

# Mill Seat Landfill Expansion

*Facility ID No. 8-2648-00014*

*Town of Riga, New York*

## Draft Supplemental Environmental Impact Statement

### Attachment B

Site Selection Report Summary & Evaluation of Alternatives



**Mill Seat Landfill**

**Town of Riga, New York**

**Site Selection Report Summary  
&  
Evaluation of Alternatives**

**August 2014**



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Town of Riga, New York

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Evaluation of Alternatives

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## Glossary of Terms

*Approved Design Capacity* – The approved design capacity for this landfill is 1,945 tons/day. This threshold is a daily average and is based on the quantity of solid wastes accepted at the landfill during a calendar year. Solid wastes that have been approved for use as a beneficial use are not included in this limit as long as they are actually being used as approved.

*Ash* – Incinerator residue.

*Beneficial Use Determination (BUD) Materials* – Waste materials that are approved by the NYSDEC for use as daily cover materials. BUD materials are not included under the daily permit limit.

*CAB* – Citizens Advisory Board.

*CE* – Clark Engineers, P.C.

*CELS* – Committee to Evaluate Landfill Sites.

*C&D Debris* – Waste resulting from the construction, remodeling, repair, and/or demolition of buildings or roads. This waste includes, but is not limited to bricks, concrete, masonry, soil, rock, wood, land clearing debris, wall coverings, roof coverings, glass, pipes, and plumbing and electrical fixtures.

*Disposal Capacity* – The amount of capacity available in the solid waste management facility available for the disposal of waste.

*E&A* – Erdman, Anthony Associates

*EMC* – Monroe County Environmental Management Council.

*Expansion* – The area on which landfill and related facilities construction, operation and maintenance activities are proposed to occur.

*Facility* – Currently permitted landfill and associated operations.

*Footprint* – A portion of a landfill site where solid waste will be disposed of within a liner system.

*Greenfield Site* – A landfill in a new location. Due to the need for several hundred acres of land for a new landfill, including buffer areas, this would typically consist of undeveloped land that is currently agricultural or sparsely developed land.

*Hydric Soils* – Soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile.

*IC&I* – Industrial, Commercial & Institutional.

*Landfill Site* – The land on which the permitted Mill Seat Landfill is located.

*LEDPA* – Least Environmentally Damaging Practicable Alternative is defined by the U.S. Army Corps of Engineers as the alternative with the least impacts to the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.

*LMC* – Landfill Monitoring Committee.

*Lessee* – In an agreement between Monroe County and Waste Management of New York, LLC (WMNY), took full responsibility for landfill operations for a 49-year period. WMNY operates the landfill on behalf of Monroe County.

*MRF* – Material Recovery Facility.

*Mill Seat Facility* – Currently permitted landfill and associated operations.

*Mill Seat Landfill* – Currently permitted landfill and associated operations.

*Monroe County* – the County.

*MSW* – Municipal solid waste.

*NEQSWF* – Northeast Quadrant Solid Waste Disposal Facility

*NYCRR* – New York Compilation of Rules and Regulations.

*NYSDEC* – New York State Department of Environmental Conservation.

*Owner* – Monroe County is the owner of the Mill Seat Landfill.

*Part 360* – NYSDEC’s solid waste management regulations, codified at 6 NYCRR Part 360 (Title 6 of the Official Compilation of Codes, Rules, and Regulations of the State of New York), effective May 12, 2006.

*SEQRA* – State Environmental Quality Review Act, codified in Article 8 of the New York State Environmental Conservation Law with implementing regulations codified at 6 NYCRR Part 617 (Title 6 of the Official Compilation of Codes, Rules, and Regulations of the State of New York).

*Site* – The land on which the permitted Mill Seat Landfill is located.

*Site Life* – *The length of time the landfill will be able to receive waste as it relates to the approved design capacity.*

*Sludge* – Any solid, semi-solid, or liquid waste generated from a wastewater treatment plant, water supply treatment plant, or air pollution control facility (6 NYCRR 360-1.2(b)(155)).

*SWMF* – Solid Waste Management Facility

*SWMP* – Updated Local Solid Waste Management Plan.

*Tipping fee* – A charge levied upon a given quantity of waste received at a waste processing facility.

*Wetlands* – A land area that is saturated with water, either permanently or seasonally, such that it takes on characteristics that distinguish it as a distinct ecosystem. The primary factor that distinguishes wetlands is the characteristic vegetation that is adapted to its unique soil conditions. Wetlands are made up primarily of hydric soil, which supports aquatic plants.

*WMNY* – Waste Management of New York, LLC operates the Mill Seat Landfill under a lease agreement with Monroe County.

*WWTP* – Wastewater Treatment Plant.



## **1.0 Introduction**

This Site Selection Report Summary & Preliminary Evaluation of Alternatives has been prepared in advance of submitting a Solid Waste Management Facility Permit Modification application for an expansion of the Mill Seat solid waste disposal facility, in the Town of Riga, Monroe County, New York. Monroe County (the “County”) is the Owner and permittee of the Mill Seat Landfill. The Mill Seat Landfill is operated by WMNY under a lease agreement with Monroe County.

The currently permitted landfill and associated operations will be referred to in this document as the “Mill Seat Facility”, the “Mill Seat Landfill” or the “Facility”, and the land on which the permitted Mill Seat Landfill is located will be referred to as the “Landfill Site” or the “Site”. The Mill Seat Landfill’s SWMF Permit I.D. number is 8-2648-00014. The location of the Facility is shown on Figure 1. The Facility property leased to WMNY is approximately four hundred thirty-five (435) acres in size.

The selection of the Mill Seat Facility was a multi-year Greenfield Site development process that involved many municipalities, organizations, individual members of the public, and other agencies. This planning and decision making process began in 1970 and continued until the late 1980s when the location of the Mill Seat Facility was ultimately selected for development and use as the County’s long-term solid waste management facility. Following completion of this twenty-three (23) year Greenfield Site development process -- from initial planning and site evaluation/selection activities through the extensive SEQRA and permitting processes that led to final facility design, public bidding and facility construction -- the Mill Seat Landfill opened and began operations in 1993. Operation of the Mill Seat Landfill was assigned to WMNY on January 25, 2002, under a minimum twenty-year lease agreement with the County.

The footprint of the Mill Seat Landfill is ninety eight point six (98.6) acres and consists of four (4) stages that are estimated to provide disposal capacity until 2019. At that time, the Mill Seat Landfill would be at capacity; therefore, the County and WMNY are proposing a lateral expansion of the existing, permitted Mill Seat Facility to extend the site life of the Facility. As a requirement of the Part 360 solid waste management regulations and SEQRA regulations, various siting criteria and evaluation requirements apply to expansions of existing solid waste landfills. This report presents:

- a summary of the County’s Greenfield Site selection process,
- an updated consideration of the final candidate sites identified during the County’s Greenfield Site development process,

- an analysis of alternatives to an expansion of the Mill Seat Landfill, including an evaluation of Facility expansion alternatives to determine which alternative warrants further consideration that will include a more detailed environmental review.

## 2.0 Project Purpose and Need

The basic purpose of this project is to:

- provide long-term, cost effective solid waste disposal capacity that is acceptable to the local community; and
- secure additional disposal capacity in the County beyond the current useful life of the Mill Seat Landfill that will ensure that locally controlled, environmentally sound, and reliable disposal capacity will be provided without interruption for at least twenty-five (25) years.

Additional information with regard to the project's purpose and need is set forth below.

- Near-Term Need for New Disposal Capacity – At current usage projections, it is estimated that the currently permitted Mill Seat Landfill will be out of disposal capacity by the end of 2019. New waste disposal capacity for use by County residents and businesses will be necessary by the end of 2019.
- Sludge Disposal Need – The County is committed to provide for the environmentally sound disposal of the County's sludge from the County's Van Lare WWTP and the County's Northwest Quadrant WWTP. These treatment plants are critical components of the County's environmental infrastructure, as is the Mill Seat Landfill. Together, they provide environmentally sound and reliable wastewater disposal services to tens of thousands of sewer users in the community.
- Rochester's Disposal Needs – Not only does the County have a commitment to Van Lare and Northwest, but they also have a contract with the City of Rochester that dates back to the 1970s to provide disposal capacity for the City of Rochester's municipal solid waste. This long-standing relationship between the County and the City of Rochester provides a local, environmentally secure, cost effective disposal service to the City's approximately 210,000 residents.
- Need for Local Publicly Controlled Disposal Capacity – By continuing to provide disposal capacity at its Mill Seat Landfill, the County will be able to continue to provide environmental and disposal cost security to the community. The County's ownership and control of its long term environmental infrastructure, which includes the Mill Seat Landfill and its wastewater treatment plants, is critical to support a high quality of life and economic development in the County. If additional disposal capacity is not provided by the County, then it would be subject to the inherent unreliability

and unpredictability associated with a reliance upon others for waste disposal. Tipping fees charged by others would be subject to market fluctuations and the County, and County residents and businesses, would be subject to the variability of the market should the County not provide a secure cost efficient long term disposal option. As shown on the graph in Appendix A, when the Mill Seat Landfill was opened in 1993 tipping fees in the County decreased and they have continued to remain stable at approximately \$48/ton in 2012; therefore, it is likely that tipping fees would increase at other facilities should a County-owned Facility become unavailable. Longer haul distances to a disposal site would also increase the County's exposure to changes in diesel fuel prices which, in recent history, have risen substantially.

- Need for Site Life of at least Twenty Five (25) Years – At the currently permitted daily disposal rate of one thousand nine hundred forty five (1,945) tons per day, the minimum site life goal of twenty five (25) years would require disposal capacity of at least an additional twenty (20) million cubic yards. A minimum site life of twenty-five (25) years beyond the current useful life of the Mill Seat Landfill is imperative since experience indicates, as summarized further below, that if a new Greenfield Site were to be pursued, it would require in the range of twenty (20) years to successfully complete such an endeavor. Therefore, for any landfill expansion alternative that would offer less than twenty-five (25) years of additional site life (if such an alternative were to be selected), the County would need to immediately commence a search for a new Greenfield Site – while it concurrently undertakes the steps necessary to obtain all necessary permits and approvals for an expansion of the Mill Seat Landfill. This would be a tremendous strain upon public resources.
- The County's Greenfield Site development process took place between 1970 and 1993 – a total of twenty-three (23) years were needed to ultimately open and begin operations at the Mill Seat Landfill. The extremely time consuming and extensive process involved with successfully developing a new Greenfield Site has not diminished in recent years, since the most recent new Greenfield landfill site developed in New York State, the Oneida-Herkimer Solid Waste Authority's regional landfill site, took eighteen (18) years to develop (from the initiation of site selection to the date the new landfill started receiving its first truckload of waste).
- The extensive offsite alternative analysis which ultimately resulted in the selection of the Mill Seat Landfill included criteria for low permeability soils. Any search for a new Greenfield Site would also place a priority upon locations that have geologic conditions suitable for potential development of a

landfill – locations with thick deposits of low permeability soils. Such geologic conditions are required by the Part 360 regulations, as part of the NYSDEC's landfill siting criteria (see Part 360-2.12). While these geologic conditions are required for landfill sites because they provide a natural soil barrier that will minimize potential migration of contaminants from a landfill, those same geologic conditions also promote the ponding of water that contributes to the formation of wetlands. The geologic conditions required by NYSDEC for landfill sites is what often results in wetland permitting issues for landfill expansion projects as well as for new Greenfield Sites. Examples of this inherent regulatory conflict have arisen throughout the state in recent years – see, for example, the recent landfill expansions that involved wetland impacts at the High Acres landfill in Monroe County, the Seneca Meadows landfill in Seneca County, plus the Oneida-Herkimer Solid Waste Authority's Greenfield Site in Oneida County that included impacts to 46.6 acres of regulated wetlands.

- Limited public resources should not be expended to revisit an offsite alternatives analysis that has already been completed and that has been upheld through a detailed environmental impact statement and permit review process.
- Environmental Stewardship – The County is committed to continue being a steward of the environment. Its selection of a long-term disposal alternative will minimize environmental impacts while satisfying the overall purpose and need for the project.

### **3.0 Summary of County's Greenfield Site Selection Process**

#### **3.1 Background**

The selection of the Mill Seat Facility was ultimately a twenty-three (23) year Greenfield Site selection and development process that involved many municipalities, organizations, individual members of the public, and other agencies. This planning and decision making process began in 1970 and continued into the late 1980s when the Mill Seat Facility was ultimately selected as the preferred location for the County's long-term solid waste management facility. The following section provides a summary of the various reports that were completed over the course of this evaluation period.

One of the first comprehensive reports on solid waste management within the County was prepared in 1970 by Greeley and Hansen. This report recommended that the County establish two (2) sanitary landfills in the towns of Rush and Mendon to serve the west and east sides of the County, respectively. Although Greeley and Hansen did not prepare a formal siting study, suitable areas within Rush and Mendon were recommended. The recommendations were based on the following criteria:

- Sparse population
- Low density zoning
- Potential for buffering
- Suitable soil characteristics
- Availability of cover material
- Access to expressway

Subsequent efforts in the early 1970s to plan for County-wide solid waste disposal solutions included Quadrant Reports prepared by E&A which developed a substantial geotechnical database that led to the selection of one (1) site in each of the four (4) quadrants of the County, however, none were implemented.

A temporary landfill was developed in 1975 on Gloria Drive in the Town of Penfield. The prompt development of this northeast quadrant landfill was precipitated by sudden closure, in June 1974, of a commercial landfill used by several localities in the northeast quadrant. The selection of this site in Penfield was made using the data and criteria developed in the Quadrants Report. Construction of the NEQSWF, commonly called the Gloria Drive Landfill, was funded by the County, and limited by the County Legislature and an agreement

with the Town to a five (5) year life. The landfill opened in June 1975 and duly closed in 1980.

Beginning in 1973, a committee of professionals and citizens of divergent backgrounds was formed by the Monroe County EMC to develop a more comprehensive basis for the County's landfill siting efforts. In its first phase of work, the LMC used a screening process to eliminate areas of the County that were unsuitable based on planning and hydrogeological criteria. The second stage of the process involved ratings of areas in consideration and further screening. The LMC finally identified sixteen (16) "primary recommendation areas" and twenty (20) "secondary recommendation areas" in their report entitled "An Environmental Approach to Selecting Potential Sanitary Landfill Sites in the County", representing the areas of the County found most promising for landfill development.

In 1979, the County Legislature formed the CELS, composed of representatives from State and County agencies and of the Legislature. The CELS began with a list of two hundred eighty (280) sites compiled from previous studies and recommendations made at that time. The CELS reduced the two hundred eighty (280) sites to nine (9) through a four-stage review process organized by the following criteria:

#### First Review – 280 sites

- Minimum size – 100 acres
- Haul route – 50% major roads, no villages en route
- Soils – minimum 100 acres of Types 1 or 2 soils
- Uncomplicated ownership (few owners)

#### Second Review (including a site visit) – 77 sites

- Potential impacts on natural environment, which included observations of steep slopes, ponding or low wet areas, active cropland, wetlands or marshes, streams and wildlife.
- Land use
- Proximity to neighbors
- Access

### Third Review – 30 sites

- Haul route – less than one mile on non-state highways
- Potential for screening

### Fourth Review (including a second site visit) – 18 sites

- Relative isolation
- Access
- Wetlands/Flooding

Consequently, nine (9) sites were recommended to the County Legislature for consideration. Of the nine (9) sites recommended by the CELS, the County Legislature selected the current Mill Seat Landfill property formerly known as the McCormick property.

## 3.2 Site Selection Report Summary (1989)

Although the Mill Seat Facility was selected as the preferred site by the CELS and the County Legislature in 1979, new Part 360 regulations for solid waste management facilities were implemented in 1988 that required specific landfill siting criteria to be reviewed as part of the solid waste management facility permitting requirements. Consequently, in August 1988, CE, in association with Camp Dresser & McKee, Inc. (CDM) and H&A of New York (HA), were retained by the County to prepare a landfill siting study (Site Selection Report). The report was to draw upon the previous landfill siting study performed by the CELS in 1979 and on work done by the LMC, but be an independent study as well.

### *3.2.1 Site Selection Methodology*

The methodology used in the site selection was designed to make the process comprehensive, systematic, and objective. A series of three (3) successive screens were used to reduce the potential sites encompassing the entire County to a conclusion resulting in one (1) recommended site. The screens were based on criteria as determined by Part 360 and by reasonable planning objectives of the County government.



## Screen One

Screen 1 reviewed mandatory siting restrictions imposed by the Part 360 regulations at that time. Areas within the County that did not meet the regulations at that time were excluded from further consideration. The criteria for Screen 1 are described below:

- *Agricultural Land.* Those lands that were classified by the Department of Agriculture and Markets as having predominantly soil groups 1 or 2, were within an agricultural district formed pursuant to the Agriculture and Markets Law, and would be acquired by eminent domain. In Screen 1, all County land mapped within an agricultural district was excluded, unless the owner of a particular parcel demonstrated commitment to sell the land to the County. The McCormick property (current Mill Seat Landfill) was one (1) known property that remained as a viable option.
- *Flood Plains.* No new solid waste management facility may be constructed on a flood plain. For Screen 1, areas of the County lying within the one hundred (100) year floodplain as described by the Flood Insurance Rate Maps of the Federal Emergency Management Administration were excluded.
- *Endangered Species.* Facilities may not be constructed or operated if such action contributes to the taking of any endangered or threatened species of plants, wildlife or fish or if a proposed action will cause the destruction of or the adverse modification to their critical habitat. In a letter dated August 30, 1988, the U.S. Fish and Wildlife Service indicated that no Federally-listed or proposed endangered or threatened species were known to occur in the County.
- *Regulated Wetlands.* The Part 360 regulations prohibited locating landfill facilities within the boundaries of a regulated wetland. All lands within the County designated by the NYSDEC as regulated wetlands were excluded during Screen 1.
- *Primary Water Supply and Principal Aquifers.* No new landfills may be constructed over a principal or primary aquifer. All areas designated by the U.S. Geological Survey as primary or principal aquifers were excluded.
- *Airports.* A landfill must not be sited within five thousand (5,000) feet of an airport runway used by piston-type aircraft or ten thousand (10,000) feet of a runway used by turbojet aircraft. Areas of the County that fell within these categories were excluded.

- *Surface Waters.* Areas within one hundred (100) feet of any stream, pond, or lake were excluded. For the purposes of Screen 1, this criterion was considered to be the same as the one hundred (100) year floodplain criterion.

### Screen Two

Screen 2 was devised to exclude from consideration areas that survived the prohibitive restriction criteria of Screen 1. The five (5) Screen 2 criteria include siting considerations either prescribed by the Part 360 regulations or imposed by planning standards appropriate to the County. The criteria for Screen 2 are described below:

- *Development Areas.* It was determined to be undesirable to site the landfill where it would displace developed areas or active residential, commercial, industrial, institutional, and/or recreational uses. Areas that were classified as these uses were excluded in Screen 2.
- *Surficial Geology.* Areas known to have surface geological features exhibiting high permeability were excluded in Screen 2.
- *Depth to Bedrock.* In Screen 2, areas where the depth to bedrock was predominantly less than ten (10) feet were excluded.
- *Steep Slopes.* Although a steep slope itself would not preclude landfill development, this feature was assessed to rule out areas with high concentrations of steep slopes that may be indicative of gullies or ravines, which would not be suitable for a landfill.
- *Expressway Corridor.* To avoid the substantial adverse impacts that could result from so large a volume of trucking over secondary highways, areas of the County more than two (2) miles from an existing general traffic expressway (other than the Ontario State Parkway) and existing exits on the New York State Thruway, were excluded in Screen 2.

Based upon review and study of the remaining areas, fifteen (15) specific sites were identified for further consideration.

### Screen Three

Screen 3 utilized a weighted matrix evaluation to comparatively assess the fifteen (15) sites as to their potential to satisfy eleven (11) different criteria, which included compatibility with existing land uses, distance from the waste source, potential impact to wetlands, potential to monitor and

remediate, potential impact on historic/archeological sites, potential loss of productive agricultural lands, potential impact on surface water quality, potential traffic impact due to haul route, soil classification, slope and drainage constraints, and visual impacts. As a result of this evaluation, three (3) of the highest ranking sites were identified and further evaluated in Screen 4. The three (3) locations included:

- (1) Bovee Road Site – Located on the south side of Bovee Road, one quarter mile east of I-490, in the town of Riga. The Bovee Road site would have incorporated a one hundred fifty three (153) acre footprint on approximately four hundred thirty (430) acres of land zoned as agricultural/residential. The previously proposed Bovee Road Site's footprint would potentially have impacted approximately sixteen point six (16.6) acres of NYSDEC regulated wetland on the eastern portion of the property.
- (2) Davis Road Site – Located on Davis Road at the intersection of Attridge Road. This site straddled the town boundary separating the towns of Chili and Riga. The Davis Road Site would have incorporated four hundred twenty five (425) acres of land that had four (4) zoning designations: industrial, agricultural/residential, general industrial and residential.
- (3) Brew Road Site – Located on Brew Road at the current Site of the Mill Seat Facility.

#### Screen Four

The three (3) sites with the top rankings were examined in a final evaluation that included site specific criteria, which included: compatibility with future land use/zoning, disposal cost per ton, project cost, environmental impacts, hydrogeological features and site life. Based upon the site-specific evaluations, the Brew Road site was determined to be the preferred construction location for the County's Landfill Site for the following reasons:

- Of the final sites selected, only the Brew Road site met the near-term goal of construction and operation before existing disposal contracts expired in 1991 based on the fact that baseline hydrogeological investigative work had been completed at the Brew Road site prior to this evaluation. The cost of site development was expected to be essentially the same at the other two (2) sites. However, a savings of \$50 million in a two (2) year period over the cost of the construction was expected to be realized since the County would not need to

dispose of MSW through short-term contracts with private disposal operations.

- Hydrogeological conditions at the Brew Road site were such that monitoring and remediation would be possible.
- The characteristics of the Site were sufficiently well understood to conclude that the Site would satisfy the requirements for a Part 360 permit application.
- The Brew Road site would meet the long-term goals of the County's solid waste management plan.

### *3.2.2 Review of Alternative Waste Management Technologies*

In addition to the Greenfield Site evaluations, alternative technologies were compared in the Site Selection Study. The technologies included waste to energy, out of area landfilling, waste to steam, and composting. Following an evaluation of these technologies, landfilling remained the most cost effective and environmentally sound disposal option.

CE issued the Site Selection Report in April 1989, which recommended that the Brew Road site be adopted as the proposed Monroe County Municipal Solid Waste Landfill Site. Consequently, the County proceeded with the Draft Environmental Impact Statement and Construction Permit Application for the Mill Seat Landfill. CE's report was incorporated into the DEIS issued by the County.

#### 4.0 Updated Consideration of Final Three (3) Greenfield Sites

The Site Selection Studies referenced in the previous section were completed over twenty (20) years ago; therefore, several of the site selection criteria for the final three (3) Greenfield Sites have been updated utilizing more recent mapping sources. These criteria include compatibility with existing land uses, potential to impact wetlands, potential impact on surface water quality, potential impacts on historic/archeological sites, potential loss of productive agricultural lands, potential traffic impact due to haul route and potential impact to visual quality. Maps representing current conditions at each of the three (3) sites are shown on Figures 2-7.

As for other site criteria, such as distance from the waste source, potential to monitor and remediate, soil classification, and slope and drainage constraints, it is unlikely that these characteristics have changed with regard to these three (3) sites since the initial evaluations were completed in 1989 since these siting considerations are less likely to change over time. Therefore, these criteria were not reevaluated.

##### Davis Road Site

The Davis Road site's current surrounding land use consists of residential, agricultural and public services as shown on Figure 2. At the time of the previous siting analysis, this property was unimproved residential and agricultural zoned land. Today, much of the Davis Road property that was previously identified as a potential Greenfield Site has been subdivided and improved with residential dwellings as shown on Figures 2 and 3. Restrictions that remain on-site are the presence of wetlands and a portion of the site is located within an Agricultural District as shown on Figures 3 and 4, respectively. Other criteria that may also be considered more restrictive presently at the Davis Road site would include potential traffic impact due to haul route and visual quality/potential to buffer given the increased development around this site. Based on the presence of residential improvements, the Davis Road site is no longer considered as a viable alternative location.

##### Bovee Road Site

With regard to an updated consideration of the Bovee Road site, for several criteria it is relatively similar to the current Mill Seat Landfill such as: compatibility with existing land uses (Figure 5), distance from the waste source, wetland impacts (Figure 6), potential impacts on historic/archeological sites, potential traffic impact due to haul route, presence of agricultural districts (Figure 7) and visual quality/potential buffer. However, the Bovee Road site does not warrant further consideration because:

- the estimated site life of fifteen (15) years would not provide the minimum twenty-five (25) year site life required by the County; and
- it is unrealistic to expect that the Bovee Road site, as a Greenfield Site, could be permitted, designed and built in time to satisfy the near-term need for new disposal capacity that is described in Section 2 of this report.

The previously proposed Bovee Road site would have incorporated a one hundred fifty three (153) acre footprint on approximately four hundred thirty (430) acres. This footprint would potentially have impacted approximately sixteen point six (16.6) acres of NYSDEC regulated wetland on the eastern portion of the property.

### *Brew Road Site*

Selection considerations remain similar to the initial selection process at the Brew Road site, such as compatibility with existing land uses (Figure 5), distance from the waste source, wetland impacts (Figure 6), potential impacts on historic/archeological sites, potential traffic impact due to haul route, presence of agricultural districts (Figure 7) and visual quality/potential buffer. Additionally, the landfill related infrastructure that has been developed on the Brew Road property, along with the long-term environmental monitoring responsibility, all weigh heavily in favor of a landfill expansion at that location rather than to pursue development of a Greenfield Site at the Bovee Road parcel, Davis Road parcel or any other Greenfield Site.

### *Conclusion*

A landfill project at either the Davis Road or Bovee Road site would not meet the near-term needs of the County due to the significant delays and controversies that would be associated with attempting to develop a new Greenfield Site. As a point of reference for a Greenfield Site development timeframe, it took the County twenty-three (23) years to select, obtain all necessary environmental approvals and permits, and ultimately open and begin operations at the Mill Seat Landfill.

Based on a review of the current conditions at each of the final three (3) sites and their comparison to the County's overall project purpose and need, the Brew Road site (i.e., the Mill Seat Landfill) continues to be the most viable option for the County's purpose of securing additional cost efficient long-term disposal capacity (a minimum of twenty-five years beyond the current useful life of the Mill Seat Landfill) in the County's service area that is acceptable to the local

community and that will ensure that locally controlled, environmentally sound, and reliable disposal capacity will be secured for the uninterrupted use by residents and businesses within the County as well as in the surrounding region.

## 5.0 Current Validity of Previous Siting Process

Since the original Part 360 regulations were developed in 1988, several modifications have been made to the regulations and therefore a comparison of the current siting requirements versus the siting requirements referenced in the 1989 Site Selection Report are provided in Table 1.

**Table 1 - Comparison of Siting Criteria**

<b>Part 360-1.7(a)(2) and Part 360-2.12 Requirements (Current [2012] Regulations)</b>	<b>1989 Site Selection Report Reference</b>
<b>Part 360-1.7(a)(2) – Prohibited Siting Criteria</b>	
Agricultural Lands (unless willing seller)	Evaluated in Screen One and Screen Three.
Floodplains	Evaluated in Screen One.
Endangered Species and Critical Habitat	Evaluated in Screen One.
Regulated Wetlands	Evaluated in Screen One, Screen Three and Screen Four.
Horizontal Separation Distances	Evaluated in Screen One and Screen Three.
<b>Part 360-2.12 – Additional Siting Criteria</b>	
Bedrock subject to rapid or unpredictable groundwater flow must be avoided	Evaluated in Screen Two and Screen Four.  Geologic and Hydrogeologic Evaluation of Final Sites (April 1989) was completed on the 3 final sites during Screen Four.
Site not in proximity to any mines, caves or other anomalous features that may alter groundwater flow	
Maintain a minimum separation of 10 feet between the base of the constructed liner and the underlying bedrock surface	
Permeability of unconsolidated deposits acceptable	
<b>Part 360 2.12(c) – Siting Restrictions</b>	
Primary water supply, and principal aquifers	Evaluated in Screen One.
Floodplains	Evaluated in Screen One.
Aircraft Safety	Evaluated in Screen One.
Unstable Areas	Generally evaluated during all Screens.
Unmonitorable and unremediable areas	Evaluated in Screen Three.
Fault Areas	See below.
Seismic Impact Zones	See below.
Federally Regulated Wetlands	Evaluated in Screen One, Screen Three and Screen Four.

As depicted in Table 1, current Part 360 siting criteria and restrictions were evaluated in the 1989 Site Selection Report with the exception of siting within two hundred (200) feet of a fault that has had displacement within the last ten thousand (10,000) years (Holocene time) and siting in a seismic impact zone. Based on a review



of existing published fault maps for Western New York (Howard et al., 1978), the nearest known fault to the Mill Seat Landfill that has experienced movement in the last ten thousand (10,000) years is the Clarendon-Linden fault, which is located approximately thirty thousand (30,000) feet to the west of the Mill Seat Landfill. The location of the Mill Seat Landfill easily conforms with this siting criterion.

The seismic impact zone siting restriction prohibits siting a landfill in a seismic impact zone unless a seismic analysis is completed to demonstrate that all permanent containment structures for the landfill, including liners, leachate collection systems, surface-water control systems, and final cover systems, have been designed to resist the maximum horizontal acceleration in earth material for the Site. The location of the Mill Seat Landfill is within a seismic impact zone; therefore, the completion of a seismic analysis is required. As part of a cell redesign activity at the Mill Seat Landfill, a stability analysis was previously completed and was determined to be acceptable per the Part 360 regulations. Along with other environmental and engineering analyses, a new seismic analysis will need to be prepared and submitted to the NYSDEC for review as part of a Part 360 permit application for new disposal capacity.

The comparison presented above indicates that the Site Selection Report prepared in 1989, which resulted in the selection and development of the Mill Seat Landfill, addressed the key Part 360 regulatory criteria currently applicable to landfill siting projects. The current validity of the results of this siting process provides justification for pursuing an expansion of the Mill Seat Landfill rather than embarking upon another County-wide search for a new Greenfield Site.

## 6.0 Current Solid Waste Management Considerations

This section provides an overview of the County's solid waste management system and its local solid waste management planning.

### 6.1 Monroe County Solid Waste Management System

The County's current solid waste management system is comprised of a variety of municipal and private programs and services. There are currently four (4) MRF, two (2) MSW landfills, seven (7) MSW transfer stations, one (1) land clearing debris landfill, and six (6) C&D waste processing facilities registered with, regulated by, or permitted by the NYSDEC and located within the County.

Of these facilities, the County owns and leases the operation of one (1) residential MRF, one (1) MSW transfer station/IC&I MRF, and one (1) landfill (Mill Seat Landfill). With the exception of the City of Rochester and five (5) villages, residential and commercial solid waste and recyclables produced within the County are handled by private hauling companies. These private haulers dispose of waste by hauling material directly to one (1) of the two (2) landfills located within the County, transferring waste to a private or public transfer station, or hauling waste to a transfer station or landfill located outside of the County. Some residential and commercial waste is collected by municipal forces or through a municipality-wide contract with a private hauler. These materials are typically disposed of in the same manner. Small portions of County residents also have access to a residential transfer station for waste management. The City of Rochester conducts their own hauling within the City limits where the waste is currently disposed of at the Mill Seat Landfill under a contract between the County and the City of Rochester. Additionally, other towns or villages that either have municipality-wide disposal contracts with private haulers or those that manage their own hauling fleet, rely on the in-County disposal at the Mill Seat Landfill.

### 6.2 Local Solid Waste Management Planning

#### *Citizen Advisory Board*

When the Mill Seat Facility was initially permitted, a CAB was established to provide a formal liaison between the local community and the County regarding the design, construction and operation of the Site. The CAB is comprised of thirteen (13) members selected or designated from the following community boards:

- Four (4) CAB members designated by the Town of Riga Town Board,
- One (1) CAB member designated by the Town of Bergen Town Board,
- One (1) CAB member designated by the Village of Bergen Board of Trustees,
- One (1) CAB member designated by the Village of Churchville Board of Trustees, and
- Six (6) CAB members designated by the County Executive (at least one (1) of whom shall be a resident of the Town of Riga and one (1) from the Village of Churchville).

This CAB has been active in the Mill Seat Landfill planning activities since the Site was opened. The CAB meets on a quarterly basis and is intended to perform several functions including to provide: a vehicle for dissemination of information regarding the Site design, construction and operation; local community oversight of the Mill Seat Landfill; and the local community with a forum for making suggestions to the County and/or WMNY. The CAB has been involved in discussions regarding the County's long term solid waste disposal options and will continue to be involved throughout the planning process. Based on the diversity of membership on the CAB, the local community is provided significant opportunity to have their questions and concerns addressed as they relate to the Mill Seat Landfill and any future development at the Site.

#### *Community-Wide Planning Efforts*

Beginning in 2008, the County and WMNY started looking to the future with regard to when the existing Site's life is estimated to come to an end. As the Mill Seat Facility had been the County's solution to providing long-term, environmentally sound and reliable solid waste disposal for businesses and citizens in the region since 1993, both the County and WMNY understood the importance of continuing to engage in long-term solid waste planning. Consequently discussions between the County and the Town of Riga were initiated to gather their thoughts on future long-term solid waste planning and how the Mill Seat Landfill could fit into those plans.

Some of these initial discussions pertained to the community's acceptance of the Mill Seat Landfill and the potential future of the Facility. The Town of Riga's inclusive approach involved reaching out to their constituents to obtain feedback with regard to the Mill Seat Landfill and its continued operation. The Town of Riga commissioned Direct2Market Sales Solutions, assisted by BRX Global Research Services, to conduct a survey research project.

On July 14, 2008, a questionnaire with a postage-paid return envelope was mailed to two thousand fifty nine (2,059) households and property owners within the Town of Riga. An online questionnaire was also offered as an alternative response mechanism, as was a toll-free telephone number. Telephone calls were also placed to those who did not respond via the above mentioned methods.

A total of nine hundred sixty eight (968) surveys were completed by mail, telephone and online, for a response rate of approximately forty seven percent (47%). Key results of the survey indicated that sixty seven percent (67%) of the respondents were in favor of adding capacity to the Mill Seat Landfill and continuing operations beyond 2018 (which, at the time of the survey, was the year that the Mill Seat Landfill was expected to be filled to capacity). Overall, the residents viewed the Mill Seat Landfill as providing needed revenues, and most felt that it had little impact, or a positive impact, on their lifestyles.

Following the completion of this survey by the Town of Riga and the positive results showing support of continued operations at the Site beyond 2018, discussions were undertaken among the Town of Riga, WMNY and the County to update the Host Community Agreement between the parties to reflect a potential future expansion of the Mill Seat Landfill.

#### *Amended and Restated Host Community Agreements*

An Amended and Restated Host Community Agreement was signed by the County and the Town of Riga in February 2011. Subsequently, the County and the Town of Bergen, Village of Bergen, Byron-Bergen Central School and Bergen Fire Department, Inc. signed an Amended and Restated Host Community Agreement in December 2011. As stated in these Agreements, the Town of Riga, the Town of Bergen and other public organizations as listed in Table 2 will receive monetary benefits for the period of time that the Mill Seat Landfill is accepting solid waste for disposal. These Agreements also indicate support by the Town of Riga and Town of Bergen for a "Landfill Expansion Area" that is defined as "*The land owned by the County or to be purchased by the County adjacent to the current [Mill Seat] Landfill and contiguous to the Landfill Footprint on which the County may seek to expand its Facility...*". Should the Mill Seat Landfill not be expanded in accordance with the terms and conditions of the Agreements then the Agreements could result in renegotiation.

Since the Mill Seat Landfill opened, the County and WMNY have provided the community with numerous economic benefits. A summary of the economic benefits provided to the Host Communities are summarized in Table 2.

**Table 2 - Summary of Host Community Benefits**

Host Communities	Benefit as per Host Community Agreements	Monetary Benefit to Date
<p><b>Town of Riga (Revenue Sharing)</b></p>	<ul style="list-style-type: none"> <li>• \$3.65 per ton of MSW (annual guaranteed payment of \$450,000)</li> <li>• \$1.25 per ton of Beneficial Use Determination (BUD)</li> <li>• \$0.03 per ton of MSW (Renewable Energy Benefit Payment)</li> </ul>	<p>Over \$20 million since opening</p>
<p><b>Town of Riga Residents</b></p>	<ul style="list-style-type: none"> <li>• County agrees to collect the residential solid waste generated from residential units in the Town of Riga and Village of Churchville and collect recyclables generated within the Town of Village, at no cost to the Town or Village or their residents.</li> </ul>	<p>Free household garbage &amp; recycling annual cost \$516,000 (Approximate)</p>
<p><b>Town and Village of Bergen</b></p>	<ul style="list-style-type: none"> <li>• \$25,000 – one-time payment upon execution of the HCA;</li> <li>• \$25,000 – one-time payment upon NYSDEC approval of the expansion of the Landfill;</li> <li>• \$0.10 per ton of MSW</li> </ul>	<p>Over \$35,000 since opening</p>
<p><b>Byron-Bergen Central School</b></p>	<p>Payment to the School District based on an increase or decrease in property tax revenues to be received by the School District (from the portion of the School District in the Town of Riga)</p>	<p>Over \$1.25 million since opening 2011-2012 School Year = \$170,000</p>
<p><b>Bergen Fire Department</b></p>	<ul style="list-style-type: none"> <li>• For as long as the Fire Department is obligated to service the Site, Maintenance Fees and Capital Reserve Fees shall be paid to the Fire Department based upon the previous year's fee multiplied by one hundred two percent (102%);</li> <li>• \$10,000 – one-time payment upon execution of the HCA;</li> <li>• \$10,000 – one-time payment upon NYSDEC approval of the expansion of the Landfill.</li> </ul>	<p>Over \$124,000 since opening 2011 Fees: Maintenance Fees = \$2,857 Capital Reserve Fee = \$2,856</p>

Other local community benefits that the Mill Seat Landfill has provided since the landfill's inception include:

- Water Supply Protection Program – The County, in order to mitigate any concerns that Site development or operation may adversely impact well water supplies in the vicinity of the Site, agreed to provide for the extension by the County Water Authority of public water mains to serve the vicinity of the Site.
- Property Value Protection Program – To mitigate any potential impacts on property values, the County agrees to provide compensation to owners of identified properties at the time of the sale of their property in the event of monetary loss as a result of the County's siting of the Landfill Site and a landfill expansion.
- Purchases of Goods and Services – It is estimated that the Mill Seat Landfill provides approximately \$5,000,000 per year back into the community in the way of purchasing goods and services from the surrounding area.

#### *Monroe County Planning Efforts*

As a continuation of the solid waste planning efforts, the County is in the process of updating its SWMP, which includes the goal of annually monitoring the available landfill capacity at the Mill Seat Landfill and pursuing expansion options as necessary to maintain long-term disposal capacity. The updated Draft SWMP is currently being reviewed by the NYSDEC. As outlined in the updated Draft SWMP, the County's priorities for solid waste management are reduction, reuse, recycling and environmentally sound disposal of remaining materials.

The updated Draft SWMP also states that the practice of landfilling has been, and will remain, a reliable, environmentally-sound means of disposal within the County.

In order to provide continued environmentally-sound long-term disposal capacity for waste and wastewater treatment biosolids for the County and in consideration of the existing environmental infrastructure, monitoring network, long-term monitoring obligations, and long-term operations/lease agreement at that Site, the future expansion of the Mill Seat Landfill is considered to be a vital component of the County's environmental infrastructure that is consistent with the goals and objectives of the updated Draft SWMP.

## **7.0 Alternatives Analysis**

Previous sections of this report provided background information on solid waste management planning and prior landfill siting evaluations that ultimately led to development of the Mill Seat Facility. In this section, the focus will shift to an alternatives analysis that is directly related to the current proposal to develop additional long-term disposal capacity through an expansion of the Mill Seat Landfill. Alternatives that do not satisfy the purpose and need for this project, as described in Section 2 of this report, will not be given further consideration. For those alternatives that could potentially address the project's purpose and need, they will be compared on the basis of key environmental considerations to determine which alternative(s) should be the subject of further consideration and additional environmental scrutiny.

### **7.1 No Action Alternative**

Should a No Action Alternative be implemented, no additional solid waste could be accepted at the Site and County wastes would have to be disposed elsewhere following the end of the useful life of the Mill Seat Landfill. The No Action Alternative does not warrant further consideration because:

- it would fail to meet the County's sludge disposal need and the County and the City of Rochester's solid waste disposal needs;
- it would fail to meet the need for local publicly controlled solid waste disposal capacity; and
- it would fail to provide solid waste disposal capacity without interruption to the residents and businesses located in the County for at least twenty five (25) years after the end of the current useful life of the Mill Seat Landfill.

### **7.2 Waste Exportation**

The waste exportation alternative would require that wastes generated within the County be disposed of at a facility not controlled by the County or outside of the County. Should the Waste Exportation Alternative be implemented, the County and its residents and businesses would be subject to the inherent unreliability and unpredictability associated with a reliance upon others for waste disposal. The Waste Exportation Alternative does not warrant further consideration because:

- it would fail to meet the objective of managing solid wastes within New York State;

- it would fail to meet the need for local publicly controlled disposal capacity; and
- it would not satisfy other aspects of the project purpose and need described in Section 2 of this report.

### 7.3 Greenfield Site

Should the County no longer have a secure disposal location for the City of Rochester's waste or the County's waste and sludge, the County would be required to search for a Greenfield Site for this purpose or replace the incinerators at Van Lare WWTP and Northwest Quadrant WWTP. It is not economically feasible to replace the incinerators given the exorbitant cost that is in the range of \$25 million to replace and obtain permits for these facilities plus in the range of an additional \$7-9 million per year in operation and maintenance costs. Additionally, the County would still require a secure disposal location for the incinerator ash. If the County were to embark upon a County-wide landfill siting process for a new Greenfield Site, instead of an expansion of the Mill Seat Landfill, it would be faced with an approximately twenty (20) year endeavor with potentially significant environmental and community impacts at various locations throughout the County as it identifies and evaluates candidate locations for a new Greenfield Site.

The Greenfield Site Alternative does not warrant further consideration because:

- The results of the County's original Greenfield Site search, which was an extensive expenditure of public resources that resulted in the selection and ultimate development of the Mill Seat Landfill, remain valid, as demonstrated in Section 5 of this report.
- Development of a Greenfield Site would establish another location in the County that will require long-term environmental monitoring and post-closure maintenance. These long-term obligations are currently consolidated at the Mill Seat Landfill.
- Another Greenfield Site might not have the convenient transportation haul route access from an expressway, such as Route 490 provides for the current Mill Seat Landfill, which would result in more traffic impacts to residents and businesses located in the vicinity of a new Greenfield Site.
- Host community benefits currently provided to those listed in Table 2 would end, once waste could no longer be disposed of at the Mill Seat Landfill. Community acceptance at a Greenfield Site is likely to be less than the level of community acceptance at the current Mill Seat Landfill.



- Development of a Greenfield Site would require additional investments in site and facility infrastructure, which have already been made at the Mill Seat Landfill to help protect the environment from significant adverse impacts and to operate and maintain the Facility in accordance with applicable environmental regulations. These include, but are not limited to, the following features at the Site: the landfill gas to energy facility, the municipal sanitary sewer connection, the maintenance garage and other support facilities, the landfill gas collection and control system, the extensive groundwater monitoring well network, and so on.
- A Greenfield Site search could result in selection of a landfill site that ultimately has more acres of wetland impacts than the preferred Mill Seat Landfill expansion alternative, since the low permeability soils required by NYSDEC for a landfill site also tend to pond water that contribute to the formation of wetlands in those same areas. Furthermore, reliance upon available wetland maps -- and even interpretations of available aerial photographs and soil maps -- have not proven to be sufficient indicators of regulated wetlands on a potential landfill site. Field delineations of regulated wetlands are necessary to determine the full extent of wetlands on a potential landfill site, and legal access to conduct such wetland field delineations is limited and often difficult to obtain (due to uncooperative landowners) during a Greenfield Site search.
- Experience indicates that a Greenfield Site could not be permitted, designed and built in time to satisfy the near-term need for new disposal capacity (the steps involved in searching for and obtaining all necessary environmental approvals to build and operate a new Greenfield Site would likely take about twenty years to complete, with no guarantee of a successful outcome).
- Real estate transactions in the vicinity of potential new Greenfield Sites would likely decline, for as long as uncertainties remain with regard to the future development of such Greenfield Sites. The breadth and scope of this significant adverse impact on the real estate business within the County could be extensive, but it would ultimately be determined by how many Greenfield Site locations are under consideration at any given time during the landfill siting process.
- The County would be susceptible to potential additional environmental impacts and costs associated with interim disposal and transportation of wastes to another disposal location, after the Mill Seat Landfill closes and while the effort to find and obtain environmental approvals for a new Greenfield Site is underway. If, for example, the interim disposal location requires farther hauling distances than additional environmental impacts

associated with fuel usage, an increase in truck emissions and increased greenhouse gas emissions could occur.

#### 7.4 Alternative Technologies

Many waste disposal technologies are available as alternatives to landfilling. Some, such as plasma arc gasification, mechanical/biological treatment, and anaerobic digestion, have not been proven environmentally or economically feasible in the United States for solid waste management. Others, such as waste-to-energy (WTE), MSW mixed composting, and ethanol production, are limited in applicability as described below. All would still require landfilling for the disposal of the byproducts or end products of the alternative technologies.

##### 7.4.1 Plasma Arc Gasification/Gasification/Pyrolysis

Plasma arc gasification is a waste treatment technology that uses electrical energy and the high temperatures created by an electrical arc gasifier. This arc breaks down waste primarily into elemental gas and solid waste (slag), in a device called a plasma converter. The process has been touted as a net generator of electricity, although this will depend upon the composition of input wastes. It will also reduce the volume of waste requiring land disposal.

There are currently 10 plasma arc gasification facilities in operation in Japan and Taiwan, but only one that operates on a large scale (all others are < 50 TPD) and uses mixed MSW as its only feedstock. A small MSW facility (93 TPD) is in operation in Canada. In the United States, St. Lucie County in Florida obtained a permit to construct a large scale MSW plasma arc gasification facility, but due to vendor and funding issues this project was never implemented.

To date, this technology has not been proven to be economically feasible within the United States for MSW management.

Pyrolysis systems use a vessel which is heated to temperatures of 750°F to 1,650°F, in the absence or near absence of free oxygen. The temperature, pressure, reaction rates, and internal heat transfer rates are used to control pyrolytic reactions in order to produce specific synthetic gas (syngas) products. These syngas products are composed primarily of hydrogen (H<sub>2</sub>), carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), and methane (CH<sub>4</sub>). The syngas can be utilized in boilers, gas turbines, or internal combustion engines to generate electricity, or alternatively can be

used in the production of chemicals. Some of the volatile components of MSW form tar and oil, and can be removed for reuse as a fuel. The balance of the organic materials that are not volatile, or liquid that is left as a char material, can be further processed or used for its adsorption properties (activated carbon). Inorganic materials form a bottom ash that requires disposal, although it is reported that some pyrolysis ash can be used for manufacturing brick materials. Under typical operations, the ash is landfilled.

Gasification is a similar process to pyrolysis, but which requires the partial oxidation of a feedstock to generate syngas. Oxygen must be provided for the reaction, but at a quantity less than is required for complete combustion. The primary syngas products are H<sub>2</sub> and CO with smaller quantities of CH<sub>4</sub> produced at lower temperatures. Similar to pyrolysis, the syngas product may be used for heating, electricity generation, fuel, fertilizers or chemical products, or in fuel cells. Byproduct residues such as slag and ash are produced and require disposal in a landfill.

Pyrolysis and gasification have too short a history for proper analysis of economic feasibility. There are currently only about one hundred mixed MSW gasification plants in the world, namely in Japan, but have a successful history of continuous operation. The capital cost of developing this technology is yet unanalyzed but estimated to be 10% higher than conventional WTE plants, based on a short history of pyrolysis/gasification development, a lack of established pyrolysis or gasification plants, and the greater complexity of the technology. According to a recent EPA study of pyrolysis and gasification technologies, the cost to process mixed MSW is approximately \$90 per ton which is significantly higher than landfill operational costs in New York State. There are no current full scale operational systems in New York State for MSW treatment. One plant for the pyrolysis of plastics, located in Niagara Falls, NY, is commercially operational and one gasification plant has been commissioned in Montgomery, NY using only portions of the MSW waste stream.

#### *7.4.2 Mechanical/Biological Treatment*

Mechanical-biological treatment (MBT) systems are similar to mixed MSW composting systems in that intense sorting is required as the first step in the waste treatment process. This is considered the mechanical phase of the treatment, where recyclable and non-organic materials are removed from the waste stream, prior to the biological

treatment. The biological treatment phase involves bio-drying of the remaining organic materials for production of refuse derived fuel, or RDF. RDF can be used in place of fossil fuel products, such as a replacement for coal in electricity production. There are currently over 70 active MBT systems in operation across Europe, with a majority of these facilities operating as pilot scale projects (exact numbers are not available).

To date, this technology has not been proven to be economically feasible within the United States for MSW management.

#### 7.4.3 Anaerobic Digestion

Anaerobic digestion is a biological process by which microorganisms digest organic material in the absence of oxygen, producing a solid byproduct (digestate) and a gas (biogas). In the past, anaerobic digestion has been used extensively to stabilize sewage sludge, but is more recently under consideration as a method to process the organic fraction of MSW. In anaerobic digestion, biodegradable material is converted by a series of bacterial groups into methane and CO<sub>2</sub>. In a primary step called hydrolysis, a first bacterial group breaks down large organic molecules into small units like sugars. In the acidification process, another group of bacteria converts the resulting smaller molecules into volatile fatty acids, mainly acetate, but also hydrogen (H<sub>2</sub>) and CO<sub>2</sub>. A third group of bacteria, the methane producers or methanogens, produce a medium-Btu biogas consisting of 50-70% methane, as well as CO<sub>2</sub>. This biogas can be collected and used for a variety of purposes including electricity production or converted to high BTU natural gas. Anaerobic digestion facilities are utilized extensively for the treatment of agricultural, wastewater sludge and organic wastes such as food wastes. Mixed MSW anaerobic digestion facilities are more common in foreign countries. There are currently over 200 MSW anaerobic digestion facilities perating across Europe. Many of these facilities are smaller scale projects, designed to provide treatment of wastes for small towns and villages. There are two such facilities in operation in Canada, each in the Toronto, Ontario area.

Specific to the United States, few mixed MSW facilities exist, as the technology has not proven economically feasible. An EPA study estimates that waste processing costs using anaerobic digestion are close to \$115 per ton of MSW, which is even higher than pyrolysis/gasification. At this time, only two commercially operational MSW anaerobic digestion facilities exist, both in Ohio. Several more facilities exist but run off only a portion of the MSW waste stream, such as source separated organics, food manufacturing industry waste, or a mixed agricultural/food waste. Many

are still in a demonstration phase and are not fully operational. In New York State, there are many anaerobic digesters in operation in the wastewater and agricultural markets, with some anaerobic facilities being converted into mixed organic waste facilities. Two anaerobic digesters have been permitted in Region 9 by Quasar Energy Group. These systems will manage regional biomass residuals (organic waste) to produce electricity that would be sold to NYSEG. Under the regional biomass residual model, there is still the need to manage other portions of the waste stream that cannot be recycled. These wastes are typically landfilled. In addition, digestate and liquids from the anaerobic digester process must also be managed, which may be recycled or landfilled depending on their constituents.

#### *7.4.4 Waste-to-Energy (Combustion/Incineration)*

A waste-to-energy (WTE) facility is a solid waste management facility that combusts wastes to generate steam or electricity and reduce the volume of MSW requiring disposal by 80-90 percent. These facilities are sometimes referred to as resource recover facilities or Municipal Waste Combustors (MWC). Newer technology allows higher efficiency heat recovery from the combustors, increasing energy production potential.

Although the total volume of MSW requiring disposal is reduced, a secondary disposal method such as landfilling would be required for the ash. This, coupled with high construction and operations and maintenance costs as well as uncertainty in energy sales revenues, results in higher disposal costs per ton than landfilling. In addition, landfilling has already been approved by the NYSDEC as preferred disposal method for County-generated biosolids in lieu of incineration.

There are currently 10 active WTE facilities in New York State; however, none have been permitted or constructed in the state in the past 20 years.

#### *7.4.5 Mixed MSW Composting*

Mixed MSW composting is typically an aerobic composting process that breaks down all organic portions of the waste into compost material. Waste is typically collected at the facility as a mixed stream. The process requires intense pre- and post-processing, treatment and sorting to remove inert materials such as plastic or glass, which diminish the quality of compost products. Some MSW composting facilities also accept

biosolids. Wastes are typically loaded into a rotating bioreactor drum for two to four days. Screening processes are used to separate unacceptable wastes, which are landfilled as process residue, from the raw compost which is stored in a maturation area for approximately one month to allow biological decomposition to occur.

Facilities such as this do not have a well-established track record in the United States. There are currently 13 mixed MSW composting facilities in operation in the United States, including one in Delaware County, New York. Typical issues associated with the reliable and cost effective operation of such facilities include quality of compost, retail/wholesale outlet for compost generated, disposal location for bypass material, and odors.

As mentioned above, Delaware County operates a mixed MSW composting facility, which has been successful as it relates to their needs. Their facility met the need of extending the life of their current landfill facility due to declining capacity and difficulty in siting a new landfill. This facility allowed the landfill to be operational for another 50 years. The cost of this facility was approximately \$20 million, which includes a rather complex odor control component. The facility became operational in 2007, which serves a rural population of about 47,000 people. This facility handles approximately 100 tons per day of waste. The mixed MSW composting facility is one part of Delaware County's integrated solid waste management system.

#### *7.4.6 Ethanol Production*

Similar to MSW composting, ethanol production from a mixed MSW stream requires extensive screening and processing. All recyclable and inert materials must be removed to produce a solely organic waste stream. The organic material is processed and hydrolyzed to form a sugar solution, which is fermented to produce ethanol and carbon dioxide. The solution requires further processing and refining to bring the ethanol concentration up to 99 percent, or fuel grade ethanol. Ethanol production still produces solid byproducts which require disposal. A solid residue of unfermented solids and microbial biomass is recovered through the anaerobic digestion process, and can be marketed as a compost material depending on the purity of feedstock as well as its visual quality. Solid residues can also be burned or gasified if alternative methods of reuse are not feasible. Although some pilot scale operations exist, many have reverted to a homogenous input stream such as wastewater treatment sludge or food processing wastes for simplicity and economic feasibility.

In addition to the aforementioned limitations of these technologies, their use is limited by the time required to design, permit, and construct the necessary facilities, which would not meet short-term waste disposal needs, and the need for local publicly-controlled solid waste disposal capacity for the residual wastes from these processes.

#### 7.5 Analysis of Alternative Footprint Configurations

Conceptual footprint configurations have been prepared for potential expansions of the Mill Seat Landfill north, south, east and west of the existing landfill disposal area. These on-site alternatives are listed below, along with a parenthetical note to indicate whether they satisfy (“Pass” or “Fail”) the project’s purpose and need (as delineated in Section 2 of this report). For those alternative footprint configurations that could potentially satisfy the project’s purpose and need, they are concisely compared on the basis of key environmental factors to determine which footprint configuration should be pursued further. The conceptual locations and preliminary development boundaries for each of these expansion alternatives are shown on Figures ALT-1 through ALT-8. A summary comparison of these on-site alternatives is provided in Table 3. As indicated on Table 3, five (5) of the eight (8) on-site footprint alternatives fail to satisfy the project’s purpose and need.

**Table 3 - Summary of On-Site Alternatives**

Footprint Alternatives <sup>(1)</sup>	Liner Acreage <sup>(2)</sup>	Potential Disturbance Acreage <sup>(3)</sup>	Overlay Acreage <sup>(4)</sup>	Volume of Potential Disposal Capacity <sup>(5)</sup> (cubic yards)	Site Life <sup>(6)</sup> (years)	Pass/Fail Criteria	Direct Impacts to Streams (linear feet)	Direct Impacts to Wetlands <sup>(8)</sup> (acres)
Alternative 1	82.0	119.6	28.9	24,350,000	27	Pass	0	26.4
Alternative 2	91.9	125.1	7.9	12,490,000	14	Fail <sup>(8)</sup>	0	0 <sup>(10)</sup>
Alternative 3	69.9	89.5	3.9	9,740,000	11	Fail <sup>(8)</sup>	0	0 <sup>(10)</sup>
Alternative 4	83.8	103.1	12.9	13,620,000	15	Fail <sup>(8)</sup>	0	3.9
Alternative 5	119.2	155.0	39.5	35,610,000	40	Pass	600	42.9
Alternative 6	103.0	135.7	14.4	21,650,000	24	Fail <sup>(9)(11)</sup>	0	59.3
Alternative 7	118.1	143.3	27.2	29,900,000	33	Pass	1500	13.5
Alternative 8	139.0	195.8	7.9	18,820,000	21	Fail <sup>(8)(12)</sup>	0	0 <sup>(10)(13)</sup>

1 - Locations of footprint alternatives are shown on Figures Alt. - 1 through Alt. - 8.  
 2 - Liner acreage is the footprint area of the limits of waste, additional area will be disturbed for supporting facilities as outlined in Note 3.  
 3 - Potential disturbance acreage includes additional areas on-site for landfill supporting facilities (perimeter roads, landfill berms, and stormwater detention basins), but does not include any acreages that may be used to provide mitigation for potential wetland impacts or soil borrow mining activities.  
 4 - Overlay acreage for the expansion areas is for an overlay onto the existing landfill.  
 5 - Volume calculations were performed with assumed vertical constraints of the existing landfill height and with a ten (10) foot depth into the existing ground.  
 6 - Site life was estimated from the site's historical density of 0.8 tons per cubic yard and an acceptance rate of 716,000 tons per year or 895,000 cubic yards/year  
 7 - 716,000 tons per year is based on 597,000 tons per year of MSW and 119,000 tons per year of BUD.  
 8 - Fails to satisfy need for a minimum useful life of twenty-five (25) years.  
 9 - All direct wetland impacts are based upon the potential on-site disturbance area for each alternative.  
 10 - Although no direct wetland impacts are noted, it is possible that indirect wetland impacts could occur. A detailed analysis of potential indirect wetland impacts has not been completed; however, this level of analysis will be completed during the environmental impact statement review process.  
 11 - This Alternative impacts more wetland acreage than the other footprint alternatives. Furthermore, the twenty four (24) year site life falls just short of meeting the County's minimum site life requirement of 25 years; therefore it does not meet the selection criteria.  
 12 - Alternative #8 provides one of the least efficient uses of land for the site life obtained. Given that this Alternative includes a non-contiguous separate footprint, also considered a Greenfield Site, additional land disturbance would be required to construct and operate the support infrastructure associated with the landfill footprint, and a separate siting analysis in accordance with 6 NYCRR Part 360 might be required. Together with the above stated reasons and the twenty one (21) year site life, which falls short of meeting the County's minimum site life requirement of twenty-five (25) years. Alternative #8 does not meet the selection criteria.  
 13 - Delineated wetlands B, C, and E were identified in B&L's December 2011 Wetland Delineation Report of the WMNY property that is included within the potential footprint of Alternative #8. These wetlands were determined in the field to be 'isolated' wetlands, meaning that these areas did not have a hydrologic connection to other Waters of the U.S. A Jurisdictional Determination, which would include a field verification by agency personnel, would need to be requested from the USACE to confirm this determination.



The remaining three (3) alternatives meet the overall project purpose and need. There is, however, a significant difference in potential environmental impacts when comparing these three (3) on-site alternatives, with regard to potential adverse impacts to on-site wetlands. A comparison relative to the wetland impacts of each alternative is provided below.

- Alternative #1 would impact approximately twenty six and four tenths (26.4) acres of wetlands associated with NYSDEC jurisdictional Wetlands RG-5 and RG-7.
- Alternative #5 would impact approximately forty two and nine tenths (42.9) acres of wetlands, which would include all of Wetland RG-6 and a portion of Wetland RG-5. In addition, the development of this alternative would include stream impacts to approximately 600 linear feet of non-Relatively Permanent Water (non-RPW).
- Alternative #7 would impact approximately thirteen and five tenths (13.5) acres of wetlands associated with Wetland RG-6. This alternative results in the least wetland impact acres of the alternatives that meet the overall project purpose and need. In addition, the development of this alternative would include stream impacts to approximately 1,500 linear feet of non-RPW.

As demonstrated above, given the significant difference in potential adverse wetland impact acreages for each on-site alternative that meets the County's overall project purpose, Alternative #7 is the preferred alternative.

This on-site Alternative #7 would provide the Facility with sufficient disposal capacity to satisfy the near-term need for new disposal capacity as well as the County's long term need for a minimum useful life of twenty-five (25) years beyond the useful life of the currently permitted Mill Seat Landfill – thereby avoiding the need to undertake a County-wide search for a new Greenfield Site at this time. If a project with less than twenty-five (25) years of site life were chosen, the County would need to immediately start the County-wide search for a Greenfield Site in conjunction with pursuing environmental approvals and permits necessary for an on-site landfill alternative with a shorter site life.

Additionally, an extensive off-site Greenfield Site search and environmental review process was undertaken by the County in the 1970s and 1980s that ultimately resulted in the selection of the Mill Seat Landfill. Limited public resources should not be expended to revisit an off-site alternatives analysis that has already been completed and that has been upheld through a detailed environmental impact statement and permit review process, nor should

limited public resources be expended to embark on a new Greenfield Site search when a potentially suitable on-site alternative is available.

Moreover, avoiding the development of a new landfill at an offsite location will avoid additional expenditures for facility infrastructure, and will also avoid site-specific environmental impacts that would result from development of a Greenfield Site somewhere else in the County, such as more acres of wetland impacts, further hauling distances, and traffic impacts. Development of a Greenfield Site would establish another location in the County that would require long-term environmental monitoring and post-closure maintenance. These long-term obligations are currently consolidated at the Mill Seat Landfill.

Soil balance estimates for Alternative #7 are currently under development. However, at this time, it is anticipated that soil for landfill construction, operation and closure will be obtained from one (1) or more off-site locations. Preliminarily, the High Acres Landfill, owned and operated by WMNY, is being considered as a potential soil source since it is currently projected to have a surplus of available soil.

## 7.6 Next Steps

Environmental investigations and analyses will be undertaken, along with preliminary engineering design activities, to further examine the potential for permitting and ultimate development of Alternative #7. An important aspect of these future activities will involve development of a wetlands mitigation plan that will ensure no net loss of wetlands as a result of this preferred landfill expansion alternative, as well as a stream mitigation plan to replace the function of the lost non-RPW. A conceptual wetland mitigation plan is currently under development. This concept is based on using the WMNY owned property, south of Bovee Road, as the primary wetland mitigation location. It is anticipated that the wetland mitigation plan will include various habitat types to compensate for the 13.5 acres of wetlands to be impacted by the Alternative #7 footprint. The WMNY owned property, south of Bovee Road, is an ideal location for wetland mitigation given its close proximity to NYSDEC RG-5, RG-7, and RG-33 wetland complexes and Hotel Creek. Additionally, non-wetland hydric soils, which are most suitable for wetland restoration, are present at this proposed location. The ultimate goal of the proposed wetland mitigation plan will be to expand and enhance the existing wetland complexes, as mentioned above, by developing a larger contiguous wetland complex that provides key wetland functions and values through which floral and faunal diversity will benefit.

To gain approval of the wetland and stream mitigation plans and wetland and stream impacts, several permits and/or variances will be required from the U.S. Corps of Engineers (USACE) and the NYSDEC. A request for permits in the form of a Joint Permit Application (JPA) will be prepared and submitted to the USACE and the NYSDEC for the following permits:

- 404 Federal wetlands permit issued by the USACE. The United States Environmental Protection Agency (EPA) and the US Fish and Wildlife Service (USFWS) are advisory agencies that the USACE will involve in their review process.
- NYSDEC Article 24 wetlands permit
- 401 water quality certification, issued by NYSDEC prior to the issuance of the 404 Federal wetlands permit by the USACE.

An alternatives analysis, to determine whether the proposed project is the Least Environmentally Damaging Practicable Alternative (LEDPA), will be part of the JPA and SEQRA review for this project.

Information obtained from these environmental, engineering, and wetland mitigation plan activities will be utilized during the SEQRA and environmental permitting processes, which will include several opportunities for the public and regulatory agencies to review and comment upon Alternative #7.

## **8.0 References**

Amended and Restated Host Community Agreement between Town of Riga and Monroe County. January 4, 2011.

Amendment No. 3 to Landfill Lease between Monroe County and Waste Management of New York. March 2011.

Amended and Restated Host Community Agreement between Town of Bergen, Village of Bergen, Byron-Bergen Central School District, Bergen Fire Department, Inc. and Monroe County. December 21, 2011.

Barton & Loguidice, P.C., "Monroe County Updated Draft Local Solid Waste Management Plan", 2011.

Clark Engineers and Associates, "Draft Environmental Impact Statement – Mill Seat Solid Waste Landfill, Brew Road, Town of Riga, Monroe County, New York," prepared by Monroe County, as Lead Agency, April 1989.

Clark Engineers and Associates, "Final Environmental Impact Statement – Mill Seat Solid Waste Landfill, Brew Road, Town of Riga, Monroe County, New York," prepared by Monroe County, as Lead Agency, June 1989.

Clark Engineers and Associates, "Draft Environmental Impact Statement – Mill Seat Solid Waste Landfill, Brew Road, Town of Riga, Monroe County, New York," prepared by Monroe County, as Lead Agency, August 1990.

Clark Engineers and Associates, "Final Environmental Impact Statement – Mill Seat Solid Waste Landfill, Brew Road, Town of Riga, Monroe County, New York," prepared by Monroe County, as Lead Agency, October 1990.

McMahon & Mann Consulting Engineers, P.C., "Draft Environmental Impact Statement – Mill Seat Landfill Proposed Soil Borrow Project," prepared for Monroe County, as Lead Agency, January 2011.