection was recorded (i.e., 0-0.5 foot, 0.5-1.0 foot, or 1.0-1.5 feet).
2. Metals concentrations are presented in milligrams per kilogram.
3. Yellow highlighted cells identify concentrations above the Arkansas Background and Ecological Screening Values.
4. Only detected concentrations of nickel, selenium, and silver are shown.



**MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT**

**SOIL SAMPLING RESULTS IN DAWSON COVE:
METALS**

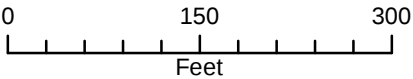
 **FIGURE 6-2.2**



LEGEND

- Sediment Sample
- Soil Sample
- Drainage Path
- Operations Areas

- NOTES:
1. Data boxes present maximum detections for each analyte at each location, and the associated sample depth interval at which the maximum detection was recorded (i.e., 0-0.5 foot, 0.5-1.0 foot, or 1.0-1.5 feet).
 2. Polycyclic Aromatic Hydrocarbon concentrations are presented in micrograms per kilogram (µg/kg).
 3. Yellow highlighted cells identify concentrations above the Ecological Screening Values.
 4. PAH summations are based on the Priority+2 List and the Long List of PAHs (Table 5-3).

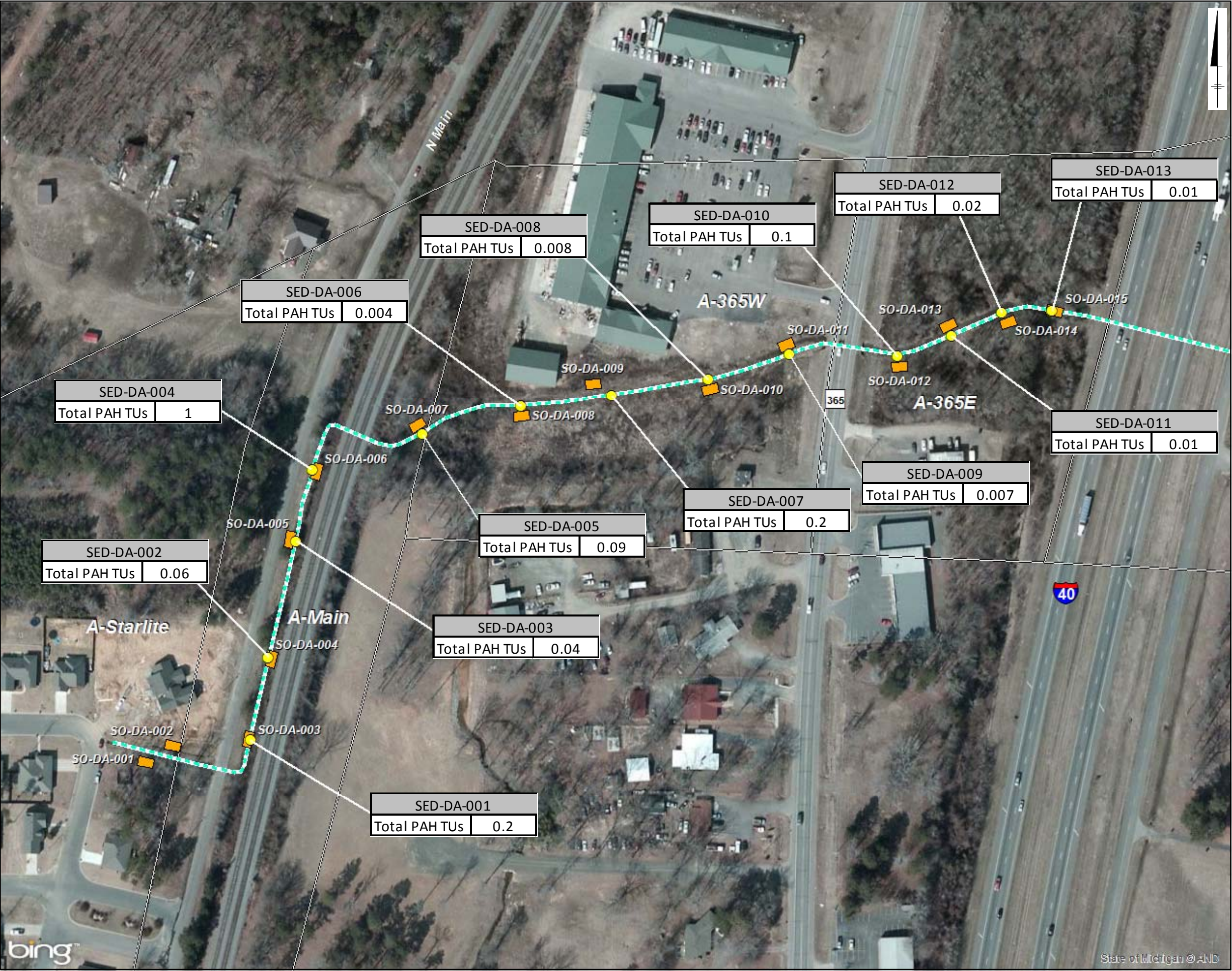


MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT

SEDIMENT SAMPLING RESULTS IN
DRAINAGE WAYS: PAHs



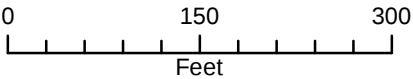
FIGURE
7-1.1



LEGEND

- Sediment Sample
- Soil Sample
- Drainage Path
- Operations Areas

NOTES:
1. Total Polycyclic Aromatic Hydrocarbon Toxic Unit values are unitless.
2. All data are from surface samples that were collected at depths of 0-0.5 foot below sediment surface.

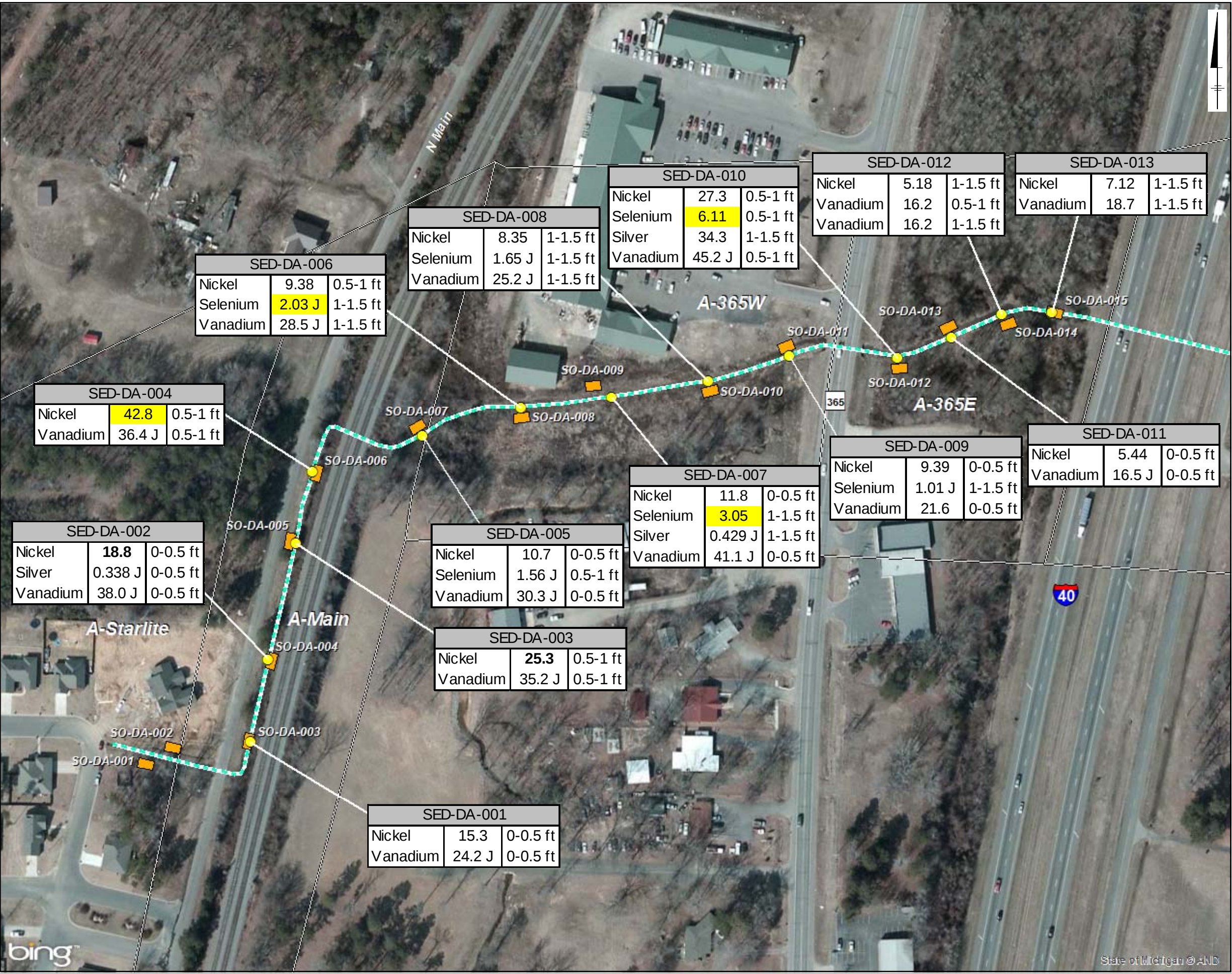


**MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT**

**SEDIMENT SAMPLING RESULTS IN
DRAINAGE WAYS: TOXIC UNIT**



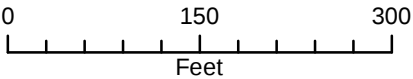
**FIGURE
7-1.2**



LEGEND

- Sediment Sample
- Soil Sample
- Drainage Path
- Operations Areas

- NOTES:
- Metals were analyzed in cores collected from 0-1.5 feet bgs; data boxes present maximum detections for each analyte at each location, and the associated sample depth interval at which the maximum detection was recorded (i.e., 0-0.5 foot, 0.5-1.0 foot, or 1.0-1.5 feet).
 - Metals concentrations are presented in milligrams per kilogram.
 - Yellow highlighted cells identify concentrations above the Arkansas Background and Ecological Screening Values.
 - Only detected concentrations of nickel, selenium, silver, and vanadium are shown.

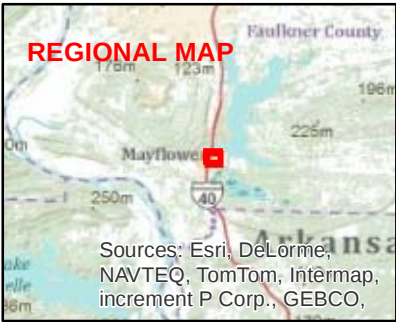
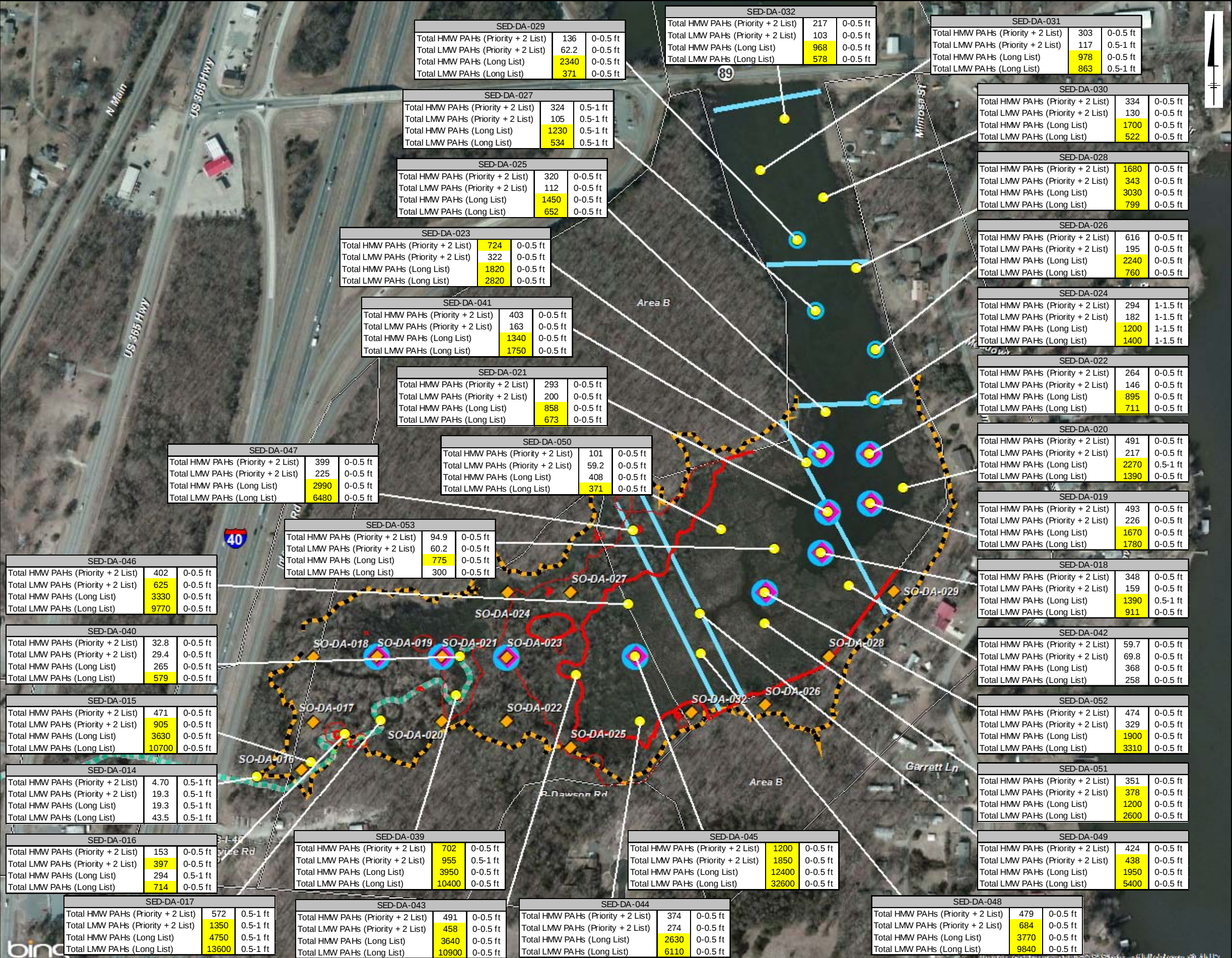


MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT

SEDIMENT SAMPLING RESULTS IN
DRAINAGE WAYS: METALS



FIGURE
7-1.3



LEGEND

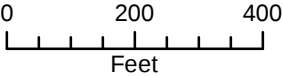
- Sediment Sample
- Soil Sample
- Dart Sample Location
- Deep Core Sample Location
- Operations Areas
- Approximate Oil Extent
- Drainage Path
- Approximate location of containment boom during sampling activities

Contour Elevation

- 262.2 ft
- 262.87 ft

NOTES:

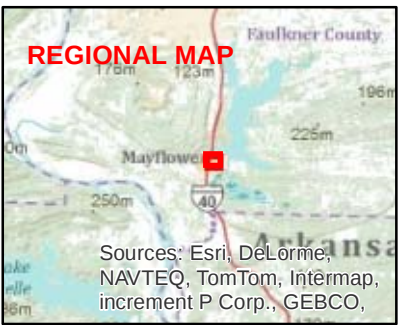
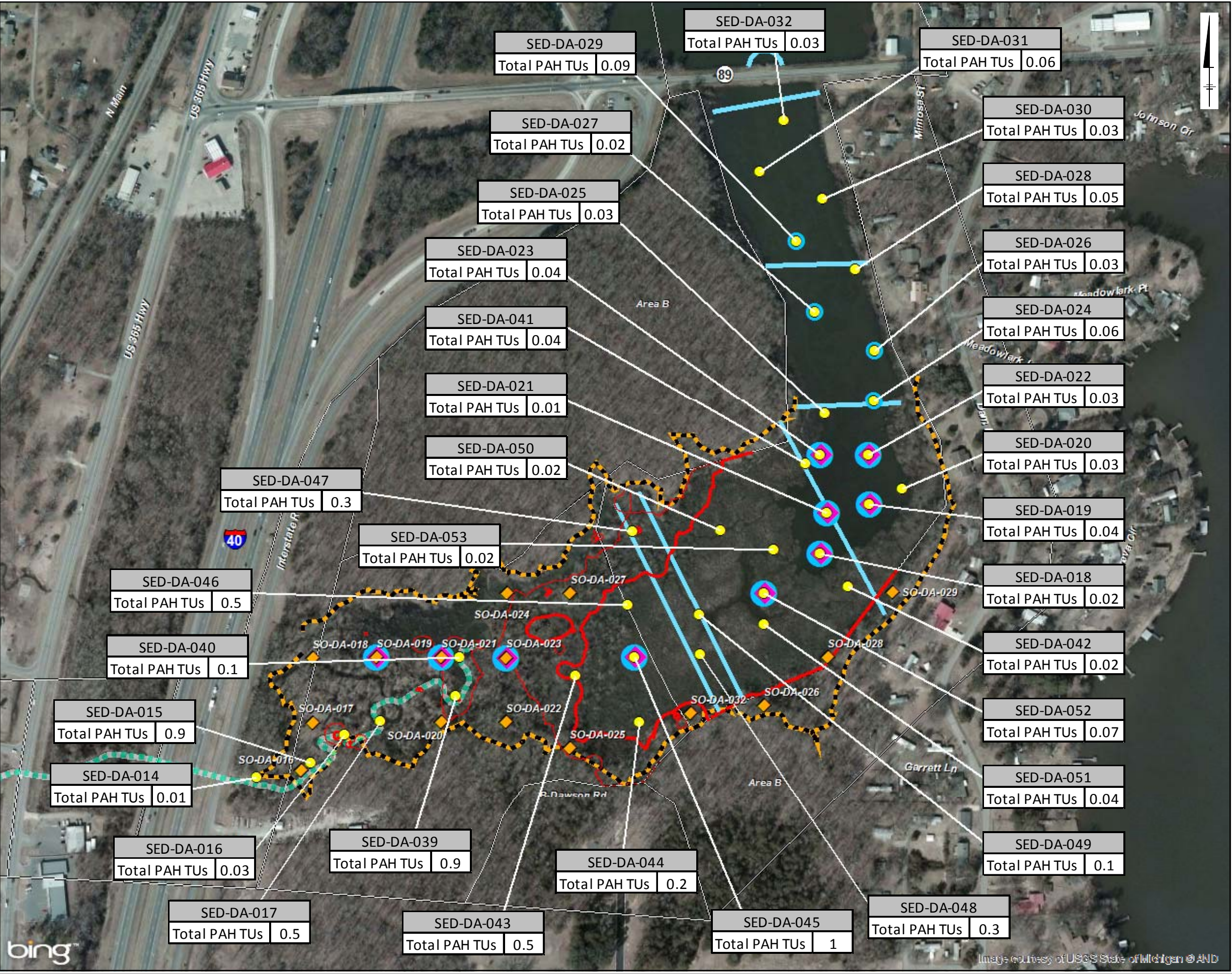
- Data boxes present maximum detections for each analyte at each location, and the associated sample depth interval at which the maximum detection was recorded (i.e., 0-0.5 foot, 0.5-1.0 foot, or 1.0-1.5 feet).
- Polycyclic Aromatic Hydrocarbon concentrations are presented in micrograms per kilogram (µg/kg).
- Yellow highlighted cells identify concentrations above the Ecological Screening Values.
- PAH summations are based on the Priority+2 List and the Long List of PAHs (Table 5-3).



**MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT**

**SEDIMENT SAMPLING RESULTS IN
DAWSON COVE: PAHs**





LEGEND

- Sediment Sample
- Soil Sample
- Dart Sample Location
- Deep Core Sample Location
- Operations Areas
- Approximate Oil Extent
- Drainage Path
- Approximate location of containment boom during sampling activities

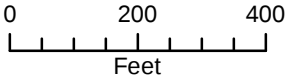
Contour Elevation

- 262.2 ft
- 262.87 ft

NOTES:

1. Total Polycyclic Aromatic Hydrocarbon Toxic Unit values are unitless.

2. All data are from surface samples that were collected at depths of 0-0.5 foot below sediment surface.

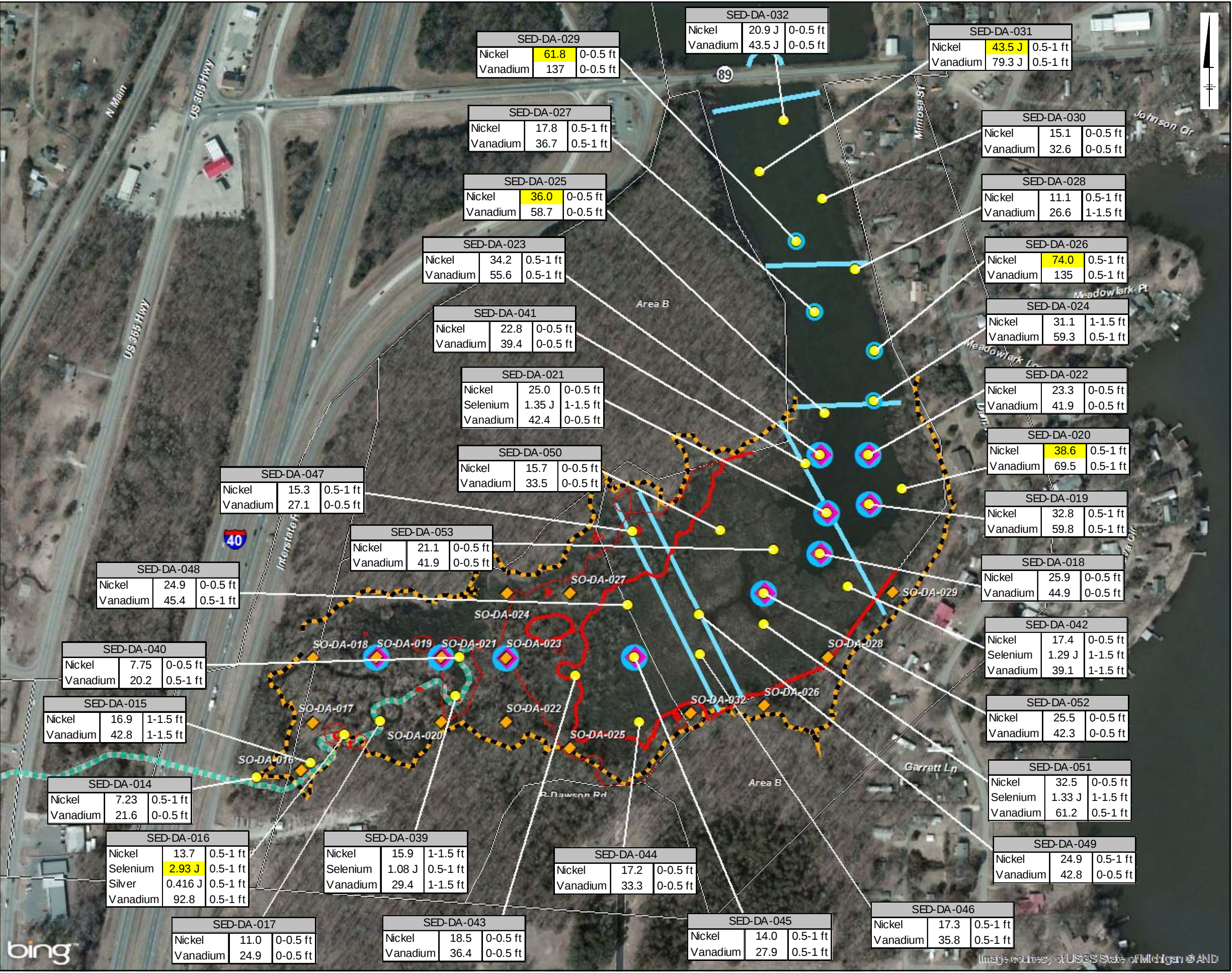


MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT

SEDIMENT SAMPLING RESULTS IN
DAWSON COVE: TOXIC UNIT



FIGURE
7-2.2



LEGEND

- Sediment Sample
- Soil Sample
- Dart Sample Location
- Deep Core Sample Location
- Operations Areas
- Approximate Oil Extent (Source: ARCADIS, May 2013)
- Drainage Path
- Approximate location of containment boom during sampling activities

Contour Elevation

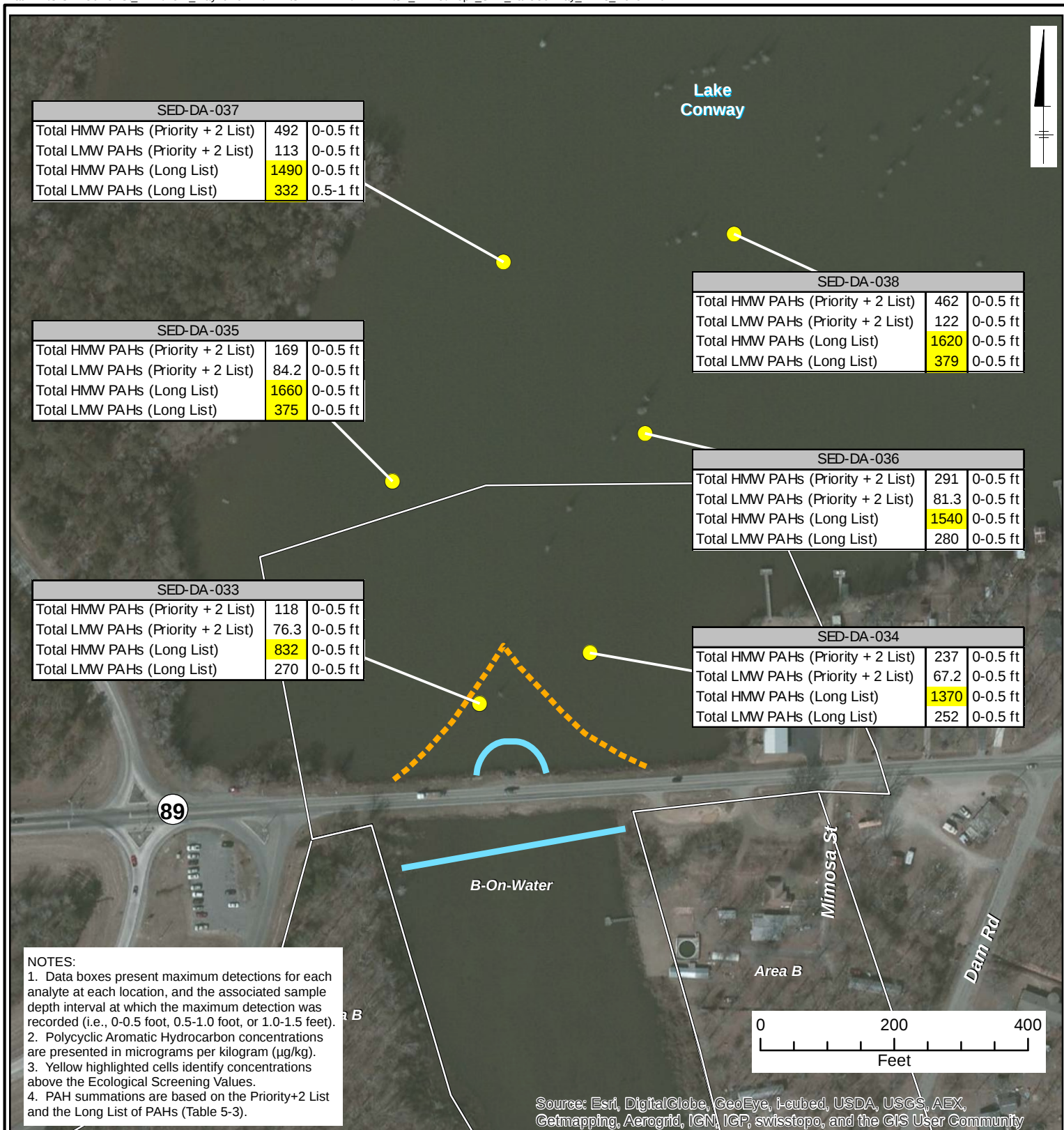
- 262.2 ft
- 262.87 ft

- NOTES:**
1. Metals were analyzed in cores collected from 0-1.5 feet bgs; data boxes present maximum detections for each analyte at each location, and the associated sample depth interval at which the maximum detection was recorded (i.e., 0-0.5 foot, 0.5-1.0 foot, or 1.0-1.5 feet).
 2. Metals concentrations are presented in milligrams per kilogram.
 3. Yellow highlighted cells identify concentrations above the Arkansas Background and Ecological Screening Values.
 4. Only detected concentrations of nickel, selenium, silver, and vanadium are shown.

**MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT**

**SEDIMENT SAMPLING RESULTS IN
DAWSON COVE: METALS**

 **FIGURE 7-2.3**



LEGEND

- Sediment Sample
- Approximate location of containment boom during sampling activities
- - - Turbidity Curtain
- Operations Areas

Map Date: 10/11/2013

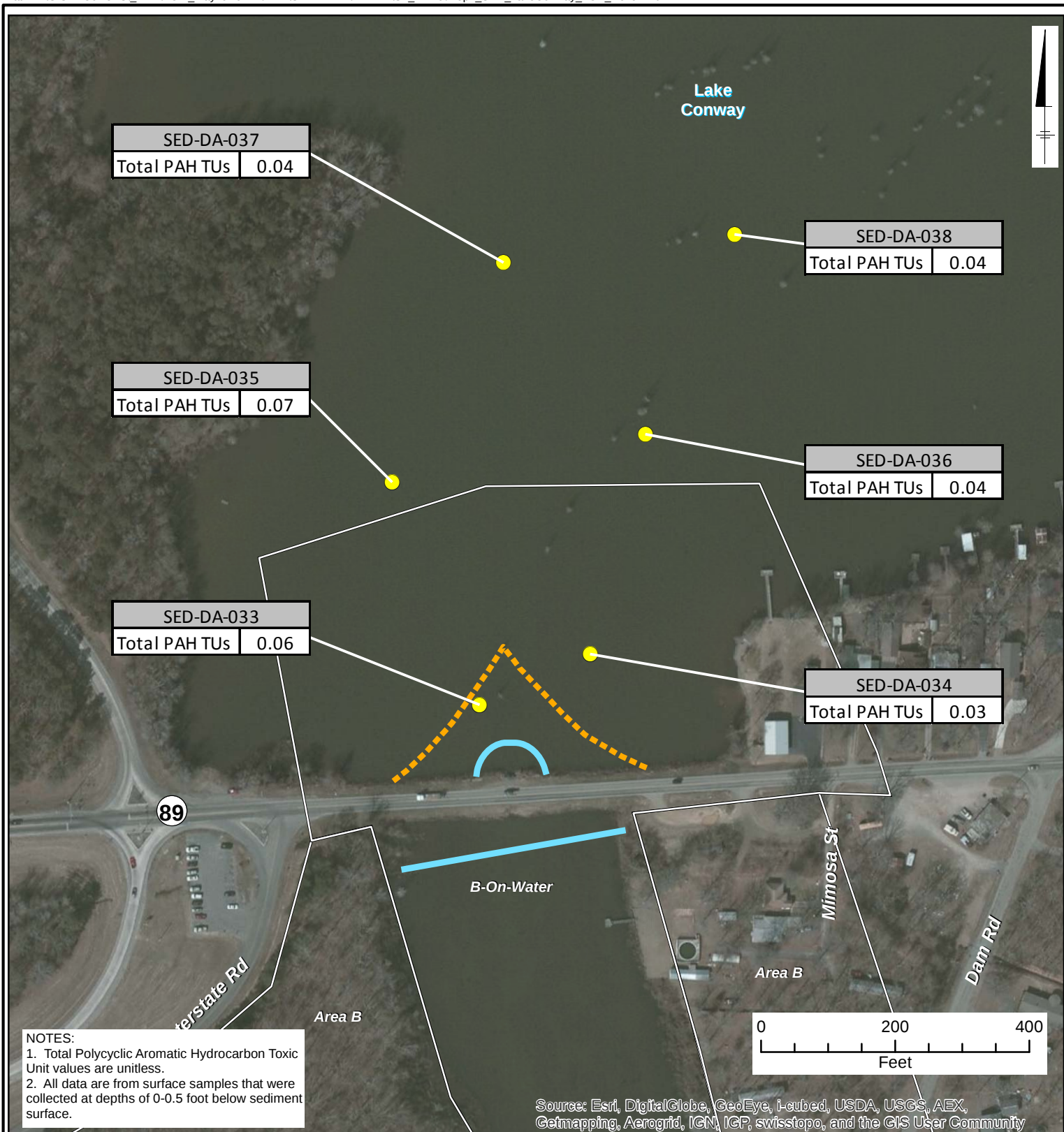


MAYFLOWER PIPELINE INCIDENT RESPONSE EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY DOWNSTREAM AREAS DATA ASSESSMENT REPORT

SEDIMENT SAMPLING RESULTS IN LAKE CONWAY: PAHs



FIGURE
7-3.1



LEGEND

- Sediment Sample
- Approximate location of containment boom during sampling activities
- - - Turbidity Curtain
- Operations Areas

Map Date: 10/11/2013

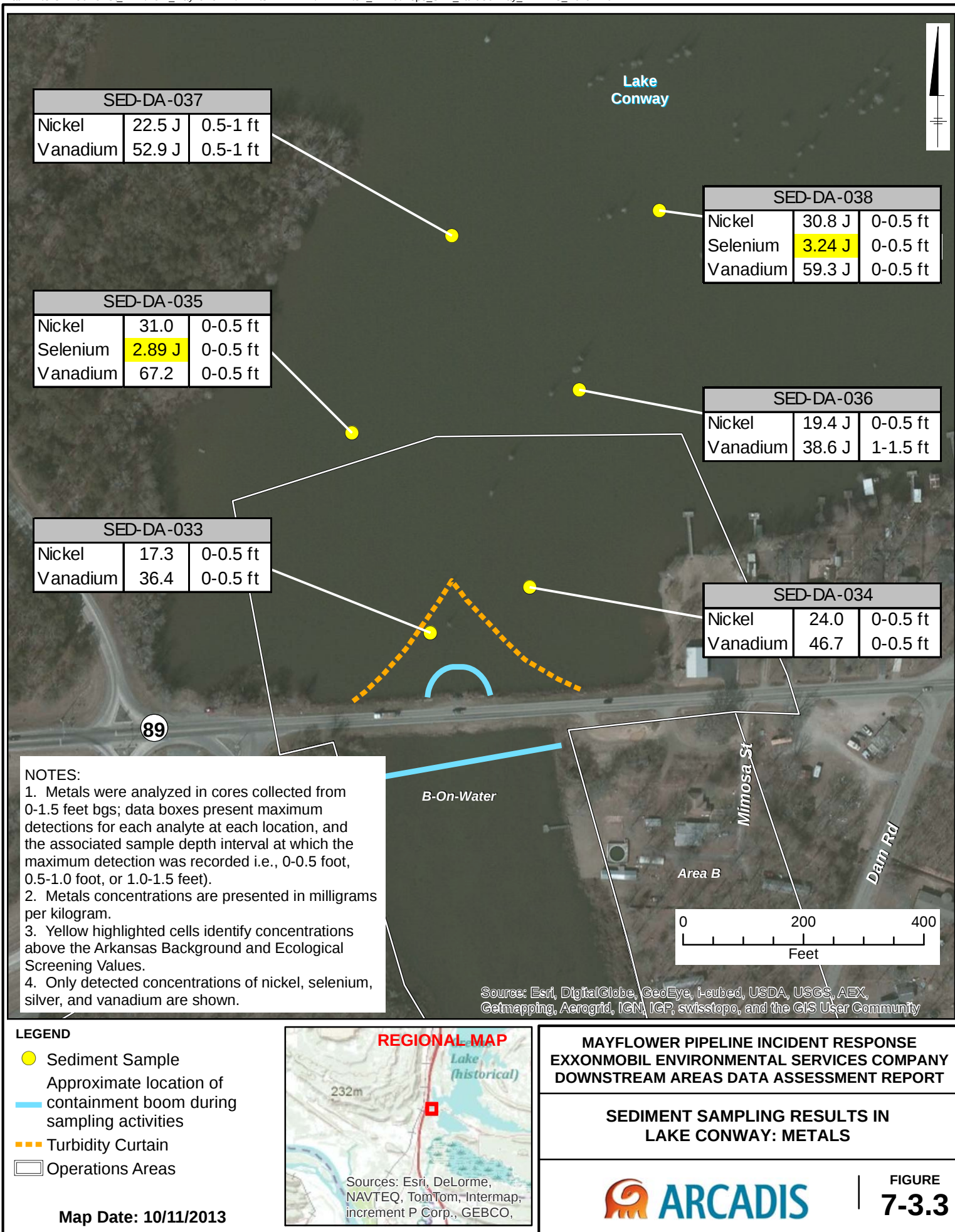


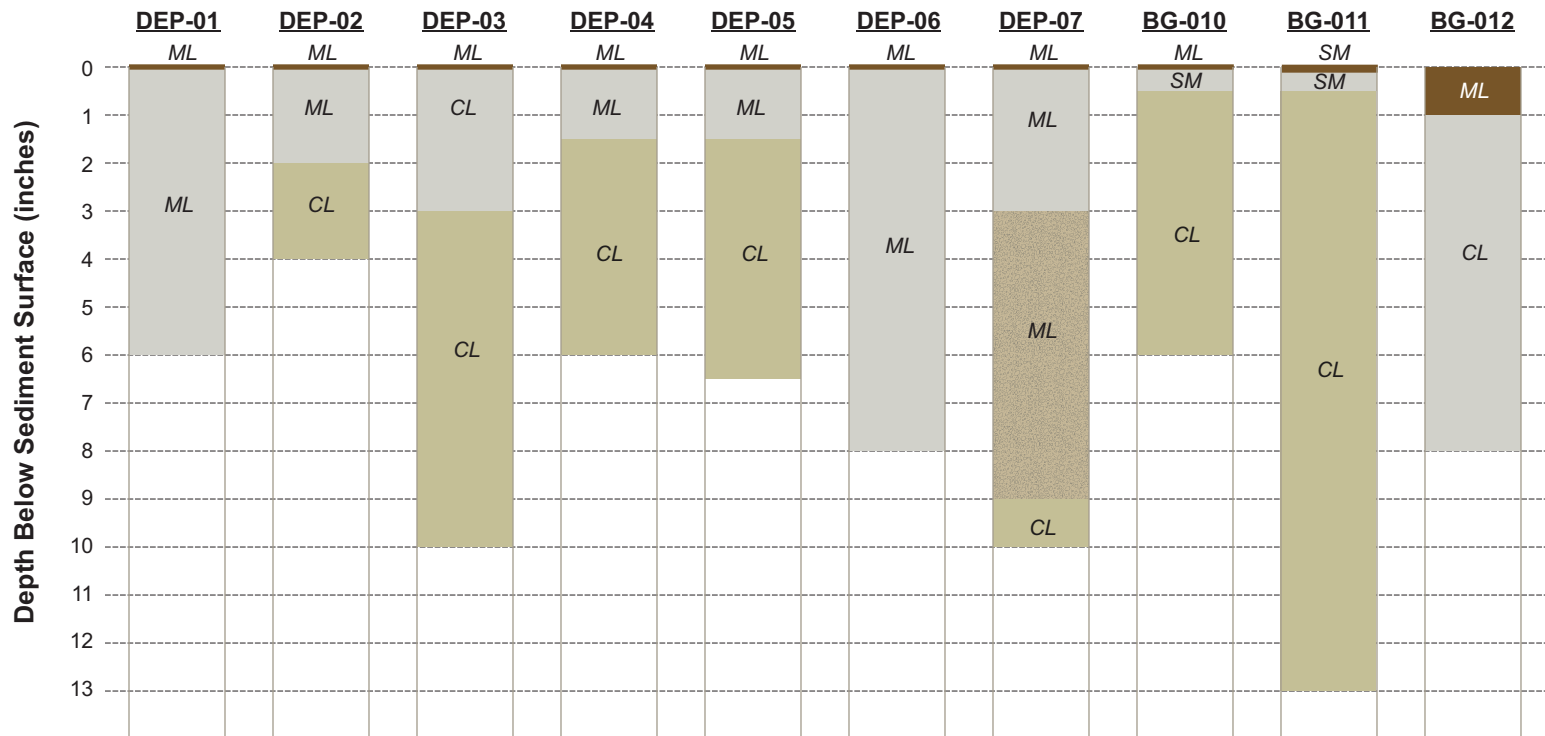
MAYFLOWER PIPELINE INCIDENT RESPONSE EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY DOWNSTREAM AREAS DATA ASSESSMENT REPORT

SEDIMENT SAMPLING RESULTS IN LAKE CONWAY: TOXIC UNIT



FIGURE
7-3.2





USCS Soil Group Symbol:

CL = Inorganic clay of low plasticity, lean clay

ML = Inorganic silt

SM = Silty sand

Color Legend:

= Surface Sediment Layer (Silt)

= Subsurface Observation of Gray Sediment (Silt, Clay or Silty Sand)

= Subsurface Observation of Brown Sediment (Silty Sand)

= Subsurface Observation of Brown Sediment (Clay)

= Subsurface Observation of Brown Sediment (Silt)

Notes:

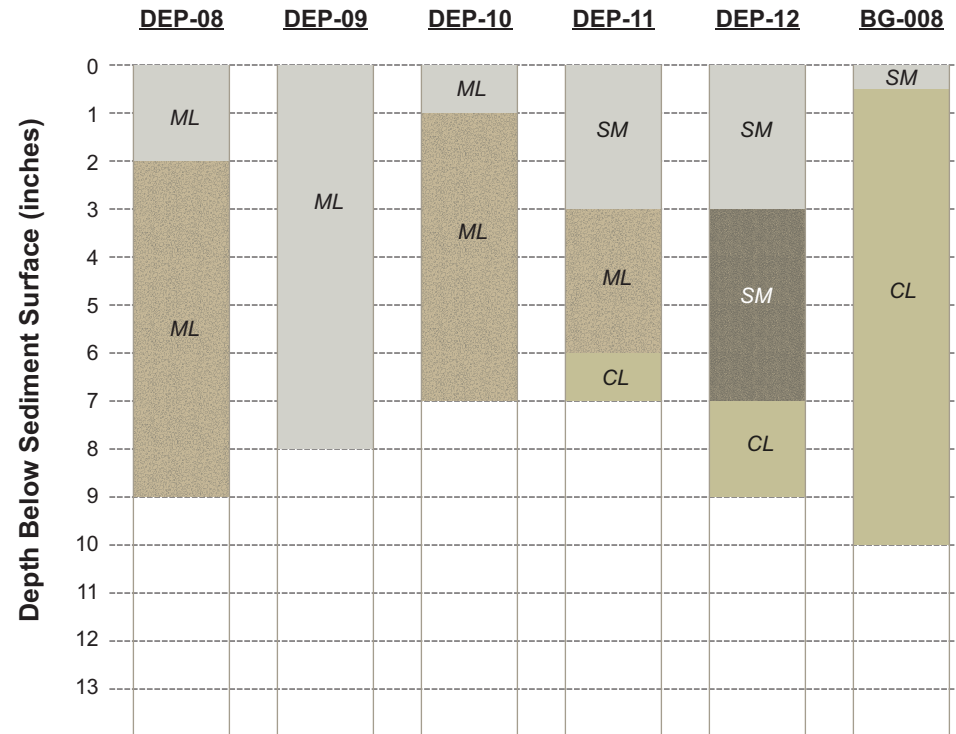
1. All sediments described in the field using the Unified Soil Classification System (USCS).
2. All sediment colors depicted are approximate representations of colors observed during field sampling.

MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT

LAKE CONWAY
DEPOSITIONAL LAYER ASSESSMENT:
CORE PROFILES WITH SURFACE BROWN LAYER



FIGURE
7-4.1



USCS Soil Group Symbol:

CL = Inorganic clay of low plasticity, lean clay

ML = Inorganic silt

SM = Silty sand

Color Legend:

 = Surface Sediment Layer (Silt)

 = Subsurface Observation of Gray Sediment (Silt, Clay or Silty Sand)

 = Subsurface Observation of Brown Sediment (Silty Sand)

 = Subsurface Observation of Brown Sediment (Clay)

 = Subsurface Observation of Brown Sediment (Silt)

Notes:

1. All sediments described in the field using the Unified Soil Classification System (USCS).

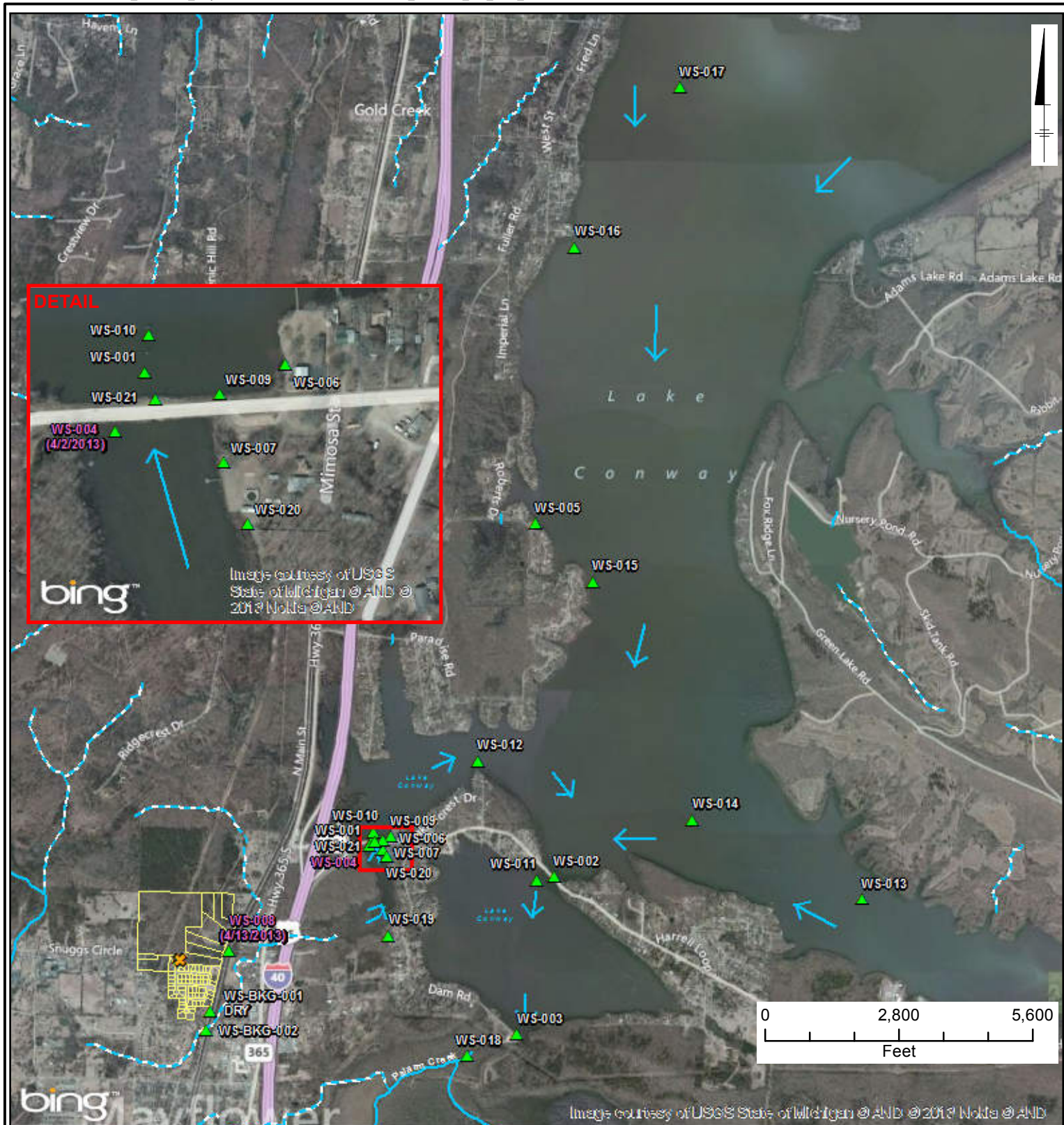
2. All sediment colors depicted are approximate representations of colors observed during field sampling.

MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT

LAKE CONWAY
DEPOSITIONAL LAYER ASSESSMENT:
CORE PROFILES WITHOUT SURFACE
BROWN LAYER



FIGURE
7-4.2



LEGEND Map date: 10/10/2013

- ▲ Surface Water Sample Location
- WS-001 VOC Above Ecological Screening Value (ESV)
- (4/2/2013) Most Recent Date Above ESV

- ✖ Source Point
- Parcel Boundary
- Stream/River: Intermittent
- Stream/River: Perennial
- Approximate Surface Water Flow Direction

VOC Volatile Organic Compounds
 *Evaluation based on the data collected between March 29 and September 6, 2013. No VOC exceedances above ESV at any sample location since April 13, 2013.



MAYFLOWER PIPELINE INCIDENT RESPONSE EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY DOWNSTREAM AREAS DATA ASSESSMENT REPORT

DAILY SURFACE WATER SAMPLE LOCATIONS WITH VOC CONCENTRATION ABOVE ESV



FIGURE
 8-1

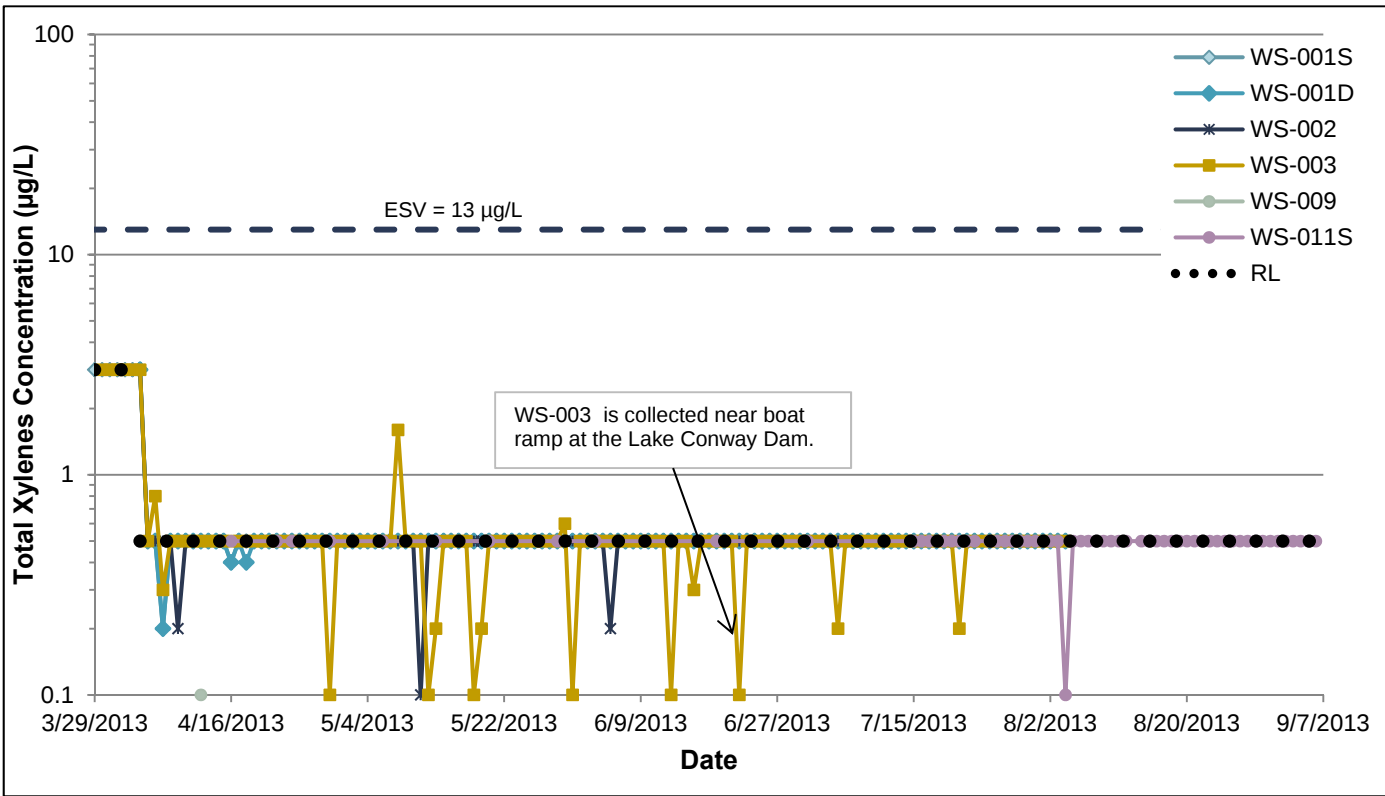
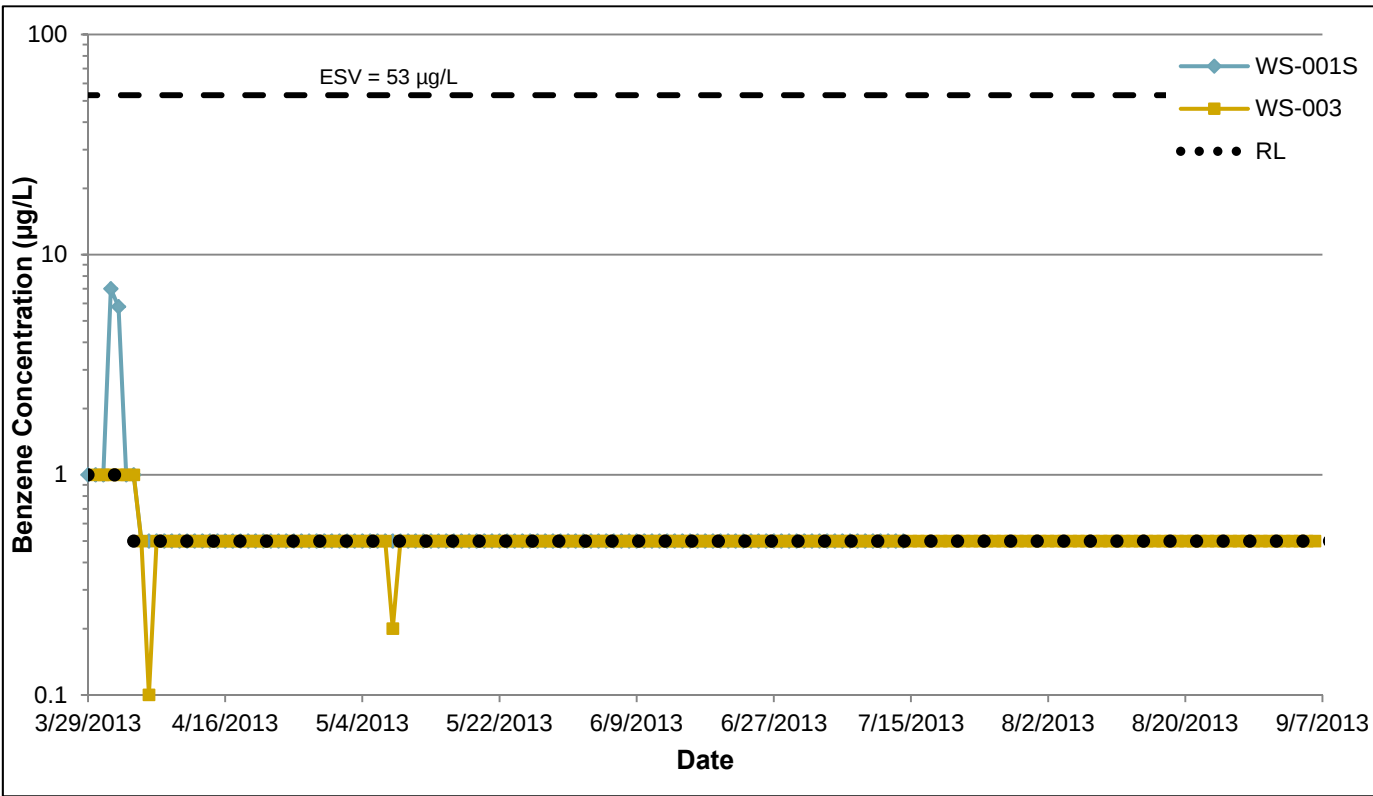
VOCs Detected < 1% of Samples				
Analyte <i>shading = not detected in crude oil</i>	Total Samples	Total Detections	Detection Frequency (%)	Last Date Detected
1,1-Dichloroethene	1262	6	0.5%	09/03/13
1,2,4-Trimethylbenzene	1262	8	0.6%	08/29/13
1,3,5-Trimethylbenzene	1262	4	0.3%	05/30/13
2-Butanone	1262	1	0.1%	07/08/13
Benzene	1262	4	0.3%	05/08/13
Diethyl Ether	1240	1	0.1%	05/08/13
Ethylbenzene	1262	4	0.3%	08/29/13
Methylene Chloride (Dichloromethane)	1262	2	0.2%	08/20/13
n-Propylbenzene	1262	1	0.1%	05/08/13
Tetrahydrofuran	1240	3	0.2%	06/19/13
Trichloroethene	1262	4	0.3%	08/15/13

VOCs Detected ≥ 1% of Samples					
Analyte <i>shading = not detected in crude oil</i>	Total Samples	Total Detections	Detection Frequency (%)	Detected Concentration Range (µg/L)	Ecological Screening Value (ESV) (µg/L)
Acetone	1262	84	7%	3.0 - 14.0	1500
p-Isopropyltoluene (Cymene)	1262	31	2%	0.1 - 22.0	85
Toluene	1262	104	8%	0.1 - 15.0	175
Total Xylenes	1262	31	2%	0.1 - 1.6	13

D = deep sample
µg/L = micrograms per liter
RL = reporting limit
S = shallow sample
USEPA = U.S. Environmental Protection Agency
VOC = volatile organic compound

No detected VOC concentrations above ESV at any location within Lake Conway.

The graphs below show benzene and total xylenes concentrations with time for the locations that had at least one detection.



1. Evaluation based on the following locations in Lake Conway: WS-001S, WS-001D, WS-002, WS-003, WS-006S, WS-006D, WS-009, WS-010S, WS-010D, WS-011S, WS-011D, WS-012S, WS-012D, WS-018S, WS-018D, and WS-021.
2. No benzene detections above RLs at locations WS-001D, WS-002, WS-006S, WS-006D, WS-009, WS-010S, WS-010D, WS-011S, WS-011D, WS-012S, WS-012D, WS-018S, WS-018D, and WS-021. The reporting limit was 1.0 µg/L from March 29 to April 4, 2013 and has been 0.5 µg/L since April 5, 2013.
3. No total xylene detections above RLs at locations WS-006S, WS-006D, WS-010S, WS-010D, WS-011D, WS-012S, WS-012D, WS-018S, WS-018D, and WS-021. The reporting limit was 3.0 µg/L from March 29 to April 4, 2013 and has been 0.5 µg/L since April 5, 2013.
4. Naphthalene was not detected when analyzed with VOCs (USEPA 8260) and therefore was not reported in this figure; naphthalene was analyzed with the polycyclic aromatic hydrocarbons (USEPA 8270 selective ion monitoring) and is reported with Figures 8-4 through 8-8.
5. Sampling at WS-001S and WS-006S was discontinued on July 14, 2013.

MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT

EVALUATION OF VOCs IN LAKE CONWAY
SURFACE WATER (MARCH 29 - SEPTEMBER 6, 2013)



FIGURE
8-2

VOCs Detected < 1% of Samples				
Analyte <i>shading = not detected in crude oil</i>	Total Samples	Total Detections	Detection Frequency (%)	Last Date Detected
1,2,3-Trichlorobenzene	468	2	0.4%	6/14/2013
Chloromethane	468	1	0.2%	6/19/2013
Tetrahydrofuran	459	1	0.2%	6/19/2013

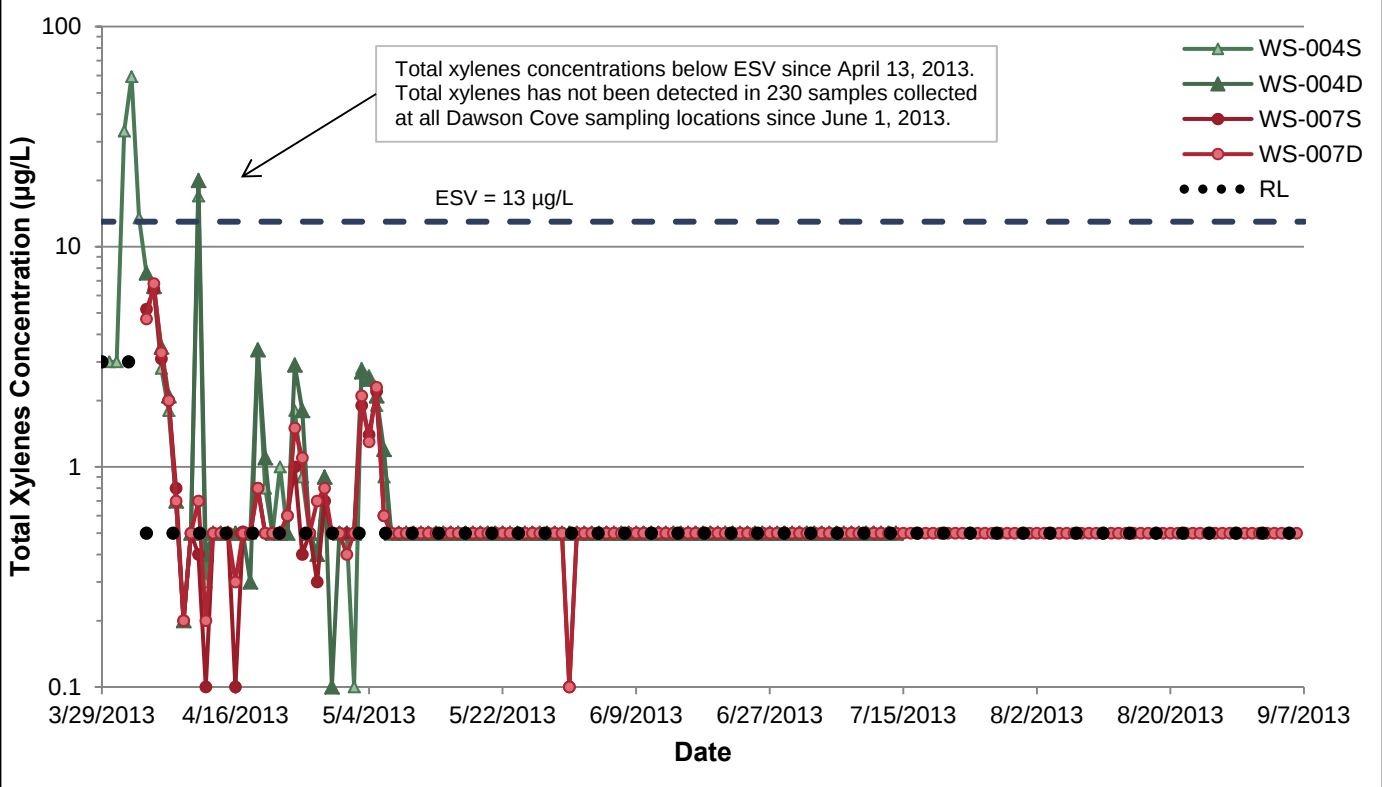
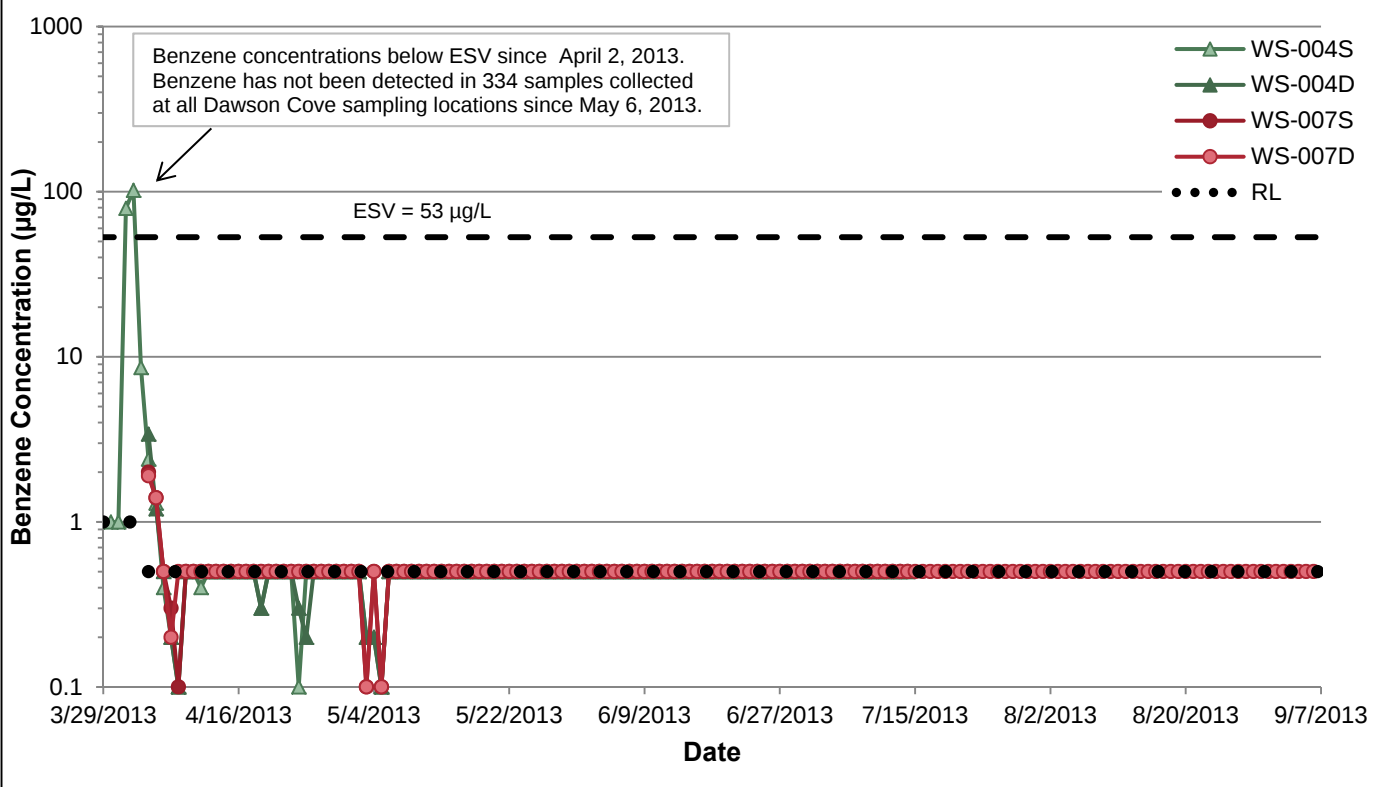
Benzene and Total Xylenes are the only VOCs that have been detected at concentrations above the screening level.

o **Benzene** has only been detected above the ESV in 2 of the 468 samples analyzed through September 6, 2013 [see graph below]. Benzene has not been detected in any Dawson Cove samples since May 5, 2013.

o **Total Xylenes** has been detected above the ESV in 5 of the 468 samples analyzed through September 6, 2013 [see graph below]. Total xylenes has not been detected in any Dawson Cove samples since May 31, 2013.

The graphs below show benzene and total xylenes concentrations with time for the locations that had at least one detection.

VOCs Detected ≥ 1% of Samples					
Analyte <i>shading = not detected in crude oil</i>	Total Samples	Total Detections	Detection Frequency (%)	Detected Concentration Range (µg/L)	Ecological Screening Value (ESV) (µg/L)
1,2,4-Trimethylbenzene	468	40	9%	0.1 - 5.9	33
1,3,5-Trimethylbenzene	468	78	17%	0.1 - 4.2	71
2-Butanone (MEK)	468	41	9%	1.0 - 6.1	14000
Acetone	468	340	73%	3.0 - 24	1500
Benzene	468	39	8%	0.1 - 102	53
Ethylbenzene	468	18	4%	0.1 - 6.0	453
Isopropylbenzene (Cumene)	468	12	3%	0.1 - 1.1	2.6
n-Propylbenzene	468	9	2%	0.1 - 0.3	128
p-Isopropyltoluene (Cymene)	468	23	5%	0.1 - 0.2	85
Toluene	468	314	67%	0.1 - 77.7	175
Xylene (Total)	468	84	18%	0.1 - 59.2	13



Notes:

D = deep sample

µg/L = micrograms per liter

1. Evaluation based on the following locations in Dawson Cove: WS-004S, WS-004D, WS-007S, WS-007D, and WS-020.

2. No benzene detections above RLs at location WS-020. The reporting limit was 1.0 µg/L from March 29 to April 4, 2013 and has been 0.5 µg/L since April 5, 2013.

3. No total xylene detections above RLs at location WS-020. The reporting limit was 3.0 µg/L from March 29 to April 4, 2013 and has been 0.5 µg/L since April 5, 2013.

4. Naphthalene was not detected when analyzed with VOCs (USEPA 8260) and therefore was not reported in this figure; naphthalene was analyzed with the polycyclic aromatic hydrocarbons (USEPA 8270 selective ion monitoring) and is reported with Figures 8-4 through 8-8.

5. Sampling at WS-004S, WS-004D, and WS-007S was discontinued on July 15, 2013.

RL = reporting limit

S = shallow sample

USEPA = U.S. Environmental Protection Agency

VOC = volatile organic compound

MAYFLOWER PIPELINE INCIDENT RESPONSE

EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY

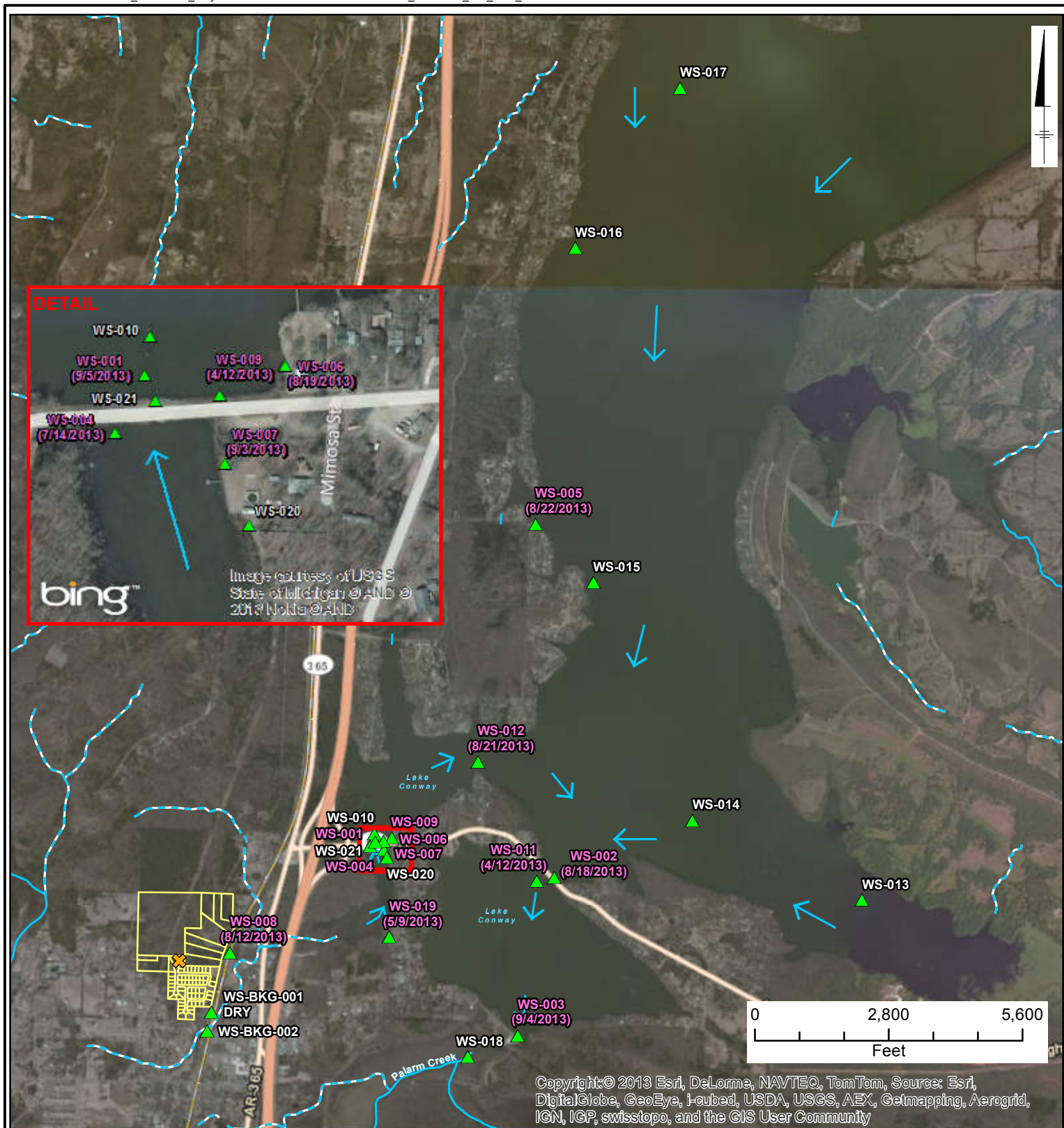
DOWNSTREAM AREAS DATA ASSESSMENT REPORT

**EVALUATION OF VOCs IN DAWSON COVE
SURFACE WATER (MARCH 29 - SEPTEMBER 6, 2013)**



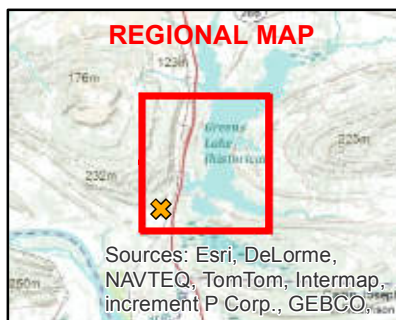
FIGURE

8-3



LEGEND Map date: 10/10/2013

- ▲ Surface Water Sample Location
- WS-001** PAH Above Environmental Screening Value (ESV)
- (8/4/2013)** Most Recent Date Above ESV
- ✕ Source Point
- Parcel Boundary
- Stream/River: Intermittent
- Stream/River: Perennial
- Approximate Surface Water Flow Direction
- PAH Polycyclic aromatic hydrocarbon
- *Evaluation based on the data collected between March 29 and September 6, 2013.

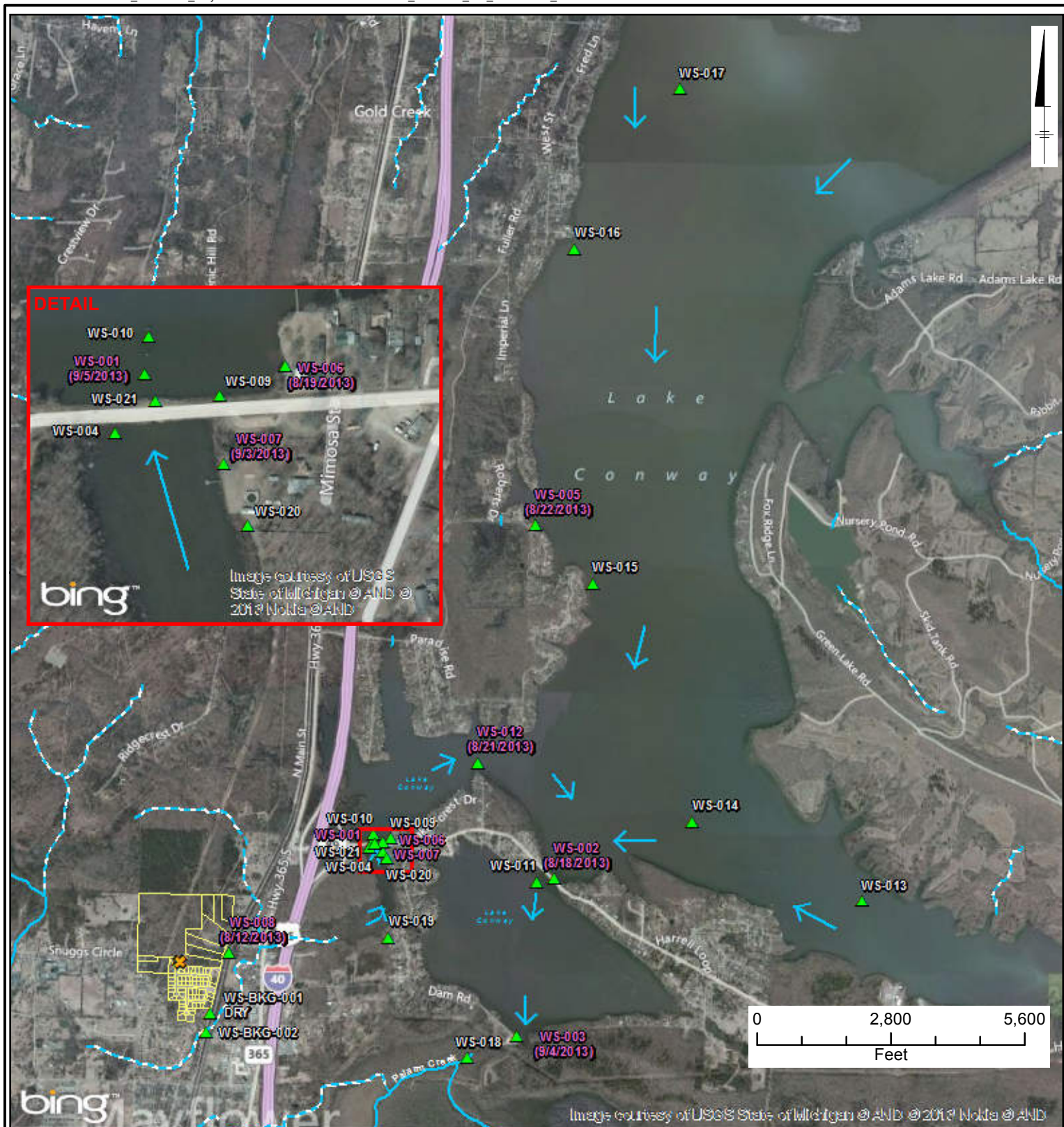


**MAYFLOWER PIPELINE INCIDENT RESPONSE
 EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
 DOWNSTREAM AREAS DATA ASSESSMENT REPORT**

**DAILY SURFACE WATER SAMPLE
 LOCATIONS WITH PAH CONCENTRATION
 ABOVE ESV (ALL DATA)**

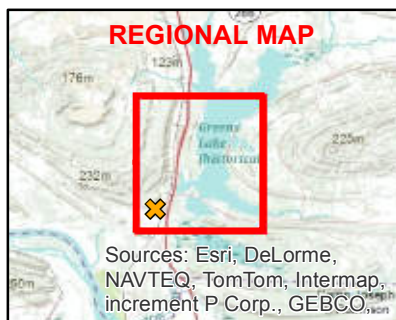


**FIGURE
 8-4**



LEGEND Map date: 10/10/2013
 ▲ Surface Water Sample Location
 WS-001 PAH Above Ecological Screening Value (ESV)
 (9/5/2013) Most Recent Date Above ESV

✕ Source Point
 — Parcel Boundary
 --- Stream/River: Intermittent
 --- Stream/River: Perennial
 → Approximate Surface Water Flow Direction
 PAH Polycyclic aromatic hydrocarbon
 *Evaluation based on the data collected between August 5 and September 6, 2013.



**MAYFLOWER PIPELINE INCIDENT RESPONSE
 EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
 DOWNSTREAM AREAS DATA ASSESSMENT REPORT**

**DAILY SURFACE WATER SAMPLE
 LOCATIONS WITH PAH CONCENTRATION
 ABOVE ESV (AUGUST 5 - SEPTEMBER 6, 2013)**



**FIGURE
 8-5**

PAHs with No Detections Above ESV							
Analyte	All Sampling Results (3/30/2012 - 9/6/2013)			ESV (µg/L)	All Sampling Results (3/30/2012 - 9/6/2013)		
	Total Samples	Total Detections	Detection Frequency (%)		Maximum (µg/L)	Maximum Location	Maximum Date
1-Methylnaphthalene	265	0	0%	2.1	--	--	--
2-Methylnaphthalene	265	1	0.4%	4.7	0.012	WS-014S	7/21/2013
Acenaphthene	271	1	0.4%	17	0.16	WS-005	7/4/2013
Acenaphthylene	271	0	0%	4840	--	--	--
Anthracene	271	0	0%	0.012	--	--	--
Benzo(a)Anthracene	271	0	0%	0.018	--	--	--
Benzo(b)Fluoranthene	271	5	2%	9.07	0.013	WS-014D	8/16/2013
Benzo(g,h,i)Perylene	271	3	1%	7.64	0.074	WS-014S	8/28/2013
Benzo(k)Fluoranthene	271	1	0.4%	--	0.014	WS-014D	8/16/2013
Chrysene	271	2	0.7%	--	0.022	WS-005	5/17/2013
Dibenz(a,h)Anthracene	271	1	0.4%	--	0.053	WS-014S	8/28/2013
Fluoranthene	271	4	1%	39.8	0.060	WS-005	5/17/2013
Fluorene	271	0	0%	3	--	--	--
Indeno[1,2,3-cd]Pyrene	271	3	1%	4.31	0.058	WS-014S	8/28/2013
Naphthalene	271	30	11%	62	0.17	WS-005	7/11/2013
Phenanthrene	271	0	0%	0.4	--	--	--

Notes:
-- = no criteria available or not applicable
D = deep sample
ESV = Ecological screening value
µg/L = micrograms per liter
PAH = polycyclic aromatic hydrocarbon
RL = reporting limit
S = shallow sample
RCRA = Resource Conservation and Recovery Act
USEPA = U.S. Environmental Protection Agency

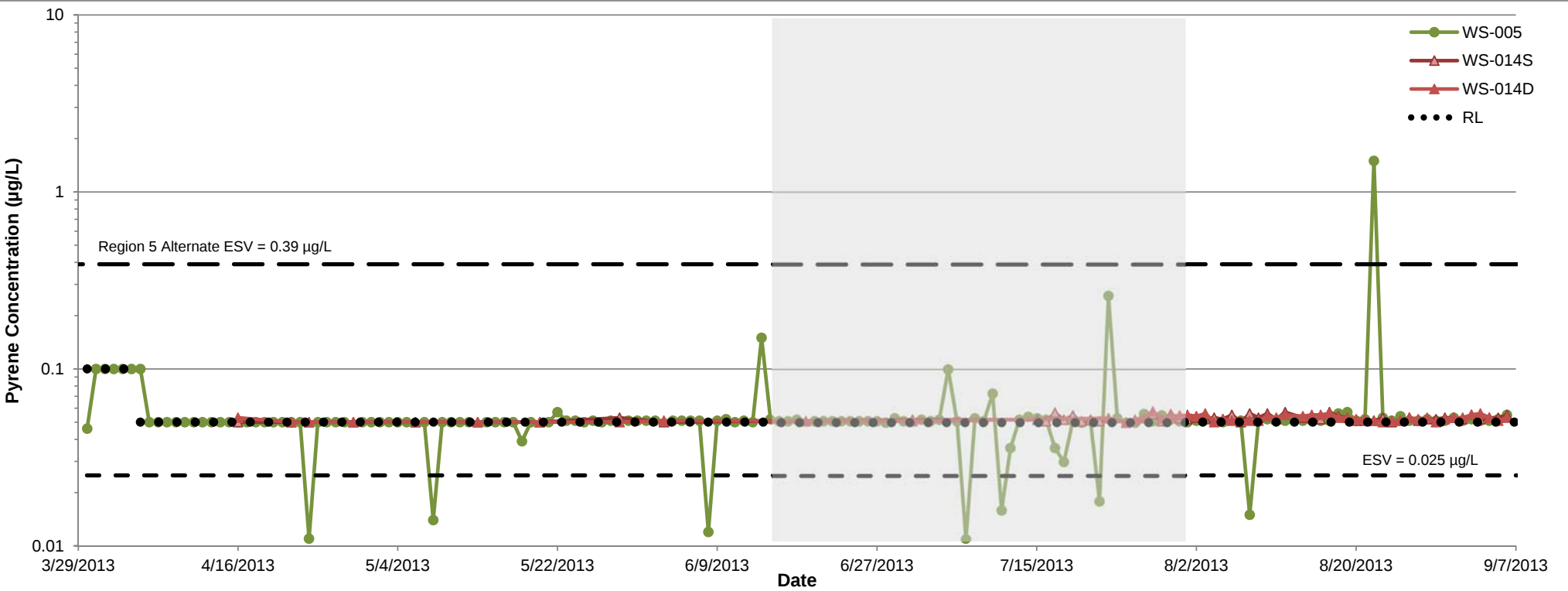
1. Evaluation based on the following background locations in Lake Conway: WS-005, WS-014S, and WS-14D.

PAHs with No Recent Detections Above ESV											
Analyte	All Sampling Results (3/30/2012 - 9/6/2013)					ESV (µg/L)	Recent Sampling Results (8/5/2013 - 9/6/2013)				
	Total Samples	Total Detections	Detection Frequency (%)	Range	Above ESV		Recent Samples	Recent Detections	Maximum (µg/L)	Maximum Location	Maximum Date
Benzo(a)Pyrene	271	2	0.7%	0.014-0.019	1	0.015	97	1	0.014	WS-014D	8/16/2013

o **Benzo(a)Pyrene:** There was one detected concentration above the ESV at WS-005 on May 7, 2013. Benzo(a)pyrene has not been detected at concentrations above ESVs since May 7, 2013 in any background samples.

PAHs with Recent Detections Above ESV												
Analyte	All Sampling Results (3/30/2012 - 9/6/2013)					ESV (µg/L)	Recent Sampling Results (8/5/2013 - 9/6/2013)					
	Total Samples	Total Detections	Detection Frequency (%)	Range	Above ESV		Recent Samples	Recent Detections	Recent Above ESV	Maximum (µg/L)	Maximum Location	Maximum Date
Pyrene	271	17	6%	0.011-1.5	10	0.025	97	2	1	1.5	WS-005	8/22/2013

o **Pyrene:** There were ten detected concentrations above the ESV as shown in the pyrene concentration with time graph for background samples. The ESV of 0.025 µg/L is from Region 3 and is based on a value identified in 1999 by the Canadian Council of Ministers of the Environment (CCME). There was only one detected concentration of pyrene above the alternate ESV of 0.39 µg/L established by USEPA Region 5 as a RCRA Interim Criterion (USEPA 2003).



= Approximate timeframe with no flow through Dawson Cove culverts to Lake Conway

MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT

EVALUATION OF PAHs IN BACKGROUND
SURFACE WATER (MARCH 30 - SEPTEMBER 6, 2013)



FIGURE
8-6

PAHs with No Detections Above ESV							
Analyte	All Sampling Results (3/29/2012 - 9/6/2013)			ESV (µg/L)	All Sampling Results (3/29/2012 - 9/6/2013)		
	Total Samples	Total Detections	Detection Frequency (%)		Maximum (µg/L)	Maximum Location	Maximum Date
1-Methylnaphthalene	1238	13	1.1%	2.1	0.069	WS-003	5/8/2013
2-Methylnaphthalene	1238	21	1.7%	4.7	0.13	WS-003	5/8/2013
Acenaphthene	1260	4	0.3%	17	0.083	WS-002	7/4/2013
Acenaphthylene	1260	5	0.4%	4840	0.038	WS-006D	8/3/2013
Benzo(b)Fluoranthene	1260	56	4.4%	9.07	0.91	WS-006S	7/8/2013
Benzo(g,h,i)Perylene	1260	18	1.4%	7.64	0.27	WS-006S	7/8/2013
Benzo(k)Fluoranthene	1260	21	1.7%	--	0.48	WS-006S	7/8/2013
Chrysene	1260	52	4.1%	--	0.60	WS-006S	7/8/2013
Dibenz(a,h)Anthracene	1260	6	0.5%	--	0.23	WS-006S	7/8/2013
Fluoranthene	1260	65	5.2%	39.8	0.64	WS-006S	7/8/2013
Fluorene	1260	4	0.3%	3	0.22	WS-006S	7/8/2013
Indeno[1,2,3-cd]Pyrene	1260	21	1.7%	4.31	0.33	WS-006S	7/8/2013
Naphthalene	1260	238	19%	62	0.56	WS-003	7/17/2013
Phenanthrene	1260	4	0.3%	0.4	0.071	WS-001D	9/5/2013

Notes:

-- = no criteria available

D = deep sample

ESV = Ecological screening value

µg/L = micrograms per liter

PAH = polycyclic aromatic hydrocarbon

RL = reporting limit

S = shallow sample

RCRA = Resource Conservation and Recovery Act

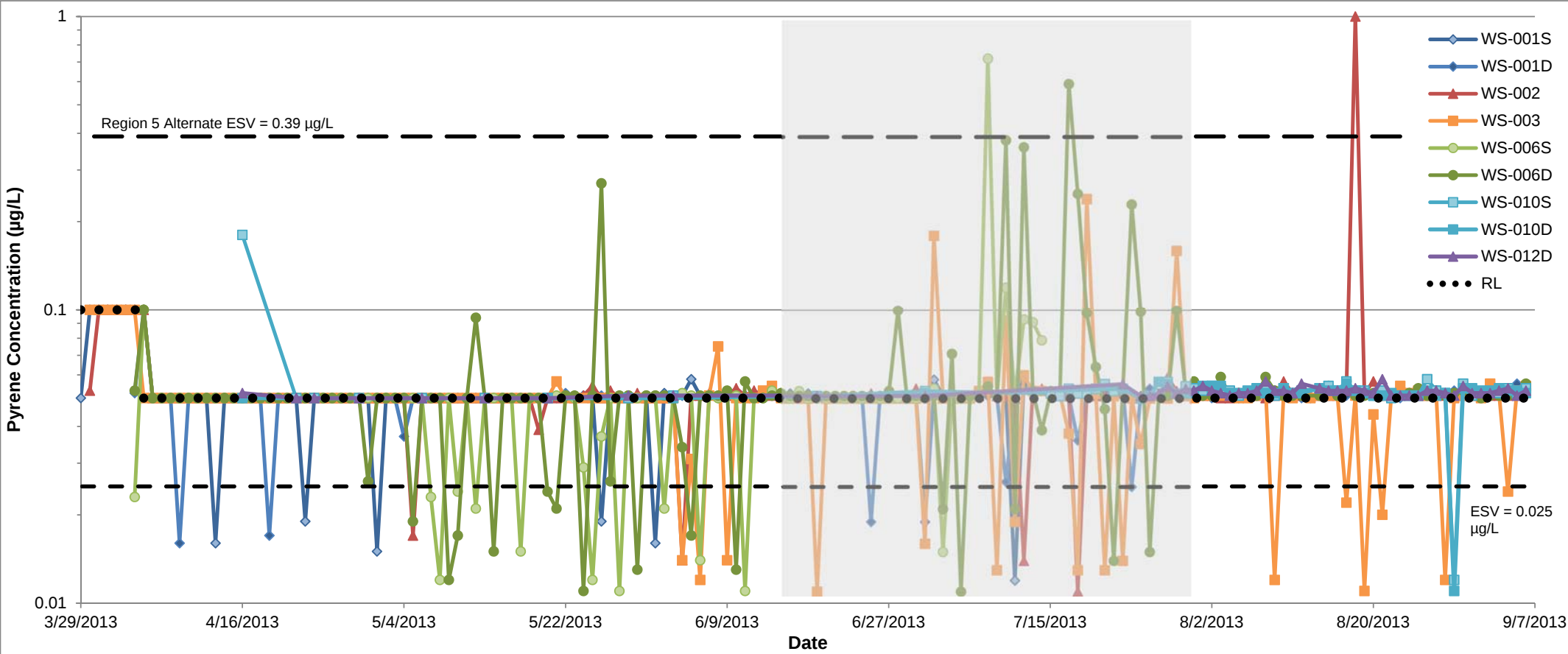
USEPA = U.S. Environmental Protection Agency

1. Evaluation based on the following locations in Lake Conway: WS-001S, WS-001D, WS-002, WS-003, WS-006S, WS-006D, WS-009, WS-010S, WS-010D, WS-011S, WS-011D, WS-012S, WS-012D, WS-018, and WS-021.

2. No pyrene detections in recent samples collected from WS-011S, WS-011D, WS-012S, and WS-018.

3. Sampling at WS-001S and WS-006S was discontinued on July 14, 2013.

PAHs with Recent Detections Above ESV												
Analyte	All Sampling Results (3/29/2012 - 9/6/2013)					ESV (µg/L)	Recent Sampling Results (8/5/2013 - 9/6/2013)					
	Total Samples	Total Detections	Detection Frequency (%)	Range of Detections	Above ESV		Recent Samples	Recent Detections	Recent Above ESV	Maximum (µg/L)	Maximum Location	Maximum Date
Anthracene	1260	6	0.5%	0.014-0.23	6	0.012	356	1	1	0.014	WS-001D	9/5/2013
Benzo(a)Anthracene	1260	23	1.8%	0.011-0.51	9	0.018	356	5	3	0.034	WS-012D	8/21/2013
Benzo(a)Pyrene	1260	16	1.3%	0.011-0.51	11	0.015	356	5	4	0.030	WS-012D	8/21/2013
Pyrene	1260	106	8.4%	0.011-1.0	46	0.025	356	12	4	1.0	WS-002	8/18/2013



Anthracene, Benzo(a)Anthracene, Benzo(a)Pyrene and Pyrene had detected concentrations above the ESV in recent samples.

o **Anthracene:** There was one detected concentration above the ESV at WS-001D on September 5, 2013.

o **Benzo(a)Anthracene:** There were three detected concentrations above ESV at WS-003 on August 20 and September 4, 2013 and at WS-012D on August 21, 2013. Locations WS-003 and WS-012D are not located adjacent to the Dawson Cove outlet.

o **Benzo(a)Pyrene:** There were four detected concentrations above the ESV at WS-003 on August 17, 20, and September 4, 2013 and at WS-012D on August 21, 2013. The maximum detected benzo(a)pyrene concentration in a background sample is 0.019 µg/L. Locations WS-003 and WS-012D are not located adjacent to the Dawson Cove outlet.

o **Pyrene:** There were 46 detected concentrations above the ESV as shown in the pyrene concentration with time graph for locations with recent detected pyrene concentrations above ESV. The maximum detected pyrene concentration of 1.0 µg/L in Lake Conway samples is less than the maximum of 1.5 µg/L detected pyrene concentration in a background sample. The ESV of 0.025 µg/L is from Region 3 and is based on a value identified in 1999 by the Canadian Council of Ministers of the Environment (CCME). There were only three detected concentrations of pyrene above the alternate ESV of 0.39 µg/L established by USEPA Region 5 as a RCRA Interim Criterion (USEPA 2003). Locations WS-002, WS-003, WS-010, and WS-012 are not located adjacent to the Dawson Cove outlet.

= Approximate timeframe with no flow through Dawson Cove culverts to Lake Conway

MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT

EVALUATION OF PAHs IN LAKE CONWAY
SURFACE WATER (MARCH 29 - SEPTEMBER 6, 2013)



FIGURE

8-7

PAHs with No Detections Above ESV							
Analyte	All Sampling Results (3/29/2012 - 9/6/2013)			ESV (µg/L)	All Sampling Results (3/29/2012 - 9/6/2013)		
	Total Samples	Total Detections	Detection Frequency (%)		Maximum (µg/L)	Maximum Location	Maximum Date
1-Methylnaphthalene	457	243	53%	2.1	0.50	WS-007D	4/5/2013
2-Methylnaphthalene	457	233	51%	4.7	0.47	WS-004S	5/5/2013
Acenaphthene	466	122	26%	17	0.76	WS-007D	7/20/2013
Acenaphthylene	466	113	24%	4840	2.7	WS-007D	7/20/2013
Benzo(g,h,i)Perylene	466	205	44%	7.64	6.1	WS-007D	6/26/2013
Benzo(k)Fluoranthene	466	206	44%	--	9.6	WS-007D	6/26/2013
Chrysene	466	293	63%	--	33	WS-007D	6/26/2013
Dibenz(a,h)Anthracene	466	98	21%	--	1.9	WS-007D	7/20/2013
Fluorene	466	175	38%	3	1.0	WS-007D	7/22/2013
Naphthalene	466	150	32%	62	0.93	WS-004S	4/2/2013

Notes:

-- = no criteria available
D = deep sample
ESV = Ecological screening value
µg/L = micrograms per liter
PAH = polycyclic aromatic hydrocarbon
RL = reporting limit
S = shallow sample
RCRA = Resource Conservation and Recovery Act
USEPA = U.S. Environmental Protection Agency

1. Evaluation based on the following locations in Dawson Cove: WS-004S, WS-004D, WS-007S, WS-007D, and WS-020.
2. Sampling at WS-004S, WS-004D, and WS-007S discontinued on July 14, 2013.

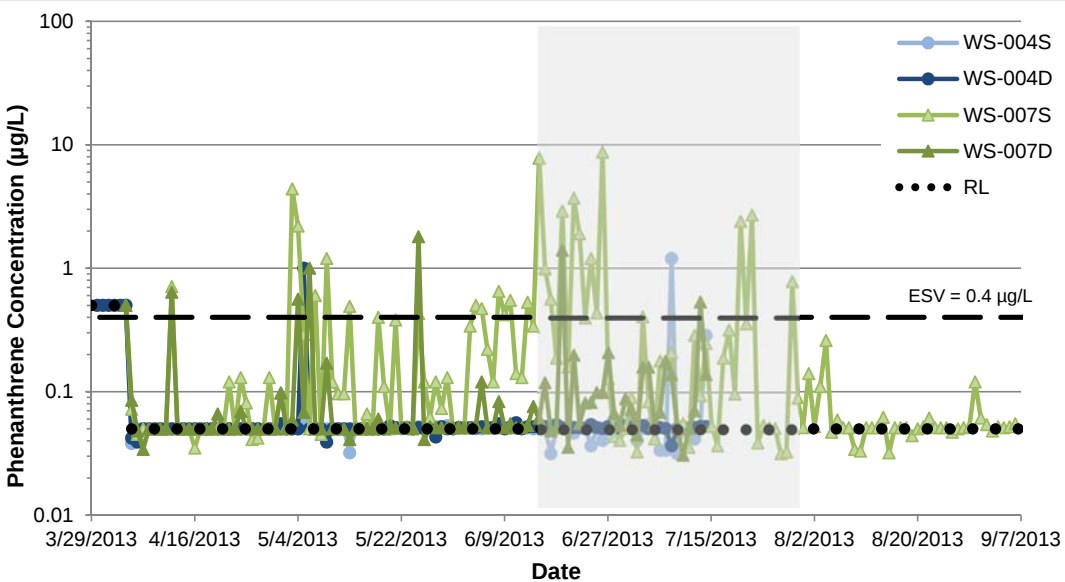
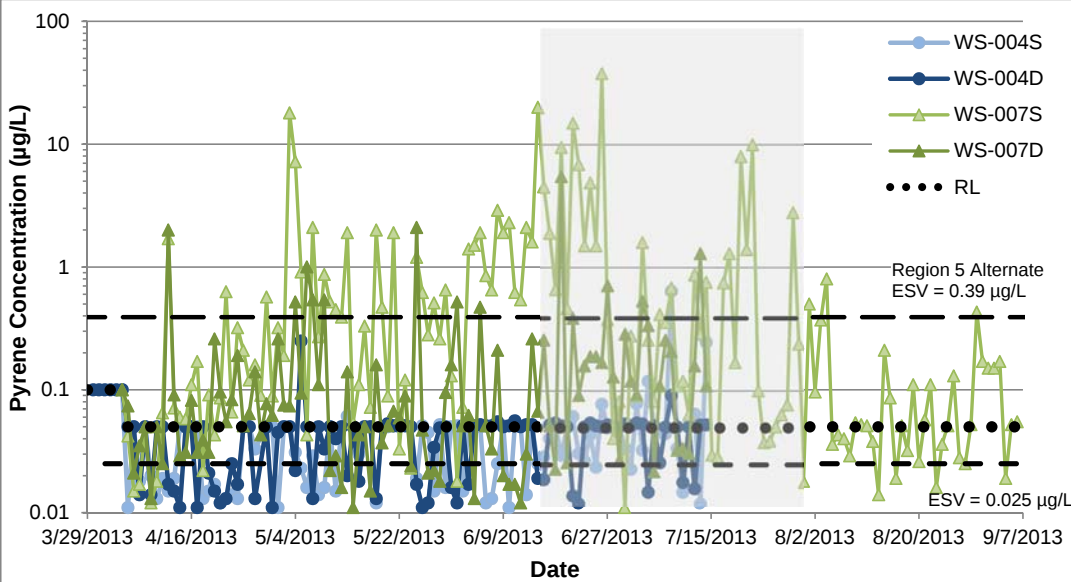
PAHs with Detections Above ESV in the Past, but Not In Recent Samples (8/5/2013 - 9/6/2013)											
Analyte	All Sampling Results (3/29/2013 - 9/6/2013)					ESV (µg/L)	Recent Sampling Results (8/5/2013 - 9/6/2013)				
	Total Samples	Total Detections	Detection Frequency (%)	Range of Detections	Above ESV		Recent Samples	Recent Detections	Maximum (µg/L)	Maximum Location	Maximum Date
Benzo(b)Fluoranthene	466	283	61%	0.011 - 31	6	9.07	33	25	0.37	WS-007D	8/30/2013
Fluoranthene	466	305	65%	0.011 - 47	1	39.8	33	29	0.47	WS-007D	8/30/2013
Indeno[1,2,3-cd]Pyrene	466	196	42%	0.011 - 6.7	3	4.31	33	17	0.18	WS-007D	8/30/2013
Phenanthrene	466	170	36%	0.031 - 8.7	34	0.4	33	12	0.12	WS-007D	8/30/2013

Benzo(b)fluoranthene, fluoranthene, indeno(1,2,3-cd)pyrene, and phenanthrene were detected above their respective ESVs in past samples but have not been detected at concentrations above ESVs in recent samples collected from August 5 through September 6, 2013.

PAHs with Recent Detections Above ESV												
Analyte	All Sampling Results (3/29/2013 - 9/6/2013)					ESV (µg/L)	Recent Sampling Results (8/5/2013 - 9/6/2013)					
	Total Samples	Total Detections	Detection Frequency (%)	Range of Detections	Above ESV		Recent Samples	Recent Detections	Recent Above ESV	Maximum (µg/L)	Maximum Location	Maximum Date
Anthracene	466	187	40%	0.011 - 3.4	174	0.012	33	18	18	0.085	WS-007D	8/30/2013
Benzo(a)Anthracene	466	221	47%	0.011 - 10	160	0.018	33	18	11	0.14	WS-007D	8/30/2013
Benzo(a)Pyrene	466	197	42%	0.011 - 9.0	165	0.015	33	16	11	0.13	WS-007D	8/30/2013
Pyrene	466	342	73%	0.011 - 38	242	0.025	33	27	22	0.43	WS-007D	8/30/2013

Anthracene, benzo(a)anthracene, benzo(a)pyrene, and pyrene are the only PAHs that were detected above their respective ESVs in recent samples collected from August 5 through September 6, 2013.

o **Pyrene:** There were 22 detected concentrations above the ESV of 0.025 µg/L. The ESV of 0.025 µg/L is from Region 3 and is based on a value identified in 1999 by the Canadian Council of Ministers of the Environment (CCME). Since August 5, 2013, there was only one detected concentration of pyrene above the alternate ESV of 0.39 µg/L established by USEPA Region 5 as a RCRA Interim Criterion (USEPA 2003). The recent maximum detected pyrene concentration of 0.43 µg/L is less than the recent maximum detected pyrene concentration of 1.5 µg/L in background surface water.



Pyrene and phenanthrene shown for illustration purposes. Similar trends observed for anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, fluoranthene, and indeno(1,2,3-cd)pyrene.
= Approximate timeframe with no flow through Dawson Cove culverts to Lake Conway

MAYFLOWER PIPELINE INCIDENT RESPONSE
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DOWNSTREAM AREAS DATA ASSESSMENT REPORT

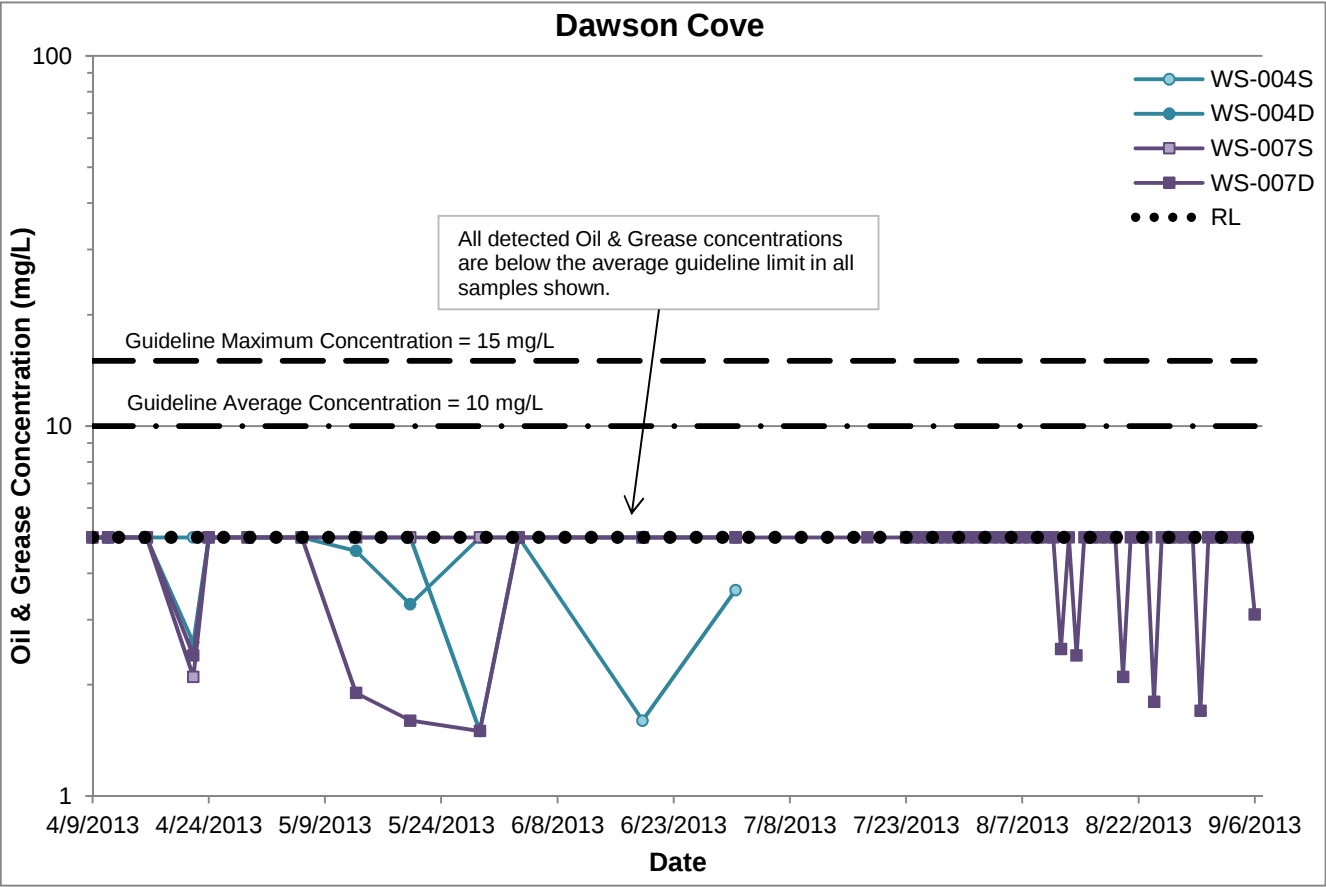
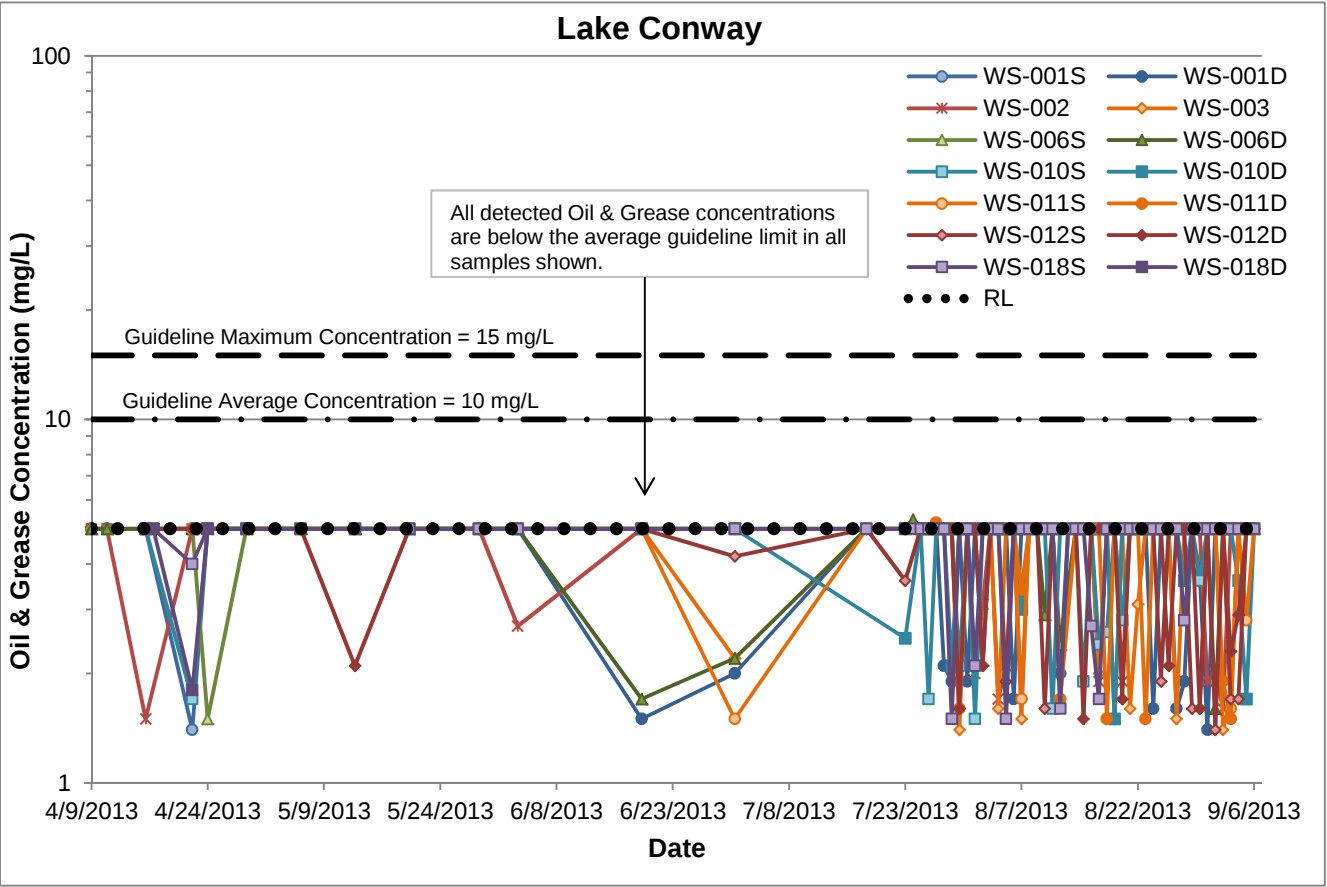
EVALUATION OF PAHs IN DAWSON COVE
SURFACE WATER (MARCH 29 - SEPTEMBER 6, 2013)



FIGURE
8-8

Summary of Oil & Grease Data							
Analyte	All Sampling Results (4/9/2013 - 9/6/2013)						
	Total Samples	Total Detections	Detection Frequency (%)	Detection Range (mg/L)	Maximum Detected Concentration (mg/L)	Maximum Location	Maximum Date
Oil & Grease	982	169	17%	1.4 - 10.1	10.1	WS-008	5/29/2013

There has been only one Oil & Grease concentration above the Guideline Average Concentration of 10 mg/L at WS-008 (10.1 mg/L) on May 29, 2013 (location in the drainage way along Main St, not graphed below). There have been no recent detected concentrations above the Guideline Average or Maximum Concentrations.



Notes:

D = deep sample
mg/L = milligrams per liter

RL = reporting limit
S = shallow sample

1. Graphs show Oil & Grease concentrations with time for locations that had more than one detection of Oil & Grease.
2. Dawson Cove evaluation based on the locations WS-004S, WS-004D, WS-007S, WS-007D, and WS-020. Samples from WS-020 were not analyzed for Oil & Grease.
3. Lake Conway evaluation based on the locations WS-001S, WS-001D, WS-002, WS-003, WS-006S, WS-006D, WS-009, WS-010S, WS-010D, WS-011S, WS-011D, WS-012S, WS-012D, WS-018, and WS-021. Samples from WS-009 and WS-021 were not analyzed for Oil & Grease.
4. No Oil & Grease detections above the RL of 5 mg/L at locations WS-BKG-001 and WS-BKG-002.
5. Evaluation based on data for surface water samples collected from April 9 through September 6, 2013.
6. Average and Maximum Guideline Concentrations are based on Arkansas Pollution Control and Ecology Commission Regulation No. 2.
7. Sampling at WS-001S, WS-004S, WS-004D, WS-006S, and WS-007S was discontinued on July 14, 2013. There was no flow in WS-008 between June 19 and August 11, 2013, and therefore, the location was not sampled.

MAYFLOWER PIPELINE INCIDENT RESPONSE
EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY
DOWNSTREAM AREAS DATA ASSESSMENT REPORT

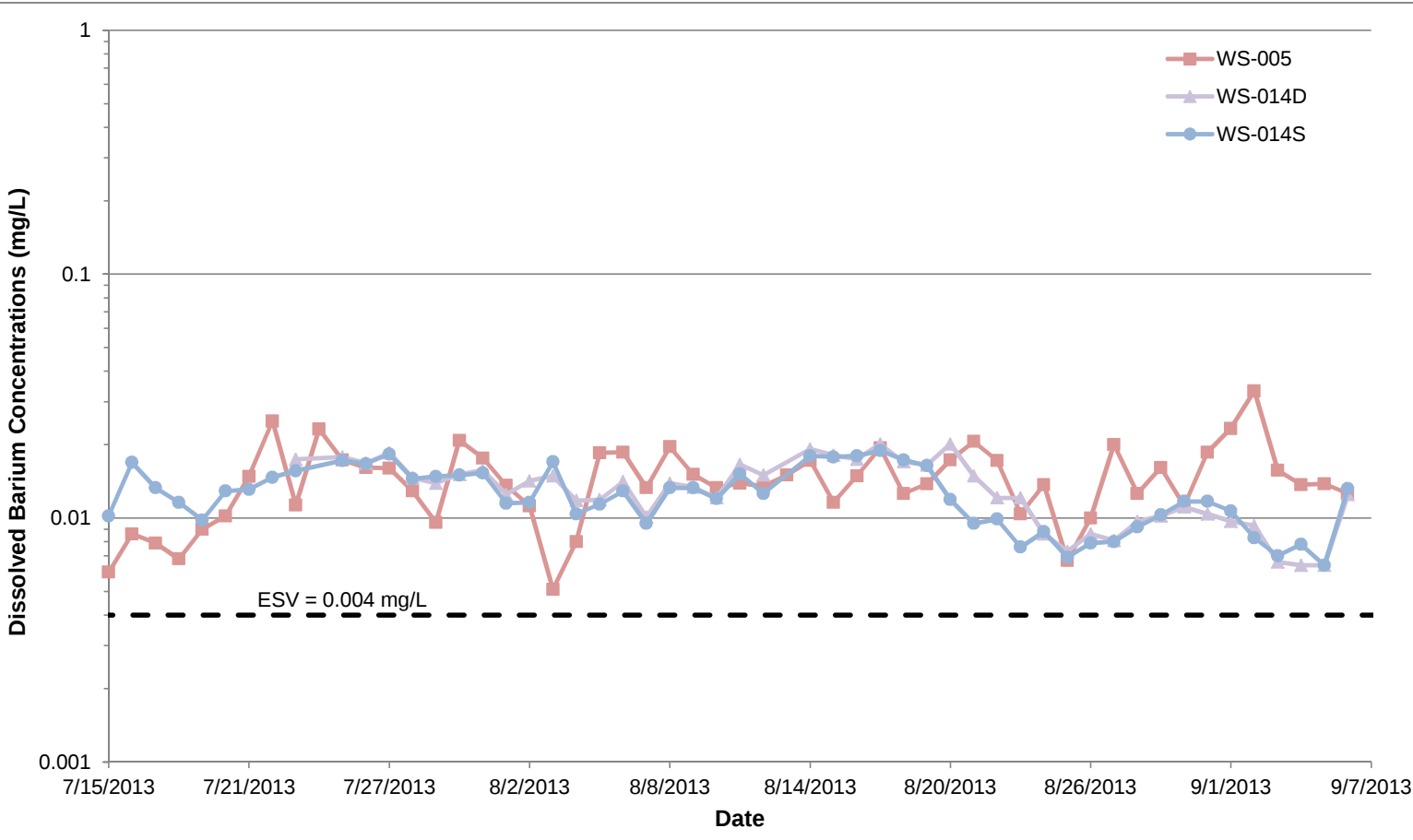
EVALUATION OF OIL & GREASE IN
SURFACE WATER (APRIL 9 - SEPTEMBER 6, 2013)



FIGURE
8-9

Metals with No Dissolved Concentrations Detected Above ESV														
Analyte <i>shading = not detected in crude oil</i>	ESV (mg/L)	All Dissolved Metals Sampling Results (7/15/2013-9/6/2013)					Total Metals Sampling Results (7/15/2013-9/6/2013)							
		Dissolved Samples	Dissolved Detections	Detection Frequency (%)	Range (mg/L)	Average (mg/L)	Total Samples	Total Detections	Detection Frequency (%)	Minimum Detected (mg/L)	Average (mg/L)	Maximum (mg/L)	Maximum Location	Maximum Date
Arsenic	0.15	150	4	3%	0.0071-0.0078	0.0074	150	24	16%	0.0069	0.0083	0.011	WS-005	8/28/2013
Cadmium	0.00037	150	0	0%	--	--	150	0	0%	--	--	--	--	--
Calcium	116	--	--	--	--	--	150	150	100%	5.55	6.30	9.5	WS-005	8/29/2013
Chromium	0.0572	150	1	1%	--	0.0038	150	16	11%	0.0016	0.0038	0.017	WS-014S	7/26/2013
Lead	0.00054	150	0	0%	--	--	150	0	0%	--	-	-	-	-
Magnesium	82	--	--	--	--	--	150	98	65%	2.45	2.79	3.21	WS-005	9/4/2013
Mercury	0.00077	150	1	1%	--	0.00077	150	3	2%	0.000067	0.00041	0.0011	WS-005	7/18/2013
Nickel	0.049	150	8	5%	0.0015-0.0019	0.0017	150	42	28%	0.0015	0.0023	0.011	WS-014S	7/20/2013
Selenium	0.005	150	0	0%	--	--	150	0	0%	--	--	--	--	--
Silver	0.0003	150	0	0%	--	--	150	0	0%	--	--	--	--	--
Vanadium	0.02	150	0	0%	--	--	150	9	6%	0.0021	0.0023	0.0028	WS-005	7/18/2013

Metal with Dissolved Concentrations Detected Above ESV														
Analyte	ESV (mg/L)	Recent Dissolved Metals Sampling Results (8/5/2013-9/6/2013)					Recent Total Metals Sampling Results (8/5/2013-9/6/2013)							
		Dissolved Samples	Dissolved Detections	Detection Frequency (%)	Range (mg/L)	Average (mg/L)	Total Samples	Total Detections	Detection Frequency (%)	Minimum Detected (mg/L)	Average (mg/L)	Maximum (mg/L)	Maximum Location	Maximum Date
Barium	0.004	97	97	100%	0.0064-0.033	0.013	97	97	100%	0.017	0.041	0.103	WS-005	9/4/2013



Between July 15 and September 6, 2013, dissolved barium concentrations in background surface water samples ranged from 0.0051 to 0.033 mg/L, above the ESV of 0.004 mg/L.

The Barium ESV is a secondary chronic value developed by the USEPA for the Great Lakes Water Quality Initiative, as cited in Suter and Tsao (1996). Suter and Tsao (1996) include a comment about this ESV: "Background water concentrations should be used as a check for these benchmarks [i.e., ESVs]. That is, because some of these benchmarks are quite conservative and because the measured concentrations in ambient water may include forms that are not bioavailable, benchmark concentrations may be lower than background water concentrations. If the background concentrations are valid and represent an uncontaminated state and if exposed site does not contain forms of the chemicals that are more bioavailable or toxic than the forms at background sites, then screening benchmarks lower than the background concentration should not be used."

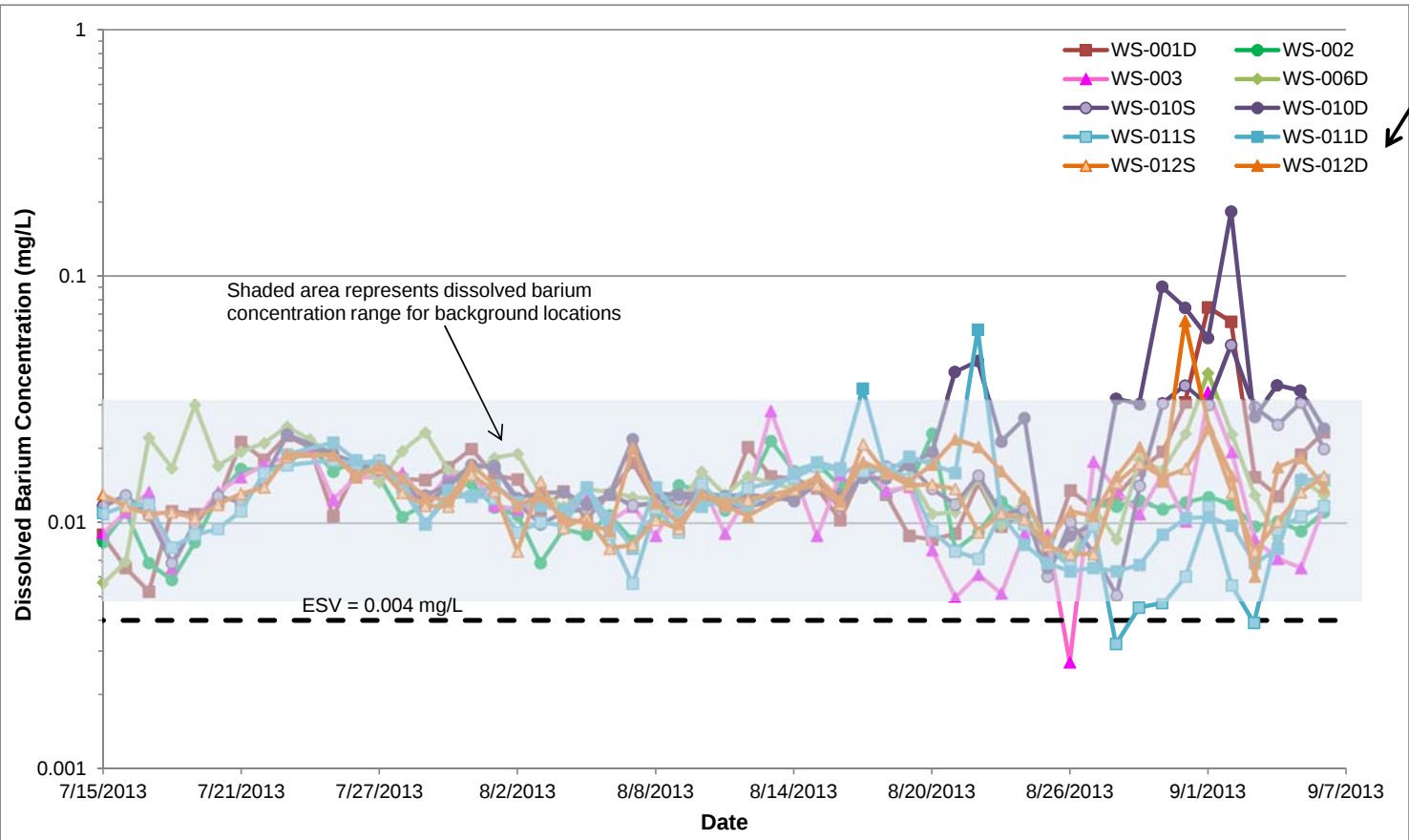
- Notes:**

 - = no criterion available or not applicable
 - D = deep sample
 - ESV = Ecological screening value
- mg/L = milligrams per liter
S = shallow sample
USEPA = U.S. Environmental Protection Agency
1. Evaluation based on the following background locations in Lake Conway: WS-005, WS-014S, and WS-14D.

Metals with No Dissolved Concentrations Detected Above ESV														
Analyte <i>shading = not detected in crude oil</i>	ESV (mg/L)	All Dissolved Metals Sampling Results (7/15/2013-9/6/2013)					Total Metals Sampling Results (7/15/2013-9/6/2013)							
		Dissolved Samples	Dissolved Detections	Detection Frequency (%)	Range (mg/L)	Average (mg/L)	Total Samples	Total Detections	Detection Frequency (%)	Minimum Detected (mg/L)	Average (mg/L)	Maximum (mg/L)	Maximum Location	Maximum Date
Arsenic	0.15	503	20	4%	0.0068-0.040	0.0077	503	100	20%	0.0069	0.0095	0.032	WS-006D	7/21/2013
Calcium	116	--	--	--	--	--	503	503	100%	5.06	6.12	11.5	WS-006D	7/21/2013
Chromium	0.0572	503	5	1%	0.0017-0.0019	0.0018	503	66	13%	0.0016	0.0057	0.047	WS-006D	7/21/2013
Lead	0.00054	503	0	0%	--	--	503	23	5%	0.0048	0.016	0.064	WS-006D	7/21/2013
Magnesium	82	--	--	--	--	--	503	503	100%	2.28	2.86	8.14	WS-006D	7/21/2013
Nickel	0.049	503	14	3%	0.0015-0.0078	0.0022	503	140	28%	0.0015	0.0032	0.030	WS-006D	7/22/2013
Selenium	0.005	503	0	0%	--	--	503	0	0%	--	--	--	--	--
Vanadium	0.02	503	0	0%	--	--	503	11	2%	0.002	0.0052	0.0225	WS-010D	8/23/2013

Metals with No Recent Dissolved Concentrations Detected Above ESV														
Analyte <i>shading = not detected in crude oil</i>	ESV (mg/L)	Recent Dissolved Metals Sampling Results (8/5/2013-9/6/2013)					Recent Total Metals Sampling Results (8/5/2013-9/6/2013)							
		Dissolved Samples	Dissolved Detections	Detection Frequency (%)	Range (mg/L)	Average (mg/L)	Total Samples	Total Detections	Detection Frequency (%)	Minimum Detected (mg/L)	Average (mg/L)	Maximum (mg/L)	Maximum Location	Maximum Date
Mercury	0.00077	323	5	2%	0.000061-0.00014	0.000083	323	8	2%	0.000062	0.000075	0.00015	WS-001D	9/4/2013
Silver	0.0003	323	0	0%	--	--	323	0	0%	--	--	--	--	--

Metals with Dissolved Concentrations Detected Above ESV														
Analyte <i>shading = not detected in crude oil</i>	ESV (mg/L)	Recent Dissolved Metals Sampling Results (8/5/2013-9/6/2013)					Recent Total Metals Sampling Results (8/5/2013-9/6/2013)							
		Dissolved Samples	Dissolved Detections	Detection Frequency (%)	Range (mg/L)	Average (mg/L)	Total Samples	Total Detections	Detection Frequency (%)	Minimum Detected (mg/L)	Average (mg/L)	Maximum (mg/L)	Maximum Location	Maximum Date
		Barium	0.004	323	323	100%	0.0027-0.18	0.016	323	323	100%	0.016	0.056	0.64
Cadmium	0.00037	323	1	0.3%	--	0.0026	323	1	0%	--	0.00076	--	WS-010D	8/23/2013



Barium, Cadmium, Mercury, and Silver are the only metals that have dissolved concentrations above the ESV in Lake Conway samples.

- o **Barium** concentrations in the Lake Conway samples ranged from 0.0027 to 0.18 mg/L which is slightly higher than the range of dissolved barium, 0.0064 to 0.033 mg/L, detected in background surface water sample [see graph to left]. Average barium concentrations in Lake Conway (0.016 mg/L) and background samples (0.013 mg/L) are similar.
- o **Cadmium** was detected at a concentration of 0.0026 mg/L above the ESV of 0.00037 mg/L in one Lake Conway sample collected at WS-002 on August 11, 2013.
- o **Mercury** was detected at a concentration above the ESV of 0.00077 mg/L in one Lake Conway dissolved sample collected at WS-012S (0.0011 mg/L) on July 18, 2013. WS-012S is not located adjacent to the Dawson Cove outlet. There have been no detected concentrations above ESV since July 18, 2013.
- o **Silver** was detected at a concentration above the ESV of 0.0003 mg/L in one Lake Conway dissolved sample collected at WS-012D (0.0022 mg/L) on July 25, 2013. WS-012D is not located adjacent to the Dawson Cove outlet. Silver was not detected in recent Lake Conway samples.

Notes:

-- = no criterion available or not applicable
D = deep sample
ESV = Ecological screening value

mg/L = milligrams per liter
S = shallow sample

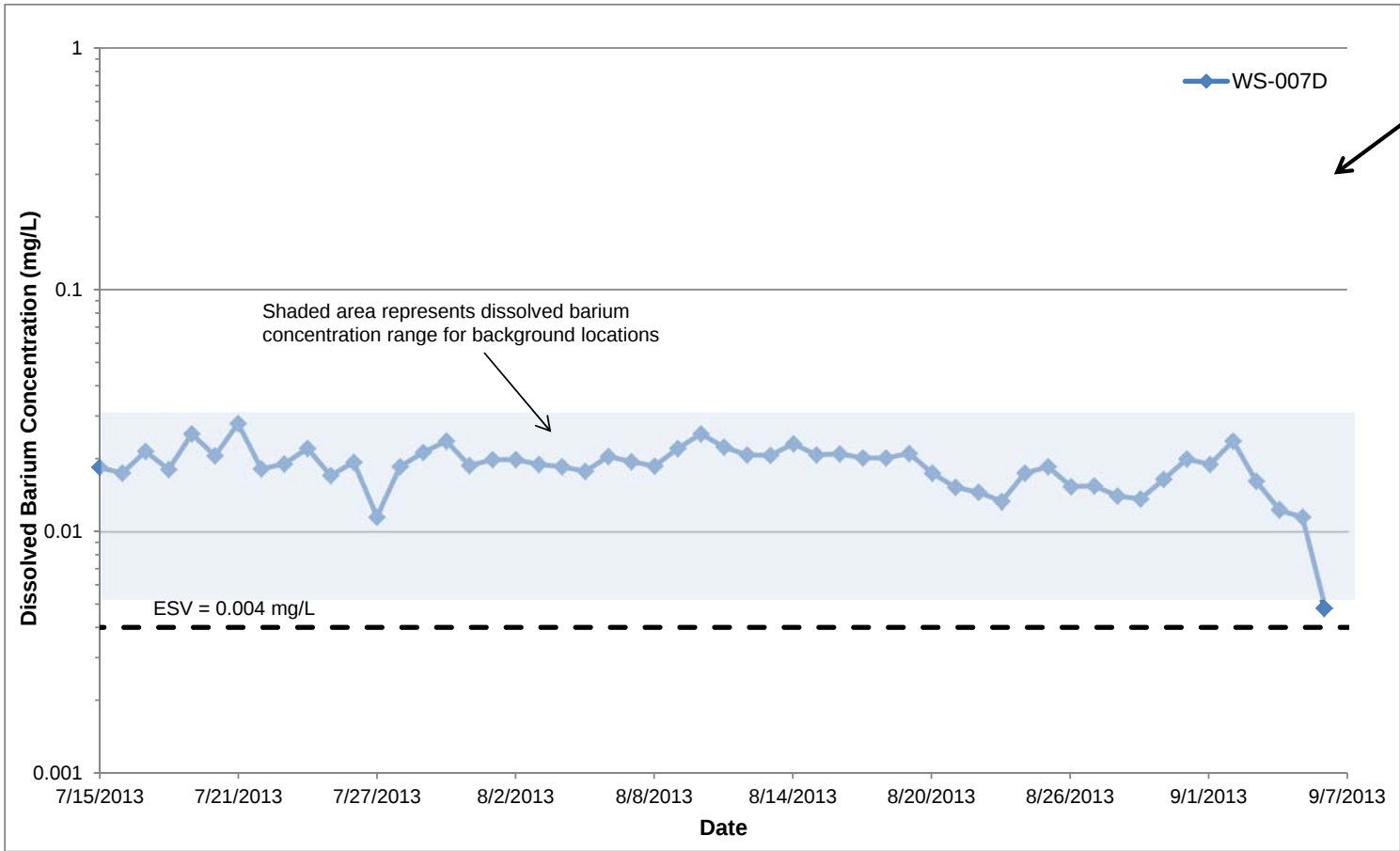
1. Evaluation based on the following locations in Lake Conway: WS-001S, WS-001D, WS-002, WS-003, WS-006S, WS-006D, WS-010S, WS-010D, WS-011S, WS-011D, WS-012S, and WS-012D.
2. Sampling at WS-001S and WS-006S was discontinued on July 14, 2013.

MAYFLOWER PIPELINE INCIDENT RESPONSE EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY DOWNSTREAM AREAS DATA ASSESSMENT REPORT	
EVALUATION OF METALS IN LAKE CONWAY SURFACE WATER (JULY 15 - SEPTEMBER 6, 2013)	
ARCADIS	FIGURE 8-11

Metals with No Dissolved Detections Above ESV														
Analyte <i>shading = not detected in crude oil</i>	ESV (mg/L)	All Dissolved Metals Sampling Results (7/15/2013-9/6/2013)					Total Metals Sampling Results (7/15/2013-9/6/2013)							
		Dissolved Samples	Dissolved Detections	Detection Frequency (%)	Range (mg/L)	Average (mg/L)	Total Samples	Total Detections	Detection Frequency (%)	Minimum Detected (mg/L)	Average (mg/L)	Maximum (mg/L)	Maximum Location	Maximum Date
Arsenic	0.15	54	7	13%	0.0068-0.0092	0.0075	54	35	65%	0.0069	0.0202	0.11	WS-007D	7/26/2013
Cadmium	0.00037	54	0	0%	--	--	54	10	19%	0.0009	0.0032	0.0097	WS-007D	7/26/2013
Calcium	116	--	--	--	--	--	54	54	100%	3.28	6.60	44	WS-007D	7/26/2013
Chromium	0.0572	54	0	0%	--	--	54	35	65%	0.0016	0.032	0.26	WS-007D	7/26/2013
Lead	0.00054	54	0	0%	--	--	54	33	61%	0.0051	0.1	0.86	WS-007D	7/26/2013
Magnesium	82	--	--	--	--	--	54	54	100%	1.4	4.4	36.1	WS-007D	7/26/2013
Mercury	0.00077	54	2	4%	0.000063	0.000063	54	14	26%	0.000061	0.00017	0.00044	WS-007D	8/31/2013
Nickel	0.049	54	23	43%	0.0015-0.0028	0.0020	54	45	83%	0.0015	0.028	0.28	WS-007D	7/26/2013
Selenium	0.005	54	0	0%	--	--	54	1	2%	--	0.014	--	WS-007D	7/26/2013
Vanadium	0.02	54	0	0%	--	--	54	49	91%	0.0023	0.049	0.38	WS-007D	7/26/2013

Metals with No Recent Dissolved Concentrations Detected Above ESV														
Analyte	ESV (mg/L)	Recent Dissolved Metals Sampling Results (8/5/2013-9/6/2013)					Recent Total Metals Sampling Results (8/5/2013-9/6/2013)							
		Dissolved Samples	Dissolved Detections	Detection Frequency (%)	Range (mg/L)	Average (mg/L)	Total Samples	Total Detections	Detection Frequency (%)	Minimum Detected (mg/L)	Average (mg/L)	Maximum (µg/L)	Maximum Location	Maximum Date
Silver	0.0003	33	0	0%	--	--	33	1	3%	--	0.0030	--	WS-007D	8/31/2013

Metals with Dissolved Concentrations Detected Above ESV														
Analyte	ESV (mg/L)	Recent Dissolved Metals Sampling Results (8/5/2013-9/6/2013)					Recent Total Metals Sampling Results (8/5/2013-9/6/2013)							
		Dissolved Samples	Dissolved Detections	Detection Frequency (%)	Range (mg/L)	Average (mg/L)	Total Samples	Total Detections	Detection Frequency (%)	Minimum Detected (mg/L)	Average (mg/L)	Maximum (µg/L)	Maximum Location	Maximum Date
Barium	0.004	33	33	100%	0.0048-0.025	0.018	33	33	100%	0.018	0.080	1.06	WS-007D	8/31/2013



Barium and Silver are the only metals that have dissolved concentrations above the screening levels in Dawson Cove since July 15, 2013.

- o **Barium** concentrations in Dawson Cove dissolved samples ranged from 0.012 to 0.028 mg/L, which is similar to the range of dissolved barium detected in background samples (0.0051 to 0.033 mg/L) and within the range of dissolved barium detected in the Lake Conway samples (0.0027 to 0.18 mg/L) [see graph to left].
- o **Silver** was detected at concentrations of 0.0022 and 0.0024 mg/L, above the ESV of 0.0003 mg/L, in two dissolved samples collected at WS-007D on July 25 and 26, 2013. These detected silver concentrations are similar to the silver concentration of 0.0022 mg/L detected in a Lake Conway sample (WS-012D) collected on July 12, 2013. WS-012D is not located adjacent to the Dawson Cove outlet. Silver was not detected in recent Dawson Cove dissolved metal samples.

Notes:

-- = no criterion available or not applicable
D = deep sample
ESV = Ecological screening value
mg/L = milligrams per liter
S = shallow sample

1. Evaluation based on the following locations in Dawson Cove: WS-004S, WS-004D, WS-007S, and WS-007D.
2. Sampling at WS-004S, WS-004D, and WS-007S was discontinued on July 14, 2013.

MAYFLOWER PIPELINE INCIDENT RESPONSE EXXONMOBIL ENVIRONMENTAL SERVICES COMPANY DOWNSTREAM AREAS DATA ASSESSMENT REPORT	
EVALUATION OF METALS IN DAWSON COVE SURFACE WATER (JULY 15 - SEPTEMBER 6, 2013)	
ARCADIS	FIGURE 8-12