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WASTE MANAGEMENT

CWM Chemical Services, LLC

Draft Environmental Impact Statement

Residuals Management Unit 2

Model City Facility

1550 Balmer Road

Model City, Niagara County, New York

April 2003
Revised August 2009
Revised March 2012
Revised February 2013
Revised July 2013
Revised November 2013

Tables

Figures

Appendices

Acronyms

AAQS	Ambient Air Quality Standards
AEC	Atomic Energy Commission
ALR	Action Leachate Rate
amsl	above mean sea level
AT	aqueous treatment
AWT	aqueous wastewater treatment
AWTS	aqueous wastewater treatment system
BBL	Blasland, Bouck & Lee, Inc.
BDAT	Best Demonstrated Available Technology
BEA	Bureau of Economic Analysis
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAC	Community Advisory Committee
CAMU	Corrective Action Management Unit
CAP	Capacity Assurance Plan
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
Certificate	Certificate of Environmental Safety and Public Necessity
CFR	Code of Federal Regulations
CMS	Corrective Measures Study

cm/sec	centimeters per second
cpm	counts per minute
CQA	construction quality assurance
CQAP	Construction Quality Assurance Plan
CWA	Clean Water Act
CWM	CWM Chemical Services, LLC
dBA	decibels
DEIS	Draft Environmental Impact Statement
DOD	Department of Defense
DOE	Department of Energy
DOH	Department of Health
DOT	Department of Transportation
ECL	Environmental Conservation Law
EDR	Environmental Design & Research, P.C.
EIR	Exposure Information Report
EIS	Environmental Impact Statement
EMC	Environmental Management Council
ESRB	East Stormwater Retention Basin
Fac	Facultative
FCM	Final Corrective Measure

FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
^{o}F	degrees Fahrenheit
GCL	geosynthetic clay liner
Golder	Golder Associates, Inc.
HDPE	high-density polyethylene
HWFSP	Hazardous Waste Facility Siting Plan
ICM	Interim Corrective Measures
LDR	Land Disposal Restriction
LOS	level of service
LOOW	Lake Ontario Ordinance Works
LTF	Leachate Tank Farm
MET	meteorological
$\mu g/m^3$	micrograms per cubic meter
mg/L	milligrams per liter
Model City Facility	CWM Model City Hazardous Waste Management Facility
mph	miles per hour
MSE	mechanically stabilized earth
NCHD	Niagara County Health Department
NHP	Natural Heritage Program

NYCRR	New York State Codes, Rules and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
PCB	polychlorinated biphenyl
Plan	RMU-2 Soil Monitoring and Management Plan
PLC	programmable logic controller
PLCS	primary leachate collection system
PM-10	particulate matter of 10 microns in diameter or smaller
ppm	parts per million
PVC	polyvinyl chloride
RAP	Response Action Plan
RCRA	Resource Conservation and Recovery Act
R&D	research and development
RFI	RCRA Facility Investigation
RIMSII	Regional Input-Output Modeling System II
RMU-1	Residuals Management Unit 1
RMU-2	Residuals Management Unit 2
RR	response rate
ROLE	Residents Organized for Lewiston-Porter's Environment, Inc.

SCA	SCA Services, Inc.
SEQR	State Environmental Quality Review Act
SESC	Soil Erosion and Sediment Control
SLCS	secondary leachate collection system
SLF	secure landfill
SWMU	solid waste management unit
SRB	stormwater retention basin
SPCC	Spill Prevention, Control and Countermeasures
SPDES	State Pollutant Discharge Elimination System
STAMINA	Federal Highway Administration Noise Prediction Model
SVOC	semivolatile organic compound
SWPPP	Surface Water Pollution Prevention Plan
TDS	total dissolved solid
TNT	trinitrotoluene
TSCA	Toxic Substances Control Act
TSDF	treatment, storage and disposal facility
TSP	total suspended particulate
TSS	total suspended solids
URS	URS Corporation
USACE	United States, Department of the Army, Buffalo District, Corps of Engineers

USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOC	volatile organic compound
WAP	Waste Analysis Plan
WMI	Waste Management, Inc.
Work Plan	In-Situ Stabilization Work Plan
WPS	Waste Material Profile Sheet
WT	water treatment

Definitions

cm/sec	Rate expressed in centimeters per second (cm/sec).
Corrosivity	A material with a pH of 2 or less or 12.5 or higher.
Facultative	Aqueous treatment under aerobic (with oxygen) or anaerobic (without oxygen) conditions.
Glaciolacustrine	Sediments deposited by the formation of lakes during glacial movement.
Hydraulic Conductivity	Measure of the rate at which water will travel through soil.
Ignitability	Temperature at which waste will ignite. Ignitable waste is typically defined as having ignitability less than 140 degrees Fahrenheit.
Lithologic	The nature or layering of subsurface rock (from lithology – the scientific study and description of rock, especially at the macroscopic level).
Pedogenic	The process of soil formation (from pedeology – the study of soils, their origins, characteristics and uses).
Permeability	Measure of the ability of a material to transmit fluids. Usually expressed as a rate of cm/sec.
Reactivity	The rate at which a chemical substance tends to undergo a chemical reaction in time.
Toxicity	The degree to which a substance can harm humans or animals.

Contact List

The following provides a list of contacts for professional organizations that have performed work at the Model City Facility, which, in part or in whole, have contributed to the investigations, design, planning and permitting for the Residuals Management Unit 2 project.

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1. Introduction

1.1 Brief Description of the Proposed Action

The proposed action is the construction and operation of additional secure landfill (SLF) disposal capacity to replace depleted existing hazardous and industrial non-hazardous waste disposal capacity at the CWM Chemical Services, LLC (CWM), Model City Hazardous Waste Management Facility (Model City Facility). The proposed facility will be designated Residuals Management Unit 2 (RMU-2) and will be located within the property boundaries of the Model City Facility. In recognition of the public policy that states that land disposal of industrial hazardous wastes, except treated residuals and untreated wastes posing little or no significant threat to the public health or to the environment, should be phased out as it is the least preferable method of waste management, the proposed landfill has been designated a residuals management unit. This designation reflects the fact that only wastes, waste treatment residuals and industrial non-hazardous wastes that meet United States Environmental Protection Agency (USEPA) and New York State Department of Environmental Conservation (NYSDEC) Land Disposal Restrictions (LDRs) would be accepted for disposal in RMU-2.

1.2 Environmental Impacts of the Proposed Action

Potential environmental impacts associated with the proposed action include the following:

1. Conversion of land that is presently comprised of existing storage, parking facilities and roads to an SLF.

2. Restrictions upon future land use in the area used for RMU-2.

3. Provision of additional capacity for land disposal of hazardous wastes and treatment residuals and industrial non-hazardous wastes in a manner that is protective of human health and the environment and in compliance with applicable federal and state land disposal regulations.

4. Creation of short-term employment during construction activities and continued long-term employment of facility employees during operation, closure and post-closure management of RMU-2.

5. The proposed action will provide new land disposal capacity within New York State (NYS). This will aid continued NYS site cleanups and Brownfield development projects.

6. Incremental increase in cumulative impacts in conjunction with other projects in Model City Facility's Ten Year Plan.

7. Loss of wildlife habitat.

8. Generation of local tax revenue.

9. Potential for release of hazardous constituents to air, surface water, groundwater and soil.

10. A temporary increase in night time local light pollution.

11. Potential odor issues.

12. Impacts to visual aesthetics in the vicinity of the Model City Facility.

13. Potential waste-on-waste reactions.

14. Potential impacts to local traffic conditions and greenhouse gas emissions.

15. The excavation of contaminated soils.

1.3 Proposed Mitigation Measures

The following mitigation measures will be associated with the design, construction and operation of RMU-2:

1. Installation of a double composite synthetic liner system and a cover system for the landfill that exceed USEPA's regulations promulgated January 29, 1992, entitled *Liners and Leak Detection Systems for Hazardous Waste Land Disposal Units* (57 Federal Register 3462).

2. Installation of a primary leachate collection system and secondary leachate collection/leak detection systems for the landfill.

3. On-site treatment of leachate before discharge pursuant to the Model City Facility State Pollutant Discharge Elimination System (SPDES) Permit.

4. Modification and maintenance of surface drainage in order to minimize infiltration and erosion.

5. Protection of berm slopes in order to minimize erosion.

6. Continuation of a Spill Prevention, Control and Countermeasures (SPCC) Plan.

7. Continuation of Air, Surface-Water and Groundwater Monitoring Plans.

8. Continuation of a Fugitive Dust Control Plan.

9. Use of equipment and continuation of operating procedures that will limit noise to acceptable levels.

10. Continued provision of emergency response equipment and trained emergency response personnel.

11. Continued patrol and surveillance of the unit by Model City Facility security personnel.

12. Protection and upkeep of final cover vegetation to minimize erosion.

13. Review of all waste streams per Model City Facility's Waste Analysis Plan (WAP).

14. Pretreatment of selected waste streams prior to land disposal to meet USEPA and NYSDEC LDR criteria.

15. Federal wetland mitigation as determined by the United States Department of the Army, Buffalo District, Corps of Engineers (USACE).

16. Stormwater runoff management. Implementation of a Stormwater Pollution Prevention Plan (SWPPP).

17. Implementation of a post-closure plan for perpetual care that will ensure that the adequate funds for future maintenance and monitoring are available and that the post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated runoff or waste decomposition products to groundwater, to surface water or to the atmosphere is controlled, minimized or eliminated so as to protect human health and the environment.

18. Relocation of existing Model City Facility structures, buildings and operational areas from within the footprint of the proposed RMU-2 location, to new locations within the facility.

1.4 Alternatives Considered

The following alternatives were considered relative to the proposed action:

1. No action.

2. Different site alternative.

3. Landfill design alternatives, such as the use of different materials.

1.5 Regulatory Requirements

1.5.1 The State Environmental Quality Review Act and Hazardous Waste Facility Siting Processes

The State Environmental Quality Review Act (SEQR) became law in NYS on August 1, 1975. The purpose of SEQR is to incorporate into the planning, review and decision-making process of state, regional and local government agencies the consideration of environmental factors in addition to social and economic factors and to do so at the earliest possible time. SEQR requires a systematic interdisciplinary approach to review environmental factors during the planning stages of a project so that any modification to avoid significant adverse environmental impacts may be incorporated into the project prior to an irreversible commitment of significant resources. An important aspect of SEQR is public participation in the planning process. The regulations implementing SEQR are contained in Title 6 New York Codes, Rules and Regulations (6 NYCRR) Part 617.

SEQR requires a determination of the environmental significance of every action and, where there is a potential for significant environmental impact (i.e., a Positive Declaration or Type I Action), the preparation of an Environmental Impact Statement (EIS) is required. SEQR defines actions to include projects or physical activities that may affect the environment by changing the use, appearance or condition of any natural resource or structure and that are directly undertaken by an agency, involve funding by an agency or require one or more new or modified discretionary approvals from an agency or agencies. The actions include the requested permits and approvals described in Section 1.5.2.

An environmental assessment form is required in order to assess the potential impact of a project. However, this requirement can be waived if a draft EIS (DEIS) is prepared and submitted. An optional scoping meeting may be conducted with the public to help identify all potential environmental impacts to be evaluated in the DEIS. An application for a project that may have a significant impact on the environment is not complete until a DEIS has been accepted by the lead agency as satisfactory with respect to scope, content and adequacy. Once the DEIS has been accepted, the SEQR process runs concurrently with the other procedures relating to the review and approval of the action.

The DEIS serves as a public disclosure of the proposed action and existing environmental conditions, projected impacts and potential impacts and proposed mitigation measures and alternatives relative to the proposed action and considers both natural and human resources. The environment is defined as to include land, air, water, minerals, fauna, noise, agricultural resources, archaeological, historical and aesthetics significant, existing patterns of populations, distribution or growth, existing community or neighborhood character and human health.

For the RMU-2 permit application, the NYSDEC declared itself to be lead agency and issued a Positive Declaration as a Type I Action on August 12, 2005 (Appendix O). Subsequently, the NYSDEC held a public scoping meeting on July 26, 2006 to define the scope of this DEIS.

The NYSDEC has indicated that they will be treating the RMU-2 application as a major permit modification to the existing Sitewide 6 NYCRR Part 373 Permit (RMU-2 modification application).

When the lead agency determines that the DEIS prepared by the applicant is adequate for public review, it files a Notice of Completion of the DEIS. This is typically done at the same time that the Department determines that the Part 373 Permit Modification Application and the Part 361 Certificate of Environmental Safety and Public Necessity Application are deemed complete. In making a completeness determination regarding a Part 361 Application, the Department must determine whether the application is consistent with the Hazardous Facility Siting Plan (Plan). The Notice of Completion, a copy of the Part 373 Modification Application and Part 361 Application, the draft Part 373 Permit Revision and a copy of the DEIS are filed and made available for inspection and copying at the NYDEC's offices in Albany, New York, the NYSDEC's office in the region where the project is proposed, the office of the Chief Executive Officer of the political subdivision where the project is to be located, other involved agencies and may be made available to persons requesting it and to the local public library. A copy is also available for review on the NYSDEC and applicant's web sites. A minimum 45-day comment period is provided. As part of the public comment process, the Department may determine to conduct a Legislative Public Hearing conducted by an Administrative Law Judge.

The Department and Siting Board must also determine whether to conduct an adjudicatory hearing concerning the project. As part of making that determination, the Administrative Law Judge (ALJ) may conduct an issues conference to help determine the status of parties other than the Department and the applicant and whether there are significant and substantive issues requiring an adjudicatory hearing. In determining whether to conduct an adjudicatory hearing, the Department and the Siting Board consider:

- Whether the Department's and/or Siting Board's review raise significant and substantive issues relating to any finding or determination the Department or Siting Board are required to make pursuant to the Environmental Conservation Law (ECL), including whether the project as proposed meets statutory and regulatory criteria or standards.

- Whether public comments on the DEIS and/or the permit modification application raise significant and substantive issues that could result in a denial or the imposition of significant conditions.

If an adjudicatory hearing is to be held, the Notice of Hearing must be published at least 14 calendar days in advance. The hearing should commence not less than 15 calendar days or more than 60 calendar days after the filing of the Notice of Completion. Where the DEIS has been the subject of a hearing, the ALJ's hearing report, together with the DEIS, shall constitute the final EIS (FEIS). Where such a hearing has not been conducted, the Department must complete the FEIS.

Prior to the lead agency's decision on an action that has been the subject of an FEIS, the Department must provide agencies and the public a minimum of 10 days in which to consider the FEIS. The lead agency must file a written findings statement and a decision on the action within 30 days after filing the FEIS.

In making a final decision to approve an action that has been the subject of an FEIS, the agency granting an approval or permit must make and file written findings stating the following:

- The agency has given consideration to the FEIS;
- The requirements of 6 NYCRR Part 617 have been met;
- Consistent with the social, economic and other essential considerations of the practicable alternatives, the action to be carried out, funded or approved, will minimize or avoid adverse environmental effects to the maximum extent practicable, including those effects disclosed in the relevant EIS;
- Consistent with social, economic and other essential considerations, the adverse environmental effects revealed in the EIS process will be minimized or avoided by incorporating as conditions to the decision the mitigative measures that were identified as practicable; and
- The facts and conclusions in the EIS that were relied upon to support the agency's decision, as well as the social, economic and other factors/standards from which the agency formed the basis of its decision.

The proposed RMU-2 project requires that an application for a Certificate of Environmental Safety and Public Necessity (Certificate) be filed with an NYS Facilities Siting Board, pursuant to 6 NYCRR Part 361. Such an application has been prepared for the RMU-2 project and was submitted to the NYSDEC on May 15, 2003. A revised application was submitted to the NYSDEC on November 19, 2009 and revised applications were submitted on September 18, 2012, February 8, 2013 and July 8, 2013 in response to NYSDEC comments. The rules pertaining to the Siting Board require compliance with SEQR in that an application for a Certificate must include a DEIS and the Site Board must make the required findings before issuing a Siting Certificate. As noted above, the DEIS serves as a public disclosure of the proposed action, existing environmental conditions, projected impacts, proposed mitigation measures and alternatives relative to the proposed action and considers both natural and human resources.

Flow charts depicting the general procedural steps involved in the SEQR and siting certificate processes are presented on Figures 1-1 and 1-2, respectively.

1.5.2 Required Permits and Approvals

Permits and/or approvals for this project are required at federal, state and local levels. The requirements are summarized below.

1.5.2.1 Federal

The proposed unit will require an approval pursuant to the Toxic Substances Control Act (TSCA), as administered by the USEPA, in order to accept polychlorinated biphenyl- (PCB-) contaminated wastes for land disposal. An application for an approval covering this activity was submitted to USEPA Region 2, 26 Federal Plaza, New York, New York, on May 15, 2003. The TSCA application was updated and submitted on July 8, 2013.

In addition, a jurisdictional wetlands determination for the proposed project site has been requested from the USACE and an application for a permit in accordance with Section 404 of the Clean Water Act (CWA) was submitted to the USACE for project impacts to jurisdictional wetlands on November 18, 2003. The request for jurisdictional determination was updated and resubmitted to the USACE on July 6, 2009. A jurisdictional determination was received from the USACE on September 13, 2011. Approximately 2.5 acres of jurisdictional wetlands, as determined by the USACE, are located within the RMU-2 development area. An updated Section 404 permit application was submitted on July 8, 2013.

1.5.2.2 State

For operation of the facility, it is necessary for the NYSDEC to issue the following permits:

- Permit for the Treatment, Storage or Disposal of Hazardous Wastes, pursuant to 6 NYCRR Part 373 (Resource Conservation and Recovery Act [RCRA] and ECL Article 27, Titles 7 and 9). As provided in 6 NYCRR Part 360-1.1(b), a separate Part 360 Permit is not required where industrial, non-hazardous wastes are managed at a facility that also manages hazardous wastes. In that event, the requirements in 6 NYCRR Part 373 applies to all wastes. An RMU-2 application was submitted on May 15, 2003 and a revised application was submitted on November 19, 2009. A separate Part 373 Sitewide Permit Renewal Application was submitted on February 2, 2010. A Technical Notice of Incomplete Application was received from the NYSDEC on March 30, 2011. A revised Part 373 Sitewide Permit Renewal Application was submitted on July 7, 2011. The NYSDEC issued a Draft Part 373 Permit Application for public comment on November 28, 2012. The NYSDEC has indicated that they will be treating the RMU-2 application as a major permit modification to the existing Sitewide 6 NYCRR Part 373 Permit (RMU-2 modification application).

- Air Pollution Control Registration, pursuant to 6 NYCRR Part 201 (Clean Air Act [CAA] and ECL Article 19, Title 3). An application was submitted on May 15, 2003. An updated application to include RMU-2 was submitted in November 2009. Since the submittal of the revised RMU-2 Part 201 Application (November 2009), the NYSDEC has promulgated changes to 6 NYCRR Part 201 regulations effective February 22, 2013. Based on the emissions estimates for the facility's current Air Pollution Control Registration and the new regulations, the NYSDEC has indicated that CWM must submit a State Facility Permit Application in accordance with 6 NYCRR Part 201-5 within 6 months of receipt of the NYSDEC determination to submit a complete State Facility Permit

Application. CWM received this notification on March 11, 2013 and will prepare and submit a Part 201 Application for the facility by September 11, 2013. Upon issuance of a State Facility Permit, a revised Part 201 Application will be submitted for RMU-2.

- A Section 401, CWA, Water Quality Certification will be required for jurisdictional wetlands impacts if the USACE determines that there will be impacts to jurisdictional wetlands. An application was submitted on November 18, 2003. A jurisdictional determination was received from the USACE on September 13, 2011. Approximately 2.5 acres of federal jurisdictional wetlands will be impacted by the construction of the RMU-2. An updated application was submitted on July 8, 2013. On November 7, 2012, CWM requested a jurisdictional determination from the NYSDEC that no state freshwater wetlands would be impacted by the construction of RMU-2. Based on a field delineation by an NYSDEC wetlands biologist, the NYSDEC determined that the new Drum Management Building Development will be in the 100-adjacent area of a state freshwater wetland. Due to impacts to the 100-foot adjacent area of a state freshwater wetland in the new Drum Management Building area, a Freshwater Wetlands Permit pursuant to Article 24 of ECL and 6 NYCRR Part 663 will be required. The updated Section 404 USACE application is a joint application with a request for NYSDEC Section 401 water quality certification and a State Article 24 application for impacts to NYSDEC freshwater wetlands (100-adjacent area).

- As provided for in ECL Article 27, Title II, Siting Board approval is required: A Certificate must be issued by a duly constituted Facilities Siting Board, pursuant to 6 NYCRR Part 361, New York Rules for Siting Industrial Hazardous Waste Facilities. As called for in 6 NYCRR Part 361, this DEIS constitutes part of the Certificate Application. A Siting Certificate application was submitted on May 15, 2003. An updated application was submitted in November 2009 and revised applications were submitted on September 18, 2012, February 8, 2013 and July 8, 2013 in response to NYSDEC comments.

- Authorization under the NYSDEC General Permit for Stormwater Discharges of Construction Activity (GP-0-10-001, effective January 29, 2010) will be required prior to development of RMU-2. It is anticipated that the modification of the Model City individual SPDES permit for the facility will include provisions for stormwater management from construction activities. As such, coverage under GP-0-10-001 specifically for construction will not be required. If the modification of the facility's individual SPDES permit does not occur prior to the start of construction of RMU-2, CWM will pursue coverage under GP-0-10-001 specifically for construction activities. Regardless of whether the construction of RMU-2 is covered under GP-0-10-001 or a modified individual sitewide SPDES permit, a SWPPP will be prepared for RMU-2 development.

- Minor modification to the SPDES Discharge Permit pursuant to 6 NYCRR Part 750 (CWA and ECL Article 17, Titles 7 and 8). A revision to the Stormwater Flow Schematic and Monitoring Locations diagram of the SPDES Permit will be necessary to add RMU-2, remove Facultative Ponds 3 and 8 upon closure, add new Facultative Pond 5 and revise surface-water flow directions.

State permits will be processed by Region 9 of the NYSDEC (270 Michigan Avenue, Buffalo, New York 14203).

1.5.2.3 Local

A Special Permit (i.e., Excavation), Building Permit and Site Plan approval will be required from the Town of Porter for construction of RMU-2. Building Permits will be required from the Town of Porter for the construction of the new Heavy Equipment/Facility Maintenance Building and Drum Management Building. Such permits are issued by the Zoning Board, pursuant to the local zoning ordinances.

1.5.3 Previous Permitting

1.5.3.1 Site-Wide Part 373 Permit

Management (i.e., treatment, storage, disposal and recycling) of hazardous wastes throughout the Model City Facility is presently conducted under the provisions of the 6 NYCRR Part 373 Permit and TSCA Authorization issued to the facility by the NYSDEC and USEPA, respectively. The permit is the instrument by which CWM is authorized to conduct the hazardous waste management activities at the Model City Facility. The permit is specific as to which particular activities are permitted and provides a set of conditions with which CWM must comply in order to operate the Model City Facility. Some of the provisions of the permit include the environmental monitoring network of the facility addressing air, surface water and groundwater, as well as various plans (i.e., training plan, contingency plan and fugitive dust control plan). The requirements for all hazardous waste units at the Model City Facility are included in the permit as various modules and attachments. Because the permit applies facility-wide, operation of RMU-2 would also be subject to the provisions and conditions of this permit and the permit would be modified as necessary to address RMU-2. Alternatively, the NYSDEC may issue a separate 6 NYCRR Part 373 Permit for RMU-2.

The previous NYSDEC Site-Wide Part 373 Permit No. 90-87-0476 was renewed as Permit No. 9-2934-00022/00097, effective August 5, 2005, with an expiration date of August 5, 2010. The renewed Site-Wide Part 373 Permit incorporated requirements from all previous hazardous waste permits, including active landfill Residuals Management Unit 1 (RMU-1). A Part 373 Permit Renewal Application was submitted on February 2, 2010. A Technical Notice of Incomplete Application was received from the NYSDEC on March 30, 2011. A revised Part 373 Permit Renewal Application was submitted on July 7, 2011. The NYSDEC issued a Draft Part 373 Permit Application for public comment on November 28, 2012. The NYSDEC has indicated that they will be treating the RMU-2 application as a major permit modification to the existing Sitewide 6 NYCRR Part 373 Permit (RMU-2 modification application).

1.5.3.2 State Pollutant Discharge Elimination System Permit

The original SPDES Permit for the Model City Facility was issued on November 16, 1974 and permitted discharge of 100,000 gallons per day of treated effluent to an outfall in the Niagara River. Permit

modifications made in 1978 did not modify the permitted volume, but established conditions under which a portion of the discharge could be made to Six Mile Creek. Following granting of permits by the USACE and NYSDEC to construct a 10-inch-diameter outfall pipeline to the Niagara River, with a diffuser outlet at the point of discharge, the SPDES Permit was modified in 1980 to increase the rate of treated wastewater discharge to a maximum of 1,000,000 gallons per day. The NYSDEC issued a new SPDES Permit No. NY0072061 to CWM effective October 8, 1993, with an expiration date of October 1, 1998. This permit contains the requirements for the discharge of treated wastewater to the Niagara River and point source discharge of stormwater off site. CWM submitted a SPDES Permit renewal application on March 6, 1998, that was approved by the NYSDEC on May 11, 1998, with an expiration date of October 1, 2003. All terms and conditions remained unchanged. Subsequent modifications initiated by the NYSDEC on February 11, 2000 and December 4, 2000 have significantly increased monitoring of treated wastewater and stormwater discharges and decreased allowable effluent limits. A SPDES Permit renewal was issued by the NYSDEC effective October 1, 2003, with an expiration date of October 1, 2008. On October 5, 2007, the NYSDEC initiated a draft modification to the CWM SPDES Permit with several significant proposed revisions. This modification is pending. On April 2, 2008, the NYSDEC extended the existing SPDES Permit until the proposed modification is finalized. In January 2010, the NYSDEC issued a revised draft permit for public comment, and a public hearing was held in February 2010.

1.5.3.3 SLF-1 through SLF-6

The original operations permit was issued by the Niagara County Health Department (NCHD) in 1972. Subsequently, Part 360 Permit No. 2343 was issued by the NYSDEC on May 1, 1981. This covered the operation of closed SLFs 1 through 6, fuels blending activities, flash distillation, the Salts Area operation, drum storage, treated wastewater storage, wastewater treatment and general site operations. On July 9, 1981, the permit was extended to cover SLF-7.

1.5.3.4 SLF-7

A Part 360 Permit to operate SLF-7 was issued by the NYSDEC on September 7, 1978. A permit to expand the unit was issued on July 9, 1981. This permit required all liquid or semisolid wastes deposited to be fixed or solidified, required daily grid worksheets describing wastes and their locations and established maximum permitted leachate levels. SLF-7 is no longer in operation and has been closed.

1.5.3.5 SLF-10

The Part 360 Permit to operate this SLF was issued by the NYSDEC on August 10, 1982. It specified the manner in which clay, Hypalon and high-density polyethylene (HDPE) liners were to be placed. The method for recording and reporting leachate levels and groundwater monitoring was also prescribed in this permit. SLF-10 is no longer in operation and has been closed.

1.5.3.6 SLF-11

On May 26, 1984, a Part 360 Permit to operate SLF-11 was issued by the NYSDEC. New permit conditions included increased construction quality control, including more detailed clay testing and more stringent specifications for placement of the HDPE and Hypalon liners. SLF-11 was constructed on a 25-acre parcel and was referred to as a scientific continuously SLF with two synthetic membranes, differing from previous landfills at the facility. It was approved for use in May 1984, with restrictions involving concentrations of certain wastes and prohibition of others. SLF-11 is no longer in operation and has been closed.

1.5.3.7 Effluent Discharge Pipeline

The USACE permit for the effluent discharge pipeline installation was limited to the location of the discharge point, the Niagara River and methods for protecting fish while making the installation, while the NYSDEC permit was also concerned with anchoring the line, containment for the line where pervious soils were encountered, minimizing the size of construction equipment and river contamination by construction materials. The construction period was limited to January 30, 1980 to December 31, 1981.

1.5.3.8 SLF-12

Following the issuance of a Siting Board Certificate on November 6, 1989 and the publication of a Findings Statement on November 8, 1989, the construction of this SLF met the social, economic and legal requirements of 6 NYCRR Part 617.9 and a Part 373 Permit was issued by the NYSDEC for the construction of the 22-acre unit. The NYSDEC Part 373 Permit No. 90-86-1137 for SLF-12 became effective on November 9, 1989, with an expiration date of July 31, 1994. SLF-12 is no longer in operation and has been closed.

1.5.3.9 RMU-1 Part 373 Permit

The NYSDEC Part 373 Permit No. 9-2934-00022/00036 for the currently active landfill RMU-1 became effective on November 16, 1993, with an expiration date of November 16, 1998. The NYSDEC also issued the RMU-1 Part 201 Air Emissions Permit and Part 608 Water Quality Certification on November 16, 1993. The RMU-1 Certificate required by 6 NYCRR Part 361 was issued by the RMU-1 Siting Board on December 10, 1993.

Operating approval has been issued by the NYSDEC upon certification of construction for completed cells within the landfill as construction progressed.

On May 6, 1997, CWM received approval of a major permit modification from the NYSDEC for the redesign of RMU-1 Cells 7 and 8. CWM submitted a major permit modification request for the redesign of RMU-1 Cells 9 through 14 that was approved by the NYSDEC on April 8, 1998. In addition, the NYSDEC approved a major permit modification to increase the maximum height of the landfill from 80 feet to 110 feet on May

18, 1999. The original RMU-1 Part 373 Permit was eliminated when RMU-1 was included in Site-Wide Part 373 Permit No. 9-2934-00022/00097.

1.5.3.10 TSCA Authorization

CWM received a completely revised TSCA Approval from the USEPA that superseded all past TSCA Approvals on December 27, 1994, and included approval for PCB waste disposal in RMU-1 Cells 1 and 2. On September 1, 1995, CWM received a modification of PCB approval conditions for the site, including approval of Cells 3 and 4 of RMU-1 for PCB disposal. On June 18, 1996, CWM received a subsequent modification of PCB approval conditions, including the approval of Cell 5 of RMU-1 for PCB disposal. Approvals to dispose PCB waste in RMU-1 Cells 6 and 7/8 were received on December 17, 1996 and November 26, 1997, respectively.

Due to the June 19, 1998 USEPA promulgation of the PCB Megarule, the CWM TSCA Approval was completely rewritten by the USEPA in July 1999 for consistency with the new requirements. At that time, the USEPA also included approval to dispose PCB wastes in RMU-1 Cells 9 and 10. Approval to dispose PCB waste in RMU-1 Cell 12/14 was included in an August 20, 2001 USEPA modification. The TSCA Approval was modified by the USEPA on December 4, 2002 to include disposal of PCB waste in RMU-1 Cell 11/13.

1.5.3.11 Air Emission Permits

The Model City Facility previously maintained certificates to operate air emission sources under the NYSDEC air permitting program. Individual permits were maintained for each source at the site that had the potential for significant emissions to the atmosphere, as determined by CWM and the NYSDEC.

In 1996, CWM completed a review of the existing air permits for accuracy and to verify emission calculations. Also, the entire site was evaluated to determine if any existing non-permitted sources should have permits. Air emissions for the Model City Facility were updated and verified in 2006.

The NYSDEC developed state regulations, 6 NYCRR Part 201, to adopt the Federal CAA Amendments of 1990 (CAAA) into its program. The state regulations contain provisions for a Title V Operating Permit that would cover all emissions from a major facility. Individual source permits are allowable if the facility falls below the threshold limits that would qualify the facility as major. Based on current total emissions from the site, the Model City Facility is not considered a major facility under the CAAA.

The total facility emissions from CWM have been determined to be less than one-half the major facility threshold limits. Therefore, on May 15, 2003, CWM submitted an application that combined all facility emission sources into a single site-wide facility registration, as required by the 6 NYCRR Part 201 regulations. The NYSDEC approved the Air Facility Registration Certificate for CWM effective June 29, 2006. The registration was revised on February 28, 2011 to add new RMU-1 tank T-165.

Since the submittal of the revised RMU-2 Part 201 Application (November 2009), the NYSDEC has promulgated changes to 6 NYCRR Part 201 regulations effective February 22, 2013. Based on the emissions estimates for the facility's current Air Pollution Control Registration and the new regulations, the NYSDEC has indicated that CWM must submit a State Facility Permit Application in accordance with 6 NYCRR Part 201-5 within 6 months of receipt of the NYSDEC determination to submit a complete State Facility Permit Application. CWM received this notification on March 11, 2013 and will prepare and submit a Part 201 Application for the facility by September 11, 2013. Upon issuance of a State Facility Permit, a revised Part 201 Application will be submitted for RMU-2.

1.5.3.12 RMU-1 Wetland Mitigation Permit

As a result of the construction of RMU-1, approximately 7 acres of federally regulated wetlands had to be filled. CWM entered into an agreement with the USACE under Permit No. 92-986-72, dated March 11, 1993. This permit required CWM to mitigate the loss by constructing replacement wetlands of approximately the same acreage. CWM completed construction of the replacement wetlands in the fall of 1995 at the north side of its property and monitored the wetlands for a period of 5 years.

The RMU-1 permit also required the construction of a flood water compensatory storage area to replace 100-year flood water storage volume from Twelve Mile Creek that was lost when the southern perimeter berm of RMU-1 was completed. CWM constructed this area in the Town of Lewiston during 2000. Because this area contained existing federally regulated wetlands, a Wetland Permit No. 2000-01534(0) was approved by the USACE on August 30, 2000. As part of the compensatory flood water storage, CWM created approximately 5 acres of mitigation wetlands to replace those lost due to its construction. Mitigation for federal wetlands that were lost due to construction of the RMU-1 East Stormwater Retention Basin (ESRB) were also provided, as specified in USACE Permit No. 2000-01534(3), issued on February 21, 2003.

1.5.3.13 Research and Development Study Permit

A USEPA Approval, dated January 1, 1997, and the NYSDEC Permit, dated January 22, 1997, allowed CWM to conduct research consisting of a trial study for the enzymatic dechlorination of PCBs related to the disposal of PCBs. This project was terminated in July 1998 and the NYSDEC Permit has expired.

1.5.4 Ten Year Plan

In compliance with the requirements of Model City Facility's existing NYSDEC Part 373 Permit, CWM developed and has updated a Ten Year Development Plan. The Ten Year Plan provides a framework by which CWM projects its future activities. It includes a list of projects that are being undertaken or planned for the future to maintain environmentally sound waste management practices and CWM's position as a leader in the hazardous and industrial non-hazardous waste management industry. The Ten Year Plan has developed over the years to keep pace with the business and regulatory changes that have occurred since

its initial preparation in 1981. This development clearly indicates how the Model City Facility is changing from a landfill-based facility to a full-scale technology site that will help accomplish the federal and state hazardous waste management objectives of waste reduction, recovery and treatment in preference to land disposal. The current Ten Year Plan also reflects the many advances in technology that have occurred over the years.

The most recent Ten Year Plan covers the facility operations (i.e., aqueous treatment [AT] system, landfill activities, stabilization facility, container storage, fuel handling operations and facility enhancements); RCRA Facility Investigations (RFIs) and Remedial Measures (i.e., Corrective Measures Study [CMS], Site-Wide CMS Update, Solid Waste Management Unit- [SWMU-] Specific CMS and Department of Defense [DOD]/Department of Energy [DOE]/Department of Health [DOH] Involvement); Status of Permits (i.e., Site-Wide Part 373 Permit, TSCA Authorization, SPDES Permit, Air Emissions Registration, RMU-1 Wetlands Mitigation Permit and Closure and Post-Closure Plans); Regulatory Changes (i.e., Phase IV LDRs Final Rule) and Schedule and Capital Budget.

2. Description of Proposed Action

2.1 Purpose of Proposed Action and Consistency with the Hazardous Waste Facility Siting Plan

The proposed action is the construction of a hazardous and industrial non-hazardous waste landfill, designated RMU-2, to be located at the Model City Facility.

2.1.1 The Hazardous Waste Facility Siting Law

2.1.1.1 The Statutory Requirements

The Hazardous Waste Facility Siting Law, in ECL § 27 1103.2.a, provides that the hazardous waste facility siting criteria shall take into account the consistency of the subject application with the Siting Plan adopted pursuant to § 27 1102. In addition, § 27 1105.3(f) provides that, upon final adoption of the Hazardous Waste Facility Siting Plan pursuant to Section 27 1102, the Siting Board should deny an application "if it is not consistent with such plan or if the need for such facility is not identified in such plan and the board finds that the facility is not otherwise necessary or in the public interest." Thus, to grant a Siting Certificate, the Siting Board must find that (1) the proposed facility is consistent with the Plan, or (2) if the need for such facility is not specified in the Plan, that the proposed facility is otherwise necessary or in the public interest.

As provided in ECL § 27-1102.1, the purpose of the Plan, inter alia, is "to assure the availability of Industrial hazardous waste treatment, storage and disposal facilities which:

(a) have adequate capacity for the destruction, treatment or secure disposition of all hazardous wastes that are reasonably expected to be generated within the state in the next twenty years;

(b) are within the state or outside the state in accordance with an interstate agreement or regional agreement or authority

(c) comply with all federal and state requirements governing such facilities; and

(d) comply with the preferred hazardous waste management practices hierarchy established pursuant to section 27 0105 of this article."

As specified in § 27 1102.2(f), the Plan must include, inter alia, a determination of the number, size and type of new or expanded facilities "which will be needed for the proper long term management of hazardous waste consistent with the assurances required pursuant to" § 27 1102.1. Upon adoption of the Plan, the Department is directed to establish a schedule for developing any new or expanded facilities identified as necessary in the Plan.

Thus, as contemplated by § 27 1102, the purpose of the Plan is to assure adequate treatment and disposal capacity to meet New York's needs over the next 20 years and to do so with in-state facilities and/or through interstate agreements assuring New York's access to facilities in other states.[1] Section 27 1102 was enacted in 1987, at least in part, to enable New York to make the capacity assurance demonstration required by § 104(c)(9) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9604(c)(9), in order to qualify New York hazardous waste sites for federal Superfund money.

2.1.1.2 The Site Plan

2.1.1.2.1 The Plan's Approach to Self-Assurance

On October 18, 2010, the Department adopted the Plan. Because significant changes in the USEPA's approach to the CERLCA capacity assurance demonstration requirements have occurred during the more than 20 years that § 27-1102 has been in effect, the Plan concluded that it was not necessary to have a plan that addressed the in-state capacity self-assurance required in §§ 27-1102.1 and 27-1102.2(f), determining, instead, that New York can rely on nationwide capacity to meet its future hazardous waste disposal needs.

In making that determination, however, the Plan did not address how that interpretation of the need requirements in § 27-1102.1 would impact the Siting Board's assessment of the very same requirement in § 27-1105.3(f). Sections 27-1102.1 and 27-1105.3(f) were parts of the same 1987 amendment to the Siting Law.

As a predicate to its adoption of the Plan, the Department completed a generic EIS (GEIS). The GEIS, at p. 2, states that:

> "The primary purpose and benefit of the Plan is to assure the availability of facilities that are necessary for the proper management of hazardous waste in New York State and provide guidance to State Agencies, Authorities and Siting Boards in the discharge of their responsibilities on this topic. Any lack of sufficient capacity for the environmentally sound management of hazardous waste could conceivably result in increased improper management of hazardous waste and in increased costs to hazardous waste generators in New York State."

The Plan is to be used as guidance by any Siting Board in reviewing a proposal for a new or expanded hazardous waste management facility (GEIS at pp. 2-3). To the extent that there is any conflict between the Plan and the applicable law or regulations, the Siting Board's obligation is to follow the statutory and regulatory requirements.

[1] No such agreements exist, and none are contemplated.

The GEIS, at p. 3, explained the Department's approach to developing the Plan as follows:

> "In 1987, the need for new or expanded hazardous waste TSD facilities was a particular concern of the Legislature. Therefore, the Department was directed to develop a Plan to provide guidance to decision-making entities and to assure the availability of industrial hazardous waste TSD facilities. However, hazardous waste management as an industry has evolved dramatically since the criteria for this Plan was established in 1987. At that time, the State believed that it was necessary to achieve self-sufficiency for the management of hazardous wastes generated within the State. The hazardous waste management industry, the associated regulation of this industry, and the status of solid waste under the Commerce Clause of the U.S. Constitution which impacts interstate transportation, were still in their infancy and evolving."

The GEIS (id.) further notes that, since 1987, the industry has significantly matured, regulations have matured, and the industry has become more regional in character. While those changes have occurred, the statutory language enacted in 1987, has not been amended or repealed. The Siting Board is required to apply the law as properly interpreted.

To the extent that the Plan concludes that it is not necessary to assure in-state disposal capacity to meet the "need" requirement in § 27-1102.1, the same is true for the "need" requirement in § 27-1105.3(f). The policy reasons for interpreting § 27-1102.1 stated in the Plan and the GEIS apply to the same needs requirement in § 27-1105.3(f). Thus, to be consistent with the guidance in the Plan, § 27-1105.3(f) should be interpreted as if in-state need is not a requirement that an applicant must demonstrate. Rather, a proposed facility is consistent with the Plan if it is demonstrated that there is a national market for the services to be provided by the proposed facility and the proposed facility will meet the applicable Siting criteria and technical requirements. In addition, the Siting Board must consider whether the application is consistent with the Siting criteria in ECL § 27-1103 and 6 NYCRR § 361.7.

2.1.1.2.2 The Plan

As described in the Plan, in the 1980s, Congress and the USEPA, through CERCLA, attempted to require states to be self-sufficient or to enter into interstate agreements, but Congress did not authorize states to erect barriers to interstate commerce. Supreme Court decisions related to interstate commerce confirmed that solid and hazardous wastes are a commodity, and states cannot act to inhibit interstate transportation, treatment, and disposal. No state can limit the movement of hazardous waste into or out of its borders. As a result, the USEPA has focused on the availability of national capacity rather than assessing state self-sufficiency.

The Plan concludes that it is extremely difficult to assess the in-state need for additional TSD facilities over the next 20 years. However, because New York generators can rely on the interstate market for TSD facilities, the Plan determined that it is not currently necessary for New York State itself to initiate the siting of additional in-state facilities because New York can rely on the private sector to do so:

> Rather, any siting proposals will originate from companies based on their own scientific, technical, environmental, regulatory, social and economic considerations. This Siting Plan embraces the market forces that have served to assure adequate hazardous waste management capacity and does not discourage the consideration of private sector siting proposals that meet the requirements of the ECL and regulations, including the siting criteria in 6 NYCRR 361. (Plan p. 6-8).

While the Plan concluded that "no schedule for siting any new or expanded hazardous waste TSD facilities is needed," it also concluded that "neither the Statute or Siting Plan precludes the consideration of applications at any time for any new or expanded facilities in any part of the State." (Plan p. 8 3).

The Plan explains that the State's reliance on the USEPA's national capacity assessment as follows:

1. RCRA created a "cradle to grave" hazardous waste management system for all newly generated hazardous wastes, and it created standard, baseline national regulations applicable to all hazardous waste generators, transporters and TSD facilities in all of the states. RCRA allows states to be authorized by the USEPA to implement the RCRA program.

2. New York has been authorized to implement most of the RCRA Subtitle C (hazardous waste management) program in New York, and the State has expressly determined by statute that the State's regulatory program be consistent with the federal RCRA regulatory program.[2]

3. "By meeting New York State regulatory and permitting requirements, New York facilities also meet federal regulatory and permitting requirements for hazardous waste management. Facilities located in the other states are similarly regulated by a combination of State and federal regulatory requirements. As a result, interstate agreements or multi State regional authorities, referenced in the law establishing the basis for development of this Plan, are not necessary to assure proper management of hazardous waste. Pursuant to federal and State regulations, generators are generally required to ship waste only to a TSD facility authorized by RCRA C or an equivalent State program." Plan at p. Intro. 6.

4. "To obtain approval of USEPA for its hazardous waste management program, a State program must be consistent with the federal program. Federal regulation states at 40 CFR 271.4(a): 'Any aspect of the State program which unreasonably restricts, impedes, or operates as a ban on the free movement across the State's border of hazardous wastes from or to other States for treatment, storage, or disposal at facilities authorized to operate under the federal or approved State program shall be deemed inconsistent.'" Id.

[2] See ECL § 27-0911 expressing the intent that the State's hazardous waste regulatory program be consistent with the federal RCRA program.

5. “The federal regulation goes on to state at 40 CFR 271.4(b): ‘Any aspect of State law or of the State program which has no basis in human health or environmental protection and which acts as a prohibition on the treatment, storage of disposal of hazardous waste in the State may be deemed inconsistent.’ To continue to be an authorized State, New York must meet the requirements of these federal regulations. This Plan is written to be consistent with these federal mandates.” Id.

6. “This Plan looks at the management of hazardous waste generated in New York State from the perspective of present industry practices, recognizes that State borders are not a major factor in the business or regulatory approach to hazardous waste management. The Plan also takes into account the impact of national hazardous waste management capacity and hazardous waste importation and exportation. A commercial TSD facility managing hazardous waste, be it by storage, recycling, treatment, incineration, or landfilling, looks well beyond the State’s borders for perspective clients. By the same token, a New York State hazardous waste generator evaluates options both inside and outside of New York to find the most effective and economical method for managing its hazardous waste. This includes consideration of availability of the required management option, transportation and handling costs, and other factors.” Id. at 6-7.

7. “Through this evaluation process, recognizing the current realities of the hazardous waste industry, the Plan’s findings, recommendations and guidance reflect a national perspective in determining the hazardous waste management needs of New York State.” Id. at 7

The Plan provides the following guidance to the Department and the Siting Board:

> Any decision regarding hazardous waste facility siting must not result in the State’s delegated hazardous waste management program becoming inconsistent with federal requirements pursuant to 40 CFR 271.4(b), including the requirement that ’[a]ny aspect of … the State program which has no basis in human health and environmental protection, and which acts as a prohibition on the treatment, storage or disposal of hazardous waste in the State may be deemed inconsistent.’ New York’s requirements for the siting of any new or expanded hazardous waste facilities in the State must accordingly be read in the context of this federal requirement (p. 9-4).

This guidance is consistent with the statutory directive that New York’s hazardous waste regulatory program be consistent with the federal RCRA program. ECL 27-0911.

With the guidance in the Plan indicating that the in-state needs demonstrations in both §§ 27-1102.1 and 27 1103.5(f) are not a requirement in the Siting certificate process, there should be no potential for a Siting Board determination to be inconsistent with 40 CFR 271.4(b) or ECL 27-0911.

2.1.1.2.3 New York's Disposal Needs

As detailed in the Plan, New York is expected to continue generating primary and remedial wastes requiring off-site treatment and/or disposal at the rate of 200,000 to 250,000 tons per year. From 1996 through 2008, on average, New York generators shipped 82,700 tons per year for off-site land disposal. There are thousands of contaminated sites in New York requiring remediation, and those remedial activities will continue for decades (Plan pp. 3 9 through 3 16). New York has the third highest number of large quantity generators among all the states, and it ranks sixth in the volume of hazardous wastes generated annually (Id. at 3 27). In 2007 and 2008, 50% of the wastes disposed of in CWM's RMU-1 came from in-state generators. Significant amounts of the in-state waste came from remedial projects (Id. at 1 18). In 2007 and 2008, RMU-1 received more than 90% of the New York-generated wastes that were sent off site for land disposal. Remedial wastes are the major contributors to the volume of wastes managed off site. The need for off-site land disposal is a "reality" (Id. at 6 1 to 6 2).

CWM's Model City facility is a fully permitted RCRA and TSCA (PCB) treatment, storage and land disposal facility. As designed, RMU-2 meets all of the applicable RCRA and TSCA regulatory requirements and the related state regulations, including 6 NYCRR Parts 361 and 373.

The federal land disposal restriction rules (LDRs) are fully implemented in New York (Id. at 4 1). CWM's RMU-1 meets all of the LDR criteria (Id. at 1 18). The New York goal is to phase out land disposal of hazardous wastes, other than treated residuals posing no significant threat to public health of the environment (Id. at 4 6). The RMU-2 application is consistent with that goal.

The Plan does not preclude the siting of new or expanded facilities sponsored by the private sector. RMU-2 is a private sector proposal and is consistent with the Plan.

The Plan emphasizes the need for any Siting Board determination to be consistent with 40 CFR 271.4(a) and (b) in order for New York to maintain the status of its hazardous waste regulatory program as a USEPA-approved RCRA delegated program. By meeting the siting criteria in 6 NYCRR 361.7, as well as the technical RCRA requirements in 6 NYCRR Part 373, RMU-2 is consistent with the federal RCRA program and protective of public health and the environment. As such, RMU-2 is consistent with the Plan.

2.1.2 RMU-2 is Otherwise Necessary or in the Public Interest

If ECL 27 1102.1 was literally applied, requiring New York to be self-sufficient, the Plan would have determined that New York needs new or expanded in-state hazardous waste land disposal capacity because CWM's RMU-1, the only commercial land disposal facility in the state (and in the northeast United States), will be out of capacity by the time RMU-2 can complete the Siting and permitting process and then be constructed.

While the USEPA and the Department's current emphasis is on national capacity, that approach is also committed to relying entirely on the private sector to determine where and when to build new or expanded facilities. Moreover, in order to avoid inconsistency with 40 CFR 271.4(b), the absence of any capacity self-assurance "need" cannot form the basis for denying the RMU-2 application. Maintaining New York's status as a USEPA-approved RCRA delegated program is in the public interest as reflected in ECL § 27-0911. If it is determined that RMU-2 meets all of the applicable RCRA standards and it receives an acceptable siting score under 6 NYCRR 361.7, granting RMU-2 a siting certificate would be in the public interest.

CWM's RMU-1 has captured a very large percentage of the New York market for off-site land disposal of hazardous wastes qualifying under the LDRs. It has also captured a significant portion of the market for land disposal in the northeast United States. Because of its location, RMU-1 provides a significant transportation advantage as compared to its competitors in Michigan and Indiana, except for those few generators who can arrange rail transportation. The shorter transport distance results in lower transport costs and lower greenhouse gas emissions.

The Plan determined that it is reasonable and appropriate to rely on the private sector to continue to build capacity to serve the national market. In order to rely on the free market and the private sector to continue to construct and operate facilities, it is necessary to allow the free market forces to operate unburdened and unrestricted by artificial regulatory requirements unrelated to public health and the environment.

CWM has proposed to site and operate RMU-2 at the Model City, Niagara County Facility for several reasons:

1. CWM has invested over $100 million in the necessary infrastructure and related facilities to properly support a land disposal facility, and it is a prudent and efficient use of the company's resources to maximize the utilization of those facilities and resources to the fullest extent possible.

2. There is properly zoned land area available at the Model City site to accommodate RMU-2, and the local hydrogeologic setting is well suited for a land disposal facility.

3. There is a continuing, relatively stable market for land disposal services consistent with the LDRs, and CWM believes that it can effectively compete in that market.

4. CWM employs an experienced, well-trained work force, essentially all of whom reside in the local area.

5. The CWM Model City Facility and the currently active landfill known as RMU-1 are a part of the hazardous waste treatment and disposal capacity currently available within New York State, as well as within the national marketplace described in the revised draft siting plan. The RMU-1 capacity was included in EPA's 1999 assessment. In many instances, hazardous wastes destined for land disposal in RMU-1 are first treated at the Model City Facility in order to meet the land disposal

restriction rules ("LDRs") prior to disposal. As noted in the Siting Plan GEIS, the toxicity and mobility of the treated residuals that are now allowed to be land disposed are dramatically reduced. However, as recognized in ECL § 27-1102.2(d), land disposal capacity for treated residuals and certain remediation wastes remains necessary.

6. Each waste stream destined for disposal at the Model City Facility must be preapproved by the Department. In order to obtain that approval, the waste generator, except in the case of certain remediation wastes, must demonstrate that it has an effective waste reduction program in place. Presumably the same requirement would be included in any permit issued for RMU-2.

7. The hazardous wastes disposed of at the Model City Facility are either exempt from or are fully compliant with the LDRs.

8. As a matter of public policy and as one of the nation's largest generators of hazardous wastes and as the location of two current major superfund cleanup projects that may generate in excess of 6 million tons of contaminated sediments requiring land disposal, most likely at an out-of-state facility or a newly constructed facility in State, New York should shoulder a share of the responsibility for providing a measure of the hazardous waste treatment and disposal capacity that will be needed in the future to deal with both in-state and out-of-state generated wastes, particularly where the Siting Plan GEIS noted New York's status as a substantial net exporter of solid and hazardous wastes.

9. If RMU-2 is not permitted, those generators currently using the Model City Facility will be required to transport their wastes greater distances for disposal in Indiana, Michigan or elsewhere. With a decrease in competition resulting from a decrease in available capacity, prices are likely to rise. The longer hauling distances will consume larger volumes of diesel fuel and will result in an increase of greenhouse gas emissions. If RMU-2 is not permitted and one assumes that the same 85,248 tons of in-state generated wastes that were land disposed at RMU-1 in 2007 would be transported to the next closest facility in Wayne, Michigan, it would be necessary for New York generators to travel an additional 514 miles (round trip) per load of waste. These longer hauling distances would annually consume approximately 350,000 additional gallons of diesel fuel at an approximate annual cost of $1.4 million (assuming an average cost of $4.00 per gallon for diesel fuel). The consumption of the additional diesel fuel would also annually contribute approximately 3,917 tons (expressed in terms of carbon dioxide emissions) of additional greenhouse gas emissions to the atmosphere. Given the large number of generators and the relative volume from each, rail transportation is not a viable option. As a result, a denial of the RMU-2 applications would be contrary to the public policies supporting energy conservation and the minimization of greenhouse gas emissions.

10. As described elsewhere in this DEIS, the Model City Facility provides significant jobs and economic benefits to the local Western New York economy. Most of those jobs and benefits would be lost if RMU-2 is not permitted.

11. Building a new state-of-the-art hazardous waste treatment, storage and disposal facility is far more technically complicated and expensive than simply constructing the land disposal unit itself. In addition to the need for a site, utilities and good access, a hazardous waste treatment, storage and disposal facility requires a comprehensive assessments of site hydrogeologic conditions, the establishment of complex groundwater, surface water and air monitoring systems, the construction of complex structures for containment and treatment of wastes and leachate, the construction of specialized support facilities, additional lands to provide adequate buffers to the surrounding community and specialized trained staff. Given the substantial investment in infrastructure that would be required to build a completely new hazardous waste facility at any greenfield site, it is virtually certain that the private sector would not endeavor to permit a new site for such a facility. In fact, no such facility is currently proposed in the eastern portion of the United States. Construction of a completely new hazardous waste treatment, storage and disposal facility would include all of the direct capital costs associated with a unit such as RMU-2, plus upwards of $40 million more to develop the aforementioned infrastructure components. In addition, siting and permitting a completely new hazardous waste treatment, storage and disposal facility would likely take ten years or more to complete. As a result, the RMU-2 expansion proposal is the only viable option for providing continued in-state hazardous waste disposal capacity to serve a statewide, regional and national market.

12. New York's expressly stated policy is to rely on the private sector to propose, construct and operate facilities to assure future hazardous waste management capacity. If RMU-2 is demonstrated to meet the applicable requirements in the ECL and related regulations, including the siting criteria, a denial of the RMU-2 application would be inconsistent with this State policy.

2.2 RMU-2 Overview

RMU-2 is designed to occupy 43.5 acres, with six cells (cell numbers 15 through 20), providing additional hazardous and industrial non-hazardous waste landfill capacity to allow continued waste disposal at the Model City Facility. The proposed unit is a secure waste residuals management unit employing state-of-the-art design and operating technology, incorporating primary and secondary liners and independent primary and secondary leachate collection and pumping systems. The liners incorporate compacted clay and synthetic components. The leachate collection systems consist of drainage nets, synthetic filters and granular material. The leachate pumping systems consist of submersible centrifugal pumps and discharge pipes with automatic or manual operation. RMU-2 would be constructed and operated in phases as disposal capacity is needed.

The proposed location of the unit is on hydrogeologically suitable land. That is, the proposed location meets the requirements contained in 6 NYCRR Part 373-2.14 (b)(1)-(3); namely:

1. The soil beneath the facility shall have a hydraulic conductivity of 1×10^{-5} centimeters per second (cm/sec) or less.

2. No waste shall be closer than 10 feet to an aquifer or bedrock.

3. No facility shall be located over groundwater recharge areas serving public water supplies.

Waste quantities to be accepted by RMU-2 are expected to be similar to those accepted in RMU-1, currently 10,000 to 15,000 tons per month. Considering separation berms, daily cover and access roads, the net waste capacity, as calculated in the *RMU-2 Engineering Report* prepared by ARCADIS, is 3,737,300 cubic yards. Based upon the maximum volume cited, the expected active life of the unit is at least 11.1 years, with variations in the incoming waste quantity potentially affecting the estimated life of the unit. Based on the current rate of waste receipts, the active life could be approximately 20 to 25 years.

The design of RMU-2 is similar to past on-site landfills having double-composite liner systems, most notably, RMU-1. RMU-2 would be bounded by a perimeter berm to control stormwater runon and runoff. RMU-2 would be divided into six cells with intercell berms constructed of compacted clay. The cells would be constructed on an as-needed basis to match the operational aspects of the facility based upon waste receipts. The floor of each cell would be sloped at a minimum of 1.0% (post-settlement) towards the cell centerline and ultimately to a leachate collection sump. Along the perimeter of RMU-2, the top of final cover grades would extend from the perimeter anchor trench at a 3H:1V slope to a grade break occurring at an elevation ranging from approximately 420 feet above mean sea level (amsl) to 432 feet amsl and then at 5% to 440 feet amsl (approximately 120 feet above existing surface grades). The RMU-2 design incorporates NYSDEC-required safety factors for stability under static and seismic conditions.

Figures 2-1 through 2-3 present photographs of typical landfill activities, such as clay and liner on the cap, daily operations and sump construction.

2.3 Proposed Service Area

The proposed service area of RMU-2 is expected to be similar to that of RMU-1. The majority of the waste accepted would originate from the northeast, mid-Atlantic and central part of the United States (most areas east of the Mississippi River). Some waste may also be received from Canada and Puerto Rico. The majority of the waste generators are expected to be:

1. Environmental site remediation efforts; and

2. Industrial treatment processes creating residual wastes.

2.4 Waste Types

Only hazardous wastes, waste treatment residuals that meet USEPA and NYSDEC LDRs, CAMU-eligible wastes and industrial non-hazardous wastes would be accepted for disposal in RMU-2. CWM does not

accept municipal solid wastes. Based on past history and future predictions, CWM anticipates that the following generalized types of waste would be accepted for RMU-2:

- Heavy metal wastes from wastewater treatment residues, filter cakes and air pollution control dusts;
- PCB-contaminated soils and decommissioned transformers formerly containing PCB dielectric fluid;
- General wastes, such as off-specification chemicals and other hazardous wastes listed in 6 NYCRR Part 373 that meet Federal LDRs (Land Ban);
- Filter cake from solid/liquid separation processes in the on-site wastewater treatment plant;
- Wastes that have been stabilized in order to meet the Land Ban;
- Stabilized incinerator ash and residues from the pretreatment of wastes;
- Soil and debris from CERCLA/RCRA cleanups;
- Soil containing heavy metals;
- Soil with organics that meet the alternate soils standard;
- Sandblast grit and paint chips with metals; and
- Industrial non-hazardous wastes, including;
    - Petroleum product spill cleanup soil and debris;
    - Construction and demolition debris;
    - Non-regulated fly ash, bottom ash and baghouse dust;
    - Non-K088 aluminum processing wastes;
    - RCRA empty crushed drums;
    - Asbestos wastes;
    - Characteristic wastes, treated by either CWM or the generator, to remove the characteristic;
    - Fluorescent light ballasts and small capacitors;

- Transformer carcasses;
- Outdated, spent or off-specification virgin chemicals (e.g., epoxy, resins, Styrofoam, silica gel, copper sulfate); and
- Non-hazardous industrial sludge and filter cake.

As allowed under TSCA regulations (40 CFR 761.60 through 63) and the NYSDEC LDRs [6 NYCRR 376.4(f)], CWM would be allowed to landfill wastes contaminated with greater than 50 parts per million (ppm) PCBs in the form of soil, sediment, debris, pollution control media (e.g., activated carbon and baghouse dust), treatment residues (e.g., wastewater treatment sludge), drained/flushed transformer carcasses, small capacitors from appliances, ballasts from fluorescent lights and PCB bulk product wastes (e.g., caulking, auto shredder fluff, gaskets, waxes, plastic insulation/parts and items coated with PCB-containing paint).

A complete list of the hazardous wastes is presented in Part A of the RMU-2 Part 373 Permit Modification Application. Wastes would be accepted in accordance with NYSDEC and USEPA regulations in effect at the time RMU-2 is in operation. In accordance with the facility's WAP, any hazardous wastes restricted from land disposal under state or federal regulations would be pretreated to meet LDR criteria, sent off site to an approved TSDF or returned to the generator. A variety of industrial non-hazardous wastes would also be handled at the Model City Facility.

The hazards associated with the wastes accepted at the Model City Facility fall into four broad categories as defined by federal and state regulations. The specific hazards associated with each particular waste are identified in the list in Appendix A by a letter code. The hazard categories and their respective codes are:

- Ignitability (I);
- Corrosivity (C);
- Reactivity (R); and
- Toxicity (E).

2.4.1 Ignitability

A waste exhibits the hazard of ignitability if the waste has a flashpoint of 140 degrees Fahrenheit (°F) or less (i.e., at a temperature of 140°F or less, the waste will burn if exposed to an open flame). This hazard is most aptly interpreted as meaning the waste is a fire hazard. Land disposal of ignitable wastes is restricted by NYSDEC regulations.

2.4.2 Corrosivity

A hazardous waste is considered corrosive if it is a liquid and has a pH of less than 2 or greater than 12.5. pH is a measure of whether a substance is an “acid” or a “base.” It is defined as the logarithm of the reciprocal of hydrogen ion concentration in gram atoms per liter and expressed as:

$$pH = -\log\left[H^{+}\right]$$

A pH lower than 2 indicates the waste is a strong acid (e.g., sulfuric acid), while a pH of greater than 12.5 indicates that the waste is a strong base (e.g., a solution of lye). Wastes with a pH in these ranges will cause chemical burns if they come into contact with body parts. In contrast, substances with a pH between 2 and 12.5 are considered to be weaker acids or bases and are less likely to cause chemical burns (i.e., tap water usually has a pH near 7 that is considered “neutral”). Land disposal of corrosive wastes is restricted by NYSDEC regulations.

2.4.3 Reactivity

A waste is considered to exhibit the hazard of reactivity if it is explosive or reacts violently with water, air or some other material. While the Model City Facility does not accept any explosive wastes, it does accept soils contaminated with low concentrations of chemicals that could be associated with explosives and various reactive wastes. The primary dangers associated with these wastes are the rapid or violent release of gases or a rapid buildup of heat or spontaneous ignition. Land disposal of reactive wastes is restricted by NYSDEC regulations.

2.4.4 Toxicity

The fourth hazard class is toxicity. This category is the most inclusive with respect to specific hazards exhibited by the wastes. Toxic wastes may result in acute health effects, such as disruption of the nervous system due to exposure to mercury, or they may cause damage to various organs due to prolonged exposure to wastes containing high levels of heavy metals, such as lead or cadmium, or they may be carcinogenic, such as many organic compounds (e.g., benzene). In general, wastes exhibiting the characteristic of toxicity result in some sort of damage to organs or organ systems due to exposure to high concentrations of these wastes or due to prolonged exposure to these wastes at lower concentrations.

Regardless of the specific type of hazard, to pose a threat to human health or the environment, there must be a way for individuals or the environment to be exposed to significant levels of the waste. The overall design of RMU-2 is specifically geared toward preventing the migration of wastes from the unit into the environment, thereby preventing any actual hazard. In addition, the USEPA has enacted a set of regulations known as the LDRs. The LDRs prohibit the land disposal of wastes that do not meet certain criteria with respect to the mobility of the hazardous constituents within the waste. For example, lead-

containing wastes that allow the leaching of lead from the waste are not allowed to be land disposed until the waste has been stabilized. Stabilization (i.e., mixing of the waste manually with lime and Portland cement or other reagent) of the waste results in the lead being immobilized, or "bound-up" within the waste such that it will not readily leach out. The Model City Facility only accepts wastes for land disposal if it has been demonstrated that the wastes can be treated to meet the LDRs.

2.5 Design Approach

The design for RMU-2 was engineered by ARCADIS. Specific details on facility design can be found in the *RMU-2 Engineering Report* that is included in the 6 NYCRR Part 373 Permit Modification Application.

RMU-2 is designed so that it would be constructed in phases (over numerous seasons) in an effort to minimize future construction and operation conflicts. The landfill is divided into six cells (labeled 15 through 20). Each cell is capable of functioning as an independent disposal unit with respect to leachate collection and pumping. Figure 2-4 presents the layout of the cells (i.e., top of operations layer grades). Separation berms with 1H:1V slopes would be constructed on an ongoing basis to provide separation between cells. Waste would be placed in designated cells after completion of proper waste documentation in accordance with the WAP. Daily and intermediate cover would be placed according to applicable permit conditions. Daily cover would consist of soil with a minimum permeability of 1.0×10^{-4} cm/sec. An NYSDEC-approved geotextile or spray on-type cover may be used instead of the soil. Certain types of wastes may also be used as alternative daily cover, providing they have low volatile organic concentrations, are odorless, are not susceptible to dust generation under dry conditions and are pre-approved by the NYSDEC. Intermediate cover would consist of 1 foot of clay that may be protected by an erosion-inhibiting geomembrane. If the geomembrane is impermeable, it would be removed prior to completing the final cap. The rationale for various design details and considerations are further discussed in the *RMU-2 Engineering Report.*

2.6 Design and Construction Specifications

2.6.1 Design Considerations

The design complies with the latest federal and state technical requirements for landfills, including double-composite liner systems of clay and geosynthetics.

The *RMU-2 Engineering Report* cites the following five criteria utilized for RMU-2:

1. Maintain structural integrity of the prepared subgrade.

2. Comply with USEPA regulations, effective July 29, 1992 entitled *Liners and Leak Detection Systems for Hazardous Waste Land Disposal Units* (57 FR 3462).

3. Allow minimum compression in the subsoils to protect the synthetic flexible membrane liners.

4. Mitigate potential earthquake impacts on the proposed landfill.

5. Meet the requirements set forth by the NYSDEC (6 NYCRR Part 373-2.14).

Each of these criteria is discussed in depth in the *RMU-2 Engineering Report*.

To assess the structural integrity of the prepared subgrade, criterion one, the potential uplift or heave of the soil due to the unconfinement during excavation was evaluated. Heave is due to the soil rebounding because the confinement pressure is relieved by excavation and due to confined water in underlying sand seams. Since the water in the sand is confined (as shown by the piezometric level), it has the capacity to lift the overburden soil. The design addresses both actions by providing sufficient undisturbed soil to counteract the confined water and design base grades that will accept future consolidation due to landfilling without impacting leachate collection.

The second criterion, liner systems, is met by the installation of the primary and secondary liners described below, including a composite liner for both the primary and secondary liner systems (Figure 2-5, Residuals Management Unit 2 Base Composite Liners). For details of the design see the following sections and the *RMU-2 Engineering Report.*

The third criteria, minimum compression in subsoils, was evaluated in the design by means of one dimensional consolidation analysis, with resulting determination of negligible impact on the structural integrity of the baseliner system and the performance of the leachate collection systems. Therefore, the design provides an analysis of the compressibility of underlying soils to determine if after installation the geomembrane will be strained. The one dimensional consolidation analysis represents the vertical compression of subgrade soil and liner components due to the loads imposed by landfilling. Because soil is comprised of a matrix of solids, water and gases, it is possible to compress them when new loads are applied. HDPE can effectively withstand these consolidation effects due to material properties that allow elongation of 13%. The analysis addresses how much water and gas will be squeezed out due to new loads caused by landfilling. This analysis is a typical approach used for most foundation analyses. The results indicate that the compression will not flatten base grades and will not elongate the HDPE beyond its elastic range.

Earthquake impacts were also addressed as the fourth criteria in the design and, as stated in the *RMU-2 Engineering Report,* a slope stability model (for the critical slope condition of the final cover) was utilized to determine the impacts from seismic acceleration due to earthquake loads. The seismic stability analysis utilizes strength parameters for the various landfill components (i.e., liner, waste and cover) and underlying geology to verify that these components are stable for the proposed design slopes and the proposed maximum height of the landfill. The seismic analysis also utilizes a peak acceleration factor consistent with the most recent United States Geological Survey (USGS) Peak Acceleration Map for the RMU-2 area. The design of RMU-2 was found to be capable of withstanding the design earthquake loading with an acceptable factor of safety (greater than 1.0, as required by the NYSDEC). The slope stability was performed using a

computer-based circular failure mode analysis program. This method is the classical geotechnical slope analysis. It is typically used for highway excavation slopes, dam stability and general embankments. The seismic analysis was applied to the final landfill configuration. For critical slopes on dams, a safety factor of 1.0 for seismic is considered adequate (Department of the Army, March 31, 1978. Design and Construction of Levees, EM-1110-2-1913).

NYSDEC standards comprise the fifth criteria for hazardous waste management facilities and were also considered in the design of RMU-2. These requirements are met or exceeded by the design. The exceedances include:

- Composite liner consisting of both HDPE and a geosynthetic clay liner (GCL) in the primary system (standards require only HDPE);
- HDPE thickness is 80-mil that exceeds the USEPA's recommended 45-mil;
- A cutoff wall extending from the baseliner system and keying 1 foot into the Glaciolacustrine Clay (not required by standards);
- The leachate detection and collection system is geosynthetic and granular, thus providing a redundancy (standards require only one of these components); and
- The leachate detection and collection system provides detection in less than 24 hours (standards do not specify a minimum time period).

2.6.2 Site Preparation

Site preparation for RMU-2 would include:

1. Relocation of existing Model City Facilities and operational areas, such as the Stabilization and Full Trailer Parking Areas, Emergency Response Garage, Drum Management Building and the Heavy Equipment/Facility Maintenance Building from within the proposed RMU-2 footprint to new locations within the facility.
2. Closure of the RMU-1 lift station. Closure of the leachate force mains from the RMU-1 lift station to the Leachate Tank Farm and replacement with new leachate force mains to the SLF 12 lift station. Upgrade of the leachate force mains from the SLF 12 lift station to the leachate tank farm.
3. Minor clearing and grubbing of existing vegetation and stripping of topsoil; topsoil would be stockpiled at another location on the CWM property.
4. Installation of temporary and permanent drainage ditches and culverts.

5. Construction of perimeter drainage swales for control of surface runon and runoff.

6. Construction of access ramps and roads at the perimeter to facilitate waste filling activities.

7. Abandonment of groundwater monitoring wells and piezometers within the footprint of RMU-2.

8. Removal and relocation of existing utilities and communications services.

9. Closure of Facultative (Fac) Ponds 3 and 8.

10. Construction of new Fac Pond 5.

2.6.3 Relocation of Existing Facilities

The proposed location for RMU-2 is within an existing developed portion of the Model City Facility occupied by the following structures, buildings and operational areas:

1. Drum Management Building:

2. Empty Trailer Parking Area;

3. Full Trailer Parking Area;

4. Stabilization Trailer Parking Area;

5. Emergency Response Garage;

6. Heavy Equipment and Facility Maintenance/Rolloff Repair Building;

7. McArthur and “M” Streets;

8. Various aboveground and belowground utilities and communications services;

9. Meteorological (MET) tower; and

10. Unloading ramps for the SLF-10 Leachate Building and SLF 1-11 Oil/Water Separator Building.

Prior to the construction of RMU-2, the aforementioned structures, buildings and operational areas would be abandoned at their existing locations and relocated to the areas identified on Figure 2-6. Each permitted hazardous waste unit will be closed in accordance with the CWM Closure Plan contained in the existing Part 373 Permit. The following sections provide a brief description of each of the aforementioned facilities, their

significance to operations at the Model City Facility and the approach to the abandonment and relocation of each facility.

2.6.3.1 Drum Management Building

The existing Drum Management Building, located west of RMU-1, is located within the footprint of RMU-2. A new Drum Management Building is to be located east of RMU-1. The new Drum Management Building will include facilities for storage of drums and other small containers, offices, a laboratory and mechanical room. Provisions will also be included for fuels bulking (as is currently performed in the existing Drum Management Building) and transformer decommissioning (to be relocated from the existing T.O. Building).

Following construction of the new Drum Management Building, the existing Drum Management Building will be closed in accordance the closure requirements included in the Site-Wide Part 373 Permit. Closure activities to be implemented for the existing Drum Management Building include the following:

- An initial inventory of all wastes within the building will be performed to verify accuracy with current records, to confirm the integrity of all waste containers for removal and to identify, by visual observation, any potentially contamination areas.

- All wastes will then be removed from the building and either relocated to the new Drum Management Building, disposed on site or transported off site to an approved hazardous waste management facility.

- Following removal of all waste containers, the Drum Management Building will be decontaminated by sweeping or vacuuming the floors, followed by washing the floors. Any wastewater generated by the washing will be treated on site at the aqueous wastewater treatment (AWT) facility.

- In addition to achieving a clean debris-type surface for RCRA closure, a rinse with a minimal amount of water will be performed and a sample will be collected and analyzed. The samples will be analyzed for VOC contamination. The results of the sampling will be used to determine the effectiveness of the decontamination.

- For TSCA closure of the building, PCB wipe samples will be collected and analyzed. The results of the sampling will be used to determine the effectiveness of the decontamination.

- Once the cleaning process has concluded, the building will be demolished. Following demolition of the building, the demolition debris will be sampled, analyzed and properly disposed at an approved waste management facility.

- Once the concrete is removed, the soil will be inspected for signs of contamination. Visibly contaminated soil will be removed and properly managed and disposed on or off-site. Upon

removal of any visibly contaminated soil, confirmatory samples will be collected of the soils underlying the Drum Management Building and analyzed to confirm that the soil meets 6 NYCRR Part 375-6 Industrial Soil Cleanup Objectives.

- Following completion of the closure activities, CWM will submit to the NYSDEC a certification that the Drum Management Building has been closed in accordance with the specifications in the Site-Wide Part 373 Permit within 60 days of final closure. As the proposed RMU-2 landfill will be constructed in the area of the existing Drum Management Building, no deed notations for the closure will be made to the Niagara County Clerk. Because existing operations will continue at the new Drum Management Building, it is anticipated that most mobile and stationary equipment utilized in the existing Drum Management Building will be transferred to the new building for continued use. Any equipment not planned for reuse will be cleaned, tested and managed in accordance with the Site-Wide Part 373 Permit requirements.

- The remaining soils underlying the Drum Management Building will be excavated as part of RMU-2 construction, in accordance with the requirements of the RMU-2 Soil Excavation Monitoring and Management Plan.

2.6.3.2 Empty Trailer Parking Area

The Empty Trailer Parking Area is used to stage trailers following the off-loading of wastes. The existing Empty Trailer Parking area, currently located southeast of the Leachate Tank Farm, will be removed. Empty trailers will continue to be stored in an existing area northwest of SLF-12.

The Empty Trailer Parking Area will be closed in accordance with the CWM Closure Plan contained in the existing Part 373 Permit. Soil samples will be collected and analyzed to verify that no contamination exists and the soil meets 6 NYCRR Part 375-6 Industrial Soil Cleanup Objectives.

2.6.3.3 Full Trailer Parking Area

The existing Full Trailer Parking Area, located south of the existing Empty Trailer Parking Area, is used for the storage of liquid and solid, RCRA regulated, TSCA regulated and non-hazardous containers. These containers consist of the following:

- Box trailers holding hazardous and non-hazardous, New York State Department of Transportation-(NYSDOT-) approved containers;

- Bulk tanker trailers, vacuum trailers or other bulk containers holding liquids;

- Covered rolloff trailers, covered dump trailers or other bulk containers holding solid materials; and

- Flatbed or lowboy trailers holding transformers or contaminated solid materials.

A portion of the existing Full Trailer Parking Area is located within the footprint of RMU-2. As such, the existing Full Trailer Parking Area will be removed and a new area will be installed along the western edge of RMU-2. The new Full Trailer Parking Area would include a reinforced concrete base with concrete curbing on three sides. The area would encompass approximately 12,500 square feet and be 250 feet long by 50 feet wide. The reinforced concrete pad would be sloped toward the center of each section of the pad to collect precipitation. Precipitation would be removed via vacuum truck.

The existing Full Trailer Parking Area will be closed in accordance the closure requirements included in the Site-Wide Part 373 Permit, prior to construction of the new Full Trailer Parking Area. Closure activities to be implemented for the existing Full Trailer Parking Area include the following:

- An initial inventory of all wastes within the Full Trailer Parking Area will be performed to verify accuracy with current records, to confirm the integrity of all waste containers for removal and to identify, by visual observation, any potentially contamination areas.

- All trailers will be transported to the new Stabilization Trailer Parking Area.

- Following removal of all waste containers, the existing Full Trailer Parking Area will be decontaminated by sweeping or vacuuming the floors, followed by washing the floors. Any wastewater generated by the washing will be treated on site at the AWT facility.

- In addition to achieving a clean debris-type surface for RCRA closure, a rinse with a minimal amount of water will be performed and a sample will be collected and analyzed. The samples will be analyzed for VOC contamination. The results of the sampling will be used to determine the effectiveness of the decontamination.

- Once the cleaning process has concluded, the structure will be demolished. Following demolition of the structure, the demolition debris will be sampled, analyzed and properly disposed at an approved waste management facility.

- Once the concrete is removed, the soil will be inspected for signs of contamination. Visibly contaminated soil will be removed and properly managed and disposed on or off-site. Upon removal of any visibly contaminated soil, confirmatory samples will be collected of the soils underlying the Full Trailer Parking Area and analyzed to confirm that the soil meets 6 NYCRR Part 375-6 Industrial Soil Cleanup Objectives.

- Remaining soils underlying the Full Trailer Parking Area will be excavated as part of RMU-2 construction, in accordance with the requirements of the RMU-2 Soil Excavation Monitoring and Management Plan.

2.6.3.4 Stabilization Trailer Parking Area

The existing Stabilization Trailer Parking Area consists of three separate concrete secondary containment areas, which are located west of the Stabilization Building. The south and west areas are currently permitted for bulk container storage similar to the Full Trailer Parking Area. The north area is currently used for storage of non-hazardous materials. The south and west areas are located within the footprint of RMU-2. Prior to RMU-2 construction, the existing north area will be removed and a new longer concrete secondary containment will be installed in that location, designed similar to the existing areas.

Following construction of the new Stabilization Trailer Parking Area, the existing west and south Stabilization Trailer Parking Areas will be closed in accordance with the closure requirements included in the Site-Wide Part 373 Permit. Closure activities to be implemented include the following:

- An initial inventory of all wastes within the west and south Stabilization Trailer Parking Areas will be performed to verify accuracy with current records, to confirm the integrity of all waste containers for removal and to identify, by visual observation, any potentially contamination areas.

- All trailers will be transported to the new Stabilization Trailer Parking Area.

- Following removal of all waste containers, the existing west and south Stabilization Trailer Parking Areas will be decontaminated by sweeping or vacuuming the floors, followed by washing the floors. Any wastewater generated by the washing will be treated on site at the AWT facility.

- In addition to achieving a clean debris-type surface for RCRA closure, a rinse with a minimal amount of water will be performed and a sample will be collected and analyzed. The samples will be analyzed for VOC contamination. The results of the sampling will be used to determine the effectiveness of the decontamination.

- Once the cleaning process has concluded, the structures will be demolished. Following demolition of the structures, the demolition debris will be sampled, analyzed and properly disposed at an approved waste management facility.

- Once the concrete is removed, the soil will be inspected for signs of contamination. Visibly contaminated soil will be removed and properly managed and disposed on or off-site. Upon removal of any visibly contaminated soil, confirmatory samples will be collected of the soils underlying the Stabilization Trailer Parking Area and analyzed to confirm that the soil meets 6 NYCRR Part 375-6 Industrial Soil Cleanup Objectives.

- Remaining soils underlying the west and east Stabilization Trailer Parking Areas will be excavated as part of RMU-2 construction, in accordance with the requirements of the RMU-2 Soil Excavation Monitoring and Management Plan.

2.6.3.5 Emergency Response Garage

The existing Emergency Response Garage, located west of RMU-1, would be relocated to an existing building west of RMU-2. The existing structure, foundation and all existing utilities would be removed to facilitate construction of RMU-2. Soils underlying the Emergency Response Garage will be excavated as part of RMU-2 construction, in accordance with the requirements of the RMU-2 Soil Excavation Monitoring and Management Plan. Operations associated with the existing Emergency Response Facility would be maintained at the new location.

2.6.3.6 Heavy Equipment and Facility Maintenance/Rolloff Repair Building

The existing Heavy Equipment and Facility Maintenance/Rolloff Repair Building, located approximately 250 feet west of RMU-1, would be relocated to the area north of Fac Pond 1/2. The existing structure, foundation and all existing utilities would be removed to facilitate construction of RMU-2. Soils underlying the Heavy Equipment and Facility Maintenance/Rolloff Repair Building will be excavated as part of RMU-2 construction, in accordance with the requirements of the RMU-2 Soil Excavation Monitoring and Management Plan. The new Heavy Equipment and Facility Maintenance/Rolloff Repair Building would include a truck bay and office area, maintenance and rolloff repair area and a wash bay. Operations associated with the existing Heavy Equipment and Facility Maintenance/Rolloff Repair Building would be maintained at the new location.

2.6.3.7 McArthur and "M" Streets

To facilitate construction of RMU-2, approximately 2,000 linear feet of site roadway (portions of McArthur Street and "M" Streets) would be removed. Although portions of the roads may remain in service for use by construction vehicles, the road surface material, road base and all above and belowground utilities along the portions of the roads impacted by RMU-2 would be removed. Soils underlying McArthur and "M" Streets will be excavated as part of RMU-2 construction, in accordance with the requirements of the RMU-2 Soil Excavation Monitoring and Management Plan.

2.6.3.8 Existing Utilities and Communications Services

In November 2002, Blasland, Bouck & Lee, Inc. (BBL) performed a utilities investigation to identify all existing above and belowground utilities impacted by the construction of RMU-2. Based on the results of the utilities investigation, it appears that underground sewers or pipelines that were previously part of the Lake Ontario Ordinance Works (LOOW) activities in these areas may be present. Additionally, there are several underground water supply pipelines and electrical service lines within the proposed RMU-2 footprint. All existing utilities would be removed during either relocation of existing facilities or prior to construction of RMU-2. An underground pipeline currently used to transfer leachate from the RMU-1 landfill to the main storage tanks would be eliminated by the RMU-2 project. Excavation would be carefully conducted so that the presence of any previously unidentified utilities can be addressed. Since no underground utilities would

be left beneath the RMU-2 landfill, landfill stability would not be affected and the potential for contamination migration along pipelines would not exist.

2.6.3.9 Meteorological Tower

The existing MET tower, located north of SLF-1 through SLF-6, would be relocated prior to or during construction of RMU-2 so that its operation would not be affected by the height of RMU-2. The new location would be determined by CWM, based on approval from the NYSDEC and the DOH.

2.6.3.10 Unloading Ramps for the SLF-10 Leachate Building and SLF 1-11 Oil/Water Separator Building.

Existing unloading ramps are provided at the SLF-10 Leachate Building west of SLF-10 and the SLF 1-11 Oil/Water Separator Building east of the LTF to provide facilities for vehicle loading/unloading of the tanks within these buildings. Although these buildings and their unloading ramps are not located within the footprint of RMU-2, access to the ramps will be impacted by the RMU-2 project. New ramps will be installed south of the SLF-10 Leachate Building and east of the SLF 1-11 Oil/Water Separator Building.

- Following construction of the new ramps, the existing ramps will be decontaminated by sweeping or vacuuming the floors, followed by washing the floors. Any wastewater generated by the washing will be treated on site at the AWT facility.

- In addition to achieving a clean debris-type surface for RCRA closure, a rinse with a minimal amount of water will be performed and a sample will be collected and analyzed. The samples will be analyzed for VOC contamination. The results of the sampling will be used to determine the effectiveness of the decontamination.

- Once the cleaning process has concluded, the ramp structures will be demolished. Following demolition of the structures, the demolition debris will be sampled, analyzed and properly disposed at an approved waste management facility.

- Once the concrete is removed, the soil will be inspected for signs of contamination. Visibly contaminated soil will be removed and properly managed and disposed on or off-site. Upon removal of any visibly contaminated soil, confirmatory samples will be collected of the soils underlying the Loading/Unloading Ramps and analyzed to confirm that the soil meets 6 NYCRR Part 375-6 Industrial Soil Cleanup Objectives.

- Soils underlying the ramps will be excavated as part of RMU-2 construction, in accordance with the requirements of the RMU-2 Soil Excavation Monitoring and Management Plan.

2.6.4 Site Clearing Activities

Prior to construction of RMU-2 and the aforementioned relocated facilities, the limits of work will be surveyed and staked. Erosion control measures will be established prior to any soil disturbance. The areas within the limits of work will then be cleared and grubbed to remove and dispose all objectionable material, such as trees, stumps, stones, brush, shrubs, roots, rubbish and other debris. Trees and other large woody debris will be chipped. Trees and stumps too large to be chipped will be properly disposed. Any existing groundwater monitoring wells or piezometers in the proposed areas for construction will either be marked for protection or abandoned in accordance with applicable regulations.

2.6.5 Excavation and Landfill Subbase

After site preparation has been completed, excavation for RMU-2 would proceed to the subbase grade. The average depth of excavation is approximately 12 feet. On-site visual inspection would confirm the suitability of the subbase and any need for over-excavation of unsuitable material. Cohesive general fill (that may be taken from approved on-site stockpiles or off-site sources) would be placed in over-excavated areas. A rigid Construction Quality Assurance Plan (CQAP), meeting the requirements of the USEPA and NYSDEC, would be implemented during preparation of the subbase and all aspects of landfill construction.

Hydrostatic uplift calculations in the *RMU-2 Engineering Report* were based on current available data. Prior to construction, water levels would be confirmed to verify hydrostatic uplift assumptions by the design engineer or qualified geotechnical engineer. Piezometers would be monitored prior to sump excavation to determine if the water level is the same or lower than the design water table. If the same or lower, construction would proceed to design grades, otherwise further evaluation would be conducted before proceeding with construction.

Excavated material would be segregated and stockpiled on site at the Model City Facility for future appropriate uses, including construction of the exterior berms, the compacted clay secondary liner system and the final cover. Additional clay for use in the liner system (described below) would be obtained from existing on-site stockpiles or off-site sources. The exact sources of this clay are not currently known, but would be obtained on a contract basis from appropriately permitted or exempt sources. Section 2.6.6.5 has a listing of potential clay sources.

During excavation activities to achieve RMU-2 design subgrade elevations, the possibility of encountering contaminated soils within the Glacial Till layer exists. This contamination may be chemical (i.e., volatile organic compounds [VOCs]) or radiological. The potential environmental impacts associated with the excavation of contaminated soils are further discussed in Section 4.2.3, while the mitigation measures to minimize these impacts are presented in Section 5.4. All excavated contaminated soils would be segregated from soils that would potentially be used in construction of RMU-2. Excavated contaminated soils would be disposed in accordance with all applicable requirements. All excavation and soil disturbance performed as part of construction for RMU-2, relocated facilities or other associated activities, shall be

completed in accordance with the requirements of the RMU-2 Soil Excavation Monitoring and Management Plan.

2.6.6 Landfill Base

The *RMU-2 Engineering Report* describes in detail the design of the landfill base for RMU-2. The following highlights the components of the proposed primary and secondary liners and primary leachate collection system (PLCS) and secondary leachate collection system (SLCS).

Figure 2-5 presents these components graphically. The liner system for RMU-2 is designed to be approximately 6 feet thick, constructed over the prepared subbase. The liner system components are given below in ascending order.

2.6.6.1 Secondary Liner System

- A varying thickness of in-situ Glacial Till would be left in place above the in-situ Glaciolacustrine Clay formation to withstand hydrostatic pressures and provide a suitable surface for construction equipment. The thickness of this till varies because of the irregularity of the surface of the Glaciolacustrine Clay.

- Three feet of re-compacted Glacial Till or other suitable clay having a maximum permeability of 1.0 x 10^{-7} cm/sec on the floors and sideslopes. (Note: “Permeability” is a measure of a material’s ability to transmit a fluid, or the relative ease of fluid flow through a material. Thus, a permeability of 1 x 10^{-7} cm/sec is equivalent to a flow of 2.12 x 10^{-3} gallons per day per square foot; that is, 0.002 gallons per day can flow through a cross-section of 1 square feet of the material under a uniform gradient).

- An 80-mil textured HDPE geomembrane on the cell floors and sideslopes.

2.6.6.2 Secondary Leachate Collection System

- A layer of geocomposite on the cell floors and sideslopes.

- A 1 foot layer of granular drainage material on the cell floors with an 8-inch-diameter perforated collection pipe along the cell floor centerline.

2.6.6.3 Primary Liner System

- A layer of non-woven geotextile on the cell floors.

- A GCL layer on the cell floors (which extends a minimum of 15 feet up the cell sideslopes) that provides a maximum equivalent hydraulic conductivity equal to or less than 1.5 feet of compacted clay with a hydraulic conductivity of 1 x 10^{-7} cm/sec.

- An 80-mil textured HDPE geomembrane on cell floors and sideslopes.

2.6.6.4 Primary Leachate Collection System

- A layer of geocomposite on the cell floors and sideslopes.

- A 1 foot layer of granular drainage material on the cell floors with an 8-inch-diameter perforated collection pipe along the cell centerline.

- A layer of non-woven geotextile on the cell floors.

- A 1 foot layer of operations stone on the cell floors and a 2-foot layer of operations stone on the cell sideslopes.

Literature information for typical geosynthetic materials is presented in Appendix B.

2.6.6.5 Construction Materials Borrow Sources

In addition to on-site materials, CWM would obtain the required clay and gravel through a contract with an appropriate hauler from off-site sources. It would be the responsibility of the hauler to procure these materials from a suitable borrow source based upon CWM specifications. It would be the responsibility of the land owner or developer to assure that the source holds an NYSDEC Mined Land Reclamation Permit, where required. The borrow source's status would then be verified by the CWM-designated hauler during the borrow site selection process.

Potential off-site sources of construction materials that presently hold an NYSDEC Mined Land Reclamation Permit are as follows.

Potential Clay Sources

The list of potential sources is preliminary and should not be considered all inclusive. Because construction will occur over several years, additional sources may be identified in the future as needed. The locations of the currently identified potential clay sources are indicated in Appendix C. Haul routes used could involve NYS Routes 31, 93, 104, 429 and Balmer Road.

- Michael J. Bergey – Bergey Mine Site, Town of Lewiston (NYSDEC Permit 9-2924-00099/00003 – permitted through June 4, 2014);

- Mawhiney Trucking Inc. – Mawhiney Trucking Helmich Site, Town of Lewiston (NYSDEC Permit 9-2924-00115/00001 – permitted through June 1, 2016).

Potential Stone Sources

- Redland Quarries NY Inc. – Redland Niagara County, Town of Niagara (NYSDEC Permit 9-2930-00015/00013 – permitted through June 16, 2012);

- Buffalo Crushed Stone Inc. – Como Park/Cheektowaga, Town of Cheektowaga (NYSDEC Permit 9-1430-00014/00011 – permitted through May 9, 2013); and

- Redland Quarries NY Inc. – Redland Lockport Quarry, Town of Lockport (NYSDEC Permit 9-2999-00002/00009 – permitted through April 30, 2013).

A CQAP (see Part 373 Permit Modification Application) would be implemented to establish adequate material sources and pre-qualify clay sources for the purposes of low-permeability soil liner construction. Pre-qualification testing would be performed to verify adequate clay material properties (i.e., permeability, compaction, strength, grain size and plasticity). As part of the CQAP, clay material would also be tested similarly during clay liner construction. The implementation of these quality assurance testing procedures to pre-qualify clay sources and clay liner construction provides for rigid quality control for use of clay material in construction.

2.6.7 Perimeter Berms

The exterior or perimeter berms would be constructed as an extension of the primary and secondary liner and leachate collection systems. The berms are designed with consideration for reducing surface-water runon into the landfill and anchoring of the various components of the liner and leachate collection systems. Erosion protection of the berms has also been evaluated, with long-term protection against possible erosion provided for with diversion ditches and establishment of vegetation on the slopes.

The perimeter berm for RMU-2 will be a mechanically stabilized earth (MSE) wall with a maximum top elevation of 350.0 feet amsl. The outside sideslope of the MSE wall will be faced with welded wire baskets filled with rock and will have a slope gradient of 1H:4V. The landfill sideslope of the MSE wall would be constructed of 3 feet of compacted clay, primary and secondary HDPE geomembrane and geocomposites and a 2-foot layer of run of crusher stone (operations layer). A cutoff wall would extend downward from the perimeter berm and extend 1 foot into the Glaciolacustrine Clay unit to add a further measure of protection to the groundwater. Further details regarding the design of the perimeter berm are provided in the *RMU-2 Engineering Report*.

All MSE wall installation areas would be scarified and cleared of rocks, debris or topsoil that would interfere with compaction efforts. The bottom of the wall would be constructed at a depth of at least 3 feet below ground surface. During construction, welded wire basket forms (i.e., facing) would be used to develop the flexible MSE wall face and 1H:4V batter. The wall face would ultimately be vegetated with vine growth. The welded wire basket forms the geosynthetic soil retention layer (i.e., geosynthetic three-dimensional erosion control mat), the geosynthetic reinforcement (i.e., geogrid) and reinforced backfill materials would be installed in successive lifts, as depicted on the RMU-2 Permit Drawings. The reinforced backfill would be placed in maximum compacted lift thicknesses of 9 inches and each lift would be compacted as set forth in the pertinent section of the RMU-2 Technical Specifications. The MSE wall will have a top elevation of 350 feet amsl and will typically be approximately 30 feet in height. The top width of the MSE wall will be 44.7 feet.

2.6.8 Intercell Berms

The intercell berms would physically separate the six waste cells, with each cell capable of operating independently with regard to leachate collection and pumping. The berms would be constructed of compacted clay, geosynthetics and stone with an approximate width of 5 feet at the top. The berms would be constructed in lifts, as necessary, in order to provide separation between cells and containment of waste. These berms, as well as the exterior berms, would be subject to a rigid CQA protocol to assure acceptable clay placement and compaction.

2.6.9 Modifications to the RMU-1 and SLF-10 Perimeter Berm Drainage

The proposed grading for RMU-2 causes a portion of the shared RMU-1/RMU-2 ditch between the two units to be unable to gravity drain along the surface. Consequently, an RMU-1/RMU-2 culvert system will be installed between RMU-1 and RMU-2 to convey runoff that enters this segment of the shared ditch to be able to drain to the V01 stormwater retention area to the north of the landfill. The culvert system will consist of an open-ended corrugated smooth-bore HDPE culvert pipe and a series of pre-cast concrete manholes along the culvert length. The culvert system will convey flow along the existing RMU-1 perimeter berm and will daylight at the northwest corner of RMU-1. The culvert system has been designed to convey the 25-year, 24-hour storm event estimated peak discharge under newly graded conditions (i.e., the first scenario discussed above). This information is discussed and presented in *RMU-2 Engineering Report*.

2.6.10 Cutoff Wall

A low-permeability cutoff wall would be installed along the inside toe of the RMU-2 perimeter berm, as indicated on the Permit Drawings. Consistent with RMU-1, the cutoff wall would extend to the underlying Glaciolacustrine Clay layer. Rather than using compacted clay, the RMU-2 cutoff wall would be constructed as an open trench slurry wall. This would minimize the potential for hydrostatic uplift and simplify the construction process. As shown on the Permit Drawings, the top of the cutoff wall would contact the bottom of the secondary clay layer of the liner system. Since the top of the Glaciolacustrine Clay layer is expected

to vary across the RMU-2 footprint, soil borings would be performed along the cutoff wall alignment prior to the construction of the cutoff wall to determine the top elevation of the Glaciolacustrine Clay layer.

As indicated in Section 3.3.1.5, the thickness of the Glaciolacustrine Clay layer within the RMU-2 footprint varies from less than 1 foot to 25 feet. Based on the current available boring information (Golder, 2002 and 2009), the clay layer may not be present in certain areas along the cutoff wall alignment. If the clay layer is not encountered at the anticipated elevation (as estimated from the pre-construction borings) during construction of the cutoff wall, the following procedure, which was originally developed for SLF-12 Cell A, would be implemented:

- Excavate down to the elevation where clay or the "maximum termination depth" is encountered, whichever comes first. The maximum termination depth is 5 feet below the anticipated clay elevation.

- If clay is not encountered at or above the maximum termination elevation, a reasonable effort would be made to widen the trench (if possible, based on construction techniques) to key into a clay layer that may exist in the trench side wall. Preference would be given to widening the trench toward the inside of the landfill footprint.

- If no clay is encountered in the side wall or trench bottom, installation of the cutoff wall would proceed from the maximum termination elevation.

This procedure also applies for portions of the cutoff wall alignment where the non-existence of the clay layer is established during the pre-construction boring activities.

2.6.11 Daily Cover and Final Cover

Daily cover requirements for RMU-2 would be similar to those currently used for RMU-1. CWM would continue to apply cover materials, as defined by 6 NYCRR 370.2(b)(39), on all exposed waste to sufficiently cover the waste at the end of each day of operation. CWM would apply daily cover on all lifts of waste using a graded granular material, or an alternative NYSDEC-approved synthetic fabric or other alternative approved cover material. All daily cover materials must be effective in controlling odors and capable of suppressing airborne dust and lightweight debris. Any previously applied daily cover that is identified as being absent or significantly deteriorated must also be restored by the end of each day of operation.

The RMU-2 final cover system would be similar to that originally used in RMU-1 with the exception of the substitution of GCL for 2 feet of compacted clay and a reduction of the general soil fill thickness (also approved by the NYSDEC for remaining uncapped portions of RMU-1 in a July 1, 2009, permit modification). The RMU-2 final cover system consists of the following components (in descending order):

- 6 inches of vegetated topsoil;

- 18 inches of general soil fill;
- A layer of geocomposite;
- A 40-mil textured HDPE geomembrane;
- A GCL layer that provides a maximum equivalent hydraulic conductivity equal to or less than 2 feet of compacted clay with a hydraulic conductivity of 1×10^{-7} cm/sec; and
- 6 inches of general soil fill to be used as a grading layer.

The final cover slope is designed as 3H:1V with a minimum top slope of 5% that allows for gravity drainage of stormwater under post-settlement conditions.

The design of the final cover considered slope stability and waste settlement to provide the integrity of the final cover. Vegetative cover and surface-water drainage were also thoroughly analyzed with appropriate designs to minimize potential erosion (analyses relating to integrity of the final cover can be found in the *RMU-2 Engineering Report*).

2.6.12 Leachate and Stormwater Management

The design philosophy behind the double-composite liner system proposed for RMU-2 is to provide an additional measure of environmental protection against contaminant migration by providing leachate collection above and between the liners. The PLCS above the top liner is intended to minimize the amount of leachate on the liner system and to remove liquids. The SLCS is intended to collect and remove any liquids infiltrating into the space between the liners from the landfill or from the groundwater, as well as to provide for long-term minimization of migration of hazardous constituents through the closed unit. USEPA regulations require a composite liner system of “synthetic and compacted clay components” for only the lower liner. The design for RMU-2 has provided an additional environmental safeguard by incorporating the composite approach for both the PLCS and SLCS.

As noted in Section 2.2, RMU-2 is divided into six cells that are used as separate operational areas. The PLCS and SLCS would slope to separate sumps within each cell. Liquids collected in the PLCS and SLCS sumps would be pumped from the sumps into a system of pipes (force mains) surrounding the landfill. The leachate force mains from RMU-2 Cells 17, 18 and 19, whose riser vault structures would be located along the eastern perimeter berm of RMU-2, would converge at a junction manhole within the MSE wall and then drop down the face of the MSE wall and extend below ground at the base of the MSE wall. From there, the force main would convey leachate in a northerly direction while paralleling the MSE wall and tie into the new force main that will parallel the northern edge of RMU-2. This junction manhole would be located to the northwest corner of RMU-2. The leachate force mains from RMU-2 Cells 15 and 16, whose riser vault structures would be located along the northern perimeter berm of RMU-2, would converge at a junction

manhole within the MSE wall and then drop down the face of the MSE wall and extend below ground at the base of the MSE wall. From there, the force main would convey leachate in a northerly direction and tie into the relocated force main from RMU-1 and RMU-2 Cell 20 that flows from east to west.

Leachate collected form RMU-2 Cell 20, whose riser vault would be located on the north perimeter berm of RMU-2 Cell 20 (adjacent to the southern edge of RMU-1 Cell 2), would be directed into the existing leachate force main of the southern perimeter berm of RMU-1. This leachate would be combined with the leachate from RMU-1 Cells 2, 4, 6, 9/10, 12/14 and 11/13 as it is conveyed north along the eastern perimeter berm of RMU-1. The combined flow from all cells of RMU-1 and RMU-2 Cell 20 would converge at an existing manhole at the northwest corner of RMU-1 Cell 1 and then through a new force main that would generally flow to the west and parallel the northern edge of RMU-2. As this force main flows towards the SLF 12 lift station, it intersects the force mains from RMU-2 Cells 15 through 19 at new junction manholes. The combined flow from all of RMU-2 and RMU-1 would be conveyed to the existing SLF-12 lift station and then to the Leachate Tank Farm. The SLF 12 lift station will be upgraded with new pumps to manage the expected flow from both RMU-1 and RMU-2. This leachate would be sampled and analyzed for hazardous waste constituents and processed at Model City Facility's existing wastewater treatment plant. The proposed leachate transfer system for RMU-2, as well as the modifications to the RMU-1 leachate transfer system described above, are presented on the RMU-2 Permit Drawings.

Surface-water management measures associated with RMU-2 will be implemented in accordance with the *Soil Erosion and Sediment Control Plan* (SESC Plan), which will be prepared in accordance with the New York State Standards and Specifications for Erosion and Sediment Control Manual (2005), and will be included in the RMU-2 SWPPP. A SWPPP will be prepared for RMU-2 and will address appropriate stormwater controls for all appurtenances and components associated with the landfill, including, but not limited to, haul roads, paved areas, associated buildings and structures, landfill surfaces, perimeter ditches and berms. During construction of individual cells (i.e., before placement of wastes into the cells) SESC control features would involve, but not be limited to, the use of sediment control barriers consisting of silt fences and/or hay bales. The number and location of these would be determined by the progress of construction operations and the SESC Plan. All silt fences and hay bales would be removed following re-vegetation of areas that have been disturbed as a result of construction operations. During construction, surface water would be directed to the Model City Facility's existing surface-water collection system. The existing surface-water collection system is monitored for hazardous constituents according to the Model City Facility's *Surface-Water Sampling and Analysis Plan*. During operation of RMU-2, precipitation entering the cells would be collected in the leachate collection system and treated as leachate as described earlier in this section.

Water from the final cover system would be treated as surface water. All surface-water runoff from the final cover system would be directed to the existing stormwater management system and retention basins. The proposed grading for RMU-2 would cause a portion of the perimeter ditch along the eastern edge of RMU-1 to be unable to gravity drain along the surface to any stormwater basin. Consequently, a storm sewer system would be installed between RMU-1 and RMU-2 to convey runoff that enters this segment of the

perimeter ditch to the existing V01 basin. The storm sewer system would consist of a single drop inlet (consisting of pre-cast concrete catch basin structure and a frame and inlet grate) and a series of pre-cast concrete manholes interconnected by smooth-bore corrugated HDPE piping. The storm sewer system would convey flow along the existing RMU-1 perimeter berm and would daylight at the northwest corner of RMU-1. The storm sewer system has been designed to convey the 25-year, 24-hour storm event estimated peak discharge under newly graded conditions.

Ground surfaces surrounding all other areas that will be disturbed as part of the RMU-2 project (e.g., relocated facilities and Fac ponds) will be regraded as necessary to promote drainage to the existing stormwater management system and appropriate stormwater basins. Provisions for increasing the capacity of the stormwater retention areas will be completed as needed based on the 25-year, 24-hour storm event.

2.6.13 Facultative Ponds

The proposed RMU-2 footprint includes land currently occupied by two Fac ponds designated as Fac Pond 3 and Fac Pond 8. Fac Pond 8, located immediately west of RMU-1, is permitted for storage of treated wastewater. Fac Pond 8 is currently out of service and undergoing closure, which is expected to be completed prior to RMU-2 permitting. A certification of the chemical clean closure of Fac Pond 8, in accordance with the Sitewide Closure Plan, was prepared by Golder Associates and submitted to the NYSDEC on November 9, 2009. Remediation of radiological contamination in Fac Pond 8 is currently in progress (see Section 3.1.2). Fac Pond 3, located west of Fac Pond 8, is currently being used for storage of treated wastewater. Wastewater stored in Fac Pond 3 is discharged to the Niagara River following approval of the pre-qualification testing requirements included in CWM's SPDES Permit. Fac Pond 3 will also be closed as a result of RMU-2. The closure of Fac Pond 3 will be performed in accordance with the Site-Wide Part 373 Permit requirements, and is described in greater depth below.

In order to compensate for the treated wastewater volume reduction due to the removal of Fac Ponds 3 and 8, a new Fac Pond 5 will be constructed between SLF-12 and SLF-7. New Fac Pond 5 will include a structural berm sloped to 2H:1V on the outside and 3H:1V on the inside and with a top elevation of 335 feet amsl. Fac Pond 5 will be constructed with a baseliner system consisting of the following (in ascending order):

- 3 feet of compacted low-permeability clay;
- A secondary geomembrane;
- A geocomposite drainage layer;
- A primary geomembrane;
- A primary geotextile cushion; and

- 1 foot of ballast stone.

The sump area of new Fac Pond 5 will have a top of baseliner elevation of 307.0 feet amsl. The sump will be used as a monitoring point to detect potential leaks in the primary baseliner system. The existing Fac Pond 1/2 would remain in service. Standard operations would include the periodic transfer of treated wastewater from Fac Pond 1/2 to new Fac Pond 5, which would be installed to replace Fac Pond 3 as the final qualification pond prior to discharge to the Niagara River.

The closure of Fac Pond 3, as described in the Model City Facility's Site-Wide Closure Plan, consists of discharging treated effluent from the Fac pond following approval of the pre-qualification testing requirements included in CWM's SPDES Permit. Soils at the base of Fac Pond 3 will then be sampled in the following manner:

- A grid system that divides the ponds into approximate 200-foot by 200-foot areas will be established in the empty pond.

- Five sample locations from within each grid will be randomly selected. From four of these five locations, composite samples will be collected at the 1 inch depth and at the 6-inch depth. These composite samples will be tested for priority pollutant metals.

- From the fifth location in two of the grids, grab samples will be collected at the 6-inch depth and tested for 6 NYCRR Part 373 Appendix 33 constituents. From the fifth location in the remaining grids, grab samples will be collected from the 6-inch depth and tested for priority pollutant organics.

It will then be determined if removal of the soils and sediments from the bottom of Fac Pond 3 is needed based on the results of the initial sampling described above. If concentrations of hazardous constituents do not exceed 6 NYCRR Part 375-6 Industrial Soil Cleanup Objectives, the soils and sediments from the pond areas will be excavated to achieve design grades for RMU-2. In the event concentrations of hazardous constituents exceed Industrial Soil Cleanup Objectives in the surface samples, but not in the samples collected at the 6-inch depth, a minimum of 6 inches of soil/sediment will be removed from the base of the pond and properly disposed. The remaining soils will be excavated to achieve design grades for RMU-2.

Excavation and disturbance of soils associated with construction of Fac Pond 5 and closure of Fac Pond 3 will be performed in accordance with the requirements of the RMU-2 Soil Excavation Monitoring and Management Plan.

3. Environmental Setting

3.1 Location of Proposed Action

The Model City Facility is located near Model City, New York in the Towns of Porter and Lewiston, Niagara County. The Model City Facility is situated along Balmer Road, 1.9 miles east of the intersection of Balmer Road and Creek Road (NYS Route 18). The Model City Facility occupies approximately 710 acres, including 630 acres of land in the Town of Porter and 80 acres of land in the Town of Lewiston. All existing TSDFs on the site are located within the Town of Porter. All land currently occupied by the Model City Facility in the Town of Porter is available for permitting by the NYSDEC for future activities to be proposed by CWM related to hazardous waste management. The nearest population concentrations are the Village of Lewiston, approximately 7 miles to the southwest; the Village of Youngstown, approximately 3 miles to the northwest and the Hamlet of Ransomville, approximately 2 miles to the east. The Lewiston-Porter Central Schools are located approximately 2 miles to the west. The Tuscarora Indian Reservation is approximately 4 miles to the south. Lake Ontario is situated approximately 4 miles north of the Model City Facility. Regional location and facility location maps showing the Model City Facility are presented as Figures 3-1 and 3-2. Owners of properties adjacent to the Model City Facility, as listed on the most recent tax maps for the Towns of Porter and Lewiston, are shown on Figure 3-12.

RMU-2 would be located in the area of the Model City Facility immediately adjacent to the western edge of existing RMU-1. RMU-2 would be bounded on the north by the existing stabilization facility, bounded on the west by the LTF and Hall Street and bounded on the south by SLF-1 through SLF-6 and SLF-10. The RMU-2 location is accessible by existing roads. A new access road would be constructed around the RMU-2 perimeter. As part of a former military complex, the site has a local grid and elevation system to provide control for construction and documentation. This grid system is monumented at the site with numerous permanent monuments. For clarity, the RMU-2 specific site descriptions, as well as the drawings, are provided in terms of this site grid system.

Passenger car access to the Model City Facility from the north or south is via the Robert Moses Parkway or other local roads; however, truck traffic is not permitted on the Robert Moses Parkway, so routes discussed in Section 3.6.3 must be used.

3.1.1 Previous Use of Property

The area, including and surrounding the Model City Facility, was, at one time in the early 1940s through mid-1960s, part of the LOOW of the DOD and was used for a variety of government activities during that time period. The past uses of the area include research, development and production of explosives and solid/liquid fuels; a missile base; a radar station and waste storage related to the Manhattan Project.

Production of trinitrotoluene (TNT) on the site was carried out for less than a year, between late 1942 and August 1943. However, some 18- to 24-inch-diameter acid lines remain on the CWM site, although many of them have been removed or decontaminated in the course of the construction and remedial operations. Results of tests run on samples of residues in the pipes taken in October 1982 indicate that no danger of detonation of these materials exists. The TNT waste pipelines were the subject of an interim remedial action conducted by the USACE in 1999/2000. The NYSDEC provided oversight on the work plan, field work and reporting of results. The residual contents were removed from the entire length of pipeline. Several sections of pipe were left in place after high pressure washing. A final determination on the Corrective Action for these pipes has not yet been made. Based on a review of historical records and the location and configuration of the former TNT process areas, no TNT pipelines are expected to be found during construction of RMU-2. However, if unidentified pipelines are encountered during construction, the lines would be sampled, removed and disposed in accordance with results of testing.

3.1.2 Site Radiological Background

The Model City Facility is located within the boundary of the former LOOW. Starting in 1944, the Manhattan Engineer District (MED) and its successor, the United States Atomic Energy Commission (AEC), used portions of the LOOW for the storage of radioactive wastes. These radioactive wastes were primarily residues from uranium processing operations. They also included contaminated rubble and scrap from decommissioning activities, waste from the University of Rochester and low level fission-product waste from Knolls Atomic Power Laboratory. Receipt of radioactive waste ceased in 1954 and cleanup activities ensued. A portion of the LOOW was declared surplus and was sold to various private, commercial and government agencies. In 1972, ChemTrol, a predecessor of CWM, initially leased about 350 acres of former LOOW property and started a waste TSDF. Between 1974 and 1978, CWM's predecessors purchased 710 acres of former LOOW property. These 710 acres are comprised of the land/parcels referred to as Vicinity Properties A through G and parts of H, J, K, P, S, T and W. The locations of these Vicinity Properties are depicted on Figure 3-13. These properties now constitute the Model City Facility.

In 1970, the federal government determined that some of the properties that had been sold were not properly remediated. The AEC proposed cleanup to a specific level. The DOH disagreed with the proposed cleanup criteria. The DOH's concern was that if residences and buildings were built in these areas, additional exposure to radon, especially in the basements, could result. The AEC disagreed and did not change its criteria. During 1971 and 1972, a radiological survey and cleanup of the LOOW was performed by AEC. Several burial sites (including the University of Rochester animal burial area) were excavated and remediated. On April 27, 1972, the DOH issued four orders that imposed land use restrictions on most of the former LOOW properties. One of those orders referenced 614 acres owned by Fort Conti Corporation, but it did not contain any metes and bounds description and it incorrectly identified the property as primarily located in the Town of Lewiston. At that time, ChemTrol was leasing Fort Conti Corporation property in the Towns of Lewiston and Porter. Existing uses could continue without expansion. Any soil excavation was prohibited unless permitted by the Commissioner of the DOH. Shortly thereafter, ChemTrol requested that it be allowed to use its property for industrial/commercial purposes. The DOH issued an amended order in

1974 allowing industrial development on 240 acres of the ChemTrol property, complete with a metes and bounds description, as long as slab foundations were employed for any new buildings. However, the 1974 order did not remove or alter the soil excavation approval requirements stipulated in the 1972 order.

Since 1974, the DOE, as the successor to the AEC, has conducted additional remediation work at the former LOOW property, including the CWM property. In the 1980s, the DOE selected guidelines for remediating radiological contamination on this property and other sites formerly used by the AEC. In 1983, a comprehensive survey was performed by Oak Ridge Associated Universities. The status of each individual LOOW Vicinity Property was evaluated and described in a report entitled *Comprehensive Radiological Survey, Off-Site Property A-X, Niagara Falls Storage Site, Lewiston, NY*, dated March 1984. Additional remediation work was performed in 1985 and 1986.

In the mid-1970s, ChemTrol was purchased by SCA Services, Inc. (SCA). In 1984, Waste Management, Inc. (WMI) purchased certain parts of SCA, including the Model City Facility. The name was changed to CWM Chemical Services, LLC and it is currently a subsidiary of WMI.

On May 7, 1992, as a result of the extensive corrective radiological remedial actions undertaken on the Vicinity Properties by the DOE, the DOE certified that the Vicinity Properties were in compliance with applicable federal radiological decontamination criteria. The exceptions to the certification included three Vicinity Properties located on CWM's property (E, E' and G). Small portions of these Vicinity Properties could not be evaluated: soil beneath the berm of Lagoon 6 (Vicinity Property E), soil under two PCB storage tanks and roadway (Vicinity Property E') and soil beneath the berm of Fac Pond 1/2 (Vicinity Property G). As these areas could not be accessed for characterization and remediation, if warranted, the DOE could not certify these areas. None of the three isolated areas are in the footprint of the proposed RMU-2.

In 1983, Oak Ridge had performed a comprehensive survey of Vicinity Property E and identified "hot spots" in the berm of Lagoon 6, west of the proposed RMU-2 footprint. The characterization showed that the contaminant was Radium-226 and the source was small pieces of scrap metal and plaster-like chips (likely lead cake residue). The contaminants are not near the surface. The pieces in the berm were reported to be small and scattered. The DOE was unable to remediate this area because the berms held low strength sludge at that time. The sludge has since been stabilized and capped. There is no exposure to site workers or the general public as the items are small, scattered and subsurface.

The July 1990 DOE Report, *Verification of 1985 and 1986 Remedial Actions, Niagara Falls Storage Site, Vicinity Properties, Lewiston, New York*, documents that remediation was performed around the two PCB storage tanks (Tanks 64 and 65) in Vicinity Property E', but the DOE was unable to access the area under the tanks for characterization and remediation as necessary. The tanks have since been removed and the soil was characterized in 1995. The soil that was under the tanks showed slightly elevated levels of volatile organics and radioactivity. The DOE cannot certify Vicinity Property E' until this area is addressed. The area of Tanks 64 and 65 has been covered with HDPE and is in the center of CWM's aqueous wastewater treatment system (AWTS), west of the proposed footprint for RMU-2 and any related project activities.

The July 1990 DOE Report documents that remediation was performed around Fac Pond 1/2 in Vicinity Property G, but the DOE was unable to access the area under the pond for characterization and remediation as necessary. Fac Pond 1/2 is currently used for storage and final treatment of treated wastewater effluent from the AWTS. Transfer of the treated effluent from the final AWTS batch qualifier tanks to Fac Pond 1/2 is not performed until after the liquid in the tanks is tested and approved for discharge. Modification of Fac Pond 1/2 is part of the RMU-2 permit modification application.

Other areas affected by the proposed RMU-2 project include former Vicinity Properties B, C, D, F and K, which were certified as meeting the cleanup standards by the DOE in 1992. The 1984 status report documents where contamination was remediated in Vicinity Properties B and C. There is no evidence of the burial of contaminated materials in Vicinity Property D; however, several small isolated items were removed during sampling and characterization. Vicinity Property F has no history of waste burial, but was likely used for waste storage, where the source of a small area with an elevated radiation level was removed during sampling and characterization in 1985 and 1986. Vicinity Property K, located east of RMU-1, is the location for the new Drum Management Building. Vicinity Property K has no history of waste burial and has been recently used by the Model City Facility as a stockpile area for soil materials associated with RMU-1 cell construction and final cover construction.

Based on a separate DOE certification regarding the adjacent property, the owner, Modern Landfill, requested that the 1972 DOH order for its property be terminated. The DOH amended the order for the Modern Landfill property in 1982 and 1985, and DOH restrictions for excavation no longer apply. In December 2003, based on the 1992 DOE certification, CWM made a similar request asking that the DOH rescind the 1972/1974 orders for its property. During the ensuing discussions with the DOH and the NYSDEC, CWM also provided the agencies with its analysis of the statutory and regulatory changes that had been enacted and/or promulgated since 1972, noting CWM's opinion that from and after 1975 the State Legislature had removed from the DOH and transferred to the NYSDEC, the authority and responsibility to address any residual radiological contamination concerns related to the former LOOW property, including CWM's property. The DOH responded that it was unclear what impact those statutory changes had on the validity of the 1972 and 1974 orders.

In 2004, the DOH advised CWM that it had reviewed the DOE certification for the CWM property and had some concerns that the development of the CWM site during the 1970s and 1980s may have prevented the DOE from detecting all contamination that might still have been present. The DOH and the NYSDEC requested that CWM submit a plan for conducting radiological surveys of any areas where soil movement is proposed. In addition, because little radiological data had been obtained since the 1980s, the DOH and the NYSDEC requested that CWM conduct a site-wide radiological survey, as well as perform environmental monitoring for radiation, and the NYSDEC determined that it was appropriate to incorporate these requests into CWM's Part 373 Permit. These requirements are included in CWM's Site-Wide Part 373 Permit issued on August 5, 2005. The NYSDEC has stated that although there are some gaps in the AEC's and DOE's documentation and investigation, procedures have improved over the last 30 years. The fact remains that the DOE did remove radioactive contaminants from the Vicinity Properties and the DOE surveys provide

reasonable assurances that widespread, immediately dangerous radioactive contamination is not present on the surface of the property.

In order to confirm the findings in the DOE certification, the NYSDEC, acting in conjunction with the DOH, required that CWM conduct additional investigations to further evaluate the current conditions of the Model City Facility property. A major component of this evaluation included a gamma radiation walkover surface survey of all accessible areas of the property (approximately 450 acres); detailed investigation and sampling of those areas identified during the survey that exceed the accepted radiological investigation level and an alpha and beta radiation survey inside six legacy buildings that were previously used by the U.S. Government. URS Corporation (URS) (Buffalo, New York) completed the survey in 2008. The results of the survey are included in the report entitled *Results of Gamma Walkover Survey, Soil Sampling, and Legacy Building Surveys* (URS, December 2008).

The radiological survey at the Model City Facility conducted by URS determined that a vast majority of the accessible areas of the property were well below the screening level. Less than 0.15% of over 4 million readings collected during the survey exceeded the threshold of 16,000 counts per minute (cpm). The readings that exceeded the 16,000 cpm threshold were generally in small areas and were often associated with the discovery of discrete, high activity sources that were removed with the sampling effort. A few elevated source items were found in the clay liner of Fac Pond 8; however, most of the rocks with elevated activity were in the cap systems of landfills and isolated areas on site. The majority of these items were removed as part of the investigation and sampling effort. The radiological characteristics exhibited by the items found during the survey were consistent with the radiological materials that were historically managed on the site by the U.S. Government from the 1940s to the mid-1960s.

Areas where elevated sources were identified but the source material was not removed include the base of Fac Pond 8, the former Syms property and along the former railroad bed. With the exception of Fac Pond 8, these areas are not impacted by the RMU-2 project. URS determined that the presence of such items does not pose a significant health or environmental issues because of the relative isolation from site workers and the general public.

As required by the 2005 Part 373 Permit, CWM has conducted recent radiological monitoring of groundwater, surface water, treated wastewater and air. Initial results were submitted as part of the *Radiation Environmental Monitoring Plan* (CWM, March 2006). All results obtained to date show no elevated radiological constituents in any of these media. Sampling and radiological analysis is ongoing and will be continued until approval to terminate is received from the NYSDEC. In addition to the surface survey and environmental media testing, CWM conducted a chemical and radiological subsurface sampling program in areas that would be affected by the RMU-2 project between August 2008 and February 2009 (*Results of Subsurface Soil and Pond Sediment Sampling for RMU-2* [URS, April 2009]). These areas include the RMU-2 footprint, location of the relocated Drum Management Building, location of new Fac Pond 5, Fac Pond 3 and Fac Pond 1/2. Soil borings up to 20 feet deep were completed in a systematic grid based pattern within the areas of RMU-2, Fac Pond 5 and the Drum Management Building. The soil cores

were scanned for chemical and radiological contamination. If the meter identified elevated readings, a sample was taken and sent off site for analysis. In addition, sediments from the floor of Fac Ponds 1/2 and 3 were radiologically screened and samples were obtained for radiological analysis.

Over 300 sample locations were evaluated during the subsurface investigation program. Only three locations exhibited levels that exceeded background levels. At one location within the original RMU-2 footprint (location 63), the boring contained some plastic pieces which likely were the source of the higher concentrations of radionuclides found in the adjacent soil. Two other locations within the original RMU-2 footprint (locations 43 and 61) found significant chemical contamination which is likely attributable to past historical activities on the property (*Letter Report on RMU-2 Footprint Investigation Boring Program* [Golder, March 2009]). As a result of these discoveries, the RMU-2 footprint was revised to exclude these three areas.

During 2010, a Radiological Characterization Investigation was performed of Fac Pond 8. During the investigation, Fac Pond 8 was divided into twelve, 2,000-square meter survey units. The investigation included gamma walkover surveys, the installation of 193 soil borings, and the collection of 207 soil samples from the soil borings. Readings above investigation levels were discovered within two of the survey units, and radiological contamination was verified through sampling and laboratory analyses. This effort demonstrated in accordance with MARSSIM guidance that all but two of the survey units are below the remedial standards developed for nearby FUSRAP sites and consistent with background concentrations.

A Remedial Action Plan (RAP) was prepared utilizing the data generated from the previous investigations to calculate the risk associated with various exposure scenarios and to derive an appropriate guideline level that can be used during Fac Pond 8 remedial activities. Remedial activities were performed between September and November 2011 and included the removal of soil with suspected MED material above established cleanup levels and the performance of a Final Status Survey (Completion Report for the Remediation of Facultative Pond 8, CWM Model City [Los Alamos Technical Associates, Inc., January, 2012]). Results of the remediation and FSS indicate that the area may be released for future development without the threat of MED radiological conditions above regulatory criteria. However, an investigation performed of the North Berm of Fac Pond 8 indicates soil is present with non-MED material slightly above the cleanup objectives established in the RAP. An approximate 18-inch layer of soil slightly above the cleanup objectives is located in the north berm of Fac Pond 8 approximately 10 feet below ground surface. The NYSDEC has indicated that CWM's forthcoming Sitewide Part 373 Permit Renewal will contain a requirement to complete additional radiological characterization, remedial activities and a final radiological survey of Fac Pond 8 as part of the closure of the area. The soil layer in the North Berm of Fac Pond 8 will be excavated, removed, and properly disposed in accordance with the RAP and Remedial Action Work Plans established for the remediation of Fac Pond 8 to complete the closure of the pond.

CWM has developed a plan for performing chemical and radiological evaluation for routine small soil excavation projects. For smaller projects, chemical and radiological instrumentation will be used. Prior to any excavation, a radiological survey meter and VOC meter would be used to screen the soil surface prior to

excavation. Investigation levels would be set to determine whether the excavation can safely proceed. Soil would be removed in approximately 6-inch lifts. During excavation, these same methods would be used on each lift prior to proceeding to the next deeper level. Finally, the radiological and chemical screening would be performed on the final excavated surface and the resulting stockpile of excavated soil. If readings higher than the investigation levels are detected at any stage, appropriate actions will be taken, such as stopping the excavation, characterization of the high reading, removal of suspect sources, detailed analysis of the contamination and disposal of the contaminated materials. For large project excavations, such as RMU-2, CWM has developed a similar plan for evaluating potential chemical and radiological contamination, entitled *RMU–2 Project Specific Soil Excavation Monitoring and Management Plan*.

3.2 Geologic Resources

3.2.1 Topography

The Towns of Porter and Lewiston are part of the Iroquois Lake Plain. The plain is located north of the Niagara Escarpment, the northernmost major topographic feature in Niagara and Erie Counties. Both the elevation and relief of the land surface tend to increase from north to south. The Model City Facility is located on a flat plain forming a portion of the extended Lake Ontario shoreline natural grade. Ground elevations on the Model City Facility vary from 308 to 338 feet amsl. Surface drainage at and in the vicinity of the Model City Facility is generally to the north towards Lake Ontario.

3.2.2 Geology and Soil

3.2.2.1 Introduction

Numerous past investigations have been conducted throughout the Model City Facility. Geologic and hydrogeologic investigations for the entire facility were performed by Golder and submitted to the NYSDEC and the USEPA in March 1985. Golder has also prepared two updates to the 1985 Site-Wide Investigation in 1988 and 1993. These studies detailed the physiography, drainage, regional geology, site stratigraphy, hydrogeology and site hydrologic parameters. In terms of hydrogeology, these studies focused on defining the uppermost aquifer underlying the Model City Facility, groundwater flow direction and flow rates.

A geologic investigation for the portion of the Model City Facility in the area of RMU-2 was also performed by Golder and presented in the report entitled *Letter Report on Geotechnical Investigation for Proposed Residuals Management Unit Number 2 - Western Expansion Area* (Golder, December 2002). In general, the 2002 Golder report confirmed the geologic and hydrogeologic findings presented in the 1985, 1988 and 1993 Site-Wide Investigations. Additional hydrogeologic investigations were performed in 2004 and 2009 by Golder to obtain geological and subsurface site stratigraphy data specific to the proposed RMU-2 location. Additionally, groundwater elevation data collected in 2008 in the area of the proposed RMU-2 was utilized during design of RMU-2. Consequently, although the geologic and hydrogeologic information presented in

the following sections was obtained primarily from the 1985, 1988 and 1993 Golder studies, some additional detail was also incorporated from the Golder 2002, 2004 and 2009 reports.

3.2.2.2 Geology

The Model City Facility is situated in the Erie-Ontario Lowlands Physiographic Province. This physiographic province is characterized by an area of low relief with gently rolling broad hills, bordered by the Appalachian Uplands to the south and Lake Ontario to the north. The Model City Facility specifically is located on the Ontario Plain that is a relatively flat lowland area situated between Lake Ontario and the Niagara Escarpment. The Ontario Plain slopes very gently northward at approximately a 0.3% grade from about 375 feet amsl at the base of the Niagara Escarpment to an elevation of about 275 feet amsl near the Lake Ontario shoreline. Actual on-site elevations vary approximately 5 to 10 feet over a distance of up to 4,400 feet. The average northerly surface gradients across the Model City Facility are between 0.1% and 0.2%.

The bedrock beneath the Model City Facility is mapped as the Queenston Formation of Upper Ordovician age. The presence of the Queenston Formation beneath the Model City Facility was confirmed during the installation of borings (including coring and sampling) at the Model City Facility. Based on core samples, the Queenston Formation in this area consists of reddish brown fissile shale with occasional green shale bands and ½ inch to 1-inch-diameter gypsum (calcium sulfate) nodules. Gypsum was also identified as joint and bedding plane fillings. The upper 5 to 15 feet of bedrock is highly weathered, obliterating any preferential joint patterns and bedding surfaces. The unconsolidated geology at the facility consists of 30 to 60 feet of glacial and glaciolacustrine deposits of Late Wisconsin age.

The slope of the bedrock surface beneath the Model City Facility generally rises from northwest (approximately 250 feet amsl) to southeast (approximately 285 feet amsl).

The top of rock surface generally undulates in a northeast-southwest trend. These undulations are likely to be an indication of layers of more resistant rock within the Queenston Formation that have formed buried ridges.

3.2.2.3 Unconsolidated Deposits

Overlying the bedrock in the vicinity of the Model City Facility is a sequence of approximately 30 to 60 feet of glacial and glaciolacustrine deposits of Late Wisconsin age deposited as a result of the advance, retreat and re-advance of major continental ice sheets during the Pleistocene Epoch. These deposits are typically Glacial Tills and Glaciolacustrine units, comprised of varying proportions of gravel, sand, silt and clay. The relationships of these materials and their hydrogeologic properties are described in more detail in following sections.

Soils are discussed in this section as those unconsolidated lithologic units occurring above bedrock and not as “soil” in the pedogenic sense. The various lithologic units are described with respect to gross physical characteristics and depositional origin. Generally, seven units have been characterized at the Model City Facility, although some units pinch and thin and, therefore, may or may not be present at various localities within the study area. The various units are discussed below and a typical geologic cross-section of the Model City Facility is presented on Figure 3-3. Based on information derived from 10 soil borings drilled in the area of RMU-2 during November 2002, the approximate thickness of each unit is noted.

3.2.2.3.1 Basal Red Till

This unit immediately overlies the shale bedrock and is the lowermost glacial deposit encountered in the vicinity of the Model City Facility. This unit is a Lodgement Till, derived from eroded and reworked materials from the Queenston Formation. It is generally characterized as a very compact, reddish, high-density silt and coarse to fine sand, with a little fine gravel. Red and green shale clasts are common. In general, this unit varies in thickness from 2 to 10 feet in the vicinity of RMU-2.

3.2.2.3.2 Glaciolacustrine Silt/Sand

The Glaciolacustrine Silt/Sand unit directly overlies the Basal Red Till. The thickness and composition of this unit varies across the Model City Facility. This unit typically consists of four subunits: stratified coarse sand, non-stratified silt and sand, stratified silt and fine sand and inter layered silt, sand and clay. The contact between the units or subunits may be either transitional or sharp. Based on borings installed in 1988 and 2002, the Glaciolacustrine Silt/Sand unit varies from 5 to approximately 25 feet thick in the vicinity of RMU-2.

3.2.2.3.3 Glaciolacustrine Clay

The Glaciolacustrine Clay unit typically overlies the Glaciolacustrine Silt/Sand unit. The contact between these two units is usually sharp. However, within the central area of the Model City Facility, the contact is transitional, as noted by interbedded sand, silt and clay layers. The Glaciolacustrine Clay is usually described as very soft to firm, gray to gray-brown, silty clay to clay, trace fine sand. Occasional gravel or coarse sand sized dropstones throughout, laminated, with occasional thin red-brown to gray silt and fine sand layers.

Abrupt clay thickness variations have been observed between boreholes in areas within the Model City Facility. These variations appear to be caused by displacement of the clays by the overlying tills. The top of clay surface generally follows the regional slope northward towards Lake Ontario.

In the northwest portion of the Model City Facility, the Glaciolacustrine unit is split into an upper and lower member by the Middle Silt Till. Typically, where the clay occurs as one layer, it is approximately 20 feet thick. Where the clay is split by the Middle Silt Till and occurs in two layers, the upper layer is approximately 10 feet thick.

The Glaciolacustrine Clay unit typically overlies the Glaciolacustrine Silt/Sand unit. The contrast between these two units is usually sharp. The Glaciolacustrine Clay is described as very soft to firm reddish brown to gray brown silty clay with occasional silt and fine sand partings and seams. The thickness of Glaciolacustrine Clay generally varies from 5 to 25 feet across the Model City Facility and from less than 1 foot to 25 feet beneath the RMU-2 footprint.

3.2.2.3.4 Middle Silt Till

The Middle Silt Till is found in the northwest and west portion of the Model City Facility. This unit was apparently deposited during a limited ice sheet advance from the northwest. A typical description of this unit is compact to very dense, gray to gray-brown, silt and coarse to fine sand, trace to some fine gravel. Gravel as limestone and shale clasts, dilatant. In general, the Middle Silt Till typically ranges from 3 to 15 feet thick at the Model City Facility. In the vicinity of RMU-2, the Middle Silt Till is discontinuous, but, where present, it is generally 4 to 11 feet thick.

As a result of glacial advance, the Middle Silt Till is interbedded with the Glaciolacustrine Clay unit in the vicinity of RMU-2. The Middle Silt Till is found between the upper and lower members of the Glaciolacustrine Clay in the northwest portion of the Model City Facility. Elsewhere at the Model City Facility, the lower Glaciolacustrine Clay is absent and the Middle Silt Till directly overlies the Basal Red Till or Glaciolacustrine Silt/Sand.

3.2.2.3.5 Upper Till Units

The Upper Silt Till is discontinuous throughout much of the Model City Facility and is generally more prevalent in the northern portion of the facility. This unit directly overlies the Glaciolacustrine Clay unit and occasionally is overlain by thin, discontinuous pockets of clay, silt and fine sand. The Upper Silt Till is typically described as compact to very dense, gray to gray-brown, silt and coarse to find sand, trace to some fine gravel. This unit varies in thickness from 3 to 7 feet in the vicinity of RMU-2.

In general, the Upper Clay Till is a continuous unit found underlying the Model City Facility. This unit overlies the Upper Silt Till or in some areas (for example, the southern half of the Model City Facility) it directly overlies the Glaciolacustrine Clay unit. The Upper Clay Till is typically described as stiff to hard, brown to purple-brown mottled, clayey silt to silty clay, some coarse to find sand, little fine gravel. This unit also exhibits remnant desiccation features and fractures formed by sediment drying or long-term stress relief from glaciation, respectively. These features are found to depths up to 18 feet below ground surface. The thickness of this unit varies from 5 to 16 feet at the location of RMU-2.

The Upper Till units form most of the ground surface at the Model City Facility. Both tills were most likely deposited during glacial re-advances. The Upper Till units have a combined thickness of 10 to 20 feet across the Model City Facility.

3.2.2.3.6 Alluvium

The Alluvium unit is discontinuous across the Model City Facility with a maximum thickness of approximately 6 feet in isolated locations. The Alluvium unit was not encountered within the limits of RMU-2 during recent drilling activities. The source of the Alluvium unit is most likely related to the early stages of glacial Lake Iroquois. This unit is typically described as stiff to hard, brown to yellow-brown, laminated fine sand and/or silt and/or silty clay stratified.

3.2.3 Seismic Activity

The Niagara Quadrant, in which the Model City Facility is located, has no known active major tectonic features. Stress relief tensional faults are known to exist regionally in the subsurface bedrock units of western NYS and are related to pressure release and uplift following retreat of the Pleistocene glaciation. However, these features have not been positively identified or correlated in on-site bedrock lithologies.

The Richter scale, which is widely used to describe the magnitude of earthquakes, also correlates anticipated results and anticipated impacts of earthquakes to their magnitude. According to the Richter scale, an earthquake with a magnitude of 2.0 to 2.9 is described as minor and is generally not felt by the community, but is recorded by seismic measurement devices. An earthquake with a magnitude of 5.0 to 5.9 is described as moderate and will rarely cause damage to well-built structures.

A number of earthquakes have occurred in NYS since 1737 with magnitudes of 4.0 or greater. In 1929, an earthquake with a magnitude of 5.5 was recorded near Attica, New York, approximately 45 miles east of the Model City Facility, along the Clarendon-Linden fault zone. Two other earthquakes with magnitudes of 4.6 and 4.4 were also recorded near Attica, New York in 1966 and 1967, respectively.

Numerous low magnitude earthquakes have also been detected at Dale, New York along the same Clarendon-Linden structure (Van Tyne, 1975). A documented earthquake in the western New York area was recorded near Batavia on July 16, 1986, with a magnitude of approximately 2.5. About 10 seismic events with magnitudes between 2.0 and 2.9 have been recorded within a 50-mile radius of the Town of Lewiston. The following minor earthquakes have been recently registered in the vicinity of western NYS:

- In 1994, a 3.5 magnitude earthquake was located near Cuylerville, New York;
- In 1995, a 2.5 magnitude earthquake was located in southeastern Monroe County, New York and a 2.7 magnitude earthquake was located northwest of Geneseo, New York;

- In 1996, Batavia, New York registered a 2.7 magnitude earthquake and Niagara Falls, New York registered a 2.1 magnitude earthquake;
- In 1997, northeast of Batavia, New York registered a 2.5 magnitude earthquake;
- In 1999, Geneseo, New York registered 2.5 and 2.4 magnitude earthquakes;
- In 1999, a 3.8 magnitude earthquake was located in Lake Ontario approximately 36 miles northwest of Model City, New York;
- In 2000, a 3.1 magnitude earthquake was registered near Toronto, Canada, approximately 43 miles northwest of Model City, New York;
- In 2006, a 2.7 magnitude earthquake was registered near Toronto, Canada;
- In 2007, a 2.6 magnitude earthquake was registered south of Buffalo, New York.
- In 2008, a 1.5 magnitude earthquake was registered in Niagara Falls, New York; and
- In 2009, a 2.1 and a 1.9 magnitude earthquake were registered near Niagara Falls, New York, as well as a 2.9 magnitude earthquake registered near Dansville, New York.

Given the frequency of seismic activities and reported magnitudes, the study area is classified as having moderate seismic risk by the USGS.

3.3 Water Resources

3.3.1 Groundwater

3.3.1.1 Introduction

The hydraulic conductivity ("hydraulic conductivity" is synonymous with "permeability" that is defined in Section 2.6.6) of the Queenston Formation and the unconsolidated units found at the Model City Facility were measured in the *1993 Hydrogeologic Characterization Update* (Golder, 1993), based on approximately 440 field and laboratory tests. Calculated values for horizontal hydraulic conductivity (k_H) and vertical hydraulic conductivity (k_V) for each unit (when available) are presented in the following paragraphs. Calculated values of vertical and horizontal flow gradients are also presented when available.

3.3.1.2 Queenston Formation

Based on rising head tests conducted during the *1985 Characterization Study*, the bulk hydraulic conductivity of the shallow bedrock was determined. Hydraulic conductivity testing was generally performed with two intervals of the shallow bedrock of the Queenston Formation. Based on testing within the first 10 feet of bedrock, a horizontal hydraulic conductivity of 1 x 10^{-5} cm/sec was estimated (note that 1 foot/year equals approximately 1 x 10^{-6} cm/sec). Utilizing the results of three tests conducted lower within the formation (approximately 50 feet), a horizontal hydraulic conductivity of approximately 5 x 10^{-6} cm/sec was calculated. Based on water levels recorded in 1986, horizontal flow gradients within this formation ranged from 0.0006 to 0.01.

3.3.1.3 Basal Red Till

Utilizing the results of two field tests, the horizontal hydraulic conductivity of this unit was calculated to be approximately 4 x 10^{-8} cm/sec. Four laboratory permeability tests (including three remolded samples) yielded a vertical hydraulic conductivity value of approximately 3 x 10^{-8} cm/sec. A horizontal flow gradient of 0.003 was calculated in the direction of aquifer flow across the south-central portion of the Model City Facility. This value for horizontal flow gradient within the unit was derived from water levels recorded in December 1986. Vertical flow gradients were also calculated and ranged from 0.00 to 0.10 downwards, with an average of 0.04.

3.3.1.4 Glaciolacustrine Silt/Sand

The Glaciolacustrine Silt/Sand unit, given the variations within subunits, indicated a range of horizontal hydraulic conductivity value of 2 x 10^{-4} cm/sec to 3 x 10^{-6} cm/sec, based on testing performed during the *1985 Characterization Study*. From this study, a geometric mean of 3 x 10^{-5} cm/sec was calculated for this unit. Vertical hydraulic conductivity has been assumed equal to the horizontal conductivity for the coarse portion of the Glaciolacustrine Silt/Sand unit. Transmissivity was estimated for this unit based on hydraulic conductivity values derived from rising head tests and the estimated thickness of the unit. In general, this unit is described as being more transmissive in the north and south portions of the Model City Facility and less transmissive in the center of the Model City Facility. Horizontal flow gradients for this unit are very low and range from 0.006 to 0.013.

3.3.1.5 Glaciolacustrine Clay

Based upon tests conducted for the *1985 Characterization Study*, a geometric mean for the horizontal hydraulic conductivity of this unit of approximately 5 x 10^{-8} cm/sec was calculated. Values of horizontal hydraulic conductivity were determined by direct measurements, from laboratory tests on horizontally oriented specimens and by field tests. A geometric mean of 2 x 10^{-8} cm/sec was calculated for the vertical hydraulic conductivity of this unit.

Vertical flow gradients exist within the Glaciolacustrine Clay and vary across the Model City Facility. Over most of the Model City Facility, the variation in vertical flow gradients have been derived from the variable thickness of this unit and are not derived from variations in potentiometric head above and below the unit. In the northwest portion of the Model City Facility, however, the vertical flow gradients are caused by variations in potentiometric head above and below the unit. Utilizing water-level measurements recorded in December 1986, estimated vertical flow gradient ranging from 0.37 upwards to 1.58 downwards was determined. A horizontal flow gradient of approximately 0.002 was determined from the December 1986 water-level measurements.

3.3.1.6 Middle Silt Till

A geometric mean of 3×10^{-6} cm/sec for the horizontal hydraulic conductivity of the Middle Silt Till unit was calculated during the *1985 Characterization Study*. Two laboratory tests were also conducted during this study to determine the vertical hydraulic conductivity of this unit. These laboratory tests yielded values of approximately 1×10^{-7} cm/sec.

Utilizing water-level measurements recorded in piezometers installed in the Middle Silt Till, a horizontal flow gradient of 0.005 was calculated for this unit across the west-central portion of the Model City Facility. Vertical flow gradients in this unit have not been determined during previous studies.

3.3.1.7 Upper Till Units

Hydraulic conductivity values for the Upper Till units (i.e., Upper Silt Till and Upper Clay Till) were determined by testing conducted during the *1985 Characterization Study* and tests performed on the revised monitoring system. Based on testing associated with the *1985 Characterization Study*, a geometric mean for horizontal hydraulic conductivity of 3×10^{-6} cm/sec was calculated for these units. Vertical hydraulic conductivity was measured in laboratory tests performed during the *1985 Characterization Study* and indicated a geometric mean of 2×10^{-8} cm/sec. The vertical conductivity was also estimated to be 6×10^{-7} cm/sec due to the structural discontinuities in the Upper Tills (*1993 Hydrogeologic Characterization Update* [Golder, 1993]).

In general, vertical flow gradients in the Upper Tills are low, with values ranging from 0.004 to 0.021. A downward gradient of 0.006 is considered representative of these units. Horizontal flow gradients in these units were estimated from the slope of the potentiometric surface. Utilizing this method, horizontal flow gradients varied from approximately 0.001 in the eastern portions of the Model City Facility to approximately 0.004 in the center of the facility.

3.3.1.8 Alluvium

Based on testing conducted during the *1985 Characterization Study*, a horizontal hydraulic conductivity value of 3×10^{-6} cm/sec and a vertical hydraulic conductivity value of 1×10^{-5} cm/sec were calculated for the Alluvium unit. This unit is minor in extent and not considered of major significance in the groundwater hydrogeologic system.

3.3.1.9 Discussion

The hydraulic conductivities of the geologic units assessed in previous studies indicate that the Glaciolacustrine Silt/Sand unit is the most permeable unit and forms an uppermost, confined aquifer beneath the Model City Facility. Recharge to this aquifer is restricted by overlying, less permeable Glaciolacustrine Clay unit and the Upper Till units. Discharge of the overburden aquifer (Glaciolacustrine Silt/Sand unit) to the bedrock is restricted in part by the Basal Red Till below. The shallow weathered and fractured shale bedrock is more permeable than the deeper, unweathered bedrock and forms a lower confined aquifer.

The groundwater flow in the Glaciolacustrine Silt/Sand unit at the Model City Facility is predominantly north-northwest. Previous dewatering of the Glaciolacustrine Silt/Sand unit at the neighboring Modern Landfill Facility caused a temporary flow reversal towards the south in a portion of the Model City Facility. Dewatering at the Modern Landfill Facility was stopped in March 1999 and is not intended to be resumed for several years. The groundwater flow direction in the Glaciolacustrine Silt/Sand unit has returned to the condition that existed prior to the dewatering. If the Modern Landfill Facility begins dewatering activities again, southerly flow would be re-established. At that time, the RMU-2 groundwater monitoring network would be evaluated and the need for additional monitoring wells on the south side of the landfill would be determined.

Although water-level data has been collected routinely for the Glaciolacustrine Silt/Sand unit since 1977, data collected through 1983 is generally not considered reliable enough for comparison purposes because several different procedures were used to measure groundwater elevations, each with varying degrees of accuracy. The May 2001 and October 2004 monitoring event data and resulting piezometric contours (depending on location) were used to develop design constraints for RMU-2 (Figure 3-4) to depict the worst case scenario in terms of hydrostatic uplift potential.

In addition to the confined Glaciolacustrine Silt/Sand aquifer, there is a near surface-water table in the Upper Tills, which is considered to be part of the uppermost water-bearing unit by the NYSDEC. Groundwater in this unit is not considered usable as a potable water supply due to water quality and quantity. Potentiometric contours in the Upper Tills indicate that lateral flow of shallow groundwater in this unit is predominantly north-northwest following the slope of the ground surface. In addition to surface topography, potentiometric contours in this unit are also affected by area drainage features and ponded areas. Barring the effects of these features, the water-table surface in the Upper Tills unit is approximately parallel to the ground surface, which drains to Lake Ontario. Its depth is noted to be approximately 2 to 5 feet below grade.

Field-specific conductance measurements performed on water samples from monitoring wells indicate that total dissolved solids (TDSs) in the shallow, fractured bedrock is slightly higher than in the glacial soils. TDSs in the deeper bedrock are much higher. The TDS estimates are generally greater than 1,000 milligram per liter (mg/L) in glacial soils and the shallow rock that are considered saline by NYSDEC groundwater quality standards (6 NYCRR Part 703). Groundwater in the deeper bedrock was found to be very saline, containing approximately 20,000 mg/L of TDSs.

The estimated groundwater flow rates through the various geologic units are low, on the order of approximately 4 feet to fractions of a foot per year.

3.3.2 Surface Water

The following streams, with the applicable NYS Stream Classifications and Standards as indicated, receive surface-water runoff from the Model City Facility:

- Twelve Mile Creek: Class B, Standard B(T), from the mouth to NYS Route 18, then Class C, Standard C(T), to Braley Road, then Class C Standard C, to headwaters; and

- Four Mile Creek: Class B, Standard B, from the mouth to 0.9 miles upstream at Tributary 1, then Class C, Standard C, to headwaters.

All portions of these creeks and tributaries to these creeks within the Model City Facility area are Class C, Standard C streams. Most of the Model City Facility property drains to Six Mile Swale. Six Mile Swale empties into Four Mile Creek, approximately 2 miles northwest of the Model City Facility. Four Mile Creek is the principle watershed flowing north through agricultural areas and Four Mile Creek State Park to Lake Ontario. Twelve Mile Creek flows through the eastern portion of the Model City Facility, then north through agricultural areas and Roosevelt Beach to Lake Ontario. None of these streams are located within the proposed site of RMU-2, nor will they be modified as part of the RMU-2 project.

NYSDEC SPDES Permit NY0072061 for the Model City Facility contains the requirements for point source discharges of stormwater runoff through Outfalls 002, 003 and 004. Outfalls 002 and 003 discharge the majority of stormwater from the Model City Facility to a tributary of Four Mile Creek. Outfall 004 discharges the RMU-1 ESRB to Twelve Mile Creek.

There were two significant NYSDEC-initiated modifications to the SPDES Permit issued by the NYSDEC in 2000. On February 11, 2000, stormwater Outfalls 002 through 004 were modified to lower the limits for PCBs, total suspended solids (TSS) and settleable solids and to increase the monitoring frequency for those constituents and TDS, VOCs, oil and grease.

On December 4, 2000, the NYSDEC issued a SPDES Permit modification to increase the sampling frequency and revise the sampling method for PCBs, TSS, TDS and settleable solids at Outfalls 002, 003 and 004.

On October 5, 2007, the NYSDEC initiated a draft modification to the CWM SPDES Permit with several significant proposed revisions. This modification is pending. On April 2, 2008, the NYSDEC extended the existing SPDES Permit until the proposed modification is finalized. In January 2010, the NYSDEC issued a draft permit for public comment, and a public hearing was held in February 2010.

Based on operational experience at the Model City Facility, no history of on-site flooding and flood-related problems have been identified since the Model City Facility began operations in 1972 as Chem-Trol Pollution Services, Inc. Additionally, Federal Emergency Management Agency Flood Insurance Rate Maps for the proposed area of RMU-2 have not been printed.

As part of previous permitting for RMU-1, the 100-year floodplain and floodway area for Twelve Mile Creek was determined via hydraulic analysis (Wehran-Envirotech, 1993). It was determined that the location of RMU-1 would not alter the pre-development 100-year floodplain, flood flow velocities or flood water surface elevations. However, the analysis showed that approximately 16-acre-feet of flood water storage capacity would be lost. Therefore, CWM constructed a compensatory flood water storage area in 2000 to replace this capacity. This flood water storage area is located near Twelve Mile Creek in an undeveloped portion of the Model City Facility within the Town of Lewiston. Because RMU-2 would be located over 1,500 linear feet further away from Twelve Mile Creek than the affected portion of RMU-1 and as verified by the previous hydraulic analysis, RMU-2 would not impact the 100-year floodplain. Due to its remote location from Four Mile Creek (approximately 2 miles), RMU-2 would also not affect its 100-year floodplain.

3.3.3 Treated Wastewater Discharge

Discharge of treated wastewater from the Model City Facility is covered by SPDES Permit NY0072061. Process wastewater, landfill leachate and contaminated aqueous waste are treated through the AWTS and pumped into Fac ponds for final treatment and storage prior to discharge. The receiving water body for this discharge, designated Outfall 001, is the Niagara River.

CWM's SPDES Permit contains all requirements associated with the discharge of treated wastewater to the Niagara River. When a Fac pond is ready for discharge, all inputs to the pond, except rainwater, are shut off and the pond is sampled. Grab samples are taken from the top, middle and bottom of the pond at five different locations (center and four corners). The NYSDEC is always notified prior to sampling. The samples are composited by depth, resulting in three composite samples (top, middle and bottom), to represent the total contents of the pond. Each composite is analyzed separately for many different parameters, including pH, solids, biological oxygen demand, nitrates, oil and grease, metals, volatile organics, semivolatile organics, phenols and PCBs. Acute toxicity testing is performed on vertebrate and invertebrate species using the pond water and control water from the Niagara River.

Treated wastewater is discharged on a batch basis through the underground pipeline to the Niagara River where submerged diffusers on the end of the pipe distribute the water into the river. The SPDES Permit allows a maximum flow of 1 million gallons per day between April 1 and November 30. Due to the capacity of the Fac pond, this currently results in an annual discharge of approximately 15 to 20 million gallons, typically over a 1 month period in the fall. Prior to each discharge, a diver must inspect the diffuser structure (unless waived by the NYSDEC due to minimal amount of ice during the previous winter) and the entire pipeline must be pressure tested to check for leaks.

The results of the chemical and toxicity analysis, pressure testing and inspections are submitted to the NYSDEC for approval prior to discharge. Discharge cannot begin until the pre-qualification report is accepted by the NYSDEC. During discharge, the entire pipeline must be visually inspected and piezometers along the route must be monitored at frequencies specified in the permit. Additional monitoring for flow, specific conductance and temperature is required continuously during discharge.

Chemical sampling of the Niagara River water is not required by CWM. However, the use of Niagara River water during toxicity testing allows a comparison between results from samples of the river water and CWM's treated wastewater. In the 1980s, CWM conducted a series of dilution dye studies during several discharges to determine the diffusion after the discharge into the river. Those studies demonstrate very rapid diffusion within a short distance from the diffuser.

The proposed RMU-2 site includes land currently occupied by Fac Pond 3 and Fac Pond 8. Fac Pond 3, located west of SLF-10, is currently utilized for storage of treated wastewater. Wastewater stored in Fac Pond 3 is discharged to the Niagara River following approval of the pre-qualification testing described above. Fac Pond 8, located immediately west of RMU-1, is not currently operated by the Model City Facility and is scheduled for closure. In order to compensate for the treated wastewater volume reduction due to the removal of Fac Ponds 3 and 8 a new lined surface impoundment designated as Fac Pond 5 will be installed. Fac Ponds 1 and 2 would discharge to Fac Pond 5, which would then serve as the final qualification pond discharging to the Niagara River. The conditions of the existing SPDES Permit are not expected to be affected.

3.4 Air Resources

3.4.1 Climate

The climate of western NYS is representative of the moist, continental type that affects the northeastern U.S. The region is affected by storms and frontal systems that travel across the continent and by storms moving up the Atlantic Coast. Consequently, the region may experience a variety of weather within a period of a few days. The Great Lakes are also a major influence on regional climate. There is considerable variation in seasonal weather from year to year. However, the following description is generally true of seasonal weather patterns.

Winters are generally long and cold, with persistent cloudiness. Coldest winter temperatures are between 5°F and 10°F below zero; severe winter colds with extended periods of subfreezing temperatures occur from early December to mid-March. Snowfall in Buffalo, New York averages 97.15 inches.

Summers are generally warm. The daily temperature range is from near 60°F at night to the low 80°F in the afternoon. Temperatures above 90°F occur on 8 to 15 days during the period from early June to early September.

During spring, the effect of cold waters in the Great Lakes is to reduce daytime warming. During autumn, the comparatively warm waters of the Great Lakes moderate the cooling of the atmosphere.

Monthly accumulations of precipitation and snowfall and mean temperatures for Buffalo, New York from 2003 to 2008 are presented in Table 3-1. Site-specific rainfall data from 2003 through 2008 are given in Table 3-2.

Wind data for the site appears on Figure 3-5. Based on the profile, prevailing winds are predominantly from the southwest.

Mixing height is defined as the height above the surface through which relatively vigorous atmospheric mixing occurs. Mixing heights experience a large diurnal variation, as well as seasonal variations. For the Buffalo area, mean annual morning mixing heights are 630 meters; mean annual afternoon mixing heights are 1,275 meters. Average wind speeds throughout the mixing height are 6.1 miles and 7.6 miles for mornings and afternoons, respectively. These conditions allow for generally good dispersion of near surface atmospheric emissions (Holyworth, 1972).

3.4.2 Air Quality

The Model City Facility is located within the Niagara Frontier Air Quality Control Region. The status of the region with respect to the National Ambient Air Quality Standards (AAQS) is attainment with respect to carbon monoxide, lead, sulfur dioxide, nitrogen dioxide and respirable particulates (particulate matter of 10 microns in diameter or smaller [PM-10]). With respect to ozone, the USEPA has included NYS as part of the Northeast Ozone Transport Region. However, the USEPA has determined that the Buffalo-Niagara Falls area, specifically, including Erie and Niagara County, is a Marginal Ozone Non-Attainment area.

TABLE 3-1

METEOROLOGIC DATA FOR
BUFFALO, NEW YORK
2003 - 2008

	2003	2004	2005	2006	2007	2008
JANUARY						
Precipitation	2.30	2.95	3.57	3.67	4.77	2.33
Snowfall	37.4	45.2	37.0	7.10	15.5	17.5
Temperature	19.0	17.4	23.8	34.9	28.9	29.7
FEBRUARY						
Precipitation	2.69	1.15	2.42	2.45	1.71	4.83
Snowfall	19.5	5.90	22.3	26.3	33.5	22.5
Temperature	20.8	25.5	25.3	27.9	18.6	25.1
MARCH						
Precipitation	2.81	3.10	1.38	2.14	2.61	4.22
Snowfall	6.60	20.7	17.5	6.50	5.40	29.1
Temperature	33.5	37.1	29.4	35.2	35.0	31.5
APRIL						
Precipitation	0.90	3.94	4.50	1.98	2.96	2.05
Snowfall	3.10	3.30	9.30	0.10	2.30	T
Temperature	43.0	46.0	46.8	48.0	42.5	50.9
MAY						
Precipitation	5.43	5.72	0.60	1.90	0.87	2.54
Snowfall	0.00	0.00	0.00	0.00	0.00	0.00
Temperature	55.4	58.2	53.5	60.0	59.2	53.3

TABLE 3-1

METEOROLOGIC DATA FOR
BUFFALO, NEW YORK
2003 – 2008

JUNE	2003	2004	2005	2006	2007	2008
Precipitation	1.79	2.02	3.27	3.38	1.82	4.91
Snowfall	0.00	0.00	0.00	0.00	0.00	0.00
Temperature	63.5	63.6	71.8	68.3	69.4	67.9
JULY						
Precipitation	3.69	6.04	1.82	4.60	3.31	2.80
Snowfall	0.00	0.00	0.00	0.00	0.00	0.00
Temperature	69.6	69.1	75.0	73.7	69.7	71.4
AUGUST						
Precipitation	2.47	1.86	5.92	3.28	1.13	5.33
Snowfall	0.00	0.00	0.00	0.00	0.00	0.00
Temperature	70.8	67.2	72.8	69.7	72.3	68.5
SEPTEMBER						
Precipitation	3.91	4.07	4.57	6.95	3.55	3.96
Snowfall	0.00	0.00	0.00	0.00	0.00	0.00
Temperature	62.8	65.2	66.0	60.5	66.1	64.2
OCTOBER						
Precipitation	3.43	2.98	2.64	8.75	2.73	4.13
Snowfall	T	T	0.00	22.6	0.00	0.10
Temperature	48.8	51.6	52.7	49.0	58.8	49.6
NOVEMBER						
Precipitation	4.10	2.91	5.70	2.15	5.38	3.34
Snowfall	4.20	0.20	17.9	2.10	3.40	6.20
Temperature	43.1	42.4	43.3	44.6	39.0	39.8
DECEMBER						
Precipitation	3.64	4.99	2.36	3.16	4.28	6.79
Snowfall	21.6	22.8	20.3	7.50	31.3	49.2
Temperature	33.2	29.7	27.1	37.2	29.3	29.4

NOTES:

Precipitation and snowfall are presented in inches.

Temperature (mean) is presented in ^{o}F.

T is defined as trace.

TABLE 3-2

MONTHLY RAINFALL (inches)
RECORDED AT MODEL CITY FACILITY
2003 - 2008

Month	2003	2004	2005	2006	2007	2008
January	0.58	1.70	2.68	2.16	2.84	0.72
February	1.33	0.42	1.53	1.34	1.19	3.57
March	1.87	2.10	0.82	1.53	2.77	3.81
April	2.13	4.12	4.69	1.86	1.84	1.48
May	4.69	4.13	0.74	1.42*	1.08	2.15
June	1.81	2.58	1.68	1.55	1.38	3.61
July	2.65	5.06	2.03	4.54	2.53	2.90
August	2.73	1.99	3.92	3.15	0.84	1.79
September	2.70	3.51	3.76	5.41	2.07	2.67
October	2.09	1.26	3.71	4.94	1.53	1.86
November	3.43	2.23	3.03	2.71	2.61	2.29
December	1.91	2.71	1.43	2.99	3.80	3.82
Total	27.91	31.81	30.02	33.60	24.48	26.85

* Due to a power failure at the Model City Facility's MET station, a portion of the May 2006 data was lost. Therefore, the 1.42-inch total for May 2006 and the 33.50-inch total for 2006 should be considered as minimum values.

The region is also covered by NYS AAQS. Regional air quality data has historically showed all monitoring stations within the region to be in compliance with NYS AAQS. Annual regional averages for 2003 to 2007 are shown in Table 3-3.

All NYS monitoring sites were in compliance with standards for sulfur dioxide, total suspended particulate (TSP), carbon monoxide, ozone, nitrogen dioxide and lead. Monitoring for sulfates, nitrates and PM-10 was also performed. The prevailing winds are predominately from the southwest.

The Model City Facility began air monitoring in 1984. The Model City Facility currently has six ambient air monitoring stations, one predominantly upwind and five downwind. The Model City Facility also maintains "non-routine" air monitoring equipment and an MET monitoring system. During its operational history,

facility-wide ambient air testing has been performed for TSP, PCB, semivolatile organic compounds (SVOCs), VOCs and PM-10, in addition to real-time analysis for PM-10 and VOCs at the perimeter of an operating landfill.

The location of the Ambient Air Monitoring Network is shown on Figure 3-6. Each location is equipped with dedicated systems to monitor for PM-10. Figure 3-6 also shows the location of the MET system. This system is capable of collecting and recording site wind speed, direction and variability, temperature, barometric pressure, dew point and precipitation.

On March 30, 2007, the NYSDEC requested that CWM perform a new air dispersion model for the Model City Facility to identify any updates or revisions to the perimeter air monitoring program that may be necessary. CWM responded to this request by providing a modeling protocol for performing air dispersion modeling for two sizes of particulates (PM-10 and PM-2.5) from selected sources at the Model City Facility. Because monitoring for other potential contaminants (e.g., VOC and PCB) was previously completed by CWM and discontinued by the NYSDEC, and the potential to emit these contaminants is currently no greater than the levels present during the previous monitoring, these contaminants were not included as part of the modeling protocol. The modeling protocol was submitted by CWM in December 2008 and approved by the NYSDEC on February 3, 2009.

Particulate air dispersion modeling was completed in 2009 (*Air Dispersion Modeling Report, Ambient Air Quality Impact Analysis*, August 14, 2009, by Conestoga-Rovers & Associates). The most significant potential emission sources, including RMU-1 and the Stabilization Facility, were modeled. Based on the results of the air dispersion models of ground level concentrations at on-site and off-site receptor locations for PM-10 and PM-2.5, emissions from the Model City Facility are not predicted to exceed, or significantly approach, applicable USEPA and NYSDEC standards. The six existing ambient air monitoring stations were determined to adequately measure and represent the condition of airborne particulates at CWM.

The following paragraphs summarize, to date, the monitoring results for PM-10, PCB-Air, SVOCs and VOCs.

3.4.2.1 PM-10 Monitoring

Ambient PM-10 monitoring superseded the TSP program in 1987 and is the only routine ambient air monitoring that continues to be performed. The NYSDEC approved the elimination of the PM-10 real-time monitoring at the operating landfill in 1994 after data showed no significant differences between upwind and downwind samples. The current PM-10 perimeter network measures respirable dust 10 micrometers or less in diameter for 24 hours once every 6 days in accordance with the NYSDEC-approved *PM-10 Monitoring System QA/QC Manual*. The monitoring data collected to date indicates that the Model City Facility meets the AAQS for industrial areas for PM-10 per 40 CFR Part 50.6 and that dust contributions resulting from facility operations are minimal. The NYSDEC is currently evaluating the need to require PM-2.5 particulate monitoring (i.e., for respirable dust 2.5 micrometers or greater) for each NYSDEC-permitted facility

throughout the state. To make this change at the Model City Facility, a modification to CWM's Part 373 Permit would be needed.

TABLE 3-3

NIAGARA FRONTIER AIR QUALITY CONTROL REGION
REGIONAL AIR QUALITY DATA SUMMARY

Parameter	2005		2006		2007		2008		2009	
	Site No.	Avg.	Site No.	Avg.	Site No.	Avg.	Site No.	Avg.	Site No.	Avg.
Sulfur Dioxide (ppm)	3102-25	0.003	3102-25	0.002	3102-25	0.003	3102-25	0.002	3102-25	0.002
Carbon Monoxide (ppm)	3102-25	0.20	3102-25	0.20	3102-25	0.20	3102-25	0.30	3102-25	0.30
Ozone (ppm)	3120-02	0.036	3120-02N	0.032	3120-02N	0.036	3120-02N	0.033	3120-02N	0.031
Nitrogen Dioxide (ppm)	1451-03	0.013	1451-03N	0.011	1451-03N	0.010	1451-03N	0.010	1451-03N	0.007
Inhalable Particulate (PM-10, $\mu g/m^3$)	3102-17	24	3102-17N	21	3102-17N	21	3102-25	22	3102-25	17

Notes:
Data is from 2010 Annual New York State Air Quality Report Ambient Air Monitoring System.
$\mu g/m^3$ – micrograms per cubic meter

A summary of the PM-10 data collected from 2005 through 2010 is presented in Table 3-4.

3.4.2.2 PCB-Air/SVOC Monitoring

Air monitoring for total PCBs occurred from March 6, 1987 through August 8, 1990. The PCB-Air monitoring program was revised in August 1990, to also include the following SVOCs:

- a-BHC;
- b-BHC;
- q-BHC;
- a-Chlordane;
- q-Chlordane; and
- Hexachlorobenzene.

Samples were collected for these individual compounds and the seven PCB isomers for 24 hours once every 12 days in accordance with the NYSDEC-approved *Routine Semi-Volatile Organic Compound Monitoring QA/QC Plan*.

In February 1992, the NYSDEC allowed CWM to discontinue monitoring for a-BHC, b-BHC, q-BHC, a-Chlordane, q-Chlordane and Hexachlorobenzene because no concentrations of these compounds had ever been detected (see H. Sandonato to M. Antonetti, 02-19-92).

In August 1996, the NYSDEC approved a request by CWM to discontinue monitoring for PCBs. The request and subsequent approval was based on a combination of years of data that demonstrated that PCBs were rarely detected, there were no significant differences between upwind and downwind samples and processes at the Model City Facility that were originally focused at PCB waste treatment were eliminated.

3.4.2.3 Volatile Organic Compound Monitoring

The NYSDEC approved the elimination of VOC real-time monitoring at the operating landfill in 1994 after data showed no significant differences between upwind and downwind samples. Perimeter VOC ambient air monitoring was performed at the Model City Facility starting August 1984. Samples were collected monthly from the six air stations located around the perimeter of the facility. All samples were analyzed for 22 different VOCs. The VOC concentrations at the six stations were similar and consistent regardless of the on-site activities. The VOC ambient air monitoring program's purpose was to monitor upwind and downwind air quality and vapor emissions from the Fuels Blending operation, the Flash Distillation process and wastewater management in Lagoons and Salts Areas. The Flash Distillation process has been dismantled, the Fuels Blending Tank Farm is closed and removed and the Lagoons and Salts Areas have been covered with an engineered final cover system. In January 2000, CWM requested that the VOC ambient air monitoring program be suspended citing that the original purpose of the program no longer existed. On August 9, 2000, the NYSDEC approved the suspension of the VOC ambient air monitoring program. Section 4.4.3 provides additional information pertaining to VOC monitoring related to RMU-2.

TABLE 3-4

PM-10 MONITORING DATA FOR TOTAL SUSPENDED SOLID PARTICULATES (µg/m^3)
2005 - 2010

2005

Site	Minimum	Second Highest 24-Hour Concentration	Average
1 (upwind) of all processes	0.00	36.07	16.39
2 (downwind)	0.69	46.78	18.19
3 (downwind)	1.85	43.26	17.06
4 (downwind)	1.66	47.69	16.74
5 (downwind)	2.27	43.50	17.64
6 (downwind)	2.47	53.70	18.96

2006

Site	Minimum	Second Highest 24-Hour Concentration	Average
1	0.53	33.56	13.13
2	0.29	38.88	14.48
3	0.69	33.81	13.43
4	0.62	33.61	13.30
5	0.73	37.95	14.11
6	1.72	42.48	15.75

2007

Site	Minimum	Second Highest 24-Hour Concentration	Average
1	2.73	39.82	13.82
2	2.02	36.60	13.30
3	2.71	35.58	13.68
4	2.81	37.07	13.62
5	2.70	37.15	14.73
6	3.02	41.28	16.18

TABLE 3-4 (continued)

PM-10 MONITORING DATA FOR TOTAL SUSPENDED SOLID PARTICULATES (µg/m^3)
2005 - 2010

2008

Site	Minimum	Second Highest 24-Hour Concentration	Average
1	2.24	26.29	11.41
2	1.96	29.10	11.87
3	2.71	30.95	11.60
4	2.48	28.62	11.17
5	2.89	29.11	13.61
6	2.72	35.21	13.77

2009

Site	Minimum	Second Highest 24-Hour Concentration	Average
1	0.17	25.97	9.53
2	0.51	29.96	9.68
3	0.81	28.54	9.93
4	0.82	27.37	9.60
5	1.55	29.90	10.37
6	1.62	40.67	11.76

2010

Site	Minimum	Second Highest 24-Hour Concentration	Average
1	0.00	31.49	9.83
2	0.06	33.04	10.27
3	1.40	30.21	10.53
4	1.45	30.46	10.19
5	1.22	36.39	11.70
6	1.92	41.06	12.62

Note: National Ambient Air Quality Standard (industrial) for PM-10 is 150 µg/m^3 over a 24-hour averaging period (40 CFR Part 50.6).

3.4.3 Odors

Odors from the Model City Facility are generally not a problem under current operations. Improvements have been attributed to changes in operational practices at the AWTS. Specifically, open surface impoundments were replaced with closed tanks for the receipt and treatment of aqueous waste in 1985. Normally, no odor sources are encountered in the landfill due to the types of wastes received (i.e., no putrescible waste). However, occasionally, when an odorous waste is received, it is stabilized or promptly covered in the landfill to minimize the potential for off-site migration of odors.

3.5 Ecological Communities

3.5.1 Introduction

This section describes the ecological communities at the RMU-2 site, along the truck route and within portions of Niagara County. The project region is defined as the area north of NYS Route 104 (Ridge Road) to Lake Ontario between the Niagara River and Ransomville Road (Figure 3-7). The Model City Facility is located in the center of this region. The truck route is approximately 8.6 miles long and includes a stretch along NYS Route 104, NYS Route 18 and Balmer Road (Figure 3-7). As indicated below, some field studies used to present this information were developed as part of the RMU-1 project and are considered applicable to the RMU-2 project. Therefore, no new ecological assessment was completed or necessary for these items.

Ecological communities were classified following *Ecological Communities of New York State* (Reschke, 1990). This classification system is used by NYSDEC Natural Heritage Program (NHP).

This section also describes federal and state jurisdictional wetlands located at the project site and the potential for threatened and endangered species. Jurisdictional wetlands are those wetlands that require a Section 404 permit for the placement of dredged or fill material in their waters under the CWA, 33 U.S.C. 1344(c) or a State Article 24 permit for impacts to state freshwater wetlands.

3.5.2 Background

Information for this section is summarized from three field studies conducted for the RMU-1 Expansion project (that are applicable to the proposed RMU-2 site). A biological survey of RMU-1 site was prepared by Terrestrial Environmental Specialists, Inc., in December of 1989 and is entitled *Vegetation and Wildlife Survey of the SCA Chemical Site, Town of Porter, Niagara County, New York*. This study was updated in March 1992 by SEC Donohue in response to NYSDEC review comments on the report as it was summarized in the *1991 Draft Environmental Impact Statement (DEIS)* for the RMU-1 project. The SEC Donohue report included a survey of the truck route and region and is entitled *Ecological Communities Evaluation of the Proposed RMU-1 Expansion and Truck Route*. Each of these reports is on file with CWM, in Model City, New York. Field visits by BBL in February 2002 and a January 2003 review by the NYSDEC NHP verified that there were no significant changes since these reports were prepared.

The scientific names for the plants and animals described in this section are given in Tables 3-5, 3-6 and 3-7. Table 3-8 lists and describes each of the ecological communities in the region.

3.5.3 Study of Truck Route

3.5.3.1 Study Methods

Niagara County Environmental Management Council (EMC) land use maps, April 1990 aerial photography and a March 1992 field review conducted by an SEC Donohue biologist were used to prepare an ecological communities map of the truck route and portions of Niagara County (Figure 3-8). Land use categories shown on the EMC maps were translated into ecological communities based on the field review and examination of aerial photography as detailed in the legend of Figure 3-8. The field review by BBL in February 2002 verified that there are no significant changes in the information depicted on this figure.

3.5.3.2 Results

The project region is located in western Niagara County in the extreme northwest corner of NYS. The Niagara River flows northward along the western boundary of the project region. The Niagara Escarpment forms the southern boundary. The Niagara Escarpment is the northern edge of a steep, northward tilting slope. Most of the land use in this area is urban and residential. The cities of Lewiston and Niagara Falls are located in this area. The dominant ecological community in this area is mowed lawn. This community is characterized by clipped grass and a tree cover less than 30%. Commonly occurring trees in this community type include white birch, sugar maple, oaks, basswood, box elder, willows and conifers. Gardens and ornamental shrubs are also common components of this community type. Animal species in this community type include robins, house sparrows, starlings, cardinals, rabbits, squirrels, dogs and cats.

North from the Niagara Escarpment, a land form called the Ontario Plain extends for 8 miles to Lake Ontario. The Ontario Plain is nearly level and owes its relatively uniform surface as a former lake bottom of post-glacial Lake Iroquois. Soils overlying these lacustrine (lake) deposits are somewhat to very poorly drained. As a result, drainage in the region is not well developed. Depressional areas lack developed outlets and streams have narrow, poorly developed flood plains. These topographical and soil features north of the Niagara Escarpment have served to limit agricultural activities and town and county planning.

Most residential development is low density and is located adjacent to the road systems, including the truck route. Mowed lawn is the ecological community associated with these residential areas. The plant and animal species composition is the same as that described for the mowed lawn communities located in the Niagara Escarpment portion of the project region.

Remaining land use in the Ontario Plain is agricultural or successional old field, brush land or forest communities. Most agricultural land is idle or not intensively used. The predominant ecological communities of this land-use type include cropland/row crops, cropland/field crops, pasture land and orchards.

Interspersed with agricultural communities are various successional community types, including successional old field, successional shrubland and successional northern hardwood forest.

Successional old field communities develop on land that has been cleared or abandoned from agricultural or other activities. Numerous grasses and forbs representing native and exotic species grow in this community. Common grasses observed in the area include Kentucky bluegrass, Brome grass, Quack grass and Orchard grass. Common forbs observed included Goldenrod, Asters, Teasel, Cinquefoil, Fleabane, Wild Strawberry, Milfoil and Common Milkweed. This community often contains invading trees and shrubs, including Stiff Dogwood, Staghorn Sumac, Red Cedar, Raspberries, Pin Cherry, Multiflora Rose, Cottonwood, Willow and Oaks. Wild grapevines are common in both shrub and ground layers.

Successional shrubland communities represent an intermediate successional stage between old field and forest communities. Stiff Dogwood is the common dominant of this community, often forming dense thickets.

The successional northern forest community is composed of tree species able to rapidly invade cleared areas. These are usually shade intolerant species and/or species propagated by wind dispersed seeds. Red Maple, Cottonwood, Big Tooth Aspen and American Elm are common dominants of this community. Also present are American Beech; White, Pin and Burr Oaks; White and Green Ash; and American Hornbeam. Poison ivy, Virginia Creeper, Gooseberry and Wild Grapes are common understory species.

Much of the original wetland area in the project region has been drained or altered by artificial ditching. Remaining wetland communities along the truck route and in the project region include forested, shrub swamp and emergent communities on mostly mineral soils (Figure 3-9). Jurisdictional wetlands located along the truck route and in the region will not be impacted by RMU-2. Forested wetland communities include floodplain forest and maple hardwood swamp.

Floodplain forests occur along undisturbed stretches of Four Mile, Six Mile and Twelve Mile Creeks. Four Mile Creek crosses the truck route twice near the intersection of NYS Route 18 and Balmer Road. Six Mile Creek crosses the truck route at Balmer Road north of the site. Six Mile and Twelve Mile Creeks flow northeast from the Model City Facility. Cottonwood, Silver Maples, Willows and Box Elder are the dominant species of the floodplain forest.

Hardwood maple swamps and silver maple-ash swamps occur throughout the region in depressional areas with poorly drained soils. Red Maple, Silver Maple, American Elm and Green Ash are the dominant trees of these ecological communities.

Shrub swamp communities are dominated by thickets of Stiff Dogwood. Red Osier Dogwood is also present.

Common species observed in emergent wetlands include Cattails, Common Reed, Asters, Goldenrod, Willow Herb, Swamp Milkweed, sedges, grasses and rushes.

Combined, the ecological communities along the truck route and in the region provide habitat for numerous common plant and animal species. During the March 1992 field review, signs and observations of deer, raccoon, opossum, rabbit, red-tail hawk, crows, blue jays, field sparrows and redwing blackbirds were noted. Other plant and animal species observed during the 1992 field review are listed in Tables 3-5, 3-6 and 3-8.

TABLE 3-5

FLORA OBSERVED AT THE RMU-1 PROJECT
AND STORMWATER RETENTION BASIN SITE AND TRUCK ROUTE
MARCH 23, 24 and APRIL 1-3, 1992

Scientific Name[1]	Common Name	Wetland Indicator-Status[2]	Proposed RMU-1 and Stormwater Detention Sites	Truck Route Region
Trees				
Acer saccharinum	Silver maple	FACW	X	X
Betula papyrifera	Paper birch	*		X
Carpinus caroliniana	American hornbeam	FAC	X	X
Carva cordiformis	Bitternut hickory	FACU+	X	X
Faqus qrandifolia	American beech	FACU	X	X
Fraxinus pennsylvania	Green ash	FACW	X	X
Malus sylvestris	Wild apple	NL	X	X
Pinus strobus	White pine	*		X
Platanus occidentalis	American sycamore	FACW-	X	X
Populus deltoides	Cottonwood	FAC	X	X
Populus qrandidentata	Big tooth aspen	*		X
Prunus serotina	Black cherry	*	X	X
Quercus bicolor	Swamp white oak	FACW+	X	X
Quercus palustris	Pin oak	FACW	X	X
Quercus rubra	Northern red oak	FACU-	X	X
Robinia pseudoacacia	Black locust	FACU--	X	X
Salix niqra	Black willow	FACW+	X	X
Ulmus americana	American elm	FACW-	X	X
Shrubs and Vines				
Cornus amomum	Silky dogwood	FACW		
Cornus foemina	Stiff dogwood	FAC		
Cornus stolonifera	Red osier	FACW+		
Crataequs sp.	Hawthorne	*		X
Juniperus virqiniana	Red cedar	*		X
Lonicera sp.	Honeysuckle	*		X
Parthenocissus quinquefolia	Virginia creeper	*	X	X
Prunus virqiniana	Choke cherry	*		X
Rhus typhina	Staghorn sumac	*		X

TABLE 3-5 (continued)

FLORA OBSERVED AT THE RMU-1 PROJECT
AND STORMWATER RETENTION BASIN SITE AND TRUCK ROUTE
MARCH 23, 24 and APRIL1-3, 1992

Scientific Name[1]	Common Name	Wetland Indicator Status [2]	Proposed RMU-I and Stormwater Detention Sites	Truck Route Region
Ribes sp.	Gooseberry	*		X
Rosa multiflora	Multiflora rose	*		X
Rubus alleqheniensis	Old field blackberry	FACU-	X	X
Rubus idaeus	Common red raspberry	FAC-	X	
Salix discolor	Pussy willow	FACW	X	X
Salix exiqua	Sandbar willow	OBL	X	X
Toxicodendron radicans	Poison ivy.	FAC	X	X
Viburnum recoqnitum	Northern arrow-wood	FACW-	X	
Vitis sp.	Wild grape		X	X
Herbaceous Plants				
Achillea millefolium	Milfoil	*	X	X
Aqropvron repens	Quack grass	*		X
Aster spp.	Asters			
Capsella bursa-pastoris	Common shepherd's purse	FACU	X	X
Carex lupulina	Hop sedge	OBL	X	
Cirsium sp.	thistle			
Daucus carota	Queen Anne's Lace	NL	X	X
Dipsacus svlvestris	Teasel	NL	X	X
Eriqeron sp.	Fleabane		*	X
Festuca arundinacea	Kentucky fescue	FACU	X	
Fraqeria sp.	Wild strawberry	*	X	X
Geum canadense	White avens	FACU	X	X
Juncus effusus	Soft rush	FACW+	X	
Juncus nodosus	Knotted rush	OBL	X	
Lvcopus sp.	Bugleweed	OBL	X	X
Medicaqo sativa	Alfalfa	*		X
Oenothera sp.	Evening-primrose		X	X
Onoclea sensibilis	Sensitive fern	FACW	X	
Penthorum sedoides	Ditch-stonecrop	OBL	X	
Phalaris arundinacea	Reed's canary grass	*		X
Phraqmites australis	Common reed	FACW	X	X
Polvqonum sp.	Smartweed		X	X

TABLE 3-5 (continued)

FLORA OBSERVED AT THE RMU-1 PROJECT
AND STORMWATER RETENTION BASIN SITE AND TRUCK ROUTE
MARCH 23, 24 and APRIL 1-3, 1992

Scientific Name[1]	Common Name	Wetland Indicator Status[2]	Proposed RMU-I and Stormwater Detention Sites	Truck Route Region
Potamogeton sp.	Pond weed	OBL	X	X
potentilla sp.	Cinquefoil	*	X	X
Prunella vulqaris	Heal-all	FACU+	X	X
Rumex crispus	Curly dock	*		X
Scirpus cyperinus	Wool-grass	FACW+	X	
Solidaqo canadensis	Canada goldenrod	FACU	X	X
Solidago sp.	Goldenrod		X	X
Tussilaqo farfara	Colt's-foot	FACU	X	X
Typha anqustifolia	Narrow-leaf cattail	OBL	X	X
Typha latifolia	Broad-leaf cattail	OBL	X	X
Verbena hastata	Blue vervain	FACW+	X	X

[1] Scientific and common names and wetland indicator statuses are from Reed, P.B., Jr. 1988. *National list of plant species that occur in wetlands: Northeast (Region I)*. U.S. Fish Wildl. Serv. Biol. Rep. 88(26.1). III pp.

[2] Indicator status codes:

OBL: Obligate Wetland
FACW: Facultative Wetland
FAC: Facultative
FACU: Facultative Upland
NL: Not listed

A + or a - appended to an indicator status code indicates a somewhat greater (+) or lesser (-) tendency to be found in wetlands.

* Wetland indicator status not listed, observed in uplands only or wetlands outside of Model City Facility.

TABLE 3-6

ANIMALS OBSERVED DURING
SEPTEMBER 9, 1988 AND MARCH 23 and 29, 1992, FIELD STUDIES
RMU-1 PROJECT AND STORMWATER RETENTION BASIN SITE

MOLLUSKS

Lampsilis ventricosa- Pocketbook Mollusk

AMPHIBIANS

Rana pipiens -Northern Leopard Frog

BIRDS

Aqelarus phoeniceus -Red-Wing Blackbird
Anas discors -Blue-Winged Teal
Anas platvrhvnchos -Mallard
Ardea herodias -Great Blue Heron
Branta canadensis -Canada Goose
Buteo jamaicensis -Red-Tailed Hawk
Cathartes aura -Turkey Vulture
Charadrius vociferus -Killdeer
Corvus brachvrhvnchos -American Crow
Cvanocitta cristata -Blue Jay
Icterus qalbula -Northern Oriole (nest)
Larus delawarensis -Ring-Billed Gull
Parus atricapillus -Black Capped Chickadee
Phalaropus tricolor –Wilson's Phalarope
Trinqa flavipes -Lesser Yellowlegs
Turdus miqratorius -American Robin
Zenaidura macroura -Mourning Dove

MAMMALS

Didelphis virqiniana -Virginia Opossum
Odocoileus virqinianus -White-Tailed Deer
Procvon lotor -Raccoon
Svlvilaqus floridanus -Eastern Cottontail

TABLE 3-7

OTHER LIKELY ANIMAL INHABITANTS
(OTHER THAN THOSE OBSERVED)

AMPHIBIANS

Plethodon cinerus -Redback Salamander
Bufo americanus -American Toad
Pseudacris triseriata -Chorus Frog

REPTILES

Storeria sp. -Northern Brown Snake
Thamnophis sirtialis -Eastern Garter Snake

BIRDS

Dumetella carolinesis -Gray Catbird
Hylocichla mustelina -Wood Thrush
Setophaqa ruticilla -American Redstart
Vireo qilvus -Warbling Vireo
Vireo olivaceus -Red-eyed Vireo

MAMMALS

Blarina brevicanda -Short-tailed Shrew
Clethrionomys qapperi -Red-Back Vole
Peromyscus leucopus noveboracensis (Fisher) -White-footed Mouse

TABLE 3-8

ECOLOGICAL COMMUNITIES:
RMU-1, TRUCK ROUTE AND REGION

System	Sub-system	Class	Definition [1]	Dominant [1] Species Observed [2,3]	Rank [4]	RMU-1	Truck Route	Region
Rivervine	Natural	Main channel stream	Aquatic community of quiet base level sections of stream, usually with clearly distinguished meanders.	Plants: Box Elder, Cottonwood, Reed Canary Grass	4/4		X	X
		Intermittent stream	Community of small ephemeral streambed with moderate to steep gradient where water flows only during spring or after heavy rains.		4/4		X	X
	Cultural	Ditch	Aquatic community of artificial waterways.	Plants: Reed's Canary Grass, Cattail, Sedge, Reed Grass. Animals: Redwing Blackbird	5/5	X	X	X
Paulustrine	Open mineral soil wetlands	Shallow emergent marsh	Marsh meadow community occurring on mineral or mud soils, water depths range from 6" to 3.5 ft.	Plants: Cattail, Reed's Canary Grass, Bulrushes. Animals: Redwing Blackbird	5/5		X	X
		Shrub swamp	Broadly defined wetland community dominated by shrubs or mineral on mud soils.	Plants: Gray Dogwood, Red Adler Dogwood. Animals: Redwing Blackbird	5/5		X	X
	Forested mineral soil wetlands	Floodplain forest	Hardwood forest that occurs on mineral soils on low terraces of rivers & streams.	Plants: Cottonwood, Box Elder, Silver Maple, Willow.	3,4/2,3		X	X
		Red maple hardwood swamp	Hardwood swamp in poorly drained depressions.	Plants: Red Maple, American Elm.	5/4,5		X	X
		Silver maple ash swamp	Hardwood swamp occurring on poorly drained soils along rivers, lakeshores, & depressions.	Plants: Silver Maple, Green Ash, Swamp White Oak, American Elm.	3,4/2,3			
	Cultural	Impounded marsh	Marsh which water levels are artificially manipulated.	Plants: Cattail, Seed Grass. Animals: Gulls, Mallards	5/5	X	X	X
Terrestrial	Open uplands	Successional old field	A meadow dominated by forbs & grasses on land cleared & plowed for agriculture & then abandoned.	Plants: Golden Rod, Bluegrass, Teasel, Cinque Foil, Orchard Grass, Common Milkweed,. Animals: Eastern Cottontail, Field Sparrow, Redtail Hawk.	4/4		X	X

TABLE 3-8 (Continued)

ECOLOGICAL COMMUNITIES:
RMU-1, TRUCK ROUTE AND REGION

System	Sub-system	Class	Definition [1]	Dominant [1] Species Observed [2,3]	Rank [4]	RMU-1	Truck Route	Region
Terrestrial		Successional shrubland	Shrubland community that occurs on land disturbed by logging, farming, or other activity.	Plants: Gray Dogwood, Staghorn Sumac, Wild Grape	4/4	X	X	X
	Forested uplands	Successional northern hardwood forest	Hardwood or mixed deciduous/coniferous forest occurring on sites cleared by farming, logging, or other disturbance activity.	Plants: Red Maple, Pine Oak, Cottonwood. Animals: White Tail Deer, Eastern Cottontail, Blue Jay, Chickadee, Crow, Redtail Hawk.	5/5	X	X	X
	Cultural	Cropland/row crops	Agricultural field planted in row crops.	Plants: Corn.	5/5		X	X
		Cropland/field crops	Agricultural field planted in field crops & rotated to pasture.	Plants: Alfalfa, Timothy	5/5		X	X
		Orchard	Stand of cultivated fruit trees.	Plants: Apple Trees	5/5			X
		Mowed lawn	Residential, recreational, or commercial land dominated by clipped grasses with tree cover less than 30%.	Plants: Grass Animals: Robin	5/5		X	X
		Mowed lawn with trees	Same as mowed lawn but with tree cover greater than 30%.	Same as Mowed Lawn.	5/5		X	X
		Mowed roadside/path way	Narrow strip of mowed vegetation along the side of the roadway, utility right-of-way, or similar.	Plants: Grasses	5/5	X	X	X
		Unpaved road/path	Sparsely vegetated road or pathway of gravel, soil, or bedrock outcrop.	Plants: Gray Dogwood, Grasses	5/5	X	X	X
		Paved road	Road or pathway paved with rock, cement, asphalt, etc.		5/5	X	X	

NOTES:
1: After Reschke, 1990.
2: See Tables 3-5 and 3-6 for scientific names.
3: Observed on March 24 and 26, 1992.
4: Heritage program rarity rank for state and world – 1 to 5 most to least rare.

3.5.4 Model City Facility

3.5.4.1 Proposed RMU-2 Site

The area for the RMU-2 site is approximately 43.5 acres that would be impacted due to construction and operations of the landfill. The following is a general description of the developed portions of the Model City Facility that is applicable to the proposed RMU-2 site, followed by a description of the portions of the facility applicable to the proposed Fac Pond 5, relocated buildings and operational areas.

The proposed RMU-2 site is located within currently developed areas of the Model City Facility. The area currently includes the existing Emergency Response Garage, Drum Management Building, Full and Empty Trailer Parking Areas, Heavy Equipment and Facility Maintenance Building, Fac Ponds 3 and 8, various site roadways, surface-water drainage ditches and utilities. Prior to the construction of RMU-2, all of the aforementioned facilities would be abandoned and/or relocated to the areas presented on Figure 2-6.

Wildlife species observed and likely to occur at the RMU-1 site (that is applicable to RMU-2) are listed in Tables 3-6 and 3-7. Observations and/or signs of deer, rabbits, raccoon, opossum and squirrel were most common in forested and shrubland areas in the Model City Facility outside the proposed RMU-2 site. According to the NYSDEC Significant Habitat Unit, two deer concentration areas have historically been located outside the property limits of the Model City Facility. These will not be impacted by the proposed project.

3.5.4.2 Other Impacted Areas

Other than the footprint of RMU-2, additional areas of the Model City Facility will be affected by the RMU-2 project. In order to compensate for the closure of Fac Ponds 3 and 8, a new Fac Pond 5 will be constructed between SLF-7 and SLF-12. The Drum Management Building will be relocated to an area east of RMU-1. The Full Trailer Park will be relocated immediately west of its current location. The Stabilization Trailer Park will be relocated north of its current location. The Heavy Equipment Maintenance Building will be relocated to an area north of Fac Ponds 1 and 2. New trailer transfer ramps for the SLF-10 Leachate Building and the SLF 1-11 Oil/Water Separator Building will be relocated to other sides of the existing buildings.

All of the land to be used for the above facilities has been previously cleared as part of the CWM operational area. The species composition of the ecological communities within these areas is similar to that at the proposed RMU-2 site.

3.5.4.3 Federal and State Wetlands Associated with RMU-2

In November 2002, a Wetlands Investigation was performed by Environmental Design & Research, P.C. (EDR) at the Model City Facility in the area of the proposed RMU-2 site and at the proposed locations for new and relocated facilities. During this investigation, EDR determined that RMU-2 and the new and relocated facilities would have no impact to state regulated wetlands, as verified by the NYSDEC. EDR also concluded that RMU-2 and the new and proposed locations for relocated facilities would impact less than 2 acres of jurisdictional federal wetlands (comprised of manmade ditches and isolated pockets of wetland areas).

EDR updated the RMU-2 wetlands delineation in April 2009. The investigation areas were redefined based on the current scope of the RMU-2 project (i.e., slightly redesigned landfill footprint and new locations of relocated facilities) as compared to the 2002 investigation. Results of this investigation are described in the *Wetland Delineation Report, RMU-2 Landfill Expansion Area*, dated June 2009. Again, EDR concluded that

the RMU-2 project would have no impact to state wetlands and impact less than 2 acres of federal wetlands, pending confirmation by the USACE. EDR again updated the RMU-2 wetlands delineation in April 2011 to include an area within the RMU-2 development area that was not included in the previous delineations. Results of this supplemental delineation are described in the *Supplemental Wetland Delineation Report, RMU-2 Landfill Expansion Area*, dated April 2011. Again, EDR concluded that the RMU-2 project would have no impact to state wetlands and impact less than 2 acres of federal wetlands, pending confirmation by the USACE.

Appendix D presents the *Delineation Reports* prepared by EDR, dated June 2009 and April 2011, that describes the wetlands in the areas where RMU-2, Fac Pond 5 and the relocated facilities would be constructed.

A jurisdictional determination was received from the USACE on September 13, 2011. Approximately 2.5 acres of jurisdictional wetlands, as determined by the USACE, are located within the RMU-2 development area. The jurisdictional determination from the USACE is also included in Appendix D.

During the detailed design of the site grading plan for the New Drum Management Building, a supplemental wetlands delineation was performed in the proposed area by EDR in July 2012. The supplemental delineation indicated that a wetland on the north side of the development area extends beyond the delineated area and outside of the study area into an NYSDEC-protected wetland (RV-8).

On November 7, 2012, CWM subsequently requested a jurisdictional determination from the NYSDEC that no state freshwater wetlands would be impacted by the construction of RMU-2, including the New Drum Management Building area. Based on a field delineation by an NYSDEC wetlands biologist, the NYSDEC determined that a portion of the new Drum Management Building Development will be in the 100-adjacent area of a state freshwater wetland (RV-8). Additionally, the NYSDEC issued a determination on February 4, 2013 that no other state freshwater wetlands or 100-adjacent areas are in the RMU-2 development area. The EDR supplemental wetlands delineation and the jurisdictional determinations from the NYSDEC are also included in Appendix D. The required permitting and proposed mitigation measures for impacts to wetlands are discussed in Sections 1.5.2.2 and 5.8.3.

3.5.5 Threatened and Endangered Species

Information on the potential occurrence of threatened and endangered species at the RMU-1 project site was obtained through a September 1988 correspondence with the NYSDEC NHP, a literature review and during field investigations. The NYSDEC NHP record review identified three species of endangered plants that have been reported in the vicinity of the Model City Facility, these are small skullcap, finged gention and Ohio goldenrod. All the records of the species' occurrence are historical, the most recent being 1930 for small skullcap, 1833 for fringed gention and 1873 for Ohio goldenrod. The literature review was conducted to supplement information from the NYSDEC NHP. Literature consulted for protected plant species included Mitchell and Sheivak (1981) and the NYSDEC list of endangered, threatened and special concern animals

(NYSDEC, 1985). The list of special concern species was compared to their geographic range maps to assess their potential occurrence at the Model City Facility. Geographic range sources consulted included Connet (1975) for amphibians and reptiles, the NYS Breeding Bird Atlas (Anderle and Carroll, 1988) for birds and Hamilton and Whitacker (1979) for mammals. Potential habitat may exist for ginseng (*Panax quinquefolia*) in the northern hardwood forest community. This plant is not listed as threatened and endangered but is listed as "exploitively vulnerable" by the NYSDEC Protective Plant Program. It typically occurs in rocky gravelly soil and deciduous forests but is also know to occur in a variety of soils and forest types. The literature review indicated three salamander species, listed as special concern species, may potentially occur at the project site. Special concern species do not have legal protective status but are under study for potential listing. The three salamanders include the Jefferson salamander (*Ambvstoma ieffersonianum*), Blue spotted salamander (*A. laterale*) and the Spotted salamander (*A. maculatum*). Each of these salamanders inhabits wooded areas and breed in early spring in temporary wooded ponds. They are difficult to observe due to their reclusive habit of living under logs and leaf litter. The past and present habitat disturbances at this site make it an unlikely habitat for sensitive species.

Information on the potential occurrence of threatened and endangered species at the adjacent RMU-2 project site was obtained through a July 2012 correspondence from the NYSDEC NHP (Appendix E). Based upon the correspondence received from the NYSDEC NHP, there have been no recent observations of rare or state-listed animals and plants, significant communities and other significant habitats located within the proposed project site. The NYSDEC NHP database indicated that the last observation of rare or state-listed animals and plants, significant communities and other significant habitats at this location was in 1893.

3.6 Human Resources

3.6.1 Socioeconomics

3.6.1.1 Demographics

Land use in the vicinity of the Model City Facility is primarily residential, agricultural, government services and military. Within 1 mile of the Model City Facility, the estimated population density is less than 1 person per 2 acres, as calculated from the 1980 USGS maps.

The following provides town populations for areas surrounding the Model City Facility based on the 2010 U.S. Census.

- Hamlet of Ransomville: 1,419;
- Town of Lewiston: 16,262;
- Village of Lewiston: 2,701;

- Town of Porter: 6,771;
- Village of Youngstown: 1,935; and
- Tuscarora Indian Reservation: 1,152.

The Town of Porter census data for 1970, 1980, 1990, 2000 and 2010 showed the following population trend:

- 1970 to 1980: 2.4% population decrease;
- 1980 to 1990: 1.9% population decrease;
- 1990 to 2000: 2.7% population decrease; and
- 2000 to 2010: 2.2% population decrease.

The Town of Lewiston's census data for 1970, 1980, 1990, 2000 and 2010 showed the following population trend:

- 1970 to 1980: 2.1% population increase;
- 1980 to 1990: 4.7% population decrease;
- 1990 to 2000: 5.2% population increase; and
- 2000 to 2010: 0.03% population increase.

As seen, the population in the Town of Porter has decreased between 1970 and 2010. It is not anticipated that the minor population growth in the Town of Lewiston will be discernible in the immediate vicinity of the Model City Facility.

Another nearby population group is the Lewiston-Porter Central Schools located approximately 2 miles west of the Model City Facility. During the school year (September through June), there may be approximately 2,500 students in grades 1 through 12 in attendance during school hours.

3.6.1.2 Housing

According to the 2010 U.S. Census, there are approximately 99,120 housing units in Niagara County. Housing starts for the period of 1980 to 2010 were 14,120 units. As reported in the 2010 Census, the number of units in the Town of Lewiston and the Town of Porter is 6,610 and 3,103, respectively.

According to the 1960 U.S. Census, the number of housing units in the Town of Lewiston and the Town of Porter were 4,213 and 2,223, respectively. Comparing the 1960 and 2010 Census data, there has been a 56.9% increase in the number of housing units in the Town of Lewiston and a 39.6% increase in the number of housing units in the Town of Porter.

Based upon a review and comparison of aerial photography by Aero-Data Corp. for the years 1966 and 2008, the total number of residential units in Lewiston and Porter increased by 56.4%, the number of industrial sites decreased by 34.5% and the number of commercial and governmental units increased by 45.7%. Historical photograph analysis figures for 1966 and 2008 are presented in Appendix O.

After applying the state equalization rates, total real estate assessed values for the Town of Porter increased by 38% between 2002 and 2011, and the total assessed values for the Town of Lewiston increased by 41.6% for the same period.

Present land use and zoning will act to deter residential development within 1 mile of the RMU-2 centroid. Thus, very little housing growth in the immediate vicinity of the RMU-2 site is anticipated.

3.6.1.3 Employment

The 2010 U.S. Census reports that educational services, health care and social assistance are the principal industries in Niagara County (26.9%). Other significant employers are retail trade (12.8%) and manufacturing (12.2%). The average unemployment rate for Niagara County in 2010 was 8.1% reported in the 2010 Census.

The Model City Facility currently employs 66 persons. Contractor personnel at the site average 10 to 20 on a daily basis and may number as high as 140 workers per day.

The Model City Facility is not located in an area containing significant minority or low income communities. The NYSDEC map for Niagara County contains no potential environmental justice areas in the Town of Porter based on data from the 2010 U.S. Census. Additionally, the NYSDEC Niagara County map shows only the Tuscarora Indian Reservation as a potential environmental justice area in the Town of Lewiston. The Tuscarora Indian Reservation is approximately 3.5 miles south of the Model City Facility and is not adjacent to facility transportation routes.

3.6.2 Land Use and Zoning

The Model City Facility is located in a predominantly rural area on the border between the Towns of Lewiston and Porter. The surrounding area is undeveloped and sparsely populated, with an average of 1 person per 2 acres of land.

All existing operational areas are within the central portion of the Model City Facility which is currently zoned for heavy industrial use (i.e., M-3) in accordance with the Town of Porter Zoning Law that allows waste management activities, including landfill operations. The proposed location of RMU-2 lies within the existing Town of Porter M-3 zoned area of the Model City Facility.

The Town of Lewiston portion of the Model City Facility is zoned I-2 Heavy Industrial. No housing is permitted, while all land surrounding the Model City Town of Lewiston property is zoned, I-1 Industrial, housing permitted. Outside of the areas zoned for industry in both the Towns of Lewiston and Porter, the land is zoned residential and agricultural.

The area, including and surrounding the Model City Facility, was, at one time in the early 1940s through the mid-1960s, part of LOOW of the DOD and was used for a variety of government activities during that time period. Past uses of the site include: research and development (R&D) and production of explosives and solid/liquid fuels; a missile base; a radar station; and R&D and waste storage related to the Manhattan Project. Areas in the vicinity of the Model City Facility have been and are used for Army and National Guard maneuvers, detonation of out-of-date explosives, sanitary landfill, agriculture and light commercial operations.

3.6.3 Transportation

The major routes to the Niagara Falls area are Interstate 90 (I-90), 190 (I-190) and 290 (I-290). Interstate 190 and the Robert Moses Parkway lead to NYS Route 104 in Lewiston; however, trucks are not permitted on the Robert Moses Parkway, making it necessary for most trucks to approach NYS Route 104 via the NYS Thruway (I-90, I-290, I-190). From NYS Route 104, transporters use NYS Route 18. The last 8,000 feet to the Model City Facility is along Balmer Road, which is a paved two-way Niagara County road, 24 feet wide.

In July 1993, CWM agreed to certain traffic restrictions as part of the Community Advisory Committee (CAC) Agreement. The CAC consists of representatives from the Town of Lewiston, Town of Porter, Niagara County and the Residents Organized for Lewiston-Porter's Environment, Inc. (ROLE). Part of the CAC Agreement requires all waste trucks approaching and leaving the Model City Facility to follow the designated route between the facility and the NYS Thruway. Stopping or standing along the route in Niagara County, traveling in convoys and traveling along the route outside of normal site operating hours is prohibited. Traffic routes to and from the Model City Facility, days and hours when trucks may be scheduled for arrival or departure, the maximum number of daily and hourly waste trucks and penalties for violating these restrictions are specified. Similar requirements are included in CWM's 6 NYCRR Part 373 Permit.

The CWM transporter rules are enforced by CWM, as required by its permit. A transporter's first offense subjects the driver and hauling company to a warning. A second offense by the same driver within a 3-month period subjects the driver to a 1 month ban from the site and a requirement to attend a training class prior to return. If a hauling company has three or more offenses in a 3-month period, the hauling company is

subject to a 1 month ban from the site and a management official is required to complete a training class. This policy has resulted in the banning of several truck drivers and entire hauling companies since its inception and the rules are enforced through routine communication with transporters, such as periodic mailings, handouts at CWM's front gate and meetings. The NYSDEC evaluates CWM's compliance in administering enforcement actions for those transportation requirements contained in the CWM Site-Wide Part 373 Permit. All trucks must also comply with all NYSDOT requirements. Speeding is routinely monitored by state and local law enforcement officials.

All wastes are transported to the Model City Facility by truck. The *Exposure Information Report* (EIR) (1987) prepared by Environ Corporation for the Model City Facility indicates that a variety of trucks transport wastes to the facility. Shipment vehicles include box-type trailers carrying 55-gallon drums and other sized containers. Bulk solids shipments are generally received in roll-off boxes and dump trailers. Bulk liquid trailers are used for large quantities of liquids. In addition, flatbed trucks are used to deliver transformers for decommissioning. This information continues to reflect the current types of transportation vehicles that service CWM. In 2003, BBL updated the EIR to reflect current conditions at the Model City Facility (Appendix F).

Assessment of the impact on local traffic of the traffic load due to RMU-1 was based on a March, 1993 *Traffic Analysis Study* (Appendix K) completed by Bettigole, Andrews and Clark, Inc., a New York firm specializing in highway planning, design and inspection. To evaluate current traffic impacts and predict future traffic impacts associated with the construction of RMU-2, additional traffic counts were conducted by BBL in June 2002 and ARCADIS in April 2007 to supplement and update the initial study by Bettigole, Andrews and Clark, Inc., and a *Traffic Impact Study* (Appendix K) was performed by Wendel Companies (Wendel), located in Amherst, New York on October 20, 2011. The 2011 study prepared by Wendel also evaluated the impacts of traffic under the maximum waste truck traffic scenario allowed by the CAC.

There are no noise level criteria designed to assess the impacts of utilization of existing roadways. There are federal and state noise level criteria that are used in determining the need for noise abatement measures in the design of new highways or the reconstruction of existing highways using federal funds. While not applicable to the RMU-2 project, per se, these federal and state highway construction noise level criteria have been used for comparison purposes in lieu of any specifically applicable criteria.

The 1982 Federal Highway Administration (FHWA) *Procedures for Abatement of Highway Noise and Construction Noise* applies to federal funded or federal aided highway construction or improvement projects. The FHWA defines significant noise impacts as: 1) noise levels that approach or exceed the noise abatement criteria for particular land uses or 2) when the predicted traffic noise levels substantially exceed the existing noise levels. The FHWA criteria refer primarily to exterior areas and vary based upon the activity category that applies to the area impacted. The FHWA recognizes five activity, or sensitivity, categories related to land use. Those categories and the associated noise abatement criteria are presented in Table 3-9. For federally funded highway construction, noise abatement must be included as part of the engineering design when the noise levels approach or exceed the defined criteria.

The NYSDOT defines increases less than 6 decibels (dBA) as “no impact” where the existing and projected sound levels do not exceed the FHWA abatement criteria. Although not applicable to the Model City Facility, this limit is also included in the NYSDEC Part 360 regulations.

To characterize the traffic noise level associated with the existing utilization of the designated transportation route, BBL evaluated the potential noise impacts associated with the proposed RMU-2 project. The 1993 *RMU-1 Traffic Noise Study* is located in Appendix G of this report. As part of the study, noise levels at defined sensitive receptor sites (residential areas and the Lewiston-Porter schools) along the transportation route were measured during ten 1 hour periods. The FHWA abatement criteria for sensitive receptors, such as the residential areas occurring along portions of the transportation route, are 67 dBA. Noise levels above the FHWA abatement criteria were determined to exist along certain portions of the designated route. During certain daytime hours, the noise levels for all traffic on the transportation route segment of NYS Route 18 south of the NYS Route 104 overpass and the NYS Route 104 segment of the route exceeded 67 dBA.

To update the 1993 *RMU-1 Traffic Noise Study*, BBL collected noise level data at three major intersections in the vicinity of the Model City Facility in June 2002: NYS Route 18 and Swann Road, NYS Route 18 and Balmer Road and Balmer Road and the CWM entrance gate. The noise level data at these three intersections is presented in Table 3-10. This new data continues to show that existing noise levels exceed 67 dBA for certain daytime hours along NYS Route 18 at the Swann Road and Balmer Road intersections.

TABLE 3-9

FHWA NOISE ABATEMENT CRITERIA FOR HIGHWAY PROJECTS[a]
HOURLY A-WEIGHTED SOUND LEVEL -DECIBELS

Activity Category	Leq(h)[b]	Description of Activity
A (Exterior)	57	Lands on which serenity and quiet of extraordinary significance serves an important public purpose and where the reservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities, not included in Categories A or B.
D		Undeveloped lands.
E	52 (Interior)	Interior spaces of Category B, where applicable.

[a] Source: FHWA 1982.
[b] Hourly A-weighted sound level measured in dBA.

TABLE 3-10

EXISTING NOISE LEVELS AT VARIOUS HIGHWAY SEGMENTS
ALONG THE CWM MODEL CITY FACILITY DESIGNATED TRANSPORTATION ROUTE
(Levels obtained June 24 - 26, 2002)

SEGMENT	HOUR	NOISE LEVEL (dBA)
Intersection of NYS Route 18 & Swann Road	5 – 6 am	62.3
	6-7 am	67.4
	7-8 am	72.5
	8-9 am	73.2
	9-10 am	73.0
	10-11 am	72.8
	11am-12pm	73.1
	12-1 pm	72.9
	1-2 pm	73.0
	2-3 pm	**
	3-4 pm	72.7
	4-5 pm	74.0
	5-6 pm	73.6
Intersection of Balmer Road & CWM entrance gate		
	5 – 6 am	54.7
	6-7 am	58.7
	7-8 am	57.4
	8-9 am	63.0
	9-10 am	61.4
	10-11 am	59.7
	11am-12pm	57.6
	12-1 pm	59.5
	1-2 pm	57.6
	2-3 pm	57.4
	3-4 pm	56.9
	4-5 pm	59.4
	5-6 pm	61.0
Intersection of NYS Route 18 & Balmer Road	5 – 6 am	60.5
	6-7 am	68.3
	7-8 am	70.4
	8-9 am	75.7
	9-10 am	74.2
	10-11 am	73.0
	11am-12pm	73.1
	12-1 pm	73.9
	1-2 pm	73.6
	2-3 pm	72.8
	3-4 pm	72.8
	4-5 pm	73.8
	5-6 pm	73.5

**: No data due to switching out batteries of the monitoring device.

3.6.4 Community Services

3.6.4.1 Fire Protection and Security

The Model City Facility is serviced by the volunteer fire companies of Youngstown, Ransomville, Lewiston and Wilson. The four fire companies were contacted and the following information was obtained regarding manpower and equipment:

- Ransomville Fire Company (located approximately 8 miles from the Model City Facility):
  92 members
  4 pumpers
  2 ambulances

- Youngstown Fire Company (located approximately 3 miles from the Model City Facility):
  62 members
  2 pumpers
  1 pumper/rescue truck combination
  1 grass fire truck
  1 hose reel truck
  1 pick-up truck with air trailer
  1 ambulance

- Lewiston Fire Company (located approximately 5 miles from the Model City Facility):
  55 members
  3 pumpers
  1 aerial unit
  2 ambulances

- Wilson Fire Company (located approximately 7 miles from the Model City Facility):
  56 members
  3 pumpers
  1 brush fire truck
  1 tanker
  1 ambulance
  Water rescue equipment

The Model City Facility maintains an alarm system, communication system and emergency response equipment. On-site equipment enables facility personnel to react and respond to most minor emergency incidents that might occur. The safety and emergency equipment located at the site are described in the CWM Contingency Plan.

The Model City Facility's Emergency Response Team consists of approximately 20 people trained in fire-fighting and hazardous materials emergencies. The Town of Lewiston has a Hazardous Materials Team that is available when needed.

Water for firefighting within the Model City Facility is provided by fire hydrants located throughout the facility.

A dry-pipe sprinkler system delivering 0.15 gallons per minute per square foot to zoned areas is installed in the existing Drum Management Building. A 350,000-gallon fire water tank is located north of the Drum Management Building and provides the source of sprinkler water. Water from the fire water tank is channeled to a belowground fire service main using a fire pump. This fire service main distributes water to the Drum Management Building and hydrant service located at the Fire Pump House. For the new Drum Management Building, fire suppression systems will consist of dry chemical and foam.

The primary access to the facility is via the entrance gate off Balmer Road. This entrance is used by plant employees, contractors, waste haulers, suppliers, salesmen and visitors. The entrance gate is monitored 24-hours a day by one or more security guards, who stop all trucks or other vehicles entering and leaving the facility. The guardhouse is equipped with telephone and radio communications. All hazardous waste shipments are stopped at this checkpoint.

Prior to admittance to the Model City Facility, all visitors or drivers must provide information, including name, business affiliation, reason for visit, person whom visiting and date and time of entry and exit. All plant visitors, contractors, vendors and other non-facility personnel are recorded by the guard in the visitor logbook prior to entry. Unauthorized access to the facility is prevented by the security guard. In addition, the entrance/exit gates may be closed and locked, if necessary. In addition to the 24-hour security surveillance at the entrance gate to the facility, the entire Model City Facility is enclosed with a chain-link fence to prevent accidental or unauthorized access to active portions of the facility. The perimeter fence is a minimum of 6 feet in height with barbed wire on top. Warning signs, labeled "DANGER – Unauthorized Personnel Keep Out," are posted at the Model City Facility entrance and at intervals along the fence line, visible from a distance of 25 feet. All gates in the perimeter fence with roadway access from public thoroughfares to the active portion of the facility, except the main gate, are kept securely locked at all times when not in use. Whenever any of these gates are opened, a CWM employee or security officer is stationed at the gate to prevent unauthorized access and records the name, date and time of the people entering or leaving the facility. All security measures, including the entire length of perimeter fence, gates, locks and warning signs are inspected on a quarterly (minimum) basis.

3.6.4.2 Health Care Facilities

The following health care facilities are identified in the Model City Facility's Contingency Plan and may provide health care services:

- Mount St. Mary's Hospital (Lewiston, New York), Emergency Room is located approximately 4 miles from the Model City Facility.

- Niagara Falls Memorial Medical Center (Niagara Falls, New York), Emergency Room is located approximately 9 miles from the Model City Facility.

In addition, the Erie County Medical Center in Buffalo has an Emergency Room and Burn Unit. The Erie County Medical Center is located approximately 27 miles from the Model City Facility.

3.6.4.3 Utilities

Electric power is supplied to the Model City Facility by Niagara Mohawk Power Corporation. The locations of two 115-kilovolt power lines are shown on Figure 3-11.

3.6.4.4 Public Water Supply

The Model City Facility obtains its water from the Town of Porter. From November 1998 through November 2000, the Model City Facility used 19.788 million gallons of water. The rate of water usage is a factor of two higher during the summer and fall as compared to the winter and spring. Heavy water use during summer is due to water spraying for dust control at the Model City Facility.

In 2008, Golder performed a water supply well inventory in the 1 mile area surrounding the property line of the Model City Facility. The findings of the inventory were summarized in a report entitled *Water Supply Well Inventory* (Golder, 2008). The study area used by Golder considered the Model City Facility's property lines to be Balmer Road to the north, Porter Center Road to the east, Modern Landfill to the south and Lutts Road to the west. As stated in the Golder report, a total of nine wells were identified in the study area within 1 mile of the Model City Facility property line. Of these nine wells, two wells were used for non-potable water only and seven wells were no longer in use.

3.6.4.5 Solid Waste Disposal

Routine municipal solid wastes produced at the Model City Facility are landfilled or recycled off site. Other non-hazardous wastes generated at the site are typically landfilled on site.

3.6.4.6 Sewage Treatment Facilities

Sanitary wastes generated on site are discharged to holding tanks, with subsequent pumping and removal by a licensed hauler to the Town of Lewiston Publicly Owned Treatment Works.

3.6.4.7 Road Maintenance

Repair and snowplowing of roads is the responsibility of the particular political jurisdiction involved. In the case of Balmer Road, this is under county control; all other routes used by trucks are state highways. However; during periods of clay hauling, the hauling company takes responsibility for sweeping those routes affected by such operations.

3.6.5 Cultural Resources

3.6.5.1 Visual Resources

The Model City Facility is located in a predominantly rural, undeveloped area. There are no structures of significant architectural design within or immediately adjacent to the property. The predominant visual resource in the area is the vista provided from the Niagara Escarpment to the south of the Model City Facility.

The nearest significant resource is Our Lady of Fatima Shrine, approximately 1.9 miles southwest of the project site, on Swann Road.

The Tuscarora Indian Reservation is located approximately 3.5 miles south of the project site, on the Niagara Escarpment.

The Model City Facility is not visible from the area's parks, including Four Mile Creek State Park, Joseph Davis State Park, Fort Niagara State Park, Art Park and the Lower Niagara River State Park. All of these parks are 3.5 miles or more from the project site.

3.6.5.2 Historic and Archaeological Resources

In 1979, a cultural resources survey of the Model City Facility was undertaken to identify and evaluate any prehistoric or historic resources on or in the vicinity of the facility (Hart Associates, 1979). The survey includes a review of the site data files of the NYS Archaeologist's Office and the State University of New York at Buffalo. It also included a review of documents on the history of the region.

The literature review located Archaic and Woodland Period sites approximately 1.5 miles north of the Model City Facility, but none within the study area. The historic documents reviewed indicated that the study area was not involved in any major historic event.

No artifacts of cultural or prehistoric importance were found during the construction of RMU-1. Uncovered objects date back less than 50 years. No such objects are expected to be found during construction of RMU-2.

Although the area was judged to have some archaeological potential, the 1979 Hart Associates reconnaissance survey of the property did not locate any cultural material of the pre-historical or early historic periods. The survey indicated that no resources listed or eligible for inclusion in the National Register of Historic Places would be affected by construction at the Model City Facility.

In June 2012, the New York State Historic Preservation Office (SHPO) was contacted by CWM and provided information pertaining to the proposed RMU-2 project. Through a correspondence dated June 29, 2012, the New York SHPO determined that the RMU-2 project will have no effect on cultural resources in or eligible for inclusion in the National Register of Historic Places. The findings of the New York SHPO are provided in Appendix P.

3.6.5.3 Noise

The major sources of noise at the Model City Facility are:

- Heavy equipment used for materials handling, earth moving and aqueous waste treatment;
- Dust collection systems at the Stabilization Facility;
- Vehicular traffic entering and leaving the facility; and
- Vehicular traffic loading or unloading at the facility.

A noise level survey was conducted at the Model City Facility by CWM in March 2002. The survey identified noise sources associated with operation of heavy equipment and quantified noise levels at the point of operation; noisy areas were also identified and evaluated. Engineering controls have been installed, where needed, to minimize ambient noise levels.

Noise levels associated with heavy equipment (i.e., tractors, payloaders and backhoes) are high, ranging from 90 dBA to 111 dBA. Some work areas, including the Compressor Room, Transportation Maintenance Garage, Stabilization Facility and Drum Warehouse, can also be noisy (greater than 90 dBA). These areas are located in the central part of the Model City Facility.

3.6.5.4 Taxes and Fees

Public revenues associated with permit fees, property and business taxes, employee salary and taxes should far exceed public expenses that are likely to be incurred. The Model City Facility provides its own security and safety services. In addition, CWM provides training for local fire and ambulance districts that may be called upon in the event of fire or emergency at the Model City Facility.

The cost of establishing and maintaining a comprehensive regulatory program for RMU-2 will be borne by CWM. The NYSDEC regulatory program fees are established in ECL §72-0101 et seq. Special assessments are established in ECL §27-0923. ECL §72-0201 subjects every person who holds a permit, certificate or approval under a state environmental regulatory program to the payment of the fees specified in Article 72.

CWM provides public revenues associated with property and school taxes, NYS hazardous waste assessments and operating program fees, employee salaries, charitable contributions and more. Also CWM pays a 6% tax on its gross receipts annually, distributed as follows:

- 2% to the Town of Porter;
- 2% to the Town of Lewiston; and
- 2% shared by the three school districts of Lewiston-Porter, Niagara-Wheatfield and Wilson.

CWM's presence creates a business for local suppliers, contractors and trucking companies. The direct monetary contribution from CWM to the state and local economies has averaged approximately $13 million per year over the past decade, including employee wages, local purchases for operating expenditures, charitable contributions, use of construction contractors for capital upgrades, Niagara County and New York State taxes, environmental, fees and host community fees. This direct monetary contribution to state and local economies is expected to be similar during operation of RMU-2. In addition to the direct economic impacts associated with CWM's expenditures, indirect economic impacts, including employee's spending in the local economies provides additional sustainability to local businesses and service providers. When considering both direct and indirect spending, it is estimated that approximately $26 million per year over the past decade is the total economic impact of the Model City Facility to the state and local economy.

CWM and the Town of Porter entered into a Host Community Agreement on October 10, 2001. Among other things, the Host Community Agreement stipulates that CWM shall pay the Town of Porter the greater of $0.50 per ton of waste landfilled in RMU-1 or annual payments of $500,000 (first year of agreement) or $200,000 (subsequent years) until waste placement begins in a new landfill (i.e., RMU-2). The effective date of the agreement was February 24, 2004, after all legal challenges expired. CWM has made the required payments since that time, including $2.1 million in 2007 to achieve the minimum required total of $3 million by May 1, 2007. If, and when, RMU-2 begins operation, payments become the greater of $3.00 per ton of waste landfilled in RMU-2, less gross receipts tax payments, or $200,000 per year.

Between 2004 and 2011, the following taxes, fees and expenditures to local and state jurisdictions were distributed by CWM:

Tax, Fee, and Expenditure	2007	2008	2009	2010	2011	2012
School Tax	$479,337	$487,160	$474,745	$440,637	$477,455	$481,345
Property Tax	$253,942	$247,986	$261,670	$273,091	$279,402	$309,248
Gross receipts tax	$852,673	$993,086	$662,394	$455,256	$646,401	$894,192
Host Community Fee*	$2,100,000	*	*	*	*	*
NYSDEC Operating Program Fees	$315,180	$290,180	$295,055	$349,171	$349,171 estimate	$349,171 estimate
NYSDEC Monitor Reimbursement**	$528,000	$553,500	$558,000	$604,000	$563,000	$513,000
New York State Sales Tax****	$339,579	$235,048	$278,698	$215,297	$231,985	$196,508
Contributions to Local Charities	$34,915	$33,296	$33,020	$375,681***	$45,254	$42,351
Erie & Niagara County Suppliers, Contractors & Haulers	$3,285,492	$5,026,693	$6,115,557	$6,374,261	$6,791,860	$5,226,666
Site Payroll	$4,985,310	$5,101,951	$4,679,482	$4,618,588	$4,481,002	$4,087,492
Total Contributions to Local & State Economies	**$13,174,428**	**$12,986,810**	**$13,358,621**	**$13,705,982**	**$13,865,530**	**$12,099,973**

* Host Community Fee will be paid upon operation of RMU-2.

** Includes two Operations Monitors, one Construction Monitor and one Regional Engineer.

*** Includes a one-time contribution ($320,000) from Waste Management Corporate Charity Golf Tournament.

**** Self-assessment only.

3.7 Existing Facilities and Operations

3.7.1 Background

Areas in the vicinity of the Model City Facility have been, and are used for Army and National Guard maneuvers, detonation of out-of-date explosives, sanitary landfill, agricultural and light commercial operations. The Model City Facility has operated as a hazardous waste treatment, storage and disposal site (USEPA ID No. NYD049836679) since 1971. Over that period of time, it has been known by several names. The corporate name of the facility in 1971 was Chem-Trol Pollution Services, Inc. SCA Services acquired Chem-Trol Pollution Services, Inc. in 1973; the corporate name was changed to SCA Chemical Waste Services, Inc. in 1978 and to SCA Chemical Services, Inc. in 1981. SCA Chemical Services Inc. became a wholly owned subsidiary of WMI in 1984. As a result of a corporate reorganization, SCA Chemical Services, Inc. became a wholly owned subsidiary of Chemical Waste Management, Inc. in 1986 and changed its name to CWM Chemical Services, Inc. in 1988. CWM Chemical Services, Inc. became a limited liability company in January 1998 and became CWM Chemical Services, LLC. CWM is the owner and operator of the Model City Facility. WMI is based in Houston, Texas.

The Model City Facility accepts a variety of liquid, solid and semisolid organic and inorganic hazardous and industrial non-hazardous wastes. In addition, the facility is the only one located in Region 2 that is approved by the USEPA to treat, store and dispose PCBs.

The Model City Facility generally serves a market located within an approximate 500-mile radius of the facility. A significant portion of the waste handled at the facility is generated in NYS, particularly in the western New York area. Additional wastes may be received from other states located in the northeastern United States, Canada and Puerto Rico.

There are 10 closed landfills at the Model City Facility. SLF-1 through SLF-6 pre-date 1979 and are equipped with leachate monitoring systems, gas venting and area monitoring wells. Their operational periods were November 1971 to February 1973 for SLF-1; February 1973 to September 1973 for SLF-2; October 1973 to September 1974 for SLF-3; September 1974 to September 1975 for SLF-4; September 1975 to May 1977 for SLF-5 and March 1977 to September 1978 for SLF-6. SLF-7 and SLF-10 are similarly equipped, but of more recent origin. SLF-7 had been operational between September 1978 and January 1983, and SLF-10 having been operational between August 1982 and December 1984.

SLF-11 was used from 1984 to 1989. This landfill reflects the changes in technology during that period, with the last two cells constructed in accordance with the USEPA minimum technology guidance governing the design of hazardous waste landfill liners and leachate collection systems. SLF-12 was also designed with a double-composite liner system and was operated between 1989 and 1995. SLF-12 is located west of SLF-7 and was closed in the spring of 1996.

All operations in the currently active landfill, RMU-1, are carried out in conformance with current landfill restrictions and in full accord with the most recent of the regularly updated WAP for the site. Wastes that do not naturally meet LDRs may be chemically treated in the on-site stabilization facility prior to disposal in the landfill.

During the course of operations at the Model City Facility, the AWTS used for treating landfill leachate and liquid gate receipts has been improved to maintain conformance with SPDES and surface impoundment LDR requirements through employment of state-of-the-art processes.

Surface impoundments originally used for treatment have been replaced as treatment units by enclosed tankage meeting all applicable standards. An interim upgrade was completed in 1990 to provide additional metals removal capability and pre-carbon biological treatment. The AWTS has been upgraded several times since 1990 by replacing deteriorated tanks with new tanks using improved materials of construction and by increasing process flow capacity.

3.7.2 Waste Characterization

The Model City Facility accepts many of the hazardous wastes identified in 40 CFR Part 261 (6 NYCRR Part 371). A list of hazardous materials managed at the Model City Facility, including treatment, storage and disposal options identified for each material is described in the facility WAP and presented in Appendix A of this document. General categories of industrial non-hazardous wastes that will also be accepted for RMU-2 disposal include those listed in Section 2.4.

Wastes received at the Model City Facility include liquids, semisolids and solids in both bulk and container (principally drum) shipments. In general, the Model City Facility will not accept radioactive, shock sensitive, pyrophoric or etiologic wastes for treatment, storage or disposal (except for trace levels slightly above background, as approved by the NYSDEC).

For potential waste receipts at the site, CWM employs the Pre-acceptance Procedure and the Incoming Load Procedure. These are detailed in the WAP and summarized below. In addition, each waste stream must be individually approved by the NYSDEC.

The Pre-Acceptance Procedure consists of four consecutive parts:

1. Generator Supplied Information

    a. Waste Material Profile Sheet (WPS).

    b. A representative sample.

    c. LDR Notification/Certification Information and/or Data.

2. Initial Review and Analysis

   Certain mandatory analyses and observations are performed at the site, with certain exceptions where a particular procedure may be inappropriate; these investigations consist of a pH determination, a physical description, a water-mix test and screening for ignitables, cyanides, sulfides and radiation. In addition, PCB determinations are runon wastes targeted for use as fuels.

   When appropriate, supplemental analyses are also run; these include such determinations as are required to determine suitability for landfilling. It is at this point that a waste may be accepted or rejected for the landfill. Wastes subject to the USEPA's LDRs, 40 CFR Part 268, must be stabilized to bring them into compliance with these restrictions prior to land disposal.

   At the Model City Facility, compliance with LDRs and the facility's WAP results in the land disposal of wastes when the toxicity has been substantially reduced or the migrating potential of its hazardous constituents has been reduced to levels below health-based standards. In keeping with the WAP, the generator of waste must test the waste or waste extract to determine if the waste is restricted from land disposal; the generator completes a waste profile sheet.

3. Disposal Decision Process

   The pre-acceptance procedure is concluded following the review of generator-supplied information and the appropriate mandatory analysis. A disposal decision results from this review.

4. Re-Evaluation Process

   Wastes are re-evaluated annually and biannually, upon notice of a change in the waste generation process or at the decision of site management that wastes received do not sufficiently conform with pre-acceptance documentation.

The Incoming Load Procedure requires CWM to determine that a waste shipment delivered to the site matches the description on the accompanying manifest and WPS, and secondarily to provide the proper management method.

There are four steps to this procedure:

a. The Manifest Review includes a weight and piece count verification, manifest review and discrepancy resolution.

b. Inspection and sampling of incoming waste shipments is specified.

c. Analyses CWM will perform on each sample are specified.

d. Decision evaluation logic utilized by CWM personnel in deciding whether to accept or reject a particular waste shipment is outlined.

Each waste shipment is evaluated to determine that the wastes coming into the site match the approved WPS and manifest description. Samples are collected for conformational analyses, if necessary. (Some waste materials that come into Model City for storage prior to shipment to another facility may not be sampled.)

On those occasions where loads do not comply with limitations that determine what qualifies for landfilling, loads are rejected for handling at the site. Generally, this involves less than 10 loads per month.

3.7.3 Treatment, Storage and Disposal Units

As described in the Permit Modification Application, hazardous waste operations currently utilized at the Model City Facility include:

- Container storage, handling and processing;
- Aqueous waste treatment;
- Waste stabilization;
- Waste fuels blending;
- PCB operations, including storage of bulk PCB dielectric fluid and disposal of PCB-contaminated material; and
- Secure land burial.

Operations directly or indirectly associated with land burial units are discussed below.

3.7.3.1 Container Processing

Containers are processed in one of four ways, depending upon what type of waste they contain:

- Aqueous wastes are transferred to the AT system.
- Liquid organic wastes, such as solvents and oils, are transferred to other containers or tankers for eventual off-site treatment or disposal.
- Solid materials are disposed in designated landfill cells (after stabilization, if required).

- Materials not suitable for treatment at the Model City Facility are transferred to other appropriately permitted TSDFs or returned to the generator.

Drum decanting is used to transfer liquid wastes from containers to bulk storage tanks and subsequent treatment, recovery or disposal of the liquid phases. Empty drums that have less than 1 inch of residual material are crushed or shredded and then buried in the landfill. Organic sludges resulting from the phase separation process are shipped off-site for incineration.

3.7.3.2 Aqueous Waste Treatment System

The AWTS is designed to treat on-site waters, landfill leachate and gate receipts from customers. The system occupies approximately 2 acres and is located at the western edge of the exiting operating facility. The facility features enclosed tanks for receipt of waste materials, reaction vessels for the precipitation of metals and cyanide from the wastes, filter presses and multi-media filters for the removal of solids, biotowers for the removal of soluble organics (alcohols and ketones), carbon adsorption for the capture of residual organics and storage tanks for the treated wastes. Treated wastewater is transferred to Fac ponds for storage and qualification prior to discharge to the Niagara River in accordance with CWM's SPDES Permit. The alkalization/metals precipitation process, lime slurry feed, filter presses and gate receipt operation are housed in the 10,000 square foot AT Building, as well as with the control room, laboratory and offices. The 1,500 square foot Water Treatment (WT) Building houses the multi-media filters and carbon adsorption processes. The system features a programmable logic controller (PLC) to monitor operational transfers of materials within the Model City Facility. The PLC is also used to ensure system safety by interlocking various control equipment.

The AWTS has been designed to be flexible in the treatment of waste streams. Using the AWTS in a modular fashion (e.g., selective use of treatment steps, repetitive sequencing) provides flexibility for the treatment of more difficult streams.

3.7.3.3 Truck Wash

Those areas on vehicles that may have come in contact with waste are required to be cleaned prior to leaving the Model City Facility. Typically, these areas include wheel wells, tires and undercarriage. Vehicles that contact wastes are physically cleaned of material with shovels and brooms and/or washed down with a pressure water spray prior to leaving the landfill.

3.7.3.4 Waste Stabilization

The waste stabilization processes reduce the mobility of hazardous constituents within a hazardous waste. At the Model City Facility, stabilization is achieved by inducing a chemical reaction in the wastes by using one or more stabilization agents, including cement kiln dust, lime or other pozzolanic materials.

Profiles for wastes that are candidates for the stabilization process are carefully reviewed regarding USEPA codes, components, types of metals that may be present and selection of stabilization reagents. WT sludges, soils containing heavy metals, emissions control dusts and sand blasting grit are typically stabilized at the Model City Facility.

Stabilization techniques or "recipes" are developed when wastes are subjected to bench-scale testing during the sample evaluation process. Effectiveness of the bench-scale process, organic content and heat generation are factors determining whether the material will be acceptable for disposal in a secure land burial facility. The stabilization process consists of mixing waste and reagents in below grade steel mixing pits using an excavator. The waste is mixed with stabilization reagents and water according to the recipe developed for that particular waste. The treated waste is then conveyed to the landfill or temporarily placed in a storage area. Depending upon the WAP developed for a particular material, stabilized wastes may be tested before placement in a secure land disposal facility.

3.7.3.5 PCB Waste Processing

The Model City Facility stores and disposes PCB and PCB-contaminated wastes. PCBs are received at the Model City Facility as drummed and bulk liquids, drummed and bulk solids and transformer carcasses. PCB handling and treatment operations include:

- PCB storage and consolidation prior to shipment off-site for incineration;
- Disposal of small capacitors and empty PCB articles (e.g. transformers); and
- Landfill of PCB-contaminated soil and debris.

Under the current site operations, PCB solids and PCB transformers, those having concentrations less than 500 ppm PCB, are landfilled on site.

3.7.3.6 Secure Land Burial

Landfill operations began at the Model City Facility in 1971. There are 10 closed landfills and one active landfill, RMU-1, on the site. Currently, most of the solid phase wastes received at the Model City Facility are disposed by landfilling, either directly or after pretreatment. The active landfill at the facility is RMU-1 that consists of 14 cells, has a gross capacity (excluding daily/intermediate/final cover and berms) of approximately 3.3 million cubic yards and occupies approximately 47 acres.

CWM has applied for a permit to construct a residuals management unit to be designated RMU-2 for use when the capacity of RMU-1 has been reached. The need for this unit is described in Section 2.1.

3.7.3.7 RCRA Corrective Action Program

An RFI for the CWM property was conducted as described in a 1993 report, to determine whether releases of contaminants had occurred and to characterize the nature and extent of any releases. Of the 146 SWMUs or areas identified in the RCRA Facility Assessment, over 80 were investigated as part of the RFI. As a result of this investigation, it was concluded that the sources of contamination at the site appear to be related to past activities and releases unrelated to current waste management activities. Of the 80 SWMUs investigated, 17 were identified as not having released chemicals to the environment. The remaining SWMUs have some level of contamination associated with them that is generally confined to the shallow upper tills soil unit. Due to the slow rate of groundwater flow at the Model City Facility, there are no cases where contamination has traveled more than a short distance from its presumed source. Seven of the SWMUs had sufficiently high levels of contamination for the NYSDEC to require Interim Corrective Measures (ICM). The ICMs included the installation of groundwater interceptor/collection systems at the former West Drum Area, the Lagoons Area, the Process Area (Phase I and II), the area South of SLF-3, Background Well BW02S, Piezometer P1202S and the area south of the PCB warehouse. A number of SWMUs, approximately 18, appear to be related to past practices associated with the DOD and the DOE.

The RCRA Corrective Measures Procedure is a two part process, Phase I and Phase II. In Phase I, a CMS was conducted to evaluate the releases that have been identified at the Model City Facility, determine if remediation is warranted, review potential remedial solutions and identify the most appropriate solution. Phase II is the Corrective Measures Implementation phase where the final design, construction and implementation schedule of the selected remedial actions are addressed.

CWM submitted the *Site-Wide CMS* in January 1995 and *SWMU Specific Corrective Measures Study* in May 1995 to the NYSDEC. In a February 2001 permit modification, the NYSDEC accepted the ICMs as the Final Corrective Measures (FCMs) for the Model City Facility. These systems will be operated in perpetuity. The February 2001 permit modification also designated in-situ stabilization and final cover as the FCMs for the formerly used wastewater treatment lagoons and salts areas (SWMU-specific). The closure of the Lagoons 1, 2, 5, 6, 7, North Salts and East/West Salts was completed by CWM in accordance with the October 1998 *In-Situ Stabilization Work Plan* (Work Plan) and January 1999 *Addendum to the Work Plan* that presented the proposed closure and corrective measures for these impoundments. The Work Plan was approved by the NYSDEC and USEPA on February 9, 1999.

Prior to implementation of the approved In-Situ Stabilization Work Plan (Work Plan), all lagoons and salts areas were dewatered and fitted with interim HDPE covers to prevent air dispersion of the remaining soils and sediments, as well as reduce the amount of contaminated wastewater due to precipitation. The approved Work Plan required CWM to remove the interim covers, mix reagents into the soils and sediments within the impoundments to stabilize the waste mass and install an engineered final cover system. This work was completed in 2003.

The NYSDEC's *Statement of Basis Summary* for selection of FCMs, issued by the Director of the Division of Solid and Hazardous Materials, on January 31, 2001, addresses each of the criteria required by 6 NYCRR Part 373-2.6 and 6 NYCRR Part 373-2.19 and provides the following conclusions:

1. Overall Protection – The proposed remedies would extract groundwater and treat it to remove contaminants, thereby reducing the risk of direct contact and minimizing the potential for migration of contaminants from the site.

2. Attainment of Media Cleanup Standards – The proposed remedies include attainment of state groundwater standards as a remedial goal. Termination of the remedial program will only be possible when the standards are achieved. Because site conditions may preclude achievement of the standards, perpetual operation and maintenance of the remedial systems is required. (Cleanup of contaminated soils is required; however, the Permittee is required to cap or cover contaminated soils to preclude their disposal.)

3. Controlling the Sources of Releases – Historical data indicate that the proposed remedies will be effective in reducing, to the extent practicable, further migration of contaminants in groundwater. The proposed remedies would remove contaminated groundwater prior to reaching the facility boundary.

4. Compliance with Waste Management Standards – The removal of groundwater and its treatment will comply with applicable requirements for the management of generated wastes. This compliance will assure that the management of wastes is conducted in a positive manner.

5. Long-Term Reliability and Effectiveness – Historical operations of similar remedial systems in NYS, particularly the Niagara Frontier, indicate the technology of the proposed remedy is effective and reliable on a long-term basis.

6. Reduction of Toxicity, Mobility or Volume of Wastes – The proposed remedy should reduce the mobility, volume and, hence, the toxicity of the hazardous constituents via removal of contaminated groundwater from the site.

7. Short-Term Effectiveness – Historical operations of similar remedial systems indicate that the technology of the proposed remedy is effective and reliable on a short-term basis. Performance data obtained during operations of the interim measures systems support their effectiveness in containing the contaminated groundwater.

8. Implementability – The proposed remedy can be readily implemented. Most of the major elements of the remedy are already in place.

9. Cost – Historical operations of similar remedial systems in the Niagara Frontier indicate that the technology of the proposed remedy is cost effective.

During the radiological and chemical footprint investigations performed in 2007 and 2008 for RMU-2, oily soil and soil with elevated VOCs were found in an area that is part of the former Process Area. Additionally, VOCs were found in groundwater monitoring wells installed for RMU-2 in the same area. A groundwater collection trench system called Process Area III was installed in 2012 for containment of contaminated groundwater and will operate on a seasonal basis. Additionally, during routine inspections of the Process Area, a seep was observed in the alley between the TO Building and the site's laboratory. A groundwater extraction well system called Process Area IV was installed in this area during 2012 for containment of this seep and will operate on a continuous basis.

There is the potential for contaminated soils in the area proposed for RMU-2, such as those resulting from previous U.S. Government activities, as discussed in Section 4.2.3. Contaminated soils would be addressed in accordance with Section 5.4. Furthermore, a groundwater monitoring plan for RMU-2 would be designed to allow adequate monitoring of RMU-2.

3.8 Exposure Assessment

3.8.1 Background

An EIR was prepared for the Model City Facility in 1985 (with an update in 1987) by Environ Corporation and in 1992 by CWM for RMU-1. A new EIR prepared by ARCADIS for RMU-2 located in Appendix F discusses the following topics:

- Site setting and potential receptor locations;
- Facility operations relevant to the EIR;
- Potential for off-site exposure resulting from air emissions;
- Potential for off-site exposure resulting from releases to surface water;
- Potential for off-site exposure resulting from releases to groundwater;
- Potential for off-site exposure resulting from subsurface gas migration and soil contamination, including radiological contamination; and
- Management practices and potential for exposure of site workers.

These are discussed briefly in the following subsections.

3.8.2 Site Setting and Potential Receptor Locations

The Model City Facility is located on the border between the Towns of Porter and Lewiston in a predominantly rural area. All of the treatment, storage and disposal units are located on property that lies within the Town of Porter. There are approximately 30 private residences within a 1 mile radius of the facility, with only one residence within 0.5 mile. The nearest residence is located approximately 2,200 feet east of the Model City Facility boundary, at the intersection of Balmer and Porter Center Roads.

3.8.3 Facility Operations Relevant to the Exposure Information Report

Included in this section are descriptions of waste characteristics; treatment, storage and disposal units and the site's permits and compliance record. The site receives and manages hazardous wastes listed in 6 NYCRR Part 371, as well as various industrial non-hazardous wastes. These are in the form of liquids, semisolids and solids.

Hazardous waste operations currently utilized by the site include container storage, handling and processing; AWT; waste stabilization; SLF disposal; and PCB waste processing.

In addition to hazardous waste permits for the operation of the landfill and associated units, the Model City Facility has a SPDES Permit issued by the NYSDEC to discharge treated wastewater meeting designated standards from the Fac ponds to the Niagara River and various air emission permits. RCRA and TSCA on-site inspections are performed, as well as health inspections by the NCHD. Since at least 1981, the Model City Facility has been in substantial compliance with all permits.

3.8.4 Potential for Off-Site Exposure Resulting from Air Emissions

The EIR addresses two major categories of air emissions that have potential for off-site exposure. These are:

- Long-term releases of VOCs and particulates; and
- Short-term releases of toxic gases resulting from accidental mixing of incompatible wastes, accidental ignition of wastes, leaks or spills and traffic accidents.

In the case of long-term releases, particulates (i.e., fugitive dusts) are monitored at six locations along the northern, eastern and western boundaries of the Model City Facility. The data are submitted to the NYSDEC on a monthly basis (Section 3.4 – Air Resources). The result of an NYSDEC point source model that estimates exposure levels to volatiles at nearby receptors was discussed in the EIR. In all cases, the estimated contaminant levels were below the NYSDEC Annual Guideline Concentrations listed in the New York State Air Guide – 1.

The Model City Facility employs a number of methods to minimize air emissions. For active or open areas of the landfill, the release of VOCs is minimized by the low level of VOC contamination allowed by current LDRs. Daily cover is placed over bulk wastes. Drums are covered to within two rows of the edge of the drum layer. Closed landfill units have been capped with compacted clay and a synthetic liner; soil has also been placed on the cap and vegetation has been planted. Based on these practices, the EIR concluded that the potential for human exposure to emissions of hazardous volatile constituents from the landfills is small.

Long-term emissions of particulates are associated with landfill construction activities, traffic, wind erosion of open areas and placement of dusty wastes in the landfill cells. To minimize generation of contaminated windblown particulates due to construction activities, construction is carried out in accordance with approved plans. Particulate emissions from on-site traffic are controlled by implementation of the *Fugitive Dust Control Plan* and regular wetting of the road surfaces. Wind erosion that could entrain contaminated particulates in the active areas of the landfill is minimized by the presence of berms and vegetative cover around the landfill. Dusty wastes are either containerized or stabilized and bulk loads of hazardous wastes with dusting potential are identified during waste acceptance and sprayed with water during disposal, as needed, to control dust. The EIR concluded that human exposure to contaminated particulates is small.

With respect to short-term releases, the occurrence of incidents resulting from mixing of incompatible wastes is minimized through analysis of wastes, in accordance with the facility's WAP prior to processing. The WAP results in the proper identification and segregation of wastes that may be incompatible. In addition, the landfill cells are designed to provide segregation of incompatible wastes. Acid sensitive and acid-generating wastes are disposed only in designated areas of the landfill and separated by at least a 50-foot horizontal buffer distance. Specific measures are taken to prevent ignition of wastes, such as adequate separation of ignitable wastes from ignition sources. These measures are further discussed in the RMU-2 Part 373 Permit Modification Application.

Further minimization of the potential for releases of volatiles is realized through the provisions of the LDRs that prohibit land disposal of hazardous wastes unless those wastes have been treated in a manner that substantially reduces the likelihood of migration of hazardous constituents from the waste. In order to minimize potential exposures, treatment standards are based upon Best Demonstrated Available Technology (BDAT) for a particular waste.

Volatilization of leaked or spilled material is a potential source of volatile emissions. Of the leaks and spills known to have occurred, most involve equipment failure, such as pumps and valves, located on trucks. Other occurrences involved leaks from on-site tanks and drums. Past leaks or spills are reported to have occurred in contained areas, such as concrete pads, bermed areas or drainage ditches, where migration is stopped and the spill quickly remediated. The potential for off-site exposure is minimized by containing the spill on-site and implementing speedy cleanup (i.e., using trained personnel and proper equipment) in accordance with the Model City Facility's SPCC and Contingency Plans.

3.8.5 Potential for Off-Site Exposure Resulting from Releases to Surface Water

The EIR considered two categories of potential releases of chemical contaminants to surface water:

- Long-term releases from effluent discharge and surface water runoff; and
- Short-term releases from upset and accident conditions.

Treated wastewater effluent is batch discharged into the Niagara River. The discharge is permitted by the NYSDEC under its SPDES program. Effluent limitations are indicated in the current SPDES Permit.

Stormwater runoff from inactive and closed areas of the Model City Facility ultimately drains to one of the creeks that flow through the site. The western portion of the facility drains to the north and west, to Six Mile Creek and Four Mile Creek. The on-site drainage system is monitored at downgradient locations to confirm stormwater runoff has not been contaminated. A small part of the eastern portion of the site, which contains the southeastern portion of RMU-1, drains to Twelve Mile Creek. All stormwater discharges are regulated under the site's current SPDES Permit.

Drainage areas include man-made stormwater retention ponds, stormwater control gates, naturally occurring topographically low areas and wooded areas. These areas are mostly located in the central and northern portions of the Model City Facility.

During construction of RMU-2 (i.e., before placement of wastes into the cells) and RMU-2 associated structures, silt fences, hay bales and other sediment control barriers would be used, as required by the SESC Plan included in the SWPPP. The number and location of these barriers would be determined by the SWPPP and progress of construction operations. Removal of these control barriers following completion of construction would occur after re-vegetation of areas that have been disturbed as a result of construction operations. During construction, surface water would be directed to the Model City Facility's existing surface-water collection system.

During operation, precipitation entering the cells of RMU-2 would be collected in the leachate collection system and treated as leachate. Measures used to prevent surface-water contamination include secondary containment of leachate lines and tanks within the Model City Facility and protection of treatment plant effluent lines to the outfall at the Niagara River.

Following closure of RMU-2, water from the final cover system would be managed as surface water. The runoff surface water from the final cover system would be directed to existing stormwater management features (ditches, culverts, basins and control gates) at CWM.

Short-term releases to surface water could occur if surface impoundments were overfilled or landfill retention basins were to overflow. As a precaution, 2 feet of freeboard is maintained in the Fac ponds and 1 foot of

freeboard is maintained in the landfill retention basis. The surface impoundments and the landfill are covered by the Model City Facility's Contingency Plan that addresses prevention of spills from entering the drainage ditches that discharge to surface streams. Spills associated with equipment failures and unloading incidents are also addressed in the Contingency Plan. In the event of an overflow of the Fac ponds or the landfill retention basins, water would be collected by existing site stormwater basins prior to release off site. In the event of an overflow, the contaminated surface water would be managed accordingly prior to discharge off site.

The EIR concluded that the potential for human exposure to hazardous constituents in effluent discharges and surface-water discharges is small and is dealt with through the current SPDES Permit and Part 373 Permit requirements.

3.8.6 Potential for Off-Site Exposure Resulting from Releases to Groundwater

The EIR considered two sources of potential releases to groundwater:

- Release of leachate; and
- Releases from surface impoundments (Lagoons and Salts Areas).

The potential for groundwater contamination is reduced by the USEPA's LDRs. The LDRs prohibit the land disposal of wastes that do not meet certain criteria with respect to the mobility of hazardous constituents within the waste. The Model City Facility will only dispose wastes that meet the criteria set by the LDRs.

A groundwater monitoring system is installed in the uppermost aquifer and in the saturated zone above it. Based upon groundwater studies conducted at the Model City Facility, it has been concluded that there is no evidence of any groundwater contamination or specific plumes of contamination in the uppermost aquifer. Indications of groundwater contamination in the saturated zone above the aquifer have been attributed to past activities at the site; these contaminants do not appear to be moving within the zone and are the subject of an approved *RCRA Facility Investigation and Corrective Measures Implementation Plan*, as specified in the CWM Site-Wide Part 373 Permit.

Breakthrough times for leachate from landfills were calculated by Golder (1985). Golder estimated breakthrough times in two cross-sections of the site. On the northwest section, 590 years was estimated for leachate to travel from the top of the water table to the top of the uppermost aquifer (a distance of 41 feet); 440 years is the breakthrough time estimated for the southwest cross-section (31 feet).

Based on the USEPA guidance criteria for identifying areas of "vulnerable hydrogeology," sites are considered vulnerable if the groundwater requires less than 100 years to travel 100 feet. The travel times calculated by Golder indicate that the site is less vulnerable and presents a lesser potential for groundwater

contamination that reduces the potential for exposure via that pathway. The perpetual care provisions of the Part 373 Permit assure that groundwater monitoring of the landfills will be continued in the future.

Two scenarios were developed in which leachate leaks into the groundwater. It was estimated that it would take approximately 223 to 55,555 years for the leachate to migrate off site. Therefore, contamination via the groundwater pathway is considered unlikely.

Formerly used wastewater treatment Lagoons 1, 2, 5, 6 and 7 and the Salts Areas have been closed in accordance with approved FCMs for these units. Closure included dewatering, in-situ stabilization of remaining soils and sediments and installation of final cover. A new downgradient groundwater interceptor trench has been installed to monitor potential contamination from the Lagoons Area. CWM has agreed to provide perpetual care for long-term monitoring and maintenance activities of the Lagoons and Salts Areas. This limits these former surface impoundments as sources of groundwater contamination.

These units are not related to the construction or operation of RMU-2.

3.8.7 Potential for Off-Site Exposure Resulting from Subsurface Gas Migration and Soil Contamination

Because municipal-type or putrescible wastes are not permitted to be deposited within the Model City Facility, the generation of methane and the potential for off-site migration of methane are considered to be negligible.

The potential for exposure of off-site populations to contaminated soil was also addressed in the EIR. The potential for exposure is minimized by the following measures:

- A chain-link fence, minimum 6 feet high, completely surrounds the perimeter of the facility.
- Site security that is provided on a 24-hour basis adequately prevents unauthorized entry to the facility.
- Emissions of particulates are controlled by means previously described in this section.
- Contaminated runoff that could contaminate off-site soils is controlled by means previously described in this section.
- Landfills and surface impoundments will be properly closed under an approved closure plan. Other areas of the facility will be decontaminated upon final closure.
- NYSDEC environmental regulations limit the potential future use of the facility [NYSDEC Part 373-2.7(g)(3)].

Additionally, as discussed in Section 3.1.2, the radiological survey at the Model City Facility conducted by URS determined that a vast majority of the accessible areas of the property were well below the screening level. Less than 0.15% of over 4 million readings collected during the survey exceeded the threshold of 16,000 cpm. The readings that exceeded the 16,000 cpm threshold were generally in small areas and were often associated with the discovery of discrete, high activity sources that were removed with the sampling effort. A few elevated source items were found in the clay liner of Fac Pond 8; however, most of the rocks with elevated activity were in the cap systems of landfills and isolated areas on site. The elevated source areas in Fac Pond 8 were remediated in 2011. However, an area of soil containing non-MED material above cleanup objectives remains in the north berm. To complete closure of Fac Pond 8, this soil will be removed and disposed properly. The radiological characteristics exhibited by the items found during the survey were consistent with the radiological materials that were historically managed on the site by the U.S. Government from the 1940s to the mid-1960s. URS determined that the presence of such items does not pose a significant health or environmental issue because of the relative isolation from site workers and the general public.

Thus, the potential for off-site human exposure to contaminated soil is considered small.

3.8.8 Management Practices and Potential for Exposure of Site Workers

Management practices and the occurrence of worker exposures are used by the USEPA as an indicator of potential release of hazardous constituents and exposure to off-site populations. Personal air monitoring of site workers is routinely undertaken at the Model City Facility. Dosimetry data indicates that exposures are generally well below Threshold Limit Values for a wide variety of chemicals.

In 2002, six Occupational Safety and Health Administration recordable cases to facility employees were filed; in 2003, two were filed; in 2004, five were filed; in 2005, two were filed; in 2006, five were filed; in 2007, three were filed and in 2008, zero were filed. These were generally minor in nature.

Facility employees receive appropriate job training, as described in Attachment H of the Sitewide Part 373 Permit. Site workers in potential exposure circumstances are required to be trained in and use appropriate personal protective equipment. With respect to the Model City Facility's Contingency Plan, specific responsibilities for facility personnel, including designation of an Emergency Coordinator, are identified.

The radiological survey at the Model City Facility conducted by URS also determined that due to the remote locations of elevated activity, the presence of such items does not pose a significant health or risk to site workers. URS concluded that the only building currently used by CWM employees that exhibited activity levels was the PCB Warehouse located north of RMU-1. Due to limited time that CWM employees enter this building and the low level of activity found in the building, projected doses to workers in the PCB Warehouse are less than 1 millirem per year. Compared to an average of 300 millirem per year of background exposure to the general population from natural cosmic and terrestrial sources, this level was determined to be insignificant.

Management practices at the site are sufficient to minimize the potential for exposure of site workers.

3.8.9 Worst-Case Exposure Analyses

Although operational and engineering safeguards are employed at the Model City Facility to prevent the accidental release of hazardous chemicals to the environment, such releases cannot be entirely ruled out. To assess the maximum possible impacts of the anticipated operations connected with RMU-2 "worst-case scenario" analyses were conducted. Such analyses are constructed to assess what the maximum impacts of an action may be, given the restriction that the scenario must be "reasonably foreseeable."

The worst-case scenario analyses assessed the exposure potential for a release of a large amount of a highly toxic hazardous waste, or the release of a hazardous waste that goes undetected for a relatively long period of time. Two scenarios were examined, a truck accident in front of the Lewiston-Porter schools and a leak in a leachate pipeline, were developed at the suggestion of a representative of the Towns of Lewiston and Porter and Niagara County.

3.8.9.1 Off-Site Traffic Accident

Emissions of particulates and volatile chemicals can potentially occur as the result of an off-site traffic accident involving a truck carrying hazardous wastes to the Model City Facility. Emissions were modeled from this scenario in which a car collides with a truck hauling a bulk shipment of hazardous waste destined for the Model City Facility. The accident was assumed to occur on NYS Route 18 in front of the Lewiston-Porter School. The receptors were assumed to be 100 meters from the accident site and it was also assumed the entire contents of the truck were spilled onto the roadside and that the spilled material lay uncontrolled for 1 hour.

From the various types of waste expected to be placed in RMU-2, the EIR selected four wastes for RMU-2 having the worst potential environmental impact based on their hazardous constituents and/or physical characteristics. These wastes, the constituents of concern and the hazardous characteristic in which it was chosen, are presented in Table 3-11.

The analysis performed utilized the USEPA's preferred air dispersion model, AERMOD (version 12060) to predict potential impacts resulting from the truck accident scenario described above. The air dispersion model utilizes conservative assumptions regarding waste characterization and environmental factors (worst-case hourly meteorological conditions from a 5-year dataset). The predicted ambient air concentrations of the constituents were then compared to the NYSDEC 2010 NYS Short-Term Guideline Concentrations (SGCs) and applicable current ambient air standards for particulate and volatile releases.

The modeling results showed that under the worst-case meteorological conditions for a 5-year period, emissions of hazardous constituents from an accident should not result in concentrations that exceed the NYS SGCs or the current ambient standards.

TABLE 3-11

TRAFFIC ACCIDENT SCENARIO WASTES

Waste	Constituents of Concern	Hazards
Baghouse dust from leaded glass manufacturing	Cadmium Lead	Toxic, Dusty
Spent potliner from aluminum reduction	Cyanides Fluorides	Toxic, Dusty
Mercury-contaminated debris from chor/akali production	Mercury	Toxic, Dusty, Volatile
Waste PVC filter from PVC production	Chloride Monomer	Toxic, Dusty, Volatile

Due to the conservative approach used in the modeling process, the results should be interpreted with caution. For example, the approach ignored several factors that would serve to limit actual exposure, such as the effect of shelter of the potentially exposed receptors and the adherence of spilled waste to soil along the roadside.

Details of the analyses can be found in Appendix F.

3.8.9.2 Leachate Pipeline Rupture

Leachate from RMU-2 would be piped to the facility's AWT plant for treatment. All of the underground hazardous waste pipelines at the Model City Facility are double-walled to provide containment in the event that the primary carrier line develops a leak. Nevertheless, it is conceivable that the primary and secondary containment of one of the leachate pipelines could rupture underground and leak.

An analysis of this scenario was conducted to determine the amount of leachate that would move off-site via groundwater and thus potentially present a hazard to off-site populations. In the modeled worst-case scenario, the leachate was assumed to contain those chemicals occurring at greater than 1 ppm in representative leachate from SLF-11. The hazardous constituents were conservatively assumed to move with the same velocity as the groundwater.

Two geologic scenarios were analyzed:

1. A leak confined to the water table in the upper till units (considered the most likely scenario); and

2. A leak transported instantaneously to the uppermost aquifer (i.e., the Glaciolacustrine Silt/Sand unit).

The leachate leak was assumed to go undetected by existing leak detection alarm systems and to continue for 1 year.

Under both geologic scenarios, the leachate was found to be confined to the immediate area of the leak. It was estimated it would take approximately 55,555 and 223 years, respectively, for leachate in scenarios 1 and 2 to migrate off-site from the area of RMU-2. Therefore, a conservative modeling approach indicates that off-site groundwater contamination as a result of a rupture in the leachate pipeline of RMU-2 is unlikely.

4. Environmental Impacts of the Proposed Action

4.1 Summary

The Proposed Action was analyzed with respect to existing environmental conditions, including water resources, air resources, terrestrial ecology, human resources, aesthetics and public health. The following potential environmental impacts are possible as a result of construction and/or operation of RMU-2 and associated activities described herein:

1. Alteration of existing site topography.
2. Alteration of site drainage.
3. Closure of Fac Ponds 3 and 8 and construction of new Fac Pond 5.
4. Relocation of existing facilities impacted by construction of the RMU-2 landfill.
5. Groundwater and surface-water impacts.
6. Production of landfill leachate.
7. Generation of fugitive dusts and air emissions.
8. Loss of habitat for indigenous species.
9. Loss of federal wetlands and impacts to a 100-adjacent area of a state freshwater wetlands.
10. Future community development.
11. Increase in short-term employment during the construction phase of the project and continued long-term employment for facility personnel during the operation phase, closure and post-closure activities.
12. Restrictions on future land use of CWM property.
13. Transportation.
14. Production of noise.
15. Continued tax revenues to local municipalities and other local economic benefits.

16. Visual impacts.

17. Increased local nighttime light levels.

18. Exposure public health impacts.

19. Continued availability of land disposal capacity for wastes and residuals that have received, or have resulted from appropriate treatment.

20. Cumulative impacts related to existing operations, RMU-2 and proposed future projects at the site.

A subject-by-subject review of the impact potential of the Proposed Action with respect to the existing environmental setting is presented in this section.

4.2 Impact on Geological Resources

4.2.1 Topography

The final cap for RMU-2 is designed to rise no more than 120 feet above existing grade when completed (elevation 440 feet amsl). Perimeter berms, except for the MSE wall, would have an exterior slope of 2H:1V and the minimum design slope of the final cover system is 5% that allows for gravity drainage of stormwater under post-settlement conditions. New Fac Pond 5 is surrounded by a perimeter berm with a top elevation of 335 feet amsl. New and relocated buildings and other facilities associated with RMU-2 will be at a lower elevation. Given that the area immediately surrounding the Model City Facility (i.e., not considering the Niagara Escarpment) has little topographic relief, RMU-2, Fac Pond 5 and other new or relocated buildings and facilities would represent a deviation from the current topographic setting. The significance of the change in topography is best evaluated within the context of site drainage and the potential visual (i.e., aesthetic) impacts that may result.

4.2.1.1 Site Drainage

Site drainage would be modified from the current situation during the construction and operation of RMU-2, Fac Pond 5 and other facilities. Precipitation in RMU-2 cells under construction (i.e., not containing waste) would be directed to the facility's surface-water drainage system. During operation of RMU-2, precipitation falling in active cells would be treated as leachate and would be pumped to the facility's AWT plant. Thus, during operation, the changed topography would result in an increase in flow to the AWT plant and a decrease in flow to the site surface-water drainage system.

Stormwater runoff from capped areas of RMU-2 would be intercepted by a series of surface-water diversion berms constructed across the slope of the final cover, spaced approximately every 30 vertical feet. The surface-water diversion berms would discharge into downflumes consisting of wide, shallow channels lined

with riprap-filled reno mattresses (riprap encased in wire mesh baskets). The downflumes would drain into a grass-lined perimeter channel adjacent to the access road on top of the perimeter berm. The perimeter channel would convey stormwater into existing stormwater retention basins (SRBs) and containment areas.

The proposed grading for RMU-2 would cause a portion of the perimeter ditch along the western edge of RMU-1 to be unable to gravity drain along the surface to any stormwater basin. Consequently, a storm sewer system would be installed between RMU-1 and RMU-2 to convey runoff that enters this segment of the perimeter ditch to the existing V01 basin. The storm sewer system would consist of a single drop inlet (consisting of pre-cast concrete catch basin structure and a frame and inlet grate) and a series of pre-cast concrete manholes interconnected by smooth-bore corrugated HDPE piping. The storm sewer system would convey flow along the existing RMU-1 perimeter berm and would daylight at the northwest corner of RMU-1. The storm sewer system has been designed to convey the 25-year, 24-hour storm event estimated peak discharge under newly graded conditions.

Grass-lined open channels have been designed for two scenarios, each with different runoff conditions and channel flow resistance. The first scenario is intended to model conditions associated with recently capped areas and uses a higher runoff curve number to reflect the sparse vegetation that is typical of newly seeded areas. Under the first scenario, the open channels are assumed to have very short vegetation in them and consequently have lower Manning “n” values. The first scenario results in greater peak discharges from the various RMU-2 watersheds, as well as faster and shallower flows in grass-lined open channels. The second scenario is intended to model conditions associated with well-established vegetation on the cap and thicker vegetation in grass-lined channels. The second scenario results in lower peak discharges from the watersheds and slower, deeper flows in grass-lined open channels. To be conservative, riprap-lined channels (e.g., downflumes) and culverts have been designed to accommodate the greater peak discharges associated with the first scenario.

After closure of RMU-2, all precipitation would be directed to the facility’s surface-water drainage system. In addition to the altered flow pattern, the rate of runoff from the capped landfill would be greater than the current rate of runoff due to the increased slope of the land surface. However, this increased rate of runoff would not result in increased flooding due to the retention capacity of the existing stormwater management system.

Additional minor site drainage alterations associated with the construction of new Fac Pond 5 and the new Drum Management Building would be required. Surface-water drainage from these areas will be modified to maintain drainage of collected surface waters to the existing basins.

4.2.2 Geology and Soils

Construction activities for RMU-2 and Fac Pond 5 would involve removal of soils to a depth of approximately 12 feet and 13.5 feet, respectively, below existing grade (average existing grade is considered to be 320 feet amsl). Glacial tills (in-situ or re-compacted) would be used to construct RMU-2 and Fac Pond 5.

Excavation into the glaciolacustrine layer would decrease the thickness of relatively impermeable clay under the site and would increase the difficulty of construction. Therefore, excavation into this layer would be avoided except for keying into the layer to a depth of 1 foot during construction of the perimeter cutoff wall.

During excavation activities for RMU-2 and Fac Pond 5 construction, all soil materials will be screened for possible chemical and/or radiological contamination prior to use as construction for RMU-2. Availability of suitable clay materials from the excavation of RMU-2 is limited. In addition, no gravel from on-site is available for construction. Assuming little or no contamination is found, there would be sufficient quantities of structural fill soils that may be used for RMU-2 and Fac Pond 5. It would be necessary to obtain suitable clay and gravel from off-site and transport it to the site. The soil balance determinations presented in the *Soil Management Plan* (Appendix H) (ARCADIS, 2003, Revised August, 2009 & November 2013) show that a total of approximately 235,000 cubic yards of clay and 115,000 cubic yards of gravel would be required to be brought to the site and temporarily stored in stockpile areas. It is estimated that approximately 150,000 cubic yards of soil (i.e., general fill and topsoil) would be available from on-site sources. The need for these materials would be spread over several construction seasons.

Stockpile capacity for RMU-2 has been estimated as 200,000 cubic yards between three storage areas. Soils, clay and gravel cannot, in total, be stockpiled all at once. Instead, as a necessary aspect of the multi-phased construction, soil materials would be stockpiled on a temporary basis at any one stockpile, with continual additions and removals to the stockpiles as soil resources are required. All stockpiles would be less than 30 feet in height and have slopes no steeper than 1.5H:1V in order to obtain acceptable soil erosion rates.

Erosion of stockpiled soils is a likely occurrence depending upon the severity and amount of rainfall. Sediments eroding from the piles, however, will be trapped by sediment fences, berms, hay bales or other sediment control measures to minimize any impact to the environment from the construction of RMU-2 and associated facilities.

4.2.3 Potentially Contamination Soils

During excavation activities to achieve RMU-2 design subgrade elevations, the possibility of encountering contaminated soils within the Glacial Till layer exists. This contamination may be chemical (i.e., VOCs) or radiological. The following information presents background historical information suggesting where contaminated soils may exist and the previous investigations performed at the facility to identify and delineate the contaminated areas.

4.2.3.1 Potential Chemical Contamination

Historical site data suggests the following areas within the RMU-2 footprint may contain contaminated soils within the Glacial Till Layer:

- Areas adjacent to the abandoned railroad bed (west of “M” Street and MacArthur Street intersection); and

- The existing Full Trailer Parking Area.

Railroad Bed Area

In April 1994, a routine surface-water sampling event near the intersection of “M” Street and MacArthur Street at the Model City Facility identified the presence of elevated concentrations of VOCs. A surface-water sampling investigation was performed by CWM both upstream and downstream of the intersection to identify the source and extent of the contamination. The investigation determined that the probable source of the contamination was an abandoned railroad bed located west of the intersection. A supplemental investigation of the abandoned railroad bed was performed in 1997 by Golder. A report summarizing the findings of the supplemental investigation entitled *Background Well BW02S, Piezometer P1202S and Abandoned Railroad Bed Supplemental Investigation* (October 1997) was also prepared by Golder. The supplemental investigation determined that low level VOC contamination (less than 100 ppm) is confined to the Glacial Till layer immediately below the abandoned railroad bed, approximately 25 feet north and south of the railroad bed, extending east to the edge of MacArthur Street and west to the location of former Tank Farm E.

Existing Full Trailer Parking Area

From September 1989 to August 1991, Phase I and Phase II investigations performed as part of CWM’s RFI, determined the presence of low level VOC contamination in surface soils in the vicinity of the existing Full Trailer Parking Area. The investigation was summarized in the report entitled *RCRA Facility Investigation Summary Report,* prepared by Golder (January 1993). The investigations included the analysis of soil and groundwater samples obtained from 16 soil borings in the vicinity of the existing Full Trailer Parking Area. Based on the soil and groundwater analytical results, Golder determined that the detection of low level VOCs (Total VOCs less than 51 ppm in soils and less than 1.5 ppm in groundwater) was confined to the Upper Till unit in the area and that the localized nature of the impacted area suggests potential sources were surface spills stemming from past waste handling activities and residual organic compounds related to lagoons which formerly occupied the area.

4.2.3.2 Potential Radiological Contamination

Section 3.1.2 describes the radiological history of the CWM property. Soil excavations for the proposed RMU-2 footprint, relocated facilities and associated construction would disturb portions of former Vicinity Properties B, C, D, E, E’, F, G and K. Project activities for each of these Vicinity Properties are discussed below. In all cases, NYSDEC and NYSDOH will determine if there is a potential for residual radioactive material to be present in concentrations which exceed current guidelines due to possible gaps in the previous DOE surveys and other factors.

The northeast section of the RMU-2 footprint would occupy a small portion of the western edge of Vicinity Property B. Vicinity Property B was certified by DOE as meeting the cleanup criteria in 1992. No elevated radiation readings have been identified in this portion of Vicinity Property B. Surface survey and subsurface investigation completed by URS did not identify any obvious areas of elevated readings in the proposed RMU-2 footprint within Vicinity Property B.

A portion of the proposed RMU-2 footprint is in the northwest corner of former Vicinity Property C. Vicinity Property C was certified by DOE as meeting the cleanup criteria in 1992. Results obtained by URS during the surface survey identified several isolated areas with elevated radiological readings in the area of existing Fac Pond 8 (proposed Cell 20 of RMU-2). Although some of the radiologically contaminated materials found in Fac Pond 8 have been removed, one small area of the floor of Fac Pond still exhibited elevated activity.

During 2010, a Radiological Characterization Investigation was performed of Fac Pond 8. During the investigation, Fac Pond 8 was divided into twelve, 2,000-square meter survey units. The investigation included gamma walkover surveys, the installation of 193 soil borings and the collection of 207 soil samples from the soil borings. Readings above investigation levels were discovered within two of the survey units, and elevated radiological readings were verified through sampling and laboratory analyses. This effort demonstrated in accordance with MARSSIM guidance that all but two of the survey units are below the remedial standards developed for nearby FUSRAP sites and consistent with background concentrations (Radiological Characterization Results Final Report, Facultative Pond 8 [EnSol, 2010]).

A Remedial Action Plan (RAP) was prepared utilizing the data generated from the previous investigations to calculate the risk associated with various exposure scenarios and to derive an appropriate guideline level that can be used during Fac Pond 8 remedial activities. Remedial activities were performed between September and November 2011 and included the removal of soil with suspected MED material above established cleanup levels and the performance of a Final Status Survey (Completion Report for the Remediation of Facultative Pond 8, CWM Model City [Los Alamos Technical Associates, Inc., January, 2012]). Results of the remediation and FSS indicate that the area may be released for future development without the threat of MED radiological conditions above regulatory criteria.

During the performance of the Final Status Survey of Fac Pond 8, areas of elevated gamma readings were found in the inside north berm of the pond. Materials with elevated readings at the surface were removed for off-site disposal. During the removal of soil with elevated gamma readings, a lense of material was found within the berm. Soil samples were collected from the lense and submitted for laboratory analyses. The laboratory analyses indicated that the material (lense) is non-MED material; however, the results were slightly above the cleanup criteria in the RAP. This material does not present a risk to the public or workers. CWM's intention is to leave this material in place until the RMU-2 cell is constructed. Supplemental investigation of this material will be done, including any necessary evaluation of the data gathered to confirm that the material can be left in place. In addition, the Soil Excavation Monitoring and Management Plan for RMU-2 will be followed during construction, and appropriate measures will be taken for management of this material.

Fac Pond 8 was sampled and characterized in accordance with existing Part 373 Site-Wide Permit requirements for chemical constituents. A certification of the chemical clean closure of Fac Pond 8, in accordance with the Sitewide Closure Plan, was prepared by Golder Associates and submitted to the NYSDEC on November 9, 2009.

Fac Pond 5 is proposed for the area west of SLF-7, in the central portion of former Vicinity Property D. Vicinity Property D was certified by DOE as meeting the cleanup criteria in 1992. It currently contains two closed landfills and a capped surface impoundment. The URS surface survey and subsurface investigation did not identify any areas of elevated readings in the proposed Fac Pond 5 footprint within Vicinity Property D.

The footprint for RMU-2 is proposed to extend into the eastern portion of former Vicinity Property E. Based on the 1971-72 survey, the only area of elevated reading within the RMU-2 footprint in Vicinity Property E was in the southeast section of Vicinity Property E along the railroad tracks on the boundary between Vicinity Property E and Vicinity Property E'. After completing remediation in Vicinity Property E, the 1983 Oak Ridge survey identified an area of elevated radiological readings along "5" Street on the western edge of Vicinity Property E. Material in this area consists of crushed rock/slag and is believed to be common construction fill. Elevated readings were also noted near small white chips. When these readings were averaged over a 100 square meter area in accordance with standard DOE procedures, the results were determined to meet acceptable guidelines in most situations. The July 1990 DOE Report, *Verification of 1985 and 1986 Remedial Actions, Niagara Falls Storage Site, Vicinity Properties, Lewiston, New York*, indicates that no remediation was performed in Vicinity Property E in 1985 or 1986. This report also states that the major area of potential contamination in Vicinity Property E is within the berm of Lagoon 6. Neither the rock/slag nor berm of Lagoon 6 fall within the proposed RMU-2 footprint and would not be disturbed by this project. The URS surface survey and subsurface investigation did not identify any areas of elevated readings in the proposed RMU-2 footprint within Vicinity Property E.

The footprint for RMU-2 is proposed to extend into the eastern portion of former Vicinity Property E'. In this section of Vicinity Property E', contamination was noted along the railroad track (at the split and along the southern spur). The remediation of this area was documented in the July 1990 DOE Report, *Verification of 1985 and 1986 Remedial Actions, Niagara Falls Storage Site, Vicinity Properties, Lewiston, New York*. Remediation included the area around Tanks 64 and 65 at the western end of Vicinity Property E'. In 1993, TMA Eberline performed a walkover survey of Vicinity Property E' and the only elevated radiological readings found were in the area around these tanks. The major area of potential contamination in Vicinity Property E' is within the area previously underneath Tanks 64 and 65. This area does not fall within the proposed RMU-2 footprint and would not be disturbed by this project. The URS surface survey and subsurface investigation did not identify any areas of elevated readings in the proposed RMU-2 footprint within Vicinity Property E'.

The southern portion of RMU-2 would extend into former Vicinity Property F. Vicinity Property F was certified by DOE as meeting the cleanup criteria in 1992. The URS surface survey and subsurface

investigation, including screening of the berms and sampling of the floor sediments from Fac Pond 3, did not identify any areas of elevated readings in locations affected by the RMU-2 project within Vicinity Property F.

The area west of Fac Pond 1/2 also located in Vicinity Property G is being evaluated for the location of potential compensatory mitigation wetlands that will be required by the USACE for the development of RMU-2. The radiological survey of this area conducted by URS determined that a majority of the accessible areas were well below the screening level. There was one area of elevated readings in the accessible areas. URS determined that the source of the elevated measurements (25,000 cpm) was a 4-foot boulder west of Fac Ponds 1 and 2, which remains in place because it was too big to move. The boulder was not sampled for analysis; it appears to be naturally occurring. There were many boulders in the area, which is a spoils pile from screening topsoil. If this area is chosen for development of a compensatory mitigation area, the *RMU-2 Soil Monitoring and Management Plan* will be followed.

The proposed new Drum Management Building is located in former Vicinity Property K. Vicinity Property K was certified by DOE as meeting the cleanup criteria in 1992. The URS surface survey and subsurface investigation did not identify any areas of elevated readings in locations affected by the RMU-2 project within Vicinity Property K.

4.3 Impact on Water Resources

4.3.1 Groundwater

No impacts to groundwater as a result of construction of RMU-2 or associated facilities are expected. The potential impacts to groundwater are associated with operation of RMU-2, primarily resulting from production of landfill leachate and potential spills of hazardous wastes. A series of deep groundwater wells, below the natural clay layer in the uppermost aquifer and shallow groundwater wells, within the saturated zone of the upper tills, would be installed downgradient of RMU-2 to detect potential groundwater contamination from RMU-2. Likewise, upgradient and downgradient shallow and deep groundwater monitoring wells would be installed at Fac Pond 5. The location and spacing of these wells are based on a computer model that assures that a potential leak would be detected by one of the wells. Results from the routine sampling of the wells for a set of site-specific indicator parameters consisting of priority pollutant volatile organics are compared with historical results. The effect of existing site contamination is considered in evaluating the results. If a statistically significant increase in the concentration of an indicator parameter is detected, specific investigative and corrective procedures would be implemented. The double-lined design in a geologically suitable location and continuation of CWM's Groundwater Monitoring Program is the basis for the "no expected impact" conclusion.

Leachate is produced by infiltration and percolation of water or liquids through the land disposal unit. However, the unit's leachate collection system is designed to prevent release of leachate to the groundwater by directing the leachate to collection sumps from which the leachate is pumped out of the landfill. Due to the double composite liner system (primary and secondary liners, each of which have HDPE and clay/GCL

layers) and perimeter cutoff wall, the possibility of leachate leaving the landfill, entering the soil and eventually migrating to the groundwater off-site without being detected is extremely remote.

4.3.2 Surface Water

Impacts to surface-water resources may result from construction and operation activities. Suspended solids may result from entrainment of soil particles in stormwater runoff. The pattern of stormwater runoff may also change due to changes in site topography and ground cover.

The design of the unit incorporates features to convey, collect, desilt and discharge stormwater runoff from RMU-2. The description of the surface-water management system is presented in Section 5.9 and in the *RMU-2 Engineering Report* and will be addressed through implementation of soil erosion and sediment control requirements included in the SESC Plan in the SWPPP to be prepared for RMU-2. Approval for surface disturbance during construction will be authorized by the Model City Facility's modified individual SPDES permit or a separate GP-0-10-001 authorization.

Any leachate that is generated requires treatment by the on-site AWTS prior to discharge to the Niagara River. The discharge of treated effluent from the facility is governed by the conditions established in the Model City Facility's SPDES Permit. The permit specifies that the wastewater must be adequately treated and pre-qualified before it is discharged to the Niagara River. The pre-qualification criteria include chemical analyses and biotoxicity testing. Discharges meeting permit limitations will have no significant impacts on water quality.

To assess the capacity of the Model City Facility's leachate management systems to accommodate the leachate generated by RMU-2 during its active life, a detailed engineering analysis was performed by BBL. The evaluation demonstrates the adequacy of the surface-water runoff design, detention basin sizing, capacity of the SLF-12 lift station, LTF and AWTS with regards to the operation of RMU-2. This evaluation is presented in Appendix F of the *RMU-2 Engineering Report.*

4.4 Impacts on Air Sources

Potential impacts to air resources may include fugitive dust, emissions resulting from operation of internal combustion engines, greenhouse gas emissions and volatile emissions resulting from hazardous waste disposal operations, including odors.

4.4.1 Fugitive Dust Control

Fugitive dust may result from traffic, operation of equipment and earth moving, including land clearing, excavation, landfill construction and disposal operations. Emissions of fugitive dusts will vary depending on the type of operation, level of activity and MET conditions. For instance, fugitive dust will increase with an increase of truck traffic, temperature, aridity and wind. It should be noted that these factors are not

independent of each other in the production of dusty conditions. The Model City Facility has prepared a *Fugitive Dust Control Plan* that is discussed in Section 5.

The plan requires identification of loads prone to dusting and adequate wetting of the waste before and during unloading. The plan also requires dust suppression of all internal roads used by waste hauling vehicles. Model City Facility operates a PM-10 air monitoring network to determine ambient dust levels. This monitoring program demonstrates CWM's compliance with the national primary and secondary 24-hour ambient air quality standard for particulate matter of 150 $\mu g/m^3$, 24-hour average concentration.

The fugitive dust control measures detailed in the *Fugitive Dust Control Plan* have consistently resulted in particulate matter levels below the AAQS. If the monitoring network begins to indicate levels above the standards, CWM will investigate the cause and revise the *Fugitive Dust Control Plan* as necessary.

CWM has evaluated the historical results of the PM-10 air monitoring program at the facility with respect to NYSDEC's Policy CP-33, as well as the potential PM-10 emissions from the proposed RMU-2. The evaluation indicates that the potential for PM-10 emissions from RMU-2 construction are less than 15 tons per year. According to CP-33, no further evaluation is necessary if the potential PM-10 emissions for a project are less than 15 tons per year.

4.4.2 Internal Combustion Sources

Internal combustion engines powering equipment used for construction or operation of RMU-2 would emit some levels of carbon monoxide, nitrogen oxides, sulfur oxides and hydrocarbons. These emissions are expected to be minor and would not contribute significantly to contravention of AAQS.

4.4.3 Greenhouse Gas Emissions

The construction and operation of RMU-2 will have an impact on the continued generation of greenhouse gases from the Model City Facility. Greenhouse gases are generally produced through energy consumption at the facility and consist of fuels used by vehicles entering the facility, operational equipment used by the facility and the electrical demand of the facility.

To assess the amount of greenhouse gases produced by the Model City Facility, several factors must be evaluated. These factors include:

- Direct emissions from stationary sources, which include fuels burned for facility heaters and boilers;
- Direct emissions from non-stationary sources, which include fuels burned by operational and other mobile equipment used by the facility;

- Indirect emissions from stationary sources, which include emissions of greenhouse gases from power production plants that supply energy to the Model City Facility; and

- Indirect emissions from non-stationary sources, which includes fuels burned by vehicles entering the Model City Facility.

Since the RMU-2 landfill will replace the existing RMU-1 landfill with minimal operational changes, the energy consumed by the existing operation of the Model City Facility is considered relevant to the predicted energy consumption of RMU-2. In determining the amount of greenhouses gases produced by the existing Model City Facility operations, the total amount of energy used by the facility was determined for 2008. By applying the appropriate emission factors, obtained from the Energy Information Administration, for the various fuels used by the Model City Facility, the amount of greenhouse gases the facility generates can be calculated. Tables 4-1 through 4-4 provide a summary of the energy consumption and the associated greenhouse gas emissions (expressed in tons of carbon dioxide) generated by Model City Facility in 2008 for each of the four factors described above.

TABLE 4-1

DIRECT EMISSIONS FROM STATIONARY SOURCES

EQUIPMENT	TYPE OF FUEL	AMOUNT USED IN 2008 (gallons)	EMISSION FACTOR (Pounds of CO_2 per gallon)	CO2 EMISSIONS (Tons)
Boilers	#2 Fuel Oil	52,682	22.384	585
Heaters	Propane	175,351	12.669	1,110
			TOTAL	1,695

TABLE 4-2

DIRECT EMISSIONS FROM NON-STATIONARY SOURCES

EQUIPMENT	TYPE OF FUEL	AMOUNT USED IN 2008 (gallons)	EMISSION FACTOR (Pounds of CO_2 per gallon)	CO2 EMISSIONS (Tons)
Landfill and construction related heavy equipment	Diesel	35,017	22.384	390
Site operational vehicles (i.e., pick-up trucks)	Gasoline	12,853	19.564	125
Site Forklifts	Propane	1,030	12.669	7
			TOTAL	522

TABLE 4-3

INDIRECT EMISSIONS FROM STATIONARY SOURCES

LOCATION	TYPE OF ENERGY	AMOUNT USED IN 2008 (MW/hr)	EMISSION FACTOR (Pounds of CO_2 per MW/hr)	CO2 EMISSIONS (Tons)
Entire Model City Facility	Electricity	4,867	850	2,070

TABLE 4-4

INDIRECT EMISSIONS FROM NON-STATIONARY SOURCES

EQUIPMENT	TYPE OF FUEL	AMOUNT USED IN 2008[2] (gallons)	EMISSION FACTOR (Pounds of CO_2 per gallon)	CO2 EMISSIONS (Tons)
Waste Trucks, employees, visitors and deliveries entering the facility	Diesel[1]	1,053,270	22.384	11,788

Notes:
1. Diesel fuel used as the conservative approach since emission factors for diesel fuel are higher than emission factors for gasoline. Diesel fuel also represents more than 90% of the fuel used by vehicles entering the facility on a total vehicle mile traveled (VMT) basis.

2. Amount of fuel used in 2008 is based on total VMTs of 10,532,700 miles for vehicles entering the facility and an average fuel economy of 10 miles per gallon.

Based on the information included above, it is estimated that approximately 16,075 tons of greenhouse gases (expressed as tons of CO_2) are currently generated by the energy consumed at the Model City Facility. As stated previously, since the RMU-2 landfill will replace the existing RMU-1 landfill with minimal operational changes, the energy consumed by the existing operation of the Model City Facility is considered representative of predicted future greenhouse gases at the facility and no significant increase of greenhouse gases, direct or indirect, is anticipated as a result of the RMU-2 operation. It is anticipated that nearly 4,000 additional tons of greenhouse gases (expressed as tons of CO_2) would likely be generated by the additional truck transportation to haul hazardous wastes to the next closest permitted hazardous waste TSDF (located in Wayne, Michigan) if there was no hazardous waste disposal capacity at the Model City Facility.

4.4.4 Volatile and Semivolatile Organics

Facility air-monitoring data for volatile and semivolatile organics has been collected. NYSDEC allowed CWM in February 1992 to discontinue monitoring for non-PCB/SVOCs because none of the compounds monitored for were ever detected. In August 1996, NYSDEC deleted the site perimeter air monitoring for PCBs since these compounds were rarely detected or detected at only background levels. The VOC ambient air monitoring program was suspended by NYSDEC in August 2000 for similar reasons. Historically, landfill operations have had no effect on perimeter air monitoring results. Due to LDRs, organic

concentration of waste currently allowed for land disposal is significantly less than those levels present when facility ambient air monitoring results showed no impact from land disposal operations. Since operations at RMU-2 should not differ significantly from operations associated with RMU-1, RMU-2 is also not expected to result in a measurable effect on air pollution.

4.5 Impacts on Ecological Communities

4.5.1 General

It is anticipated that there will be no impact to natural ecological communities by the construction of RMU-2 and associated facilities since it is located in a developed area that has been cleared of woods and includes existing buildings and roads.

Additionally, no rare, threatened or endangered wildlife would be affected by construction. Further, the site of the proposed action is not known to be a deer concentration area, nor is it known to be a habitat for species of “Special Concern.”

4.5.2 Impacts on Wetlands

In 2002 and 2009, EDR determined that the proposed area of RMU-2 and relocated facilities does not impact any NYSDEC-regulated wetlands and contains less than 2 acres of federal wetlands, all of which may be considered jurisdictional waters of the United States pending verification by USACE. EDR updated the RMU-2 wetlands delineation in April 2011 and July 2012 to include areas within the RMU-2 development area that were not included in the previous delineations. Again, EDR concluded that the RMU-2 project would have no impact to state wetlands and impact less than 2 acres of federal wetlands, pending confirmation by the USACE.

A jurisdictional determination was received from the USACE on September 13, 2011. The USACE jurisdictional determination indicated that approximately 2.5 acres of jurisdictional wetlands are located within the RMU-2 development area.

The wetlands were identified and delineated based on the presence of hydrophytic vegetation, hydric soils and indicators of wetland hydrology.

The area proposed for the RMU-2 site is approximately 43.5 acres, plus additional acreage for Fac Pond 5 and associated facilities, with approximately 2.5 acres of federal wetlands that would be impacted due to construction and operations (Figure 3-9). The wetlands delineated by EDR and the USACE consist of man-made roadside ditches and isolated pockets of wetland areas which provide limited function and value (primarily stormwater detention and flood storage). The limited function and value is due to the small size, shallow depth and seasonal inundation/saturation of these delineated wetlands. The wetlands on site provide no aesthetic, recreational, or educational value and appear to have little, if any, groundwater

recharge or discharge function. The wetlands have little beneficial effect on water quality and do not provide spawning areas for fish, waterfowl habitat or shoreline erosion control. The wetlands also provide limited value for wildlife due to the lack of habitat diversity, water level fluctuations and adjacent land development.

During the detailed design of the site grading plan for the New Drum Management Building, a supplemental wetlands delineation was performed in the proposed area by EDR in July 2012. The supplemental delineation indicated that a wetland on the north side of the development area extends beyond the delineated area and outside of the study area into an NYSDEC-protected wetland (RV-8).

On November 7, 2012, CWM subsequently requested a jurisdictional determination from the NYSDEC that no state freshwater wetlands would be impacted by the construction of RMU-2, including the New Drum Management Building area. Based on a field delineation by an NYSDEC wetlands biologist, the NYSDEC determined that a portion of the new Drum Management Building Development will be in the 100-adjacent area of a state freshwater wetland (RV-8). Additionally, the NYSDEC issued a determination on February 4, 2013 that no other state freshwater wetlands or 100-adjacent areas are in the RMU-2 development area. The EDR supplemental wetlands delineation and the jurisdictional determinations from the NYSDEC are also included in Appendix D.

Required permitting and mitigation measures for impacts to wetlands are described in Section 1.5.2.2 and Section 5.8.3, respectively. Appendix D presents the *Wetland Delineation Report, RMU-2 Landfill Expansion Area,* prepared by EDR, dated June 2009, the *Supplemental Wetland Delineation Report, RMU-2 Landfill Expansion Area,* prepared by EDR, dated April 2011, and the *Supplemental Wetland Delineation Report (Drum Building Area and Wetland M),* prepared by EDR, dated July 2012, that describes the wetlands that are impacted by the construction of RMU-2 and associated facilities.

4.6 Impacts on Human Resources

4.6.1 Demographics

No impacts are anticipated. Although RMU-2 would extend the life of operations at the Model City Facility, the nature of facility operations is not expected to change in a manner that would tend to attract or repel potential residents different than the current operations.

4.6.2 Housing

No housing impacts are anticipated, since this is related to demographics of the region. The characteristics of the human population should remain unchanged and the proposed RMU-2 construction and operation should not affect the housing market in this region.

4.6.3 Employment

Contractors would be employed for the short term during construction of RMU-2 and associated facilities. Contractors may be involved in the actual physical construction, or may be employed for adjunct activities, such as construction oversight, testing and environmental monitoring. CWM contracts outside services to local firms wherever possible. The operation of RMU-2 would allow continuation of employment for approximately 80 current Model City personnel. The operation of RMU-2 would not create any new full-time employment opportunities.

4.6.4 Land Use and Zoning

The area to be used for RMU-2 and associated facilities is currently zoned as M-3 (Heavy Industrial) to allow use for hazardous waste management activities. Areas in the immediate vicinity of CWM are Zoned M-1 (Restricted Industrial), M-2 (General Industrial), M-4 (Special Industrial) and AAR (Agricultural and Rural Residences). No additional changes in zoning are required for the Proposed Action. Future use of land that has been used for hazardous waste disposal activities is restricted by USEPA and NYSDEC regulations.

Post-closure care for the existing Model City Facility, including monitoring and maintenance of the properly closed landfills, surface impoundments and CAMUs, will continue in perpetuity. Perpetual post-closure care of RMU-2 and Fac Pond 5 would also be provided. Future land use would not disturb the integrity of the final cover, liner, containment system or monitoring system. Financial assurances for closure and post-closure activities are based upon the closure and post-closure estimates prepared for each treatment, storage and disposal unit. Such assurances are intended to guarantee funding that would allow the completion of closure and post-closure activities regardless of the financial situation of the owner/operator of the Model City Facility. Closure and post-closure activities are guaranteed financially, pursuant to the requirements for hazardous waste management facilities given in 6 NYCRR Part 373. The current financial assurance provided for closure and perpetual post-closure care of the Model City Facility is $100 million.

4.6.5 Transportation

4.6.5.1 Waste Delivery Traffic

The Model City Facility is limited to 425,000 tons per year of hazardous waste gate receipts destined for the current operating landfill, RMU-1. However, in consideration of the exemptions that do not count toward this limit, RMU-1 can realistically accept 500,000 tons per year for land disposal. In recent years, the average level for land disposal has been less than 200,000 tons per year. The number of trucks delivering waste to the facility typically ranges from 20 to 120 trucks per day. CWM anticipates that there would be no increase in trucks hauling wastes to the facility when RMU-2 becomes operational. However, there is a potential to increase waste truck traffic above current levels, while still abiding by the restrictions in the CAC.

All transporters comply with all Federal Department of Transportation (DOT) requirements in 49 CFR; NYSDEC requirements as found in 6 NYCRR Parts 364 and 373 and NYSDOT requirements as found in Parts 390-396 of the Federal Motor Carriers Safety Regulations. Security Guards at the Model City Facility's entrance gate inspect vehicles prior to entrance into the facility. Any vehicle found to be out-of-compliance upon arriving at the facility is immediately reported to the proper authorities. Additionally, NYSDEC on-site monitors and conservation officers monitor transporters for compliance to applicable regulatory requirements.

All transporters also comply with the Model City Transporter Rules and Regulations. Although the RMU-1 CAC Agreement technically expired on July 28, 2008, CWM continues to follow its stipulations. CWM and the CAC meet when needed to review the conditions and the effectiveness of the CAC Agreement. CWM continues to comply with the CAC Agreement and would be willing to negotiate new conditions with the CAC for RMU-2. It should be noted that the CAC agreement is not applicable to construction-related traffic. The CAC agreement indicates "All trucks carrying waste to CWM will comply by these rules, (used to be hazardous trucks and now includes hazardous and non-hazardous trucks)." Additionally, item No. 7 of the Operations Plan (appended to the CAC agreement) indicates "These restrictions do not apply to trucks delivering supplies and materials."

All trucks are scheduled for arrival on-site during operating hours. Drivers may arrive within 15 minutes either side of their scheduled appointment time. If for any reason an appointment cannot be kept, transporters are advised to call. Trucks carrying wastes or similar hazardous materials are scheduled for arrival or departure during the hours of 5:00 a.m. and 10:00 p.m. All trucks transporting, in bulk, blended fuels, PCB contaminated oils or liquid or solid materials that presents a risk of vapor release or fuming are scheduled to arrive or depart the facility between 5:00 and 7:00 a.m. or between 4:00 and 9:00 p.m. No trucks carrying waste are scheduled for arrival or departure between 7:30 and 9:00 a.m. or between 2:15 and 3:45 p.m. on days when the Lewiston-Porter School complex is in session ("black-out hours"). No more than 35 waste trucks per hour are scheduled for arrival or departure between 6:00 a.m. and 12:00 p.m., and no more than 25 waste trucks per hour between 5:00 and 6:00 a.m. and between 12:00 and 10:00 p.m. A maximum of 220 waste trucks are scheduled for arrival or departure during any 24-hour period, except in unusual circumstances when 250 waste trucks may be allowed. The following describes the designated route:

- State/Federal highways only when entering Niagara County to NYS Route 104 or NYS Thruway (I-90) north to Route 265 (north) to NYS Route 104 then:
    - NYS Route 104 to NYS Route 18;
    - North on NYS Route 18 approximately 5 miles to Balmer Road;
    - Right (east) on Balmer Road; and

- Proceed 3 miles to Guardhouse at truck/plant entrance.

The reverse is followed when leaving the facility. All waste haulers must use this route unless the CWM guard directs the driver north on NYS Route 18 to Route 93 east during school "black out" hours for empty loads only.

All waste transporters destined for the Model City Facility enter the Towns of Lewiston or Porter using the designated route during normal operating hours only. No stopping or standing along the designated route is allowed in Niagara County. Trucks are not to be on any roadway other than state/federal highways when in Niagara County. Convoys are not allowed and trucks must keep at least ¼ mile apart. CWM imposes severe penalties for violating any of these rules.

There would be no net increase in the average hourly rate of waste trucks arriving at the facility via the designated transportation route for RMU-2. The traffic impact analyses presented below assumes the current rate of waste truck arrival. This conservative approach is made in order to account for the phased construction schedule of RMU-2, when RMU-1 will be operating and to provide a worst-case scenario for the construction period.

4.6.5.2 Construction-Related Traffic

Construction of RMU-2 would require deliveries of approximately 440,000 cubic yards of soil materials (e.g., clay and gravel) from off-site sources over the life (11 to 25 years) of RMU-2. Delivery of these soil materials would be by truck and consequently would result in truck traffic in the immediate vicinity of the Model City Facility. To estimate the impact on local traffic loads of delivery of these materials to the site, the following assumptions were made:

1. RMU-2 would be constructed during several construction seasons as additional RMU-2 airspace is needed;

2. All soil materials would be delivered during the first two months of each construction season;

3. Borrow sources would operate 12 hours per day, 6 days per week; and

4. Each truck delivering soil materials would have a capacity of at least 20 cubic yards.

Given these assumptions and the estimated amount of soil materials required from off-site sources, approximately 22,000 truckloads of soil materials would be brought to the site during normal business hours over several construction seasons. Construction activities for RMU-2 may result in an additional 100 trucks per day arriving at the site during an anticipated 12-hour work day (operating hours for borrow source).

The worst-case conditions for construction-related traffic would include the time period during which the first two cells of RMU-2 and Fac Pond 5 are constructed. The estimated quantity of soil materials (clay, gravel and general fill) from off-site sources would be approximately 370,100 cubic yards over two construction seasons.

The specific clay borrow source for this project has not been determined. However, a list of potential clay sources has been developed by the Model City Facility and is presented in Section 2.6.5.5.

4.6.5.3 Traffic Impacts

Traffic impacts caused by construction trucks would vary widely based on the selected borrow sources. For example, the Green Lakes (Pletcher Pond) property is located adjacent to the CWM Facility. Trucks delivering materials from this property can access CWM without traveling on off-site roadways. In this case, there would be no impact from construction related traffic. For other properties, the impact analysis presented below should be considered a "worst case" estimate for the following reasons:

1. The estimate assumes that stockpiling of soil materials cannot begin before commencement of the construction season in which construction of RMU-2 is initiated;

2. All soils for a given construction season must be delivered within the first 2 months of the construction season;

3. It is assumed borrow sources would not operate more than 12 hours per day and 6 days per week; and

4. All deliveries of soil materials would use the same haul route as trucks delivering waste to the facility.

5. Trucks will carry approximately 20 cubic yards of soil material each.

Using the worst-case scenario and above information, this may result in an additional 210 construction trucks per day (18 construction trucks per hour) arriving at the RMU-2 site during the 2 months of each construction season.

4.6.5.4 Traffic Analysis Study

Assessment of the impact on local traffic of the traffic load due to RMU-1 was based on a March 1993 *Traffic Analysis Study* (Appendix K) completed by Bettigole, Andrews and Clark, Inc., a New York firm specializing in highway planning, design and inspection. To evaluate current traffic impacts and predict future traffic impacts associated with the construction of RMU-2, additional traffic counts were conducted by BBL in June 2002 and ARCADIS in April 2007 to supplement and update the initial study by Bettigole, Andrews and

Clark, Inc., and a *Traffic Impact Study* (Appendix K) was performed by Wendel Companies (Wendel), located in Amherst, NY on October 20, 2011.

4.6.5.4.1 RMU-1 Traffic Analysis Study Summary

The 1993 RMU-1 study included an analysis of the level of service (LOS) for various segments along the designated transportation route (i.e., the route waste-haulers are required to travel) to the Model City Facility and the following intersections:

1. Swann Road and NYS Route 18;

2. NYS Route 18 and Balmer Road; and

3. Balmer Road and the CWM entrance gate.

The LOS is a system designated in the *Highway Capacity Manual* published by the Transportation Research Board indicating a particular set of traffic conditions. The six designated levels range from Level A, favorable, with little or no delay, to Level F, severe congestion and extreme delays. Levels A, B and C are considered desirable, while Level D is considered acceptable, but not desirable, with Level F usually requiring mitigation.

The LOS analyses focused on two scenarios:

1. The predicted LOS without the addition of soil material hauling trucks arriving at the facility (i.e., without construction traffic); and

2. The predicted LOS with the addition of soil material hauling trucks arriving at the facility (i.e., with construction traffic).

The analyses revealed that the LOS of a particular intersection or road segment varies among the three peak traffic periods analyzed (morning, mid-day, evening); and the number of trucks necessary to change the LOS is a function of how close the existing LOS is to adjacent LOS. Consequently, the number of trucks required to change the LOS for a given road segment or critical intersection approach varies from as little as 10 to as many as 180 additional trucks per hour.

With respect to specific road segments and intersections the analyses predict the following changes to LOS with construction traffic (worst case scenario).

Intersections

- NYS Route 18 and Swann Road: Change from A to B for left hand turning movements from Swann Road to southbound NYS Route 18 during the mid-day peak period.

- NYS Route 18 and Balmer Road: Change from A to B for left hand turning movements from Balmer Road to southbound NYS Route 18 during the morning and mid-day peak periods.

- Balmer Road and the Model City Facility driveway: No changes.

Highway Segments

- NYS Route 104 south of NYS Route 18: Change from A to B for both northbound and southbound portions of this highway during the mid-day peak period.

- NYS Route 18 south of NYS Route 104 overpass: Change from B to C during the mid-day and evening peak periods.

- NYS Route 18 north of NYS Route 104 overpass: Change from B to C during the morning and evening peak periods.

- NYS Route 18 south of Balmer Road (includes NYS Route 18 adjacent to Lewiston-Porter Schools): No decreases in LOS during any of the daily peak periods.

- Balmer Road east of NYS Route 18: Change from A to B during the mid-day and evening peak periods.

In summary, the traffic study analyses indicates that the additional traffic due to construction of RMU-1 will not result in a change to the LOS of more than one level at any location and in no circumstance will the resultant LOS be below a level of C that is considered an acceptable LOS from a traffic engineering standpoint.

Under the “no build” alternative, some improvement to the existing LOS may be realized. However, for the road segments and intersections studied, the existing LOS is A or B, with only a few exceptions of C (Appendix K).

Given that a LOS of B is defined as a “good” LOS, the analyses to see which segments may change to LOS of A was not performed and the analyses focused on the potential negative impacts of RMU-1, relative to existing conditions.

With respect to potential impacts of RMU-1 related traffic on vehicles exiting the Lewiston-Porter Schools, the traffic study reported that, more than adequate sight distances exist for the various driveways considering the posted speed limit of 55 miles per hour (mph) for NYS Route 18. Given the adequate sight distance, drivers attempting to exit driveways at the Lewiston-Porter Schools have sufficient distance to perceive NYS Route 18 traffic and decide whether to enter NYS Route 18 or wait. It should be noted that the current posted speed limit on NYS Route 18 adjacent to the Lewiston-Porter Schools is normally 45 mph, but 35 mph during daytime hours when the school is in session.

In order to assess the possible impacts of winter weather on the safe transportation of wastes along the transportation route, the highway departments of the Towns of Porter and Lewiston were contacted by the Model City Facility to ascertain if any of the departments' policies or procedures may contribute to sub-optimal driving conditions during snowfall events. Both highway departments indicated that they conduct snow removal and salting operations on a 24-hour basis. In cases where snowfall events are predicted for nighttime hours, the highway departments monitor the conditions and will deploy snow removal and salting crews within 1 hour of the decision to start snow removal and salting operations. Particular emphasis is placed on the hours of 2 to 4 a.m. to insure that safe driving conditions are maintained going into the morning commuting hours. Consequently, no highway department policies were expected to result in significant negative impacts in conjunction with RMU-1 operations.

Construction crews for RMU-1 were normally required to access the site via the Porter Center Road construction gate and proceed to the RMU-1 area. Additionally, construction crews were required to approach the general vicinity of the facility via Porter Center Road and Balmer Road east of Porter Center Road (i.e., they were required to avoid Balmer Road west of Porter Center Road and the designated transportation route in general to the extent possible). Soil material haulers would also normally access the facility via the Porter Center Road construction gate. For the purposes of the worst-case traffic impact analysis, the soil haulers were assumed to use the designated transportation route. All waste haulers continue to use the main gate at Balmer Road. Segregation of the construction traffic from waste hauling traffic within the site should avoid any significant potential environmental traffic impacts on site.

4.6.5.4.2 RMU-2 Traffic Analysis Study

BBL conducted a Traffic Analysis Study update in June 2002 and ARCADIS in April 2007 to compare the current traffic conditions to the conditions included in the 1993 study. BBL counted the number of vehicles at three major intersections within the vicinity of the Model City Facility: NYS Route 18 and Swann Road, NYS Route 18 and Balmer Road and Balmer Road and CWM entrance gate. These intersections were selected to provide a direct comparison to the data collected for the *RMU-1 Traffic Study* that evaluated the same three intersections. The count study was performed over 3 days and during peak traffic hours; 7 to 9 a.m., 11:30 a.m. to 1:30 p.m. and 4 to 6 p.m. The peak hour during each of these intervals was evaluated (based on the peak hours identified in the 1993 study). A comparison of the numbers of vehicles identified during the morning, mid-day and afternoon peak hours of the 1993, 2002 and 2007 traffic studies is provided in Table 4-5. The data shows similar traffic volumes at the intersections of NYS Route 18 and Swann Road and NYS Route 18 and Balmer Road from 1992, 2002 and 2007. However, there is a significant decrease in traffic volumes at the intersection of Balmer Road and the CWM entrance gate since 1992. There is no proposed increase in the number of waste or construction material delivery trucks for RMU-2 as compared to RMU-1 levels. Therefore, the 1993 RMU-1 study represents a worst-case scenario for this project. Table 4-6 provides a breakdown, by vehicle type, for the intersections considered in the Traffic Analysis Study. As demonstrated by Table 4-6, there has been a significant decrease in the percentage of semi trucks observed at the intersections identified in the study.

An updated *Traffic Impact Study* (Appendix K) was performed by Wendel in October, 2011 to compare the current traffic impacts in the vicinity of the Model City Facility to the impacts observed in the 1993 *RMU-1 Traffic Study* and to predict the potential impacts associated with the anticipated maximum number of waste hauling trucks on a daily basis for RMU-2.

The first part of the 2011 study entailed evaluating the existing LOS at intersections in the vicinity of the Model City Facility. For the 2011 study, the following intersections were evaluated:

1. Pletcher Road and NYS Route 18;

2. NYS Route 18 and Balmer Road; and

3. Balmer Road and the CWM entrance gate.

For the 2011 study, the intersection of NYS Route 18 and Pletcher Road was evaluated in lieu of the intersection of NYS Route 18 and Swann Road. It was determined by Wendel that because the intersection of NYS Route 18 and Swann Road was unsignalized (i.e., no traffic light), it was less impacted by traffic conditions than a signalized intersection, such as NYS Route 18 and Pletcher Road. Additionally, the intersection of NYS Route 18 and Pletcher Road was chosen for the 2011 study, as this intersection has direct connection to the access ramp for the Robert Moses Parkway, and therefore, represents a potential larger volume of traffic and provides for a better evaluation of potential impacts.

Similar to the 1993 study, the 2011 study determined the LOS for each of the intersections included in the study during the morning, mid-day and evening peak hours. For the 2011 study, the peak hours consisted of 7:00 a.m. to 8:00 a.m. for morning, 11:00 a.m. to 12:00 p.m. for mid-day and 4:00 p.m. to 5:00 p.m. for evening. Wendel utilized Synchro Version 7 modeling software to conduct two operational analyses:

1. Evaluation of existing traffic operations (with separate truck counts); and

2. Evaluation of traffic operations with existing non-truck traffic counts with the anticipated maximum number of waste hauling trucks under the transportation conditions outlined in Site Operations Plan for the Model City Facility.

For the first evaluation, the 2011 study determined that the existing LOS for the two intersections included in both the 2011 and 1993 studies (NYS Route 18 and Balmer Road and the CWM entrance gate and Balmer Road) continue to operate at similar LOS to those found in the 1993 study. Specifically, the intersection of NYS Route 18 and Balmer Road continues to operate at LOS A for both northbound and southbound traffic on NYS Route 18. For vehicles traveling westbound on Balmer Road approaching NYS Route 18, vehicles continue to operate at LOS B. At the intersection of Balmer Road and the CWM entrance gate, vehicles traveling eastbound and westbound on Balmer Road continue to operate at LOS A. Vehicles leaving the CWM entrance gate now operate at LOS B for the morning peak hour, but remain at LOS A for the remaining portions of the day. The 2011 study also concluded that vehicles traveling through the intersection of NYS Route 18 and Pletcher Road operate at LOS A or B, with the only exception being vehicles traveling eastbound on Pletcher (toward NYS Route 18) during the morning peak hour, which operate at LOS C.

The second evaluation in the 2011 study was intended to determine the potential impacts (i.e., reduction in LOS) to the study intersections if the anticipated maximum number of waste hauling trucks were considered during future operation of RMU-2. To perform this evaluation, Wendel utilized the 2011 traffic counts for existing non-truck traffic, and supplemented the data with the maximum potential truck traffic volumes to and from the Model City Facility permitted in each of the peak hours, as indicated by the Site Operations Plan. This included adding 70 truck trips to the existing non-truck traffic counts for the morning and mid-day peak hours, and adding 50 truck trips to the existing non-truck traffic counts for the evening peak hour. This data was then utilized with the Synchro Version 7 modeling software to predict the following LOS at the three study intersections for the anticipated maximum number of waste hauling trucks during the peak hours:

1. Utilizing the maximum number of waste hauling trucks for each peak hour, there was no change to existing LOS for the intersection of NYS Route 18 and Pletcher Road. Vehicles will continue to operate at LOS A or B in all directions, except for vehicles traveling eastbound on Pletcher Road (toward NYS Route 18), which will operate at LOS C during the morning peak hour.

2. Utilizing the maximum number of waste hauling trucks for each peak hour, there was no change to existing LOS for the intersection of NYS Route 18 and Balmer Road. All vehicles will continue to operate at LOS B or better.

Utilizing the maximum number of waste hauling trucks for each peak hour, there was minimal change to LOS for the intersection of Balmer Road and the CWM entrance gate. Vehicles traveling eastbound and westbound on Balmer Road will continue to operate at LOS A, while vehicles leaving the CWM entrance gate will now operate at LOS B during the morning and mid-day peak hours. The total increase in delay for the mid-day peak hour was 1 second more than current conditions.

To determine the impacts of construction-related traffic in combination with waste truck traffic, the worst-case scenario described above (18 construction-related trucks per hour) is utilized. The number of waste trucks utilized in the Wendel 2011 traffic study, including waste trucks at the maximum CAC levels, are well below the 1993 study that included background traffic and the addition of 33 construction-related trucks per hour. The total traffic volumes at the CAC maximum levels, plus the worst-case 18 construction-related trucks per hour would still be below the levels evaluated in the 1993 study for RMU-1. As such, the 1993 study is considered conservative and applicable to RMU-2.

4.6.5.4.3 RMU-2 Construction and Operation Traffic

Construction crews for RMU-2 would normally be required to access the site via the Porter Center Road construction gate and proceed to the RMU-2 area along the route indicated on Figure 4-2. Additionally, construction crews would be required to approach the general vicinity of the facility via Porter Center Road and Balmer Road east of Porter Center Road (i.e., they would be required to avoid Balmer Road west of Porter Center Road and the designated transportation route in general to the extent possible). Soil material haulers would also normally access the facility via the Porter Center Road construction gate. Since the above traffic impact studies assume that soil haulers would use the designated transportation routes, a worst-case traffic impact is evaluated. All waste haulers would continue to use the main gate at Balmer Road. Segregation of the construction traffic from waste hauling traffic within the site would avoid any significant potential environmental traffic impacts on-site.

TABLE 4-5
TRAFFIC COUNT COMPARISON:
1992, 2002 and 2007 VEHICLE COUNTS

INTERSECTION OF NYS ROUTE 18 AND BALMER ROAD

Time	Direction	Vehicles Counted 2007	Vehicles Counted 2002	Vehicles Counted 1992
7 – 8 a.m.	NYS Route 18 S	189	141	190
	NYS Route 18 S to Balmer Road	7	9	8
	NYS Route 18 N	68	57	43
	NYS Route 18 N to Balmer Road	60	42	50
	Balmer Road to NYS Route 18 S	89	61	70
	Balmer Road to NYS Route 18 N	10	7	9
12 – 1 p.m.	NYS Route 18 S	51	122	82
	NYS Route 18 S to Balmer Road	10	19	11
	NYS Route 18 N	96	111	97
	NYS Route 18 N to Balmer Road	36	35	35
	Balmer Road to NYS Route 18 S	29	47	49
	Balmer Road to NYS Route 18 N	10	19	13
4:15 – 5:15 p.m.	NYS Route 18 S	135	107	95
	NYS Route 18 S to Balmer Road	12	14	10
	NYS Route 18 N	165	163	171
	NYS Route 18 N to Balmer Road	62	42	55
	Balmer Road to NYS Route 18 S	41	48	56
	Balmer Road to NYS Route 18 N	24	21	14
Total Vehicles		1,094	1,065	1,058

TABLE 4-5 (continued)
TRAFFIC COUNT COMPARISON:
1992, 2002 and 2007 VEHICLE COUNTS

INTERSECTION OF NYS ROUTE 18 AND SWANN ROAD

Time	Direction	Vehicles Counted 2007	Vehicles Counted 2002	Vehicles Counted 1992
7:15 – 8:15 a.m.	NYS Route 18 S	168	144	157
	NYS Route 18 S to Swann Road	90	73	63
	NYS Route 18 N	167	129	170
	NYS Route 18 N to Swann Road	11	13	7
	Swann Road to NYS Route 18 S	22	20	31
	Swann Road to NYS Route 18 N	89	83	74
12 – 1 p.m.	NYS Route 18 S	93	176	139
	NYS Route 18 S to Swann Road	41	66	34
	NYS Route 18 N	77	112	103
	NYS Route 18 N to Swann Road	15	29	20
	Swann Road to NYS Route 18 S	23	36	29
	Swann Road to NYS Route 18 N	41	62	43
4 – 5 p.m.	NYS Route 18 S	109	131	155
	NYS Route 18 S to Swann Road	72	47	43
	NYS Route 18 N	113	133	129
	NYS Route 18 N to Swann Road	28	41	26
	Swann Road to NYS Route 18 S	30	34	26
	Swann Road to NYS Route 18 N	82	87	71
Total Vehicles		1,271	1,416	1,320

TABLE 4-5 (continued)
TRAFFIC COUNT COMPARISON:
1992, 2002 and 2007 VEHICLE COUNTS

INTERSECTION OF BALMER ROAD AND CWM ENTRANCE GATE

Time	Direction	Vehicles Counted 2007	Vehicles Counted 2002	Vehicles Counted 1992
7 – 8 a.m.	Balmer Road W	51	24	34
	Balmer Road W to CWM Entrance	8	9	25
	Balmer Road E	22	22	21
	Balmer Road E to CWM Entrance	7	13	61
	CWM Entrance to Balmer Road W	10	12	16
	CWM Entrance to Balmer Road E	0	2	6
11:45 a.m. – 12:45 p.m.	Balmer Road W	14	17	20
	Balmer Road W to CWM Entrance	4	3	13
	Balmer Road E	15	24	18
	Balmer Road E to CWM Entrance	7	8	23
	CWM Entrance to Balmer Road W	6	7	37
	CWM Entrance to Balmer Road E	0	6	9
4 – 5 p.m.	Balmer Road W	34	38	34
	Balmer Road W to CWM Entrance	0	4	2
	Balmer Road E	39	28	28
	Balmer Road E to CWM Entrance	1	9	10
	CWM Entrance to Balmer Road W	8	20	28
	CWM Entrance to Balmer Road E	14	21	26
Total Vehicles		240	267	409

Note:
N: North
S: South
E: East
W: West

TABLE 4-6

COMPARISON OF VEHICLE TYPES AT SUBJECT INTERSECTIONS:
1992, 2002 and 2007 TRAFFIC COUNTS

Intersection	Vehicle Type	Vehicle Percentages		
		2007	2002	1997
NYS Route 18 and Swann Road				
	Buses	3.3	2.6	3.0
	Automobiles	92.5	61.2	87.4
	Single Unit (SU) Trucks	3.2	30.2	2.8
	Semi Trucks	1.0	6.0	6.8
NYS Route 18 and Balmer Road				
	Buses	4.1	0.3	2.4
	Automobiles	91.0	49.9	71.3
	Single Unit (SU) Trucks	3.5	41.0	2.6
	Semi Trucks	1.4	8.8	23.7
Balmer Road and CWM Gate				
	Buses	10.8	0.2	NA
	Automobiles	77.1	40.5	NA
	Single Unit (SU) Trucks	6.7	47.1	NA
	Semi Trucks	5.4	12.2	NA

NA – Vehicle types at the intersection of Balmer Road and the CWM Gate was not provided in the 1993 Traffic Analysis Study.

4.6.5.5 Traffic Noise Impacts

Assessment of the impact on traffic noise due to RMU-1 was based on an April 1993 report by Normandeau Associates. In addition, a separate traffic noise impact study was conducted by BBL in June 2002 to supplement and update the initial study by Normandeau Associates.

4.6.5.5.1 RMU-1 Traffic Noise Study Summary

Traffic noise prediction modeling was conducted as part of the *Traffic Noise Study* (Appendix G) conducted by Normandeau Associates that assessed the impact of the RMU-1 project on the local noise environment. The modeling is discussed in Section 3.6.3. The modeling employed the FHWA approved Federal Highway Administration Noise Prediction Model (STAMINA) 2.0 model (Normandeau Associates, 1993), calibrated to actual noise levels measured along the transportation route and correlated with traffic counts collected simultaneously with the noise data. The model was used to estimate the number of truck trips above existing levels that would be required to result in a 6 dBA increase in noise level, or cause a road segment to exceed the FHWA abatement criterion.

As noted in Section 3.6.3, the FHWA defines significant traffic noise impacts as those:

- Which occur when the predicted noise levels approach or exceed the noise abatement criteria for particular land uses; or

- When the predicted traffic noise levels substantially exceed the existing noise levels.

The “abatement criterion” for a land use is that noise level, measured in A-weighted dBA, at which traffic noise is considered to interfere with the designated land use. For FHWA new construction projects, the abatement criterion for the most sensitive land use along the transportation route is 67 dBA. The NYSDOT criterion for significant increases in noise levels is set at 6 dBA. Consequently, any noise level increase less than 6 dBA is not considered “significant or substantial” unless the increase results in an exceedance of the applicable abatement criterion for FHWA purposes.

There were no noise level criteria designed to specifically assess or characterize the impact, if any, due to traffic noise levels that might be associated with increased truck traffic related to the construction and operation of RMU-1. In order to project the results of the traffic noise study for impact analysis purposes, the FHWA approved STAMINA traffic noise model was used to estimate the number of additional truck trips that would be required to cause either a 6 dBA increase in traffic noise or cause an existing roadway segment to exceed 67 dBA. Table 4-7 presents the results of the RMU-1 modeling. It should be noted that the A-weighted sound level measurement in dBA is a logarithmic scale and, consequently, the incremental effect of a single truck on the local noise environment is dependent on the existing noise level. Thus, during nighttime hours, when truck traffic is light, or non-existent, a single truck may add a given number of dBA to the noise environment, whereas during daytime hours a single truck may add less than that number of dBA.

The Model City Facility has agreed to certain traffic restrictions as part of the CAC Agreement, July 1993. The last CAC Agreement is located in Appendix L of this report. Traffic routes to and from the Model City Facility, days and hours when trucks may be scheduled for arrival or departure, the maximum number of daily and hourly waste trucks and penalties for violating these restrictions are specified. The traffic noise study was carried out without considering the traffic restrictions imposed by the CAC Agreement. That study does, however, provide information that would indicate the potential impacts associated with a variety of scenarios, including a hypothetical worst case scenario.

As indicated above, most of the potential clay sources are located within the immediate vicinity of the Model City Facility. The RMU-1 construction gate is located off Porter Center Road, and all RMU-1 construction related traffic, including clay hauling trucks, were expected to arrive at the RMU-1 construction gate.

If, during the construction season, the clay hauling trucks use Balmer Road and NYS Route 18 North of NYS Route 104, the maximum number of added truck trips per hour for clay hauling between 6:00 a.m. and 6:00 p.m. (assuming the required clay is brought to the site over a 2-month period) are projected to exceed the NYSDOT 6 dBA noise abatement criterion in Table 4-7 during the 6:00 a.m. to 7:00 a.m. and 5:00 p.m. to 6:00 p.m. periods on Balmer Road. If the information for NYS Route 18 in Table 4-7 is used, a projected NYSDOT 6 dBA exceedance would occur during the 6:00 a.m. to 7:00 a.m. period for NYS Route 18. Due to the limited data available for segment 2, no projected impacts were separately calculated for segment 2 in Table 4-7.

This scenario would not result in the noise levels exceeding the FWHA criterion of 67 dBA on Balmer Road. Since the data for NYS Route 18 in front of the Lewiston-Porter school campus is similar for the corresponding periods for segment 1, it is estimated that noise levels would not approach 67 dBA along NYS Route 18 in the vicinity of the school campus.

It should be noted that the modeling results were based upon external noise levels at the closest receptor location without any reduction for shielding due to materials of construction used in any dwelling. It should also be noted that, depending on the clay source(s) selected, it may not be necessary for the clay hauling trucks to use the NYS Route 18 and Balmer Road sections of the designated route.

As noted in Section 3.6.3, certain portions of the designated transportation route exceeded the FHWA abatement criterion of 67 dBA. The STAMINA model (Normandeau Associated, 1993) was used to estimate whether, under the No Action Alternative, these segments might meet the FHWA abatement criterion of 67 dBA or result in a significant decrease in the local noise environment, due to elimination of the Model City Facility related truck traffic. The modeling results indicate that noise levels along the transportation route as a whole would decrease between 0 to 3.3 dBA depending on time of day. For those segments of the route currently exceeding the FHWA abatement criterion, the decreases during the exceedance periods ranged from 0.4 to 2.5 dBA and would not result in levels below the FHWA abatement criterion. Consequently, there would not be a significant beneficial impact to the local noise environment under the No Action Alternative.

TABLE 4-7
NUMBER OF ADDITIONAL TRUCK TRIPS ABOVE EXISTING LEVELS THAT CAUSE
AN EXCEEDANCE OF NYSDOT AND/OR FHWA NOISE ABATEMENT CRITERIA

			ADDED TRUCK TRIPS TO REACH	
Highway Segment	Time	Existing dBA	+6 dBA	67 dBA
1- Balmer Road	2- 3 a.m.	38.8	1	150
	5 -6 a.m.	43.8	3	160
	6 -7 a.m.	55.0	30	134
	7 -8 a.m.	62.5	160	120
	12- 1 p.m.	61.7	130	110
	4- 5 p.m.	59.5	90	130
	5- 6 p.m.	54.1	25	150
	6 -7 p.m.	51.3	15	150
	7 -8 p.m.	49.3	8	140
	8 -9 p.m.	48.4	9	150
3- NYS Route 18	2- 3 a.m.	48.8	1	50
	5 -6 a.m.	56.9	7	25
	6 -7 a.m.	65.9	55	6
	7 -8 a.m.	70.4	160	a
	12- 1 p.m.	70.8	175	--
	4- 5 p.m.	68.5	100	--
	5 -6 p .m.	66.4	70	3
	6 -7 p.m.	64.4	40	13
	7 -8 p .m.	63.2	35	15
	8- 9 p.m.	60.8	20	20
4- NYS Route 104	2- 3 a.m.	49.4	4	60
	5 -6 a.m.	57.3	20	60
	6 -7 a.m.	63.9	90	30
	7 -8 a.m.	69.1	220+	--
	12 -1 p.m.	70.2	280+	--
	4 -5 p.m.	68.0	200+	--
	5- 6 p.m.	64.6	100+	30
	6 -7 p .m.	63.4	70	40
	7- 8 p.m.	61.3	50	50
	8 -9 p.m.	61.4	50	50

a: Already exceeds 67 dBA under existing conditions.
RP/MODELCTY/AS4

Data obtained from “Noise Assessment for Proposed Truck Traffic Volume Alternatives,” by Normandeau Associates, April 1993.

4.6.5.5.2 RMU-2 Traffic Noise Impacts

In June 2002, BBL conducted a noise level study at three major intersections within the vicinity of the Model City Facility: NYS Route 18 and Swann Road, NYS Route 18 and Balmer Road and Balmer Road and CWM entrance gate. The noise level data is presented in Table 3-10. The noise data was collected from 5 a.m. to 6 p.m. The data indicates that background noise levels are above the 67 dBA FHWA abatement criteria at the NYS Route 18 intersections of Swann Road and Balmer Road for certain hours.

The type and volume of truck traffic is not expected to change for RMU-2 from current conditions. Also it should be noted that the 1993 traffic study anticipated the potential Expanded Operations scenario that was never utilized and is not part of the RMU-2 project. Therefore, the assumptions used in the 1993 traffic noise study are considered conservative and conclusions reached are applicable to RMU-2. The addition of traffic associated with RMU-2 would not change the LOS for the road segments identified. Under the No Action Alternative, these segments would experience only slight decreases in noise level. The RMU-1 study represents a worst-case scenario for this project.

With respect to the condition of combined maximum allowable amount of waste trucks (35 trucks per hour) and the combined construction trucks, it is anticipated that a worst-case scenario for development of RMU-2 would be the construction of two cells and the construction of Fac Pond 5. Because it is likely that this 2-year period would occur during final waste placement operations of RMU-1, the scenario where maximum waste truck traffic would combine with the worst-case construction truck traffic situation is unlikely. Furthermore, the CAC agreement specifies the haul routes to be used by trucks delivering waste to the Model City Facility. Because a portion of the construction trucks would be utilizing different haul routes to the Model City Facility and in most cases be utilizing a separate construction entrance to the facility (located off Porter Center Road), it is further unlikely that the combination of waste truck traffic and construction truck traffic would approach the conservative truck volume estimates predicted by the 1993 Normadeau study. As such, the 1993 Normadeau study conservatively predicts the impacts related to truck traffic noise for both waste delivery trucks and construction trucks and the findings of the 1993 study remain applicable.

4.6.6 Environmental Justice

Environmental Justice is meant to provide the fair treatment and meaningful involvement of all people regardless of race, color or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Permit applications must be prepared and reviewed in consideration of environmental justice concerns as described in NYSDEC Policy No. CP-29, Environmental Justice and Permitting, dated March 19, 2003. The USEPA has also developed guidance under the National Environmental Policy Act and Executive Order No. 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

The CWM Model City TSDF is not located in an area containing significant minority or low income communities. NYSDEC map for Niagara County contains no potential environmental justice areas in the

Town of Porter based on data from the 2010 U.S. Census. Additionally, NYSDEC Niagara County map shows only the Tuscarora Indian Reservation as a potential environmental justice area in the Town of Lewiston. The Tuscarora Indian Reservation is approximately 3.5 miles south of the Model City Facility and is not adjacent to facility transportation routes.

Executive Order 12898 (February 11, 1994) directed EPA (and other federal agencies) to develop an environmental justice strategy to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low income populations, including providing minority and low income communities access to public information on, and an opportunity for public participation in, matters related to human health or the environment.

Executive Orders 13084 (May 14, 1998) and 13175 (November 9, 2000) both address consultation and coordination with Indian Tribal Governments. Order 13084 was revoked by Order 13175, § 9(c), effective as of January 6, 2001. Order 13175 applies to regulations, proposed legislation and other policy statements or actions that have a substantial direct effect on one or more Indian Tribes, on the relationship between the federal government and Indian Tribes, or on the distribution of power and responsibilities between the federal government and Indian Tribes. This Order requires every federal agency to have an accountable process to ensure meaningful and timely input by Tribal officials in the development of regulatory policies that have tribal implications. No federal agency may promulgate any regulation that has tribal implications unless, *inter alia*, the agency has consulted with Tribal officials early in the process of developing the proposed regulation.

In November 2000, the National Environmental Justice Advisory Council Indigenous People's Subcommittee, a Federal Advisory Committee to the EPA, issued a "Guide On Consultation and Collaboration With Indian Tribal Governments and The Public Participation of Indigenous Groups and Tribal Members in Environmental Decision Making," (the "Guide"). This Guide addresses two separate topics: (1) the consultation and collaboration appropriate for the federal government to Indian Tribal government relationship in the development of legislation, regulations and other federal policies impacting Indian Tribes; and (2) the participation of Indian Tribes and their members in the public participation process in environmental decision-making.

The public participation process is an information gathering and sharing process; consultation is a government-to-government process that requires greater involvement and decision-making by all parties.

Since CWM is seeking EPA approval, under the Toxic Substances Control Act (TSCA), 15 U.S.C. §§ 2601 *et seq.*, to dispose of certain wastes in RMU-2, Executive Orders 12898 and 13175 and the Guide may impose certain requirements on EPA's decision-making process.

In particular, Executive Order 12898 and the environmental justice strategy that EPA was directed to develop requires EPA to consider whether granting the TSCA approval for RMU-2 would result in a disproportionately high and adverse human health or environmental effect on minority and low income

populations. To the extent that there are minority or low income populations who might be affected by EPA's TSCA approval for RMU-2, such populations must be provided with access to public information on, and an opportunity for public participation in, that decision-making process.

Since the demographics of the communities surrounding the Model City Facility, the proposed location of RMU-2, are not predominately low income or minority, it is expected that the USEPA would conclude that Executive Order 12898 does not impose any additional obligations on its decision-making process beyond those otherwise established by statute and regulation.

Because the decision to grant the request for TSCA approval for RMU-2 does not involve the promulgation of any regulation or the development of any federal legislation or other policy statements that have substantial direct effects on one or more Indian Tribes, on the relationship between Indiana Tribes and the federal government, or on the distribution of power and responsibilities between Indian Tribes and the federal government, the consultation and collaboration requirements in Executive Order 13175 (also discussed and explained in the Guide) likely do not apply. The established federal public participation process related to TSCA approvals will meet the public participation requirements recommended in the Guide.

Therefore, construction and operation of RMU-2 is not expected to result in disproportionate adverse environmental impacts to any minority or low income communities. As such, environmental justice procedures are not applicable to this project.

4.7 Impact on State and Community Services

4.7.1 Fire Protection and Security

Construction and normal operation of RMU-2 would be consistent with current activities and is not expected to have any additional impact on external providers of fire protection and security services. The Model City Facility will continue to provide on-site response for minor emergencies and use local police and fire departments per current practice as needed. CWM will continue to use contract security services at their current levels.

4.7.2 Health Care

No additional impact is anticipated.

4.7.3 Utilities

No significant additional impact is anticipated.

4.7.4 On-Site Monitors

Oversight for construction and operation of RMU-2 would be provided by the current on-site NYSDEC monitor(s). Currently, there are two operations monitors who are typically on-site between 7:00 a.m. and 4:00 p.m. Monday through Friday and at other times as needed. In addition, one construction monitor is on-site during all major construction projects and one Regional Engineer is available at the NYSDEC Region 9 office in Buffalo, New York. No additional NYSDEC staffing is required. The cost of these monitors would continue to be borne by the Model City Facility and should place little burden on NYSDEC.

4.7.5 Community Economy

The monetary contribution from CWM to the state and local economies has totaled approximately $79.2 million over the past 6 years (2007 to 2012) as stated in Section 3.6.5.4. This equates to an annual average monetary contribution from CWM to state and local economies of $13.2 million. This monetary contribution to state and local economies is expected to continue during the operation of RMU-2. In fact, CWM payments to the Town of Porter required by the 2001 Host Community Agreement would increase from $0.50 per ton of waste landfilled in RMU-1 to $3.00 per ton of waste landfilled in RMU-2, less gross receipts tax payments. This would result in an estimated $495,000 annual fee to the Town of Porter, assuming waste disposal of 165,000 tons per year.

Total gross receipts taxes of over $22 million would be paid to the towns and school districts over the anticipated life of RMU-2. Other recurring monetary contributions from CWM to the state and local economies would include employee wages, local purchases for operating expenditures, charitable contributions, Niagara County and New York State taxes and environmental fees.

In addition to monetary impacts discussed above, other direct impacts to the local economy, including capital expenditures related to facilities development and expansion must be considered.

Capital expenditures related to facilities development and expansion includes both capping/closure of existing landfill areas, as well as the development of new waste cells associated with RMU-2. It is anticipated that there will be an ongoing expenditure of approximately $2.4 million every 2 years for capping/closure of the filled portions of the landfill. In addition to regular capping expenses, it is anticipated that $55.8 million construction costs required for the new RMU-2 landfill will be spent over the life of the facility. It is anticipated that approximately $28 million, or 50%, will be spent within the first 6 years, with a majority of the costs anticipated to be spent on local contractors.

When considering all the factors described above, it is estimated that more than $645 million in direct benefits alone will be recognized by state and local economies during the site life of the Model City Facility with RMU-2. However, the economic and labor impacts of an industry go well beyond their direct effects on output, earnings and employment in the regional, state and local economies in which they are located. As a result, the total impact of CWM's expenditures requires analysis and consideration of the direct benefits detailed above, as well as the additional economic activity stimulated by significant salary spent in local communities.

Indirect benefits (multiplier effects) are created when the initial spending by CWM employees circulates and recycles through the community. In contrast to initial or direct benefits, the indirect benefits measure the magnitude of successive rounds of re-spending as those who work or sell products to CWM or their employees. For example, when an employee's wages are spent to purchase food, housing, clothing and medical services, these dollars create more jobs and income in the general economy of the region through the multiplier effects of re-spending.

The appropriate economic multiplier to consider for the purposes of determining the indirect benefits of RMU-2 to state and local economies can be obtained from the U.S. Department of Commerce's Bureau of Economic Analysis (BEA). The BEA's latest methodology is called the Regional Input-Output Modeling System II (RIMS II). Within this methodology, the multiplier for New York waste management and remediation services of 1.889 was selected. By applying this multiplier to the results of the direct benefits provided above, it is estimated that the total economic impact (both direct and indirect) of the RMU-2 landfill on local and state economies will be approximately $25.6 million annually and in excess of $1.2 billion over the life of RMU-2. Based on these calculations, the Model City Facility, and more specifically the RMU-2 landfill, will have a major impact in the continued sustainability of the state and local economy.

4.8 Visual Impacts

The RMU-2 visual impacts due to the change in topography were estimated in three ways:

1. A viewshed of the area that is based strictly on topography and with considering the effort of screening by vegetation;

2. Line-of-sight analyses for nearby key viewpoints; and

3. Photographic analysis for the Our Lady of Fatima Shrine.

A viewshed map (Figure 4-1) was developed by constructing topographic profiles radiating out every 5 degrees from the location of RMU-2 to a distance of 5 miles. The topographic profiles were based on the Lewiston, Cambria, Six Mile Creek, Ransomville, Lewiston and Fort Niagara USGS 7.5 minute quadrangle maps. Additionally, the profiles assumed an "as-built" condition for RMU-2 of a maximum elevation of 440 feet amsl. The line-of-sight distance was then taken as the farthest point where a line extending from the

assumed maximum elevation of RMU-2 could touch the topographic contour tangentially. The 73 profiles thus constructed are presented in Appendix I. The viewshed map, based solely on topography, was then constructed by plotting the line-of-sight distances on a composite map based on the five quadrangle maps (Figure 4-1). As Figure 4-1 indicates, this extremely conservative approach suggests that RMU-2 would be theoretically visible from virtually anywhere within the 5-mile radius.

The viewshed map, based strictly on land surface elevation, must be considered worst-case and unrealistic due to its lack of consideration of the screening effects of trees and structures. To provide an estimate as to the effects of screening and a more realistic, but yet conservative estimate of the potential visual impact of RMU-2, the line-of-sight profiles used to construct the strict topographic viewshed were truncated at the point where the line-of-sight encountered a stand of trees off of the Model City Facility property. For this analysis, fence rows were not considered “stands” of trees, though they can provide substantial screening. The viewshed considering the effect of tree screening is also presented on Figure 4-1 and, as is evident, is much smaller than that based solely on land surface and that RMU-2 may be visible from the Niagara Escarpment and the Ransomville area.

The viewshed considering the screening effect of stands of trees must also be considered conservative, because it does not consider the screening effect of the following:

1. Trees in fence rows;

2. Individual trees in residential settings; and

3. Structures.

Inclusion of these factors would result in the areas between the Model City Facility and the Niagara Escarpment, and in the Ransomville area, to appear as a mosaic of areas from which RMU-2 may or may not be visible. A detailed line-of-sight analysis for the area along Porter Center Road indicates RMU-2 would not be visible from that area, though the viewshed map suggests that it may be visible.

Another reason why the viewshed approach in general should be considered conservative is that it does not allow for depicting the effect of distance on the visual impression of a structure. That is, a large structure up-close will have a greater impact on visual aesthetics than will the same structure at a greater distance. Thus, while RMU-2 may be visible from the Niagara Escarpment, the visual impact would be small due to the distance. To assess what the visual impact of RMU-2 may be to a passerby in the immediate vicinity of RMU-2, line-of-sight profiles were constructed for hypothetical observers based on maximum design elevations and key nearby, off-site vantage points (Figures 4-3 and 4-4). The analysis predicts that the completed RMU-2 would not be visible from residences located east of the site on Porter Center Road and on Balmer Road. The unit would not be visible to an observer standing at the intersection of Porter Center and Balmer Roads (northeast of the site), but may be visible to individuals at higher elevations. This impact is not considered significant.

The final visual analysis focused on the potential impact to Our Lady of Fatima Shrine located on Swann Road, southwest of the Model City Facility. The question of the potential impact to the shrine has been raised in previous projects at the Model City Facility, RMU-1 DEIS. The viewshed analysis indicated that the shrine would be screened from RMU-2 by several stands of trees. Figure 4-5 is a photograph taken from the top of the shrine looking toward the Model City Facility. As evidenced by the photograph, the trees immediately to the northeast of the shrine extend 15 to 20 feet above the shrine and effectively screen the view to the northeast. Therefore, the proposed site for RMU-2 would have no visual impact on Our Lady of Fatima Shrine.

In addition to the direct visual impact of the unit, operation and construction may require the use of construction floodlights at night. Though the lights should not be directly visible to the nearby residents and passers-by based on the line-of-sight analyses presented on Figures 4-3 and 4-4, the glow from the lights would be visible in the night sky. However, this impact should be minor based on past experience with such lighting at the facility.

Additionally, as part of a proposed vertical enhancement of RMU-1, EDR performed a visual analysis in 1997 for a proposed height of 120 feet above existing grade. The analysis included a viewshed map, an assessment of potential project visibility and photographic simulations to represent viewpoints within a 4-mile radius from the center of RMU-1. Topographic maps, a site survey and helium filled balloons raised to the proposed maximum height were all used by EDR during the analysis. Leaves had yet to emerge on the trees when the field portions were completed. It was concluded through this analysis that the proposed height would not be visible from the majority of directions and distances and visual impacts would be extremely limited. Since the maximum proposed height of RMU-2 is also 120 feet and the location of RMU-2 would be more toward the center of the facility, adverse visual impacts associated with RMU-2 are expected to be the same, or less than the impacts evaluated for the RMU-1 vertical enhancement.

In order to confirm the conclusions reached during the BBL viewshed analyses and the previous EDR study, CWM performed a new visual impact analysis in 2007 specifically targeted at identifying potential visual impacts associated with RMU-2. The new visual impact analysis includes an assessment of potential project visibility using a site survey and helium filled balloons raised to the proposed maximum height to predict views within a 4-mile radius from the proposed center of RMU-2. Field portions of the analysis were conducted during the fall of 2007 after a majority of the trees had shed their leaves. The results of the visual impact analyses performed by EDR in 1997 and 2007 are included as Appendix J.

It is not anticipated that any adverse visual impacts associated with new Fac Pond 5 or the relocated facilities discussed in Section 4.12.4 will exist due to the proposed locations of the facilities and their lower height relative to the proposed RMU-2 landfill.

4.9 Impact on Ambient Noise Levels

A theoretically based analysis of noise emissions as received at the nearest residence, approximately 4,200 feet northeast of the proposed RMU-2 location at the intersection of Porter Center Road and Balmer Road, was carried out for RMU-2 by BBL in 2003 and is located in Appendix M. This analysis disclosed that both the daytime and the nighttime energy equivalent ambient sound level (Leq) of 57 and 47 dBA, respectively, set by 6 NYCRR Part 360-1.14(p) would not be exceeded, even if there were no attenuation due to trees or due to the topography.

4.10 Exposure Impacts

The EIR that is contained in Appendix F addresses potential exposure impacts to site workers and off-site receptors through the following pathways (see Section 3.8):

- Air;
- Groundwater;
- Surface water; and
- Subsurface (soil).

In addressing these pathways, the EIR considers reasonably foreseeable potential releases from both normal operations and accidents at the facility including releases associated with transportation to or from the facility.

Due to protective measures, air and water monitoring programs and various safety measures currently employed by the site, the potential for exposure impacts is considered to be small. Construction and operation of RMU-2 and associated facilities are not expected to significantly alter the exposure potential to the Model City Facility since all of the existing safe guards are expected to continue. The EIR located in Appendix F has a detailed discussion of the potential for exposure impacts.

4.11 Impacts on Solid Waste Management and Planning

At the present time, the Model City Facility is the only permitted commercial TSDF in NYS with capacity for land disposal of hazardous wastes. The remaining projected life of the currently operating RMU-1 is approximately 3 to 4 years. Sections 2.1.1 through 2.1.3 provide additional information on the impacts and needs for the RMU-2 landfill.

4.12 Cumulative Effects of RMU-2 and Other Planned Projects

The following is a discussion of the cumulative or synergistic environmental effects that the RMU-2 project may have in conjunction with other projects either on-going or being planned for the Model City Facility. The discussion is based on those projects listed in the most recent update of the Model City Facility Ten Year Plan that have reasonably related cumulative effects with the RMU-2 project. Given that many of these projects are in the early planning stages, the discussion is necessarily qualitative rather than quantitative.

4.12.1 Leachate Pumping from Closed Landfills

The volume of leachate pumped from closed landfills has been measured annually since 1980. Data in the Ten Year Plan indicate that the closed landfills SLF 1-6, SLF-7, SLF-10, SLF-11 and SLF-12 show a generally decreasing trend in leachate generation and continue to approach steady state. The aqueous phase of the leachate collected from closed landfills is treated on site by the AWTS. The non-aqueous phase of the leachate is shipped off-site to a TSCA-approved hazardous waste incinerator for disposal, typically to the facility in Port Arthur, Texas, owned by Veolia Environmental Solutions.

Active landfill RMU-1 leachate is also treated in the AWTS. Leachate produced by RMU-2 would also require treatment in the AWTS. Based on calculations presented in Appendix E of the *RMU-2 Engineering Report*, it appears that the current capacity of the AWTS is sufficient to accommodate the current rate of leachate production from the closed landfills, the anticipated rate of leachate production from RMU-1 after closure, aqueous waste gate receipts and leachate from the then active portion of RMU-2.

4.12.2 Aqueous Waste Treatment System

To satisfy the requirements of CWM's Tank Assessment Program, as established between CWM and NYSDEC and as required by CWM's Site-Wide Part 373 Permit, a phased tank assessment program addressing the site tanks continues to be performed in accordance with the schedules listed in the facility permit.

In addition, all secondary containment and sumps associated with container and tank storage areas are inspected annually by an engineer who is qualified to evaluate the condition of the concrete. The inspection includes all building floors, curbs, dikes, sloped trailer containments used with any hazardous waste container or tank. A detailed report is prepared to summarize each year's inspections, results and repairs.

Tanks that are likely to be replaced or repaired within the next ten years may include tanks T-3001, T-3002 and T-3003. The carbon vessels and filter presses may also be replaced. CWM may use outside consultants to evaluate the overall AWTS and provide recommendations for possible improvements.

The AWTS upgrade projects are needed to provide continuing treatment of site generated leachate and are consistent with the anticipated needs of RMU-2. There would be no significant cumulative impacts between the AWTS upgrades and RMU-2.

4.12.3 Residuals Management Unit 1

RMU-1 is the currently operating landfill unit at the Model City Facility. The anticipated environmental impacts for RMU-2 are qualitatively the same as those currently being experienced for RMU-1. RMU-2 is intended as replacement capacity for RMU-1 and operation of both units may occur simultaneously during a transition period, but the total waste acceptance volumes would not increase over current amounts. However, certain activities at the two units would overlap, such as operation of RMU-1 with construction of RMU-2 and capping of RMU-1, with operation of RMU-2. These activities have certain potential environmental impacts in common and that could act cumulatively. These are:

- Fugitive dust emission;
- Construction noise; and
- Construction and operation traffic.

The cumulative effect of the simultaneous activities at these two units can be assessed on the basis of facility operational history of the similar simultaneous activities of SLF-12 operation with RMU-1 construction and SLF-12 capping with RMU-1 operation. During the period where activities were occurring at both SLF-12 and RMU-1, the Model City Facility operated the facility-wide air monitoring program described in Section 3.4. Results of the standard monitoring showed no significant fugitive dust (PM-10), PCB or VOC levels in downwind versus upwind air samples. Based on these results, the Model City Facility predicts that there would not be significant cumulative effects with respect to air contaminants due to simultaneous activities at RMU-1 and RMU-2.

Similarly, the Model City Facility is unaware of any significant effects on traffic flow in the vicinity of the facility or noise complaints during the period of overlapping activities at SLF-12 and RMU-1. Also, since RMU-1 has been constructed in phases as additional disposal capacity is needed, simultaneous construction and operation of RMU-1 has frequently occurred. This has not resulted in unacceptable LOS truck traffic or noise. Based on the estimates of available vehicle capacity with respect to LOS along the truck route, as determined by the *Traffic Analysis Study* and the operational history of the Model City Facility, significant cumulative impacts in the areas of noise or traffic are not anticipated for RMU-1 and RMU-2.

There would be cumulative impacts due to RMU-1 and RMU-2 not related to simultaneous activities. These impacts include:

- Limits on future land use for both areas (and any other future landfills);

- Production of leachate; and
- The irretrievable use of resources in terms of construction materials and the aforementioned land use.

4.12.4 Relocation of Existing Facilities

As discussed in Section 2.6.3, the proposed location for RMU-2 is within an existing developed portion of the Model City Facility occupied by the following structures, buildings and operational areas:

1. Drum Management Building;
2. Empty Trailer Parking Area;
3. Full Trailer Parking Area;
4. Stabilization Trailer Parking Area;
5. Emergency Response Garage;
6. Heavy Equipment and Facility Maintenance/Roll-Off Repair Building;
7. McArthur and “M” Streets;
8. Various above and below ground utilities and communications services;
9. MET Tower; and
10. Unloading ramps for the SLF 10 Leachate Building and SLF 1-11 Oil/Water Separator Building.

Prior to construction of RMU-2, the aforementioned structures, buildings and operational areas would be abandoned at their existing locations and relocated to new areas as identified on Figure 2-6. It is anticipated that the relocation of the existing facilities would have no adverse impacts on the environment, as discussed in each individual subsection of Section 4, as applicable. Section 5.4 of this DEIS provides a description of the mitigation measures to be followed during the abandonment and relocation of the existing facilities with respect to potentially contaminated soils that may be encountered during excavations. Additional mitigation measures applicable to the relocated facilities are discussed in Section 5.

5. Mitigation Measures to Minimize Environmental Impacts

5.1 General

This section discusses measures that will be undertaken to mitigate (i.e., lessen or minimize) impacts identified in Section 4 – Environmental Impacts of the Proposed Action.

5.2 Alteration of Existing Site Topography

Before existing surface drainage, culverts, roadside ditches and other drainage features are interrupted, adequate temporary drainage systems would be provided, pending completion of permanent systems. RMU-2, Fac Pond 5 and other associated facilities would be located and constructed in a manner to minimize erosion.

Erosion due to changes of topography would be mitigated by:

- Minimizing the area to be disturbed at any one time.
- Compaction of soils and clays as expeditiously as possible.
- Application of erosion control measures to slopes and embankments.
- Placement of topsoil and vegetation upon completion of construction activities and when landfill is closed.

5.3 Facultative Ponds

The proposed RMU-2 footprint includes land currently occupied by two Fac ponds designated as Fac Pond 3 and Fac Pond 8. Fac Pond 8, located immediately west of RMU-1, is permitted for storage of treated wastewater. Fac Pond 8 is currently out of service and undergoing closure. Fac Pond 3, located west of Fac Pond 8, is currently being used for storage of treated wastewater. Wastewater stored in Fac Pond 3 is discharged to the Niagara River following approval of the pre-qualification testing described in Section 3.3.3. Fac Ponds 3 and 8 will be permanently closed in accordance with the Site-Wide Part 373 Closure Plan.

In order to compensate for the treated wastewater volume reduction due to the removal of Fac Ponds 3 and 8, a new Fac Pond 5 will be constructed between SLF-12 and SLF-7. The double-liner system with leak detection described in Section 2.6.13 is designed to prevent groundwater infiltration from the pond.

5.4 Potential Soil Contamination

As discussed in Section 4.2.3, excavation activities within the proposed RMU-2 footprint to achieve design subgrade conditions and at other associated project construction areas may involve excavation of chemically and/or radiologically contaminated soils in isolated areas.

The mitigation measures to minimize environmental impacts associated with the excavation of soils in these areas are discussed below.

CWM must submit and obtain approval for a project-specific Soil Monitoring and Management Plan for all large excavation projects. In order to address the possibility of existing chemical or radiological contamination in any areas disturbed by the RMU-2 project, an *RMU-2 Soil Monitoring and Management Plan* (Plan) has been prepared and will be submitted to the NYSDEC as a supporting document. Plan approval must be obtained prior to excavation of any soils. This Plan includes procedures to be followed during excavation of soils in these areas to evaluate and identify any areas with elevated chemical or radiological readings and minimize the potential of spreading contamination, as well as procedures to be followed during post-excavation verification sampling to ensure soils left in-place meet applicable requirements. The Plan includes chemical screening and a surface radiation survey of the footprint of RMU-2 and any related areas of disturbance prior to excavation. All removed soils will be evaluated for potential chemical and radiological contamination. If chemically or radiologically contaminated soil is identified, dust control measures will be employed and stormwater runoff controls will be established to minimize exposure to site workers and the public. In addition, the Plan also includes analytical procedures to determine proper disposal methods of any contaminated soil.

5.5 Surface-Water Impacts

The Model City Facility is located in the Eighteen Mile Creek Drainage Sub-basin that is part of the Lake Ontario Drainage Basin. Surface water on the Model City site is composed of stormwater runoff from precipitation. Surface water presently drains to one of two creeks that flow through the site. The main part of the property drains to the north and west, discharging to Six Mile Creek and ultimately to Four Mile Creek that ultimately empties into Lake Ontario. A small part of the site drains to the east to Twelve Mile Creek that also ultimately empties into Lake Ontario. Surface runoff is collected on-site in a series of drainage channels, retention basins and drainage control gates. All collected drainage from operational areas is tested prior to discharge off-site. In addition, surface water discharged from the site is tested under flowing conditions in accordance with the CWM SPDES Permit.

Consistent with RMU-1, the surface-water management features for RMU-2 and associated facilities have been designed for the estimated peak runoff rates and, where appropriate, the cumulative volumes resulting from the 25-year, 24-hour storm event. The stormwater runoff calculations were performed using PondPack v.7.5 (Haestad Methods, Inc.) that utilizes TR-20 based methodology (similar to TR-55). Surface-water

management features during construction and for capped and uncapped (i.e., active) areas of RMU-2 are discussed separately below.

5.5.1 During Construction

During construction of RMU-2 and associated facilities, the purpose of surface-water management will be to restrict sediment discharge from the work area and to prevent accumulated waters from causing damage to components of construction not yet completed. Authorization for disturbance of ground surfaces will be obtained through either the Model City Facility modified individual SPDES permit or a separate GP-0-10-001 authorization.

Construction surface-water management measures would involve sediment control barriers, such as rock check dams, silt fences and hay bales, at all construction areas and soil stockpiles. The number and location of these would be determined by the progress of construction operations in order to cover the perimeter of construction zones. Removal of accumulated stormwater from the construction area would be accomplished using pumps, as necessary, and transferred to the site surface-water management system (i.e., ditches, retention basins) in accordance with CWM's established permit procedures. Silt fences and hay bales would be removed following completion of construction and re-vegetation of areas that have been disturbed as a result of construction operations.

Surface-water control gates are located at internal monitoring points and are operated manually using gate valves. The valves are normally closed to contain runoff. Runoff is allowed to build up behind the gates until it has been sampled and cleared for discharge. Each control gate consists of a control valve, carbon filter cloth and rock check dams for sediment retention and contaminant reduction. Surface water from the surface-water monitoring points is currently discharged through three effluent points, designated Outfall 002, 003 and 004 as described in the SPDES Permit.

Surface-water monitoring at the Model City Facility is regulated by the *Surface Water Sampling and Analysis Plan* and SPDES regulations. The SPDES Permit specifies analytical sampling parameters and sampling event scheduling for the surface-water outfalls.

5.5.2 Capped Conditions

Stormwater runoff from capped areas of RMU-2 would be intercepted by a series of mid-slope swales and surface-water diversion berms constructed across the slope of the final cover. The surface-water diversion berms would discharge into downflumes consisting of wide, shallow channels lined with riprap-filled reno mattresses (riprap encased in wire mesh baskets). The downflumes would drain into a grass-lined trapezoidal perimeter ditch that is located along the interior edge of the perimeter berm access road. The perimeter ditch would convey stormwater into the existing stormwater management system via a series of culvert pipes.

Grass-lined open channels have been designed for two scenarios, each with different runoff conditions and channel flow resistance. The first scenario is intended to model conditions associated with recently capped areas and uses a higher runoff curve number to reflect the sparse vegetation that is typical of newly seeded areas. Under the first scenario, the open channels are assumed to have very short vegetation in them and consequently have lower Manning "n" values. The first scenario results in a greater peak discharge from the various RMU-2 watersheds and faster, shallower flows in grass-lined open channels. The second scenario is intended to model conditions associated with well-established vegetation on the cap and thicker vegetation in grass-lined channels. The second scenario results in lower peak discharges from the watersheds and slower, deeper flows in grass-lined open channels. To be conservative, riprap-lined channels (e.g., downflumes) and culverts have been designed to accommodate the greater peak discharges associated with the first scenario.

Stormwater runoff from RMU-2 capped conditions would be directed to existing retention basins designed for the 25-year, 24-hour design storm. All basins provide a minimum of 1 foot of freeboard for the second runoff scenario (i.e., with the entire watershed modeled using reduced runoff curve numbers). The basins have also been designed to accommodate runoff from a hybrid scenario with half of the tributary watershed represented with a higher runoff curve number and the remainder with a lower curve number. Due to the temporary nature of this hybrid scenario, less than 1 foot of freeboard in the basin is provided for this condition. The storage capacity of the basins also includes provisions for the storage of sediment lost from the final cover of RMU-2. The existing SRBs would continue to drain to Four Mile Creek via an engineered outlet structure (i.e., control valve, carbon filter cloth and rock check dams) and open channel through existing Outfalls 002 and 003.

5.5.3 Uncapped Conditions

Controlling and directing water resulting from precipitation into the landfill during operations would involve sloping waste toward infiltration channels, or retention basins and placing more permeable waste layers around the vertical risers to enhance vertical flow to the sumps.

Stormwater runoff from active areas of RMU-2 would be managed within the permitted limit of waste (the crest of the liner components at the top of the perimeter berm) as leachate. During the initial stages of waste filling in each cell, stormwater runoff would be managed via infiltration areas along the perimeter of the cell formed by the intersection of the waste surface and the operations layer (consistent with the design of RMU-1). Once waste filling has progressed to a stage where gravity drainage is possible, stormwater runoff would be managed in lined SRBs constructed within the active cells. As waste filling in the final cell is nearing completion (and after the lined basin in that cell has been filled in), stormwater from the uncapped area of the cell would be managed via a combination of pumping into a riser vault and infiltration into the operations layer stone in the lowest corner of the cell.

Prior to opening a new cell within RMU-2, CWM would prepare a Leachate Level Compliance Plan to demonstrate that the surface-water management features and the leachate storage and treatment facilities have sufficient capacity to manage leachate from active areas of the RMU-2 immediately after the 25-year, 24-hour storm event in accordance with current facility requirements.

5.6 Production of Landfill Leachate

RMU-2 is designed to prevent leachate from infiltrating to groundwater. As described in Section 2 and in the *RMU-2 Engineering Report* prepared by BBL, RMU-2 would have a double composite liner, a primary and secondary leachate collection system and an engineered cover. The double composite liner and dual leachate collection system mitigates migration of leachate by providing low-permeability barriers of compacted clay (permeability less than 1.0×10^{-7} cm/sec) and 80-mil HDPE. The primary leachate system is intended to minimize hydrostatic pressure on the liner system by collecting and removing liquids. The secondary leachate collection system is intended to collect and remove any liquids collecting in the space between the liners. It should be noted that the proposed design for RMU-2 exceeds NYSDEC's promulgated regulations (6 NYCRR Part 373-2.14) regarding the design of liner systems for hazardous waste units, since it provides synthetic and re-compacted clay or GCL components for both the primary and secondary liner systems rather than for the secondary system only.

Each cell would have a sloped bottom and leachate would drain to a sump. As leachate reaches a specified depth in the primary sump, pumping and withdrawal of accumulated liquid would begin automatically. The leachate collection system is designed to handle precipitation resulting from the 25-year, 24-hour storm event.

Production of leachate during the active life of the unit is limited by prohibiting landfilling of free liquids. Generation of leachate in the closed system would be minimized by placement of a cap and planting of vegetation that would minimize infiltration of precipitation into RMU-2. The leachate collection system would provide long-term mitigation for leachate generated after the landfill is closed.

Leachate from RMU-2 would be piped to the facility's existing AT system. Consistent with current operating requirements, aqueous wastes would be treated and discharged in accordance with the facility's SPDES Permit. As noted in Section 4 of this document, the AWTS has adequate capacity for the operation of RMU-2.

As part of the overall leachate management program, the Model City Facility has prepared a *Response Action Plan* (RAP) for RMU-2. The purpose of the RAP is to establish evaluation criteria known as the Response Rate (RR) and the Action Leachate Rate (ALR) that are hypothetical rates of liquid accumulation in the secondary leachate collections systems (SLCS) of RMU-2. The actual rate of inflow of liquids to the SLCS of each cell would be monitored on an on-going basis and compared to the RR and ALR. The RAP also establishes response actions associated with the RR and ALR to address the accumulation of liquids.

The RAP includes:

1. A description of the landfill unit;

2. A description of the sources of liquid that may be present in the SLCS of a cell;

3. Discussions of the major mechanisms that can affect the quantity of liquids entering an SLCS;

4. Calculations to determine the appropriate RR and ALR;

5. The criteria that govern implementation of the RAP (i.e., the RR and ALR) and ranges of appropriate responses when these volumes are exceeded; and

6. A proposed outline of the reporting procedures to state and federal agencies.

The RAP has been prepared in accordance with 6 NYCRR Part 373-2.14(o). The RAP for RMU-2 is a companion document that has been submitted along with the 6 NYCRR Part 373 Permit Modification Application for RMU-2.

As noted above, the RAP contains two criteria: the RR and the ALR. Each criterion is a numeric value representing a rate of liquid accumulation in the SLCS. The ALR is the maximum rate of liquid accumulation in the SLCS that the SLCS can remove without the liquid head on the secondary liner exceeding 1 foot. In essence, the ALR is the maximum calculated rate, based on the design of RMU-2, at which liquids can be collected and removed from the SLCS. The RR is the SLCS flow rate, which would require the implementation of response actions, as prescribed by the RAP. Like the ALR, the RR is calculated based on the design of RMU-2.

5.7 Generation of Fugitive Dusts and Emissions to the Atmosphere

5.7.1 Fugitive Dusts

Construction and operations would be conducted in a manner that would minimize generation of fugitive dusts, as well as the generation of carbon monoxide, nitrogen oxides, sulfur dioxides and hydrocarbons (byproducts of internal combustion engines).

The Model City Facility has developed a Control Plan for fugitive dusts. The Control Plan includes the elements discussed in the following paragraphs.

5.7.1.1 Evaluation of Wastes to Determine Potential for Generation of Dusts

If a load is overly dusty, the laboratory may include stabilization or containerization, pre-wetting or wetting during disposal as a prerequisite for acceptance. This procedure is addressed in the Model City Facility's WAP. Potentially dusty wastes are identified upon acceptance at the facility and marked to alert landfill disposal personnel.

5.7.1.2 Water Spraying to Control Dust

During construction and operation activities, water spraying would be used outside of RMU-2 and associated facilities to control dust generated by movements of soil. Site roads are generally paved and water spraying and street sweeping equipment are used, as needed, to control dusts. Landfill operating personnel would wet dusty loads, as previously identified by the laboratory, during disposal.

The potential exists for dust to be present on the roadway leading from the landfill to the laboratory (or back to the Stabilization Facility). These roadways will be cleaned and maintained. A sweeper or other road cleaning equipment will be used to minimize dust accumulation on the roads. Water trucks will also be used to wet the road surfaces and to minimize air borne dust.

Roadways other than those between the landfill exit, the laboratory, the landfill and the Stabilization Facility will be cleaned and maintained, as good housekeeping dictates. In general, the paved roads will be swept on a regular basis, weather permitting. These roads may be wetted on an as-needed basis to provide general dust management, adequate visibility and nuisance control.

5.7.1.3 Traffic Controls

During dry and potentially dusty conditions, drivers are instructed to reduce their speed within the Model City Facility. The Model City Facility employs speed bumps in addition to posted limits, 10 to 15 mph throughout the facility, to control vehicle speed. Vehicles or any other equipment that have entered the landfill facility where it could come into direct contact with waste would be inspected for gross contamination prior to leaving the landfill area. Any gross contamination identified on the wheels or equipment would be physically removed and tires and external surfaces would be washed before leaving the area to prevent contamination of on-site roads.

5.7.1.4 Monitoring for Particulates

CWM has an Ambient Air Monitoring Program. This program determines the impact, if any, of the hazardous waste activities and other site activities on the surrounding air quality at the Model City Facility. This Ambient Air Monitoring Program has been approved by NYSDEC.

A detailed discussion of the PM-10 monitoring network relative to dust emissions is presented in Section 3.4.2 and the PM-10 monitoring system Quality Assurance/Quality Control Manual previously approved by NYSDEC. This monitoring program demonstrates CWM's compliance with the national primary and secondary 24-hour AAQS for particulate matter of 150 $\mu g/m^3$, 24-hour average concentration. The level of the national primary and secondary annual standards for particulate matter is 50 $\mu g/m^3$, annual arithmetic mean. Respirable particulates (particulate matter [PM]) are monitored at six locations of the Model City Facility. Current mitigative measures for PM-10 emissions, as described in Section 3.8.4, would be continued for the RMU-2 project.

5.7.2 Volatile Emissions

Volatile emissions that may potentially occur during the operations phase of RMU-2 are primarily associated with releases of volatiles due to accidental mixing of incompatible wastes, accidental ignition of wastes and leaks or spills. The mitigation measures that would be employed to address volatile emissions from RMU-2 are those currently employed by the Model City Facility, which have been described in Section 3.8.4 of this document.

5.7.3 Greenhouse Gas Emissions

As discussed in Section 4.4.3, it is anticipated that the operation of RMU-2 will have similar amounts of greenhouse gas emissions when compared to the existing operations of RMU-1. Mitigation measures to reduce energy consumption, thereby reducing the amount of greenhouse gases released to the atmosphere, will continue to be employed by the Model City Facility. These mitigation measures include:

- use of energy efficient electrical appliances;
- separate collection of recyclables;
- reuse of materials and equipment where possible;
- use of energy efficient design in the new Drum Management Building; and
- incorporate truck idling reduction practices.

5.8 Loss of Habitat for Indigenous Species

5.8.1 Vegetation

During construction, precautions would be taken to prevent damage, injury or destruction of areas surrounding the actual work zone. The boundaries of the work zone and sub-areas within the work zone for contractor mobilization, soil stockpiles, roads, monitoring well locations, retention basins and parking areas

are clearly identified to the contractor in the design drawings for RMU-2 and other construction areas. The following measures would be undertaken:

- Protection of all trees and other woody plants that are to remain after construction.
- Protecting natural vegetation and surroundings, including natural drainage ways, open fields and wooded areas wherever possible.
- Repairing (by approved horticultural methods) all injuries to woody plants that are to remain after construction.
- Scarifying compacted soil and regrading to restore natural conditions wherever possible.

5.8.2 Wildlife

Since the proposed location for RMU-2 and associated facilities lies entirely within a currently developed portion of the Model City Facility, no significant impacts to wildlife are anticipated.

5.8.3 Wetlands

Based on the information contained in the EDR Reports (Appendix D), the construction of RMU-2, Fac Pond 5 and the proposed relocation of existing structures, buildings and operational areas would impact the 100-foot adjacent area of an NYSDEC wetland and approximately 2.5 acres of federal wetlands. The USACE has indicated that mitigation measures will be necessary for impacts to wetlands in the RMU-2 development area. The NYSDEC has indicated that a vegetative buffer shall be constructed and maintained between the new Drum Management Building operational area and the state freshwater wetland. A revised application for a permit in accordance with Section 404 of the CWA was submitted to the USACE in July 2013 for project impacts to jurisdictional wetlands. Compensatory mitigation may be accomplished through one of the following three ways: Mitigation Banks, In-Lieu Fee Mitigation or Permittee-Responsible Mitigation. CWM will pursue a permittee-responsible mitigation through construction of replacement wetlands at an on-site location. The revised Section 404 application is a joint application with a request for NYSDEC Section 401 water quality certification and a State Article 24 application for impacts to NYSDEC freshwater wetlands (100-foot adjacent area).

To mitigate for the unavoidable permanent loss of wetlands within the Project area, CWM is proposing the creation of a 4.3-acre successional wetland on a 21-acre parcel of land owned by CWM immediately west of Fac Ponds 1 and 2. This parcel is currently dominated by successional deciduous forest, but also includes areas of disturbed land used for topsoil stockpiles, successional old field and approximately 5 acres of forested and emergent wetland communities. The successional wetlands to be created on site will be designed to succeed from scrub-shrub into forested wetlands. This represents a mitigation ratio of approximately 1.7 to 1 (mitigation to impact) for direct impacts to wetlands/streams.

CWM shall place a perpetual deed restriction, in the form of a conservation easement, on the mitigation site to protect the compensatory wetland mitigation area and adjacent uplands in perpetuity and guarantee its preservation. The conservation easement will protect a total of 15.94 acres.

The mitigation of impacts to the 100-foot adjacent area for development of the new Drum Management Building will be accomplished by the construction and maintenance of a vegetated buffer between the building's operational area and the New York State Freshwater Wetland RV-8.

5.9 Visual Impacts

Potential visual impacts due to alteration of existing site topography would be mitigated through the use of visual barriers provided by existing vegetation, both on and off the Model City Facility. Because of the on-site vegetation, RMU-2 and associated facilities will not be visible or just barely visible, to the nearest off-site receptors identified in the line-of-sight analyses discussed in Section 4. Any visual impacts to observers at higher elevations would be short-term (i.e., construction phase) and mitigated at closure of RMU-2 by placement of a cap and vegetative cover. The Model City Facility intends to maintain the on-site vegetation barriers, located primarily along the perimeter of the facility, by maintaining set-backs from the boundaries of the facility. The Town of Porter Zoning Law requires that waste storage, processing or disposal shall not be conducted within 300 feet of any residence or public street. Currently, CWM maintains a buffer of at least 800 feet, which was the Porter Zoning Law requirement prior to 2004. CWM complies with this requirement by maintaining the required minimum setback distances for operations of the facility and by maintaining perimeter vegetation. Trees are typically not removed from the buffer zone unless they become diseased. Additionally, the fact that the normal climax vegetation over most of the facility is northern hardwoods, natural biological succession will help ensure effective vegetation screening around the undeveloped facility perimeter.

It is anticipated that there would be no impact to nighttime light levels during construction of RMU-2 and the associated facilities since all construction is planned to occur during daylight hours. During operation, the existing RMU-1 requirements allow land disposal of bulk wastes not requiring stabilization until 8:00 p.m. Drummed and stabilized bulk wastes may be placed in the landfill 24 hours per day. Artificial lighting would be used during non-daylight hours. It is anticipated that RMU-2 operations would follow these same requirements. Due to the relatively low quantities of waste requiring land disposal in recent years, most disposal in RMU-2 would occur during daylight and utilization of artificial lighting would be very infrequent with negligible impact to the surrounding communities. If needed, artificial lighting would be restricted to the immediate area of disposal and partially shielded by the perimeter vegetation.

5.10 Production of Noise

Mobile equipment with acceptable noise control devices would be used during construction and operation of RMU-2 and associated facilities. Noise mitigation efforts would be upgraded and/or modified as new noise control technologies are developed. Special noise barriers and other muffling devices would be employed

when equipment controls, natural barriers and distance to off-site receptors does not adequately control noise. However, calculation of anticipated noise levels, as presented in Appendix M, indicates that such levels would be acceptable without the use of special noise control efforts.

5.11 Restrictions on Future Land Use

Future land use is restricted by regulations regarding post-closure. Post-closure care that includes monitoring and maintenance of the properly closed landfill will continue in perpetuity. Post-closure use of the landfill will not disturb the integrity of the final cover, liner, containment system or monitoring system.

Owners and/or operators of hazardous waste management facilities must prepare a written cost estimate for closure. The closure cost estimate must equal the cost of final closure at the point in the Model City Facility's active life when the extent and manner of operations would make closure the most costly. Further, such costs must be based on hiring an independent third party to perform the closure and must be adjusted annually for inflation. The owner/operator must establish financial assurance covering the entire cost of closure. Similarly, post-closure cost estimates and financial assurance must be established based on annual costs for post-closure care performed by an independent third party, multiplied by the required number of years of post-closure care and adjusted for inflation.

Financial assurances for closure and post-closure activities are based upon the closure and post-closure estimates prepared for the treatment, storage and disposal unit. Such assurances are intended to guarantee funding that would allow the completion of closure and post-closure activities regardless of the financial situation of the owner/operator of the Model City Facility. Closure and post-closure activities will be guaranteed financially, pursuant to the requirements for hazardous waste management facilities given in 6 NYCRR Part 373. The requirements for closure and post-closure of RMU-2 are provided by CWM as part of the permit modification application. Closure and post-closure cost estimates are provided under separate cover. Financial assurance to cover these costs will be provided by CWM under separate cover after NYSDEC approves these costs and the permit is issued.

After completion of closure, notices to the county clerk and to the property deed will be made in order to alert potential purchasers of the site that hazardous waste management activities occurred at the site and that use of the site is restricted by 6 NYCRR Part 373-2.7.

5.12 Traffic

The amount of truck traffic and traffic safety with respect to trucks hauling hazardous waste to the Model City Facility has been a concern of the public, especially with respect to the Lewiston-Porter Schools located on NYS Route 18, south of Balmer Road (i.e., on the designated transportation routes).

To address these concerns and mitigate potential traffic impacts, the Model City Facility entered into the CAC Agreement in 1993. The last version of the CAC Agreement, dated September 23, 1997, is included in Appendix L and includes the following requirements related to the community traffic concerns:

- CWM established a telephone hotline number for community complaints concerning traffic and associated activities at the Model City Facility.

- CWM participates in a quarterly (or as needed) review of complaints, problems and concerns related to the Model City Facility with designated representatives of Porter, Lewiston, Niagara County, the School District and ROLE.

- CWM provides advance notice to Porter, Lewiston, Niagara County and the School District concerning any expected unusual traffic activities at the Model City Facility.

- CWM has implemented and adheres to the *Site Operations Plan*. All parties reserve the right by mutual agreement to make modifications to the *Site Operations Plan*.

- CWM has established and maintains a direct telephone line between the Model City Facility and the Lewiston-Porter Central School District Administration.

- CWM has participated with the School District in reviewing the emergency evacuation plans of the school district to address potential worst case incidents at the Model City Facility or in the transportation of hazardous waste on NYS Route 18, past the school campus.

- CWM reports all violations of applicable transportation regulation and law annually to the Niagara County District Attorney and the Town of Lewiston Police Department.

The last CAC Agreement technically expired on July 28, 2008. However, CWM continues to implement these requirements. CWM and the CAC meet as needed to review the conditions and effectiveness of the CAC Agreement. CWM is willing to negotiate appropriate conditions as part of a new CAC Agreement for RMU-2 to provide similar restrictions to mitigate potential traffic impacts. Previously, as part of the RMU-1 CAC process, possible alternate traffic routes to the Model City Facility were jointly evaluated. None were identified because the potential alternate roads were not adequately designed for heavy truck traffic.

6. Significant Adverse Environmental Effects that Cannot be Avoided if the Project is Completed

6 NYCRR Part 617.11 provides guidelines in determining the significance of any environmental impacts due to the proposed action. Based on these guidelines, it is anticipated that within the context of the current environmental setting, the construction and operation of RMU-2 and associated activities described herein would not result in any unavoidable significant adverse environmental effects. This conclusion is based on the following specific considerations:

- Since the RMU-2 landfill is a replacement for the existing RMU-1 landfill, minimal additional environmental impacts are anticipated, as this is merely a continuation of the existing Model City Facility operations.

- Waste volumes accepted at the Model City Facility would not increase beyond current permitted levels.

- There are no significant operational changes associated with RMU-2 or associated facilities.

- Due to engineering safeguards and continued upgrades to the wastewater treatment system at the Model City Facility, there would be no substantial adverse change in existing air, groundwater or surface-water quality.

- No substantial increase in traffic or noise levels above existing levels is anticipated.

- No substantial adverse visual impacts associated with the construction of RMU-2 or associated facilities.

- The proposed action would not result in erosion, flooding or drainage problems.

- No endangered, threatened or special concern species or unique or critical habitats would be affected.

- The proposed action would not impact the character or quality of an important historical, archaeological or other cultural resource.

- Based on the EIR prepared, the action would not create a hazard to human health, but would, in fact, help provide environmentally sound disposal of hazardous waste.

- The proposed operation is consistent with the current use and zoning of the facility.

- Existing financial benefits to the local community, e.g., employment, tax payments and host community fees, would be continued.

Because the proposed action will merely provide replacement capacity for the existing RMU-1, it is not anticipated to result in induced growth in the area.

7. Alternatives to Proposed Action

7.1 General

In addition to the No Action Alternative, a description and evaluation of reasonable alternatives to the Proposed Action that would achieve the same or similar objectives is presented in this section. These alternatives have been identified by CWM. A discussion of waste treatment technologies other than land disposal is also included.

The Proposed Action is defined as the development of an additional secure land disposal unit for wastes and treatment residuals meeting the land disposal restriction rules to replace the anticipated depleted capacity at the Model City Facility. The Proposed Action would include the construction and operation of a new 43.5-acre secure RMU, to be known as RMU-2, as well as the construction of a new Surface Impoundment for treated wastewater (Fac Pond 5) and relocation of existing buildings and operations, within the boundaries of the permitted Model City Facility owned and operated by CWM. The alternatives to the Proposed Action are:

- No action;
- Action at a different location within the Model City Facility;
- Action at a different site;
- Different technological approach; and
- Design subalternatives.

7.2 No Action Alternative

To place the Proposed Action in the proper perspective and evaluate the environmental and socioeconomic impacts to the affected communities, it is essential to consider the consequence of "No Action." For the purposes of this environmental impact analysis, the No Action Alternative is defined as the continuation of the hazardous waste processing and disposal operations presently conducted at the Model City Facility with no further commitments to modify the Model City Facility's existing capabilities. Implementation of this alternative would exhaust land disposal capacity at the Model City Facility by about 2015 based on current waste receipt rates. As the currently operating land disposal unit closes, it would not be replaced. While it is possible that another company may attempt to develop a similar facility, either locally or at a different location within NYS, there have been no plans announced to do so and the design, permitting and construction of such a facility would take many years. Assuming no new SLFs would be constructed, all of

the in-state and out-of-state generators served by CWM would need to find another disposal facility, likely in Indiana, Michigan or further away.

The NYSDEC's 2010 Siting Plan concluded that the relevant market for hazardous wastes generated in NYS was nation-wide disposal capacity. While this analysis reflects a comparison of the available disposal capacity to annual demand, it does not consider the potential economic, environmental and health and safety considerations that might arise if the transportation distances were to increase significantly. Relying on traditional market forces applicable to private sector development of new or expanded disposal capacity, the Plan further concluded that there was no need for NYSDEC itself to try to provide economic or other support for the development of additional disposal capacity in NYS. For this approach to be viable, all states, including NYS, will need to let the traditional market forces function to foster private sector development of additional disposal capacity, provided that the applicable siting criteria are otherwise met.

While it is not possible to state with certainty what the exact consequences of a denial of the RMU-2 application might be, some likely impacts would be:

1. Hazardous waste generated in NYS and requiring land disposal would need to be shipped out-of-state.

2. Decreased competition in the waste land disposal market and added transportation costs will result in increased disposal costs to NYS companies, placing an additional economic burden on those companies.

3. With increased transportation and disposal costs, there may be an increase in illegal disposal of hazardous wastes.

4. Disposal at facilities outside of NYS would result in longer hauling distances, increased fuel consumption and larger greenhouse gas emissions.

If the RMU-2 Application is denied solely because the Plan did not identify a need for additional in-state land disposal capacity, that denial could jeopardize New York's status as a RCRA-delegated state because of 40 CFR 271.4(f).

As discussed in Section 3.6.5.4, CWM has contributed on average of over $13 million per year to state and local economies through various taxes, fees and expenditures over the last 6 years. When the existing capacity is exhausted, under the No Action Alternative, the majority of these economic benefits would be eliminated or significantly reduced. For example, the No Action Alternative would result in a significant decrease in the tax and fee revenues realized by NYS, Niagara County, the Town of Porter, the Town of Lewiston and several school districts. The purchase of fewer materials and services would impact local

businesses and decrease sales tax revenues. The loss of jobs at the Model City Facility would result in decreased spending locally.

NYS would also suffer a decrease in the revenues derived from the regulatory fee system (6 NYCRR Part 483) and Hazardous Waste Assessments.

7.3 Action at a Different Location within the Model City Facility

An alternative to the Proposed Action would be construction and operation of a hazardous and industrial non-hazardous waste landfill at a different location within the existing Model City Facility.

Locating a new landfill and other hazardous waste units within the existing CWM Facility would be limited to the property that is currently zoned for such activity (i.e., M-3 zone in the Town of Porter). Existing M-3 areas are largely utilized by active and closed waste management units. The proposed location for RMU-2 represents the only feasible area within the central portion of the Model City Facility meeting the zoning requirements.

On October 10, 2001, the Town of Porter Town Board approved the rezoning of 75 acres of CWM's property east of RMU-1, known as the "Eastern Area," from zone M-2 to M-3. Although the Eastern Area could be used for RMU-2, the proposed location is closer to the site infrastructure and provides reduced environmental impact for certain aspects, such as visual impacts and wetlands. The proposed location for Fac Pond 5 and relocated facilities is within the central portion of the Model City Facility which also minimizes these environmental impacts.

As previously discussed, the proposed location for RMU-2 would require the need to relocate numerous existing facilities. These facilities would be relocated and operational prior to closure of the existing facilities and construction of RMU-2. Based on the limited areas available within the central portion of the Model City Facility, alternative locations for RMU-2 within the facility (i.e., the Eastern Area) have several disadvantages:

- Overall costs would be increased to the point of being significantly less economical;
- This alternative would require the need to relocate existing facilities more critical to Model City waste handling operations (e.g., AWTS, Stabilization) to be closer to the new landfill location;
- The current land use of another area would need to be modified or rezoned, requiring the need to evaluate the potential environmental impacts associated with this land disposal facility that may or may not be significantly different than the Proposed Action; and

- Due to the smaller landfill size necessitated by land or zoning restrictions, the projected deficit in regional hazardous waste disposal capacity would not be significantly affected.

Use of other property at the Model City Facility for this project (i.e., property in the Town of Porter not currently zoned M-3 and all property in the Town of Lewiston) would require Siting Board approval to override current zoning restrictions. In addition, these areas are currently undeveloped and would have additional potential impacts, such as loss of vegetation and disturbance of wetlands. For the above reasons, action at a different location within the Model City Facility is not a reasonable preferred alternative.

7.4 Action at a Different Site Alternative

An alternative to the Proposed Action would be construction and operation of a hazardous and industrial non-hazardous waste landfill at a location other than the existing Model City Facility. This alternative would require construction of the proposed landfill at another WMI owned facility or at some other location.

The Model City Facility is the location of 11 hazardous and industrial non-hazardous waste landfills (10 closed landfills and the currently active RMU-1). The Model City Facility has invested millions of dollars in the infrastructure that is necessary to support and maintain a state-of-the-art hazardous waste TSDF. That infrastructure includes a fully integrated wastewater treatment plant that is used to treat, among other things, the leachate from the active and closed landfills and a stabilization facility necessary to treat hazardous waste to LDR standards prior to land disposal. Extensive groundwater, surface-water and air monitoring systems, with a well-developed database, an exhaustive hydrogeologic study of the site, a comprehensive on-site analytical laboratory and well established utilities and security systems would also be needed. In addition, the Model City Facility has in place a well-qualified management team and well trained employees familiar with the operation of the facility.

Any alternative site would require the duplication of the infrastructure systems, support and monitoring systems and the management and operating personnel. At the same time, closure and post-closure care at the current Model City Facility would be required. Any such alternative would be cost prohibitive. Thus, locating the proposed unit at a new location elsewhere in NYS or within Niagara County, but outside the boundaries of the existing CWM facility, has several disadvantages: overall costs would be increased and the current land use of another area would need to be modified, adding to the potential for the environmental impacts associated with a land disposal facility. The time required for permitting the facility would be lengthy, causing an increased deficit in regional hazardous waste land disposal capacity.

In addition, prior permit and siting certificate applications at the Model City Facility have demonstrated that the facility's hydrogeologic characteristics are well suited for a hazardous and industrial non-hazardous waste landfill facility and previous siting boards have concluded that the siting criteria are satisfied at this location. As per 6 NYCRR Part 361, a certificate of environmental safety and public necessity is required for

construction and operation of a new industrial hazardous waste management facility. The application for a certificate for RMU-2 includes:

- Description of the design and capacity of the proposed unit;
- Type and volume of wastes to be handled by the proposed unit;
- Expected sources of hazardous wastes;
- Proposed methods of transportation and routes;
- Program for closure of the unit; and
- Status of the unit with respect to local zoning or land use plans.

In addition, the application addresses potential impacts of the proposal by evaluating population density adjacent to the site; the risk of transportation accidents involving wastes; the effect of the proposed unit on groundwater and surface-water quality; and the effect of the proposed unit on air quality.

Part of the Application is the Siting Evaluation Worksheet that evaluates 14 siting considerations according to specific rating criteria. The criteria are rated according to their relative impact; all considerations are weighted and summed in order to calculate a siting consideration score that is used to determine if the proposed activity is compatible with the proposed location. A score of 200 or above indicates that the proposed activity is not well suited to the proposed location. A score below 200 indicates that a proposed activity is well suited to the proposed location. As part of the RMU-2 certificate application, CWM has suggested ratings for the various criteria and completed the scoring worksheet. The score calculated by CWM for RMU-2 is 152.0, which indicates that the proposed activity is suitable with the existing Model City location. A State Siting Board, appointed by the governor for this application, will conduct an independent rating of the criteria.

RMU-2 is proposed for location at the Model City Facility for several reasons, including:

- Hydrological suitability of the proposed location (as determined by extensive studies).
- Existence of the necessary infrastructure systems.
- Availability of extensive background environmental data and comprehensive site monitoring program.

- Demonstrated need for disposal capacity at the Model City location.

In NYS, 26 counties out of a total of 62 counties produce approximately 95% of the waste destined for secure land burial. Niagara and Erie Counties account for nearly one-third of the total tonnage of these wastes.

Failure to provide adequate disposal capacity in NYS would require disposal of NYS generated hazardous wastes in other states. Export of wastes would be more costly for many waste generators due partly to the distance haulers may need to travel. Generators in Niagara and Erie Counties would probably be the most impacted, from a financial perspective, since they could not use nearby commercial waste management facilities. Fuel consumption, greenhouse gas emissions and environmental risks associated with leaks, spills or accidents would be greater with longer transportation distances.

Additionally, 6 NYCRR Part 617.14(f)(5) provides that the discussion of site alternatives "may be limited to parcels owned by, or under option to, a private applicant." CWM does not own or have under option any other property in NYS of adequate size and appropriately zoned for hazardous waste facility siting. Although WMI, CWM's parent company, does own other property in NYS, none of these properties are currently permitted or equipped for hazardous waste disposal, and historically, NYSDEC has been opposed to permitting hazardous waste disposal units at an existing solid waste disposal site. Also, CWM is not aware of any other company currently pursuing the development of commercial TSDFs within NYS. For the above reasons, CWM does not believe that the "action at a different site alternative" is a reasonable alternative.

7.5 Secure Residuals Management Alternatives

7.5.1 Different Technological Approach Alternatives

Landfilling is used as a method of final disposal for a wide variety of waste streams. The concept of landfilling is relatively old and has been utilized for the disposal of wastes from municipal, commercial and industrial sources in a number of physical forms, including solids, liquids, sludges and bulk wastes. Currently, landfilling is restricted to solids and sludges containing no free liquid and to wastes satisfying all prerequisite conditions in USEPA's LDRs, as well as the Model City Facility's specific permit restrictions.

As specified in the NYSDEC's waste management hierarchy, alternatives to land disposal for the management of hazardous waste include (in order of preference):

- Reduction at the source (waste minimization).

- Recovery, recycling or reuse of wastes that continues to be generated.

- Detoxification, treatment or destruction of wastes that cannot be recycled or reused.

The Model City Facility currently employs BDAT for wastes regulated by the LDRs. Waste minimization, recovery, recycling and reuse are encouraged and employed where feasible. A discussion of several technology approach alternatives is presented below.

7.5.1.1 Waste Minimization

Waste minimization is the reduction or elimination, to the maximum extent practicable, of hazardous waste generated at the source. All generators of hazardous wastes are required to employ waste minimization techniques. However, these practices will only reduce – not eliminate – the quantities of wastes that must be subsequently treated and disposed.

Also, in keeping with statutory requirements of NYS ECL §27-0908, ECL §27-0105 and ECL §27-0106, as implemented by 6 NYCRR Part 372, CWM efforts at the Model City Facility, present and future, are dedicated toward recovery, reuse, recycling, detoxification, stabilization and destruction of hazardous waste in order to extend the life of residuals management facilities.

7.5.1.2 Recycling/Recovery/Reuse

Recovery generally involves the separation of usable constituents from waste streams. These constituents can be reused or recycled rather than being disposed. The decision to recover, recycle or reuse is made by the generator and is usually based upon the economics of waste management versus manufacturing and production and other marketing considerations.

The Model City Facility practices recovery and reuse through its fuels program. Waste solvents and oils are received from generators and then processed into a final product for reuse as a fuel in cement and aggregate kilns.

Reuse is a form of recycling in which a waste material is returned to its manufacturing process or used as a substitute for another commercial product in a different process. Model City Facility's use of waste acids and other waste materials for waste-on-waste treatment is a form of reuse.

It should be noted that under current restrictions regarding land disposal of hazardous wastes, the materials currently recycled or recovered at the Model City Facility would not be candidates for landfilling in the absence of the recycle and recovery programs.

7.5.1.3 Detoxification/Stabilization

Detoxification is the removal or conversion of toxic constituents in a waste stream in order to produce non-toxic or less toxic materials. Waste stabilization processes reduce the mobility of hazardous constituents within a hazardous waste. At the Model City Facility, stabilization is achieved by inducing a chemical or physical reaction in the wastes by using one or more stabilization agents, including cement kiln dust and other pozzolanic materials. The stabilization process yields a solid residual that must ultimately be disposed, usually in a landfill.

Stabilization must be permanent and irreversible, and its performance must be demonstrated on each type of waste.

Although it reduces the mobility of the hazardous constituents of the waste, the stabilization processes do not decrease the volume of waste treatment residuals that need to be landfilled.

In summary, use of the above alternate technologies will serve to reduce the volumes of hazardous waste or reduce the concentration or mobility of hazardous constituents in the waste. However, it should be noted that each of the technologies produce waste streams and residues that require additional management, including land disposal. After using the alternative technologies to the extent practical, land disposal of remaining wastes and residuals will always be necessary under current technological limitations.

7.6 Design Subalternatives

There are three basic categories of design subalternatives:

- Changes in materials;
- Changes in construction techniques; and
- Changes in operational techniques.

Each of the components of these design subalternatives is discussed in more detail below.

7.6.1 Changes in Materials

The design subalternatives in this category would relate principally to technological advances in the material used to construct RMU-2. Changes in construction materials that could be anticipated over the life of the landfill would include:

- Change in synthetic liners/covers;
- Change in soil materials;
- Changes in leachate collection system materials; and
- Change in capping system materials.

7.6.1.1 Change in Synthetic Liner/Cover

The liner/cover systems as currently proposed for RMU-2 that exceed NYSDEC's requirements for the design of hazardous waste landfill liner systems, include the use of two synthetic membranes:

1. 80-mil HDPE geomembrane for use in each of the primary and secondary liner systems for the bottom and sides of the landfill; and
2. A 40-mil textured HDPE geomembrane for use in the final cover system.

HDPE is widely accepted as the currently preferred geomembrane material at the Model City Facility and other landfills throughout the United States due to its physical properties and proven chemical resistance. It is possible that during the course of constructing future sections of RMU-2, new and improved synthetic geomembrane materials may become available for use. If these new materials would potentially have increased resistance to chemical attack and/or could have improved handling capacities, there would be an advantage to using such materials in RMU-2. If the new liner material meets the specifications described in the *RMU-2 Engineering Report* and is compatible with the existing liner materials and expected leachate characteristics, the use of the new material as a substitute for existing liner materials in final design plans and specifications for future landfill sections would be evaluated. Substitution of acceptable materials may produce a slight reduction in the potential adverse impacts to the environment.

7.6.1.2 Change in Soil Materials

The use of compacted clay obtained from the excavation of the base of the unit and from other suitable sources, is proposed for the construction of the initial stage of RMU-2. On-site soil has been extensively tested, and it is likely that the soil will meet the necessary permeability and strength requirements identified in the *RMU-2 Engineering Report*. It is possible, however, that the on-site soil could be augmented with clay from outside sources. On-site soil from a specific location and all off-site soil would, prior to its use, require testing to determine whether it complies with the required design permeability and strength requirements. If this testing proves to be satisfactory, off-site soil could be used in the unit. GCL would be included in the primary liner system for RMU-2. This exceeds the requirements of 6 NYCRR Part 373-2.14(c)(3) since this

layer is not required by regulations. The RMU-2 liner system has been designed to withstand anticipated stresses associated with the installation and operation of RMU-2. A GCL layer would be used on the cell floors that will provide a maximum equivalent hydraulic conductivity equal to or less than 1.5 feet of compacted clay, which has a hydraulic conductivity of 1×10^{-7} cm/sec. GCL would be used in the final cover system, with a maximum equivalent hydraulic conductivity equal to or less than 2 feet of compacted clay with a hydraulic conductivity of 1×10^{-7} cm/sec. The GCL is approximately ¼ inch thick, which allows for better utilization of the permitted landfill footprint. Use of GCL is considered an improvement to the compacted clay that was previously used for these applications in other site landfills.

7.6.1.3 Changes in Leachate Collection System Materials

The proposed unit would utilize a geonet/geotextile geocomposite, drainage stone and collection pipes for leachate collection. If materials other than those currently identified are specified in the finalized plans and specifications for future leachate collection systems, the new materials would have to satisfy the primary engineering requirement of the existing system (i.e., effective collection and withdrawal of leachate) to be consistent with NYSDEC's requirements for the design of hazardous waste landfill liner systems.

Such new materials would also have to be compatible with the original materials and the expected leachate. If these conditions are met, no change in environmental impacts would result due to this subalternative.

7.6.1.4 Changes in Final Cover Materials

The proposed unit would utilize a final cover system consisting of, in ascending order:

- 6 inches of general fill soils;
- A GCL;
- A synthetic membrane (40-mil textured HDPE geomembrane);
- A geocomposite layer;
- 18 inches of general fill soils suitable for root penetration and support; and
- 6 inches of topsoil for vegetation cover.

Potential use of alternative materials for the geomembrane, geocomposite and GCL was discussed in the preceding sections.

7.6.2 Changes in Construction Techniques

The construction techniques that could conceivably be modified in the final design and specifications for the future sections of RMU-2 could include:

- Excavation deeper into the underlying Glaciolacustrine Clay; and
- Construction of interior slopes at a steeper grade.

7.6.2.1 Excavation Deeper into the Underlying Glaciolacustrine Clay

The depth of excavation proposed for RMU-2 is limited to approximately 12 feet in order to avoid extensive excavation into Glaciolacustrine Clay.

The proposed depth of excavation for the construction of RMU-2 effectively optimizes landfill airspace, yet utilizes good engineering practice and minimizes environmental risks. Excavation to an average depth of 5 to 10 feet below the ground surface provides a substantial portion of the borrow material needed to construct the unit. The availability of on-site material greatly reduces the costs associated with using material transported from off-site borrow sources.

The proposed excavation depth does not present environmental concerns because the proposed double-liner design of RMU-2 provides redundant leachate collection systems that effectively protect the groundwater system and the surrounding environment. In addition, as discussed in the *RMU-2 Engineering Report*, the depth of excavation has been limited to ensure that hydrostatic uplift of the unit excavation will not occur and that the subbase materials will have sufficient geotechnical stability.

Across the site, the surface of the underlying Glaciolacustrine Clay is at a depth ranging from 13.5 to 23 feet and the strata ranges in thickness from several feet to approximately 23 feet. An adequate layer of good bearing clay will be present above the much softer Glaciolacustrine Clay.

Deep excavation for the landfill would penetrate into the Glaciolacustrine Clay. Excavating to a depth deeper than the estimated 12 feet currently specified could still provide in-situ soil of a permeability of 10^{-8} cm/sec (a permeability 10 times less than that required) between the landfill bottom and uppermost aquifer. Deeper excavation into the Glaciolacustrine Clay will not affect the integrity of the other layers of the leachate containment system. The existing design of RMU-2 provides several backup leachate containment systems, to protect the groundwater system and the surrounding environment.

The advantage of excavating deeper would be to increase the capacity of the unit. However, the disadvantages of deeper excavation would be threefold. First, due to the handling characteristics of the

Glaciolacustrine Clay, the excavation would be slower to accomplish and, therefore, more costly. Second, upon operation of RMU-2, it is anticipated that due to the difficulty of operating in the softer Glaciolacustrine Clay, especially in adverse weather conditions, there would be a greater potential for reduced operations. Finally, deeper excavation into the Glaciolacustrine Clay would reduce the amount of impermeable soils between the landfill bottom and groundwater and would result in a shorter travel time for potential migration of hazardous constituents to the uppermost aquifer. Such a decrease in travel time may result in an adverse rating by the Siting Board with respect to RMU-2's potential impact on groundwater.

In summary, while excavating deeper into the Glaciolacustrine Clay would reduce the amount of impermeable soils under the landfill, it is not expected that deeper excavation would have an increased environmental impact relative to the existing design plans and specifications. Any modifications of this type would have to satisfy the primary engineering requirement for effective containment of the hazardous wastes disposed, while meeting the geotechnical stability and strength requirements.

7.6.2.2 Construction of Interior Slopes at a Steeper Grade

The advantage of constructing interior side slopes steeper than the currently proposed grade would be an increase in the volume of the landfill since less land space would be used for the berms. The disadvantage associated with this change would be a decrease in berm stability. Before specifying a steeper slope, the structural integrity and stability of the interior slope of the berm and the effect on HDPE liner installation and stability should be investigated. No adverse environmental impacts would result from steeper interior slopes as long as the structural integrity and the design criteria were equivalent to those specified in the *RMU-2 Engineering Report*.

NYSDEC and USEPA requirements do not explicitly outline the steepness of the interior berm slopes. However, the regulations do state that the hydraulic conductivity of any approved liner of natural material must be less than or equal to 10^{-7} cm/sec. Using standard construction procedures, a practical slope to effectively compact the clay component of the secondary liner to the required permeability is 3H:1V.

7.6.3 Changes in Operational Techniques

In general, the operating parameters proposed for RMU-2 are consistent with those that have been proven to be effectively utilized in RMU-1 since its initial operation in 1994. The operational techniques that could potentially be modified during the course of construction of RMU-2 include:

- Number of cells;
- Construction of the unit in stages;

- Change in types of waste streams;
- Change in the procedure for stacking drums; and
- Other minor modifications.

7.6.3.1 Number of Cells – Footprint Area Remaining Constant

The advantages and disadvantages associated with changing the number of cells depend on whether the change constitutes an increase or decrease. If the number of cells is decreased, the result is increased landfill capacity. The disadvantages associated with decreasing the number of cells would not be significant, assuming that the remaining cells were adequate to handle the wastes received. The advantage of increasing the number of cells would be to enhance the capability of the landfill to accept wastes not compatible with those in the other cells. The disadvantage associated with increasing the number of cells is reduction of landfill capacity because area is required for construction of intercell berms.

In general, positive environmental impacts would be the result of the flexibility in the design permitting the number of cells to be determined by the quantity and types of wastes to be received. This assumes that the primary engineering design requirements established in the *RMU-2 Engineering Report* would not be compromised.

7.6.3.2 Construction in Stages

The chief advantage of constructing RMU-2 in stages would be to allow greater flexibility of the land disposal unit's design to react to changing conditions and operational experience. Consistency with the fundamental design criteria specified in the *RMU-2 Engineering Report* should result in no significant adverse environmental impacts if such an approach were taken. Positive impacts are associated with construction in stages, such as reduction of leachate generation time at any given time. Negative impacts include potential conflicts with future construction and operation activities at the Model City Facility.

7.6.3.3 Change in Types of Waste Streams

The types of waste streams to be disposed in RMU-2 have been identified in Section 2.4 and Appendix A. A subalternative requiring consideration relates to changing waste streams to be disposed. The design for RMU-2 could accommodate such changes, without adverse environmental impact, through changing the number of cells in each section of the landfill, or by changing the size of the cells. Both these issues are discussed above. Disposal of any new or additional waste streams not specified in the modification application for RMU-2 will require approval from NYSDEC prior to their placement in the landfill.

7.6.3.4 Changes in Procedure for Stacking Drums

Only one layer of drums is typically placed in each lift with the remainder of the lift composed of soil type waste, to the average lift depth of 6 feet. Alternative methods for stacking drums could either increase or decrease the capacity of RMU-2. Assuming that no major design change will affect the integrity of the baseliner and cover systems, stability of the cells or the leachate collection system, the manner in which the drums are stacked would have no impact on the environment.

7.6.3.5 Other Minor Modifications

It is possible that other minor modifications to the overall design could be proposed. These could include modifications to the leachate collection system, alternate pump designs or relocation of access roads. These types of modifications would not represent a departure from the total design concept proposed for RMU-2. Therefore, the basic function as a containment system would not be compromised. Furthermore, any design improvements, when implemented, would reduce the potential for adverse environmental impacts.

8. Irreversible and Irretrievable Commitments of Resources

The proposed construction would convert open space and existing industrial zoned areas to an industrial use. Due to the nature of the industrial use (i.e., land disposal of hazardous wastes), the commitment of this land is currently irreversible from a practical standpoint.

Irretrievable commitments of resources would include soils, liner materials, piping, concrete, wood, steel and fuels that would be expended during construction, for maintenance during operation, and for closure. A list of materials and estimated quantities for RMU-2and new Fac Pond 5 is presented in Table 8-1.

Irreversible economic commitments would include the value of land, cost of construction materials, cost of labor services, cost of fuels and the cost of utilities, such as electric power and water.

TABLE 8-1
RESOURCES THAT WOULD BE EXPENDED DURING CONSTRUCTION, OPERATION, AND CLOSURE OF RMU-2 AND ASSOCIATED PROJECT AREAS

Materials	Quantity
Total excavation to subgrade in RMU-2 and Fac Pond 5[1]	266,947 cy
Total fill to subgrade in RMU-2 and Fac Pond 5[1]	801,815 cy
Net fill import to achieve subgrade in RMU-2 and Fac Pond 5[2]	534,868 cy
Clay in RMU-2 and Fac Pond 5 liner systems[3]	233,618 cy
Aggregate in RMU-2 and Fac Pond 5 liner systems[4]	154,235 cy
Geosynthetic materials in RMU-2 and Fac Pond 5 liner systems[5]	10,001,376 sq ft
Total fill to construct RMU-2 final cover[6]	158,300 cy
Geosynthetic materials in RMU-2 final cover[7]	5,031,180 sq ft
Linear feet of HDPE force main pipe	14,000 ft
Linear feet of HDPE leachate collection pipe	3,750 ft
Pre-cast concrete riser vaults	6
Leachate/treated water pumps	14
Linear feet of electrical wire and conduits	8,200 ft
Square feet of site restoration materials [8]	1,479,796 sq ft

1. Total excavation/fill is removal/fill needed to reach design subgrade, which is the bottom of the liner system, starting with existing grade. Total fill includes all material types (e.g., general fill, aggregate in RMU-2 MSE wall and perimeter roads, and topsoil on Fac Pond 5 perimeter berm).
2. Net fill import to achieve subgrade is the difference between total fill and total excavation to reach design subgrade and is based on the assumption that all material excavated can be reused as fill.
3. Clay volume for liner system construction includes 3 feet across RMU-2 floor and interior sideslopes for the secondary liner and across the Fac Pond 5 floor and interior sideslopes.

4. Aggregate volume for liner system construction includes 2 feet across RMU-2 floor and interior sideslopes (approximately 36 acres) for the primary liner, 1 foot across RMU-2 floor (approximately 22 acres) for secondary liner, and 1 foot across Fac Pond 5 floor (approximately 1.6 acres) for ballast layer.
5. Geosynthetics in RMU-2 liner system includes 2 layers of geomembrane and 2 layers of geocomposite across RMU-2 floor and interior sideslopes (approximately 36 acres) and 2 layers of nonwoven geotextile and 1 layer of geosynthetic clay liner across RMU-2 floor (approximately 22 acres) for a total of 210 acres. Geosynthetics in Fac Pond 5 liner system includes 2 layers of geomembrane, 1 layer of geosynthetic clay liner, and 1 layer of geocomposite across the pond floor and interior sideslopes (approximately 4.5 acres) and 1 layer of nonwoven geotextile across the pond floor (approximately 1.6 acres) for a total of 19.6 acres.
6. Fill volume for RMU-2 final cover includes 6-inch-thick general fill layer below geosynthetics, 18-inch-thick general fill layer above geosynthetics, and 6-inch-thick topsoil layer.
7. Geosynthetics in RMU-2 final cover includes 1 layer each of geocomposite, geomembrane, and geosynthetic clay liner across approximately 38.5 acres for a total of 115.5 acres.
8. Areas requiring restoration materials (i.e., seed, fertilizer, etc.) includes RMU-2 final cover, Fac pond berms and other disturbed areas.

9. Growth-Reducing Aspects of the Proposed Action

The waste disposal capacity of RMU-2 would serve as replacement capacity for the existing RMU-1 as it reaches maximum capacity. Thus, construction and operation of proposed RMU-2 would allow the Model City Facility to continue to provide hazardous waste management and service. Industries located in the area served by the Model City Facility may view the proposed action as an opportunity to expand production or construct new facilities. If this occurred, secondary growth in construction, supply and service industries might also occur. However, since such growth is dependent on many other factors, the growth-inducing potential of the proposed action cannot be quantified. It is more likely that the continued availability of hazardous waste disposal capacity would facilitate continued production for regionally based industries.

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Figures

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Figure 1-1
SEQR Process Flow Diagram

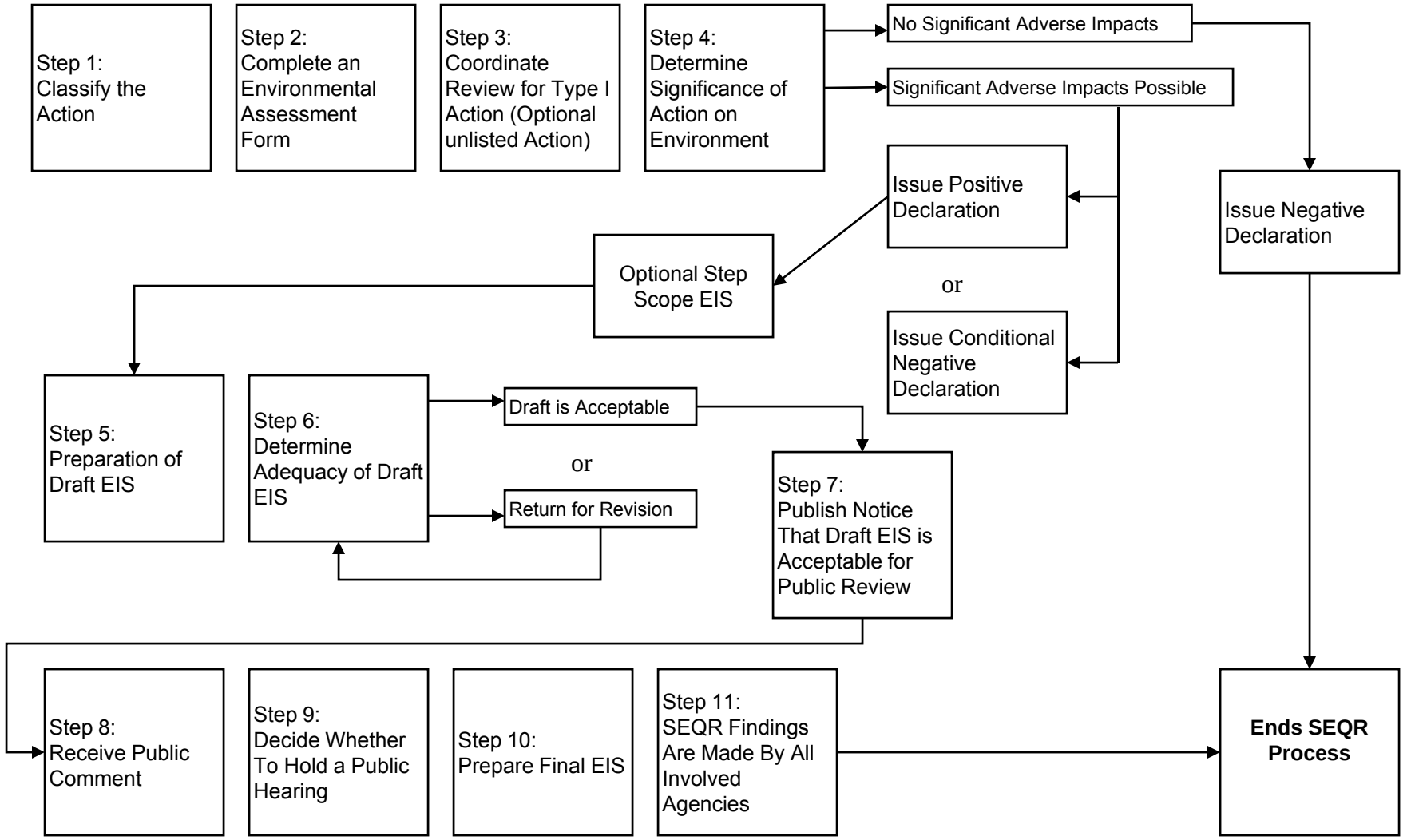

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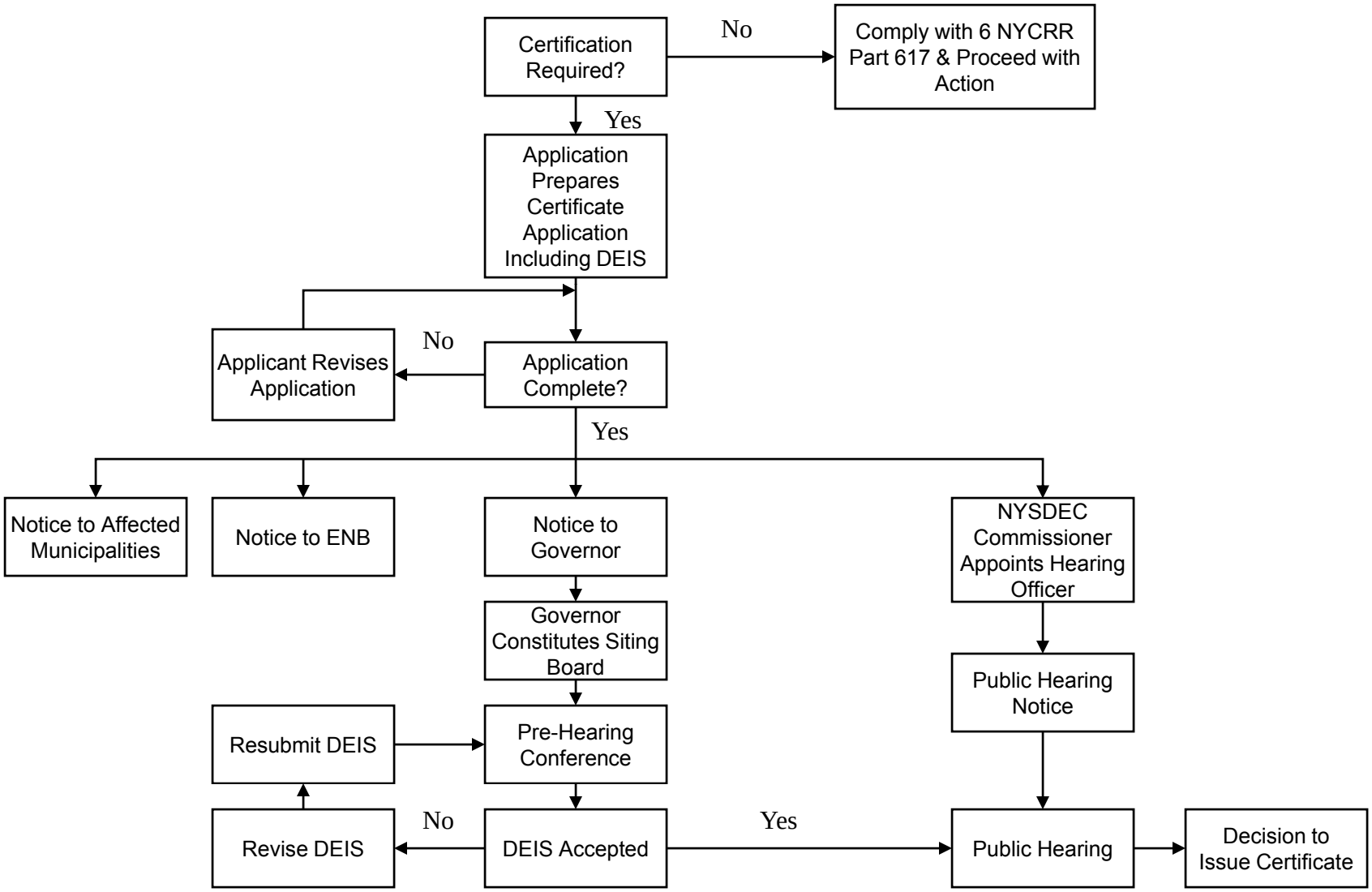
Figure 1-2
Generalized Procedures of Siting Board



CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
DRAFT ENVIRONMENTAL IMPACT STATEMENT

CLAY AND LINER ON THE CAP

ARCADIS

FIGURE
2-1

CITY: SYRACUSE, NY DIV/GROUP: 14/ENVCAD DB: L.POSENAUER LD:(Opt) PIC: W.POPHAM PM: W.RANKIN TM: T.FARMEN LYR:(Opt)ON=*;OFF=*REF*
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23725X06.JPG

CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
DRAFT ENVIRONMENTAL IMPACT STATEMENT

DAILY OPERATIONS AT THE MODEL CITY FACILITY

ARCADIS

FIGURE
2-2

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: L. FORAKER LD: PIC: W. POPHAM PM: W. RANKIN TM: B. STONE LYR: ON=*;OFF=*REF*
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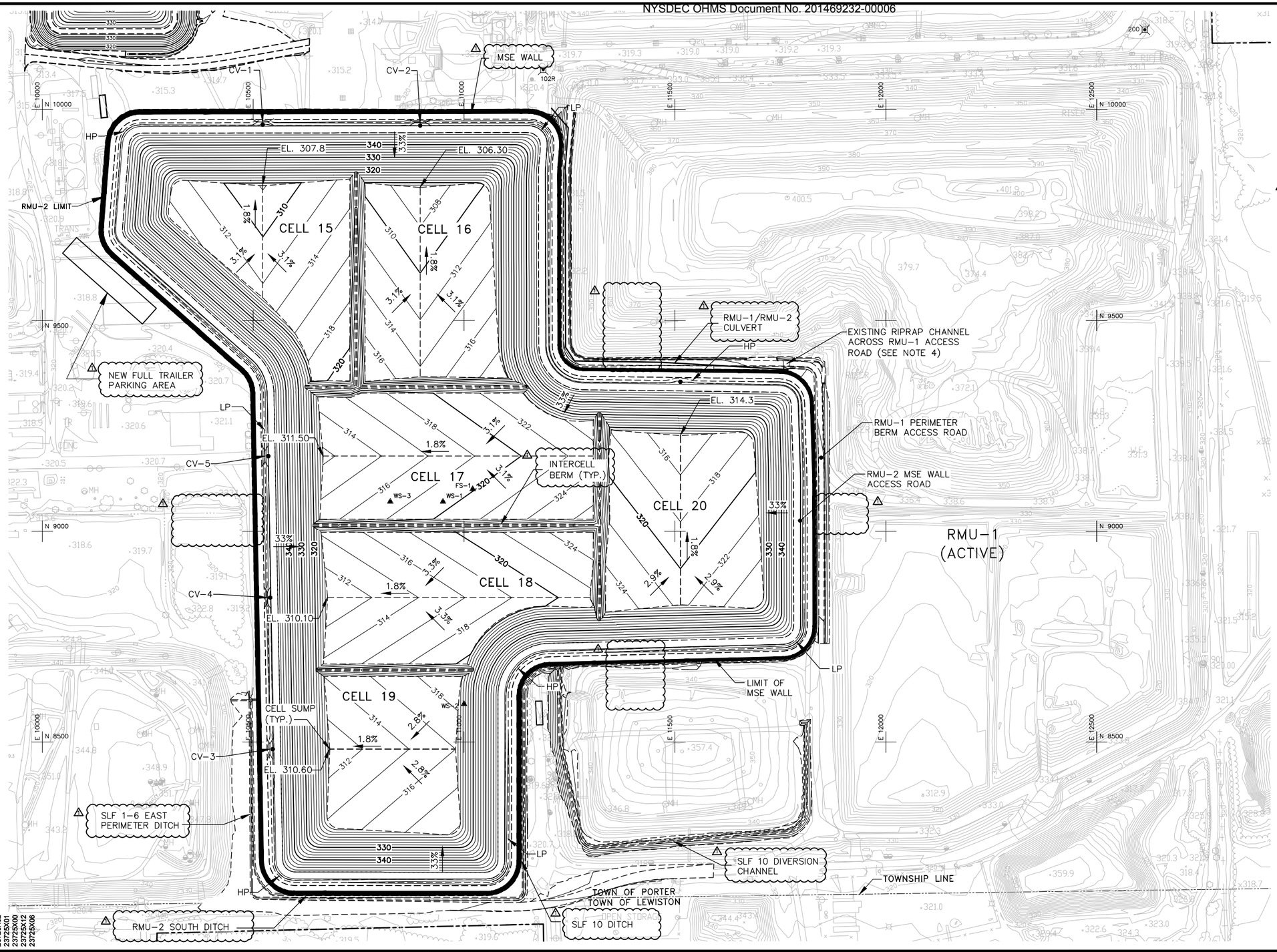
CWM CHEMICAL SERVICES, LLC
MODEL CITY, NEW YORK
DRAFT ENVIRONMENTAL IMPACT STATEMENT

SUMP IN A CELL - PRIMARY CLAY LAYER

ARCADIS

FIGURE
2-3



LEGEND:

- APPROXIMATE PROPERTY LINE
- 310 — PROPOSEDINDEX ELEVATION CONTOUR
- 308 — PROPOSED INTERMEDIATE ELEVATION CONTOUR
- PROPOSED GRADE BREAK
- PROPOSED LEACHATE RISER VAULT
- CV-1 — PROPOSED PERIMETER DITCH CULVERT AND ID
- x320.0 — PROPOSED SPOT ELEVATION
- LP — PROPOSED PERIMETER DITCH LOW POINT
- HP — PROPOSED PERIMETER DITCH HIGH POINT
- FS-1 — EXAMPLE FLOOR SETTLEMENT CALCULATION POINT
- WS-1 — EXAMPLE WASTE SETTLEMENT CALCULATION POINT
- 200 — PERMANENT CONTROL MONUMENT
- E 12500 / N 10000 — COORDINATE GRID

NOTES:

1. REFER TO DRAWING NO. 2 FOR ADDITIONAL BASE MAP INFORMATION.
2. PROPOSED GRADES INSIDE OF PERIMETER DITCH REPRESENT TOP OF OPERATIONS LAYER. PROPOSED GRADES WITHIN AND OUTSIDE OF PERIMETER DITCH REPRESENT FINAL GRADE.
3. ACCESS ROADS TO BE CONSTRUCTED UP TO TOP OF MSE WALL AND OVER CELL SEPARATION BERM LOCATIONS AS NEEDED.
4. EXISTING RIPRAP CHANNEL ACROSS RMU-1 PERIMETER BERM ACCESS ROAD CONVEYS RUNOFF FROM RMU-1 PERIMETER CHANNEL TO NEW RMU-1/RMU-2 PERIMETER CHANNEL.

CITY: SYRACUSE DIV/GROUP: ENV/CAD DB: K. DAVIS L. FORAKER K. DAVIS N.SMITHGALL LD: PIC: W. POPHAM PM: W. RANKIN TM: B. STONE LYR: ON=*;OFF=*REF*
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XREFS: IMAGES: PROJECTNAME: ----
23725X02
23725X01
23725X00
23725X12
23725X06

1"=120' (120' 0 120' 240')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
1	2/2013	REVISED CALLOUTS	GNG	TJF

Professional Engineer's Name: JOSEPH MOLINA
Professional Engineer's No.: 072644
State: NY | Date Signed: | Project Mgr.: WAR
Designed by: BMS/PTO | Drawn by: LAF | Checked by: BMS

ARCADIS OF NEW YORK, INC.

CWM CHEMICAL SERVICES, LLC • MODEL CITY, NEW YORK
RESIDUALS MANAGEMENT UNIT 2 DRAFT ENVIRONMENTAL IMPACT STATEMENT

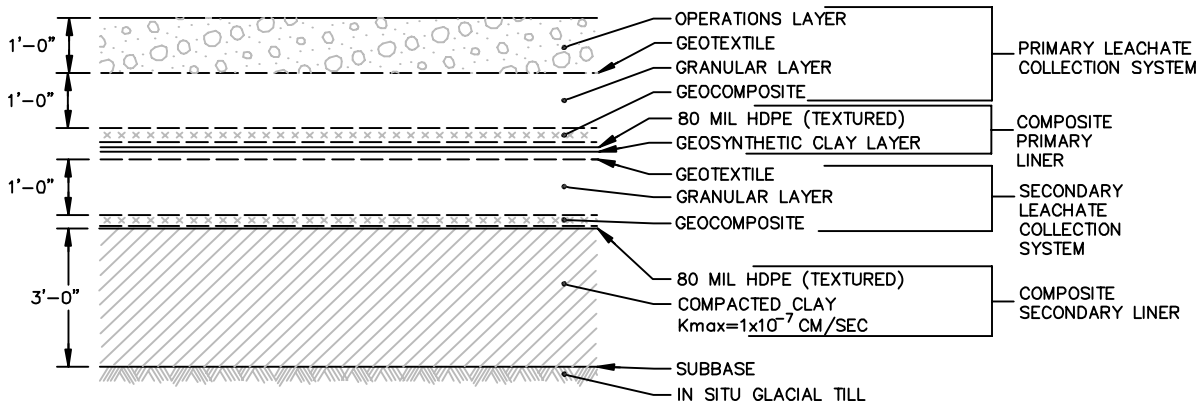
TOP OF OPERATIONS LAYER GRADES

GENERAL

ARCADIS Project No. B0023725.2009.00006
Date OCTOBER 2009

ARCADIS of New York, Inc.
6723 Towpath Road
P.O. Box 66
Syracuse, New York
TEL. 315.446.91220

2-4



CWM CHEMCIAL SERVICES, LLC
MODEL CITY, NEW YORK
DRAFT ENVIRONMENTAL IMPACT STATEMENT

RESIDUALS MANAGEMENT UNIT 2 BASE COMPOSITE LINERS

ARCADIS

FIGURE
2-5

CITY: SYRACUSE DIV/GROUP: ENVCAD DB: G. STOWELL L. FORAKER LD: PIC: W. POPHAM PM: W. RANKIN TM: B. STONE LYR: ON=*;OFF=*REF*
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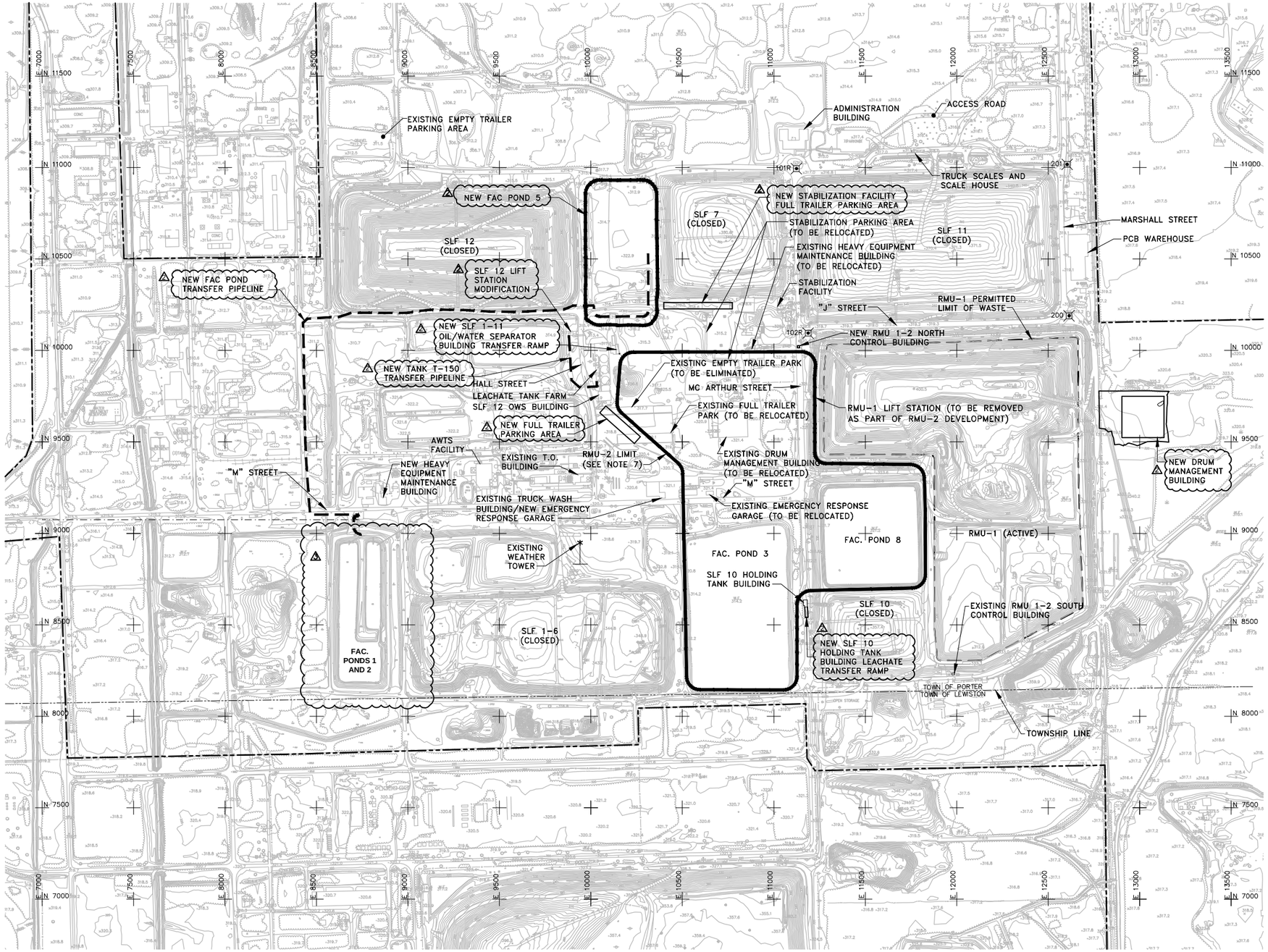

LEGEND:

- BRUSHLINE
- CABLE MARKER
- CATCH BASIN
- DROP INLET
- FENCE
- FIRE HYDRANT
- GUARD RAIL
- LIGHT POLE
- MISCELLANEOUS POLE
- MONUMENT
- POST
- RAILROAD TRACKS
- SIGN
- SWAMP
- TRAFFIC LIGHT
- TREE
- TREELINE
- UNIDENTIFIED OBJECT
- UTILITY POLE
- VALVE
- WATER LINE
- EXISTING CONTOUR
- EXISTING GRADEBREAK
- PROPERTY LINE
- NEW FAC POND TRANSFER PIPELINE

200 CONTROL MONUMENT (SEE TABLE BELOW)

E 13500 N 7000 COORDINATE GRID (SEE NOTE 3)

RMU-1/RMU-2 CONTROL MONUMENTS								
MONUMENTS	ELEVATION	CWM PLANT GRID		RMU-1 GRID		NY STATE PLANE COORDINATES (NAD-27)		NGVD-29 ELEVATION
		NORTHING	EASTING	NORTHING	EASTING	NORTHING	EASTING	
102R	319.72	100+94.55	111+87.56	100+94.65	11+87.56	1,175,430.46	396,380.12	319.66
200	318.33	101+89.56	126+13.77	101+89.56	26+13.77	1,175,488.28	397,808.18	318.27
101R	316.01	109+94.28	111+23.09	---	---	1,176,331.436	396,339.034	315.92
201	316.62	110+17.82	126+3.49	---	---	---	---	---

CONTROL MONUMENTS NOTE:

1. RMU-1 EASTING GRID COORDINATES ARE SIMPLIFIED PLANT GRID COORDINATES. SUBTRACTING 10,000 FROM THE CWM PLANT GRID EASTING COORDINATE WILL CONVERT THE CWM PLANT GRID TO THE RMU-1 GRID. NOTE THAT NO CONVERSION IS REQUIRED FOR NORTHING COORDINATES.

NOTES:

1. TOPOGRAPHIC BASE MAP CONSISTS OF COMBINATION OF DATA COMPILED BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY DATED 5/31/01 BY AIR SURVEY CORP. (PROJECT NO.71010503). AND AN AUGUST 2008 SURVEY BY ENSOL, INC.
2. VERTICAL DATUM BASED ON NGS MEAN SEA LEVEL.
3. GRID COORDINATES SHOWN ARE CWM PLANT GRID.
4. CONTOUR INTERVAL 2 FT.
5. DASHED CONTOURS INDICATE THAT GROUND IS PARTIALLY OBSCURED BY VEGETATION OR SHADOWS. THESE AREAS MAY NOT MEET STANDARD ACCURACY AND REQUIRE FIELD VERIFICATION.
6. PROPERTY LINE IS APPROXIMATE. EASEMENTS AND RIGHT-OF-WAYS NOT SHOWN.
7. RMU-2 LIMIT REPRESENTS TOE OF PERIMETER MSE WALL.

CITY: SYRACUSE DIV/GROUP: ENV/CAD DB: K. DAVIS K. WOOD N.SMITHGALL LD: PIC: W. POPHAM PM: W. RANKIN TM: B. STONE LYR: ON="OFF="REF"
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XREFS:
IMAGES:
23725X02
23725X01
23725X00

300' 0 300' 600'
1"=300'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
3	11/2013	REMOVED FAC POND 1/2 RECONSTRUCTION	GNG	BMS
2	2/2013	REVISED CALLOUTS	GNG	TJF
1	2/2012	REDESIGNED FAC POND TRANSFER PIPELINE	NWF	BMS

Professional Engineer's Name: JOSEPH MOLINA
Professional Engineer's No.: 072644
State: NY | Date Signed: | Project Mgr.: WAR
Designed by: BMS/PTO | Drawn by: LAF | Checked by: BMS

ARCADIS OF NEW YORK, INC.

CWM CHEMICAL SERVICES, LLC • MODEL CITY, NEW YORK
RESIDUALS MANAGEMENT UNIT 2 DRAFT ENVIRONMENTAL IMPACT STATEMENT

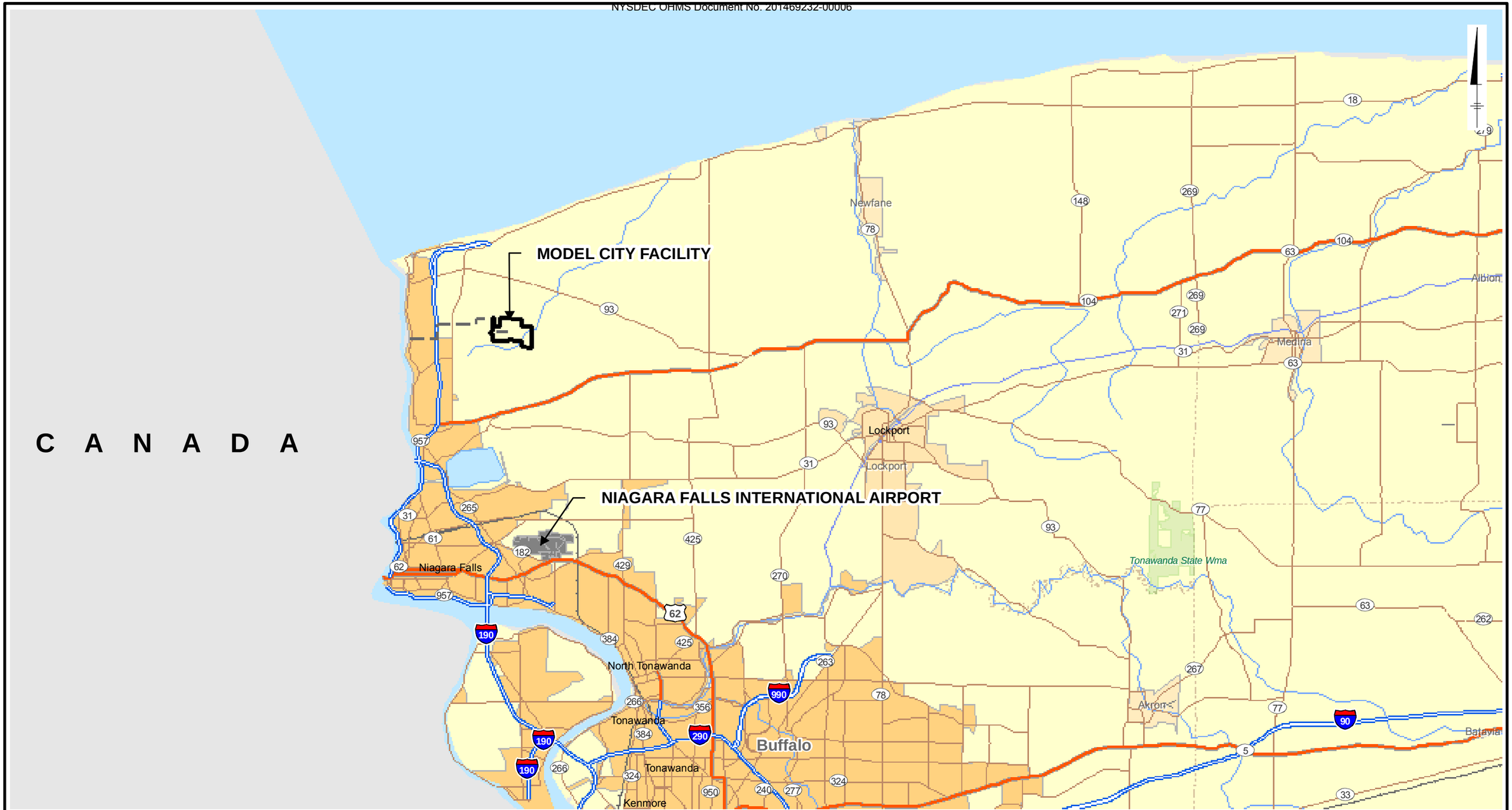
PROPOSED FACILITY LOCATIONS

GENERAL

ARCADIS Project No. B0023725.2009.00006
Date OCTOBER 2009

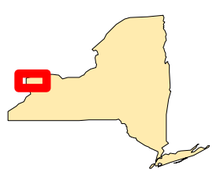
ARCADIS of New York, Inc.
6723 Towpath Road
P.O. Box 66
Syracuse, New York
TEL. 315.446.91220

2-6



NOTES:

1. PROPERTY LINES ARE APPROXIMATE.
2. NO DRINKING WATER WELLS EXIST WITHIN 1/4 MILE OF THE FACILITY.
3. THE TREATED EFFLUENT DISCHARGE IS LOCATED AT THE NIAGARA RIVER.
4. 710 TOTAL ACRES.
5. 630 RCRA PERMITTED ACRES.



AREA LOCATION

0 5 10

MILES

GRAPHIC SCALE

DRAFT

CWM CHEMICAL SERIVCES, LLC
MODEL CITY, NEW YORK

DRAFT ENVIRONMENTAL IMPACT STATEMENT

REGIONAL LOCATION OF MODEL CITY

ARCADIS

FIGURE
3-1

CITY: CLE DIV/GROUP: AIT 40 DB:L.GREENE LD:EAL PIC: WP PM: TM: GNG TR:
MODEL CITY 23725.003
Friday, June 19, 2009 1:37:16 PM
G:\enviro\Common\GIS\CWMModelCity\RevisionsToDEIS\mxd\FacilityLocationDetail_regional_3_1.mxd

SPDES OUTFALL 001 AT NIAGARA RIVER

SPDES OUTFALL 002

SPDES OUTFALL 003

SPDES OUTFALL 004

PROPERTY LIMIT

EFFLUENT DISCHARGE PIPE

LIMITS OF RCRA PERMITTED AREA

NOTES:

1. PROPERTY LINES ARE APPROXIMATE.
2. NO DRINKING WATER WELLS EXIST WITHIN 1/4 MILE OF THE FACILITY.
3. THE TREATED EFFLUENT DISCHARGE IS LOCATED AT THE NIAGARA RIVER.
4. 710 TOTAL ACRES.
5. 630 RCRA PERMITTED ACRES.

AREA LOCATION

0 1 2

MILES

GRAPHIC SCALE

DATA SOURCE: 24K USGS TOPO QUAD, NRCS Geospatial Data Gateway

DRAFT

CWM CHEMICAL SERIVCES, LLC
MODEL CITY, NEW YORK

DRAFT ENVIORNMENTAL IMPACT STATEMENT

REGIONAL TOPOGRAPHIC MAP

ARCADIS

FIGURE 3-2

CITY: CLE DIV/GROUP: AIT 40 DB: L.GREENE EAL LD: EAL PIC: WP PM: TM: GNG TR:
MODEL CITY 23725.003
Q:\CWM\ModelCity\RevisionsToDEIS\mxd\FacilityLocationDetail_3-2_DRIv2.mxd - 9/18/2009 @ 9:14:40 AM