Case Studies

Air Force Plant 51 Feasibility Study

The Former Air Force Plant No. 51 site is located just north of the Lake Ontario State Parkway at 4777 Dewey Avenue in suburban area of the Town of Greece, Monroe County, New York. The main site features once included a central complex of large and mid-size buildings surrounded by parking areas, roadways, and open fields.

The plant was originally built during WWII by the Odenbach Shipbuilding Corp. for the production of ocean-going ships. To launch the ships, a water-filled channel was dredged from the north end of the shipyard to Round Pond Creek. Today, the remaining portion of the channel is used by the Shoremont Treatment Plant as a settling pond for sediments from filter backwashing. After the war, the plant was used by the Department of Defense for the production of B-52 bulkheads and the name of the facility was changed to Air Force Plant 51. Records indicate that the A.O. Smith Corporation and the American Machine and Foundry Company occupied the site in the 1950s. In 1959, the facility was declared excess by the United States (U.S.) government. From 1961 to 1963 the property was owned by the Monroe County Water Authority. Since 1963, the facility has been owned by corporate relatives of the current owner with space leased to a variety of businesses including scrap metal recycling and metal plating.

Alternative Analysis

The example provided herein is limited to soil. The analysis for other media can be found in the [Proposed Remedial Action Plan for the site](#).

Green and Sustainable Remediation: Potential Indirect Environmental Impact of the Remedy. For this criterion, preference is given to alternatives that have the potential to remediate the site with the lowest potential negative environmental impact, such as CO2 emissions. This criterion also considers the resilience of alternatives to potential climate change effects such as sustained changes in average temperatures, increased heavy precipitation events, and increased coastal flooding. A detailed analysis can be found in the Proposed Remedial Action Plan.

For soil, Alternative S2 would have a higher impact on the environment than Alternative S3. Approximately 77,200 million British Thermal Units (MMBtus) of total energy would be used (on-site and off-site consumption). The estimated greenhouse gas (GHG) emissions associated with alternative S2 are approximately 6,800 tons of “carbon dioxide equivalents of global warming potential” (CO2e); approximately 142,400 pounds of total nitrogen oxides (NOx), sulfur oxides (SOx), and particulate matter (PM) emissions; and approximately 580 pounds of total (hazardous air pollutant) HAP emissions.

For alternative S3, approximately 15,000 MMBtus of total energy would be used (on-site and off-site consumption). The estimated GHG emissions associated with alternative S3 are approximately 1,200 tons of CO2e; approximately 23,000 pounds of total NOx, SOx, and PM emissions; and approximately 130 pounds of total HAP emissions.

The following are just a portion of the SEFA Analysis Outputs for illustrative purposes. The complete outputs are available in the Proposed Remedial action Plan.

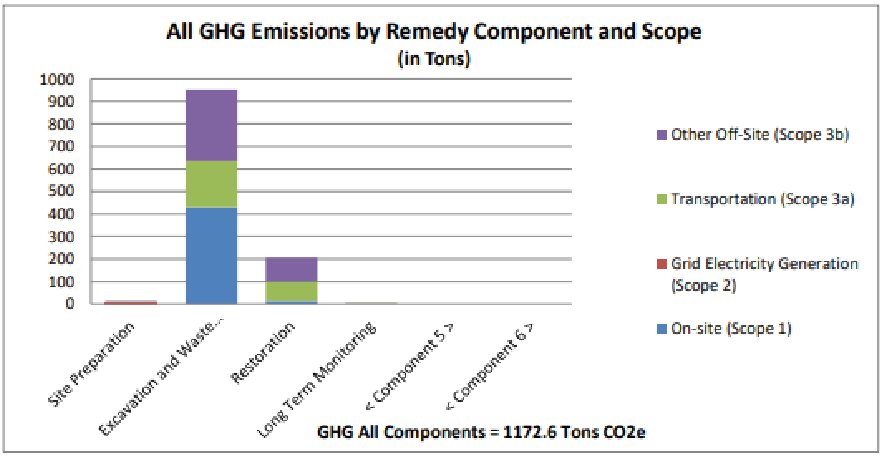
In addition to GHG emissions, energy use, NOx emissions, SOx emissions, PM emissions and HAPs emissions were evaluated by remedy component and scope.

Spreadsheets for Environmental Footprint Analysis (SEFA) Version 3.0, November 2019:

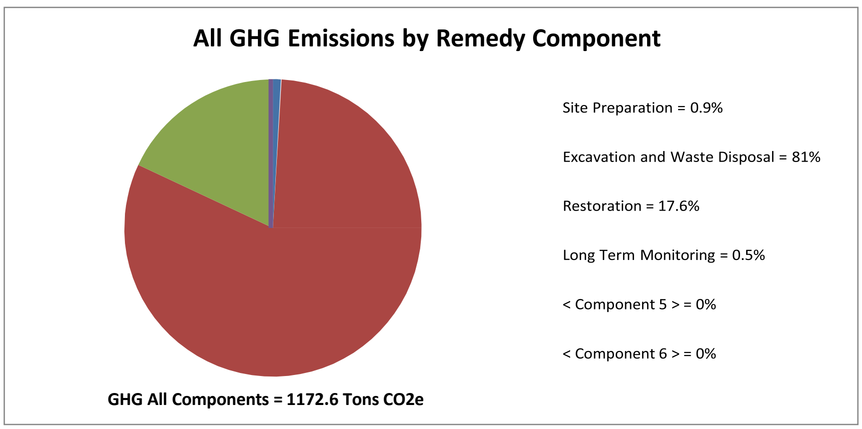
Former Air Force Plant 51 - OU2 - S3 - Soil Excavation to Commercial Use Soil Cleanup Objectives, Offsite Disposal, Soil Cover, and Institutional Controls

Core Element	Metric		Unit of Measure	Footprint						
				Site Preparation	Excavation and Waste Disposal	Restoration	Long Term Monitoring	< Component 5 >	< Component 6 >	Total
Materials & Waste	M&W-1	Refined materials used on-site	Tons	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	M&W-2	% of refined materials from recycled or reused material	%							
	M&W-3	Unrefined materials used on-site	Tons	0.0	0.0	18,022.0	0.0	0.0	0.0	18,022.0
	M&W-4	% of unrefined materials from recycled or reused material	%			0.0				0.0%
	M&W-5	On-site hazardous waste disposed of off-site	Tons	0.0	2,002.5	0.0	0.0	0.0	0.0	2,002.5
	M&W-6	On-site non-hazardous waste disposed of off-site	Tons	0.0	16,020.0	0.0	0.0	0.0	0.0	16,020.0
	M&W-7	Recycled or reused waste	Tons	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	M&W-8	% of total potential waste recycled or reused	%		0.0%					0.0%
Water (used on-site)	W-1	Public water use	MG	0.01	0.00	0.00	0.00	0.00	0.00	0.06
	W-2	Groundwater use	MG	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	W-3	Surface water use	MG	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	W-4	Reclaimed water use	MG	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	W-5	Storm water use	MG	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	W-6	Wastewater generated	MG	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	E-1	Total energy used (on-site and off-site)	MMBtu	198.0	11,823.7	2,852.2	65.1	0.0	0.0	14,939.0
	E-2	Energy voluntarily derived from renewable resources								
	E-2A	On-site renewable energy generation or use + on-site biodiesel use + biodiesel and other renewable resource use for transportation	MMBtu	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	E-2B	Voluntary purchase of renewable electricity	MWh	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	E-3	Voluntary purchase of RECs	MWh	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	E-4	On-site grid electricity use	MWh	14.6	0.0	0.0	0.0	0.0	0.0	14.6
Air	A-1	On-site NOx, SOx, and PM emissions	Pounds	4.4	4,260.0	218.9	0.0	0.0	0.0	4,483.2
	A-2	On-site HAP emissions	Pounds	0.0	1.5	0.0	0.0	0.0	0.0	1.6
	A-3	Total NOx, SOx, and PM emissions	Pounds	193.4	19,694.4	3,009.2	32.8	0.0	0.0	22,929.8
	A-3A	Total NOx emissions	Pounds	51.0	9,900.8	2,396.4	26.5	0.0	0.0	12,374.8
	A-3B	Total SOx emissions	Pounds	140.8	1,974.4	463.5	2.7	0.0	0.0	2,581.5
	A-3C	Total PM emissions	Pounds	1.5	7,819.2	149.3	3.6	0.0	0.0	7,973.6
	A-4	Total HAP emissions	Pounds	3.5	106.6	21.0	1.5	0.0	0.0	132.6
	A-5	Total greenhouse gas emissions	Tons CO_2e*	11.0	950.4	206.0	5.3	0.0	0.0	1,172.6
Land & Ecosystems	Qualitative Description									

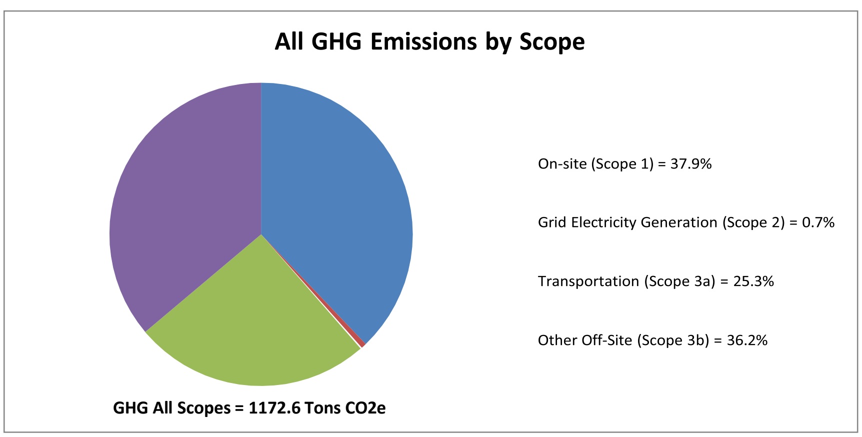
*Total greenhouse gases emissions (in CO_2e) include CO_2, CH_4, and N_2O (Nitrous oxide) emissions. "MMBtu" = millions of Btus
"MG" = millions of gallons
"CO_2e" = carbon dioxide equivalents of global warming potential
"MWh" = megawatt hours (i.e., thousands of kilowatt-hours or millions of Watt-hours) "Tons" = short tons (2,000 pounds)
"HAP" = hazardous air pollutants "PM" = particulate matter
"NOx" = nitrogen oxides "SOx" = sulfur oxides "CO_2" = carbon dioxide "CH_4" = methane "N_2O" = nitrous oxide
The above metrics are consistent with EPA's Methodology for Understanding and Reducing a Project's Environmental Footprint (EPA 542-R-12-002), February 2012.



All GHG Emissions by Remedy Component and Scope
(in Tons)
1000
900
800
700
600
500
400
300
200
100
0
Site Preparation
Excavation and Waste...
Restoration
Long Term Monitoring
< Component 5 >
< Component 6 >
Other Off-Site (Scope 3b)
Transportation (Scope 3a)
Grid Electricity Generation (Scope 2)
On-site (Scope 1)
GHG All Components = 1172.6 Tons CO2e



All GHG Emissions by Remedy Component
Site Preparation = 0.9%
Excavation and Waste Disposal = 81%
Restoration = 17.6%
Long Term Monitoring = 0.5%
< Component 5 > = 0%
< Component 6 > = 0%
GHG All Components = 1172.6 Tons CO2e



All GHG Emissions by Scope
On-site (Scope 1) = 37.9%
Grid Electricity Generation (Scope 2) = 0.7%
Transportation (Scope 3a) = 25.3%
Other Off-Site (Scope 3b) = 36.2%
GHG All Scopes = 1172.6 Tons CO2e

Dzus Fasteners Climate Resiliency Assessment

The Dzus Fastener Co. site is a one-acre site located at 425 Union Boulevard in a suburban area of West Islip.

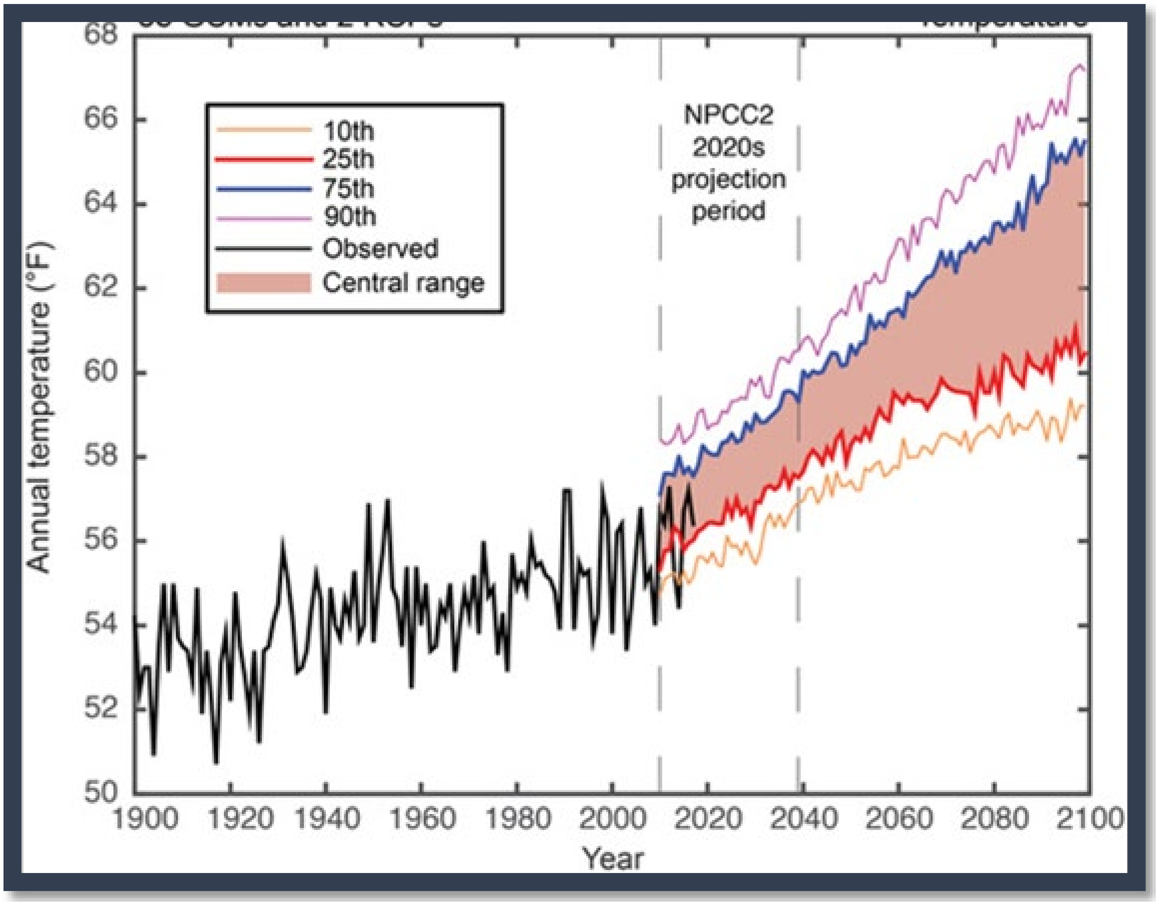
The Dzus Fastener Co. Inc. produced fasteners and springs from 1932 to 2015 and moved operations to 425 Union Boulevard in 1937. Operations included the design and manufacture of quarter-turn fasteners, quick acting latches and panel strips using steel, stainless steel, aluminum, and plastic. The products were used by the military and commercial aerospace industries. The fasteners were also used in the transportation, electronics, air handling, refrigeration, motor control and computer industries to secure access panels, covers, or detachable components. Wastes from metal plating, tumbling, electroplating, chromic acid, anodizing, and special finishing operations consisted of oils, heavy metals and salts. Leaching pools on-site were used for the disposal of wastes.

Climate Resiliency

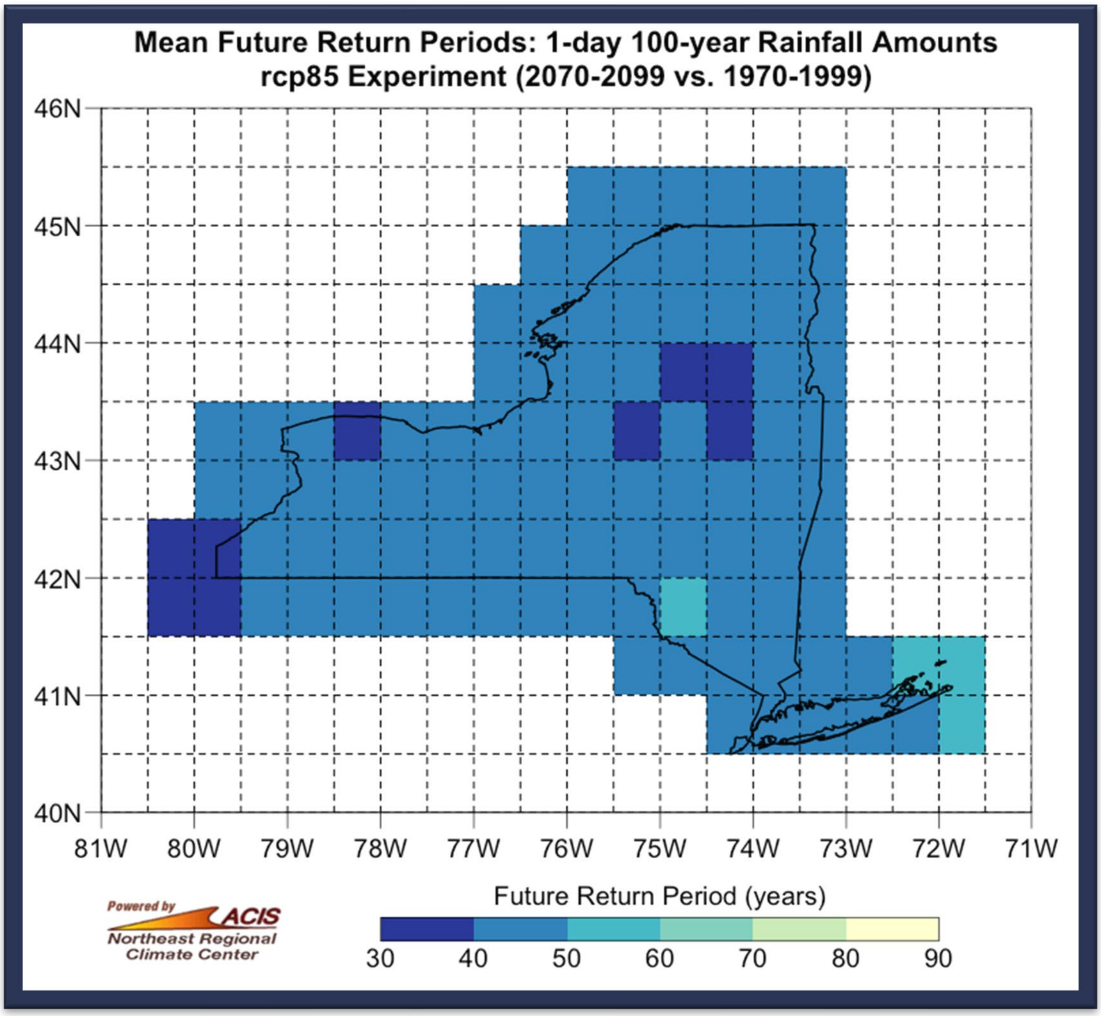
The objective was to provide an assessment of the possible impacts of climate change at the site to the completed environmental cleanup and any residual contamination at the site. The climate resiliency assessment is treated as a living document to be reassessed as climate projections evolve during site management.

The assessment considered potential temperature and precipitation impacts, sea level rise scenarios, possible climate change sensitivities and climate change adaptation. Site climate vulnerabilities and associated adaptation strategies were developed.

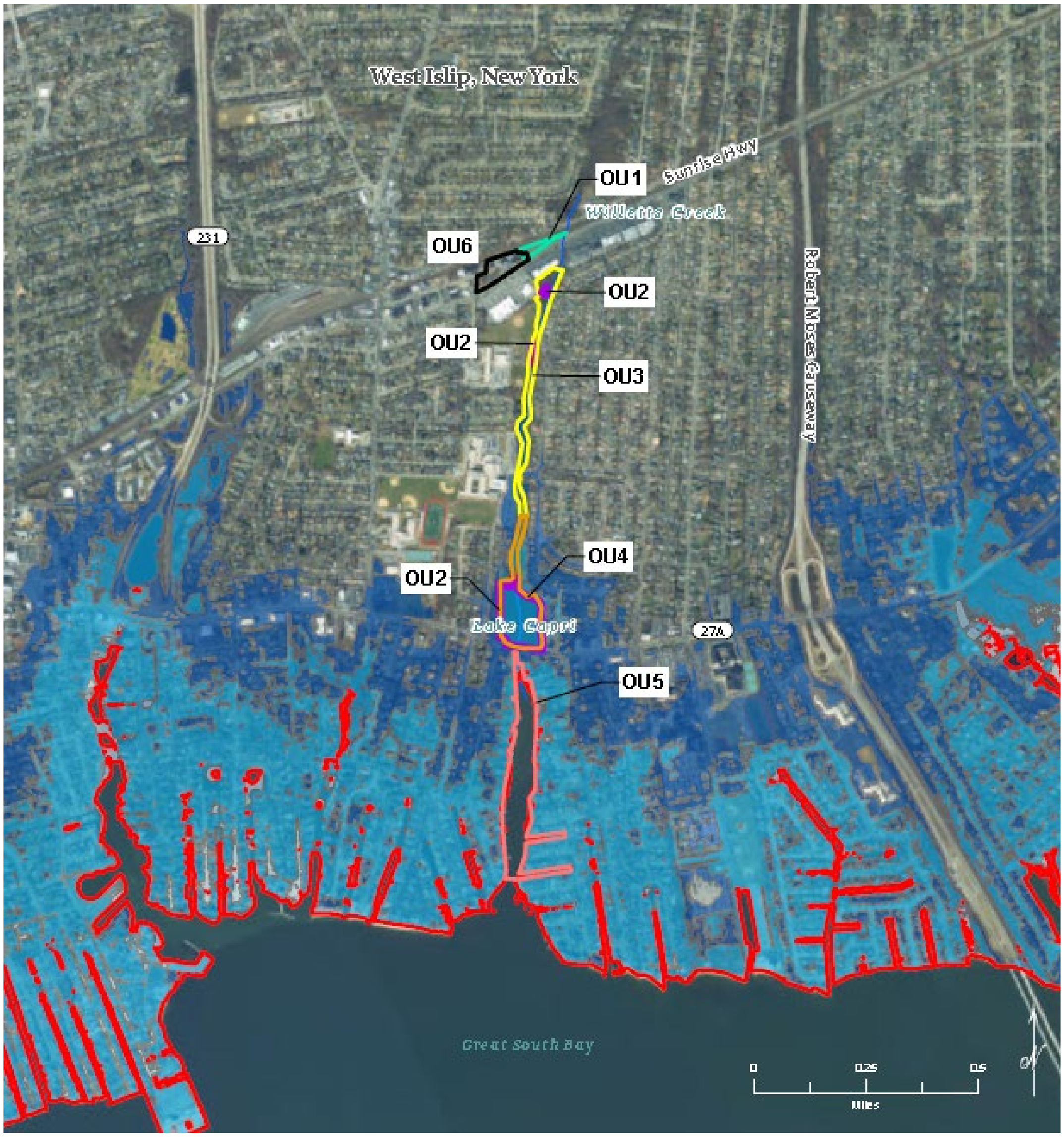
The following are just a portion of the Climate Resiliency Assessment for illustrative purposes. The complete assessment is available in the report entitled "Dzus Climate Resiliency Assessment Report," dated July 2020. (Index of /data/DecDocs/152033 (ny.gov))



Middle range projection by 2100, temperature increase 6 to 10 degrees F, hotter summers, winters more mild



Middle range projections, possible precipitation increase up to 9 inches per year, increased erosion potential



Middle range projection, sea level increase by 1.3 feet, major storm stage increases by 6 feet, Sandy Storm stage increase by 9.6 feet

Recommendations Implemented

Climate resilience assessments included in the Site Management program

Periodic monitoring and inspections of the site

Awareness of evolving climate conditions which would result in re-evaluation of the Adaption Plan

Cross County Sanitary – Kessman Landfill

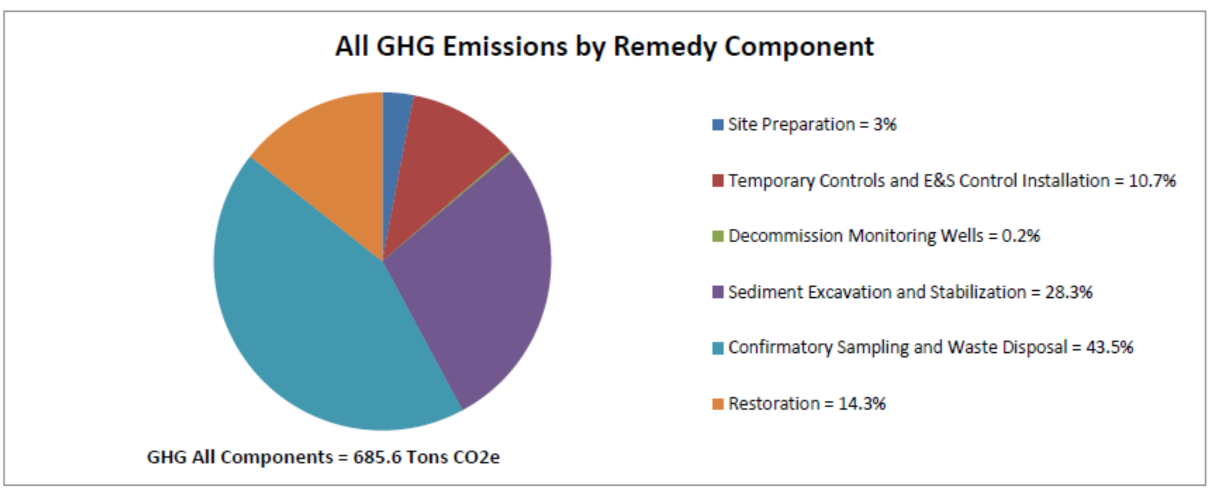
The Cross-County Sanitary-Kessman Landfill site is a 10-acre site located at 286 Cornwall Hill Road in the Town of Patterson, approximately 1 mile south of the Village of Patterson, Putnam County, New York. The Site is bordered by undeveloped land to the north, a commercial property to the south, residential properties and Cornwall Hill Road to the west, and the Metro North Railroad and the Great Swamp, a more than 4,830-acres of protected wetland (NYSDEC Classification DP-22) to the east. Site Features: The Site is approximately 10-acres in size consisting of approximately 7.2-acres of landfill and 2.8-acres of low-lying wetland area (approximately 1.6-acres of which contain impacted sediment).

The Site was operated as a municipal landfill by the Town of Patterson from approximately 1963 to 1972. From 1972 to 1974 the site was operated by Cross County Sanitation, Inc. The site was ordered closed and covered in 1974 by NYSDEC. Periodic monitoring during site managed found high levels of PCBs in the wetland and a subsequent removal action is underway.

Tracking GSR from Remedial System Optimization to Design through Implementation

SEFA was used for a footprint analysis with the following six components:

Site Preparation
Temporary Controls & SESC
Monitoring Well Abandonment
Sediment Excavation and Stabilization
Confirmatory Sampling and Waste Disposal
Site Restoration



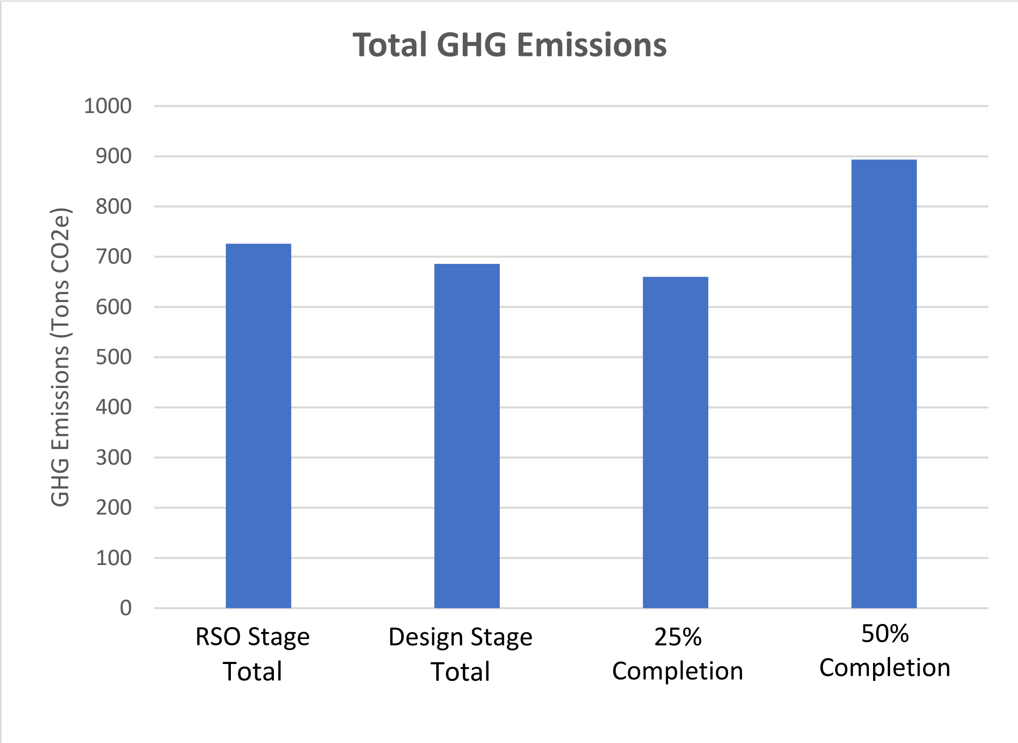
The GSR Metrics Assessment contained more than just the footprint assessment, modeled after ITRCs Table 4-1 (May 2011) and includes sustainability topics and environmental justice, provided focus on land & eco system and was set up for independent assessment at each project stage. Some examples from the assessment follow.

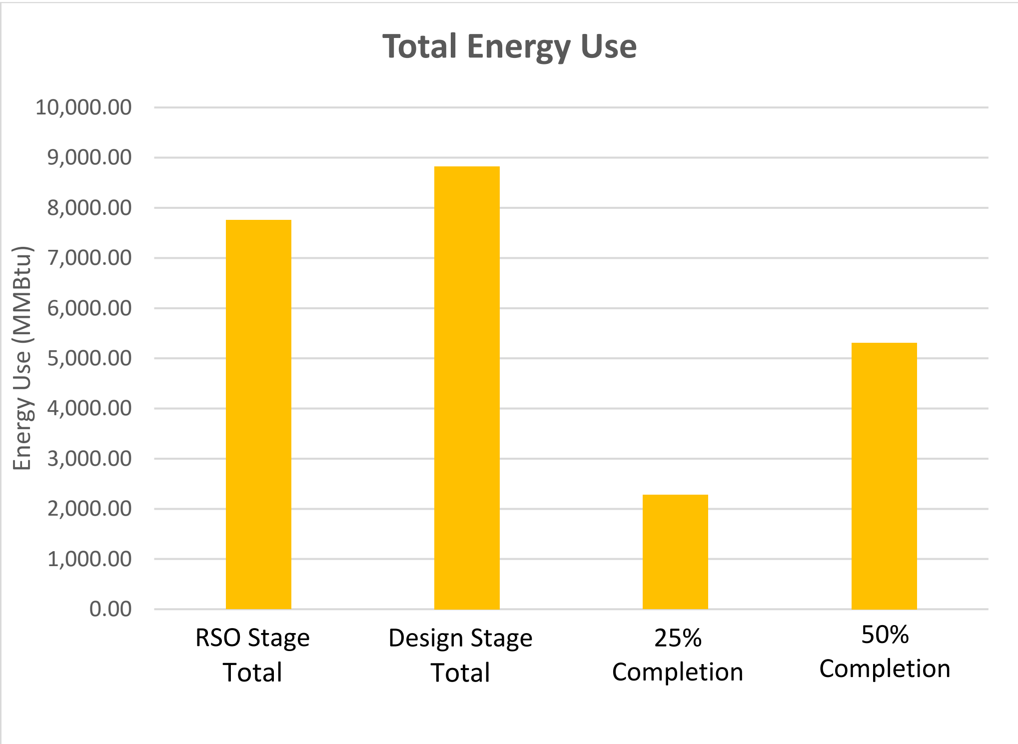
Project Components	Land & Ecosystems	Water	Air & Atmosphere	Energy	Materials & Waste	Community	Economics	Metric Units	Metric Description
Materials & Waste									
Material Use								Tons	Total material use
Waste Reduction								Volume (Gallons)	Measure of waste diverted for off-site recycling, composting, WTE, etc.
Materials Reused On-Site								Volume (Gallons)	Measure of water diverted from landfill
Use of Recycled Materials								Percentage of materials recycled	Mass or volume of recycled material in proportion to virgin materials
Material Extraction								Mass per mass	Mass of material extracted per mass recovered

Project Components	Metric Weight						
		Qty	Score	Qty	Score	Qty	Score
Water		Category Score:	65%	Category Score:	65%	Category Score:	0%
Water Consumption	5	**556,000**	**5**	**909,000**	**5**		
Groundwater Protection	5	**10**	**7**	**10**	**7**		
Surface Water Protection	5	**527,000**	**7**	**527,000**	**7**		
Water Reuse	4	**527,000**	**7**	**527,000**	**7**		
Air & Atmosphere		Category Score:	50%	Category Score:	50%	Category Score:	0%
GHG Emissions	5	**725**	**5**	**686**	**5**		
Air Pollution (non-GHGs)	5	**11,000**	**5**	**12,000**	**5**		

In the above table, the first set of quantity and score is predicted from the Remedial System Optimization stage and the second set of quantity, and score is updated from the Remedial Design stage. The last set would be updated as implementation progresses.

Finally, the assessment can be evaluated to determine trends and develop lessons learned related to approaches and best management practices as depicted in the following examples.





GHG emissions increased due to longer transportation distance, no rail used and are likely to be higher than projected. Scope increases also contributes to differences between actual and predicted (baseline) estimates.