Remediation Cost Estimate Summary

GM – IFG Syracuse
MLC ID 1010

October 30, 2009
Revised May 2010
Revised March 2011

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March 2011 Revisions

The May 2010 version of this document was based on the remedial actions and implementation schedules derived from discussions between MLC and the governmental agencies at that time. Edits to the following document reflect changes subsequently incorporated in the final Environmental Remediation Trust Consent Order and Settlement Agreement filed in the bankruptcy court in October 2010. Among these changes were the assumption that the building would remain in use indefinitely and that the remediation of upper Ley Creek would be included.

Background Information

The Brown-Lipe-Chapin Division of General Motors Corporation (formerly GM, now Motors Liquidation Company MLC]) began operations at the Inland Fisher Guide (IFG) facility in 1952. Due to mergers among GM divisions, the facility operated as the Brown-Lipe-Chapin Division from 1952 until 1968, the Fisher Body Division from 1968 until 1984, the Fisher Guide Division from 1984 until 1989, and the IFG Division of GM from 1989 until on-site manufacturing operations ceased in 1993. Historically, the site was used for the manufacture of metal automotive components and plastic auto parts. Operations included plating, die casting, sheet metal pressing, injection molding, and painting.

Currently, the site covers approximately 65 acres and includes the main 800,000-square-foot former manufacturing plant building, a former Powerhouse, a formal industrial wastewater treatment plant (WWTP), a former mold storage building, a former bulk rail delivery handling building, and other facilities, including an active stormwater/groundwater treatment building. The site has been redeveloped as an industrial park, with multiple tenants performing various types of manufacturing.

Selected background information is provided below:

Site Location
1000 Town Line Rd. (aka 1 General Motors Drive)
Syracuse NY 13206
MLC Site ID 1010

USEPA ID Number
USEPA ID. No. NYD002239440

NYSDEC ID Number
NYSDEC Registry No. 7-34-057

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Real Estate Information

The following is a summary of selected real estate information for this site:

Current Land Use – Industrial

Zoning – Industrial

Building and Improvements – A manufacturing building, a Powerhouse, a former industrial waste treatment building, a mold storage building, a bulk rail car building, and other facilities

Size, Age, Condition – Main plant is 800,000-square feet, 57 years old, recently redeveloped

Infrastructure – Power, water, sewer

Environmental History

From 1981 to 2009, GM conducted several investigations addressing specific environmental media primarily impacted with polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), and metals in response to regulatory requirements and consent orders. Collectively, GM has extensively investigated the sources and extent of contamination attributable to the IFG facility, and implemented several interim remedial measures (IRMs) on site and off site.

On August 12, 1985, the New York State Department of Environmental Conservation (NYSDEC) and GM entered into an Administrative Order on Consent (Case# 7-0383) to address the discharge of constituents in facility process wastewater and stormwater into Ley Creek. GM subsequently redirected process water to the county publically owned treatment works system and provided treatment of stormwater under a State Pollutant Discharge Elimination System (SPDES) permit.

On February 16, 1986, the NYSDEC and GM entered into an Administrative Order on Consent (R7-0002-85-05) to investigate and remediate a paint thinner spill in an underground storage tank (UST) area. GM ultimately installed and continues to operate two groundwater recovery trenches to remediate this spill.

In 1988, the United States Environmental Protection Agency (USEPA) conducted the first site-wide inquiry into site contamination, the Resource Conservation and Recovery Act (RCRA) site inspection, which identified a number of solid waste management units and Areas of Concern.

In 1994, the USEPA and the NYSDEC issued a Joint Demand for Information under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and related state statutory authority. GM responded to the joint demand on September 29, 1994, and to a supplemental demand for information on February 2, 1995. Subsequently, in a letter dated June 23, 1997, the USEPA and NYSDEC notified GM that the former IFG Facility and the Ley Creek PCB Dredgings Site (MLC ID 1110) would be designated as part of the Onondaga Lake

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National Priorities List (NPL) site based on the confirmed hazardous substance contamination at the site (PCBs, VOCs, and heavy metals) and the proximity of these substances to the NPL site.

On September 25, 1997, the NYSDEC and GM entered into an Administrative Order on Consent (Index # D-7-0001-97-06), which required GM to conduct a remedial investigation and feasibility study (RI/FS) to develop an understanding of the nature and extent of site contamination and evaluate potential remediation alternatives. The former IFG Facility was classified by the NYSDEC as a Class 2 Site in the New York State (NYS) Registry of Inactive Hazardous Waste Disposal Sites (Registry; Site No. 7-34-057). The NYSDEC also redefined the site in this Consent Order to include an area of groundwater, surface water, and sediment in Ley Creek, formerly associated with another site on the NYS Registry (7-34-044) called the Ley Creek PCB Dredgings Site. The NYSDEC designated the additional area to be investigated by GM as Ley Creek Deferred Media. The Ley Creek Deferred Media and the IFG facility property comprise the "site" subject to the Consent Order.

Numerous environmental investigations have been conducted at the site to characterize soil, groundwater, surface-water, and sediment conditions. At least 25 environmental field investigations, which have included surface and subsurface soil, groundwater, surface-water, and sediment sampling, have been conducted by GM and the NYSDEC to investigate and characterize site conditions, including off-site impacts.

Based upon the results of these field investigations and subsequent regulatory and/or Consent Order requirements, the following remedial actions were conducted at the site:

Underground hydraulic oil sumps and tanks were abandoned or removed.

Eight oil/water collection sumps were installed in the vicinity of the former storm sewer system.

A groundwater remediation system was installed to address toluene, ethylbenzene, and xylene in the groundwater near a leaking UST.

Contaminated soils from two surface impoundments were excavated and disposed off site.

Approximately 18,000 tons of PCB-contaminated soil was excavated.

Infiltration of contaminated groundwater into the storm sewer system was addressed.

A former drainage swale contaminated with PCBs, trichloroethene (TCE), chlorobenzene, and metals above the NYSDEC Technical and Administrative Guidance Manual levels was excavated and disposed off site.

Groundwater treatment from the paint thinner area has been ongoing since 1985.

Additional investigations were conducted and an IRM has been initiated to address surface and subsurface impacts related to the former landfill. Remedial measures at the former

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landfill included hot spot soil/material excavation and capping with a high-density polyethylene liner, and either asphalt or vegetative cover.

Current Environmental Issues

The primary contaminants present at the site include PCBs; benzene; toluene, ethylbenzene, and xylene (BTEX); chlorinated VOCs (primarily TCE); and metals. Soil contamination is managed through engineering and institutional controls (cover system comprised of soil cap, asphalt, and buildings). Soil disruptions require, at a minimum, notification to the NYSDEC and implementation of NYSDEC-approved soils management procedures. Stormwater is collected and treated in an on-site treatment system. Groundwater contaminants associated with historic manufacturing operations are distributed within shallow and deep aquifer systems. Remediation of groundwater is currently incomplete.

Stormwater

Stormwater is currently managed through a network of storm drains routed to a retention basin at the northern end of the site. Water is pumped from the retention basin through an on-site treatment facility before being discharged to Ley Creek in accordance with a SPDES permit. A permitted overflow from the retention basin also discharges to Ley Creek during peak storm periods. All other (historic) outfalls have been removed or permanently sealed in place.

Shallow Aquifer Zone

Chlorinated VOCs, primarily TCE and its degradation products (cis-1,2-dichloroethylene [cis-1,2-DCE] and vinyl chloride), are present above NYS Class GA standards in the shallow aquifer zone. TCE has been detected up to 25,000 micrograms per liter (µg/L) in a well located beneath the manufacturing building. The contaminated zone extends from the manufacturing building and/or former tank farm building towards the north/northeast, in the direction of shallow and deep groundwater flow towards Ley Creek.

BTEX is present in the shallow aquifer zone, primarily in the area of the former paint thinner USTs. Sampling conducted in 1999 as part of the Supplemental RI (2000) identified total BTEX concentrations up to 192,400 µg/L. The current paint thinner area groundwater recovery system consists of two trench recovery systems intercepting and collecting BTEX-impacted groundwater for on-site treatment prior to discharge into Ley Creek pursuant to a SPDES permit.

PCBs are present at concentrations exceeding the NYS Class GA standard (0.09 g/L) in the shallow aquifer zone at locations throughout the site, extending from the southern portion of the manufacturing building and/or industrial WWTP to beyond the northern property boundary. Concentrations of PCBs, primarily Aroclors 1242 and 1248, detected in the shallow aquifer zone, have historically ranged up to 18 g/L.

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Deep Aquifer Zone and VOC Source Area

Chlorinated VOCs, primarily TCE and its degradation products (cis-1,2-DCE and vinyl chloride), are present at concentrations exceeding NYS Class GA standards in the deep aquifer zone. TCE has been detected in the deep aquifer zone at concentrations as high as 170,000 g/L at locations north of the manufacturing building. The detected concentrations and subsurface topography of the deep aquifer zone indicated the possible presence of dense non-aqueous phase liquid (DNAPL) in the deep aquifer zone, although this has never been confirmed during RIs nor has DNAPL ever been encountered downgradient of the manufacturing building. Groundwater monitoring results indicate that the chlorinated VOC plume within the deep aquifer zone extends to and beyond the northern property boundary.

PCBs are also present at concentrations exceeding the NYS Class GA standard in the deep aquifer zone at locations throughout the site and beyond the northern property boundary. Concentrations of PCBs, primarily Aroclors 1242 and 1248, detected in the deep aquifer zone have historically ranged up to 3 g/L.

Vapor Intrusion Mitigation

In 2005, the NYSDEC requested the investigation of the potential existence and extent of soil gas associated with groundwater containing constituents of concern under and within the former manufacturing building. Since 2005, three rounds of sub-slab vapor and indoor air investigations have been implemented (March 2006, March 2007, and October 2009). Comparison of the sampling analytical results to New York State Department of Health's (NYSDOH's) October 2006 Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH, 2006), indicates that TCE concentrations in some samples of indoor air were greater than 5 micrograms per cubic meters ($\mu g/m^3$) (guidance value), and TCE concentrations in some sub-slab vapor samples were greater than 250 $\mu g/m^3$ (guidance value).

In addition to sampling performed in the manufacturing building, the following activities have been conducted in connection with potential vapor intrusion conditions at the facility:

A building survey in 2006 focused on the condition of the building envelope and interior walls and concluded that interior air spaces are in constant communication.

Fact sheets were provided to building tenants in 2006 and 2010 notifying tenants of ongoing vapor intrusion investigations and providing sampling results.

Plugging of drain holes in the facility floor and the sealing of sump covers.

Diagnostic sub-slab communication tests in 2008.

Risk evaluations in 2007 and 2008 to assess risk to commercial and industrial tenants.

Vapor intrusion evaluation in 2008 to summarize findings or prior assessments and evaluate potential site-specific vapor mitigation technologies.

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Based on a letter to GM, dated May 21, 2009, from the NYSDEC, vapor mitigation measures will be required for the manufacturing building based on findings of TCE above guidance values.

Remedial Investigations and Feasibility Studies

Pursuant to the Administrative Order on Consent Index # D-7-0001-97-06, a Preliminary RI/FS Report that summarized environmental conditions based on historical data collected for the site was submitted to the NYSDEC on October 24, 1997. Following the collection of additional environmental data, a Supplemental RI Report for the site was submitted to the NYSDEC on April 20, 2000. Additional work to complete the RI/FS, including the risk assessment (human health and ecological), is ongoing.

As-Needed IRMs Associated with Soils Management Requirements

"As-Needed IRMS" are associated with the owner's obligation, under an Addendum to the NYSDEC Administrative Order on Consent D-7-0001-97-06 (November 16, 1999) to clean interior surfaces and implement soil and materials management and disposal whenever the building interior, floor slab, or subsurface soils are disturbed, to address the presence of certain contaminants, including PCBs. Specifically, the addendum allows activities associated with site redevelopment to proceed in a manner that is consistent with 6 New York Codes, Rules, and Regulation Part 375 and the Consent Order. These activities include cleaning of lease space floors, walls, ceilings, and structures prior to occupancy under NYSDEC-approved IRM Work Plans. Restricted activities, such as floor and wall penetrations, and soil disturbance must also be performed in accordance with approved IRM Work Plans and require notification to the NYSDEC, monitoring during the activity, proper handling and disposal of contaminated materials, and reporting. Since 1999, numerous IRMs have been completed in the normal course of tenant build out, building repair, underground utility work, and related disruption to managed (epoxy coated) building surfaces and exterior cover systems.

Remediation Scope of Work and Cost Estimate

This "Remediation Scope of Work and Cost Estimate" summarizes the discussions and agreements between MLC and applicable environmental regulatory agencies in connection with the plan of reorganization or liquidation for MLC, including the establishment of a post-confirmation trust to complete remediation. The objectives of this Remediation Scope of Work and Cost Estimate are to: i) describe activities and associated, assumed costs that are focused on MLC's goal of bringing the site to regulatory closure within the timeframes indicated in the accompanying "Project Schedule" table; and/or ii) describe any necessary long-term operation, maintenance, and monitoring (OMM) tasks and associated, assumed costs that may be required for maintaining an environmentally protective remedy for the specified timeframe.

The scope of work presented below is based on the assumptions concerning conditions, rates, other costs, and other variables stated herein and in referenced documents. Significant variances from these assumptions may result, if more favorable, in reductions in scope and/or costs, and if less favorable, in increased or different scope and/or costs.

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Several remedial action activities have already been completed at the site; therefore, ongoing OMM activities associated with these completed remedial action activities will continue (i.e., stormwater/groundwater treatment system and landfill cap OMM). In addition to the ongoing OMM activities, the future design and remediation activities anticipated for the site will include finalization of the RI/FS and risk assessment, vapor intrusion mitigation, construction of a subsurface barrier wall and groundwater collection trench, in-situ groundwater treatment in source areas for VOCs, and "As-Needed IRM." The remediation cost estimate that has been developed for this site reflects these OMM, design, and remediation activities, and are described in more detail below.

The remediation cost estimate for this site in current dollars (2009) is $52,799,931. This cost is based on a total Estimated Baseline/Engineering Cost of $48,743,972 and a contingency of $3,289,318 (ranging between 0 and 25 percent for selected tasks), as well as an Agency Oversight cost of $4,055,959. The Remediation Cost Estimate Summary spreadsheet provides a year-by-year breakdown of costs for each task included in this estimate. In addition, Appendix A includes a more detailed cost breakdown that supports these estimates.

Stormwater and Groundwater Treatment and Discharge

Site stormwater and remediation groundwater are currently treated using the on-site treatment facility operating in accordance with a SPDES permit. Additional groundwater flow of approximately 10 gallons per minute will be added to the influent for treatment after the downgradient groundwater collection system is installed, which is conceptually described under the slurry wall and collection trench system task below. The scope of work for the stormwater and groundwater treatment OMM includes the continued operation of the current system plus the additional extraction and treatment of groundwater for the future downgradient system. The baseline cost to operate this system is based on current operating costs, adjusted to handle the increase in VOC loading to the carbon treatment media, and the additional cost to operate the additional groundwater extraction pump system. Following completion of subsurface in-situ VOC treatment, it is assumed that the groundwater collection system for the thinner area will no longer be operated, reducing total treatment system influent flows to current volumes.

The annual Estimated Baseline/Engineering Costs for performing these OMM activities include the following:

$122,000 per year for 2 years (2010 through 2011, $244,000)

$162,000 per year for 4 years (2012 through 2015, $648,000)

$130,000 for six years (2016 through 2021, $780,000)

$122,000 per year for 88 years (2022 through 2109, $10,736,000)

The total undiscounted life cycle cost for this activity is estimated at $12,408,000, should this entire scope of work be implemented between 2010 and 2109. The need to perform these OMM activities over a 100-year period has yet to be determined and may be reduced if site VOC

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concentrations demonstrate a consistent downward trend over time. Thus, a portion of this expenditure remains as a potential cost that may not be incurred and is subject to further evaluation.

Vapor Intrusion Mitigation

A vapor intrusion mitigation system will be designed, installed, and operated to reduce the levels of VOCs detected in indoor air space, specifically attributed to sub-slab vapors. O'Brien and Gere (OBG) has proposed additional pre-design investigations to develop the specific mitigation measures intended to meet NYSDOH guidance values. The scope of work for vapor intrusion mitigation includes pre-design testing, installation of a full scale sub-slab depressurization system for the former manufacturing building, and operation of the system until 2109. The Estimated Baseline/Engineering Cost for this activity includes the following:

Pilot Test – $316,000 (2009 through 2010)

Capital Cost for Vapor Intrusion Mitigation System – $1,841,604 (2010 through 2011)

Annual Cost for OMM – $239,000 per year for 2 years (2012 through 2013, $478,000)

Annual Cost for OMM – $98,000 per year for -96 years (2014 through 2109, $9,408,000)

The total undiscounted life cycle cost for this activity is estimated at $12,043,604, should this entire scope of work be implemented between 2009 and 2109. The need to perform these OMM activities over a 100-year period has yet to be determined and may be reduced if site VOC concentrations demonstrate a consistent downward trend over time or reuse of the building is eliminated. Thus, a portion of this expenditure remains as a potential cost that may not be incurred and is subject to further evaluation.

Completion of RI/FS, Risk Assessment and Off-Site Remediation

The scope of work for completing the site RI/FS is limited to the areas defined in the September 1997 Administrative Order on Consent (Index # D-7-0001-97-06) and includes the completion of the nature and extent of contamination evaluation, risk assessment, and final FS activities. No significant additional on-site investigation is required because most of the nature and extent investigations have been completed and summarized in the supplemental RI Report (April 2000). Completion of this work is required before the NYSDEC can issue a Record of Decision (ROD) for the site. The Estimated Baseline/Engineering Cost for the RI/FS is $285,021 and was completed between 2009 and 2010.

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Upper Ley Creek

This subtask includes the completion of the RI/FS and remediation of the impacted sediments in the portion of Ley Creek and adjacent floodplain upstream of the Route 11 bridge to the IFG outfall, and the treed wetland along the south side of Factory Avenue, adjacent to the northwest corner of the IFG property. . The Estimated Baseline/Engineering Cost for the off-site RI/FS is $359, 979 and is anticipated to be completed between 2010 and 2011. The Estimated Baseline/Engineering Cost for the off-site remediation is $8,168,875, and is shown in the estimate to be incurred in 2012.

The total undiscounted life cycle cost for these efforts is $8,813,875 and is anticipated to be completed between 2009 and 2012.

Slurry Wall and Collection Trench

A downgradient hydraulic control system has been proposed as the permanent remedial action for groundwater within the site boundaries, downgradient of the manufacturing building, and associated source areas. The scope of work for this remedial action is the installation of an effective groundwater control system for the extraction and treatment of on-site VOC and PCB-impacted groundwater. The control system is intended to prevent the migration of contaminated groundwater to off-site receptors, including Ley Creek. Although the specific groundwater control system has not been selected or designed, the cost estimate is based on an assumed 1,800 linear foot soil-bentonite slurry wall (2.5 feet wide) at an average depth of 33 feet below ground surface (bgs), and an adjacent 1,800 linear foot groundwater collection trench installed with a bottom drain system and using a biopolymer trench method to an average depth of 30 feet bgs.

The Estimated Baseline/Engineering Cost for the design and construction of the slurry wall and collection trench is $2,472,670 and is anticipated to be completed between 2011 and 2012. The design of the slurry wall and collection trench has yet to be determined, and thus, this expenditure remains as a potential cost that is subject to further evaluation.

Subsurface In-Situ VOC Source Treatment

The scope of work for VOC impacted soil remediation is assumed to be in-situ chemical oxidation using sodium persulfate solution injections to treat approximately 16,000 cubic yards of VOC-impacted saturated soils. This assumes that a network of up to 65 injection wells will be installed, an initial injection in all injection wells is required, and a secondary injection in 75 percent of the wells will occur.

The Estimated Baseline/Engineering Cost for designing and implementing this in-situ VOC source treatment is $1,205,000 and is scheduled to be completed between 2011 and 2013. The need for this remedial action has yet to be determined, and thus, this expenditure remains as a potential cost that may not be incurred and is subject to further evaluation.

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Surface Soil IRM and Landfill Cap OMM

The scope of work for this remedial activity includes excavation and off-site disposal of an assumed 20 cubic yards of PCB-containing soil, which was previously delineated by OBG, and ongoing OMM of the landfill cap (comprised of asphalt and grass vegetated surfaces). Currently, the landfill cap is managed as general routine property maintenance. The asphalt surface consists of an access driveway from Factory Avenue and a parking area constructed and maintained for tenant use. The rest of the cap is vegetated with grass, which is regularly mowed. Similar OMM activities will continue under this scope of work.

The Estimated Baseline/Engineering Cost for the surface soil IRM is $21,506 and is anticipated to be completed in 2011. The annual Estimated Baseline/Engineering Cost for performing the OMM activities is $10,000 per year for 99 years (2011 through 2109, $990,000).

The total undiscounted life cycle cost for this activity is estimated at $1,011,506, should this entire scope of work be implemented between 2010 and 2109. The need to perform the OMM activities over a 100-year period has yet to be determined and may be reduced if site conditions maintain consistent stability. Thus, a portion of this expenditure remains as a potential cost that may not be incurred and is subject to further evaluation.

As-Needed IRMs and Removal of Impacted Soil under Slabs after Demolition

The scope of work for this remedial category is based on the required IRMs associated with slab penetrations and subsurface penetrations encountering either contaminated concrete slab or soil. These IRMs, typically resulting in removal and off-site disposal of impacted materials, will be performed as needed to support tenant build out or underground utility repair. Costs are based on historic average annual expenses for prior as-needed IRMs, pursuant to the NYSDEC-approved IRM plans. The annual Estimated Baseline/Engineering Cost for this activity is $11,506 in 2009, $13,049 in 2010, $175,444 in 2011 and $100,000 per year for 48 years (2012 through 2059, $4,800,000) and $50,000 per year for 50 years (2060 through 2109, $2,500,000).

The total undiscounted life cycle cost for this activity is estimated at $7,499,999, should this entire scope of work be implemented between 2009 and 2109. The need to perform these remedial activities has yet to be determined, and thus, this expenditure remains as a potential cost that may not be incurred and is subject to further evaluation.

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Regulatory Requirements

The regulatory requirements for the site include the following:

NYSDEC Administrative Order on Consent (Index # 7-0383), August 12, 1985

NYSDEC Administrative Order on Consent (Index # R7-0002-85-05), February 16, 1986

NYSDEC Administrative Order on Consent (Index # D-7-0001-97-06), September 17, 1997

NYSDEC Addendum to Administrative Order on Consent (Index # D-7-0001-97-06), November 16, 1999

Project Schedule and Estimated Cost

The project schedule and estimated cost for the anticipated work to be performed is presented below.

Timeframe	Event	Responsibility	Estimated Baseline/Engineering Cost[1,2]
2010 to 2109	Stormwater and Groundwater Treatment and Discharge	MLC	$12,408,000
2009 to 2109	Vapor Intrusion Mitigation	MLC	$12,043,604
2009	Completion of Onsite RI/FS and Risk Assessment	MLC	$285,021
2010 to 2012	Off site RI/FS and Remediation	MLC	$8,528,854
2011 to 2012	Slurry Wall and Collection Trench	MLC	$2,472,,670
2011 to 2013	Subsurface In-Situ VOC Source Treatment	MLC	$1,205,000
2009 to 2109	Surface Soil IRM and Landfill Cap O&M	MLC	$1,011,506
2009 to 2109	As-Needed IRMs and Impacted Soil Removal Under Slabs	MLC	$7,499,999

Notes:
1. Contingency not included in cost table.
2. Agency oversight cost not included. As shown below in the Remediation Cost Estimate Summary, the Agency oversight cost for each year assumed 10 percent of the sum of the total Estimated Baseline/Engineering Cost for the year and the specified contingency amount.

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Year		Storm Water & Groundwater Treatment and Discharge	Contingency	Vapor Intrusion Mitigation	Contingency	Completion of Onsite RI/FS, Risk Assessment and Off-Site Remediation	Contingency	Slurry Wall and Collection Trench	Contingency	Subsurface Insitu VOC Source Treatment Thinner and Larger TCE Area When Building Slab is Removed	Contingency	Surface Soil IRM and Landfill Cap O&M	Contingency	As-Needed Soils Management IRMs, Removal of Impacted Sewers Under Slab after Demolition	Contingency	Agency Oversight
		Remediation Cost Estimate Summary														
2009	1	$ -	0%	$ 34,352	0%	$ 285,021	0%	$ -	10%	$ -	0%	$ 13,506	0%	$ 11,506	0%	$ 42,724
2010	2	$ 122,000	0%	$ 937,160	15%	$ 176,572	10%	$ -	10%	$ -	0%	$ 6,005	10%	$ 13,049	10%	$ 135,993
2011	3	$ 122,000	0%	$ 1,136,086	25%	$ 233,407	10%	$ 100,000	10%	$ 680,000	10%	$ 13,992	10%	$ 175,844	10%	$ 291,773
2012	4	$ 162,000	10%	$ 239,000	15%	$ 8,168,875	0%	$ 3,312,870	25%	$ 300,000	10%	$ 10,000	10%	$ 100,000	10%	$ 386,989
2013	5	$ 162,000	10%	$ 239,000	10%	$ -	0%	$ -	0%	$ 225,000	10%	$ 10,000	10%	$ 100,000	10%	$ 80,950
2014	6	$ 162,000	10%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 40,700
2015	7	$ 162,000	10%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 40,700
2016	8	$ 130,000	10%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 37,180
2017	9	$ 130,000	10%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 37,180
2018	10	$ 130,000	10%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 37,180
2019	11	$ 130,000	10%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 37,180
2020	12	$ 130,000	10%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 37,180
2021	13	$ 130,000	10%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 37,180
2022	14	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2023	15	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2024	16	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2025	17	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2026	18	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2027	19	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2028	20	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2029	21	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2030	22	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2031	23	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2032	24	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2033	25	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2034	26	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2035	27	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2036	28	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2037	29	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2038	30	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2039	31	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2040	32	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2041	33	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2042	34	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2043	35	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2044	36	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2045	37	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2046	38	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2047	39	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2048	40	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2049	41	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2050	42	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2051	43	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2052	44	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2053	45	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2054	46	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2055	47	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2056	48	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2057	49	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2058	50	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2059	51	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 100,000	10%	$ 35,080
2060	52	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2061	53	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2062	54	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2063	55	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2064	56	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2065	57	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2066	58	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2067	59	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2068	60	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2069	61	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2070	62	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2071	63	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2072	64	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2073	65	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2074	66	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2075	67	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2076	68	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2077	69	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2078	70	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2079	71	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2080	72	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2081	73	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2082	74	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2083	75	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2084	76	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2085	77	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2086	78	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2087	79	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2088	80	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2089	81	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2090	82	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2091	83	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2092	84	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2093	85	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2094	86	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2095	87	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2096	88	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2097	89	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2098	90	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2099	91	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2100	92	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2101	93	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2102	94	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2103	95	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2104	96	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2105	97	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2106	98	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2107	99	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2108	100	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580
2109	101	$ 122,000	0%	$ 98,000	10%	$ -	0%	$ -	0%	$ -	0%	$ 10,000	10%	$ 50,000	10%	$ 29,580

Appendix A

Notes and Calculations

Appendix A - Notes and Calculations
MLC Site 1010 - Former Inland Fisher Guide Facility
Cost Summary
2/4/2011

Task Column From Estimate	Basis	Assumptions
Stormwater and Groundwater Treatment and Dischange	GM - REALM Project Summary Form O&M 11/6/2007 and Discussion with O'Brien &Gere (OBG) Project Manager	Stormwater and groundwater O&M cost from REALM Project Summary form. Future cost assumes system upgraded to handle 10 gpm increased groundwater flow and additional mass load of VOCs from 1,800 ft recovery trench starting in 2013, with mass load and groundwater infiltration decreasing after building sewers removed or sealed in 2017 and return to steady state by 2020
Surface Soil IRM	O'Brien & Gere Project Completion Cost Estimate - June 2008 and Discussion with OBG Project Manager	Assumes excavation of approximately 20 cy and offsite disposal vs. reuse
As-Needed IRMs	Discussion with OBG PM, review of recent yearly expenses, and projection of future obligations	Included an average expense of $100,000/yr through 2059 based on historic expenses and $50,000/yr through 2109.

Task	Cost
Stormwater/Groundwater Treatment	$12,408,000
Vapor Intrusion Mitigation Complete	$12,043,604
RI/FS and Risk Assessment Slurry	$8,813,875
Wall and Collection Trench	$2,472,670
In-Situ VOC Treatment	$1,205,000
Landfill Cap OMM	$1,011,506
As-Need IRMs and Removal of Impacted Soil Under Slabs	$7,499,999
Total Estimated Baseline/Engineering Cost:	**$45,454,655**

Motors Liquidation Corporation - Former Inland Fisher Guide Facility
Storm Water and Groundwater Treatment and Discharge
2/4/2011

Site 1010 On-Site Storwater and Groundwater Treatment Estimate

Items	Unit	Qty	Cost	Estimated Cost
2010 - 2011 Annual Flow and Operating Cost - Estimated [1]	Gallons	3,000,000	$ 0.015	$ 45,000.00
Engineering, Monitoring, DMRs	LS	1	$ 70,000	$ 70,000.00
Maintenance	LS	1	$ 7,000	$ 7,000.00
			Total Annual	**$ 122,000.00**
		Total 2010 through 2011		**$ 244,000.00**
2012-2015 Annual Flow and Operating Cost - Estimated [2]	Gallons	8,500,000	$ 0.010	$ 85,000.00
Engineering, Monitoring, DMRs	LS	1	$ 70,000	$ 70,000.00
Maintenance	LS	1	$ 7,000	$ 7,000.00
			Total Annual	**$ 162,000.00**
		Total 2012 through 2015		**$ 648,000.00**
2016-2021 Annual Flow and Operating Cost - Estimated [1]	Gallons	3,666,666	$ 0.015	$ 55,000.00
Engineering, Monitoring, DMRs	LS	1	$ 70,000	$ 70,000.00
Maintenance	LS	1	$ 5,000	$ 5,000.00
			Total Annual	**$ 130,000.00**
		Total 2016 through 2021		**$ 780,000.00**
2022 - 2109 Annual Flow and Operating Cost - Estimated [1]	Gallons	3,000,000	$ 0.015	$ 45,000.00
Engineering, Monitoring, DMRs	LS	1	$ 70,000	$ 70,000.00
Maintenance	LS	1	$ 7,000	$ 7,000.00
			Total Annual	**$ 122,000.00**
		Total 2022 through 2109		**$ 10,736,000.00**
			Total Cost	**$ 12,408,000.00**

Notes:

(1) Based on 2009 Operating expense and annual totalized flow of 2,840,039 gallons

(2) Based on increased flow of 10 gpm, running at 70% up time, until after thinner area collection system terminated, and costs revert to 2010 estimated

Motors Liquidation Corporation - Former Inland Fisher Guide Facility
Vapor Intrusion Mitigation Cost Estimate
2/4/2011

Vapor Intrusion Mitigation Pilot System - Cost Estimate (Drilled Option)

	QTY	UNIT	UNIT COST	TOTAL COST		Note
DIRECT CAPITAL CONSTRUCTION COSTS						
Building Permit	1	LS	$3,220	$3,220		
Install 415-LF Sub-slab piping and blower	1	LS	$103,372	$103,372		Pipe installation by trenching. Install blower fan at roof curb Inc. T&D of trench spoils
Install electric	1	LS	$1,950	$1,950		
Sub-slab drawdown monitoring (allowance)	1	LS	$15,180	$15,180		Quarterly inc. slab drilling repair
Prepare Evaluation Report	1	LS	$6,555	$6,555		
Sampling						
Exhaust sampling/communication setup	9	EA	$1,200	$10,800		1 sample monthly
Indoor Air	54	EA	$800	$43,200		6 samples monthly
TOTAL DIRECT CAPITAL COST (rounded)				**$185,000**		
Engineering Design (15% of DCC)			15%	**$27,750**		
TOTAL ESTIMATED CAPITAL COST (rounded)					**$213,000**	
Utilities and O&M (9 months)				**$103,000**		
TOTAL ESTIMATED O&M (rounded)					**$103,000**	
Total Estimate					**$316,000**	

Sub-Slab Depressurization System

Site:	Old Former IFG Facility	Description:	Installation of horizontal sub-slab depressurization
Location:	Syracuse, NY		system in footprint of there portion of Manufacturing Building
Phase:	Conceptual Estimate (-30% to +50%)		Using trench installation of system.
Base Year:	2010		

ITEM	UNIT	ESTIMATED QUANTITY	ESTIMATED UNIT COST	ESTIMATED COST		NOTES
Direct Capital Costs						
1) Health and Safety	LS	1	$82,500	$82,500		
				SUBTOTAL:	**$82,500**	
2) Vapor Intrusion Mitigation System Installation						
Concrete sawcutting	LS	1	$77,000	$77,000		5800 linear ft of 15-inch wide, 18-inch deep trenches.
Disposal of concrete and soil	tons	1143	$221	$252,603		TSCA waste disposal to Model City
Electrical	LS	1	$212,000	$212,000		An existing 460 volt 3phase power panel is available for power supply near all fans
Carbon Filters & Piping	LS	1	$110,000	$110,000		Six exhaust treatment carbon units, 6 equipment pads, & 400 ft of 6" PVC Pipe
System installation	LS	1	$900,000	$900,000		- Four M-2500 PDH and 1 M-1200PDH carbon beds to treat SSD exhaust stream - Below slab perforated pipe is 4 inches in diameter - All above ground header and exhaust stack piping is 6 inch, schedule 40 PVC - 2720 feet of 6 inch schedule 40 PVC pipe - Twenty fiber-Ship blowers
				SUBTOTAL:	**$1,551,603**	
3) Air Permitting						
Modeling	LS	1	$2,000	$2,000		Screening level modeling, assuming carbon offgas treatment
Permit	LS	1	$3,000	$3,000		
				SUBTOTAL:	**$5,000**	
4) O&M&M Plan	LS	1	$20,000	$20,000		
				SUBTOTAL:	**$20,000**	
			TOTAL DIRECT CAPITAL COST:		**$1,659,103**	
Indirect Capital Costs						
Engineering (11% of Direct Capital Costs)	LS	1	$182,501.33	$182,501		Design, coordination, IRM work plan, Engineering completion report
				SUBTOTAL:	**$182,501**	
			TOTAL CAPITAL COSTS (rounded):		**$1,841,604**	
Operation & Maintenance Costs						
1) Vapor Intrusion Monitoring and Reporting						
Analyses & Database Maintenance	LS	1	$10,000	$10,000		One sampling, 9 locations per year
Labor	LS	1	$5,000	$5,000		
2) Vapor Intrusion Mitigation System Operation and Maintenance						
Power consumption	Blower	24	$3,441	$82,594		Assumes $0.11/kWh
Carbon usage	LS	1	$141,000	$141,000		
Annual Cost for First 2 Years				$238,594		First 2 Years
Rounded:				**$239,000**	**$478,000**	
Annual Cost for Remaining Years				597,564		Remaining 96 Years
Rounded:				**598,000**	**$9,408,000**	
				Total O&M	**$9,886,000**	
				Total Task:	**$12,043,604**	

Assumptions and Notes

1. Costs based on sub-contracted pipe installation
2. Pipe installation by hand bore directional drilling
3. Davis-Bacon wage rates for electrical work based on Onondaga County, NY rates
4. Spoils to be disposed at Model City assumed T&D is $221 per ton
5. Discharge to be less than 1 pound per hour TOC. Off-gas treatment will not be required (based on 700,000 ug/m3 vapor concentration)
6. Power is available within 50-ft of fan location
7. Installation of system is accomplished by a 2-week field effort
8. System will operate for 3 seasons (9 months)
9. Sampling of exhaust will occur monthly for 1 yr.
10. Sampling of indoor air will occur monthly for 1 yr. 6 samples each will be collected for each event (total 54 samples)
11. Sampling will consist of summa canisters analyzed by TO-15 procedures.

Motors Liquidation Corporation - Former Inland Fisher Guide Facility
Completion of Onsite RI/FS and Risk Assessment
2/4/2011

Site 1010 On-Site RI/FS (incluing Risk Assessment)				
Items	**Unit**	**Qty**	**Cost**	**Estimated Cost**
Work Plan				
Senior Advisor	HR	100	$225	$22,500
Principle Sci/Eng	HR	160	$200	$32,000
Senior Sci/Eng	HR	400	$175	$70,000
Project Sci/Eng	HR	300	$135	$40,500
Staff Sci/Eng	HR	500	$100	$50,000
Sci/Eng	HR	300	$80	$24,000
Technician	HR	300	$65	$19,500
Designer	HR	120	$65	$7,800
Project Assistant	HR	120	$55	$6,600
Misc Expenses	LS	1	$7,000	$7,000
			On-site Total	$279,900
			Rounded On-site Total	$280,000

Site 1010 Deferred Media RI/FS (Including Risk Assessment)				
Items	**Unit**	**Qty**	**Cost**	**Estimated Cost**
Senior Advisor	HR	160	$225	$36,000
Principle Sci/Eng	HR	180	$200	$36,000
Senior Sci/Eng	HR	320	$175	$56,000
Project Sci/Eng	HR	450	$135	$60,750
Staff Sci/Eng	HR	550	$100	$55,000
Sci/Eng	HR	500	$80	$40,000
Technician	HR	500	$65	$32,500
Designer	HR	240	$65	$15,600
Project Assistant	HR	240	$55	$13,200
Misc Expenses	LS	1	$20,000	$20,000
			Off-site Total	$365,050
			Rounded Off-site Total	$365,000
			RI/FS Total	**$645,000**

Allowance for off-site remediation of the impacted sediments in the upper portion of Ley Creek and adjacent floodplain (upstream of the Route 11 bridge to the IFG outfall), and the treed wetland along the south side of Factory Avenue, adjacent to the northwest corner of the IFG property, per the NYSDEC.

Off-Site Remediation Total **$8,168,875**

TASK TOTAL **$8,813,875**

Motors Liquidation Company - Former IFG Facility
Slurry Wall and Collection Trench
2/4/2011

Slurry Wall and Collection System

System Design	1	LS	$215,000	$215,000	
Direct Capital Costs					
Ground water control system					
Collection trench	1800	LF	30	Depth (ft)	
Mobilization	1	LS	$50,000	$50,000	
Bioslurry Trench w/ Backfill	54000	SF	$20	$1,080,000	1800 LF x 30 ft deep x 2.5 ft wide - includes permeable fill
Clay Cap	833	CY	$30	$25,000	1800 LF x 5 ft deep x 2.5 ft wide
Recycle Trench Soils	4167	CY	$15	$62,505	Recycle all but PCB-contaminated soils onsite
Off-Site Disposal	833	CY	$140	$116,667	50% of top 10-ft; as PCB contaminated
Restoration	2.1	Acre	$1,200	$2,520	50 ft wide
Work Platform	1800	LF	$84	$150,300	Soil platform
Ground water recovery pumps	3	pump	$3,000	$9,000	
PVC piping	1700	LF	$2	$3,400	
Slurry wall, 1,800 ft long, 33 ft deep (avg)	59400	SF	$7	$415,800	amend existing soils
Monitoring Points	24	well	$2,000	$48,000	
Total Direct Capital Costs				**$1,963,192**	
Indirect Capital Costs					
Engineering (15% Direct Capital Costs)			15%	**$294,479**	
Total Estimate				**$2,472,670**	

Design	Length	Depth (avg)	Width
Trench	1800	30	2.5
Slurry Wall	1800	33	2.5

Motors Liquidation Corporation - Former Inland Fisher Guide Facility
Surface Soil IRM and Landfill Cap OMM - Cost Estimate
2/4/2011

		Unit		Unit Cost		Estimated Cost
Surface Soil IRM	1	Lump sum	$	21,506.00	$	**21,506.00**

Cap Maintenance	Estimated Quantity per year	Unit		Unit Cost		Estimated Yearly Cost
Mowing (6 events each year)	6	Event	$	900.00	$	5,400.00
Asphalt maintenance	1	Lump Sum	$	2,000.00	$	2,000.00
Annual Cap Inspection & OM&M Report						
Project Engineer	22	Hour	$	100.00	$	2,200.00
Graphics/Typist	4	Hour	$	65.00	$	260.00
Expenses (copying/postage, etc.)	1	Lump Sum	$	140.00	$	140.00
				Total/yr	**$**	**10,000.00**
				Rounded Total/yr	**$**	**10,000.00**
				Total for 99 years	**$**	**990,000.00**
				Total Cost	**$**	**1,011,506.00**

Motors Liquidation Corporation - Former Inland Fisher Guide Facility
As-Needed Soils Management IRMs
2/4/2011

	Unit	Qty	Cost	Estimated Cost
Estimated Total for 2009	LS	1	11,506	**$11,506**
Estimated Total for 2010	LS	1	13,049	**$13,049**
Estimated Total for 2011	LS	1	175,444	**$175,444**

IRM Typical Costs

Assume - Tenant expansion
Installation of electrical and new restrooms
Subsurface work includes electrical conduits and plumbing

Items		**Unit**	**Qty**	**Cost**	**Estimated Cost**
Work Plan					
Principle Sci/Eng		HR	1	$200	$200
Senior Sci/Eng		HR	4	$175	$700
Project Sci/Eng		HR	10	$135	$1,350
Staff Sci/Eng		HR	12	$90	$1,080
Designer		HR	2	$65	$130
Admin		HR	4	$55	$220
Soil Excavation, Disposal, and Oversight					
Principle Sci/Eng		HR	1	$200	$200
Project Sci/Eng		HR	4	$135	$540
Sci/Eng		HR	80	$90	$7,200
Technician		HR	40	$65	$2,600
Expenses		LS	1	$4,500	$4,500
Estimated Soil Volume					
Linear Feet		LF	100	LF	
Soil Volume	3	CY/LF	300	CY	
Soil Weight	1.5	Tons/CY	450	Tons	
Excavate and Backfill		CY	300	$40	$12,000
Disposal (Hazardous Waste)		Ton	450	$142	$63,900
Closure Report					
Principle Sci/Eng		HR	2	$200	$400
Senior Sci/Eng		HR	4	$175	$700
Project Sci/Eng		HR	10	$135	$1,350
Staff Sci/Eng		HR	20	$90	$1,800
Designer		HR	4	$65	$260
Admin		HR	4	$55	$220
Expenses		LS	1	$650	$650
				Annual Cost	**$100,000**
				Total As-Needed IRMs for 48 years (2010-2059)	**$4,800,000**

As-Needed IRMS for 50 years (2160-2109) (assume one-half annual cost from above)

Annual Cost	**$50,000**
Total As-Needed IRMs for 50 years (2060-2109)	**$2,500,000**
Total Cost	**$7,499,999**

Motors Liquidation Corporation - Former Inland Fisher Guide Facility
Subsurface Insitu VOC Source Treatment - Thinner and Larger TCE Area
Cost Summary
2/4/2011

Syracuse IFG Site Budgetary Source Treatment Estimate	Estimated Cost for TCE + Petroleum Source Areas
Full Scale Injection Design and Permitting	$48,000
Injection Trailer Build	$60,000
Injection Test	$48,000
Full Scale Well Drilling	$143,000
Chemical Injections	$861,000
Injection Monitoring	$45,000
TOTAL[1]	**$1,205,000**

Notes:

(1) Total estimate includes engineering,remediation and performance monitoring and assumes 1 ISCO Injection in 100 percent of thinner and TCE source area injection wells, and second injection in 75% of the injection wells

Total Treatment Volume (TCE + Petroluem Area)	21,667 cyds
TCE Area Only	15,556 cyds
Petroleum (Thinner Area) Only	6,111 cyds

Year 1 (2011):	**$680,000**
Year 2 (2012):	**$300,000**
Year 3 (2013):	**$225,000**

Motors Liquidation Corporation - Former Inland Fisher Guide Facility
Subsurface Insitu VOC Source Treatment - Thinner and Larger TCE Area
Build System Cost
2/4/2011

Full Scale Injection System Build

1 Labor includes all labor to order parts and assemble trailer. Assumes trailer is built at the shop, not at the site so that expenses are not required. Labor to assemble assume 2 techs for 2 weeks. Labor to prep O&M manual.

2 Materials
All materials are required to be stainless steel or plastic for chemical compatibility.
Trailer will be utilized for all ISCO locations across the site
Trailer built to inject into up to 10 wells at a time

Items	Unit	Qty	Cost	Extension
1. Labor				
Senior Advisor	HR	2	$225	$450
Principle Sci/Eng	HR	4	$200	$800
Senior Sci/Eng	HR	8	$175	$1,400
Project Sci/Eng	HR	40	$135	$5,400
Staff Sci/Eng	HR	40	$100	$4,000
Sci/Eng	HR	80	$80	$6,400
Technician	HR	160	$65	$10,400
Designer	HR	40	$65	$2,600
Project Assistant	HR	8	$50	$400
2. Materials				
Tanks with containment	LS	1	$1,178	$1,178
Compressor	EACH	1	$400	$400
Compressor Filters and Fittings	LS	1	$117	$117
Air Hose	LS	1	$79	$79
Chem Res Diaphragm Pump	EACH	2	$1,031	$2,062
Rubber Injection Hose	FT	1500	$3	$4,680
2" Sch 80 Pipe	FT	100	$4	$381
2" Sch 80 Tee FPT	EACH	10	$29	$290
1/2" Sch 80 Tee FPT	EACH	10	$9	$90
2" Sch 80 Female Adapter	EACH	10	$29	$285
2"x1/2" Sch 80 Reducer	EACH	10	$18	$179
1/2" Sch 80 PVC	FT	100	$1	$88
1/2"x1/4" Sch 80 Reducer	EACH	10	$10	$101
1/2" Sch 80 Ball Valve	EACH	20	$19	$374
1" SS Camlock Male	EACH	3	$58	$173
1" SS Camlock Female	EACH	3	$71	$214
1" SS Union	EACH	3	$27	$81
1" SS Pipe	FT	10	$18	$181
1" SS Nipples	EACH	10	$14	$145
1" SS Tee	EACH	2	$17	$34
1" SS Elbow	EACH	10	$11	$114
1" SS Hose Barbs	EACH	10	$27	$265
1" SS Check Valve	EACH	1	$147	$147
1" SS Ball Valves	EACH	10	$56	$556
1/2" Needle Valves	EACH	10	$125	$1,255
1" x 1/4" SS Reducers	EACH	20	$6	$127
Pressure Gauges	EACH	20	$17	$336
Flow Meters	EACH	10	$106	$1,060
Totalizers	EACH	10	$296	$2,964
Trailer- 7'x16' Flatbed	EACH	1	$3,500	$3,500
Miscellaneous Parts	LS	1	$500	$500
Freight and Tax for Materials	LS	1	$3,513	$3,513
		Mark Up on Expenses, Subs, and Materials	**5%**	**$1,300**
		Project Management	**5%**	**$1,300**
		Full Scale Injection System Build Subtotal		**$60,000**

Motors Liquidation Corporation - Former Inland Fisher Guide Facility
Subsurface Insitu VOC Source Treatment - Thinner and Larger TCE Area
Cost Details
2/4/2011

Full Scale Injection Design and Permitting

Includes the labor to design of a full scale ISCO injection using persulfate with ambient activation
Treatment objective - reduce TCE and Petroleum Hydrocarbon mass
Assumes access to the Site is granted

Items	Unit	Qty	Cost	Extension
Labor				
Senior Advisor	HR	2	$220	$440
Principle Sci/Eng	HR	20	$190	$3,800
Senior Sci/Eng	HR	40	$160	$6,400
Project Sci/Eng	HR	160	$130	$20,800
Staff Sci/Eng	HR	70	$100	$7,000
Sci/Eng	HR	35	$70	$2,450
Technician	HR		$65	$0
Designer	HR	70	$65	$4,550
Project Assistant	HR	2	$50	$100
	Project Management		**5%**	**$2,300**
	Full Scale Injection Design Subtotal			**$48,000**

Injection Test

Injection test will be completed to verify injection flow rate and ROI
Includes installation of 1 injection well and 3 MWs

Items	Unit	Qty	Cost	Extension
Labor				
Senior Advisor	HR	2	$220	$440
Principle Sci/Eng	HR	3	$190	$475
Senior Sci/Eng	HR	5	$160	$800
Project Sci/Eng	HR	20	$130	$2,600
Staff Sci/Eng	HR	70	$100	$7,000
Sci/Eng	HR		$70	$0
Technician	HR	40	$65	$2,600
Designer	HR		$65	$0
Project Assistant	HR	2	$50	$100
Lodging	DAY	10	$150	$1,500
Meals	DAY	10	$50	$500
Truck/Gas	DAY	10	$150	$1,500
Health and Safety	DAY	10	$50	$500
2. Drilling				
Driller Mob/demob	LS	1	$1,500	$1,500
Driller 3-man crew	DAY	2	$375	$750
HSA Drilling	FT	100	$10	$1,000
2" PVC Riser	FT	60	$20	$1,200
2" wire wrapped screen	FT	40	$45	$1,800
Drums	EACH	4	$60	$240
Traffic rated flushmounts	EACH	4	$225	$900
Well Development	HR	4	$140	$560
Move/decon/IDW handling	HR	4	$350	$1,400
Skid Steer	WK	1	$800	$800

2. Subcontractor				
Injection Contractor Mob/Demob	EACH	1	$1,200	$1,200
Injection Contractor	DAY	3	$3,600	$10,800
3. Other				
Tracer	LS	1	$500	$500
Data Loggers	EACH	3	$600	$1,800
Field Kits	LS	1	$1,000	$1,000
Mark Up on Expenses, Subs, and Materials			**5%**	**$2,200**
Project Management			**5%**	**$2,173**
Injection Test Subtotal				**$48,000**

Full Scale Well Drilling

1 Labor and expenses include oversight of injection well installation (geo) and development (tech),
No split spoon sampling included

2 Drilling

The TCE treatment area is:	20,000 ft^2			
The petroleum treatment area is:	9,500 ft^2			
Total # of injection wells (both areas):	65 wells			
Injection volume/well (petroleum area):	5076 gal			
Injection volume/well nest (TCE area):	5,077 gal	Treatment interval:	15 ft	
Estimated ROI:	12 ft	Flow Rate/well nest:	2 gpm	
Drilling rate:	120 ft/day	Mobile porosity	0.1	

TCE area injection wells are 2" dia with 10' SS screens in TCE area, nested wells set in same borehole
Petroleum injection wells are 2" diameter with 5' SS screens
1 hr/well for well development and 55 gal/well purge water and decon water
1 hr/well to move/decon/IDW handling
No performance monitoring wells included

3 Other
Soil and water drum disposal assumes non-haz
PID rental for drilling (not needed for well development)
Survey new injection and monitoring wells

Items	Unit	Qty	Cost	Extension
1. Labor				
Senior Advisor	HR	1	$220	$220
Principle Sci/Eng	HR	3	$190	$570
Senior Sci/Eng	HR	5	$160	$800
Project Sci/Eng	HR	10	$130	$1,300
Staff Sci/Eng	HR	40	$100	$4,000
Sci/Eng	HR		$70	$0
Technician	HR	65	$65	$4,225
Designer	HR		$65	$0
Project Assistant	HR	2	$50	$100
Lodging	DAY	10	$150	$1,500
Meals	DAY	10	$50	$500
Truck/Gas	DAY	10	$150	$1,500
Health and Safety	DAY	10	$50	$500
2. Drilling				
Driller Mob/demob	LS	1	$1,500	$1,500
Driller 3-man crew	DAY	10	$375	$3,750

HSA Drilling	FT	315	$10	$3,150
2" PVC Riser	FT	325	$20	$6,500
2" wire wrapped screen	FT	975	$45	$43,875
Drums	EACH	74	$60	$4,440
Traffic rated flushmounts	EACH	65	$225	$14,625
Well Development	HR	65	$140	$9,100
Move/decon/IDW handling	HR	65	$350	$22,750
Skid Steer	WK	1	$800	$800
3. Other				
Soil Cuttings Drums Transportation and Disposal	EACH	9	$250	$2,250
Development/Decon Water Trans and Disposal	EACH	65	$0.40	$26
PID Rental	DAY	4	$200	$800
WL Inidcator	DAY	4	$100	$400
Survey new wells	LS	1	$500	$500
Mark Up on Expenses, Subs, and Materials			**5%**	**$6,000**
Project Management			**5%**	**$6,484**
Full Scale Well Drilling Subtotal				**$143,000**

Chemical Injections

1 Labor and expenses includes personnel to perform the injection, one engineer plus one technician.

2 Materials

Persulfate cost based on :	2.0%	solution
Total volume gw in the holder	169,781	gal
Total extraction flow rate (4wells @ 7gpm)	28	gpm
Time for injection based on:	10	hrs per day
Total injection time for one injection:	56	days

Items	Unit	Qty	Cost	Extension
1. Labor				
Senior Advisor	HR		$220	$0
Principle Sci/Eng	HR	170	$190	$32,300
Senior Sci/Eng	HR	340	$160	$54,400
Project Sci/Eng	HR	340	$130	$44,200
Staff Sci/Eng	HR	680	$100	$68,000
Sci/Eng	HR		$70	$0
Technician	HR	680	$65	$44,200
Designer	HR		$65	$0
Project Assistant	HR	170	$50	$8,500
Lodging	DAY	114	$150	$17,100
Meals	DAY	114	$50	$5,700
Truck/Gas	DAY	114	$150	$17,100
Health and Safety	DAY	114	$50	$5,700
3. Materials				
Sodium Persulfate	LB	55,300	$1.35	$74,655
Activator	LS	1	$2,240	$2,240
Freight and Taxes	LS	1	$11,200	$11,200
Utilities - water	GAL	224,430	$0.03	$6,733
Meters:cond, H_2S gas, WL, pump	DAY	56	$500	$28,000
Field Persulfate Testing Kits	LS	1	$500	$500
Skid Steer rental	DAY	56	$800	$44,800

Replacement part/misc supplies	LS	1	$2,500	$2,500
Mark Up on Expenses, Subs, and Materials			**5%**	**$10,900**
Project Management			**2.7%**	**$13,000**
First Chemical Injection Subtotal (% of Injection Wells)			**100%**	**$492,000**
Second Chemical Injection (% of Injection Wells)			**75%**	**$369,000**
Third Chemical Injection (% of Injection Wells)			**0%**	**$0**
Fourth Chemical Injection (% of Injection Wells)			**0%**	**$0**
Fifth Chemical Injection (% of Injection Wells)			**0%**	**$0**

Injection Monitoring

1 Labor and expenses includes one monitoring event for a tech. Also includes labor to evaluate data, design/coordinate subsequent injections and/or final documentation report

2 Laboratory

# of monitoring wells	9
# of QA/QC samples	1

3 Materials

Includes all the supplies required to groundwater sample

Items	Unit	Qty	Cost	Extension
Labor				
Senior Advisor	HR		$220	$0
Principle Sci/Eng	HR	5	$190	$950
Senior Sci/Eng	HR	10	$160	$1,600
Project Sci/Eng	HR	20	$130	$2,600
Staff Sci/Eng	HR	20	$100	$2,000
Sci/Eng	HR		$70	$0
Technician	HR	20	$65	$1,300
Designer	HR		$65	$0
Project Assistant	HR	5	$50	$250
Lodging	DAY	2	$150	$300
Meals	DAY	2	$50	$100
Truck/Gas	DAY	2	$150	$300
Health and Safety	DAY	2	$50	$100
Laboratory				
VOCs	EACH	10	$80	$800
Materials				
Field Kits	EACH	1	$500	$500
Meters: WL, pump	DAY	2	$500	$1,000
Pack/ship coolers	EACH	2	$500	$1,000
Misc. supplies (tubing, decon water)	LS	1	$500	$500
Mark Up on Expenses, Subs, and Materials			**5%**	**$300**
Project Management			**5%**	**$665**

Baseline Monitoring Subtotal	**$15,000**
Post Injection 1 Monitoring	**$15,000**
Post Injection 2 Monitoring	**$15,000**
Post Injection 3 Monitoring	**$0**
Post Injection 4 Monitoring	**$0**
Post Injection 5 Monitoring	**$0**

Motors Liquidation Corporation - Former Inland Fisher Guide Facility
Subsurface Insitu VOC Source Treatment - Thinner and Larger TCE Area
Injection Details
2/4/2011

	TCE - Upper 10'		TCE - Lower 10'		Petroluem	
Total Treatment Area	20,000	ft^2	0	ft^2	9,500	ft^2
Top of Treatment Interval	5		15		5	
Bottom of Treatment Interval	20		25		10	
Treatment Thickness	15	ft	0	ft	15	ft
Estimated Mobile Porosity	0.1		0.1		0.1	
Total Injection Volume	224,430	gal	0	gal	106,604	gal
Injection Well ROI	12	ft	12	ft	12	ft
Injection Volume per Well	5076	gal	0	gal	5076	gal
Injection Wells Required (min 3)	44	wells	0	wells	21	wells
Anticipated Flow Rate Per Well	1	gpm	1	gpm	1	gpm
Wells Injected Simultaneously	10	wells	10	wells	10	wells
total Injection Flow Rate	10	gpm	10	gpm	10	gpm
Total Time for Injection	372	hrs	0	hrs	178	hrs
Injection time per day	10	hrs	10	hrs	10	hrs
Total Time for Injection	38	days	0	days	18	days
Persulfate Concentration	2.0%		2.0%		2.0%	
Persulfate Concentration	20	g/L	20	g/L	20	g/L
Persulfate Mass Required	37,454	lbs	0	lbs	17,791	lbs
Activation Method	iron		iron		iron	