OPERABLE UNIT 2 OF THE GENERAL MOTORS – INLAND FISHER GUIDE
SUBSITE OF THE ONONDAGA LAKE SUPERFUND SITE
RECORD OF DECISION

APPENDIX II

TABLES

Table 1. Summary of Minimum and Maximum Values of the Contaminants of Concern

	OU-2 Soil (mg/kg)							
	Soil		National Grid Wetland		Factory Avenue Area		Ave Intersection	
	Min	Max	Min	Max	Min	Max	Min	Max
PCBs	ND	130	ND	14000	ND	18000	ND	8.8
Arsenic	--	--	0.71	19.3	--	--	2.1	13.6
Chromium	--	--	6.7	16700	--	--	5.17	265
Copper	--	--	4.3	12100	--	--	9.5	219
Lead	--	--	2.7	264	--	--	2.3	398
Nickel	--	--	6.8	10600	--	--	9.41	97.9
Zinc	--	--	14.2	7010	--	--	17.9	429

	Ley Creek Sediment (mg/kg)				Ley Creek Surface Water (ug/L)			
	Upstream		Site Reach		Upstream		Site Reach	
	Min	Max	Min	Max	Min	Max	Min	Max
PCBs	ND	4.76	ND	207	ND	ND	ND	0.51
Arsenic	1.1	19.1	2.2	15.1	ND	ND	ND	ND
Chromium	4.3	45.6	10.9	429	ND	0.008	ND	0.0074
Copper	6.7	423	13.9	183	ND	0.0067	0.0029	0.0087
Lead	2.5	1170	ND	172	ND	0.0045	ND	0.004
Nickel	ND	38.6	6.6	121	0.0014	0.013	0.001	0.01
Zinc	22.7	811	51	390	0.0125	0.0421	0.0112	0.0331

	Biota - Crayfish (ug/kg)				Biota - Whole/Fillet (ug/kg)			
	Upstream		Site Reach		Upstream		Site Reach	
	Min	Max	Min	Max	Min	Max	Min	Max
PCBs	52.4	636	177.5	207.8	ND	2690	ND	6800
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	400	1000	ND	430	ND	500	ND	570
Copper	27200	39900	21800	25900	900	7900	ND	3700
Lead	ND	790	ND	1100	ND	ND	ND	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	16800	23600	15900	34000	16300	17500	5400	30700

Notes

1. Data shown is derived from the report titled "Revised Off-Site Remedial Investigation, Former IFG Facility and Deferred Media Site, March 2013 (Operable Unit #2, Site NO. 7-34-057). O'Brien & Gere 2013
2. PCBs includes the sum of all detected aroclors
3. Units are as noted
4. "ND" indicates the compound was not detected in at least one sample
5. "--" indicates the compound was not analyzed for

Table 2 – Sediment Criteria for Subsite-Related Metals

Analyte of Concern	Lowest Effects Level	Severe Effects Level
Arsenic	6.0 mg/kg	33 mg/kg
Total Chromium	26 mg/kg	110 mg/kg
Copper	16 mg/kg	110 mg/kg
Lead	31 mg/kg	110 mg/kg
Nickel	16 mg/kg	50 mg/kg
Zinc	120 mg/kg	270 mg/kg

Table 3
Summary of Chemicals of Concern and
Medium-Specific Exposure Point Concentrations

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Concern	Concentration Detected		Concentration Units	Frequency of Detection	Exposure Point Concentration	Exposure Point Concentration Units	Statistical Measure
		Min	Max					
EU 1	Less Chlorinated PCBs[b]	1.3E-01	2.0E+02	mg/kg	8/24	2.0E+02	mg/kg	Max
	Highly Chlorinated PCBs[c]	1.7E-01	3.1E+01	mg/kg	22/24	5.6E+00	mg/kg	95% Approximate Gamma UCL

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Concern	Concentration Detected		Concentration Units	Frequency of Detection	Exposure Point Concentration	Exposure Point Concentration Units	Statistical Measure
		Min	Max					
EU2	Highly Chlorinated PCBs[b]	2.0E-02	7.8E+02	mg/kg	63/120	9.2E+01	mg/kg	Use 95% Chebyshev (Mean, Sd) UCL
	Less Chlorinated PBCs[c]	2.6E-01	1.4E+04	mg/kg	21/120	7.3E+03	mg/kg	Use 99% Chebyshev (Mean, Sd) UCL
	Total PCBs[d]	1.0E+00	1.0E+02	mg/kg	10/14	1.0E+02	mg/kg	Max

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface and Subsurface Soil

Exposure Point	Chemical of Concern	Concentration		Concentration Units	Frequency of Detection	Exposure Point Concentration	Exposure Point Concentration Units	Statistical Measure
		Min	Max					
EU 2	Highly Chlorinated PCBs[b]	9.3E-03	1.8E+04	mg/kg	144/265	2.7E+02	mg/kg	95% H-UCL
	Less Chlorinated PBCs[c]	5.6E-03	1.4E+04	mg/kg	54/265	2.3E+03	mg/kg	97.5% Chebyshev (Mean, Sd) UCL
	Total PCBs[d]	1.0E+00	1.0E+02	mg/kg	5/6	1.0E+02	mg/kg	Max

Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations

This table presents the chemicals of concern (COCs) and exposure point concentrations (EPCs) for each of the COCs detected in soil and sediment (i.e., the concentration that was used to estimate the exposure and risk from each COC in these media). The table includes the range of concentrations detected for each COC, as well as the frequency of detection (i.e., the number of times the chemical was detected in the samples collected at the site), the EPC and how it was derived.

Max = maximum concentration used

Table 4
Selection of Exposure Pathways

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/ Future	Water	Surface Water	EU-1 Surface Water	Fisherperson	Older Child (Age 6-<18)	Ingestion	None	Incidental ingestion of surface water is expected to be *de minimis.*
						Dermal	Quantitative	It is possible that people will visit EU-1 for recreational purposes; dermal contact with EU-1 surface water could occur.
					Adult (Age >18)	Ingestion	None	Incidental ingestion of surface water is expected to be *de minimis.*
						Dermal	Quantitative	It is possible that people will visit EU-1 for recreational purposes; dermal contact with EU-1 surface water could occur.
	Surface Sediment (0-1 ft)	Surface Sediment (0-1 ft)	EU-1 Sediment	Fisherperson	Older Child (Age 6-<18)	Ingestion	Quantitative	It is possible that people will visit EU-1 for recreational purposes; ingestion with EU-1 surface sediment could occur.
						Dermal	Quantitative	It is possible that people will visit EU-1 for recreational purposes; dermal contact with EU-1 surface sediment could occur.
					Adult (Age >18)	Ingestion	Quantitative	It is possible that people will visit EU-1 for recreational purposes; ingestion with EU-1 surface sediment could occur.
						Dermal	Quantitative	It is possible that people will visit EU-1 for recreational purposes; dermal contact with EU-1 surface sediment could occur.
		Biota	Ley Creek Fish Tissue	Fish Consumer	Child (Age 0 to <6)	Ingestion	Quantitative	Fish collection efforts at Ley Creek support the conclusion of a low abundance and diversity of fish inhabiting the Creek. While it is unlikely that fishing will be conducted in the Creek, the ingestion of fish tissue remains a possibility.
				Fisherperson	Older Child (Age 6-<18)	Ingestion	Quantitative	Fish collection efforts at Ley Creek support the conclusion of a low abundance and diversity of fish inhabiting the Creek. While it is unlikely that fishing will be conducted in the Creek, the ingestion of fish tissue remains a possibility.
					Adult (Age >18)	Ingestion	Quantitative	Fish collection efforts at Ley Creek support the conclusion of a low abundance and diversity of fish inhabiting the Creek. While it is unlikely that fishing will be conducted in the Creek, the ingestion of fish tissue remains a possibility.

Current/ Future	Surface Soil (0-1 ft)	Surface Soil (0-1 ft)	EU-1 Surface Soil	Fisherperson	Older Child (Age 6-<18)	Ingestion	Quantitative	It is possible that people will visit EU-1 for recreational purposes; incidental ingestion with the EU-1 surface soil could occur.
						Dermal	Quantitative	It is possible that people will visit EU-1 for recreational purposes; dermal contact with the EU-1 surface soil could occur.
				Fisherperson	Adult (Age >18)	Ingestion	Quantitative	It is possible that people will visit EU-1 for recreational purposes; incidental ingestion with the EU-1 surface soil could occur.
						Dermal	Quantitative	It is possible that people will visit EU-1 for recreational purposes; dermal contact with the EU-1 surface soil could occur.
		Fugitive dust	Outdoor ambient air	Fisherperson	Older Child (Age 6-<18)	Inhalation	Quantitative	Fisherpersons could inhale fugitive dust as a result of normal activities in this exposure area.
				Fisherperson	Adult (Age >18)	Inhalation	Quantitative	Fisherpersons could inhale fugitive dust as a result of normal activities in this exposure area.
		Volatile emissions	Outdoor ambient air	Fisherperson	Adult (Age >18)	Inhalation	Quantitative	Fisherpersons could be exposed to constituents volatilized from surface soil in this exposure area.
				Fisherperson	Older Child (Age 6-<18)	Inhalation	Quantitative	Fisherpersons could be exposed to constituents volatilized from surface soil in this exposure area.
Future	Water	Surface Water	EU-1 Surface Water	Dredge Worker	Adult (Age >18)	Ingestion	None	Incidental ingestion of surface water during dredging operations is expected to be *de minimis.*
						Dermal	Quantitative	A dredge worker could have dermal contact with surface water during maintenance dredging operations.
	Surface & Subsurface Sediment (0-3 ft)	Surface & Subsurface Sediment (0-3 ft)	EU-1 Sediment	Dredge Worker	Adult (Age >18)	Ingestion	Quantitative	A dredge worker could incidentally ingest sediment during maintenance dredging operations.
						Dermal	Quantitative	A dredge worker could have dermal contact with sediment during maintenance dredging operations.
	Surface Soil (0-1 ft)	Surface Soil (0-1 ft)	EU-1 Surface Soil	Dredge Worker	Adult (Age >18)	Ingestion	Quantitative	A dredge worker could incidentally ingest surface soil during maintenance dredging operations.
						Dermal	Quantitative	A dredge worker could have dermal contact with surface soil during maintenance dredging operations.
		Fugitive dust	Outdoor Ambient Air	Dredge Worker	Adult (Age > 18)	Inhalation	Quantitative	A dredge worker could inhale fugitive dust as a result of normal activities in this exposure area.
		Volatile emissions	Outdoor Ambient Air	Dredge Worker	Adult (Age > 18)	Inhalation	Quantitative	A dredge worker could be exposed to constituents volatilized from surface soil in this exposure area.

Current/ Future	Water	Surface Water	EU-2 Surface Water	Trespasser	Adolescent (Age 12-<18)	Ingestion	None	Incidental ingestion of surface water is expected to be *de minimis.*
						Dermal	Quantitative	It is possible that people will trespass at EU-2; dermal contact with EU-2 surface water could occur.
					Adult (Age >18)	Ingestion	None	Incidental ingestion of surface water is expected to be *de minimis.*
						Dermal	Quantitative	It is possible that people will trespass at EU-2; dermal contact with EU-2 surface water could occur.
	Surface Soil (0-1 ft)	Surface Soil (0-1 ft)	EU-2 Surface Soil	Trespasser	Adolescent (Age 12-<18)	Ingestion	Quantitative	It is possible that people will trespass at EU-2; ingestion with EU-2 surface soil could occur.
						Dermal	Quantitative	It is possible that people will trespass at EU-2; dermal contact with EU-2 surface soil could occur.
					Adult (Age >18)	Ingestion	Quantitative	It is possible that people will trespass at EU-2; ingestion with EU-2 surface soil could occur.
						Dermal	Quantitative	It is possible that people will trespass at EU-2; dermal contact with EU-2 surface soil could occur.
		Fugitive dust	Outdoor Ambient Air	Trespasser	Adolescent (Age 12-<18)	Inhalation	Quantitative	Trespassers could inhale fugitive dust as a result of normal activities in EU-2
					Adult (Age > 18)	Inhalation	Quantitative	Trespassers could inhale fugitive dust as a result of normal activities in EU-2
		Volatile emissions	Outdoor Ambient Air	Trespasser	Adolescent (Age 12-<18)	Inhalation	Quantitative	Trespassers could be exposed to constituents volatilized from surface soil in EU-2.
					Adult (Age > 18)	Inhalation	Quantitative	Trespassers could be exposed to constituents volatilized from surface soil in EU-2.
Future	Surface & Subsurface Soil (0-10 ft)	Surface & Subsurface Soil (0-10 ft)	EU-2 Surface & Subsurface Soil	Utility Worker	Adult (Age >18)	Ingestion	Quantitative	A utility worker could incidentally ingest surface and subsurface soil while performing duties.
						Dermal	Quantitative	A utility worker could have occasional dermal contact with surface and subsurface soil while performing duties.
		Fugitive dust	Outdoor Ambient Air	Utility Worker	Adult (Age > 18)	Inhalation	Quantitative	A utility workers could inhale fugitive dust from surface and subsurface soil as a result of normal activities in this exposure area.
		Volatile emissions	Outdoor Ambient Air	Utility Worker	Adult (Age > 18)	Inhalation	Quantitative	A utility workers could be exposed to constituents volatilized from surface and subsurface soil in this exposure area.

Summary of Selection of Exposure Pathways

The table describes the exposure pathways associated with the media that were evaluated for the risk assessment, and the rationale for the inclusion of each pathway. Exposure media, exposure points, and characteristics of receptor populations are included.

Table 5
Non-Carcinogenic Toxicity Data Summary

Pathway: Ingestion/Dermal

Chemicals of Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Absorp. Efficiency (Dermal)	Adjusted RfD (Dermal)	Adj. Dermal RfD Units	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfD Target Organ	Dates of RfD
LESS CHLORINATED PCBs *	Chronic	7.0E-05	mg/kg-day	9.6E-01	7.0E-05	mg/kg-day	Reduced birth weights (W)	100/1	IRIS	02/01/2008
HIGHLY CHLORINATED PCBs *	Chronic	2.0E-05	mg/kg-day	9.6E-01	2.0E-05	mg/kg-day	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	300/1	IRIS	02/01/2008
TOTAL PCBs *	Chronic	2.0E-05	mg/kg-day	9.6E-01	2.0E-05	mg/kg-day	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	300/1	IRIS	02/01/2008

Pathway: Inhalation

Chemicals of Concern	Chronic/ Subchronic	Inhalation RfC	Inhalation RfC Units	Inhalation RfD (If available)	Inhalation RfD Units (If available)	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfD Target Organ	Dates of RfC
LESS CHLORINATED PCBs *	NA	NA	NA	NA	NA	NA	NA	NA	NA
HIGHLY CHLORINATED PCBs *	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL PCBs *	NA	NA	NA	NA	NA	NA	NA	NA	NA

Summary of Toxicity Assessment

This table provides non-carcinogenic risk information which is relevant to the contaminants of concern. When available, the chronic toxicity data have been used to develop oral reference doses (RfDs) and inhalation reference concentrations (RfCs).

NA: Not Available
IRIS: Integrated Risk Information System, U.S. EPA

Table 6 Risk Characterization Summary - Non-Carcinogens

Scenario Timeframe: Current/Future
Receptor Population: Fisherperson
Receptor Age: Older Child (6-18 yrs)

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Primary target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Surface Sediment	EU 1	Less Chlorinated PCBs	Birth Weight	2E+00	--	2E+01	2E+01
			Highly chlorinated PCBs	Eye; Nails; Immunological	2E-01	--	2E+00	2E+00
			Chemical Total		2E+00	--	2E+01	2E+01
		Exposure Point Total						2E+01
	Exposure Medium Total							2E+01
Medium Total								2E+01

Scenario Timeframe: Current/Future
Receptor Population: Fisherperson
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Primary target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Surface Sediment	EU 1	Less Chlorinated PCBs	Birth Weight	5E-01	--	1E+00	2E+00
			Chemical Total		5E-01	--	1E+00	2E+00
		Exposure Point Total						2E+00
	Exposure Medium Total							2E+00
Medium Total								2E+00

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent (12-18 yrs)

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Primary target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EU 2	Less Chlorinated PCBs	Birth Weight	2E+01	--	3E+01	5E+01
			Highly Chlorinated PCBs	Eye; Nails; Immunological	1E+00	--	1E+00	2E+00
			Total PCBs *	Eye; Nails; Immunological	1E+00	--	1E+00	2E+00
			Chemical Total		2E+01	--	3E+01	5E+01
		Exposure Point Total						5E+01
	Exposure Medium Total							5E+01
Medium Total								5E+01

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Primary target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	EU 2	Less Chlorinated PCBs	Birth Weight	2E+01	--	2E+01	4E+01
			Highly Chlorinated PCBs	Eye; Nails; Immunological	8E-01	--	9E-01	2E+00
			Total PCBs *	Eye; Nails; Immunological	9E-01	--	1E+00	2E+00
			Chemical Total		2E+01	--	2E+01	4E+01
		Exposure Point Total						4E+01
	Exposure Medium Total							4E+01
Medium Total								4E+01

Scenario Timeframe: Future
Receptor Population: Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Primary target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface and Subsurface Soil	EU 2	Less Chlorinated PCBs	Birth Weight	4E+01	--	5E+01	9E+01
			Highly Chlorinated PCBs	Eye; Nails; Immunological	2E+01	--	2E+01	4E+01
			Total PCBs *	Eye; Nails; Immunological	6E+00	--	8E+00	1E+01
			Chemical Total		7E+01	--	8E+01	1E+02
		Exposure Point Total						1E+02
	Exposure Medium Total							1E+02
Medium Total								1E+02

Summary of Risk Characterization - Non-Carcinogens

The table presents hazard quotients (HQs) for each route of exposure and the hazard index (sum of hazard quotients) for all routes of exposure. The Risk Assessment Guidance for Superfund states that, generally, a hazard index (HI) greater than 1 indicates the potential for adverse non-cancer effects.

* Some soil samples were analyzed for total PCBs as opposed to individul Aroclors.

TABLE 7: Summary of Soil Cleanup Objectives for Soil Alternative 2

		SCO (mg/kg)			
COC	AREA	Residential	Commercial	Industrial	Ecological
PCB	Factory Avenue Area (North of GM-IFG facility)		1		
	National Grid Property (along access road)			25	
	Factory Avenue Area (at Lemoyne Avenue)		1		
	Ley Creek Floodplain				1
	National Grid Wetland				1
Arsenic	Factory Avenue Area (North of GM-IFG facility)		16		
	National Grid Property (along access road)			16	
	Factory Avenue Area (at Lemoyne Avenue)		16		
	Ley Creek Floodplain				13
	National Grid Wetland				13
Chromium[3]	Factory Avenue Area (North of GM-IFG facility)		1500		
	National Grid Property (along access road)			6800	
	Factory Avenue Area (at Lemoyne Avenue)		1500		
	Ley Creek Floodplain	36			41
	National Grid Wetland				41
Copper	Factory Avenue Area (North of GM-IFG facility)		270		
	National Grid Property (along access road)			10000	
	Factory Avenue Area (at Lemoyne Avenue)		270		
	Ley Creek Floodplain				50
	National Grid Wetland				50
Lead	Factory Avenue Area (North of GM-IFG facility)		1000		
	National Grid Property (along access road)			3900	
	Factory Avenue Area (at Lemoyne Avenue)		1000		
	Ley Creek Floodplain				63
	National Grid Wetland				63
Nickel	Factory Avenue Area (North of GM-IFG facility)		310		
	National Grid Property (along access road)			10000	
	Factory Avenue Area (at Lemoyne Avenue)		310		
	Ley Creek Floodplain				30
	National Grid Wetland				30
Zinc	Factory Avenue Area (North of GM-IFG facility)		10000		
	National Grid Property (along access road)			10000	
	Factory Avenue Area (at Lemoyne Avenue)		10000		
	Ley Creek Floodplain				109
	National Grid Wetland				109

Notes:
1. Ley Creek Floodplain uses the ecological SCO unless the residential SCO is lower and that portion of the Ley Creek Floodplain is zoned residential.
2. Chromium refers to trivalent chromium.
3. The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

TABLE 8: Summary of Soil Cleanup Objectives for Soil Alternative 3

COC	AREA	Unrestricted SCO (mg/kg)
PCB	Site Soil	0.1
Arsenic	Site Soil	13
Chromium[3]	Site Soil	30
Copper	Site Soil	50
Lead	Site Soil	63
Nickel	Site Soil	30
Zinc	Site Soil	109

Notes:
1. Chromium refers to trivalent chromium.
2. The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

RACER Trust
Former Inland Fisher Guide Facility and Ley Creek Deferred Media Site
Syracuse, New York
Off-Site Feasibility Study

TABLE 9.1: ALTERNATIVE 1 - NO FURTHER ACTION

	QTY	UNIT	UNIT COST	TOTAL COST	Notes
DIRECT CAPITAL CONSTRUCTION COSTS					
TOTAL DIRECT CAPITAL COST				**0**	
Engineering/Design/Oversight			15%	**0**	
Legal			5%	**0**	
Contingency			20%	**0**	
TOTAL ALTERNATIVE CAPITAL COST				**0**	
OPERATION AND MAINTENANCE COSTS					
TOTAL ANNUAL O&M COST (rounded)				**$0**	
PRESENT WORTH ANALYSIS (YEARS 1-30)			**Discount**		
Cost Type	**Total Cost**		**Factor (7%)**	**Cost Per Yr**	**Present Value**
Capital Cost - Year 0	$0		1.000	$0	$0
Annual O&M - Years 1-30			12.4081	$0	$0
TOTAL PROJECT PRESENT WORTH (rounded)					**$0**

RACER Trust
Former Inland Fisher Guide Facility and Ley Creek Deferred Media Site
Syracuse, New York
Off-Site Feasibility Study

TABLE 9.2: REASONABLY ANTICIPATED FUTURE USE

	QTY	UNIT	UNIT COST	TOTAL COST	Notes
DIRECT CAPITAL CONSTRUCTION COSTS					
General Conditions, Surveys and Permits					
General Conditions	1	LS	$626,000	$626,000	Trailer, electrical, CAMP, Construction Management, H&S
Plan Development	1	LS	$56,000	$56,000	Dewatering Plan, HASP, Traffic Control Plan
Permits	1	LS	$46,000	$46,000	Permits and SWPP
Surveys	1	LS	$35,000	$35,000	
Access, Erosion Control, and Site Security	1	LS	$155,000	$155,000	
Pre-design Investigations	1	LS	$100,000	$100,000	Geotechnical investigation, materials testing.
General Conditions, Surveys and Permits Subtotal				**$1,018,000**	
Ley Creek Sediment and Floodplain Soil Removal					
Construction Road	2,800	LF	$39	$109,200	Stone base road.
Cofferdam	6	EA	$37,400	$224,400	50-ft long Port-a-dams.
Creek Dewatering	7	MONTH	$99,200	$694,400	Bypass pumps (up to 50-60 CFS), Maintenance, Fuel.
Sediment Dewatering Pad	1	EA	$52,400	$52,400	1,900 SY HDPE lined Pad.
Treatment of Dewatering Fluids (Bag Filters, Act Carbon)	1	LS	$156,400	$156,400	up to 60 gpm, pump, bag filters, 4000 lbs carbon total. (50% of sed; inc %solids by 17%)
Mechanical Excavation and Dewatering - Non-TSCA	9,600	CY	$107	$1,027,200	Average 1.25 ft depth, bank to bank, volume per Fig 5-5b, assumes 60 to 103 CY/day.
Mechanical Excavation and Dewatering - TSCA	550	CY	$145	$79,750	Assumes 200 - ft length of Ley Creek at Route 11, assumes 60 CY/day.
In-creek restoration; sand	3,620	CY	$51	$184,620	0.5-ft layer of clean sand.
Floodplain Soil Mechanical Excavation	2,900	CY	$58	$168,200	Exc depth ranges 1 to 4-ft, volume per Figs. 5-1b and 5-2, assumes 150 CY/day.
Floodplain Soil Backfill	1,807	CY	$39	$70,489	Exclusive of top 0.5-ft of soil.
Floodplain Soil Restoration; topsoil and seed	59,000	SF	$1.07	$63,130	0.5-ft layer of topsoil
Sediment and Soil Loading	13,050	CY	$7.00	$91,350	
Sediment and Soil Off-site Transport/Disposal - Non-TSCA	12,500	CY	$116.00	$1,450,000	High Acres Landfill, PCBs < 50 ppm; incl fees and 41% fuel surcharge.
Sediment Off-site Transport/Disposal - TSCA	550	CY	$244.00	$134,200	Model City Landfill, PCBs > 50 ppm, land disposal; incl fees and 41% fuel surcharge.
Ley Creek Sediment and Floodplain Soil Removal Subtotal				**$4,505,739**	
National Grid Soil Removal					
Construction Road	560	LF	$36	$20,160	Stone base road
Nat Grid Prop Clearing (Ditch wetland)	0.6	AC	$2,700	$1,620	
Nat Grid Prop Clearing (forested wetland)	3.6	AC	$4,400	$15,840	
Dewatering Pad	1	EA	$108,700	$108,700	4,000 SY HDPE lined Pad.
Treatment of Dewatering Fluids (Bag Filters, Act Carbon)	1	LS	$167,300	$167,300	up to 60 gpm, pump, bag filters, 4000 lbs carbon total. (50% of sed; inc %solids by 17%)
Mechanical Excavation(Nat Grid Area)	8,600	CY	$22	$189,200	Depth Varies; within tree'd area; following tree removal, assumes 400 CY/day, Fig 5-4b
Mechanical Excavation (Access Road)	30	CY	$22	$660	Within wetland area, assumes 400 CY/day, Fig 5-4b
Loading, Transportation and Off-site Disposal - Non-TSCA	2,770	CY	$123	$340,710	High Acres Landfill, PCBs < 50 ppm; incl fees and 41% fuel surcharge.
Loading, Transportation and Off-site Disposal - TSCA	5,830	CY	$244	$1,422,520	Model City Landfill, PCBs > 50 ppm, land disposal; incl fees and 41% fuel surcharge.
Backfill	1,960	CY	$35	$68,600	
Restoration; forest	155,200	SF	$2.35	$364,720	exclusive of topsoil.
Restoration; wetland	24,000	SF	$1.41	$33,840	1-ft layer of topsoil.
Nat Grid Access Road Restoration (gravel)	300	SF	$1.85	$555	1-ft layer of topsoil.
National Grid Soil Removal Subtotal				**$2,734,425**	
Factory Avenue Soil Removal					
Traffic Control	1	LS	$6,600	$6,600.00	
Shoring	7,445	SF	$40	$297,800.00	
Mechanical Excavation	3,600	CY	$22	$79,200.00	4-ft depth, volume per Fig. 5-3b, assumes 400 CY/day.
Loading, Transportation and Off-site Disposal - Non-TSCA	1,800	CY	$123	$221,400.00	High Acres Landfill, PCBs < 50 ppm; incl fees and 41% fuel surcharge.
Loading, Transportation and Off-site Disposal - TSCA	1,800	CY	$244	$439,200.00	Model City Landfill, PCBs > 50 ppm, land disposal; incl fees and 41% fuel surcharge.
Backfill	3,280	CY	$35	$114,800.00	
Restoration; topsoil and seed	17,200	SF	$0.85	$14,620.00	0.5-ft layer of topsoil.
Restoration; Asphalt	100	SF	$11	$1,100.00	Access road entrance from Factory Avenue.
Restoration; gravel	20,000	SF	$1.85	$37,000.00	Factory Avenue Shoulder, 0.5 ft gravel.
Factory Avenue Soil Removal Subtotal				**$1,211,720**	
TOTAL DIRECT CAPITAL COST (rounded)				**$9,470,000**	
Engineering/Design/Oversight			15%	1,420,500	
Legal			5%	473,500	
Contingency			25%	2,367,500	
TOTAL INDIRECT CAPITAL COST (rounded)				**$4,262,000.00**	
TOTAL ALTERNATIVE CAPITAL COST (rounded)				**$13,732,000.00**	

RACER Trust
Former Inland Fisher Guide Facility and Ley Creek Deferred Media Site
Syracuse, New York
Off-Site Feasibility Study

TABLE 9.2: REASONABLY ANTICIPATED FUTURE USE

	QTY	UNIT	UNIT COST	TOTAL COST	Notes
OPERATION AND MAINTENANCE COSTS			**$15,000.00**		Assumes up to 1 acre of maintenance required.
Annual Costs (Years 1-7)					
Wetland monitoring and Reporting	1	LS	$12,500.00	12,500	
Contingency Planting and Invasive Species Control	1	LS	$15,000.00	15,000	Assumes up to 0.5 acre of maintenance required.
TOTAL ANNUAL O&M COST (rounded)				**$27,500**	
Periodic Costs (Years 5, 10, 15, 20, 25, 30))					
5-yr reviews	1	ea	$5,000.00	$7,000	

PRESENT WORTH ANALYSIS (YEARS 1-30)			**Discount**		
Cost Type	**Total Cost**		**Factor (7%)**	**Cost Per Yr**	**Present Value**
Capital Cost - Year 0	$13,732,000		1.000	$13,732,000	$13,732,000
Annual O&M - Years 1-7			12.4081	$27,500	$341,200
Periodic Costs - Years 5, 10, 15, 20, 25, 30			2.1577	$7,000	$15,100
TOTAL PROJECT PRESENT WORTH (rounded)					**$14,088,000**

Notes:
Estimate excludes the following:
- Pre-characterization sampling in Ley Creek and National Grid Wetland
- Tax on construction and materials
- Wetland dewatering and water treatment
- Construction water treatment
- Confirmatory sampling (production rates also assume no confirmatory sampling)
- Additivies to dewater sediment
- Expenses related to obtaining property access and right-of-ways.

RACER Trust
Former Inland Fisher Guide Facility and Ley Creek Deferred Media Site
Syracuse, New York
Off-Site Feasibility Study

TABLE 9.3: UNRESTRICTED USE

	QTY	UNIT	UNIT COST	TOTAL COST	Notes
DIRECT CAPITAL CONSTRUCTION COSTS					
General Conditions, Surveys and Permits					
General Conditions	1	LS	$1,103,000	$1,103,000	Trailer, electrical, CAMP, Construction Management, H&S
Plan Development	1	LS	$56,000	$56,000	Const WP, Dewatering Plan, HASP, Traffic Control Plan
Permits	1	LS	$46,000	$46,000	Permits and SWPP
Surveys	1	LS	$69,000	$69,000	
Access, Erosion Control, and Site Security	1	LS	$155,000	$155,000	
Pre-design Investigations	1	LS	$100,000	$100,000	Geotechnical investigation, materials testing.
General Conditions, Surveys and Permits Subtotal				**$1,529,000**	
Ley Creek Sediment and Floodplain Soil Removal					
Construction Road	2,800	LF	$39	$109,200	Stone base road.
Cofferdam	10	EA	$37,400	$374,000	50-ft long Port-a-dams.
Creek Dewatering	10	MONTHS	$99,200	$992,000	Bypass pumps (up to 50-60 CFS), Maintenance, Fuel.
Sediment Dewatering Pad	1	EA	$136,100	$136,100	4,740 SY HDPE lined Pad.
Treatment of Dewatering Fluids (Bag Filters, Act Carbon)	1	LS	$169,900	$169,900	up to 60 gpm, pump, bag filters, 4000 lbs carbon total. (50% of sed; inc %solids by 17%)
Mechanical Excavation and Dewatering - Non-TSCA	13,200	CY	$104	$1,369,764	Average 1.25 ft depth, bank to bank, volume per Fig 5-10, assumes 60 to 103 CY/day.
Mechanical Excavation and Dewatering - TSCA	550	CY	$145	$79,750	Assumes 200 - ft length of Ley Creek at Route 11, assumes 60 CY/day.
In-creek restoration; sand	5,060	CY	$51	$258,060	0.5-ft layer of clean sand.
Floodplain Soil Mechanical Excavation - Non-TSCA	8,400	CY	$58	$487,200	Exc. depth ranges 1 to 4-ft, volume per Figs. 5-6 and 5-7.
Floodplain Soil Backfill	6,140	CY	$39	$239,460	Exclusive of top 0.5-ft of soil.
Floodplain Soil Restoration; topsoil and seed	121,900	SF	$1.07	$130,433	0.5-ft layer of topsoil
Sediment and Soil Loading	22,150	CY	$7.00	$155,050	
Sediment and Soil Off-site Transport/Disposal - Non-TSCA	21,600	CY	$116.00	$2,505,600	High Acres Landfill, PCBs < 50 ppm; incl fees and 41% fuel surcharge.
Sediment Off-site Transport/Disposal - TSCA	550	CY	$238.00	$130,900	Model City Landfill, PCBs > 50 ppm, land disposal; incl fees and 41% fuel surcharge.
Ley Creek Sediment and Floodplain Soil Removal Subtotal				**$7,137,417**	
National Grid Soil Removal					
Construction Road	560	LF	$36	$19,980	Stone base road.
Nat Grid Prop Clearing (Ditch wetland)	0.6	AC	$2,700	$1,620.00	
Nat Grid Prop Clearing (forested wetland)	4.5	AC	$4,400	$19,800.00	
Dewatering Pad	1	EA	$156,100	$156,100.00	5,672 SY HDPE lined Pad.
Treatment of Dewatering Fluids (Bag Filters, Act Carbon)	1	LS	$149,800	$149,800.00	up to 60 gpm, pump, bag filters, 4000 lbs carbon total. (50% of sed; inc %solids by 17%)
Mechanical Excavation	14,400	CY	$22	$316,800	Average 1.75 ft depth, volume per Fig 5-10, assumes 400 CY/day, Fig 5-9
Mechanical Excavation (Access Road)	760	CY	$27	$20,520	Average 2 ft depth, volume per Fig 5-10, assumes 400 CY/day, Fig 5-9
Loading, Transportation and Off-site Disposal - Nonhaz	8,830	CY	$123	$1,086,090	High Acres Landfill, PCBs < 50 ppm; incl fees and 41% fuel surcharge.
Loading, Transportation and Off-site Disposal - Haz	6,330	CY	$244	$1,544,520	Model City Landfill, PCBs > 50 ppm, land disposal; incl fees and 41% fuel surcharge.
Backfill	7,200	CY	$35	$252,000	Exclusive of top 1-ft.
Restoration; forest wetland	170,800	SF	$2.35	$401,380	1-ft layer of topsoil.
Restoration; wetland	23,500	SF	$1.41	$33,135	1-ft layer of topsoil.
Restoration; gravel	8,160	SF	$1.85	$15,096	0.5-ft layer gravel.
National Grid Soil Removal Subtotal				**$4,016,841**	
Factory Avenue Soil Removal					
Traffic Control	1	LS	$6,600	$6,600.00	
Shoring	11,950	SF	$40	$478,000.00	20-ft Sheet pile.
Mechanical Excavation	7,900	CY	$22	$173,800.00	1 to 10-ft depth, volume per Fig. 5-8, 400 CY/day.
Loading, Transportation and Off-site Disposal - Nonhaz	3,950	CY	$123	$485,850.00	High Acres Landfill, PCBs < 50 ppm; incl fees and 41% fuel surcharge.
Loading, Transportation and Off-site Disposal - Haz	3,950	CY	$244	$963,800.00	Model City Landfill, PCBs > 50 ppm, land disposal; incl fees and 41% fuel surcharge.
Backfill	7,010	CY	$35	$245,350.00	Exclusive of top 0.5-ft.
Restoration; topsoil and seed	26,000	SF	$0.85	$22,099.58	0.5-ft layer of topsoil.
Restoration; Asphalt	100	SF	$11	$1,100.00	Access road entrance from Factory Avenue.
Restoration; gravel	24,800	SF	$1.85	$45,880.00	Factory Avenue Shoulder, 0.5 ft gravel.
Factory Avenue Soil Removal Subtotal				**$2,422,480**	
TOTAL DIRECT CAPITAL COST (rounded)				**$15,106,000**	
Engineering/Design/Oversight			15%	2,265,900	
Legal			5%	755,300	
Contingency			25%	3,776,500	
TOTAL INDIRECT CAPITAL COST (rounded)				**$6,798,000.00**	
TOTAL ALTERNATIVE CAPITAL COST (rounded)				**$21,904,000.00**	

RACER Trust
Former Inland Fisher Guide Facility and Ley Creek Deferred Media Site
Syracuse, New York
Off-Site Feasibility Study

TABLE 9.3: UNRESTRICTED USE

	QTY	UNIT	UNIT COST	TOTAL COST	Notes
OPERATION AND MAINTENANCE COSTS					
Annual Costs (Years 1-7)					
Wetland monitoring and Reporting	**1**	**LS**	**$12,500.00**	**12,500**	
Contingency Planting and Invasive Species Control	1	LS	**$15,000.00**	**15,000**	Assumes up to 1 acre of maintenance required.
TOTAL ANNUAL O&M COST (rounded)				**$27,500**	
Periodic Costs (Years 5, 10, 15, 20, 25, 30))			**$15,000.00**		Assumes up to 0.5 acre of maintenance required.
5-yr reviews	1	ea	$7,000.00	$7,000	

PRESENT WORTH ANALYSIS (YEARS 1-30)		**Discount**		
Cost Type	**Total Cost**	**Factor (7%)**	**Cost Per Yr**	**Present Value**
Capital Cost - Year 0	$0	1.000	$0	$21,904,000
Annual O&M - Years 1-7		12.4081	$27,500	$341,200
Periodic Costs - Years 5, 10, 15, 20, 25, 30		2.1577	$7,000	$15,100
TOTAL PROJECT PRESENT WORTH (rounded)				**$22,260,000**

Notes:
Estimate excludes the following:
- Pre-characterization sampling in Ley Creek and National Grid Wetland
- Tax on construction and materials
- Wetland dewatering and water treatment
- Construction water treatment
- Confirmatory sampling (production rates also assume no confirmatory sampling)
- Additivies to dewater sediment
- Expenses related to obtaining property access and right-of-ways.

RACER Trust
Former Inland Fisher Guide Facility and Ley Creek Deferred Media Site
Syracuse, New York
Off-Site Feasibility Study

TABLE 10: EVALUATION OF POTENTIAL STANDARDS, CRITERIA AND GUIDANCE (SCGs)

Medium/Location/ Action	Citation	Requirements	Comments	Potential SCG	Alt(s)
Potential Chemical-Specific SCGs					
Soil	6 New York Code of Rules and Regulations (NYCRR) Part 375-6 Remedial Program Soil Cleanup Objectives (SCOs)	Provides SCOs for various property uses. Property uses for which SCOs are provided are Unrestricted, Residential, Restricted Residential, Commercial and Industrial Uses. SCOs are also provided for the protection of ecological receptors and groundwater.	Potentially applicable to off-site area soils, based on current and reasonable future property use.	Yes	All
	New York State Department of Environmental Conservation (NYSDEC) Commissioner's Policy - Soil Cleanup Guidance	Guidance that provides framework and procedures for the selection of soil cleanup levels. As part of the procedures, supplemental soil cleanup levels are provided.	Potentially applicable to off-site area soils, based on current and reasonable future property use.	Yes	All
Ley Creek Surface Water	NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 - Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations	This TOGS presents NYSDEC Division of Water ambient water quality standards and guidance values and groundwater effluent limitations. The authority for these values is derived from Article 17 of the Environmental Conservation law and 6 NYCRR Parts 700-706, Water Quality.	Potentially applicable to Ley Creek surface water.	Yes	All
Ley Creek Sediment	NYSDEC 1999 Technical Guidance for Screening of Contaminated Sediments - Sediment Quality Criteria	State guidance document that provides sediment quality criteria for aquatic sediments.	Potentially applicable to Ley Creek sediment.	Yes	All
Potential Location-Specific SCGs					
Wetlands	6 NYCRR 663 - Freshwater wetland permit requirements	Actions occurring in a designated freshwater wetland (within 100 ft) must be approved by NYSDEC or its designee. Activities occurring adjacent to freshwater wetlands must: be compatible with preservation, protection, and conservation of wetlands and benefits; result in no more than insubstantial degradation to or loss of any part of the wetland; and be compatible with public health and welfare.	Potentially applicable based on available mapping which shows that the wetland area on the National Grid property west of the facility is a portion of State-mapped wetland SYE 6. In addition, wetland SYE 6 extends north and south of the NYS Thruway, north and south side of Factory Avenue, and east and west of Townline Road.	Yes	2A, 2B and 3
Wetlands and 100-yr floodplain	United States Environmental Protection Agency (USEPA) Office of Solid Waste and Emergency Response (OSWER) Directive 9280.0-02 (August 1985) - Policy on Floodplains and Wetlands Assessments for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Actions	Superfund actions must meet the substantive requirements of Executive Order 11988 (Floodplain Management) and Executive Order 11990 (Protection of Wetlands). Executive Order 11988 requires that consideration of flood hazards and floodplain management including restoration and preservation as natural undeveloped floodplains be included in the evaluation of the potential effects of remedial actions. Executive Order 11990 requires that activities occurring in wetlands be conducted in such a manner as to minimize the destruction, loss and degradation of wetlands.	Potentially applicable because portions of off-site areas are within floodplain and/or wetland areas. Specifically, portions of off-site areas are located in the 100-yr floodplain for Ley Creek and based on available mapping, the wetland area on the National Grid property west of the facility is a portion of State-mapped wetland SYE 6. In addition, wetland SYE 6 extends north and south of the NYS Thruway, north and south side of Factory Avenue, and east and west of Townline Road.	Yes	2A, 2B and 3

TABLE 10: EVALUATION OF POTENTIAL STANDARDS, CRITERIA AND GUIDANCE (SCGs)

Medium/Location/ Action	Citation	Requirements	Comments	Potential SCG	Alt(s)
Potential Location-Specific SCGs (continued)					
100-yr floodplain	6 NYCRR 373-2.2 - Location standards for hazardous waste treatment, storage, and disposal facilities - 100-yr floodplain	Hazardous waste treatment, storage, or disposal facilities located in a 100-yr floodplain must be designed, constructed, operated and maintained to prevent washout of hazardous waste during a 100-yr flood.	Portions of off-site areas are located in the 100-yr floodplain for Ley Creek. Based on analytical results of soil and sediment, there is the potential for some excavated materials to exhibit concentrations of PCBs in excess of 50 mg/kg, and thus, be categorized as hazardous waste in New York State. Potentially applicable for soil, sediment or construction waters found to be hazardous waste and requiring temporary storage or treatment as part of remedy implementation.	Yes	All
Within 61 meters (200 ft) of a fault displaced in Holocene time	40 Code of Federal Regulations (CFR) Part 264.18	New treatment, storage, or disposal of hazardous waste is not allowed.	Not applicable. Off-site areas are not located within 200 ft of a fault displaced in Holocene time, as listed in 40 CFR 264 Appendix VI.	No	None
River or stream	16 United States Code (USC) 661 - Fish and Wildlife Coordination Act	Requires protection of fish and wildlife in a stream when performing activities that modify a stream or river.	Potentially applicable to remediation of Ley Creek sediment.	Yes	2A, 2B and 3
Habitat of an endangered or threatened species	6 NYCRR 182	Provides requirements to minimize damage to habitat of an endangered species.	Not applicable, as no endangered or threatened species or their habitat were found in the off-site areas.	No	None
	Endangered Species Act	Provides a means for conserving various species of fish, wildlife, and plants that are threatened with extinction.	Not applicable, as no endangered or threatened species or their habitat were found in the off-site areas.	No	None
Historical property or district	National Historic Preservation Act	Remedial actions are required to account for the effects of remedial activities on any historic properties included on or eligible for inclusion on the National Register of Historic Places.	Not applicable, as no historic properties were identified in the off-site areas.	No	None
Construction in a floodplain	6 NYCRR 500 - Floodplain management regulations development permits	Hazardous waste treatment, storage, or disposal facilities located in a 100-yr floodplain must be designed, constructed, operated and maintained to prevent washout of hazardous waste during a 100-yr flood.	Portions of off-site areas are located in the 100-yr floodplain for Ley Creek. Based on analytical results of soil and sediment, there is the potential for some excavated materials to exhibit concentrations of PCBs in excess of 50 mg/kg, and thus, be categorized as hazardous waste in New York State. Potentially applicable.	Yes	2A, 2B and 3
Treatment actions	6 NYCRR 373 - Hazardous waste management facilities	Provides requirements for managing hazardous wastes.	Based on analytical results of soil and sediment, there is the potential for some excavated materials to exhibit concentrations of PCBs in excess of 50 mg/kg, and thus, be categorized as hazardous waste in New York State. Potentially applicable to excavated soil and sediment.	Yes	2A, 2B and 3

TABLE 10: EVALUATION OF POTENTIAL STANDARDS, CRITERIA AND GUIDANCE (SCGs)

Medium/Location/ Action	Citation	Requirements	Comments	Potential SCG	Alt(s)
Potential Action-Specific SCGs					
General excavation	6 NYCRR 257-3 - Air Quality Standards	Provide limitations for generation of constituents including particulate matter.	Not applicable because dust emissions would not be from a point source. May be relevant for consideration during dust generating activities such as earth moving, grading and excavation of soil.	Yes	2A, 2B and 3
	40 CFR 50.1 through 50.12 - National Ambient Air Quality Standards.	Provides air quality standards for pollutants considered harmful to public health and the environment. The six principle pollutants include carbon monoxide, lead, nitrogen dioxide, particulates, ozone, and sulfur oxides.	Potentially applicable during dust generating activities such as earth moving, grading, and excavation of soil.	Yes	2A, 2B and 3
Generation and disposal of hazardous material and treatment residuals	6 NYCRR 360 - Solid Waste Management Facilities	Provides requirements for management of solid wastes, including disposal and closure of disposal facilities.	Potentially applicable to excavated soil and sediment, and to treatment residuals associated with construction water management.	Yes	2A, 2B and 3
Construction	29 CFR Part 1910 - Occupational Safety and Health Standards - Hazardous Waste Operations and Emergency Response	Remedial activities must be in accordance with applicable Occupational Safety and Health Administration (OSHA) requirements.	Applicable for construction phase of remediation.	Yes	2A, 2B and 3
	29 CFR Part 1926 - Safety and Health Regulations for Construction	Remedial construction activities must be in accordance with applicable OSHA requirements.	Applicable for construction phase of remediation.	Yes	2A, 2B and 3
Transportation	6 NYCRR 364 - Waste Transporter Permits	Hazardous waste transport must be conducted by a hauler permitted under 6 NYCRR 364.	Based on analytical results of soil and sediment, there is the potential for some excavated materials to exhibit concentrations of PCBs in excess of 50 mg/kg, and thus, be categorized as hazardous waste in New York State. Potentially applicable.	Yes	2A, 2B and 3
	6 NYCRR Part 372 - Hazardous Waste Manifest System and Related Standards for Generators, Transporters, and Facilities	Substantive hazardous waste generator and transportation requirements must be met when hazardous waste is generated for disposal. Generator requirements include obtaining a USEPA Identification Number and manifesting hazardous waste for disposal.	Based on analytical results of soil and sediment, there is the potential for some excavated materials to exhibit concentrations of PCBs in excess of 50 mg/kg, and thus, be categorized as hazardous waste in New York State. Potentially applicable.	Yes	2A, 2B and 3
	49 CFR 172-174 and 177-179 - Department of Transportation (DOT) Regulations	Hazardous waste transport to off-site disposal facilities must be conducted in accordance with applicable DOT requirements	Based on analytical results of soil and sediment, there is the potential for some excavated materials to exhibit concentrations of PCBs in excess of 50 mg/kg, and thus, be categorized as hazardous waste in New York State. Potentially applicable.	Yes	2A, 2B and 3

TABLE 10: EVALUATION OF POTENTIAL STANDARDS, CRITERIA AND GUIDANCE (SCGs)

Medium/Location/ Action	Citation	Requirements	Comments	Potential SCG	Alt(s)
Potential Action-Specific SCGs (continued)					
Land disposal of hazardous waste	6 NYCRR 376 - Land disposal restrictions	Provides treatment standards to be met prior to land disposal of hazardous wastes.	Based on analytical results of soil and sediment, there is the potential for some excavated materials to exhibit concentrations of PCBs in excess of 50 mg/kg, and thus, be categorized as hazardous waste in New York State. Potentially applicable.	Yes	2A, 2B and 3
Disposal of Toxic Substances Control Act (TSCA) waste	40 CFR 761	Provides requirements for disposal of TSCA wastes.	Based on analytical results of soil and sediment, there is the potential for some excavated materials to exhibit concentrations of PCBs in excess of 50 mg/kg, and thus, be categorized as TSCA waste. Potentially applicable.	Yes	2A, 2B and 3
Discharge to surface water	6 NYCRR 750 through 758 - State Pollutant Discharge Elimination System (SPDES) Regulations	Substantive requirements associated with discharge to a water body (limitations and monitoring requirements) would be set by NYSDEC.	Applicable to treated water from dewatering operations in the event that these are discharged to Ley Creek.	Yes	2A, 2B and 3
Generation of air emissions	NYS Air Guide 1	Provides annual guideline concentrations (AGLs) and short-term guideline concentrations (SGCs) for specific chemicals. These are property boundary limitations that would result in no adverse health effects.	Potentially applicable.	Yes	2A, 2B and 3
	NYS Technical Administration Guidance Memorandum (TAGM) 4031 - Dust Suppressing and Particle Monitoring at Inactive Hazardous Waste Disposal Sites	Provides limitations on dust emissions.	Potentially applicable.	Yes	2A, 2B and 3
Construction storm water management	NYSDEC General permit for storm water discharges associated with construction activities. Pursuant to Article 17 Titles 7 and 8 and Article 70 of the Environmental Conservation Law.	The regulation prohibits discharge of materials other than storm water and all discharges that contain a hazardous substance in excess of reportable quantities established by 40 CFR 117.3 or 40 CFR 302.4, unless a separate NPDES permit has been issued to regulate those discharges. A permit must be acquired if activities involve disturbance of 5 acres or more. If the project is covered under the general permit, the following are required: development and implementation of a storm water pollution prevention plan; development and implementation of a monitoring program; all records must be retained for a period of at least 3 years after construction is complete.	Potentially applicable.	Yes	2A, 2B and 3

TABLE 10: EVALUATION OF POTENTIAL STANDARDS, CRITERIA AND GUIDANCE (SCGs)

Medium/Location/ Action	Citation	Requirements	Comments	Potential SCG	Alt(s)

Notes:
CFR - Code of Federal Regulations
DOT - Department of Transportation
NPDES - National Pollutant Discharge Elimination Discharge System
NYCRR - New York Code of Rules and Regulations
NYSDEC - New York State Department of Environmental Conservation
PCB - Polychlorinated biphenyl
SCO - Soil Cleanup Objective
TAGM - NYS Technical Administration Guidance Memorandum
TSCA - Toxic Substances Control Act
USEPA - United States Environmental Protection Agency

OPERABLE UNIT 2 OF THE GENERAL MOTORS – INLAND FISHER GUIDE
SUBSITE OF THE ONONDAGA LAKE SUPERFUND SITE
RECORD OF DECISION

APPENDIX III

ADMINISTRATIVE RECORD INDEX

Administrative Record Index
Operable Unit 2 of the General Motors – Inland Fisher Guide
Subsite of the Onondaga Lake Superfund Site

RI/FS Activities	Document
Remedial Investigation/ Feasibility Study Work Plan	Final Work Plan, Supplemental Remedial Investigation/Feasibility Study, Former Inland Fisher Guide Facility and Ley Creek Deferred Media (October 1999)
Remedial Investigation Reports	Problem Formulation Document, Former IFG Facility and Ley Creek Deferred Media (April 2000)
	Exposure Pathway Analysis Report for the Human Health Risk Assessment, Former IFG Facility and Deferred Media, Syracuse, New York (June 2000)
	Revised Off-Site Remedial Investigation Report, Former Syracuse IFG Facility and Deferred Media Site (March 2013)
	Fish and Wildlife Impact Analysis, Former Syracuse Inland Fisher Guide Facility (October 2013)
Feasibility Studies	Off-Site Feasibility Study, Former IFG Facility and Deferred Media Site (May 2013)
	Revised Draft Addendum, Off-Site Feasibility Study, Former IFG Facility and Deferred Media Site, Addendum, Syracuse, New York (June 2014)
Proposed Plan Released	Proposed Plan (November 17, 2014)
Public Meeting Held	Documentation and Transcript of December 2, 2014 Public Meeting (Attached to the ROD as Appendix V-d)
	Written Comments on Selected Remedy (Attached to the ROD as Appendix V-e)
Record of Decision Issued	Record of Decision and Responsiveness Summary (March 31, 2015)
Enforcement Documents	Administrative Consent Order (September 25, 1997)

OPERABLE UNIT 2 OF THE GENERAL MOTORS – INLAND FISHER GUIDE
SUBSITE OF THE ONONDAGA LAKE SUPERFUND SITE
RECORD OF DECISION

APPENDIX IV

NEW YORK STATE DEPARTMENT OF HEALTH LETTER OF CONCURRENCE

NEW YORK
state department of
HEALTH

Howard A. Zucker, M.D., J.D.
Acting Commissioner of Health

Sue Kelly
Executive Deputy Commissioner

October 23, 2014

Mr. Robert Schick, Director
NYS Dept. of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233

Re: **Proposed Plan — Operable Unit 2**
General Motors - Fisher Guide
Site #734057
Salina (T), Onondaga County

Dear Mr. Schick:

At your Department's request, staff reviewed the US EPA's and your Department's *Proposed Plan* for Operable Unit 2 (as defined in the plan) of the referenced site to determine whether the proposed remedy is protective of public health. I understand that sediment and soil within and along Lower Ley Creek, floodplains and wetlands are contaminated. Human exposures to this contamination will be addressed by the proposed remedy as follows:

- Sediment: All sediment that is contaminated with polychlorinated biphenyls at levels above 1 mg/kg will be removed for off-site disposal. Removal areas will be restored in accordance with an approved habitat restoration plan.
- Soil: Soil and subsurface soil will be removed to meet ecological or land use soil cleanup objectives depending upon the current and reasonably anticipated future land use of discrete areas. Residual contamination will be managed in place (in accordance with voluntary agreements that are obtained when individual property owners grant permission to your Department or the US EPA to do so) and cover systems will be maintained to allow for continued use of the properties in accordance with 6NYCRR Part 375. Future excavations will be conducted in accordance with an approved excavation plan to ensure that human exposures to contaminated soil are properly managed.

Periodic reviews will be completed to certify that these elements of the remedy are being implemented and remain effective. This remedy is dependent upon agreements with third parties. If these agreements cannot be obtained, I understand that appropriate next steps will be discussed. Based on this information, I believe the remedy is protective of public health and concur with the *Proposed Plan*. If you have any questions, please contact Ms. Maureen Schuck or me at 518-402-7860.

Sincerely,

Krista M. Anders

Krista M. Anders, Director
Bureau of Environmental Exposure Investigation

ec: A. Salame-Alfie, Ph.D.
M. Schuck / M. Sergott / e-File
J. Strepelis – NYSDOH CRO
K. Zimmerman – OCHD
M. Ryan / D. Hesler / R. Mustico – NYSDEC Central Office
H. Warner – NYSDEC Region 7

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OPERABLE UNIT 2 OF THE GENERAL MOTORS – INLAND FISHER GUIDE
SUBSITE OF THE ONONDAGA LAKE SUPERFUND SITE
RECORD OF DECISION

APPENDIX V

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY
FOR THE RECORD OF DECISION
OPERABLE UNIT 2 OF THE GENERAL MOTORS – INLAND FISHER GUIDE SUBSITE
ONONDAGA LAKE SUPERFUND SITE
TOWN OF SALINA, ONONDAGA COUNTY, NEW YORK

INTRODUCTION

This Responsiveness Summary provides a summary of the public's comments and concerns received during the public comment period related to the General Motors – Inland Fisher Guide Subsite (Subsite) of the Onondaga Lake Superfund site (Site) Proposed Plan and provides the New York State Department of Environmental Conservation (NYSDEC) and the U.S. Environmental Protection Agency (EPA) responses to those comments and concerns. All comments summarized in this document have been considered in the final decision in the selection of a remedy to address the contamination at the Subsite.

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

NYSDEC and General Motors Corporation (GM) entered into an Administrative Order on Consent in 1997 that required GM to conduct a remedial investigation and feasibility study (RI/FS)[1] for the Subsite. GM conducted field investigations at the Subsite that culminated in the completion of an RI report in March 2013, FS report in May 2013 and FS report addendum in June 2013 for Operable Unit 2 (OU2)[2] of the Subsite by the Revitalizing Auto Communities Environmental Response (RACER) Trust.[3] Based upon the results of the RI/FS, NYSDEC and EPA identified a preferred remedy for OU2. The preferred remedy and the basis for that preference were identified in a Proposed Plan.[4] The RI/FS reports and a Proposed Plan were released to the public for comment on November 17, 2014. These documents were made available to the public at information repositories maintained at the Salina Library, 100 Belmont Street, Mattydale, New York; Atlantic States Legal Foundation, 658 West Onondaga Street, Syracuse, New York; NYSDEC, Division of Environmental Remediation, 625 Broadway, Albany, New York; NYSDEC Region 7, 615 Erie Boulevard West, Syracuse, New York; and at EPA's Region 2 Records Center, 290 Broadway, 18th Floor, New York, New York. An

[1] An RI determines the nature and extent of the contamination at a site and evaluates the associated human health and ecological risks and an FS identifies and evaluates remedial alternatives to address the contamination.

[2] The Subsite consists of two OUs--OU1, which addresses the former plant and groundwater on, and emanating from, the former plant, and OU2, which includes "other media" not addressed under OU1. Specifically, OU2 includes Ley Creek channel sediments, surface water and floodplain soils/sediments in the reach from Townline Road to the Route 11 Bridge, and the National Grid Wetland, Factory Avenue Area and Factory Avenue/LeMoyne Avenue Intersection Area described in the ROD.

[3] In 2009, General Motors filed for bankruptcy, and on March 31, 2011, administration of the remedial activities at the GM-IFG Subsite was taken over by RACER, the current property owner.

[4] A Proposed Plan describes the remedial alternatives considered for a site and identifies the preferred remedy with the rationale for this preference.

NYSDEC listserv bulletin notifying the public of the availability for the above-referenced documents, the comment period start and completion dates and the date of the planned public meeting was issued on November 14, 2014. The public comment period ran from November 17, 2014 to December 17, 2014.

A second public comment period ran from January 14, 2015 to February 14, 2015. An NYSDEC listserv bulletin notifying the public of the availability for the RI and FS reports and Proposed Plan and the second comment period's completion date was issued on January 14, 2015. This information was also published in *The Post-Standard* on January 14, 2015.

On December 2, 2014, NYSDEC held a public meeting at the Town of Salina Town Hall, 201 School Road, Liverpool, New York, to inform local officials and interested citizens about the Superfund process, to present the Proposed Plan for the OU2 portion of the Subsite, including the preferred remedy, and to respond to questions and comments from the public. Approximately 20 people, including local business people and local government officials, attended the public meeting.

SUMMARY OF COMMENTS AND RESPONSES

Comments were received at the public meeting and in writing.

Comments at the public meeting were received from Robert A. Papworth, Trustee, The Nature Conservancy, Central Western New York. The transcript from the public meeting can be found in Appendix V-d.

Written comments were received from:

- Michael E. Hooker, Executive Director of the Onondaga County Water Authority, transmitted *via* a November 25, 2014, e-mail.
- Julia Braunmueller and David Palmerton, Palmerton Group on behalf of Carrier Corporation, Cooper Crouse-Hinds, LLC, Syracuse China Company, and Niagara Mohawk Power Company d/b/a National Grid, transmitted *via* a December 16, 2014, e-mail from Julia Braunmueller, Assistant Project Manager, Palmerton Group, LLC.
- Richard Capozza, Partner, Hiscock and Barclay, on behalf of Niagara Mohawk Power Company d/b/a National Grid, transmitted *via* a December 17, 2014, letter.
- Kevin C. Murphy, The Wladis Law Firm P.C., on behalf of Onondaga County, transmitted *via* a December 17, 2014, e-mail.
- Alma Lowery, Of Counsel, Law Office of Joseph J. Heath, on behalf of the Onondaga Nation, transmitted *via* a December 17, 2014, e-mail.
- Steve Apelman, President and Tim Cook, V.P. of Operations of Greenfield Restorations, transmitted *via* a January 20, 2015, e-mail.

The written comments submitted during the public comment period can be found in Appendix V-e.

A summary of the comments provided at the public meeting and in writing, as well as the NYSDEC and EPA responses to them, are provided below.

Coordination with the Lower Ley Creek Subsite

Comment #1: A commenter opines that it is critical that if the entirety of the Creek is not going to be subject to primary oversight by a single government regulator, whether that be EPA or NYSDEC, that the regulators work cooperatively and in harmony to secure an overall result that is protective of human health and the environment without actual or perceived differences in the remedy and in a manner that is cost-effective and efficient for all parties concerned, especially given the impact of the GM bankruptcy. Another commenter opines that the remedy for Ley Creek upstream of the Route 11 bridge and the remedy for Lower Ley Creek should be coordinated if not integrated into a single remediation project to increase the efficiency of the cleanup, reduce the environmental footprint of the project, limit the duration and extent of impacts on the local community, and increase the overall protectiveness of the remedies.

Response #1: The remedies for both Lower Ley Creek and GM-IFG will comply with applicable or relevant and appropriate requirements of federal and state environmental statutes and requirements. As both Lower Ley Creek and GM-IFG are part of the Site, they must comply with the National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR Part 300. Therefore, the remedial programs for both will have to be consistent and protective of public health and the environment. The remedial alternatives for both were developed under the joint review of EPA and NYSDEC. EPA and NYSDEC have discussed with the potentially responsible parties (PRPs) for Lower Ley Creek and the RACER Trust the importance of coordinating the implementation of the two remedies.

It should be noted that the physical characteristics and the nature of the contamination present in Ley Creek, from the Route 11 bridge downstream to Onondaga Lake (Lower Ley Creek), are significantly different than the Creek upstream of the Route 11 bridge (OU2 portion of the GM-IFG). For example, the sediment depths in Ley Creek upstream of the Route 11 are typically 1 to 2 feet thick, whereas sediment depths in Lower Ley Creek are significantly thicker (1 to 8 feet thick). Nevertheless, the sediment remedies for both of the subsites are similar in their end result. Lower Ley Creek calls for a 1 milligram per kilogram (mg/kg) PCB cleanup number in sediments, as does the OU2 portion of GM-IFG. The remedy for the OU2 portion of GM-IFG calls for complete removal of sediment to native clay where any PCB concentrations are above 1 mg/kg.

In addition, the soil remedies for both of the subsites are similar. The Lower Ley Creek remedy calls for a PCB-soil cleanup of 1 mg/kg in the top 2 feet and of 10 mg/kg in deeper soils, and the OU2 portion of the GM-IFG remedy calls for a PCB-soil cleanup of 1 mg/kg in ecological, residential and commercial use areas irrespective of depth (the extent of PCB-contaminated soil at the OU2 portion of GM-IFG is generally in the top 1-4 feet).

Comment #2: A commenter questions the proposed timing of the implementation of the remedy given that the source areas are subject to continuing investigation and have not yet been remediated, while at the same time the former GM-IFG facility continues to discharge PCBs to Ley Creek. Given these deficiencies, the commenter states that the projected costs are based on poorly defined remedial endpoints and insufficient field data and, thus, the Proposed Plan's comparison of remedies is of limited utility.

Response #2: Analyses of samples collected from Ley Creek surface water and sediments upstream of the contaminated areas indicate that current upstream conditions will not impact the remedy, since PCBs were not detected in upstream surface water, and upstream sediment samples averaged only 0.28 mg/kg for PCBs, well below the cleanup goal.

In addition, three Interim Remedial Measures (IRMs) were performed at the former GM-IFG facility from 2002 to 2004 to prevent the former GM facility from acting as a source of PCBs to Ley Creek or, as termed by the commenter, to prevent "the discharge of PCBs to Ley Creek," that could impact the remedy. An industrial landfill at the former GM-IFG facility that contains chromium- and PCB-contaminated material was capped to prevent contaminants from leaching into the groundwater. A second response action involved the removal of highly-contaminated soil from a former discharge swale used in the 1950s and 1960s as a conduit for the discharge of liquid process waste to Ley Creek. The swale was subsequently filled in, but the contaminated soil remained until removed by the IRM. Over 26,000 tons of soil containing PCBs were removed by this IRM for off-Site disposal. The third response action involved the construction of a retention pond and associated water treatment system to stop the intermittent discharge of PCBs and other contaminants to Ley Creek that could occur during storm events. This pond collects all water that accumulates on the GM-IFG property in any of the storm sewers or abandoned process sewers. The pond water is then treated by the on-Site treatment plant, prior to discharge to Ley Creek. The discharge from the former GM-IFG facility to Ley Creek is regulated by the NYSDEC through a State Pollutant Discharge Elimination System (SPDES) permit.

Furthermore, the sampling performed during the RI provided sufficient information to estimate soil and sediment removal volumes and to develop suitable, corresponding FS level cost estimates. During the remedial design (RD), additional sampling will be performed to refine the limits of soil and sediment excavation.

Comparison to the Lower Ley Creek Remedy

Comment #3: A commenter states that the sediment remedy for Lower Ley Creek is more conservative than the remedy for the OU2 portion of GM-IFG.

Response #3: Both remedies have PCB cleanup levels of 1 mg/kg in sediment, which means that sediment areas that exhibit less than 1 mg/kg total PCBs will not be excavated under either remedy. Because of the relatively shallow depth of sediment in Ley Creek between Townline Road and Route 11 (generally 1 to 2 feet), any area of sediment excavation under the OU2

portion of the GM-IFG remedy is expected to remove all of the sediment to the underlying native clay. For Lower Ley Creek, the remedy generally addresses deeper sediment excavations. The differences between the two remedies are not differences in protectiveness; they reflect differences in the sediment deposition and the nature and extent of contamination between the two subsites.

Comment #4: A commenter states that the Lower Ley Creek remedy is unnecessarily over-protective due to the greater soil backfill thicknesses. The commenter states that the post-excavation fill placement for the two subsites should be the same.

Response #4: For the OU2 portion of GM-IFG, soil contamination has been identified in floodplains areas and other discrete areas, including the National Grid Wetland Area and the Factory Avenue Area, with an estimated two foot average depth of soil contamination. For Lower Ley Creek, on the other hand, the soil contamination is significantly deeper, to depths of 14 feet in limited areas. As a result, the deeper excavations at Lower Ley Creek will generally require more backfill.

For the Lower Ley Creek remedy, the limited hotspot excavation areas on the southern bank will not be backfilled to grade since reducing the elevation of this area will increase the flood storage capacity of the floodplain. The extent of backfilling in these areas will be determined during the RD based on the consideration of various factors, including flooding potential and desired habitat conditions.

Where it may not be possible to excavate soil to achieve the soil cleanup objectives (SCOs), such as in the vicinity of underground utilities, both remedies call for a demarcation layer and a one-foot soil cover. In such cases, protectiveness is being provided by a combination of excavation and a soil cover.

As stated in Response #3, the differences between the two remedies are not indicative of any difference in protectiveness but rather reflect differences in the nature and extent of contamination between the two subsites.

Comment #5: A commenter states that there appears to be a discrepancy between the sediment remedies between Lower Ley Creek and the OU2 portion of GM-IFG, and that, absent an explanation that resolves the apparent discrepancy, NYSDEC should select Sediment Alternative 4 (0.28 mg/kg PCB sediment cleanup goal) for the OU2 portion of GM-IFG. The commenter maintains that because the Lower Ley Creek remedy will remove all of the contaminated sediment above cleanup levels in the Creek, it is more conservative than the OU2 portion of the GM-IFG remedy.

Response #5: The PCB sediment cleanup goals for the OU2 portion of the GM-IFG and Lower Ley Creek are both 1 mg/kg. As such there is not a discrepancy between the PCB sediment cleanup goals of the two remedies.

Utility Infrastructure

Comment #6: Two commenters state that the maintenance of the existing utilities (such as buried pipelines in contaminated areas) and the future need to inspect, maintain and improve the existing utility infrastructure will be significantly impacted by contaminants that are not removed. One of the commenters further stated that the final RD needs to allow for future utility access.

Response #6: During the RD, utility entities will be consulted to insure that the remedy design and construction protects utilities and does not prevent maintenance personnel from accessing the utility infrastructure, as needed. A Site Management Plan (SMP) will be developed to ensure that any future construction and/or maintenance projects within this area are performed in a manner that is protective of workers and the long-term integrity of the remedy.

Comment #7: Two commenters inquire as to what steps will be taken to coordinate with local municipalities, utilities, *etc*., to ensure proper mark-out and protection of the utilities' property.

Response #7: NYSDEC will inform property owners and utilities in advance of work being conducted on their property. Insofar as there may be specific access or utility considerations raised, the NYSDEC project manager or authorized representative will meet with the involved party to work through any issues. Also see Response 6 above.

Flood Control

Comment #8: A commenter states that the Ley Creek channel is flat and has little fall from the upper drainage areas to the mouth of the creek at Onondaga Lake. The commenter inquires as to how the remedy will assure that the flood district residents are protected from flooding; what effort will be made to assure that the future flood mitigation meets or exceeds the current channel capacity; and what opportunities are envisioned to expand the floodway to offer greater flood protection as either a necessary aspect of the proposed remedy or as an added/modified design feature (*e.g*., less capping material).

Response #8: Maintaining sufficient flood capacity of the Ley Creek channel and floodplains will be one of the design requirements.

Capping is not envisioned to be part of the OU2 portion of the GM-IFG remedy. Sediments exceeding 1 mg/kg PCB in this reach of Ley Creek will be removed to the native clay material. On average, sediment excavation is expected to be approximately 1.25 feet deep over approximately 72% of the creek reach. Approximately 6 inches of sand will be replaced in the excavated areas for habitat restoration purposes. The net result is expected to be an increase to the Creek channel capacity resulting in improved flood protection compared to current conditions.

Remedy Implementation

Comment #9: A commenter inquires as to how the environment will be protected from the mobilization of pollutants during the implementation of the remedy.

Response #9: The RD and/or remedial construction work plan will address the details of sediment and soil excavation; measures to reduce sediment resuspension; measures to ensure that erosion is controlled; provisions for monitoring operations to ensure they are protective of the environment; and any corrective or other mitigative measures that may be warranted.

Comment #10: A commenter inquires as to what cost saving or efficiency opportunities have been identified.

Response #10: As discussed in the Proposed Plan and the Record of Decision, a RD will be developed to provide the details necessary for the construction of the remedial program. Green remediation, as set forth in DEC's DER-31, identifies many measures that are both green and cost saving those to be considered will include, but not be limited to:

- Reduction in vehicle idling, including both on and off road vehicles and construction equipment during construction;
- Increasing energy efficiency and minimizing use of non-renewable energy; and
- Conserving and efficiently managing resources and materials.

Comment #11: A commenter states that current and future discharges from the former GM facility, including an SPDES violation from as recently as November 2012, will impact the remedies selected for Ley Creek and Onondaga Lake.

Response #11: As was noted in Response #2, under an IRM, a retention pond and associated water treatment system were constructed to stop the intermittent discharge of PCBs and other contaminants that occur during storm events. There have been two SPDES discharge violations for PCBs from the former GM-IFG facility since the implementation of the IRM. The violations were for 0.05 micrograms per liter (ug/L) and 0.02 ug/L over the PCB discharge limit. Relative to the cleanup goal of 1 mg/kg PCB in sediment, these violations would not impact the remedy.

Finally, based on the data collected as part of the RI for the OU1 portion of GM-IFG, PCB-contaminated groundwater is not discharging from the former GM-IFG facility to Ley Creek.

Comment #12: A commenter inquires as to whether or not the Metropolitan Syracuse Wastewater Treatment Plant (METRO) wastewater treatment plant will be used during the remediation, what potential volume is envisioned, if pretreatment of wastewater is envisioned, and what provisions will be made to cease pumping to the system will be made during wet weather conditions.

Response #12: It is likely that the water generated from dewatering the excavated sediments will require on-Site treatment prior to discharge to surface water. The design will determine if the treatment discharge will be to Ley Creek or to METRO. If it is determined that discharge to METRO is the most efficient way of properly discharging the construction waters, the RACER Trust would need to obtain proper approvals and permits from Onondaga County. Details regarding the volume of discharge and the size and type of treatment units in the water treatment train will be determined during the design process. Discharged, treated water will be required to meet appropriate discharge limits and provisions regardless of whether the discharge is to Ley Creek or to METRO.

Comment #13: A commenter notes that National Grid expects that surface soils located within the Natural Gas Pipeline 50 corridor that do not meet SCOs should be excavated and immediately backfilled, thereby obviating the need for a demarcation layer and soil cover over the pipeline. The commenter states that based on the RI data, the vast majority of the contamination within the Factory Avenue Area is located within the top 3 feet, and, thus, the remedy should include excavation and disposal of soils to a depth of 3 feet in areas designated for soil removal within the Pipeline 50 corridor.

Response #13: The remedy calls for soil removal to meet SCOs regardless of depth. Also, see Response 6, above.

Comment #14: A commenter states that NYSDEC should provide flexibility in the ROD to design and build appropriate sediment caps to contain sediments with unacceptable post-removal residual PCB contamination, as well as sediments which should be remediated but cannot be efficiently removed due to physical limitations.

Response #14: As the sediment depositions in this reach of Ley Creek are fairly shallow, NYSDEC and EPA do not anticipate any impediments to excavation.

Comment #15: A commenter states that the ROD should allow for the use of adaptive management in the description of long-term operation and maintenance (O&M) to allow for appropriate modifications of O&M activities over the long-term.

Response #15: A SMP will be developed to provide for the proper management of all post-construction remedy components. The SMP will allow flexibility to facilitate O&M modifications, as may be appropriate, over the long-term.

Institutional Controls

Comment #16: A commenter inquires as to how the institutional controls will impact the Ley Creek Drainage District; what restrictions will be placed on properties incorporated in the District, and if the restrictions will preclude upgrades in the District.

Response #16: The purpose of institutional controls is to protect the integrity of a remedy and to prevent exposure to contamination that remains after the remediation is completed. It is anticipated that the institutional controls (*e.g.*, environmental easements) will restrict intrusive activities in areas, where residual contamination remains, unless the activities are in accordance with an approved SMP. It is not envisioned that the institutional controls will preclude upgrades to the District.

Funding

Comment #17: A commenter requests that the ROD include an itemized financial update from the GM bankruptcy settlement.

Response #17: This comment seeks detailed information that is outside the scope of the Proposed Plan, there is approximately $19 million dollars available in the trust fund for remediation of GM-IFG Operable Units 1 and 2.

Disposal

Comment #18: A commenter states that the ROD should provide an option for disposal of excavated soils and sediment having PCB concentrations less than 50 mg/kg in a suitable local landfill in the same manner as the ROD for the Lower Ley Creek. Assuming that the technical requirements for disposal in either the Town of Salina Landfill or the Cooper Crouse-Hinds North Landfill can be met, such disposal would reduce the risks and the environmental footprint of waste transport relative to off-Site disposal. Considering that essentially all of contamination being managed in the proposed cleanup upstream of the Route 11 bridge and the planned cleanup downstream of the Route 11 Bridge emanated from the former GM-IFG facility, the same disposal methods should be available for both projects.

Response #18: The selected remedy calls for the proper disposal at a RCRA-compliant facility of approximately 20,000 cubic yards of non-TSCA soil and sediment for the OU2 portion of GM-IFG, in comparison to approximately 140,000 cubic yards of disposal for the non-TSCA soil and sediment for Lower Ley Creek. The ROD for Lower Ley Creek called for either local or non-local disposal of the excavated soils and sediments with PCB concentrations less than 50 mg/kg. Should it be determined that local disposal of soils and sediments is a viable option for Lower Ley Creek, then consideration will be given to similarly disposing of the excavated soil and sediment from GM-IFG OU2.

Protectiveness

Comment #19: A commenter states that the “remedial action levels” for PCB sediments and soils should be based upon site-specific risk assessments rather than the generic soil and sediment cleanup objectives, such as the 1 mg/kg PCB value identified in the Proposed Plan. The assumptions underlying the generic values are not applicable to the circumstances of the OU2 portion of GM-IFG.

Response #19: A Superfund site-specific baseline risk assessment determines whether a site poses an unacceptable risk to human health or the environment. The baseline human health risk assessment can inform the selection of remediation goals, particularly for less common contaminants where there is an absence of promulgated standards or guidelines; however, for PCBs, there is a strong basis for the selection of the 1 mg/kg SCO, as discussed below.

Regarding establishing cleanup objectives for soils, SCOs are identified in 6 NYCRR Part 375, Environmental Remediation Programs, Subpart 375-6, effective December 14, 2006. The 1 mg/kg PCB SCO is protective of the ecosystem and commercial, restricted residential, and residential, use areas.

There are no federal or state promulgated standards for contaminant levels in sediments. There are, however, other federal or state advisories, criteria or guidance (which are used as "To-Be-Considered" criteria). Specifically, NYSDEC's "Technical Guidance for Screening Contaminated Sediments" (January 1999) sediment screening values are a To-Be-Considered criteria. The 1 mg/kg PCB sediment clean up criteria is routinely evaluated and often selected by NYSDEC for contaminated sediment sites. It is protective for this Subsite. It should be noted that this is the same sediment clean up criteria selected by EPA for Lower Ley Creek.

Comment #20: The Onondaga Nation expressed a strong preference for remedial alternatives that directly remove contaminants from the areas on or around Onondaga Lake and ensure the greatest degree of public safety. Accordingly, the Nation states that the remedy for the OU2 portion of GM-IFG will relegate Ley Creek to a permanently contaminated state.

Response #20: NYSDEC and EPA recognize the Onondaga Nation's strong preference for remedial alternatives that remove all contaminants from the areas on or around Onondaga Lake. This remedy was determined by USEPA and NYSDEC to be protective of human health and the environment, comply with ARARs, and represent the best balance of the criteria established in the National Oil and Hazardous Substances Pollution Contingency Plan. The selected remedy for the OU2 portion of GM-IFG will remove the majority of contamination in the sediments and soils. Specifically, the application of the 1 mg/kg cleanup level for PCBs in sediments will result in the excavation to the native clay soil over 70% of the creek bed, and the utilization of the 1 mg/kg PCB cleanup level in soil will result in excavations of 1 to 4 feet, with a Ley Creek floodplain hot spot being excavated to as deep as 6 feet. The removal of these sediments and soils will reduce the potential risks to human health and the environment to acceptable levels.

Comment #21: The Onondaga Nation expresses concern with the reliance on the current fish advisory to limit human exposure to PCBs from fish consumption to acceptable levels. The Nation stated that, traditionally, it relied heavily on fish caught in Onondaga Lake and its tributaries. The continued contamination of these resources significantly damages or altogether precludes such traditional uses. The remedy, opines the Nation, should allow for the lifting of fish consumption restrictions at some identifiable point in the future. Similarly, the Nation supports relying on unrestricted use standards for soil remediation, which would provide for the broadest possible future uses at the Subsite.

Response #21: There is a State-wide advisory for all fresh waters that recommends that fish consumption be limited, primarily due to the presence of PCBs and mercury in fish, because of the ubiquitous nature of these environmental contaminants. In addition, due to local conditions, there is a more stringent advisory for Onondaga Lake and its tributaries, including Ley Creek, to the first impassible barrier to fish. Contaminants found in fish from Onondaga Lake and its tributaries which give rise to the need to advise that consumption be limited are attributed to many potential sources, including contaminated lake bottom and tributary sediments, urban run-off *via* storm-water discharges and non-point sources, and atmospheric deposition. The selected remedy for the OU2 portion of GM-IFG is expected to significantly reduce the potential source of PCB to fish and other biota attributed to this Subsite. However, the remediation of this Subsite is not expected, in and of itself, to significantly impact PCB concentrations in fish that drive the consumption advice specific to Onondaga Lake and its tributaries. Until such time that the cumulative impacts of the many ongoing and completed remedial actions and other lake-basin water management improvements lead to sufficient reductions in fish contaminant levels to enable a relaxation of the consumption advisory, the advisory serves an important role to help protect public health.

Comment #22: The Onondaga Nation states that an unrestricted use SCO would provide greater assurance that these contaminated areas of the OU2 portion of the GM-IFG will not discharge PCBs or other hazardous substances to Ley Creek in the future.

Response #22: The SCO of 1 mg/kg PCB is protective of the ecosystem and protective for current and reasonably anticipated future uses of the area by the public.

Comment #23: The Onondaga Nation notes that because there are no cleanup standards for PCB-contaminated sediment, the Proposed Plan relies on a “risk-based” remediation goal of 1 mg/kg PCBs in sediment. The derivation of this value is not explained in the Proposed Plan, which simply notes that the standard has been adopted in other New York State hazardous waste sites and is “protective of human health and the environment for this site.” In addition, notes the Nation, the supporting documents fail to provide a valid reason to discard other “risk-based clean-up levels” considered in during the FS. Sediment Alternative 4, for example, would set a remediation goal of 0.28 mg/kg PCBs, which is described as the average upstream sediment concentration for PCBs, and as suggested by the Nation, would be economically and technically viable. Other remedial alternatives that would have set a preliminary remediation goal of 0.2 mg/kg PCBs were, apparently, eliminated from consideration as infeasible, because they also incorporated remediation goals for trivalent chromium, copper, and nickel lower than the levels that could be documented in clean fill (GM-IFG OU2 FS Addendum, June 2014). However, the Nation states that this explanation fails to recognize the fact that the PCB-remediation goals incorporated in the rejected alternative were apparently achievable. In addition, the Proposed Plan acknowledges that PCB levels in fish tissue and invertebrates are significantly higher within the OU2 portion of GM-IFG than in upstream regions, meaning that the Subsite is contributing to the on-going contamination of Onondaga Lake, its tributaries and its natural resources. Rather than eliminating this contribution by remediating the sediments to a level as clean as or cleaner than upstream sources, NYSDEC appears to have selected a remediation goal which simply reduces contamination to more acceptable levels. The Nation is concerned that even the most

protective clean-up level considered presumes that Ley Creek will remain contaminated by man-made pollutants in perpetuity.

While the Nation's preferred alternatives may be slightly more expensive, the Nation believes that these costs are more than justified by their potential to support a fully restored Ley Creek and the permanent removal of potential contaminants to Ley Creek and Onondaga Lake.

Response #23: Because there are no NYSDEC or EPA cleanup standards for PCB-contaminated sediment, a remedial goal for sediment has been selected for this Subsite using other New York State hazardous waste sites as a reference, where a cleanup value of 1 mg/kg PCBs in sediment has proven effective.

In regards to consideration of "other risk based clean-up levels", the baseline ecological risk assessment (BERA), indicated that PCB sediment concentrations of 2.2 mg/kg would be protective for mink and 8.0 mg/kg would be protective for belted kingfisher. Therefore, based on the BERA, the 1 mg/kg PCB clean-up value is protective of ecological receptors.

The PRG value of "0.2 ppm" referenced in the comment above was a soil cleanup value evaluated in the feasibility study addendum, not a sediment cleanup value, and it would therefore, not be applicable to sediments.

Although the selected remedy sediment clean-up value of 1 mg/kg is greater than the 0.28 mg/kg value included under Proposed Plan's Alternative 4, where sediment excavation is required, over 70% of the creek bed, the excavation will occur down to the native clay , which is uncontaminated.

Additional Remedial Alternatives

Comment #24: A commenter opines that thermal desorption treatment should be evaluated as a remedial technology for this Subsite, and that a thermal desorption treatment facility should be built to treat contamination from other hazardous waste sites in the area.

Response #24: Thermal desorption was screened out in the FS due to high capital costs and because the technology would not be effective for metals.

Comment #25: A vender comments that it would like to show NYSDEC how its biological treatment technology could be used for remediation.

Response #25: Biological treatment was not evaluated in the FS because the technology would not be effective for metals.

OPERABLE UNIT 2 OF THE GENERAL MOTORS – INLAND FISHER GUIDE
SUBSITE OF THE ONONDAGA LAKE SUPERFUND SITE
RECORD OF DECISION

APPENDIX V-a

NOVEMBER 2014 PROPOSED PLAN

General Motors – Inland Fisher Guide Site Operable Unit 2

Subsite of the Onondaga Lake Superfund Site
Town of Salina, Onondaga County, New York

NYSDEC *November 2014* EPA *Region 2*

PURPOSE OF THIS DOCUMENT

This document describes the remedial alternatives considered to address contamination related to Operable Unit 2 (OU2) of the General Motors – Inland Fisher Guide Site (Site), which is a subsite of the Onondaga Lake Superfund Site, and identifies the preferred remedial alternative with the rationale for this preference.

This Proposed Plan was developed by the New York State Department of Environmental Conservation (NYSDEC) and the U.S. Environmental Protection Agency (EPA) in consultation with the New York State Department of Health (NYSDOH). NYSDEC and EPA are issuing this Proposed Plan as part of their public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and Sections 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), as well as the New York State Environmental Conservation Law (ECL) and Title 6 New York Code of Rules and Regulations (NYCRR) Part 375. The nature and extent of the contamination at the Site and the remedial alternatives summarized in this Proposed Plan are described in the *Revised Final Off-Site Remedial Investigation (RI) of the Former General Motors Facility and Deferred Media Site, and the Feasibility Study (FS) and FS Addendum* reports, contained in the Administrative Record file for this Site. NYSDEC and EPA encourage the public to review these documents to gain a more comprehensive understanding of the Site and the Superfund activities that have been conducted at the Site.

This Proposed Plan is being provided as a supplement to the reports listed above to inform the public of NYSDEC and EPA's preferred remedy and to solicit public comments pertaining to all of the remedial alternatives evaluated, including the preferred remedy.

NYSDEC and EPA's preferred remedy consists of excavating approximately 25,000 cubic yards of polychlorinated biphenyl (PCB)-contaminated sediment and soil from the areas of Ley Creek included in this Site, including wetlands, floodplain areas and roadway shoulders near the facility and the northern side of Factory Avenue in the vicinity of LeMoyne Avenue. The excavated material would be dewatered and stabilized prior to disposal at an off-Site facility. The remedy would also include institutional controls, restoration of impacted habitats and monitoring of the biota, water column and sediment in Ley Creek.

The remedy described in this Proposed Plan is the preferred remedy for the Site. Changes to the preferred remedy, or a change from the preferred remedy to another remedy, may be made if public comments or additional data indicate that such a change would result in a more appropriate remedial action. The final decision regarding the selected remedy will be made after NYSDEC and EPA have taken into consideration all public comments. NYSDEC and EPA are soliciting public comment on all of the alternatives considered in the Proposed Plan and in the detailed analysis section of the FS and FS Addendum reports because NYSDEC and EPA may select a remedy other than the preferred remedy.

MARK YOUR CALENDAR

November 17, 2014 – December 17, 2014*: Public comment period on the Proposed Plan.*

Public Meeting:

December 2, 2014 at 6:00 P.M.*:*
Town of Salina Town Hall
201 School Road
Liverpool, NY 13088

Community Role in the Selection Process

The NYSDEC and EPA rely on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. To this end, this Proposed Plan has been made available to the public for a public comment period which begins on November 17, 2014 and concludes on December 17, 2014.

A public meeting will be held during the comment period to present the conclusions of the remedial investigation and feasibility study (RI/FS), further elaborate on the reasons for recommending the preferred remedy and receive public comments.

Comments received at the public meetings, as well as written comments, will be documented in the Responsiveness Summary Section of the Record of Decision (ROD), the document that formalizes the selection of the remedy.

Written comments on this Proposed Plan should be addressed to:

Richard Mustico, P.E.
NYS Department of Environmental Conservation
625 Broadway
Albany, NY 12233
E-mail: richard.mustico@dec.ny.gov

INFORMATION REPOSITORIES

The administrative record file, which contains copies of the Proposed Plan and supporting documentation are available at the following locations:

Salina Library
100 Belmont Street, Mattydale, NY 13211
315-454-4524

New York State Department of Environmental Conservation
615 Erie Blvd. West
Syracuse, NY 13204
315-426-7400

New York State Department of Environmental Conservation
Attn.: Richard Mustico
625 Broadway
Albany, NY 12233
518-402-9676
(richard.mustico@dec.ny.gov)

Atlantic States Legal Foundation
Attn.: Samuel Sage
658 West Onondaga Street
Syracuse, NY 13204
315-475-1170

SCOPE AND ROLE OF ACTION

On June 23, 1989, the Onondaga Lake Site was added to the New York State Registry of Inactive Hazardous Waste Disposal Sites. On December 16, 1994, Onondaga Lake, its tributaries and the upland hazardous waste sites which have contributed or are contributing contamination to the lake (subsites) were added to EPA's National Priorities List (NPL). This NPL listing means that the lake system is among the nation's highest priorities for remedial evaluation and response under the federal Superfund law for sites where there has been a release of hazardous substances, pollutants, or contaminants.

Because many Superfund sites are complex and have multiple contamination problems and/or areas, they are often divided into operable units for the purpose of managing the site-wide response actions. NYSDEC and EPA have, to date, identified 12 subsites to the Onondaga Lake NPL Site, including the General Motors – Inland Fisher Guide (GM-IFG) Site. These subsites are also considered to be operable units of the NPL Site by EPA, and actions at these subsites have and will need to meet all CERCLA requirements.

The GM-IFG Site includes two operable units. The first operable unit (OU1) addresses the former GM-IFG facility, which is located south of Ley Creek on Townline Road in the Town of Salina. In addition to a series of interim remedial measures (IRMs) implemented by General Motors at NYSDEC's direction (discussed in more detail, below), a remedial investigation and feasibility study (RI/FS) is currently underway for the OU1 portion of the GM-IFG Site. The OU1 RI/FS is investigating the facility property and groundwater. A separate Proposed Plan for OU1 will be released to the public when it becomes available.

The second operable unit (OU2), which is the focus of this Proposed Plan, includes "other media" not addressed under OU1: Ley Creek channel sediments; surface water; and floodplain soils/sediments in the reach from Townline Road to the Route 11 Bridge. OU2 also includes an adjacent wetland and roadway shoulders near the facility and on the northern side of Factory Avenue in the vicinity of LeMoyne Avenue. The primary objective of this response action is to address risks to public health and the environment due to PCBs and other contaminants of concern (COCs) in sediments, surface water and soils under this operable unit.

See Figure 1 for the location of the two operable units of the GM-IFG Site.

A Record of Decision for the Lower Ley Creek Site (from the Route 11 Bridge to the mouth of Ley Creek at Onondaga Lake) was issued by the EPA on September 30, 2014.

SITE BACKGROUND

Site Description

The GM-IFG Site is located in the Town of Salina, in Onondaga County, New York. OU2 consists of:

- approximately 9,200 linear feet of Ley Creek between Townline Road and Route 11;
- soil in the Ley Creek Floodplain Area (generally along the creek banks), defined as the portion of the Federal Emergency Management Agency (FEMA) 100-year floodplain of Ley Creek between Townline Road and Route 11, exclusive of the Ley Creek PCB Dredgings Site;
- soil/sediment in the 10-acre wetland (referred to as the "National Grid Wetland") located on the northern portion of the National Grid property directly west of the former GM-IFG facility;
- soil in the approximately 1.8-acre area located directly between the former GM-IFG facility's northern property boundary and Factory Avenue (referred to as the "Factory Avenue Area"); and
- soil in the area located along the northern shoulder of Factory Avenue in the vicinity of LeMoyne Avenue (referred to as the "Factory Avenue/LeMoyne Avenue Intersection Area").

Current Zoning and Land Use

Ley Creek is a Class B stream which means the best usages for the creek are "primary and secondary contact recreation and fishing". The creek is located approximately 150 feet north of the former GM-IFG facility property boundary and flows due west approximately 2.5 miles downstream from the facility, where it discharges into Onondaga Lake. Ley Creek drains an area of approximately 30 square miles. The Ley Creek drainage basin can generally be described as a highly urbanized area. Portions of the city of Syracuse and the towns of Cicero, Clay, DeWitt, Manlius, and Salina are located in the Ley Creek drainage basin. Also located in the Ley Creek watershed are interstate highways, a National Grid electrical transfer station, Syracuse International Airport, and the Air National Guard's Hancock Field. Large areas of impermeable surfaces in the Ley Creek watershed cause rapid runoff during storms and corresponding rapid rising of flow and water levels.

The Ley Creek Floodplain Area is a portion of the Federal Emergency Management Agency (FEMA) 100-year floodplain between Townline Road and Route 11 (excluding the Ley Creek PCB Dredgings Site). Ley Creek is not currently used as a public water supply, and there is no commercial transportation use of the creek. The Ley Creek Floodplain Area is zoned as mixed commercial and residential with some stretches of undeveloped land between the northern bank of Ley Creek and the New York State Thruway.

The National Grid Wetland is located in the northern portion of property owned by the utility company National Grid, directly to the west of the former GM-IFG facility. This wetland is an approximately 10-acre portion of a New York State-regulated wetland known as SYE-6. A drainage ditch is present along the northern edge of the National Grid property along Factory Avenue. Upland drainage flows into this wetland from the south and is discharged north to the ditch and through culverts under Factory Avenue towards Ley Creek. Wetland vegetation, trees and shrubs comprise the dominant vegetation of the wetland. The National Grid property is currently zoned for industrial use.

The Factory Avenue Area is a narrow roadway shoulder and storm water drainage ditch located between the northern former GM-IFG facility property boundary and Factory Avenue. The area extends from the northwestern corner of the facility property to Townline Road. The Factory Avenue Area is characterized by maintained grass and is a corridor for overhead and underground utilities. Specifically, a natural gas pipeline and an Onondaga County sanitary sewer are present underground along this corridor. The Ley Creek PCB Dredgings Site is located across Factory Avenue to the north of this area. This area is currently zoned for industrial use.

The Factory Avenue/LeMoyne Avenue Intersection Area is located north of Factory Avenue in the vicinity of LeMoyne Avenue down to the Route 11 Bridge. This area is currently zoned for commercial use.

Site History

In 1938, the area in the vicinity of Ley Creek was primarily farmland. Since then, commercial and industrial development has occurred in the drainage basin, including in areas bordering the creek.

General Motors began operations in Salina in 1952. Operations conducted at the GM-IFG facility included metal die casting; nickel, chromium and copper cyanide electroplating; stamping; polishing; buffing; painting and machining. During the early 1960s injection molding operations were added to the existing metal operations. Metal finishing and die casting were subsequently reduced and replaced by injection molding by the early 1970s. PCB-containing hydraulic oil was used in die cast machines and injection molding operations until 1968 and in the diffusion pumps of three vacuum metallizers until 1969. More than 120 injection molding machines operated at the plant until plant operations ceased in December 1993. PCB-containing oil leaked from the machines to floor drains and sumps. During early facility operations, this oil and other process waste was discharged to an on-Site swale. The swale discharged to Ley Creek, where PCBs are found in the sediments down to the mouth of the creek at Onondaga Lake.

As part of a flood control project in the 1970s, several sections of Ley Creek were dredged. Dredged material contaminated with PCBs was placed along the banks of the creek. Areas along the south bank of Ley Creek upstream of the Route 11 Bridge, where PCB-contaminated dredge spoils were placed, were included on the New York State Registry of Inactive Hazardous Waste sites as the Ley Creek PCB Dredgings Site. A ROD was issued by NYSDEC for the Ley Creek PCB Dredgings Site in March 1997, which called for the excavation and disposal of PCB-contaminated material greater than 50 milligrams per kilogram (mg/kg) and the consolidation and on-site capping of material less than 50 mg/kg in compliance with the Toxic Substances Control Act (TSCA) PCB cleanup and disposal regulations (40 CFR Part 761). The remedy was completed in 2001, and the Ley Creek PCB Dredgings Site is currently monitored and maintained.

NYSDEC and General Motors entered into an Administrative Order on Consent (Index # D-7-0001-97-06) (Order), which became effective on September 25, 1997. The Order required General Motors to conduct an RI/FS for the GM-IFG Site. Soil, sediment, surface water and biota samples were obtained for chemical analysis as part of the RI.

Three significant IRMs to prevent further migration of PCBs from the facility to Ley Creek were implemented. The IRMs, which were performed from 2002 to 2004, included the following activities:

- Former Landfill IRM An industrial landfill at the former GM-IFG facility that contains chromium- and PCB-contaminated material was capped to prevent contaminants from leaching into the groundwater. In addition, hot spots associated with the landfill were excavated.

- Former Drainage Swale IRM A second action involved the removal of highly-contaminated soil from a former discharge swale. This swale was used in the 1950s and 1960s as a conduit for the discharge of liquid process waste to Ley Creek. The swale was subsequently filled in, but the contaminated soil remained until the performance of this action. Over 26,000 tons of soils containing PCBs were removed from this area of the GM-IFG property.

- SPDES Treatment System IRM The third action involved the construction of a retention pond and associated water treatment system. This pond collects all water that accumulates on the GM-IFG property in any of the storm sewers or abandoned process sewers. The pond water is then sent through the treatment plant in order to meet permitted discharge limits, prior to discharge to Ley Creek. The purpose of this response action was to stop the intermittent discharge of PCBs and other contaminants that occur during storm events.

In 2005, General Motors conducted a Phase 1A Cultural Resources Survey for OU1 and OU2 of the GM-IFG Site. The Cultural Resources Survey Report[1] concluded that no further cultural resources investigation was required. This document was approved by NYSDEC in December 2005.

In 2009, General Motors filed for bankruptcy, and on March 31, 2011, administration of the remedial activities at the GM-IFG Site was taken over by the Revitalizing Auto Communities Environmental Response (RACER) Trust, the current property owner, who completed the RI/FS for OU2. The RI report (March 2013) for the OU2 was approved by NYSDEC in April 2013. The FS report (May 2013) and the FS report addendum (June 2014) will be approved by NYSDEC concurrent with the issuance of the ROD.

The Lower Ley Creek Site, which is downstream of the OU-2, consists of the sediments and floodplain soils along the lower two miles of Ley Creek, beginning at, and including, the Route 11 Bridge and ending downstream at the mouth of Ley Creek and its confluence with Onondaga Lake, as well as the sediments and floodplain soils associated with the “Old Ley Creek Channel” (the pre-1970s dredging route of the Creek). A Proposed Plan for the Lower Ley Creek Site was

[1] Phase 1A Literature Review and Archeological Sensitivity Assessment, Former IFG Facility and Ley Creek Deferred Media, Towns of Salina and Dewitt, Onondaga County, New York, June 2005.

released by the EPA to the public on July 15, 2014, and the ROD was issued on September 30, 2014.

SITE HYDROLOGY/HYDROGEOLOGY

Ley Creek Hydrology

Ley Creek is located approximately 150 feet north of the GM-IFG facility property boundary and flows west to ultimately discharge into Onondaga Lake, approximately 2.5 miles downstream of the facility. Ley Creek was restructured and dredged to aid in storm water drainage in the 1970s. The reach of Ley Creek from Townline Road to the Route 11 Bridge was most recently dredged in 1983. Water depths range from less than three inches to approximately four feet, depending on channel width, flow rates and bottom profile. Flow rates also vary significantly ranging from less than 1 cubic foot per second (cfs) to 1,400 cfs. Ley Creek varies in width from less than 10 feet to more than 30 feet.

The substrate is predominantly gravel and fine inorganic material with little to no submerged or emergent aquatic vegetation. Sediment probing performed during the RI indicated that the main channel of Ley Creek is primarily hard substrate with limited sediment depositional areas. Depositional areas are generally limited to the edges of the channel.

Onondaga Lake receives surface runoff from a drainage basin of approximately 250 square miles. Surface water flows into the Lake via six tributaries: Ninemile Creek, Onondaga Creek, Harbor Brook, Bloody Brook, Sawmill Creek and Ley Creek. Ley Creek accounts for approximately eight percent of the total water inflow to the Lake.

Efforts since 1970 to alleviate the flooding of Ley Creek have been generally successful, though flooding still occurs in portions of the Creek.

Site Hydrogeology

The bedrock geology in the area of Ley Creek generally consists of sedimentary rock units from the Paleozoic-age Salina Group which, in order of oldest to youngest, consists of the Vernon Formation, the Syracuse Formation, Camillus Shale and the Bertie Formation. Specifically, the bedrock underlying the GM-IFG Site is made up of units of the Vernon Formation, which consists of upper Silurian shale and dolostone.

Groundwater discharge to surface water channels accounts for most of the stream flow in the Onondaga Lake Basin. Groundwater discharge accounts for an estimated 56 percent of stream flow in Ley Creek. The groundwater can be found from eight to 12 feet below ground surface (bgs) in the overburden of the Site.

RESULTS OF THE REMEDIAL INVESTIGATION

Summary of Sampling Results

Several metals detected on the GM-IFG facility are identified as “Site-related metals” (*i.e.*, arsenic, chromium, copper, lead, nickel and zinc) when found in GM-IFG OU2 media. Other metals, (*e.g.*, mercury/methylmercury) were found within the watershed and evaluated in the RI/FS, but are not associated with the GM-IFG Site and are considered to be “non-Site-related” metals.

Based upon the results of the RI, NYSDEC and EPA have concluded that the primary COCs for this Site are PCBs, PAHs,[2] chromium, copper, lead, nickel and zinc, with PCBs being the predominant contaminant in the Site soils and creek sediments. A review of the sampling results indicates that the PCBs are collocated with the vast majority of other COCs. Soil, sediment, surface water and biota investigations for OU2 are described below.

Soil

Soil investigations were performed between 1986 and 2009 and are documented in the RI report[3].

6 NYCRR Part 375 (NYSDEC Division of Environmental Remediation Environmental Remediation Programs, effective December 14, 2006) unrestricted use soil cleanup objectives (SCOs) were used as RI screening values for comparison purposes. Part 375 SCOs for the protection of ecological receptors (Ley Creek Floodplain Area and National Grid Wetland) and Part 375 industrial use SCOs (Factory Avenue Area and portions of the National Grid property) were also

[2] It should be noted that all or some of the PAHs are likely from anthropogenic sources such as urban runoff.

[3] Revised Final Off-Site Remedial Investigation, Former IFG Facility and Deferred Media Site, Syracuse, New York, March 2013.

used during the screening process to provide a context for the contaminant concentrations detected. The following sections summarize the soil contamination as characterized in the discrete OU2 areas.

Ley Creek Floodplain Area

Soil in the Ley Creek Floodplain Area (see Figure 2) was investigated through samples collected within the Ley Creek 100-year floodplain between Townline Road and Route 11 (excluding the Ley Creek PCB Dredgings Site) as part of a series of sampling events conducted by General Motors between 2003 and 2007, and in connection with an intersection improvement at Lemoyne Avenue and Factory Avenue on behalf of Onondaga County in 2009. The initial samples collected in the Ley Creek Floodplain Area in 2003 indicated the presence of PCBs at concentrations above the Part 375 unrestricted SCO of 0.1 mg/kg. Sample results ranged from not detected to 35 mg/kg, though most of these detections were below 1 mg/kg PCBs. An additional round of sampling followed in 2004, which identified a localized floodplain hot-spot. The results of this sampling documented the presence of PCB concentrations ranging from not detected to 130 mg/kg. Soil samples in the vicinity of the 130 mg/kg detection also exhibited visual staining. Subsequent sampling conducted in 2005 and 2007 for the Ley Creek Floodplain Area focused on the area of visual staining. Samples collected between 2003 and 2007 in the vicinity of the stained area exhibited concentrations ranging from 0.11 mg/kg to 61 mg/kg PCBs along an approximately 180-foot long stretch on the northern bank of Ley Creek, down to a depth of 6 feet. Westernmost and northernmost samples exhibited concentrations below 1 mg/kg PCBs, the Part 375 SCO for the protection of ecological resources. The easternmost sample exhibited a concentration of 6.4 mg/kg at the deepest interval sampled [4 to 6 feet below ground surface (bgs)]. This portion of the investigation was limited to analysis of PCBs in soil.

In connection with rehabilitation work for the Route 11 Bridge, two soil samples were collected by the New York State Department of Transportation from one location on the bank of Ley Creek in November 1992 in the Site area. The samples, located east of the northern bridge abutment (upstream), were collected from 0 to 8 inches and 8 to 16 inches below grade. PCBs were detected in each sample at concentrations above the Part 375 unrestricted use SCO of 0.1 mg/kg ranging from 4 mg/kg (8 to 16 inches) to 55 mg/kg (0 to 8 inches). VOCs and SVOCs were not detected in either sample. Detected metals concentrations were within typical ranges for natural soils.

What are PCBs?

The main COCs at OU2 are PCBs.

Due to their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were widely used in many industrial and commercial applications including electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastics, and rubber products; in pigments, dyes, and carbonless copy paper; and many other industrial applications. The former GM-IFG facility started using PCBs in hydraulic oils in the 1960s.

PCBs are a group of chemicals consisting of 209 individual compounds, known as congeners. PCBs were sold in mixtures containing dozens of congeners. In the United States, the most common commercial mixtures were known as Aroclors.

Although manufacturing of PCBs was banned in 1979, they can still be released into the environment from poorly maintained hazardous waste sites that contain PCBs, from leaks or releases from electrical transformers containing PCBs, or from the disposal of PCB-containing consumer products into landfills not designed to handle hazardous waste. PCBs may also be released into the environment by the burning of some wastes in municipal and industrial incinerators. At OU2, PCB-contaminated sediment and soil act as a potential ongoing source of PCB releases to the environment.

PCBs have been demonstrated to cause cancer and are linked to other adverse health effects such as developmental effects, reduced birth weights and reduced ability to fight infection.

National Grid Wetland Area

Investigation of the National Grid Wetland Area (see Figure 2) has been conducted over various sampling events associated with evaluating conditions within the wetland and the drainage ditch (approximately 760 long by 20 feet wide) that runs north of the wetland along Factory Avenue on this property and in connection with the soil removal IRMs described above.

PCBs were detected in the Factory Avenue drainage ditch soils at concentrations greater than the Part 375 unrestricted SCO, ranging from 0.22 mg/kg to 370 mg/kg, and extending approximately 760 feet along the ditch

westward from the former GM-IFG facility property. These concentrations were encountered as deep as 3.5 feet. While the westernmost sample exhibited a concentration of 0.27 mg/kg PCBs, still slightly above the Part 375 unrestricted SCO of 0.1 mg/kg PCBs, concentrations at this location were significantly lower than other samples collected within the wetland area. The extent of Site-related metals detected at concentrations above the corresponding Part 375 unrestricted SCOs follows a similar pattern, with exceedances noted in the ditch, though the westernmost sample in the ditch exhibits concentrations below the corresponding Part 375 unrestricted SCOs for Site-related metals (arsenic, total chromium, copper, lead, nickel and zinc). In addition, there are relatively limited areas within the National Grid Wetland Area where Site-related metals were detected at concentrations above the corresponding Part 375 ecological SCOs. Samples collected in the National Grid Wetland Area in connection with investigations for National Grid (then Niagara Mohawk) were analyzed for SVOCs and VOCs. Detectable concentrations of SVOCs and VOCs were below the corresponding 6 NYCRR Part 375 SCOs for unrestricted use. PCB concentrations greater than the Part 375 SCO for the protection of ecological resources extended west, approximately 660 feet along the ditch.

The wetland located on the northern portion of the National Grid property was sampled between 2001 and 2008 during a series of efforts to evaluate the extent of contamination within the wetland. Results of these investigations showed PCB Aroclors 1242, 1248, and 1260 in wetland soil at concentrations greater than the Part 375 unrestricted SCO, ranging from 0.11 mg/kg to 14,000 mg/kg PCBs. These detections were encountered as deep as 2.75 feet. Contamination in the western half of the wetland extends approximately 140 feet to the south, and in the eastern half of the wetland extends approximately 230 feet to the south, where detectable concentrations of PCBs and Site-related metals were below the corresponding Part 375 unrestricted SCOs.

As part of the Former Landfill IRM hot spot excavation, confirmatory samples were obtained from the National Grid Wetland Area. Analytical results indicated concentrations greater than the Part 375 unrestricted SCO in four samples ranging from 0.1 mg/kg to 42 mg/kg.

Factory Avenue Area

The majority of the soil samples collected in the Factory Avenue Area (see Figure 2) are associated with efforts to bound the northern extent of the excavations from the Former Landfill IRM and the Former Drainage Swale IRM in the vicinity of a National Grid gas line that runs parallel to the northern property boundary and Factory Avenue. Samples collected in the immediate vicinity of the National Grid gas line, exhibiting concentrations greater than the Part 375 unrestricted use SCO, ranged from 0.13 mg/kg to 18,000 mg/kg PCBs. The higher concentrations are associated with the edge of hot spots and the former drainage swale, located approximately 8 to 10 feet bgs (0.13 mg/kg to 18,000 mg/kg PCBs), and surface soils in the vicinity of the new access road to the Former Landfill (1.4 mg/kg to 54 mg/kg PCBs). In addition, samples east of this area exhibited relatively low concentrations of PCBs but greater than the Part 375 unrestricted use SCO ranging from 0.162 mg/kg to 1.25 mg/kg.

Samples collected along the shoulder of Factory Avenue in connection with roadway improvements at the Factory Avenue and LeMoyne Avenue intersection indicated the presence of PCBs (not detected to 8.8 mg/kg) and Site-related metals (2.1 mg/kg to 13.6 mg/kg arsenic; 5.17 mg/kg to 265 mg/kg chromium; 9.5 mg/kg to 219 mg/kg copper; 2.3 mg/kg to 398 mg/kg lead; 9.41 mg/kg to 97.9 mg/kg nickel; and 17.9 to 429 mg/kg zinc) at concentrations above corresponding Part 375 unrestricted SCOs, but generally below the commercial SCOs.

Sediment

GM-IFG sediment sample locations are depicted on Figure 2. To evaluate upstream conditions, samples were collected from Ley Creek upstream of Townline Road and from three upstream branches of Ley Creek: North Branch Ley Creek, South Branch Ley Creek and Sanders Creek. Samples collected from Ley Creek between Townline Road and Route 11 (on-Site) as well as samples collected upstream of the Site exhibited concentrations of PCBs and Site-related metals (arsenic, chromium, copper, lead, nickel, zinc) above the NYSDEC sediment criteria (NYSDEC Technical Guidance for Screening Contaminated Sediments, January 1999) at the following concentrations.

PCBs on-Site: not detected to 207 mg/kg
Arsenic on-Site: not detected to 15.1 mg/kg
Chromium on-Site: 10.9 mg/kg to 429 mg/kg
Copper on-Site: 13.9 mg/kg to 183 mg/kg
Lead on-Site: not detected to 172 mg/kg
Nickel on-Site: 6.6 mg/kg to 121 mg/kg
Zinc on-Site: 51 mg/kg to 390 mg/kg

PCBs upstream: not detected to 1.3 mg/kg
Arsenic upstream: 1.1 mg/kg to 19.1 mg/kg
Chromium upstream: 4.3 mg/kg to 42.2 mg/kg
Copper upstream: 7.5 mg/kg to 423 mg/kg
Lead upstream: 2.5 mg/kg to 1,170 mg/kg
Nickel upstream: not detected to 38.6 mg/kg
Zinc upstream: 22.7 mg/kg to 811 mg/kg

For comparison purposes, Table 1, below provides sediment criteria for the Site's metals from the NYSDEC Technical Guidance for Screening Contaminated Sediments (January 1999). It should be noted that PCBs are the primary risk driver for all pathways for this Site (see the "Summary of Site Risks" section, below).

Table 1 – Sediment Criteria for Site-Related Metals

Analyte of Concern	Low Effect Level	Severe Effect Level
Arsenic	6.0 mg/kg	33 mg/kg
Total Chromium	26 mg/kg	110 mg/kg
Copper	16 mg/kg	110 mg/kg
Lead	31 mg/kg	110 mg/kg
Nickel	16 mg/kg	50 mg/kg
Zinc	120 mg/kg	270 mg/kg

Surface Water

Surface water samples were collected during four sampling events between 1996 and 2002 in Ley Creek and in the drainage ditch that runs along the south side of Factory Avenue.

Applicable screening values from the NYSDEC's Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1., Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (June 1998) were used to evaluate surface water detections.

Analytical results indicate that chlorinated VOCs, PCBs, and metals were detected in the surface water samples. With the exception of PCBs, concentrations were below applicable surface water standards.[4] PCB Aroclor 1248 was detected above the standards of 0.00012 micrograms per liter (µg/L) (wildlife protection) and 0.000001 µg/L (protection of human consumers of fish) in one sample collected between Townline Road and Route 11 at 0.04 µg/L, and in one sample collected from the drainage ditch along Factory Avenue at 0.51 µg/L. PCBs were not detected in upstream surface water samples (detection limits range from 0.5 to 1 µg/L). It should be noted that typical detection limits for PCBs in water are greater than the surface water standards discussed above (see Figure 2).

Biota

Fish and crayfish tissue were collected as an additional line of evidence to assess risk to the fish and benthic community, respectively, and as measured inputs to the piscivorous food chain models. Biota data are described with respect to samples collected in Ley Creek upstream of Townline Road (including three upstream branches of Ley Creek, North Branch Ley Creek, South Branch Ley Creek and Sanders Creek) and from the Site (*i.e.*, from Townline Road to Route 11).

SVOCs, PCBs and certain Site-related metals (chromium, copper and zinc) were detected in biota samples (fish and macro-invertebrates) collected from the Site and in samples collected upstream of the Site. Average and maximum detected concentrations for copper in upstream fish tissue samples were higher than in samples collected from the Site. Average concentrations of zinc and the maximum concentration of bis(2-ethylhexyl)phthalate were also found to be higher upstream of the Site. Average concentrations of non-Site-related metals manganese and mercury/methylmercury were also found at higher concentrations in samples collected upstream of the Site. In addition, maximum concentrations of mercury and methylmercury were higher upstream than within the Site reach.

The average total PCB fish tissue concentration in samples from the Site reach were higher than from samples collected upstream of the Site (1.91 mg/kg versus 1.14 mg/kg). In fish tissue, the average and maximum detected concentrations for three out of seven inorganic constituents (copper, mercury, methyl mercury) were higher upstream than in the Site reach. Average concentrations of manganese and zinc and the maximum concentration of bis(2-ethylhexyl)phthalate were also identified as higher upstream.

Both the average and maximum invertebrate tissue constituent concentrations for three Site-related metals (chromium, copper, and zinc) were lower within the Site reach than upstream. Both the average and maximum invertebrate tissue

[4] Technical and Operational Guidance Series Number 1.1.1. New York State Ambient Water Quality Standards and Guidance Values (NYSDEC 1998b); National Recommended Ambient Water Quality Criteria (USEPA 2009a); USEPA Region 3 Biological Technical Assistance Group Freshwater Screening Benchmarks (USEPA 2006A); and ECO Update: Ecotox Thresholds (USEPA 1996)

concentrations for four non-Site-related metals (barium, cadmium, manganese and methylmercury) were lower in the Site reach than upstream. Additionally, non-Site-related mercury was detected in invertebrate tissue from upstream, but not within the Site reach.

The average total PCB invertebrate tissue concentration for samples collected from the Site reach were higher than from samples collected upstream of the Site (0.52 mg/kg versus 0.25 mg/kg).

In summary, PCB 1248 in fish fillets average and maximum tissue concentration exceeded the respective upstream concentration by more than one order of magnitude. For crayfish, PCB Aroclor 1248, lead and nickel were detected in Site tissue, but not in upstream tissue. Also, PCB Aroclor 1242 was detected in Site tissue (whole fish) but not upstream.

Summary of Site Risks

Based upon the results of the RI, a baseline human health risk assessment (HHRA) was conducted to estimate the risks associated with current and anticipated future property conditions. A HHRA is an analysis of the potential adverse human health effects caused by exposure to hazardous substances in the absence of any actions to control or mitigate these under current and reasonably anticipated future land uses (see "What is Risk and How is it Calculated?" box on the next page).

The human health estimates summarized below are based on reasonable maximum exposure scenarios and were developed by taking into account various conservative estimates about the frequency and duration of an individual's exposure to the COCs, as well as the toxicity of these contaminants.

In addition, a baseline ecological risk assessment (BERA) was conducted to assess the risk posed to ecological receptors as a result of Site-related contamination.

Based upon the results of the RI and the risk assessments, the NYSDEC and EPA have determined that actual or threatened releases of hazardous substances present at the Site, if not addressed by the preferred remedy or one of the other active measures considered, may present a current or potential threat to human health and the environment.

Human Health Risk Assessment

Although the areas surrounding Ley Creek are mainly commercial/industrial in nature, it is not used for commercial/industrial purposes. The Creek is currently accessible for recreational uses and is expected to remain so. A four-step process was used for assessing Site-related cancer risks and noncancer health hazards. The four-step process is comprised of: Hazard Identification of contaminants of concern (COCs), Exposure Assessment, Toxicity Assessment, and Risk Characterization. Consistent with EPA policy and guidance, cancer risks and non-cancer health hazards were evaluated for the reasonably maximally exposed (RME) individual and the central tendency exposed (CTE) individual. The RME is considered the maximum exposure that is reasonably estimated to occur at the Site and is not a worst-case scenario. The CTE is the average exposure to an individual.

The HHRA evaluated potential risks to receptors under current and future land use scenarios. The HHRA addressed several distinct exposure areas. Those areas were defined as the Ley Creek Exposure Area; Ley Creek Floodplain Exposure Area; Ley Creek Floodplain Hot-Spot Exposure Area; National Grid Wetland Exposure Area; and Factory Avenue Exposure Area. Health risks were evaluated for the following potential human receptor populations:

- Current and future child fish consumers exposed to fish tissue;
- Current and future older child (6-17 years old) fisherpersons exposed to surface water, surface sediment (0-1 feet bgs), fish tissue, surface soil, and outdoor air;
- Current and future adult fisherpersons exposed to surface water, surface sediment (0-1 feet bgs), fish tissue, surface soil, and outdoor air;
- Future dredge workers exposed to surface water, surface and subsurface sediment (0-3 feet bgs), surface soil (0-1 feet bgs), and outdoor air;
- Current and future adolescent (12-17 years old) trespassers exposed to surface water, surface soil (0-1 feet bgs), and outdoor air;

- Current and future adult trespassers exposed to surface water, surface soil (0-1 feet bgs), and outdoor air; and
- Future utility workers exposed to, surface and subsurface soil (0-10 feet bgs), and outdoor air.

Within each exposure scenario, the HHRA identified potential exposure pathways for receptors and constituents. An exposure pathway was deemed complete if there was a constituent source; a mechanism for release, retention, or transport of the contaminant; human contact with the medium; and an exposure route at the contact point.

COCs for the HHRA were identified for each exposure area. For each medium, the maximum detected concentration of the constituent was compared to a conservative screening value for the protection of human health. In general, constituents that exceed the screening value or did not have screening values available were retained as HHRA COCs for further evaluation, while those below the screening value were excluded.

Cancer risks and non-cancer hazards were quantified for the reasonable maximum exposure and central tendency scenarios. The range for acceptable cancer risk is 10^{-6} to 10^{-4}, whereas non-cancer hazards are considered acceptable if they are less than or equal to 1. Total risk and hazard for each receptor was summed over all media, pathways, and constituents.

WHAT IS RISK AND HOW IS IT CALCULATED?

A Superfund baseline human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these under current- and future-land uses. A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios.

Hazard Identification: In this step, the chemicals of concern (COCs) at the Site, in various media (*i.e.*, soil, groundwater, surface water, and air), are identified based on such factors as toxicity, frequency of occurrence, and fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Exposure Assessment: In this step, the different exposure pathways through which people might be exposed to the contaminants in air, water, soil, etc. identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil and ingestion of and dermal contact with contaminated groundwater. Factors relating to the exposure assessment include, but are not limited to, the concentrations in specific media that people might be exposed to and the frequency and duration of that exposure. Using these factors, a "reasonable maximum exposure" (RME) scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Toxicity Assessment: In this step, the types of adverse health effects associated with chemical exposures and the relationship between magnitude of exposure (dose) and severity of adverse effects (response) are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other non-cancer health hazards, such as changes in the normal functions of organs within the body (*e.g.*, changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and non-cancer health hazards.

Risk Characterization: This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks for all COCs. Exposures are evaluated based on the potential risk of developing cancer and the potential for non-cancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a "one-in-ten-thousand excess cancer risk"; or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions identified in the Exposure Assessment. Current Superfund regulations for exposures identify the range for determining whether remedial action is necessary as an individual excess lifetime cancer risk of 10^{-4} to 10^{-6}, corresponding to a one-in-ten-thousand to a one-in-a-million excess cancer risk. For non-cancer health effects, a "hazard index" (HI) is calculated. An HI represents the sum of the individual exposure levels compared to their corresponding reference doses (RfDs). The key concept for a non-cancer HI is that a threshold (measured as an HI of less than or equal to 1) exists below which non-cancer health hazards are not expected to occur. The goal of protection is 10^{-6} for cancer risk and an HI of 1 for a non-cancer health hazard. Chemicals that exceed a 10^{-4} cancer risk or an HI of 1 are typically those that will require remedial action at the Site and are referred to as contaminants of concern (COCs) in the ROD.

Ley Creek is a New York State Class B fresh surface water, which, pursuant to 6 NYCRR § 701.7, means the best usages for the Creek are primary and secondary contact recreation and fishing. Class B waters are suitable for fish, shellfish and wildlife propagation and survival. The Creek itself is not used commercially, although it is accessible for fishing or other recreation. While access to Ley Creek within the GM-IFG OU2 Site is unrestricted, it is difficult to reach in many areas because of thick vegetation. The fish species found during recent investigations include bluegill, pumpkinseed, shiners, bullhead and carp.

The HHRA indicated that cancer risks were within acceptable limits for all receptors. Non-cancer hazard for the dredge worker was also within acceptable regulatory limits. Non-cancer hazards for all other receptors exceeded the acceptable

threshold. Unacceptable RME hazard indices ranged from 4.0 for the child fish consumer to 200 for the utility worker. These hazards were driven by:

- PCBs in fish tissue;
- PCBs in surface sediment (0-1 foot depth); and
- PCBs in surface soil and subsurface soil (0-10 feet bgs).

The risks and hazards from the Ley Creek Floodplain Hot-Spot Exposure Area were not quantitatively evaluated in the HHRA. Based on the screening of this area, the compounds detected would require preventative measures to protect public health under any scenario.

The HHRA may be found in Appendix D of the RI Report.

A fish consumption advisory, which is updated annually by the New York State Department of Health (NYSDOH), currently indicates that the consumption of fish from Onondaga Lake and its tributaries (including Ley Creek) should be limited because of, in part, PCBs and mercury which have been found to be present in the Onondaga Lake fish tissue.

Ecological Risk Assessment

A BERA was prepared for the Site in accordance with the NYSDEC's Fish and Wildlife Impact Analysis guidance and the EPA's Ecological Risk Assessment Guidance for Superfund. The BERA can be found in Appendix E of the RI report.

The process used for assessing Site-related ecological risks includes:

Problem Formulation - a qualitative evaluation of contaminant release, migration, and fate; identification of COCs, receptors, exposure pathways, and known ecological effects of the contaminants; and selection of endpoints for further study;

Exposure Assessment - a quantitative evaluation of contaminant release, migration, and fate; characterization of exposure pathways and receptors; and measurement or estimation of exposure point concentrations;

Ecological Effects Assessment - literature reviews, field studies, and toxicity tests, linking contaminant concentrations to effects on ecological receptors; and

Risk Characterization - measurement or estimation of both current and future adverse effects.

The BERA addressed several distinct exposure areas which were most likely to be utilized by ecological receptors. Those areas were defined as the Ley Creek Exposure Area, Ley Creek Floodplain Exposure Area, and the National Grid Wetland Exposure Area. Aquatic receptors were evaluated in the Ley Creek Exposure Area and terrestrial receptors were evaluated in the Ley Creek Floodplain Exposure Area and the National Grid Wetland Exposure Area.

Ley Creek Exposure Area

Potentially unacceptable risks to aquatic ecological receptors in the Ley Creek Exposure Areas were identified and assessed using quantitative lines of evidence. Screening results indicated that risks to the benthic invertebrate community are likely the result of direct contact exposures to total PCBs and PAHs.

Food chain models for piscivorous birds (belted kingfisher and great blue heron) and semi-piscivorous mammals (mink) were evaluated to determine the viability and function of the piscivorous bird and mammal communities at Ley Creek. Two constituents (methylmercury and total PCBs) had NOAEL-based hazard quotients (HQs)[5] greater than or equal to one for the belted kingfisher. Only one constituent (methyl mercury) had a NOAEL-based HQ greater than one for the great blue heron. However, methyl mercury is not considered to be a Site-related constituent. Therefore risks to the piscivorous bird community are considered to be minimal. Risk from food chain exposures to the semi-piscivorous

[5] An HQ is the ratio of the potential exposure to a substance and the level at which no adverse effects are expected. If the HQ is calculated to be less than 1, then no adverse health effects are expected as a result of exposure.

mammal community (mink) are driven primarily by methyl mercury and total PCBs; with total PCBs having HQ exceedances of both NOAEL and LOAEL values. Risks from methyl mercury are not considered to be Site-related.

Ley Creek Floodplain Area

Potentially unacceptable risks to community-level ecological receptors of the Ley Creek Floodplain Area were identified. Evaluation of risk to community-level receptors at the Ley Creek Floodplain Area indicated that there is a potential ecological risk and that the primary risk drivers to the terrestrial plant community are total PCBs and metals (chromium, copper, lead and zinc). Risk to soil invertebrates is also driven by metals (chromium, copper, lead, and zinc) and total PCBs. The food chain model for insectivorous birds (American robin) indicated potential risk from metals and total PCBs. Risk to insectivorous mammals (short-tailed shrew) at the Ley Creek Floodplain Area is driven by metals (copper and zinc) and total PCBs

National Grid Wetland Area

Potentially unacceptable risks to community-level ecological receptors of the National Grid Wetland Area were identified. Evaluation of risk to community-level receptors at the National Grid Wetland Area indicated that there is a potential ecological risk and that the primary risk drivers to the terrestrial plant community are metals (chromium, copper, lead, and zinc) and total PCBs. Risk to soil invertebrates is also driven by metals (chromium, copper, nickel, and zinc) and total PCBs. The food chain model for insectivorous birds (American robin) indicated potential risk from metals, total PCBs, and bis(2-ethylhexyl)phthalate. Risk to insectivorous mammals (short-tailed shrew) at the National Grid Wetland Area is driven by metals (chromium and copper) and total PCBs.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are specific goals to protect public health and the environment. These objectives are based on available information and standards, such as applicable or relevant and appropriate requirements (ARARs), to-be-considered (TBC) guidance, and site-specific risk-based levels established using the risk assessments.

The following RAOs have been established for OU2:

- Reduce or eliminate any direct contact and ingestion threat to public health associated with contaminated soils and sediments;
- Minimize exposure of ecological receptors to contaminated soils and sediments; and
- Reduce the health hazards associated with eating fish from Ley Creek by reducing the concentration of contaminants in fish.

These RAOs are consistent with current and reasonably anticipated future use of the discrete Site areas, continued industrial use for the neighboring National Grid property (except for ecological use within and adjacent to the wetland); ecological use for areas in the Ley Creek floodplain, except for areas of residential use where the residential use SCO is lower than the ecological use SCO (*i.e.*, chromium); and commercial use of the property along Factory Avenue.

REMEDIAL GOALS

To satisfy the direct-contact RAO, for the soils discussed in the “Results of the Remedial Investigation” section, above, the EPA has adopted NYSDEC’s 6 NYCRR Part 375 (NYSDEC Division of Environmental Remediation Environmental Remediation Programs, effective December 14, 2006) SCOs as the soil remediation goals for this action. SCOs are based on the lowest concentration for the protection of human health, ecological exposure or groundwater depending upon the anticipated future use of a site. Several areas along the Creek are considered ecologically sensitive. SCOs for unrestricted site use are also evaluated (see Tables 2 and 3). There are no federal or New York State cleanup standards for PCB contamination in sediment. For sediments, a 1 mg/kg PCB remedial action objective will be applied, as it has been established to be protective of human health and the environment for this site. In addition, the 1 mg/kg PCB sediment cleanup objective is consistently evaluated and often applied at contaminated sediment sites in New York State. PCBs are the primary ecological risk driver and are collocated with the majority of the other sediment COCs.

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA § 121(b)(1), 42 U.S.C. § 9621(b)(1), mandates that remedial actions must be protective of human health and the environment, cost-effective, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ, as a principal element, treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants and contaminants at a site. CERCLA § 121(d), 42 U.S.C. § 9621(d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants, which at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA § 121(d)(4), 42 U.S.C. § 9621(d)(4).

Capping was screened out of the FS due to limited implementability and therefore not retained for further evaluation. Sediment depths to hardpan in the stream are generally 2 feet or less. Excavation of at least 2 feet of the sediment would be required to install a protective sediment cap and maintain the existing bathymetry for flood control purposes. This would remove the contamination, and capping would not be required. In addition, soil contamination is generally in the top 2 feet. Excavation in the floodplain would be required for flood control purposes prior to installing a protective soil cover. A 2-foot excavation would remove the contamination in most Site areas, and in general, a soil cover would not be required.

Based upon EPA's guidance on Remedial Actions for Superfund Sites with PCB Contamination, PCBs above 500 mg/kg in industrial areas, that cannot be reliably contained and would present a significant risk to human health or the environment should exposure occur, are generally considered principal threat waste. The concentrations of PCBs and other contaminants found in the soils and sediments at the Site do not constitute principal threat waste.

The remedial alternatives are as follows:

Sediment Alternative 1: No Action

The Superfund program requires that the "no-action" alternative be considered as a baseline for comparison with the other alternatives. The no-action remedial alternative does not include any physical remedial measures that address the problem of sediment contamination at the Site.

Because this alternative would result in contaminants remaining above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years. If justified by the review, remedial actions may be implemented to remove, treat, or contain the contaminated sediments.

Capital Cost:	$0
Annual O&M Cost:	$0
Present-Worth Cost:	$0
Construction Time:	0 years

Sediment Alternative 2: Monitored Natural Recovery to Achieve 1 mg/kg PCB[6]

This alternative would rely upon monitored natural recovery (MNR) to achieve the RAOs related to the Ley Creek sediments from Townline Road to the Route 11 Bridge. Natural recovery processes include biodegradation, biotransformation, bioturbation, diffusion, dilution, adsorption, volatilization, chemical reaction or destruction, resuspension, downstream transport, and burial by clean material. Long-term monitoring of the sediment, water column, and biota would be included under this alternative to confirm that contaminant reduction is occurring and that the reduction is achieving the RAOs.

This alternative would include monitoring and modeling to determine whether the human health and ecological risks are being reduced, and a study would be conducted during the design phase to determine the feasibility of MNR.

Because this alternative would result in contaminants remaining on-Site above levels that allow for unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years. If justified by the review, remedial actions may be implemented to remove, treat, or contain the contaminated sediments.

[6] 1.0 mg/kg PCB is a previously selected sediment cleanup goal at New York State hazardous waste sites.

Capital Cost:	$0
Annual O&M Cost:	$24,000
Present-Worth Cost:	$300,000
Construction Time:	0 years

Sediment Alternative 3: Mechanical Excavation to Achieve 1 mg/kg PCB

This alternative would include mechanical excavation of contaminated sediment in the GM-IFG OU2 reach of Ley Creek exhibiting PCB concentrations greater than 1 mg/kg. The estimated volume of material would be 9,600 cubic yards based on PCB concentrations in sediment exceeding the 1 mg/kg sediment cleanup criteria. It is assumed that for reaches indicated for sediment removal, the sediment would be removed from bank to bank, to the extent practicable, until the unconsolidated bed material is reached. For volume estimation, an average excavation depth of 1.25 feet was assumed. Because PCBs are collocated with the majority of other COCs, and are the primary risk driver for all pathways for this Site (see the "Summary of Site Risks" section, above), they would be used as an indicator compound (1 mg/kg PCBs) to ensure that the sediment cleanup goals are achieved. It is assumed that excavated sediment would require dewatering prior to final off-Site disposal, and that water treatment would be required prior to discharge.

Habitat restoration of Ley Creek would consist of placement of at least 0.5 feet of substrate similar to the existing sediments over disturbed areas and restoration of vegetation. The specific thickness and substrate material to be used for the backfill in these areas would be determined during the remedial design as part of a habitat restoration plan.

Because this alternative would result in contaminants remaining on-Site above levels that allow for unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years. If justified by the review, remedial actions may be implemented to remove, treat, or contain the remaining contaminated sediments.

Capital Cost:	$6,320,000
Annual O&M Cost:	$16,000
Present-Worth Cost:	$6,520,000
Construction Time:	2 years

Sediment Alternative 4: Mechanical Excavation to Achieve 0.28 mg/kg PCB[7]

This alternative would include the mechanical excavation of sediment exhibiting concentrations exceeding the average upstream PCB concentration of 0.28 mg/kg within Ley Creek. The estimated volume of target material associated with sediment removal in this alternative would be 13,200 cubic yards. Excavation limits for Sediment Alternative 4 assume removal of the full depth of sediments from bank to bank within Ley Creek between Townline Road and Route 11. For volume estimation, an average excavation depth of 1.25 feet was assumed. It is assumed that excavated sediment would require dewatering prior to final off-Site disposal, and that water treatment would be required prior to discharge.

Habitat restoration of Ley Creek would consist of placement of at least 0.5 feet of substrate similar to the existing sediments over disturbed areas and restoration of vegetation. The specific thickness and substrate material to be used for the backfill in these areas would be determined during the remedial design as part of a habitat restoration plan.

Because this alternative would remove all of the sediment, and thus all of the contaminants in on-Site sediment, a CERCLA five year review would not be required for this portion of the remedy.

Capital Cost:	$8,710,000
Annual O&M Cost:	$16,000
Present-Worth Cost:	$8,910,000
Construction Time:	2 years

[7] 0.28 mg/kg PCB is the average upstream sediment concentration.

Soil Alternative 1: No Action

The Superfund program requires that the "no-action" alternative be considered as a baseline for comparison with the other alternatives. The no-action remedial alternative does not include any physical remedial measures that address the problem of soil contamination at the Site.

Because this alternative would result in contaminants remaining above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years. If justified by the review, remedial actions may be implemented to remove, treat, or contain the contaminated soils.

Capital Cost:	$0
Annual O&M Cost:	$0
Present-Worth Cost:	$0
Construction Time:	0 years

Soil Alternative 2: Soil Excavation to Achieve Restricted SCOs

This alternative would include excavation of surface and subsurface soil to meet the restricted SCOs (see Table 2) consistent with current and reasonably anticipated future land use of discrete Site areas as follows:

- continued industrial use for the neighboring National Grid property (except for ecological use within and adjacent to the wetland);
- ecological use for areas in the Ley Creek floodplain, except for areas of residential use where the residential use SCO is lower than the ecological use SCO (*i.e.*, chromium); and
- commercial use of the property along Factory Avenue.

The estimated volume of soil to be excavated under this alternative would be 15,000 cubic yards. Most excavations are anticipated to be approximately 1 to 4 feet in depth; with some limited areas excavated to depths as deep as 6 feet within the Ley Creek floodplain hot spot.

It is assumed that National Grid Wetland soil/sediments would require dewatering prior to final soil disposal, and that water treatment would be required prior to discharge to Ley Creek.

Appropriate controls and monitoring (*e.g.*, community air monitoring) would be utilized to ensure that during remediation activities, airborne particulate and volatile organic vapor concentrations surrounding the excavation area are acceptable.

For costing purposes, approximately 5,800 cubic yards of the soil excavated from the National Grid Wetland, and approximately 1,800 cubic yards of material excavated from the vicinity of Factory Avenue are assumed to exhibit PCB concentrations above 50 mg/kg, and therefore, would need to be disposed of at an off-Site TSCA-compliant facility. The remainder of excavated soils would be disposed at an off-Site, permitted non-hazardous waste disposal facility.

There are limited areas where underground utilities are present at the Site. Due to the potential health and safety threat of excavating around and beneath underground utilities, soil may remain at concentrations above restricted SCOs in some areas following excavation. This would be addressed by a soil cover, institutional controls and as part of the Site Management Plan.

Clean fill meeting the requirements of the NYSDEC Technical Guidance for Site Investigation and Remediation (DER-10), Appendix 5[8] would be brought in to replace the excavated soil or complete the backfilling of the excavation and establish the designed grades at the Site. With the exception of the Factory Avenue Area and Factory Avenue/LeMoyne Avenue Intersection Area excavations, excavated areas would be restored with clean substrate and vegetation as per an approved habitat restoration plan developed as part of the design. Excavated areas along Factory Avenue would be restored with a cover which would consist of an indicator fabric layer, as needed (*e.g.*, for soil in the vicinity of underground utilities), overlain by 12 inches of clean soil (minimum) and a top layer consisting of vegetation, asphalt, or gravel, as appropriate, for the area being restored.

[8] Allowable Constituent Levels for Imported Fill or Soil.

A Site Management Plan would provide for the proper management of all post-construction remedy components. Specifically, the Site Management Plan would describe procedures to confirm that the requisite engineering (*e.g.*, demarcation layer) and institutional controls are in place and that such controls continue to protect public health and the environment. The Site Management Plan would also detail the following: the provision for the management of future excavations in areas where contamination remains; an inventory of any use restrictions; the necessary provisions for the implementation of the requirements of any above-noted environmental easements and/or restrictive covenants; a provision for the performance of the O&M required for the remedy; and a provision that a property owner or party implementing the remedy submit periodic certifications that the institutional and engineering controls are in place.

Because this alternative would result in contaminants remaining above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years. If justified by the review, remedial actions may be implemented to remove, treat, or contain the contaminated soils.

Capital Cost:	$7,410,000
Annual O&M Cost:	$16,000
Present-Worth Cost:	$7,610,000
Construction Time:	1 year

Soil Alternative 3: Soil Excavation to Achieve Unrestricted SCOs

This alternative would include excavation of surface and subsurface soil exhibiting concentrations greater than SCOs for unrestricted use (see Table 3). It should be noted that the presence of underground utilities may hinder full excavation along Factory Avenue and on the National Grid property near the access road.

The approximate volume of soil associated with Soil Alternative 3 would be 31,500 cubic yards with average excavation depths ranging from 0 to 10 feet bgs.

It is assumed that National Grid Wetland soil/sediment would require dewatering prior to final soil disposal, and that water treatment would be required prior to discharge to Ley Creek.

Appropriate controls and monitoring (*e.g.*, community air monitoring) would be utilized to ensure that during remediation activities, airborne particulate and volatile organic vapor concentrations surrounding the excavation area are acceptable.

For cost purposes, approximately 5,800 cubic yards of the soil excavated from the National Grid Wetland and approximately 1,800 cubic yards of material excavated from the vicinity of Factory Avenue are assumed to exhibit PCB concentrations above 50 mg/kg and therefore would need to be disposed of at an off-Site TSCA-compliant facility. The remainder of excavated soils would be disposed at an off-Site, permitted non-hazardous waste disposal facility.

There are limited areas where underground utilities are present at the Site. Due to the potential health and safety threat of excavating around and beneath underground utilities, soil may remain at concentrations above unrestricted SCOs in some areas following excavation. In such a case, a soil cover, institutional controls and a Site Management Plan would address such area(s).

Clean fill meeting the requirements of DER-10, Appendix 5 would be brought in to replace the excavated soil or complete the backfilling of the excavation and establish the designed grades at the Site. With the exception of the Factory Avenue Area and Factory Avenue/LeMoyne Avenue Intersection Area excavations, excavated areas would be restored with clean substrate and vegetation as per an approved habitat restoration plan developed as part of the design. Excavated areas along Factory Avenue would be restored with a cover which would consist of an indicator fabric layer, as needed (*e.g.*, for soil in the vicinity of underground utilities), overlain by 12 inches of clean soil (minimum) and a top layer consisting of vegetation, asphalt, or gravel, as appropriate, for the area being restored.

A Site Management Plan would provide for the proper management of all post-construction remedy components. Specifically, the Site Management Plan would describe procedures to confirm that the requisite engineering (*e.g.*, demarcation layer) and institutional controls are in place and that such controls continue to protect public health and the environment. The Site Management Plan would also detail the following: the provision for the management of future excavations in areas where contamination remains; an inventory of any use restrictions; the necessary provisions for the

implementation of the requirements of any above-noted environmental easements and/or restrictive covenants; a provision for the performance of the O&M required for the remedy; and a provision that a property owner or party implementing the remedy submit periodic certifications that the institutional and engineering controls are in place.

Because this alternative would result in soil with concentrations above levels that allow for unrestricted use and unlimited exposure due to the presence of underground utilities, CERCLA requires that the Site be reviewed at least once every five years. If justified by the review, remedial actions may be implemented to remove, treat, or contain the contaminated soils.

Capital Cost:	$13,200,000
Annual O&M Cost:	$16,000
Present-Worth Cost:	$13,400,000
Construction Time:	1 year

COMPARATIVE ANALYSIS OF ALTERNATIVES

The detailed analysis consists of an assessment of the individual alternatives against each of the nine evaluation criteria (see box below) and a comparative analysis focusing upon the relative performance of each alternative against those criteria.

A comparative analysis of these alternatives based upon the evaluation criteria noted below follows.

EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES
Overall protection of human health and the environment determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
Compliance with ARARs evaluates whether the alternative would meet all of the applicable or relevant and appropriate requirements of federal and state environmental statutes and other requirements that pertain to the Site, or provide grounds for invoking a waiver.
Long-term effectiveness and permanence considers the ability of an alternative to maintain protection of human health and the environment over time.
Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies an alternative may employ.
Short-term effectiveness considers the period of time needed to implement an alternative and the risks the alternative may pose to workers, residents, and the environment during implementation.
Implementability is the technical and administrative feasibility of implementing the alternative, including the availability of materials and services.
Cost includes estimated capital and annual operation and maintenance costs, as well as present-worth costs. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
Support agency acceptance indicates if, based on its review of the RI/FS and Proposed Plan, NYSDOH (the support agency for NYSDEC) concurs with the preferred remedy.
Community acceptance will be assessed in the ROD and refers to the public's general response to the alternatives described in the Proposed Plan and the RI/FS reports. Comments received on the Proposed Plan are an important indicator of community acceptance.

Overall Protection of Human Health and the Environment

In order to be protective, the sediment remedial alternatives considered would need to address the migration of PCBs from sediments; control contaminated sediment transport; and reduce potential exposures to contaminated sediments, whereas, the soil remedial alternatives considered would need to reduce potential exposures to contaminated soils. Each of the action alternatives presented (Sediment Alternatives 3 and 4 and Soil Alternatives 2 and 3) would protect human health and the environment *via* removal (excavation) of contaminated sediments and soils, respectively, and for the soil alternatives, covering residual contaminated soils as needed. Sediment Alternative 1 and Soil Alternative 1 (the No Further Action alternatives) and Sediment Alternative 2 (Monitored Natural Recovery) would not be protective of human health and the environment since they would not address the PCBs in the sediments and soil, which present human health and ecological risks.

Compliance with ARARs

SCOs are identified in 6 NYCRR Part 375, Environmental Remediation Programs, Subpart 375-6, effective December 14, 2006. There are currently no federal or state promulgated standards for contaminant levels in sediments. There are, however, other federal or state advisories, criteria, or guidance (which are used as TBC criteria). Specifically, NYSDEC's sediment screening values are a TBC criteria.

The chemical-specific ARARs for PCBs in the water-column are 0.014 µg/L for protection of aquatic life (criterion continuous concentration [chronic] federal water quality criterion for fresh water), 0.00012 µg/L (NYS standard for protection of wildlife) and the 0.000001 µg/L (NYS standard for protection of human consumers of fish). These chemical-specific ARARs for the surface water would not be expected to be met by any of the alternatives during the implementation of the alternatives. This is due to Site background PCB water concentrations that likely exceed these ARARs due to the ubiquitous nature of PCBs, especially within an urban drainage system.

Since the contaminated sediments and soils would not be addressed under Sediment Alternative 1, Sediment Alternative 2 and Soil Alternative 1, these alternatives would not achieve the sediment cleanup goals, the sediment screening criteria, nor the SCOs.

The Soil Alternatives 2 and 3 would attain the respective SCOs. Sediment Alternatives 3 and 4 would meet their respective cleanup goals for PCBs in sediment. Sediment Alternatives 4 would meet the sediment screening criteria as achieving the background concentration for PCBs would require removal of all sediment in the creek. During sediment excavation for Sediment Alternatives 3 and 4, any increases in PCB concentrations in the surface water of Ley Creek due to excavation would be expected to be short term. Sufficient engineering controls would be utilized during excavation to prevent or minimize resuspension of contaminated sediments and exceedances of surface water ARARs (above background conditions) downstream of the work zone. Furthermore, compliance with the discharge limits (to be established by NYSDEC, as needed) should ensure that there are no exceedances of surface water ARARs caused by the discharge from on-Site water treatment to the extent practicable. Also, any water quality impacts would meet the substantive water quality requirements imposed by New York State on entities seeking a dredged material discharge permit under Section 404 of the Clean Water Act (CWA). For the action alternatives, other action-specific ARARs to be met include CWA Sections 401 and 402; the Rivers and Harbors Act Section 10; the New York Environmental Conservation Law (ECL) Article 15 Water Resources, Article 17 Water Pollution Control and Article 27 Collection, Treatment and Disposal of Refuse and Other Solid Waste; and associated implementing regulations.

Under Soil Alternatives 2 and 3, clean fill meeting the requirements of the DER-10, Appendix 5 would be brought in to replace the excavated soil or complete the backfilling of the excavation and establish the designed grades at the Site. Since Soil Alternatives 2 and 3 would involve the excavation of contaminated soils, and Sediment Alternatives 3 and 4 would require dewatering and processing of sediments, compliance with fugitive dust regulations would be addressed as necessary. In addition, the Soil Alternatives 2 and 3 and Sediment Alternatives 3 and 4 would be subject to New York State and federal regulations related to the transportation and off-Site treatment/disposal of wastes.

The Resource Conservation and Recovery Act (RCRA) is the federal law addressing the storage, transportation and disposal of solid and hazardous waste. NYSDEC implements RCRA in New York under ECL Article 27. Sediment Alternatives 3 and 4 and Soil Alternatives 2 and 3 would comply with TSCA's PCB cleanup and disposal regulations (40 CFR Part 761).

Long-Term Effectiveness and Permanence

Sediment Alternatives 1 and 2 and Soil Alternative 1 would not provide long-term effectiveness or permanence because they do not take any action to prevent exposures to or mobilization of PCBs.

Sediment Alternatives 3 and 4 and Soil Alternatives 2 and 3 are each effective in the long-term and each provide permanent remediation, to varying degrees, by removal and off-Site disposal of contaminated sediments and soils. Sediment Alternatives 3 and 4 and Soil Alternatives 2 and 3 would provide increasing degrees of long-term effectiveness and permanence as each successive alternative calls for further removals of sediment or soil, respectively.

For Soil Alternatives 2 and 3, institutional controls would be needed to restrict intrusive activities in areas where soil contamination remains. Even implementation of Soil Alternative 3, which calls for the excavation of soils which exceed unrestricted SCOs, would likely result in some soils remaining in the vicinity of buried utilities that would warrant institutional controls. Since Sediment Alternatives 1, 2 and 3 and all of the soil alternatives would result in residual contamination, five-year reviews would be required. In addition, the fish advisory that applies to Onondaga Lake and all tributaries up to the first impassible barrier would continue to apply to this reach of Ley Creek.

Sediment Alternative 3 and 4 and Soil Alternatives 2 and 3 would maintain reliable protection of public health and the environment over time.

Reduction in Toxicity, Mobility, or Volume Through Treatment

None of the alternatives include treatment.

Sediment Alternatives 1 and 2 and Soil Alternative 1 would provide no reduction in toxicity, mobility or volume. Under each of the other alternatives, the mobility of contaminants would be reduced to varying degrees *via* excavation and proper disposal of excavated soils or sediments.

Short-Term Effectiveness

Sediment Alternatives 1 and 2 and Soil Alternative 1 do not involve any construction work, so there would be no short-term impacts.

Sediment Alternatives 3 and 4 and Soil Alternatives 2 and 3 could present some risk of limited adverse impacts to remediation workers through dermal contact and inhalation (through fugitive dust) related to sediment or soil excavation activities. Noise from the excavation work associated with the action alternatives could impact remediation workers and nearby residents. These potential short-term impacts would, however, be mitigated by following appropriate health and safety protocols, the implementation of engineering controls developed during remedial design, and by following appropriate construction practices.

A wetlands assessment and restoration plan will be prepared for any wetlands impacted or disturbed by the remedial activities (CWA Section 404, Protection of Wetlands E.O. 11990, 40 CFR 6 App A) and Management Practices (according to Federal Register Vol. 51, No. 219, Part 330.6) will be followed to minimize unavoidable impacts to wetlands to the maximum extent practicable while designing/implementing the remedy.

There would be some short-term impacts to aquatic and upland wildlife habitat areas for each of the action alternatives due to excavation of soil and sediment. These impacts would be greatest for Sediment Alternative 4, since the entire reach of Ley Creek would be dredged from bank to bank, and Soil Alternative 3, since the greatest surface area of upland habitat would be excavated. Habitat reconstruction and appropriate monitoring provisions would be implemented to mitigate these short-term impacts. Potential for exposures to fish and other biota due to resuspension of sediments caused by excavation under Sediment Alternatives 3 and 4 would be minimized through the use of engineering controls developed during remedial design and appropriate construction practices.

Sediment Alternatives 3 and 4 and Soil Alternatives 2 and 3 include off-Site transport of several thousand cubic yards of contaminated sediments or soils, but this would have minimal impact on local traffic due to accessibility and proximity to truck routes and the New York State Thruway.

There is a potential for increased storm water runoff and erosion during construction of Sediment Alternatives 3 and 4 and Soil Alternatives 2 and 3 that would require management to prevent or minimize any adverse water quality impacts.

Since no actions would be performed under Sediment Alternative 1 and Soil Alternative 1, there would be no time required for implementation. Sediment Alternative 2 requires no construction, but would require some time to develop a monitoring plan. Sediment Alternatives 3 and 4 are estimated to be completed within 2 years from the start of construction, and Soil Alternatives 2 and 3 are estimated to be completed within 1 year from the start of construction.

Implementability

Sediment Alternative 1 and Soil Alternative 1 are the easiest alternatives to implement, as there is no action to undertake. Sediment Alternative 2 is the next most implementable alternative since it only provides for Site monitoring, which is readily implementable.

Sediment Alternatives 3 and 4 and Soil Alternative 2 are readily implementable. Requisite equipment and services for each of these alternatives are readily available and have been used successfully at numerous sites to remediate contaminated soils and sediment. However, attaining unrestricted SCOs called for by Soil Alternative 3 is likely not implementable due to the presence of underground utilities that would likely require an undisturbed buffer zone in order to prevent exposures to Site workers and/or damage to utilities.

Cost

The present-worth costs were calculated using a discount rate of seven percent and a thirty-year time interval for post-construction monitoring and maintenance.

The estimated capital, O&M, and present-worth costs for each of the alternatives are presented in the table below. The estimated costs for the action alternatives are directly related to the given alternative's corresponding total volumes of soil and sediments to be excavated.

Alternatives	Capital	Annual O&M	Total Present Worth
Sediment Alternative 1: No Action	$0	$0	$ 0
Sediment Alternative 2: MNR	$0	$24,000	$300,000
Sediment Alternative 3: Excavation to 1 mg/kg PCB	$6,320,000	$16,000	$6,520,000
Sediment Alternative 4: Excavation to 0.28 mg/kg PCB	$8,710,000	$16,000	$8,910,000
Soil Alternative 1: No Action	$0	$0	$ 0
Soil Alternative 2: Excavation to 1 mg/kg PCB	$7,410,000	$16,000	$7,610,000
Soil Alternative 3: Excavation to 0.1 mg/kg PCB	$13,200,000	$16,000	$13,400,000

Support Agency Acceptance

NYSDOH has reviewed this Proposed Plan and concurs with the preferred alternative.

Community Acceptance

Community acceptance of the preferred alternative will be addressed in the ROD following review of the public comments received on the Proposed Plan.

PREFERRED REMEDY

Based upon an evaluation of the various alternatives, NYSDEC and EPA recommend Sediment Alternative 3 (Mechanical Excavation to Achieve 1.0 mg/kg PCB), and Soil Alternative 2 (Soil Excavation to Achieve Restricted SCOs) as the preferred remedy to address the contaminated sediment and soil, respectively. The total present worth cost of the alternatives is estimated to be $14.1 million.

The recommended alternatives include:

1. A remedial design program to provide the details necessary for the construction (including any design sampling), operation, optimization, maintenance, and monitoring of the remedial program. The environmental benefits of the preferred remedy may be enhanced by consideration, during the design, of technologies and practices that are sustainable in accordance with the EPA Region 2's Clean and Green Energy Policy and NYSDEC's DER-31 Green Remediation Policy[9]. Green remediation principles and techniques would be implemented to the extent feasible in the design, implementation, and site management of the remedy. The major green remediation components are as follows;

    - Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
    - Reducing direct and indirect greenhouse gases and other emissions;
    - Reduction in vehicle idling, including both on and off road vehicles and construction equipment during construction;
    - Use of Ultra Low Sulfur Diesel (ULSD);
    - Increasing energy efficiency and minimizing use of non-renewable energy;
    - Conserving and efficiently managing resources and materials;

[9] see http://epa.gov/region2/superfund/green_remediation and http://www.dec.ny.gov/docs/remediation_hudson_pdf/der31.pdf

- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Mechanical excavation of sediment in Ley Creek exceeding 1 mg/kg PCBs. The estimated volume of material would be 9,600 cubic yards. Figure 8 depicts the areas of the creek where sediments would be excavated. It is assumed that within reaches included for sediment removal, the excavations would be from bank to bank and the depths of excavation would be to the unconsolidated bed material, to the extent practicable. The areal foot-print of areas to be excavated would be refined during the remedial design. It is assumed that excavated sediment would require dewatering prior to final off-Site disposal, and that water treatment would be required prior to discharge.

3. Habitat restoration of Ley Creek excavated areas which would consist of the placement of at least 0.5 feet of substrate similar to the existing sediments over disturbed areas and restoration of vegetation. The specific thickness and substrate material to be used for the backfill in these areas would be determined during the remedial design as part of a habitat restoration plan. The main goal of the habitat restoration would be to restore the habitats affected by the remedy, and the restoration would meet the substantive requirements of 6 NYCRR Part 608 and 663. A habitat assessment would be performed to support the restoration design. The habitat assessment would include an assessment of the Ley Creek removal areas for mussels and would determine any actions necessary (if any) to minimize impacts to existing populations. The habitat restoration plan would also describe the specific design for areas impacted by the remediation of sediments and soils and determine the appropriate plantings (including types and locations) necessary to restore habitats. The habitat restoration plan would also include the necessary requirements for monitoring restoration success and for needed restoration maintenance.

4. Excavation of surface and subsurface soil to meet the restricted SCOs (see Table 2) consistent with current and reasonably anticipated future land use of discrete Site areas as follows:

   - continued industrial use for the neighboring National Grid property (except for ecological use within and adjacent to the wetland);
   - ecological use for areas in the Ley Creek floodplain, except for areas of residential use where the residential use SCO is lower than the ecological use SCO (*i.e.*, chromium); and
   - commercial use of the property along Factory Avenue.

   The estimated volume of soil to be excavated would be 15,000 cubic yards. Most excavations are anticipated to be approximately 1 to 4 feet in depth; with some limited areas excavated to depths as deep as 6 feet within the Ley Creek floodplain hot spot. The locations and assumed excavations for soil removal are illustrated on Figures 4 through 7. Confirmatory sampling would be conducted to ensure the excavations are complete.

   It is assumed that National Grid Wetland soils would require dewatering prior to final soil disposal, and that water treatment would be required prior to proper discharge.

   Clean fill meeting the requirements of DER-10, Appendix 5 would be brought in to replace the excavated soil or complete the backfilling of the excavation and establish the designed grades at the Site. With the exception of the Factory Avenue Area and Factory Avenue/LeMoyne Avenue Intersection Area excavations, excavated areas would be restored with clean substrate and vegetation as per an approved habitat restoration plan developed as part of the design. Excavated areas along Factory Avenue would be restored with a cover which would consist of an indicator fabric layer, as needed, overlain by 12 inches of clean soil (minimum) and a top layer consisting of vegetation, asphalt, or gravel, as appropriate, for the area being restored.

   For cost estimating purposes, approximately 5,800 cubic yards of the soil excavated from the National Grid Wetland and approximately 1,800 cubic yards of material excavated from the vicinity of Factory Avenue are assumed to exhibit PCB concentrations above 50 mg/kg and therefore would need to be disposed of at an off-Site TSCA-compliant facility. The remainder of excavated soils would be disposed at an off-Site, permitted non-hazardous waste disposal facility.

5. Appropriate controls and monitoring (*e.g.*, community air monitoring) would be utilized to ensure that during remediation activities, airborne particulate and volatile organic vapor concentrations surrounding the excavation area are acceptable.

6. Institutional controls in the form of environmental easements would be used to restrict intrusive activities in areas where contamination remains unless the activities are in accordance with an approved Site Management Plan.

7. A Site Management Plan would provide for the proper management of all post-construction remedy components. Specifically, the Site Management Plan would describe procedures to confirm that the requisite engineering (*e.g.*, demarcation layer) and institutional controls are in place and that such controls continue to protect public health and the environment. The Site Management Plan would also detail the following: the provision for the management of future excavations in areas where contamination remains; an inventory of any use restrictions; the necessary provisions for the implementation of the requirements of any above-noted environmental easements and/or restrictive covenants; a provision for the performance of the O&M required for the remedy; and a provision that a property owner or party implementing the remedy submit periodic certifications that the institutional and engineering controls are in place.

8. Because this remedy would result in contaminants remaining on-Site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years.

BASIS FOR THE REMEDY PREFERENCE

Under the NCP, the "Overall Protection of Human Health and the Environment" and "Compliance with ARARs" evaluation criteria are threshold requirements that an alternative must meet in order to be eligible for selection. The preferred remedy, Sediment Alternative 3 and Soil Alternative 2, is protective of public health and the environment and would achieve the ARARs. This remedy would reduce the human health and ecological risks through the removal of the PCB-contaminated sediment and soil and the placement of soil covers over residual soil contamination.

With respect to soils, both Soil Alternative 2 and Soil Alternative 3 are protective since their respective soil cleanup objectives are at least as stringent as the NYSDEC promulgated restricted use soil cleanup objectives. The additional environmental benefit in regard to soil cleanup associated with Soil Alternative 3 relative to Soil Alternative 2 would not be commensurate with the additional costs ($5.8 million).

With respect to sediments, Sediment Alternative 3 and Sediment Alternative 4 are protective since their respective sediment cleanup values are at least as stringent as the risk-based sediment value derived from the baseline ecological risk assessment, and in areas targeted for cleanup, excavation would be down to native material resulting in Site-wide residual contaminant concentrations much lower than the respective alternative's sediment criteria. The additional environmental benefit and risk reduction, in regards to sediment cleanup associated with Sediment Alternative 4 relative to Sediment Alternative 3, would not be commensurate with the additional costs ($2.4 million) since Alternative 3 would achieve the Site risk-based sediment value for PCBs.

The preferred remedy is technically and administratively feasible and implementable. All of the necessary personnel, equipment, and services required are expected be readily available.

The preferred remedy would provide the best balance of tradeoffs among alternatives with respect to the evaluating criteria. The EPA and NYSDEC believe that the preferred remedy would be protective of public health and the environment, comply with ARARs, be cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable.

TABLE 2: Summary of Soil Cleanup Objectives for Soil Alternative 2

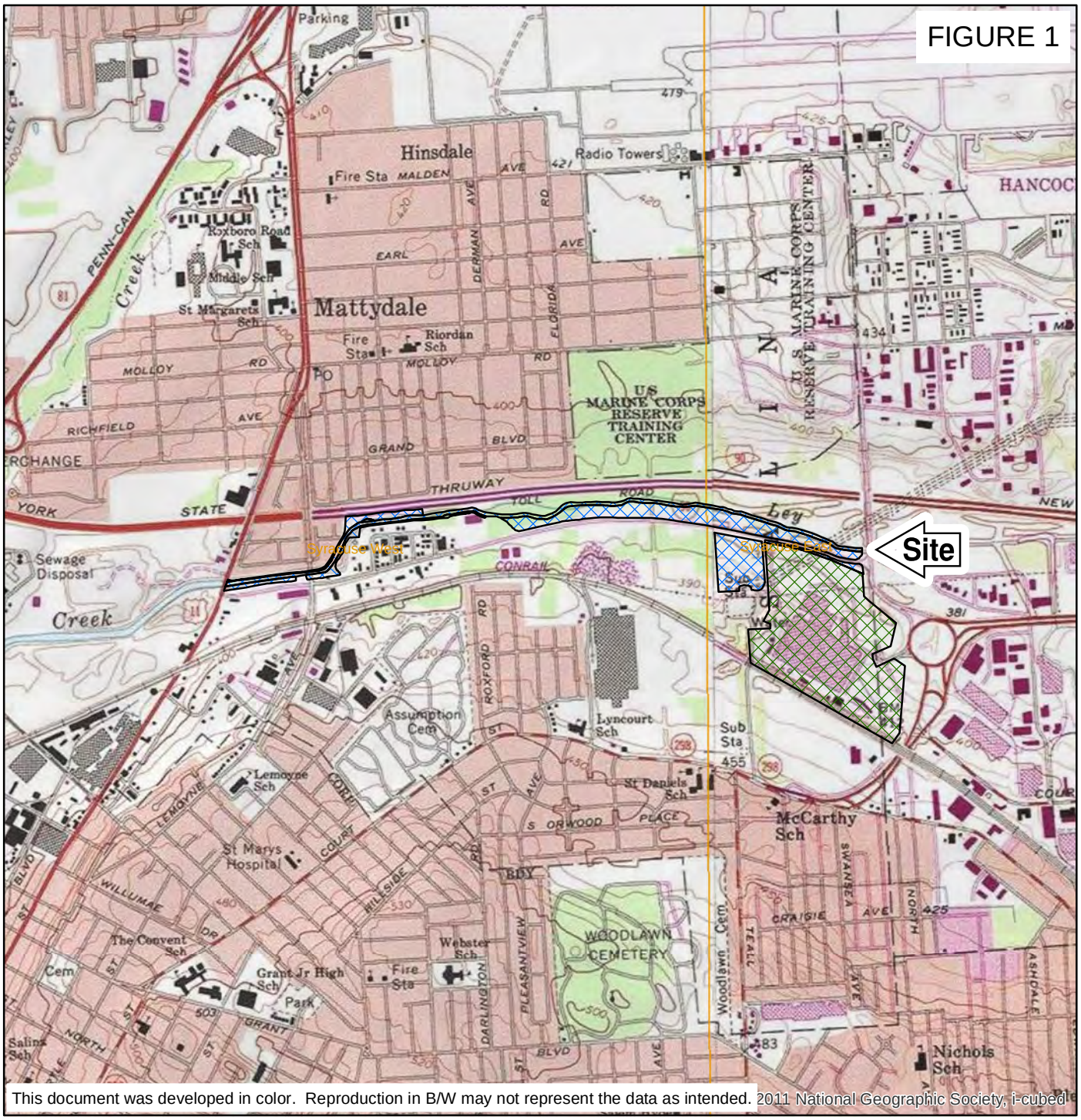
		SCO (mg/kg)			
COC	AREA	Residential	Commercial	Industrial	Ecological
PCB	Factory Avenue Area (North of GM-IFG facility)		1		
	National Grid Property (along access road)			25	
	Factory Avenue Area (at Lemoyne Avenue)		1		
	Ley Creek Floodplain				1
	National Grid Wetland				1
Arsenic	Factory Avenue Area (North of GM-IFG facility)		16		
	National Grid Property (along access road)			16	
	Factory Avenue Area (at Lemoyne Avenue)		16		
	Ley Creek Floodplain				13
	National Grid Wetland				13
Chromium[3]	Factory Avenue Area (North of GM-IFG facility)		1500		
	National Grid Property (along access road)			6800	
	Factory Avenue Area (at Lemoyne Avenue)		1500		
	Ley Creek Floodplain	36			41
	National Grid Wetland				41
Copper	Factory Avenue Area (North of GM-IFG facility)		270		
	National Grid Property (along access road)			10000	
	Factory Avenue Area (at Lemoyne Avenue)		270		
	Ley Creek Floodplain				50
	National Grid Wetland				50
Lead	Factory Avenue Area (North of GM-IFG facility)		1000		
	National Grid Property (along access road)			3900	
	Factory Avenue Area (at Lemoyne Avenue)		1000		
	Ley Creek Floodplain				63
	National Grid Wetland				63
Nickel	Factory Avenue Area (North of GM-IFG facility)		310		
	National Grid Property (along access road)			10000	
	Factory Avenue Area (at Lemoyne Avenue)		310		
	Ley Creek Floodplain				30
	National Grid Wetland				30
Zinc	Factory Avenue Area (North of GM-IFG facility)		10000		
	National Grid Property (along access road)			10000	
	Factory Avenue Area (at Lemoyne Avenue)		10000		
	Ley Creek Floodplain				109
	National Grid Wetland				109

Notes:
1. Ley Creek Floodplain uses the ecological SCO unless the residential SCO is lower and that portion of the Ley Creek Floodplain is zoned residential.
2. Chromium refers to trivalent chromium.
3. The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

TABLE 3: Summary of Soil Cleanup Objectives for Soil Alternative 3

COC	AREA	Unrestricted SCO (mg/kg)
PCB	Site Soil	0.1
Arsenic	Site Soil	13
Chromium[3]	Site Soil	30
Copper	Site Soil	50
Lead	Site Soil	63
Nickel	Site Soil	30
Zinc	Site Soil	109

Notes:
1. Chromium refers to trivalent chromium.
2. The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.



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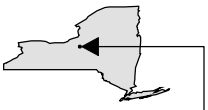

QUADRANGLE LOCATION

GENERAL MOTORS
IFG SITE
OPERABLE UNIT 2
SYRACUSE, NEW YORK

PROPOSED PLAN
SITE LOCATION

LEGEND

- OFF-SITE AREAS
- FORMER IFG FACILITY

N

0 1,000 2,000 4,000 6,000 8,000

Feet

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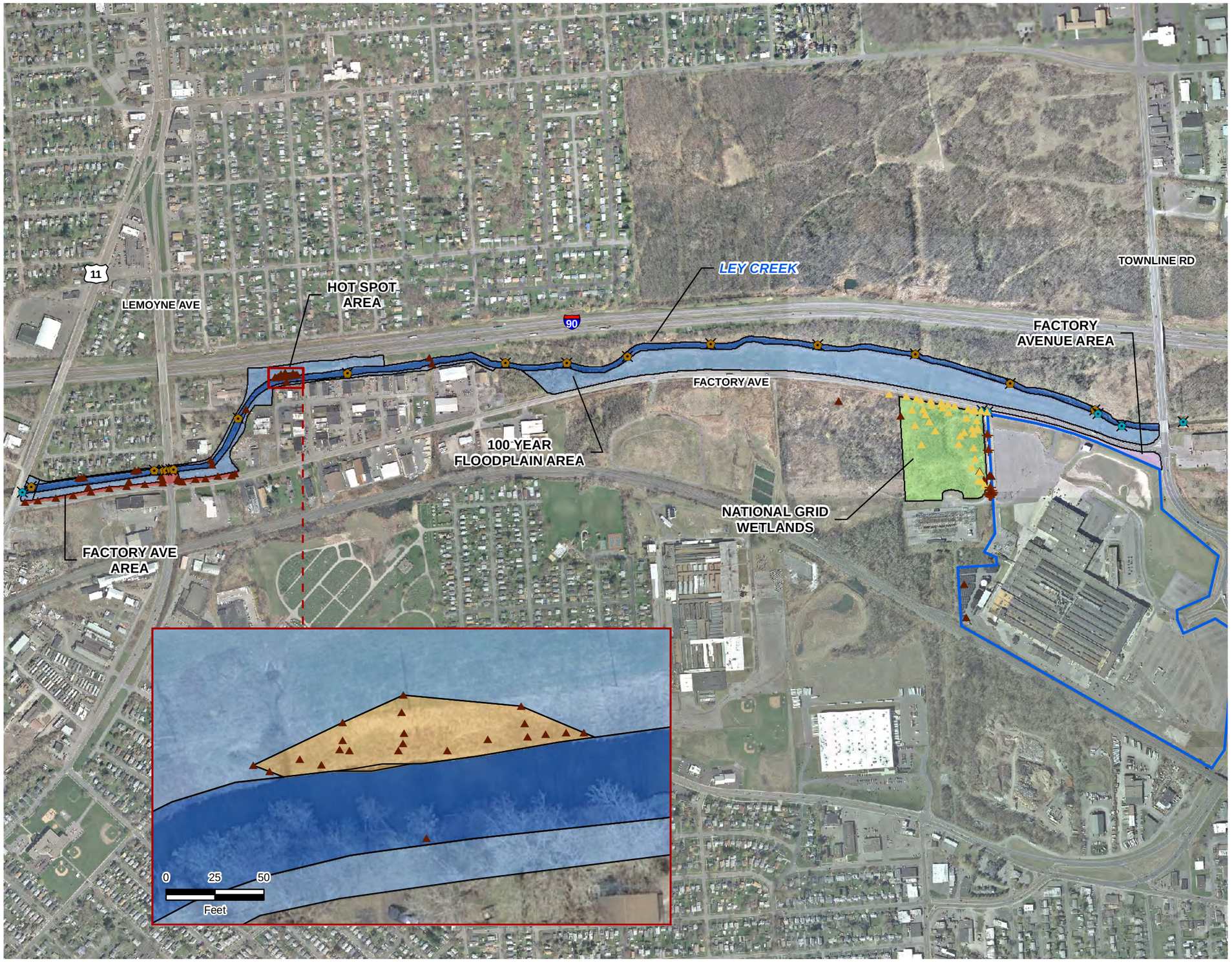
FIGURE 2



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LEGEND

- SOIL BORING
- SURFACE SOIL
- SOIL SAMPLE
- SEDIMENT SAMPLE
- SURFACE WATER
- FORMER IFG FACILITY PROPERTY BOUNDARY (OU 1)
- FACTORY AVENUE AREA
- LEY CREEK 100-YEAR FLOODPLAIN AREA
- LEY CREEK 100-YEAR FLOODPLAIN HOT SPOT AREA
- LEY CREEK
- NATIONAL GRID WETLANDS
- FACTORY AVENUE / LEMOYNE AVENUE INTERSECTION

GENERAL MOTORS
IFG SITE
OPERABLE UNIT 2
SYRACUSE, NEW YORK

PROPOSED PLAN
OU 2 AREAS

0 375 750 1,500
Feet

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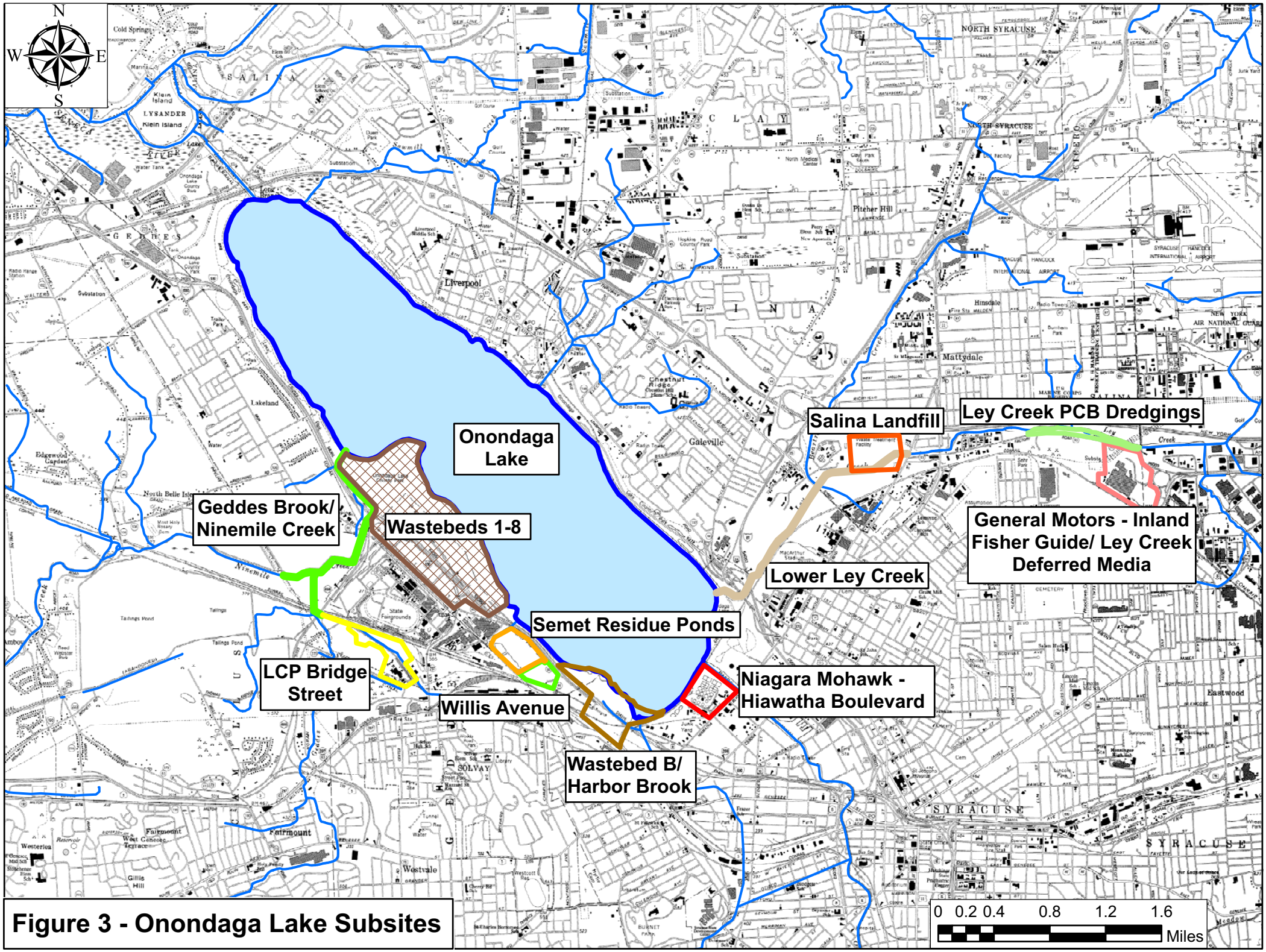
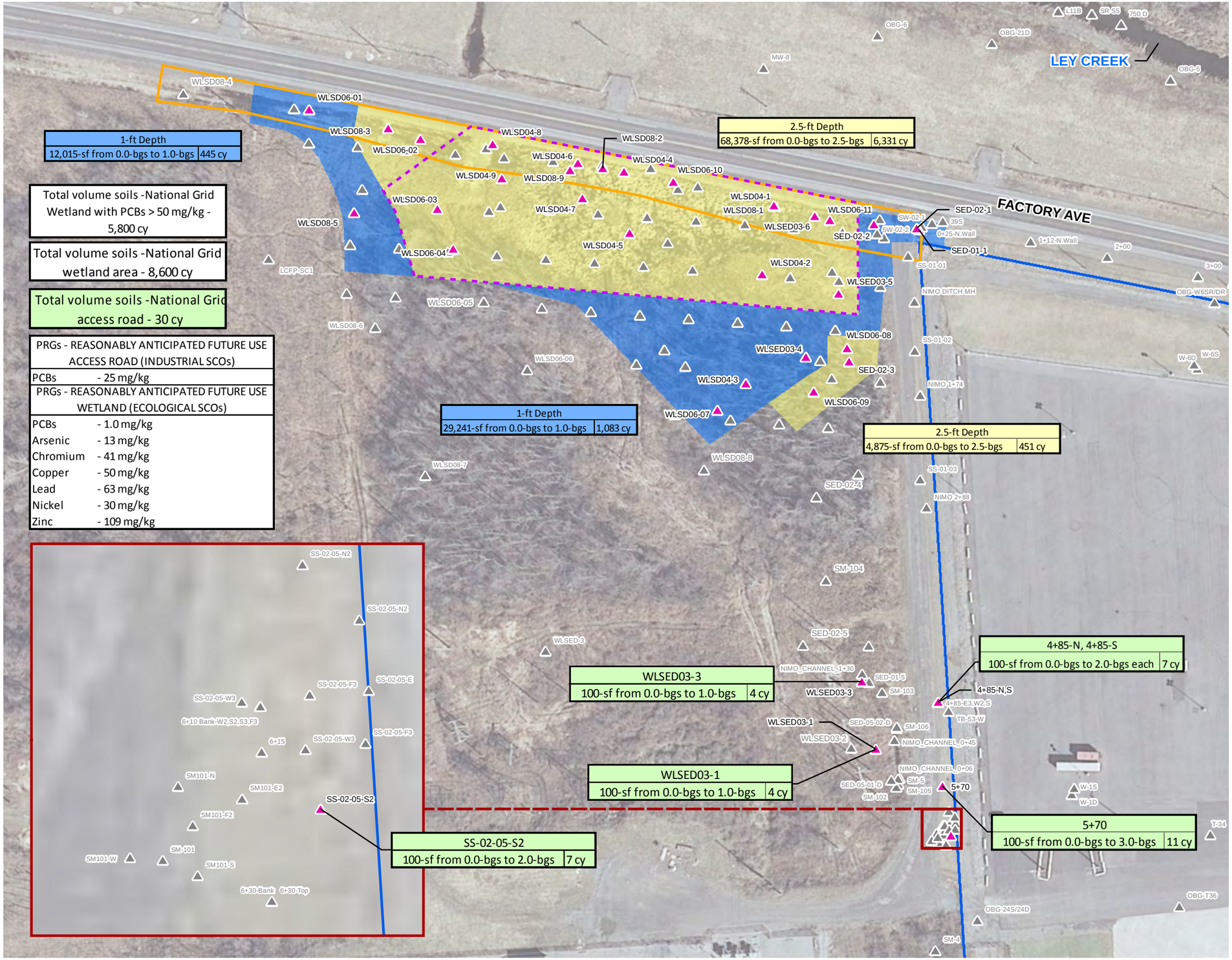


Figure 3 - Onondaga Lake Subsites

FIGURE 4



LEGEND

- SOIL SAMPLE > PRGs*
- SOIL SAMPLE
- PCBs > 50 mg/kg
- FACTORY AVENUE DITCH

PROPOSED EXCAVATION EXTENT

- 1 FOOT DEPTH
- 2.5 FOOT DEPTH

NOTE:

* PRGs used for area limits are listed in figure box inset.
- Proposed excavation extent excludes soil sample location WLSD04-8; Nickel (0.5-1 ft bgs) is marginally above PRG.
- Industrial SCOs - NYCRR part 375 Soil Cleanup Objectives (SCOs) for Industrial Land Use
- Ecological SCOs - NYCRR Part 375 SCOs for Protection of Ecological Resources

EXCAVATION LIMITS

WLSED03-3
100-sf from 0.0-bgs to 1.0-bgs | 4 cy

AREA AND DEPTH — VOLUME

GENERAL MOTORS
IFG SITE
OPERABLE UNIT 2
SYRACUSE, NEW YORK

PROPOSED PLAN NATIONAL GRID WETLAND AREA

0 50 100 200
Feet

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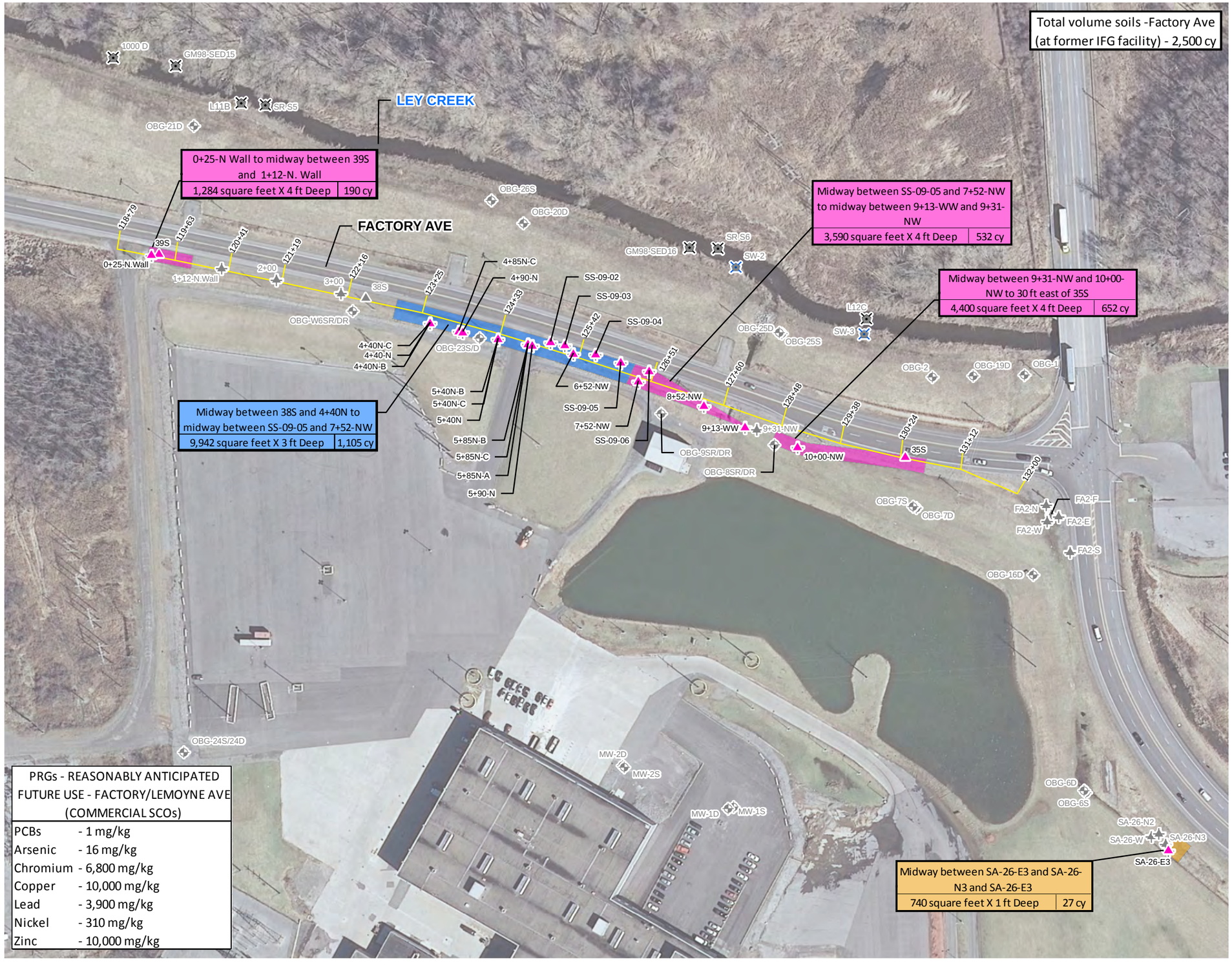
FIGURE 5



PRGs - REASONABLY ANTICIPATED FUTURE USE - FACTORY/LEMOYNE AVE (COMMERCIAL SCOs)	
PCBs	- 1 mg/kg
Arsenic	- 16 mg/kg
Chromium	- 6,800 mg/kg
Copper	- 10,000 mg/kg
Lead	- 3,900 mg/kg
Nickel	- 310 mg/kg
Zinc	- 10,000 mg/kg

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LEGEND

- SOIL SAMPLE > PRGs*
- MONITORING WELL
- SOIL BORING
- SURFACE SOIL
- SEDIMENT SAMPLE
- SURFACE WATER SAMPLE
- FORMER IFG FACILITY PROPERTY BOUNDARY

PROPOSED EXCAVATION EXTENT

- 1 FOOT DEPTH
- 3 FOOT DEPTH
- 4 FOOT DEPTH

NOTES:

* PRGs used for area limits are listed in figure box inset.
- Commercial SCOs - 6 NYCRR Part 375 Soil Cleanup Objectives (SCOs) for Commercial Land Use

EXCAVATION EXTENT

Midway between SA-26-E3 and SA-26-N3 and SA-26-E3	
740 square feet X 1 ft Deep	27 cy

AREA AND DEPTH — VOLUME

GENERAL MOTORS
IFG SITE
OPERABLE UNIT 2
SYRACUSE, NEW YORK

PROPOSED PLAN FACTORY AVENUE AREA (AT FORMER IFG FACILITY)

0 70 140 280
Feet

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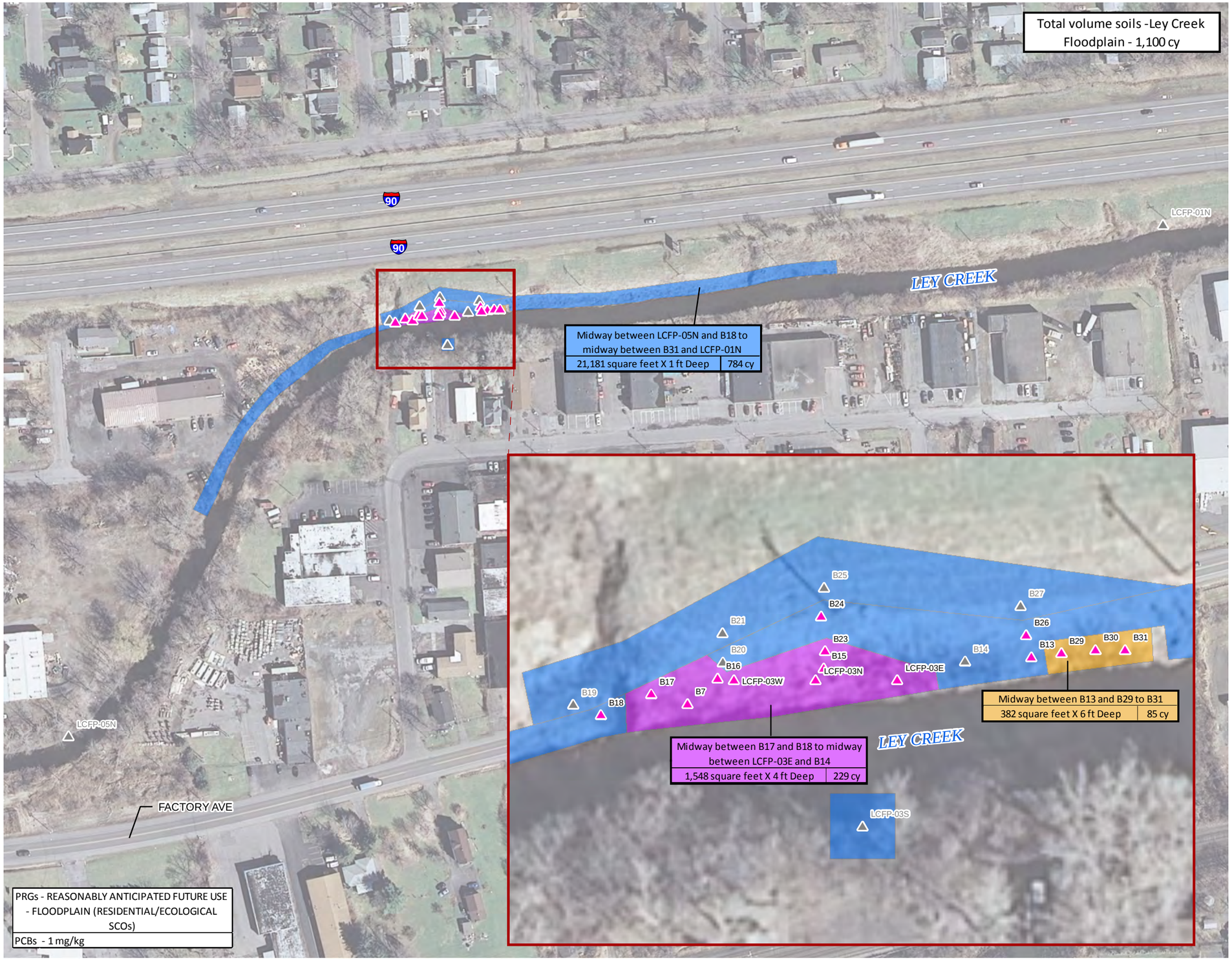

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FIGURE 6

N

LEGEND

- SOIL SAMPLE > PRG*
- SOIL SAMPLE < PRG*

PROPOSED EXCAVATION EXTENT

- 1 FOOT DEPTH
- 4 FOOT DEPTH
- 6 FOOT DEPTH

NOTES:

* PRGs used for area limits are listed in figure box inset.
- Boring locations acquired from a Trimble Pro XRS GPS Unit
- Residential SCOs - 6 NYCRR Part 375 Soil Cleanup Objectives (SCOs) for Residential Land Use
- Ecological SCOs - 6 NYCRR SCOs for Protection of Ecological Resources

EXCAVATION LIMITS

Midway between B17 and B18 to midway between LCFP-03E and B14	
1,548 square feet X 4 ft Deep	229 cy

AREA AND DEPTH — VOLUME

GENERAL MOTORS
IFG SITE
OPERABLE UNIT 2
SYRACUSE, NEW YORK

PROPOSED PLAN FLOODPLAIN HOT SPOT AND FLOODPLAIN

0 75 150 300
Feet

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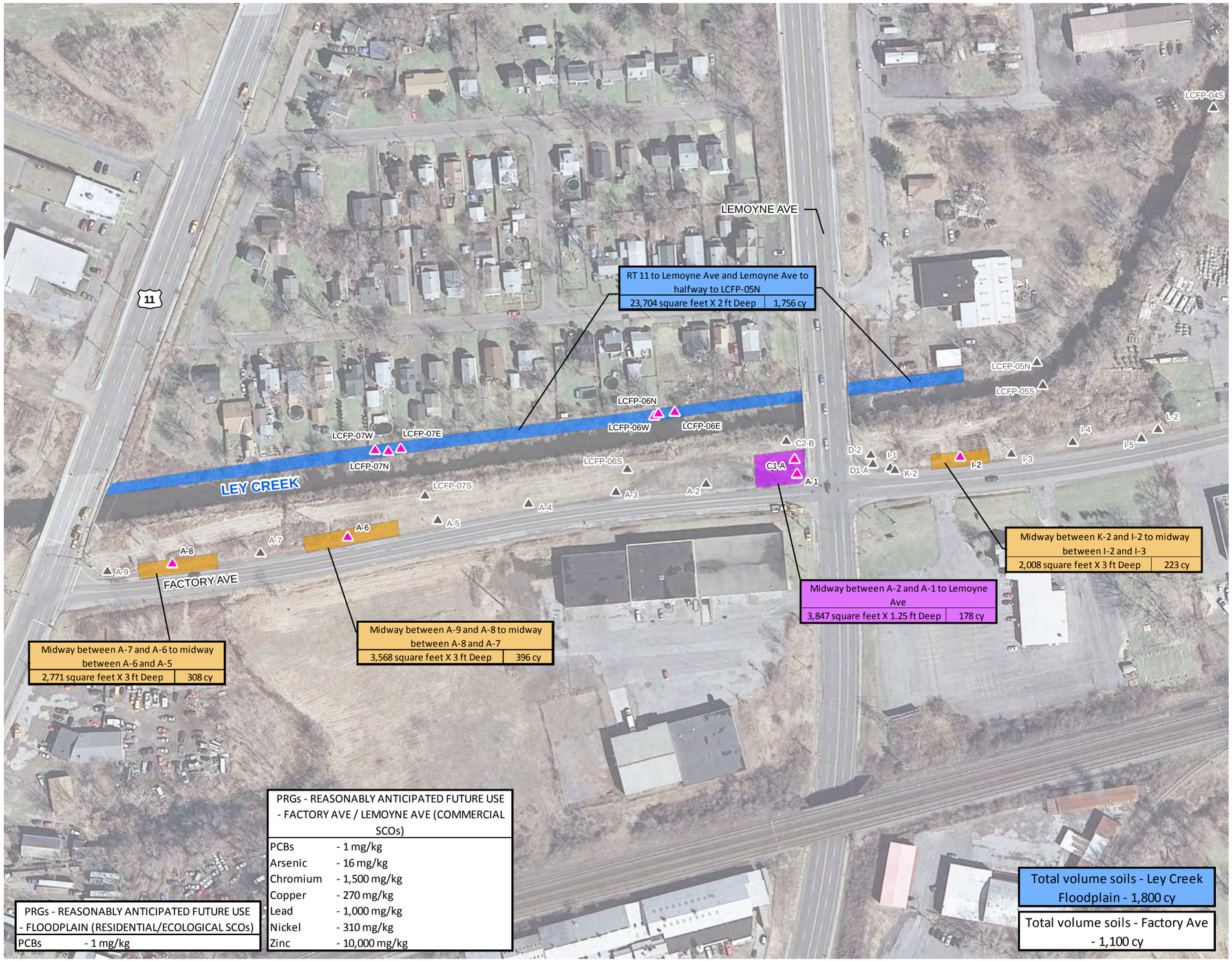
FIGURE 7



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N

LEGEND

- SOIL SAMPLE > PRGs*
- SOIL SAMPLE

PROPOSED EXCAVATION EXTENT

- 1.25 FOOT DEPTH
- 2 FOOT DEPTH
- 3 FOOT DEPTH

NOTES:

* PRGs used for area limits are listed in figure box inset.
- Residential SCOs - 6 NYCRR Part 375 Soil Cleanup Objectives (SCOs) for Residential Land Use
- Ecological SCOs - 6 NYCRR SCOs for Protection of Ecological Resources
- Commercial SCOs - 6 NYCRR Part 375 SCOs for Commercial Land Use

EXCAVATION LIMITS

RT 11 to Lemoyne Ave and Lemoyne Ave to halfway to LCFP-05N | 23,704 square feet X 2 ft Deep | 1,756 cy

AREA AND DEPTH — VOLUME

GENERAL MOTORS
IFG SITE
OPERABLE UNIT 2
SYRACUSE, NEW YORK

PROPOSED PLAN FACTORY AVE AREA (AT LEMOYNE AVE INTERSECTION)

0 75 150 300
Feet

APRIL 2014
15388.51418

O'BRIEN & GERE

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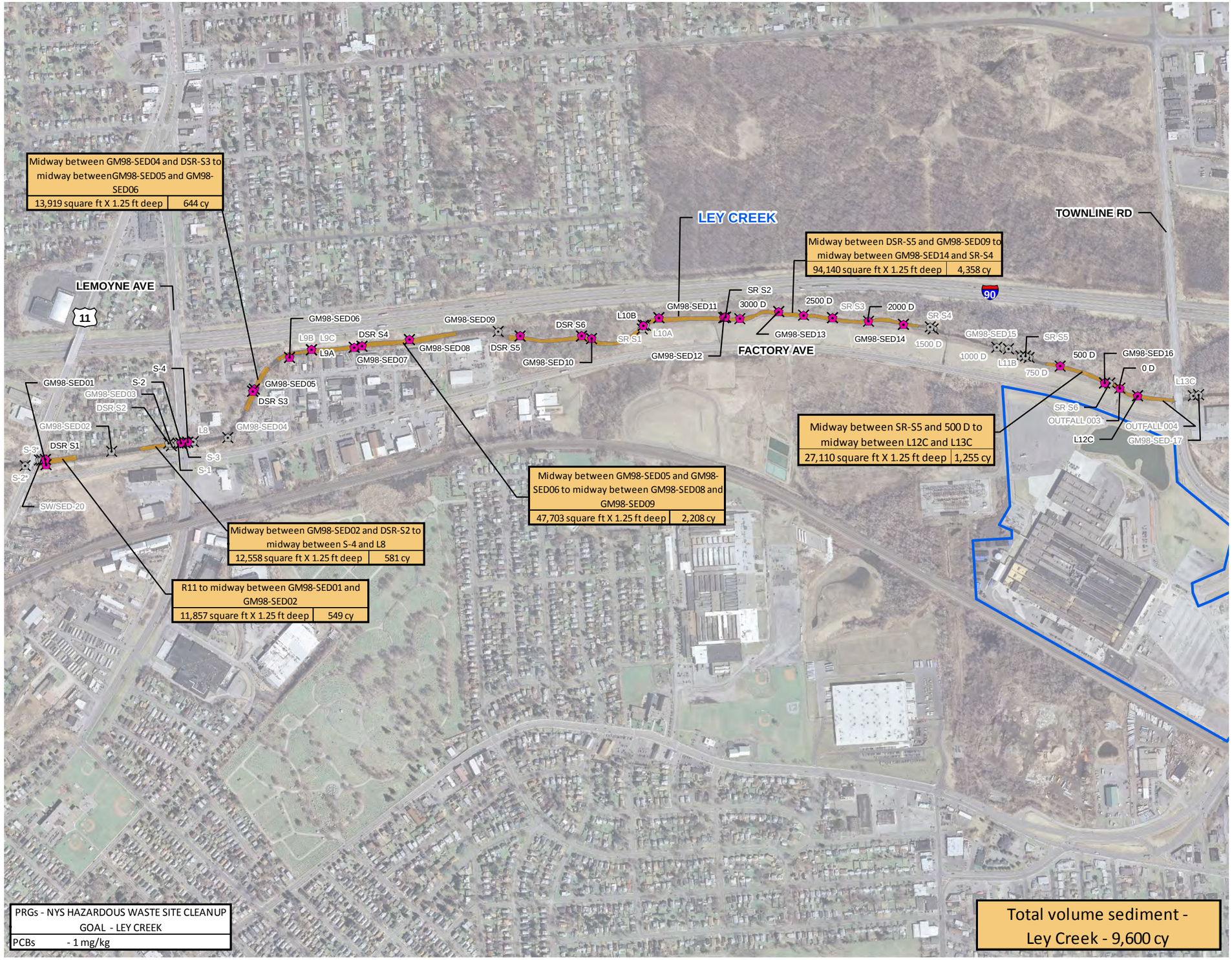
FIGURE 8



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N

LEGEND

- SEDIMENT SAMPLE > PRG*
- SED
- FORMER IFG FACILITY PROPERTY BOUNDARY
- PROPOSED EXCAVATION EXTENT

NOTES:
- Ley Creek length between Townline Rd and Route 11: 9,242 linear ft.
- Proposed excavation extent square footage was estimated using the aerial image of each relevant reach of Ley Creek.

* PRGs used in area limits are listed in figure box inset.
- PRG of 1 mg/kg for total PCBs based on previously selected cleanup goals for NYS Hazardous Waste Sites.

EXCAVATION LIMITS

R11 to midway between GM98-SED01 and GM98-SED02	
11,857 square ft X 1.25 ft deep	549 cy

AREA AND DEPTH — VOLUME

GENERAL MOTORS
IFG SITE
OPERABLE UNIT 2
SYRACUSE, NEW YORK

PROPOSED PLAN LEY CREEK SEDIMENT

0 375 750 1,500
Feet

APRIL 2014
15388.51418

O'BRIEN & GERE

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