

STATE OF NEW YORK  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

X

IN THE MATTER OF THE APPLICATIONS OF  
CWM CHEMICAL SERVICES, LLC Pursuant to Titles 7  
and 11 of Article 27 of the Environmental Conservation  
Law, for required permits and approvals for the RMU-2  
Project in the Towns of Porter and Lewiston, New York

**PETITION FOR FULL  
PARTY STATUS**

Project Application Nos. 9-2934-00022/00225, 9-2934-00022/00231,  
9-2934-00022/00232, 9-2934-00022/00049, and a Hazardous Waste  
Facility Siting Application

X

THIS PETITION is submitted on behalf of Niagara County, the Town and Village of  
Lewiston, and the Village of Youngstown (hereafter, the “Municipal Stakeholders”) in  
accordance with 6 N.Y.C.R.R. § 624.5. The Municipal Stakeholders are municipalities within  
which the proposed RMU-2 Project would be located, or are within close proximity to the project  
site.<sup>1</sup> The following expert reports are incorporated and provided herewith:

M. Resnikoff, Ph.D, Radioactive Waste Management Associates (RWMA), *Review of CWM  
Radioactive Sampling Program In the Proposed RMU-2 Development Areas* (November 2014).

A. Michalski, Ph.D., CGWP, PG, LSRP, Michalski & Associates, Inc., *Report on Groundwater  
Flow and Contamination at Chemical Waste Management, LLC, Model City, New York, and  
Proposed RMU-2 Permitting and Siting Issues* (November 2014).<sup>2</sup>

A. De, Ph.D., P.E., *Report on RMU-2 Project Engineering Issues* (October 2014).

R. Sahu, Ph.D., QEP, CEM, *Report on RMU-2 Project Air Emissions Impacts* (November 2014).

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<sup>1</sup> The Town of Porter, principally hosting the project, is precluded from submitting adverse  
comments or a petition in opposition to the project as proposed under a host benefit agreement with  
CWM.

<sup>2</sup> Drs. Resnikoff and Michalski offer to testify in support of both their expert reports and all  
assertions of fact made in Petitioners’ July 16, 2014 public hearing statement in this matter.

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**I. IDENTIFICATION OF PROPOSED PARTIES AND THEIR OFFICIAL  
REPRESENTATIVES AT THE HEARING**

**Information required by 6 NYCRR Part 624.5(b)(1)**

**Part 624.5(b)(1)(i)**

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**Part 624.5(b)(1)(ii)**

The environmental interest of the Municipal Stakeholders in this proceeding is basic to their role as municipalities, with primary responsibility for the protection of the health, welfare and safety of their citizens and visitors. The Municipal Stakeholders' residents include a substantial number of people who live and work near the site proposed for the RMU-2 landfill project.

**Part 624.5(b)(1)(iii)**

The Municipal Stakeholders' primary interest relating to statutes administered by the Department is in the proper implementation and enforcement of New York's Environmental Conservation Law ("ECL"), Article 1; Article 3; Article 27, Titles 7, 9 and 11; Article 15; Article 19; and Article 70; and the Department's regulations that implement these statutes, specifically 6 NYCRR Parts 200, 201, 202, 208, 212, 231, 360, 361, 373, 608, 617, 621 and 624. To the extent

administered by the New York State Department of Environmental Conservation (“DEC”, “the Department”) , the federal Solid Waste Disposal Act, also called the Resource Conservation and Recovery Act (RCRA), the federal Clean Air Act, the federal Clean Water Act, and the federal Toxic Substances Control Act (TSCA) are relevant to the proposed project because they include environmental permitting programs that apply to the project.<sup>3</sup>

In addition, the State Environmental Quality Review Act (SEQRA), ECL Article 8, governs the environmental review of these applications. Among other things, SEQRA requires a major new project such as this to show that significant impacts on the environment, including impacts to the existing character of the community in which the project is located, have been avoided or reduced as far as is practically possible, and to mitigate unavoidable impacts. Accordingly, the Municipal Stakeholders have a substantial interest in the manner in which the Department carries out its responsibilities under SEQRA and its implementation of the state and federal environmental statutes noted above.

#### **Part 624.5(b)(1)(iv)**

The Municipal Stakeholders are requesting full party status, in opposition to the permits and permit modifications proposed by CWM Chemical Services, LLC (“CWM”) and drafted by the Department.

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<sup>3</sup> The Model City facility is currently permitted under TSCA as a PCB Landfill, exclusively under the jurisdiction of the U.S. Environmental Protection Agency (EPA), and the RMU-2 Project requires EPA’s approval as a new PCB Landfill. Accordingly, permitting under TSCA is outside the scope of this proceeding.

**Part 624.5(b)(1)(v)**

The precise grounds for the Municipal Stakeholders’ opposition to the project proposal are set forth in the remainder of this petition and its exhibits, and the expert reports listed on the first page of the petition. Briefly, Petitioners assert that widespread radioactive contamination would be dispersed from site soils and groundwater were the RMU-2 Project proposal be approved, threatening the environment and public health. In addition, the site would continue to discharge polychlorinated biphenyls (PCBs) from contaminated soils and groundwater. Because PFCBs are among the most toxic substances known, discharge of PCBs into local waterways including the Niagara River threatens the environment and public health. In addition, the proposed project would sited directly over a buried sand and gravel valley that moves contaminated groundwater off site at a much faster rate than the applicant acknowledges, threatening the environment and public health. In addition, CWM’s applications fail to provide basic information required of hazardous waste facility proposals and the applications are therefore inadequate to resolve the issues raised in the Petition in their present form.

The documents, records and exhibits referred to or attached to those reports provide the offers to prove the bases for the Municipal Stakeholders’ issues. In addition, the Municipal Stakeholders offer the testimony of the above-listed experts at the issues conference scheduled in this matter.

**Conclusion**

On the basis of its offers of proof, its identification of substantive and significant issues, and its ability to “make a meaningful contribution to the record regarding a substantive and

significant issue raised by another party,” Part 624.5(d)(2)(ii), the Petitioners respectfully request they be granted full party status as one combined party, and that the issues identified herein be certified for adjudication.

## II. BRIEF FACTUAL BACKGROUND

For decades, Niagara County has opposed continued siting of a hazardous waste disposal facility because the County has disproportionately shouldered the burden of both closed and operating hazardous waste sites in New York,<sup>4</sup> and because doing so has adversely affected the County’s potential for developing non-toxic economically and socially beneficial enterprises and communities. These concerns are in addition to concerns regarding the inherent risks of this type of facility, and the demonstrable risks of expanding this facility. “Volatile organic compounds (VOCs) and PCBs are the hazardous constituents, which are most commonly observed in the soil and groundwater at the facility.”<sup>5</sup> Accordingly, “NYSDEC has determined that given the magnitude of contamination present at the facility, cleanup of the soils and groundwater beneath the facility to pre-industrial use conditions is not feasible at this time.”<sup>6</sup> Given the severity of groundwater contamination at the site, and assuming corrective measures and environmental

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<sup>4</sup> According to the NYS Hazardous Waste Facility Siting Plan, Western New York, DEC’s Region 9, hosts more hazardous waste treatment, storage and disposal facilities than any other region. DEC, *New York State Hazardous Waste Facility Siting Plan* (October 2010), ch. 6, Figs. 6-2, 6-3 and 6-4, available at <<http://www.dec.ny.gov/chemical/9054.html>> (hereafter, “2010 Siting Plan”). In terms of volume of waste managed, most of these Region 9 facilities are in Niagara County, with CWM dwarfing all others. *Id.*, Appx. C. In addition, “there are 132 contaminated sites in Niagara Count, New York, among the highest densities of inactive facilities the Great Lakes Basin.” Thomas H. Fletcher, FROM LOVE CANAL TO ENVIRONMENTAL JUSTICE: THE POLITICS OF HAZARDOUS WASTE ON THE CANADA-U.S. BORDER (2003), 129 (citations omitted).

<sup>5</sup> CWM, *Site Management Plan* (February 2014), 8.

<sup>6</sup> *Id.*, 9.

monitoring are maintained in perpetuity, as required under CWM's current operating facility permit, DEC has determined to "limit the use and development of the site to industrial and commercial uses only."<sup>7</sup> As discussed at greater length in Section B, *below*, the New York State Department of Health has found that radiological contamination of the site is so severe that major excavation must be restricted, but "industrial or commercial structures" are permissible, limited to "slab construction."<sup>8</sup>

**1. The community has consistently identified adverse economic impacts as the basis for its opposition**

Commenting on CWM's 2008 proposal, since approved, to expand the operating RMU-1 landfill to add ten feet of permitted airspace, Niagara County's County Manager stated, "Hosting a large toxic waste landfill poses an economic development challenge" because "[t]he negative stigma associated with such sites deters private investors from locating their businesses in the Lewiston-Porter area" and is "counterproductive to sustainable and attractive growth."<sup>9</sup> In his comments, the Town of Lewiston Supervisor agreed, noting there are "numerous Town Board resolutions" adopting "oppos[ition to] any increase to hazardous waste landfill capacity, as it is counterproductive to economic development and environmental goals and plans of the

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<sup>7</sup> *Id.*, 21-22.

<sup>8</sup> As stated in a 1974 NYSDOH Order, *cited below* at footnote 132.

<sup>9</sup> Gregory D. Lewis, Niagara County Manager, Letter to ALJ Molly McBride, NYSDEC Office of Hearings & Mediation Services, *Re: Permit Modification to RMU-1, Permit No. 9-2934-00022/00097*, January 29, 2009.



community.”<sup>10</sup> The community’s State Assemblywoman Francine DelMonte at that time noted in her comment letter, “All local municipalities empowered to do so are on record as opposing any increase to hazardous waste disposal capacity, as it represents a material conflict to their environmental and economic goals.”<sup>11</sup>

## **2. The 2010 Siting Plan finds no need for RMU-2**

As long ago as 1987, the State Legislature recognized the community’s extraordinary burden by amending provisions of the state’s Environmental Conservation Law (“ECL”) in ways intended to single out commercial hazardous waste landfills by making their siting and expansion more difficult, and by requiring that DEC prepare a state wide plan for siting hazardous waste facilities, directing that siting and expansion proposals be consistent with the plan.<sup>12</sup> These changes closed a loophole in the former ECL § 27-1105(1)(d), enacted in 1982, which exempted from the hazardous waste siting requirements “facilities located at the site of an existing facility, the operation of which is substantially similar to the existing facility with respect to the mode of waste management and the type and quantity of hazardous waste being managed.” In 1987 the Legislature added, after the word, “facilities,” the following: “other than land disposal facilities.”<sup>13</sup>

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<sup>10</sup> Fred M. Newlin II, Town Supervisor, Town of Lewiston, Letter to ALJ Molly McBride, *Re: Permit Modification to RMU-1, CWM Chemical Services, LLC*, January 27, 2009.

<sup>11</sup> Francine DelMonte, Member of the Assembly, Letter to ALJ Molly McBride, January 28, 2009, p. 2.

<sup>12</sup> L. 1987, c. 618, adding, *inter alia*, ECL §§ 27-0105 and 27-1102, and modifying ECL § 27-1105(1)(d).

<sup>13</sup> ECL § 27-1105(2)(d).

Although CWM submitted its application for approval of the RMU-2 Project proposal in 2003, by 2005 DEC had still not developed and issued the siting plan and guidance required under the 1987 legislation, prompting the Legislature to once again amend the ECL to preclude DEC action on hazardous waste landfill expansion proposals until after a state siting plan is adopted. The purpose of this change, according to sponsors' memos in both Houses, was to require "development of a [State Siting] Plan in order to determine the hazardous waste disposal needs of the state and to determine whether proposed facilities were consistent with that Plan for the purposes of the siting process."<sup>14</sup>

In 2010, DEC finally issued the required siting plan. The 2010 Siting Plan includes an investigation into the nature of the market for hazardous waste disposal services, concluding that this market is national, and transportation of hazardous waste to out-of-state disposal facilities is an insignificant portion of the expense of managing hazardous waste for New York generators of such waste.<sup>15</sup> Indeed, the Plan finds that the majority of the hazardous waste generated in New York by a wide margin is exported to out-of-state facilities for treatment, storage and ultimate disposal. Accordingly, the Plan concludes there is no need for additional hazardous waste disposal capacity in the State for the foreseeable future.<sup>16</sup>

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<sup>14</sup> Bill Memo to A.8484 (2005). *See also* Bill New York State Senator George Maziarz, Sponsor's Bill Memo for Senate Bill No. 5564 (2005) (identical language).

<sup>15</sup> 2010 Siting Plan, 6-2, 6-7.

<sup>16</sup> 2010 Siting Plan, at 6-9 and 9-3.

### III. LEGAL BACKGROUND: THE APPLICANT'S BURDEN OF PROOF

#### A. Under 6 NYCRR Part 624

The Department's hearing rules are provided at Part 624 of the Department's regulations. Under the rules, "The applicant has the burden of proof to demonstrate that its proposal will be in compliance with all applicable laws and regulations administered by the department."<sup>17</sup> Therefore, CWM has the burden of proof throughout this proceeding.

The burden of proof is relaxed for a permittee seeking to renew a permit. In that case, "[a] demonstration by the permittee that there is no change in permitted activity, environmental conditions or applicable law and regulations constitutes a prima facie case for the permittee."<sup>18</sup> However, this provision is not applicable to this proceeding because CWM is not seeking to renew a permit.<sup>19</sup>

#### B. Under 6 NYCRR Part 373

Under Part 373 of the Department's regulations, CWM must meet its burden to "demonstrate that the facility will have no significant adverse impact on the public health, safety or welfare, the environment and natural resources."<sup>20</sup> Thus, for a hazardous waste transfer, storage and disposal facility (TSDF) subject to Part 373, the burden of demonstration is substantially higher than it is under the State Quality Review Act, (SEQRA, 6 NYCRR Part 617),

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<sup>17</sup> 6 NYCRR § 624.9(b)(1).

<sup>18</sup> 6 NYCRR § 624.9(b)(3).

<sup>19</sup> In addition, the Department's permitting procedures provide: "There are no minor hazardous waste management facility projects." 6 NYCRR § 621.4(n)(2).

<sup>20</sup> 6 N.Y.C.R.R. § 373-1.1(e)(1)(iii).

which requires that project approval be supported only by a demonstration that the project proposal “avoids or minimizes adverse environmental impacts to the maximum extent practicable . . . by incorporating as conditions to the decision [to approve] those mitigative measures that were identified as practicable.”<sup>21</sup>

As discussed at length at various parts of this Petition and its supporting materials, CWM is unable to meet this burden for a number of reasons. First, the site, including all areas planned for excavation,<sup>22</sup> suffers from a history of mismanagement of radiological and chemical waste dumping and transport. A copious amount of historical information is available indicating where these wastes were buried or moved, but CWM has made no effort to utilize this information. A total of seven contaminated waste management units must be remediated (“clean closed”) before construction can commence for the RMU-2 project as proposed, according to the Fact Sheet provided by the Department.<sup>23</sup>

Second, as detailed in Dr. Michalski’s expert report, provided herewith, the CWM site is not hydrogeologically secure. Regulated chemical constituents (volatile organic compounds (VOCs) and DNAPL) downgradient from the proposed landfill substantially exceed the

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<sup>21</sup> 6 NYCRR § 617.11(d)(5).

<sup>22</sup> In addition to the RMU-2 landfill and Fac Pond 5, site preparation would include “[r]emoval and relocation of existing utilities and communication services.” DEIS, 31. All utilities for the existing Emergency Response Garage, located west of the RMU-1 landfill would be removed. DEIS, 36. Utilities encountered during construction include underground sewers.

<sup>23</sup> *New York State Department of Environmental Conservation Fact Sheet for CWM Chemical Services, L.L.C. Proposed Landfill Project, Model City, New York, Niagara County* (May 5, 2014), II.C (hereafter, “*Fact Sheet*”).

corrective action trigger, set at 23 mg/l total VOCs for this site.<sup>24</sup> Since the hazardous constituents detected in groundwater would be the same as those that could be released from RMU-2, the site cannot meet minimum Part 373 requirements for the ability to distinguish releases to groundwater by the proposed units from releases by other sources.<sup>25</sup> To some extent, this has been acknowledged by the Department:

In some locations (Landfills 2, 3, 4/East West Salts), it is not possible to conclusively attribute the presence of groundwater contamination to waste management activities at the regulated units, nor is it possible to rule out those units as potential sources of the contamination. In other locations (Landfill 7, 10, 11, RMU-1), the observed groundwater contamination has resulted from waste management activities that occurred before the units were constructed and, hence, is not attributable to releases from them.<sup>26</sup>

As further detailed in Dr. Michalski's report, these deficiencies cannot be rectified without comprehensively revising CWM's model of the site hydrogeological setting, as the model on which the Part 373 application is based is seriously flawed, and contradicted by independent investigations.

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<sup>24</sup> Michalski expert report, at 19-20. The calculated response trigger for this site is identified at CWM, Part 373 Applic., Reference Documents, *Groundwater Sampling and Analysis Plan*, 17.

<sup>25</sup> See generally, 6 NYCRR § 373-2.6(h). Specifically, CWM must meet its burden to demonstrate that it can provide a groundwater monitoring program covering the RMU-2 Project that is capable of detecting contamination that has "migrated from the waste management area to the uppermost aquifer." 6 NYCRR § 373-2.6(h)(1)(iii).

<sup>26</sup> CWM Sitewide Permit, Mod. VIII, 1. USACE concurs: "Chemical contamination in the upper groundwater water-bearing zone is present on both sides of the boundary of the Waste Management property and the NFSS. Analysis of potential source and localized direction of flow was inconclusive." USACE, *LOOW & NFSS Frequently Asked Questions* (question D.4), available at <http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/NiagaraFallsStorageSite/NFSSLOOWFAQs.aspx#D4>.

*C. Under DEC Decisional Law*

In addition to the high burden of demonstration the applicant faces under Part 373, the Department imposes a general burden on permit applicants to provide, before approval of applications can be considered, a reasonable assurance that its project proposal is capable of complying with all applicable design plans and specifications. The purpose of “submission of detailed plans and specifications for construction of the proposed facility” is to “demonstrat[e] specific means for meeting the standards of section 360.8 of Part 360 [governing non-hazardous waste landfills in Long Island].”<sup>27</sup>

What is true regarding non-hazardous solid waste landfills under Part 360 is also true regarding hazardous solid waste landfills.<sup>28</sup> Perhaps more importantly, the rule announced by the Commissioner in *Orange County Department of Public Works*, quoted above, reflects a longstanding policy by the Department to require applicants for major permits to provide *in the application* a reasonable assurance that the project proposal will comply with all applicable design and operating standards. This policy was invoked in a 2010 ALJ ruling, affirmed by the Commissioner, that compliance with numerical noise standards for landfills under Part 360 should be adjudicated:

the need to adjudicate noise impacts for an expansion of the

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<sup>27</sup> Decision of the Commissioner, *In the Matter of the Application of The Orange County Department of Public Works for Permits to Construct and Operate a Solid Waste Management Facility*, DEC No. 3-3330-37-3, 1988 N.Y. ENV LEXIS 28, \*11 (July 20, 1988) (adopted ALJ report, holding that grounds for permit denial include “a number of deficiencies in the application concerning the design and engineering of the Project and the hydrogeology of the Site”).

<sup>28</sup> Part 360 is applicable to facilities subject to Part 373. 6 NYCRR § 373-1.1(b)(2).

Sullivan County landfill was not eliminated by a permit condition requiring annual noise testing once operations commence because DEC needed a reasonable assurance that the expansion would comply with the applicable noise standard before it could be permitted. If, as it turned out, compliance was not maintained, I noted that the County risked a shutdown of the landfill or, at the least, further restrictions on its operations, which, even if they were imposed for a short period, would be disruptive to those who depend on the facility. For that reason, I concluded, Sullivan County should not be allowed to proceed at its own peril, in the absence of a reliable understanding of potential environmental impacts.<sup>29</sup>

Previously, the Commissioner advised that permits should not be issued without a finding that the applicant has provided a “reasonable assurance of compliance” based on “adequate supporting documentation.”<sup>30</sup>

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<sup>29</sup> Rulings of the Administrative Law Judge on Issues and Party Status, *In the Matter of the Application of the Sullivan County Division of Solid Waste for permits for the Phase II expansion of the County Landfill in the Village of Monticello, Sullivan County*, No. 3-4846-00079/00027, 2007 N.Y. ENV LEXIS 2, \*57 (January 18, 2007). *See also* Rulings of the ALJ, *In the Matter of the Application of Chemung County for modification of the Part 360 permit for its municipal solid waste landfill*, No. 8-0728-00004/00013, 2010 N.Y. ENV LEXIS 60, \*48-49 (September 3, 2010), affirmed as to the noise issue by Decision of the Commissioner, same matter, August 4, 2011 (discussing ALJ Rulings on Issues and Party Status, *In the Matter of the Application of the Sullivan County Division of Solid Waste for permits for the Phase II expansion of the County Landfill*, No. 3-4846-00079/00027, 2007 N.Y. ENV LEXIS 2, \*56-57 (January 18, 2007) (“the Department needs a reasonable assurance that the landfill expansion will comply with applicable operating standards, including those governing noise, before it is permitted”), affirmed by Decision of the Commissioner, same matter, 2008 N.Y. ENV LEXIS 20 (March 28, 2008)). *See also* Decision of the Deputy Commissioner, *Matter of Erie Boulevard Hydropower L.P.*, 2006 N.Y. Env. LEXIS 2951127, \* 7 (Oct. 6, 2006) (noting that the Department must find that “there are reasonable assurances that the activity will be conducted in a manner which will not violate applicable water quality standards” in order to grant a Water Quality Certificate) (citing 40 C.F.R. Section 121.2(a)(3); Rulings of the ALJ, *In the Matter of the Application of Entergy Indian Point Unit 2, LLC and Entergy Indian Point Unit 3, LLC for a Water Quality Certificate*, DEC Nos. 3-5522-00011/00030, 3-5522-00105/00031, 2010 N.Y. ENV LEXIS 86, \*1-2 (December 13, 2010) (citing *Matter of Erie Boulevard Hydropower L.P.* for the requirement that applications provide a reasonable assurance of compliance).

<sup>30</sup> Final Decision of the Commissioner, *In the Matter of the Application of Tecrone, Inc. for a State Pollutant Discharge Elimination System Permit for a brine injection well in the Town of Clymer*,

The Department has once approved a permit “pending the effective availability of superior disposal technologies” but only after “every reasonable assurance that, pending attainment of the future goals noted above, the ability to comply with the relevant environmental criteria has been shown.”<sup>31</sup> In another landfill case the Department has allowed “conceptual” proposals for mitigating measures to support a finding of “reasonable assurance of care for the environment,” but only where “environmental impacts of the proposals as presented conceptually . . . would be negligible.”<sup>32</sup>

CWM cannot meet the Department’s assurance of compliance policy not only because it must characterize and “clean close” several areas prior to construction, and has yet to demonstrate it can do so, and not only because it cannot demonstrate the groundwater beneath the proposed RMU-2 landfill (and proposed Fac Pond 5) can be adequately monitored under Part 373, but also because, as Dr. De demonstrates in his report, provided herewith, several basic design features of the RMU-2 landfill and Fac Pond 5 liner systems are flawed. Specifically, Dr. De shows that, as currently designed, these waste management units would penetrate through the clay substrate into the protected aquifer beneath these units. The resulting water uplift pressure risks a landfill slope failure. In addition, both the RMU-2 landfill and Fac Pond 5 would bottom well below the groundwater level, disqualifying both for approval.

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*Chautauqua County*, No. 90-86-0513 SPDES Permit Appl. No. NY0202975, 1988 N.Y. ENV LEXIS 65, \*20-21 (December 5, 1988).

<sup>31</sup> Final Decision of the Commissioner, *In the Matter of the Application of Newco Waste Systems, Inc.*, (no number), 1982 N.Y. ENV LEXIS 45, \*4 (December 16, 1982) (hazardous waste landfill).

<sup>32</sup> Final Decision of the Commissioner, *In the Matter of the Applications and Requests of Onondaga County [etc.]*, (no number), 1981 N.Y. ENV LEXIS 23, \*6 (August 6, 1981).



#### *D. Under SEQRA*

The New York State Environmental Quality Review Act, N.Y. Envtl. Conserv. L. § 8-0101 et seq., and its implementing regulations, 6 N.Y.C.R.R. § 617 et. seq., (“SEQRA”, or “Part 617”), requires a comprehensive disclosure and assessment of potential impacts of a proposed project on the environment. SEQRA mandates that “the protection and enhancement of the environment, human and community resources shall be given appropriate weight with social and economic considerations in public policy.”<sup>33</sup>

SEQRA’s substantive requirements have been often stated, and are based on the widely accepted test in *H.O.M.E.S. v. New York State Urban Dev. Corp.*: the lead agency (here, the Department) and involved agencies (including the Siting Board) must identify the relevant areas of potential impact, take a “hard look” at each, and provide a reasoned elaboration of the basis for their decisions approving or disapproving a proposed project, including supporting documentation.<sup>34</sup> A Draft Environmental Impact Statement (“DEIS”) is an “initial statement” that “provides a means for agencies, project sponsors and the public to systematically consider significant adverse environmental impacts, alternatives and mitigation.”<sup>35</sup> The level of detail required in a DEIS must “reflect[ ] the severity of the impacts and the reasonable likelihood of their occurrence.”<sup>36</sup> To enable agencies reviewing a project proposal to satisfy the hard look

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<sup>33</sup> ECL § 8-0103(7).

<sup>34</sup> 69 A.D.2d 222, 232, 418 N.Y.S.2d 827, 832 (4th Dep’t 1979). *Cf.* since revised Part 617.7(b) (adopting the same standard).

<sup>35</sup> 6 NYCRR § 617.2(n).

<sup>36</sup> 6 NYCRR § 617.9(b)(5)(3).

standard, a DEIS must address “applicable and significant” subjects, including “short-term and long-term impacts, cumulative impacts and other associated environmental impacts,” and inherent adverse impacts, that is, “impacts that cannot be avoided or adequately mitigated if the proposed action is implemented.”<sup>37</sup> For those adverse impacts that can be avoided or mitigated, the measures to do so must be described.<sup>38</sup> Finally, alternatives to the project proposal must be provided, and the “no action alternative” (no approval) must be considered.<sup>39</sup> “For private project sponsors, . . . [s]ite alternatives may [but need not] be limited to parcels owned by, or under option to, a private project sponsor.”<sup>40</sup> Accordingly, CWM’s burden under SEQRA includes providing sufficient information in the DEIS to enable reviewing agencies and the public to fully understand the potential for adverse impacts, including the specific kinds of impacts identified above.

While Petitioners believe additional details required in CWM’s permit applications in others areas are also seriously deficient, information on air emissions is virtually nonexistent. CWM has applied for approval to permit air emissions from its facility including the RMU-2 Project, but according to the Department’s *Fact Sheet*, CWM does not want its air permit application to be considered in this proceeding.<sup>41</sup> Nevertheless, toxic air emissions are certainly

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<sup>37</sup> 6 NYCRR §§ 617.9(b)(5)(3)(iii)(a), (b).

<sup>38</sup> 6 NYCRR §§ 617.9(b)(5)(3)(iv).

<sup>39</sup> 6 NYCRR §§ 617.9(b)(5)(3)(v).

<sup>40</sup> *Id.*

<sup>41</sup> *Fact Sheet*, II.C.5.

among the potential adverse impacts that can be expected from the proposed RMU-2 Project. Such impacts will result from dispersal of contaminants into the ambient air at times of construction, which extend through the life of the project; and from toxic emissions generated by various units and equipment, including tanks, valves, process buildings, containers, surface impoundments (fac ponds), and landfills, whose emissions should be estimated. At a minimum, potential emissions from the proposed RMU-2 landfill should be added to these in a cumulative impacts analysis provided in the DEIS.

The DEIS fails to provide such information. Instead, it notes that emissions from existing and proposed facility units and equipment are either exempt from permitting or are, individually, “de minimis.” However, as Dr. Sahu shows in his report, provided herewith, combined emissions could be very significant and, if properly estimated, would likely make permitting under Title V of the federal Clean Air Act applicable. Title V is designed to collect all applicable emissions control requirements under any of several programs under the Act into one operating air permit. We would like to comment on CWM’s emissions estimates and calculations once these are provided, particularly with regard to the possible applicability of control requirements under the Clean Air Act. However, SEQRA requires in the first instance much more detail in CWM’s discussion of potential emissions of air toxics than is provided in the DEIS. According to Dr. Sahu’s report, regardless of whether specific air permitting programs apply to its facility or project proposal, CWM has failed to meet its burden to provide in the DEIS a sufficient level of information to allow the Department or the Siting Board to determine whether adverse impacts to the local air can or would be avoided or mitigated to the maximum extent CWM could

practically achieve.<sup>42</sup>

*E. Under 6 NYCRR Part 361*

Under the State siting program for hazardous waste facilities provided under Part 361, CWM faces several burdens in addition to those it faces under Part 373 of the Department's regulations, DEC decisional law, and SEQRA. In a decision dismissing a challenge to New York's hazardous waste facility siting law, DEC took the position that "the legislature . . . determined that given the serious implications of expanding hazardous waste facilities, two independent bodies (the DEC and the siting board) should evaluate the necessity for such expansion."<sup>43</sup>

This Petition does not recommend specific conclusions for the risk-based factors that the Industrial Hazardous Waste Facility Siting Board constituted pursuant to ECL § 27-1105 ("Siting Board") may wish to consider. The Petitioners believe that the facts we offer to prove, preliminarily set forth in the specific grounds for opposition, *below*, are amply sufficient to support denial of a certificate of environmental safety and public necessity based on concerns with "human health and environmental protection."<sup>44</sup> A certificate should be denied based on the

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<sup>42</sup> In order to approve a project under SEQRA, both agencies must, upon reviewing the DEIS and all supporting materials, "certify that consistent with social, economic and other essential considerations from among the reasonable alternatives available, the action is one that avoids or minimizes adverse environmental impacts to the maximum extent practicable, and that adverse environmental impacts will be avoided or minimized to the maximum extent practicable by incorporating as conditions to the decision those mitigative measures that were identified as practicable." 6 NYCRR § 617.11(d)(5).

<sup>43</sup> *Cecos International, Inc. v. Jorling*, 706 F. Supp. 1006, 1028, 1989 U.S. Dist. LEXIS 1698, \*68 (N.D.N.Y. 1989) (describing DEC's position), *affirmed*, 895 F.2d 66 (2d Cir. 1990).

<sup>44</sup> 2010 Siting Plan, at 9-4 (noting that the State's delegated hazardous waste management program must be based on such concerns to avoid "becoming inconsistent with federal requirements

merits of the issues raised here, together with the absence of need for more land disposal space, which heightens the burden on CWM compared to past siting board decisions.

There have been very few siting board decisions for hazardous waste landfills. In 1990 a siting board denied the siting certificate required under Part 361 to CECOS International (also located in Niagara County) on the basis of hydrogeological concerns.<sup>45</sup> That denial relied on finding the evidence for a need for additional land disposal capacity was “ambivalent,” principally because no final State siting plan was then available, and because CWM’s SLF-12 landfill at Model City had been approved in 1989.<sup>46</sup>

CWM’s RMU-1 landfill received a siting certificate and Part 373 permit in 1993 by a divided siting board, the minority issuing a separate opinion implying that, because CWM operates three other hazardous waste landfills on sites as large or larger than Model City, insufficient need was shown for RMU-1.<sup>47</sup> The majority supported its decision to issue the certificate by specifically relying on a finding that the need for RMU-1 was “critical”:

The proposed RMU-1 facility constitutes a critical environmental management

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pursuant to 40 CFR 271.4(b)).

<sup>45</sup> See Fletcher, *supra* note 4, at 142 (discussing the CECOs denial in 1990).

<sup>46</sup> Final Decision of the Commissioner, *In the Matter of the Application of CECOS International, Inc.*, DEC No. 90-85-0551, 1988 N.Y. ENV LEXIS 34, \*39-43 (NYSDEC February 6, 1990). Note that, in that case, “None of the intervening parties produced any witnesses or presented a direct case on the issue of need.” *Id.*, at \*6.

<sup>47</sup> Final Decision of the Siting Board, *In the Matter of the Application of CWM CHEMICAL SERVICES, INC. for permits to construct and operate a 47.1 acre hazardous waste landfill at 1550 Balmer Road, Model City, New York*, DEC No. 9-2934-00022/00036-0, 1993 N.Y. ENV LEXIS 50, \*16-17 (December 10, 1993) (“no evidence was presented to show that either or all of these sites could not handle the waste materials expected to come to the proposed site”).

resource for New York State. Under federal law, each state must demonstrate the continuing capacity to manage all of the hazardous waste generated within its borders. New York State has no other commercial land burial facility for hazardous waste and therefore this project is needed if the State is to be able to meet the requirements of the Superfund Amendments and Reauthorization Act (“SARA”) (Pub. L. No. 99-499) for hazardous wastes that cannot be disposed of through other means. . . . Because this new resource is so valuable, it is crucial that its useful life be extended as long as possible.<sup>48</sup>

Because DEC has now issued a siting plan that concludes New York has no need for additional commercial land disposal facilities like CWM’s, the company has an additional burden, compared to past siting decisions, to demonstrate why the facility should not be allowed to close. The 2010 Siting Plan advice regarding the Siting Board’s determination as to need is based specifically on the finding that hazardous waste generators in New York utilize a national market for disposal services, and that nationally there is currently no shortfall in capacity to manage New York’s hazardous wastes.<sup>49</sup> Accordingly, even if the CWM facility were to close, New York hazardous waste generators will for the foreseeable future still be able to manage their waste lawfully.

Because, as a matter of law and policy, additional hazardous waste landfill capacity *in the State*, including RMU-2, is not necessary, the Siting Board in this case may dispense with the scoring approach otherwise required under Part 361. As DEC Commissioner Jorling noted in the

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<sup>48</sup> *Id.*, \*11-12.

<sup>49</sup> 2010 Siting Plan, at 6-2 (“The present national and international market for commercial hazardous waste management demonstrates that state boundaries are not the salient factor in determining where a generator will ship a particular waste.”). *See also id.*, at 6-7 (“... there may not be a meaningful market for new facilities in the State simply because of the availability of hazardous waste management services elsewhere”).

*CECOS* case:

The Siting Board is directed by 6 NYCRR § 361.4(f)(4) (also § 361.7[c][4]) to deny a certificate of environmental safety and public necessity if “the board finds that the facility is not necessary or is otherwise not in the public interest.” ECL § 27-1105(3)(f) directs the Siting Board to deny certificates for facilities which are not consistent with or are not identified as necessary in the final statewide siting plan, upon final adoption of such plan, or if the board finds the facility is not otherwise necessary.<sup>50</sup>

Here, the RMU-2 Project is not consistent with the 2010 Siting Plan, which in addition to finding there is no need for additional land disposal capacity in New York for at least another 20 years, restates the State’s policy establishing a hierarchy of hazardous waste management methods, providing that land disposal is least favored. ECL § 27-1105.<sup>51</sup> Accordingly, CWM faces the heavy burden to demonstrate its proposal is “otherwise . . . in the public interest.” 6 NYCRR § 361.4(f)(4). A commercial interest is insufficient to carry that burden.

#### IV. SPECIFIC GROUNDS FOR OPPOSITION

The following discussions are based on information provided in the CWM application materials identified in the Department’s *Fact Sheet*; numerous facility reports, plans and agency correspondence not included in the application materials but directly relevant thereto; and expert reports provided herewith and identified below as appropriate. These sources of information may not be sufficient to fully prepare for the issues conference expected in this proceeding.

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<sup>50</sup> 1988 N.Y. ENV LEXIS 34, at \*29.

<sup>51</sup> 2010 Siting Plan, at 2-9 (“the least desired practice is the land disposal of untreated industrial hazardous wastes”).

Accordingly, Petitioners reserve their right to move for more time to prepare for the issues conference.<sup>52</sup>

## **A. POOR HYDROGEOLOGY MAKES THE SITE UNACCEPTABLY INSECURE**

### **1. Summary of the Issues**

The application is seriously deficient regarding the information provided on the site hydrogeological setting. Basic information on this subject required of Part 373 applications is missing or erroneous.

In general, the most transmissive units in the uppermost aquifer beneath the proposed RMU-2 footprint, as defined in the Part 373 regulations, and its immediate vicinity have not been recognized, and data for an actual groundwater flow direction and rate in the detection zone have not been provided. These data are essential in light of the close proximity of RMU-2 to RMU-1 and several closed landfills on site, as the applicable regulations require groundwater monitoring capable of early detection of releases from each waste management unit. Because CWM has failed to provide adequate information on groundwater flow direction and rate, it has not met its burden to demonstrate it can adequately monitor releases of hazardous constituents to groundwater from RMU.<sup>53</sup>

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<sup>52</sup> See 6 NYCRR §§ 624.4(b)(1), 624.5(b)(5).

<sup>53</sup> The application's "completeness" in the DEC permitting context simply means that an application is ready for substantive review. See 6 NYCRR § 621.3(a). It does not mean that all of the required information has been provided and the permittee has demonstrated compliance with the applicable regulatory criteria. Accordingly, a completeness determination does not preclude intervenors from raising as substantive and significant issues the ability of the application to demonstrate that the proposed Project will comply with all applicable requirements, and the adequacy of the information provided in the application and its supporting materials.



CWM has also failed to provide sufficient support for the assertion in its Part 361 Application that the RMU-2 Project would be sited on “hydrogeologically suitable land.”<sup>54</sup> Beneath the Central Area and the RMU-2 landfill footprint, a highly transmissive east-west buried sand and gravel valley gouged from the bedrock by glacial advances provides a substantial flow to the west.<sup>55</sup> CWM’s RMU-2 applications obscure past recognition of this feature of the site.

In 1977, Wehran Engineering (for Chem-Trol Pollution Services) documented the presence of a buried alluvial sand and gravel channel running east-west in the eastern and central portions of the Model City site, finding this channel is the most permeable unit within the site hydrogeological setting. In October 1984 Waste Management acquired SCA Chemical Services and soon thereafter hired Golder Associates to review the then-accepted hydrogeological characterization of the site. The presence of a highly transmissive linear aquifer in this area would preclude landfill development in that area.

In 1985, Golder incorrectly merged this sand and gravel unit into another site groundwater bearing zone known as a Glaciolacustrine Silt and Sand (GSS) aquifer, finding that the aquifer’s permeability is generally sufficient to qualify the eastern and central portions of the Model City site for landfill development. However, the underlying site hydrogeological data did

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<sup>54</sup> Part 361 Applic., 8.

<sup>55</sup> See Michalski expert report, pp. 5, Fig. 2; 9, Fig. 5; and Ex. 1. The east-west alignment of this buried valley coincides with the northern boundary of Fac Pond 3, where deep aquifer wells R213D, R214D and R215D are located. *Cf. id.*, Ex. 7A. As Dr. Michalski notes, hydraulic conductivity values greater than  $1 \times 10^{-3}$  cm/s have been measured in these wells. *Id.*, 18-19 (*citing* Golder (2010), Table 3, included in the Michalski report as Exhibit 10).

not change.

The 1985 Golder model, on which the currently proposed Part 373 application is based, utilizes regional groundwater flow direction, which is to the north, and median values for the thickness of the overlying clay aquitard, obscuring wide variations in the thickness of the clay in the eastern and central portions of the site, and avoiding altogether evidence of the highly transmissive localized buried sand and gravel valley that runs through the RMU-2 landfill footprint.

In 1993 a RCRA Facility Investigation (RFI) was completed by Golder utilizing the new model to support a corrective measures plan addressing serious groundwater contamination in the Central Area. However, the 1993 model, on which the RMU-2 Project applications are based is erroneous, and fails to address serious groundwater contamination that has migrated from the Central Area.

CWM also asserts that the landfill design “exceed[s] USEPA requirements in the final rule (Federal Register, Volume 57, No. 19) with respect to hazardous waste landfill liner system design.”<sup>56</sup> However, this assertion is clearly in error. At this site, groundwater historically reaches near the surface, and discharges regularly to surface drainage channels.<sup>57</sup> As we offer to demonstrate through the expert report and testimony of Dr. Anirban De, the proposed subgrade elevations for the liners can be expected to result in excessive water uplift pressures below the

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<sup>56</sup> Part 361 Applic., 9.

<sup>57</sup> Cf. CWM, Site Management Plan (February 2014), 6 (“there is a near surface-water table in the Upper Tills”).

liner system for both the RMU-2 landfill and proposed Fac Pond 5, clearly failing to meet EPA minimum requirements for hazardous waste landfill liner system design.<sup>58</sup>

In addition, the site fails to meet EPA requirements for a TSCA (PCB) landfill, which include separating the bottom of the landfill liner from the upper reach of groundwater by 50 feet of unsaturated soil.<sup>59</sup> Accordingly, CWM will need to obtain a waiver from the 50-foot separation requirement. This requires additional demonstrations not provided with the Part 373 or 361 applications.

The Department has denied a landfill application on grounds of poor hydrogeology in a case with (as we offer to prove) parallel facts:

The general stratigraphy of the site consists of the low permeability silt/clay unit overlying the high permeability sand/gravel unit, which overlies the bedrock. In significant portions of the Site, however, . . . the silt/clay unit is absent or appears only as thin lenses interbedded with the sand/gravel. The water-bearing sand/gravel unit is therefore considered semi-confined by the low permeability silt/clay unit which acts as an aquitard. In a large area in the eastern portion of the Site, the sand/gravel unit is at the surface and extends all the way down to the bedrock to a depth of about 80 feet. In the eastern portion of the Site the sand/gravel unit is also in contact with the Wallkill River bed and banks. The silt/clay unit reaches its maximum thickness of over 60 feet in the extreme northern and southern ends of the Site, and is generally absent or less than 10 feet thick through the hilly center of the Site on an east-west axis.<sup>60</sup>

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<sup>58</sup> Cf. 57 Fed.Reg. 3462 (1992), at sec. IV.B.2. (“Double liner systems must be constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including status [sic; static] head and external hydrogeologic forces) . . . The liners must be placed upon materials capable of providing support to the liners and resistance to pressure gradients above and below the liners to prevent failure of the liners due to settlement, compression, or uplift.”).

<sup>59</sup> 40 CFR § 761.75(b)(3).

<sup>60</sup> Decision of the Commissioner, *In the Matter of the Application of The Orange County Department of Public Works for Permits to Construct and Operate a Solid Waste Management Facility*,

This Decision concludes by suggesting a re-application for a landfill at a more hydrologically favorable location on the site should be considered.<sup>61</sup>

## **2. Failure to correctly identify ground water flow direction and rate**

Operators of a hazardous waste facility must protect the uppermost aquifer beneath the facility property. “[L]ower aquifers that are hydraulically interconnected” with “the geologic formation nearest the natural ground surface that is an aquifer” together constitute the regulatory “uppermost aquifer.”<sup>62</sup> Part 373 applications must identify the “ground water flow direction and rate” in the “uppermost aquifers” beneath the facility property, “and the basis for such identification (i.e., the information obtained from hydrogeologic investigations of the facility area).”<sup>63</sup> However, CWM’s application relies on the regional ground water flow direction, and groundwater calculations are based on “a geometric mean” value for hydraulic conductivity within the “Glaciolacustrine Silt/Sand” aquifer unit beneath the entire Model City site.<sup>64</sup> According to CWM, this hydrostratigraphic unit “is the most permeable unit and forms an

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DEC No. 3-3330-37-3, 1988 N.Y. ENV LEXIS 28, \*59-60 (July 20, 1988) (adopted ALJ report, Findings of Fact #44).

<sup>61</sup> *Id.*, at \*11 and \*102.

<sup>62</sup> 6 NYCRR § 370.2(b)(210).

<sup>63</sup> 6 NYCRR § 373-1.5(a)(3)(ii).

<sup>64</sup> DEIS, 60.

uppermost, confined<sup>65</sup> aquifer beneath the Model City Facility.”<sup>66</sup> However, reliance on regional and mean groundwater flow values fails to provide accurate information on the ground water flow direction and rate beneath the RMU-2 footprint.

As shown in the accompanying Michalski expert report, the presence of the buried alluvial valley beneath the RMU-2 footprint is causing the groundwater flow to be directed to the west-southwest. In addition, because this variation in the regional groundwater flow is caused by a distinct hydrogeological unit, a thick alluvial sand and gravel unit in that area, flow within that unit occurs at a much higher rate compared to median values calculated by CWM.<sup>67</sup> The alluvial sand and gravel unit makes the site hydrogeologically vulnerable, and therefore more detailed evaluation of the site should be provided.

Hydrogeology is considered vulnerable when groundwater travel time along any 100-foot flow path from the edge of an engineered containment structure is less than approximately 100 years.<sup>68</sup> As noted by Dr. Michalski, CWM has detected westward migration of acetone at a velocity of at least 40 ft/yr., and in 1977 Wehran Engineering found “[e]ven higher groundwater

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<sup>65</sup> Petitioners disagree that the aquifer is “confined” by impermeable deposits above, as discussed further below and in Dr. Michalski’s expert report.

<sup>66</sup> DEIS, 62.

<sup>67</sup> See Michalski report, especially at 23-24.

<sup>68</sup> EPA Interim Final Guidance, *Criteria for Identifying Areas of Vulnerable Hydrogeology under the Resource Conservation and Recovery Act—Statutory Interpretive Guidance* (July 1986), EPA 530-SW-86-022/PB-86-224953, ES-3, available at <http://nepis.epa.gov/Exe/ZyPDF.cgi/40001F6N.PDF?Dockey=40001F6N.PDF>.

velocity values, ranging from 86 ft/yr to 624 ft/yr . . . for the alluvial lower aquifer at this site.”<sup>69</sup>

In addition, VOC migration rates within a known 240 ft long area of contamination in the lower aquifer beneath the Process Area are at least 13 ft/year.<sup>70</sup> These groundwater and contaminant migration rates substantially exceed the standard established by EPA for vulnerable hydrogeology.

The conclusion stated in the application, that groundwater flow beneath the central portion of the site is less than in the northern or southern portions, thus lacks any support.<sup>71</sup> As a result of these serious deficiencies in the information provided, the application fails to comply with the requirement for Part 373 applications, to accurately identify the “ground water flow direction and rate” beneath the facility property,<sup>72</sup> and with several other important requirements governing the information needed to protect health and the environment from releases of hazardous constituents to groundwater, and the discharge of such hazardous materials to surface water.

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<sup>69</sup> Michalski report, 15 (discussing Wehran Engineering Corp., *Hydrogeologic Investigation, ChemTrol Pollution Services, Townships of Porter and Lewiston, Niagara County, New York* (October 14, 1977)).

<sup>70</sup> *Id.*, 23.

<sup>71</sup> See DEIS, 60 (“[the central aquifer] 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.”).

<sup>72</sup> 6 NYCRR § 373-1.5(a)(3)(ii).

### **3. Failure to identify the regulatory “point of compliance” for groundwater monitoring**

In addition to identifying the ground water flow direction and rate beneath the facility property, the localized flow rate and direction beneath regulated waste management units within the facility property must be provided in the application in order to identify the “point of compliance” where groundwater monitoring wells must be located.<sup>73</sup> The point of compliance is the vertical surface at the downgradient edge of any waste management area, where monitoring wells capable of detecting a release to groundwater must be located.<sup>74</sup> Because the application incorrectly identifies the ground water flow direction and rate beneath the proposed RMU-2 landfill, it is insufficient to identify upgradient *versus* downgradient monitoring wells at the point of compliance for purposes of monitoring groundwater for any release of contaminants from the RMU-2 landfill.

### **4. Failure to meet the minimum vertical hydraulic conductivity required beneath the RMU-2 landfill**

Part 373 requires sites on which a new hazardous waste landfill is proposed to have soil beneath the facility with “a hydraulic conductivity of  $10^{-5}$  centimeters per second or less as determined by in situ hydraulic conductivity test methods.”<sup>75</sup> However, as Dr. Michalski notes in his report, horizontal hydraulic conductivity values greater than  $1 \times 10^{-3}$  cm/s have been measured

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<sup>73</sup> 6 NYCRR § 373-1.5(a)(3)(iii).

<sup>74</sup> 6 NYCRR § 373-2.6(f)(1). Chemical waste landfills under TSCA must be sited over soils with hydraulic conductivity of  $1 \times 10^{-7}$  or less. 40 CFR § 761.75(b)(1)(ii).

<sup>75</sup> 6 NYCRR § 373-2.14(b).

along the northern border of RMU-2.<sup>76</sup> In addition, of 13 shallow aquifer wells located within the RMU-2 landfill footprint, only three meet the minimum hydraulic conductivity.<sup>77</sup>

The “Groundwater Sampling and Analysis Plan” (GWSAP) provided with CWM’s Part 373 application states that the vertical migration rate for groundwater or contaminants beneath the landfill is 0.04 ft/yr.<sup>78</sup> However, field data interpreted conservatively show that under portions of the RMU-2 landfill footprint the vertical contaminant migration rate is over 2 ft/yr., more than 50 times greater.<sup>79</sup> Near Fac Pond 8, within the RMU-2 landfill footprint, acetone has moved through groundwater at a rate of at least 40 ft/yr.<sup>80</sup> In addition, a low-permeability clay aquitard which would otherwise protect the underlying aquifer is missing in several locations within the RMU-2 landfill footprint, or is so thin as to lack any meaningful protective character.<sup>81</sup> In those locations, highly transmissive sand and gravel deposits are vulnerable to rapid contaminant transport.

CWM’s Part 373 application and DEIS assert that the RMU-2 Project meets the minimum hydraulic conductivity required for hazardous waste landfills.<sup>82</sup> However, this assertion

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<sup>76</sup> Michalski expert report, 4, 18-19.

<sup>77</sup> *Id.*, 18.

<sup>78</sup> GWSAP, Fig. 4.

<sup>79</sup> Michalski expert report, 13.

<sup>80</sup> *Id.*, 14.

<sup>81</sup> *See id.*, Exhibit 8.

<sup>82</sup> DEIS, 61; GWSAP, Table 1; *Engineering Report*, 2-4.



is based on median regional measurements of hydraulic conductivity, including measurements from the least transmissive units beneath the facility and ignoring the most transmissive unit beneath the facility. As discussed above, when the localized hydrogeological unit beneath the facility is considered, CWM cannot meet the requirement.

**5. Failure to identify sufficient information to establish groundwater detection, monitoring, characterization and corrective action programs**

Part 373 requires permit applications to sufficiently identify “a detection monitoring program which meets the requirements of subdivision 373-2.6(i) of this Part” if hazardous constituents have not been detected in the site groundwater.<sup>83</sup> If hazardous constituents have been detected, the application “must submit sufficient information, supporting data, and analyses to establish a compliance monitoring program which meets the requirements of subdivision 373-2.6(j) of this Part.”<sup>84</sup> If detected hazardous constituents exceed maximum concentration limits set forth in the regulations, or exceed previously established site background levels, the application must include “a corrective action program.”<sup>85</sup> If this condition is met, to avoid the corrective action requirement the application must, among other things, include “a characterization of the contaminated ground water, including concentrations of hazardous constituents.”<sup>86</sup> Thus, depending on whether site groundwater has become polluted, and

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<sup>83</sup> 6 NYCRR § 373-1.5(a)(3)(vi).

<sup>84</sup> 6 NYCRR § 373-1.5(a)(3)(vii). *See also below*, text at footnote 100.

<sup>85</sup> 6 NYCRR § 373-1.5(a)(3)(viii).

<sup>86</sup> 6 NYCRR § 373-1.5(a)(3)(viii)(a). *Cf.* 6 NYCRR §§ 373-1.5(3)(viii)(a)-(e).

depending on how polluted, the application must establish a detection or a compliance monitoring system or a corrective action program, and it must characterize or delineate the area of contamination.

CWM's Part 373 application lacks sufficient information to establish a compliance monitoring program west of the proposed active part of the facility, including the proposed RMU-2 landfill, despite having identified severe groundwater contamination in the site's Central Area, where the layout of the buried valley has yet to be mapped. In addition, as discussed further below, deep aquifer and bedrock DNAPL contamination west of the Central Area has not been acknowledged or characterized. The detection of hazardous constituents in groundwater between the compliance point for RMU-1 and "the downgradient facility property boundary," to the west, triggers CWM's obligation to institute a corrective action program to address that contamination.<sup>87</sup> The required corrective action program has not been provided.<sup>88</sup>

CWM's 1993 RCRA Facility Investigation (RFI), the principal support for the existing corrective action program at Model City, provides information at one moment in time about high concentrations of hazardous constituents detected in site groundwater, in tables reporting the analytical results of groundwater sampling, but the text of the report is silent about the implications of these detections. Therefore, before the application can be advanced any further, these information deficiencies regarding groundwater detection, monitoring, characterization and

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<sup>87</sup> 6 NYCRR § 373-2.6(b)(1)(iii).

<sup>88</sup> *Cf.* 6 NYCRR § 373-1.5(a)(3)(viii) (requiring the corrective action program in the Part 373 application).

corrective action programs identified above must be rectified.<sup>89</sup>

Since the proposed RMU-2 landfill is downgradient and immediately adjacent to RMU-1, CWM faces a serious burden to demonstrate how unimpeded monitoring and remediation of releases from RMU-2 could be achieved. Part 373 requires “sufficient number of wells, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that . . . allow for the detection of contamination when hazardous waste or hazardous constituents have migrated from the waste management area to the uppermost aquifer.”<sup>90</sup> The procedure for sampling groundwater wells must reflect “the uppermost aquifer’s effective porosity, hydraulic conductivity, and hydraulic gradient.”<sup>91</sup> However, CWM has not installed groundwater wells downgradient from the active area of the Model City facility, including the proposed area for the RMU-2 landfill, that reflect the characteristics of the site’s uppermost aquifer. Only one deep monitoring well (BW04D) is located on the south side, one deep well (TW15D) is located on the north side and three deep wells (R218D, R201DR and R206D) are located on the east side. There is no deep monitoring well on the west side of the contaminated Central Area.<sup>92</sup> Thus, deep monitoring wells are not installed and monitored around the perimeter of the central area of the

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<sup>89</sup> Since these application deficiencies reflect deficiencies in the applicant’s 1993 RFI, the Department may (and should) find “it is necessary to complete a RCRA Facility Assessment that will determine if a more complete investigation is necessary.” 6 NYCRR § 373-1.5(4)(iii).

<sup>90</sup> 6 NYCRR § 373-2.6(h)(1)(iii).

<sup>91</sup> 6 NYCRR § 373-2.6(h)(7)(i).

<sup>92</sup> Cf. Golder Associates, 2013 Hydrogeologic Update, Model City TSD Facility, Model City, New York (January 31, 2014), Fig. 4. One deep well (F102D) is located to the west of the central area of the CWM facility, but this well monitors Faculative Ponds 1 & 2 and is located south of the remediation areas located in the Central Area of CWM.

CWM property; none are installed on the west side, downgradient from that area. Accordingly, CWM will be unable to detect hazardous constituents if they migrate from the landfill area.

An example of current operations leaking contaminants into groundwater is SLF-11, a closed landfill. There are currently five shallow monitoring wells up to 26 ft deep (W1103S, W1104S, W1105S, W1106S and W1109S) classified as “Dirty,” which means that contaminants exceed the 23 mg/L response trigger standard for this site.<sup>93</sup> Groundwater monitoring in that area would accordingly be ineffective in detecting contaminants from a new landfill.

In the 1988 Orange County Landfill case the Commissioner concurred in the ALJ’s “conclusion that if any landfill is constructed on this Site, it be limited to the northern portion of the Site at a sufficient distance from the existing landfill to allow for unimpeded monitoring and remediation of the two facilities.”<sup>94</sup> In that case, a new, second landfill was at issue, the existing operating landfill had contaminated site groundwater, and there was a “100 to 200-foot wide corridor between the existing landfill and the [proposed] Project.”<sup>95</sup>

Compelling reasons in the present case support the same conclusion. Landfilling was initially approved for the Model City site in the northern portion of the site, in order to avoid the highly transmissive aquifer in the central portion of the site. This was one of the grounds for

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<sup>93</sup> GWSAP, Appx. D (1989 data). This appendix is a data table and does not identify the make-up of contaminants. The response trigger is noted at GWSAP, 17. Comparison of monitoring data between upgradient and downgradient wells in recent monitoring leaves no doubt that the leaking source is beneath SLF-11.

<sup>94</sup> Decision of the Commissioner, *Orange County Facility*, 1988 N.Y. ENV LEXIS at \*11. This locational recommendation was initially made by DEC Staff. *Id.*, at \*90.

<sup>95</sup> *Id.*, at \*63. *See also id.*, at \*66-67 (discussing contaminants released by the existing operating landfill).

approval of SLF-12. However, when RMU-1 was proposed, Golder's 1985 hydrogeological model, incorporated into Golder's 1993 RCRA Facility Investigation for the Model City was accepted, concluding that no highly transmissive aquifer exists in the eastern and central portions of the site, and low-permeability overburden in the area of RMU-1 (and now RMU-2) sufficiently precludes vertical transmission of contaminants as to be considered an aquitard. For RMU-1, the Department accepted Golder's utilization of median transmissivity (permeability) values for site hydrogeological units in support of an assurance that the leak detection and monitoring network was placed appropriately and would function effectively.<sup>96</sup> Nevertheless, CWM's Part 373 application acknowledges shallow groundwater contamination is located west of RMU-1 and RMU-2, and the Department cannot say whether the source is RMU-1, other CWM operations on site, or legacy contamination from past uses of the site.<sup>97</sup>

Under these conditions, a new landfill should not be approved immediately west of RMU-1. This action would reflect accurate information about the site's hydrogeological setting. In any case, the site hydrogeological setting does not support the location of a new landfill immediately downgradient from RMU-1 because the new landfill would not be monitorable.

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<sup>96</sup> It should be noted that no issues were raised by intervenors or Department Staff before the RMU-1 siting board owing to a negotiated settlement under which opponents of RMU-1 withdrew their opposition in return for a concession by CWM to abandon an incinerator proposal. *See* Decision of the Industrial Hazardous Waste Facility Siting Board, *In the Matter of the Application of CWM Chemical Services, Inc. for permits to construct and operate a 47.1 acre hazardous waste landfill at 1550 Balmer Road, Model City, New York*, No. 9-2934-00022/00036-0, 1993 N.Y. ENV LEXIS 50, \*1-3 (December 10, 1993).

<sup>97</sup> *See above*, footnote 26.

**6. Failure to describe contaminant plumes in the deep aquifer west of the RMU-2 landfill footprint**

Part 373 applications must include “[a] description of any plume of contamination that has entered the groundwater from a regulated unit, at the time that the application was submitted.”<sup>98</sup> The description must “delineate[ ] the extent of the plume” and “identif[y] the concentration” of hazardous constituents within the plume.<sup>99</sup>

In addition:

If hazardous constituents have been detected in the ground water at the point of compliance at the time of permit application, . . . the owner or operator must also submit an engineering feasibility plan for a corrective action program necessary to meet the requirements of section 373-2.6(k) of this Part, unless the owner or operator obtains written authorization *in advance* from [the Department] to submit a proposed permit schedule for submittal of such a plan. To demonstrate compliance with section 373-2.6(j) of this Part, the owner or operator must address the following items:

- (a) a description of the wastes previously handled at the facility;
- (b) a characterization of the contaminated groundwater, including concentrations of hazardous constituents; [and other requirements as listed].<sup>100</sup>

Authorization “in advance” means “prior to submittal of the complete permit application.”<sup>101</sup>

Accordingly, the Department has discretion to allow CWM to provide plans and an engineering report required to establish the corrective action program addressing identified

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<sup>98</sup> 6 NYCRR § 373-1.5(a)(3)(iv).

<sup>99</sup> 6 NYCRR §§ 373-1.5(a)(3)(iv)(a), (b).

<sup>100</sup> 6 NYCRR § 373-1.5(a)(3)(vii) (emphases added).

<sup>101</sup> 6 NYCRR § 373-1.5(a)(3)(viii)(e).

contaminants in groundwater not previously characterized or delineated in the future, but only if CWM obtains approval for the plans and report prior to submitting a complete permit application, and only if CWM's RMU-2 Part 373 application otherwise includes "sufficient information, supporting data and analyses to establish a corrective action program which meets the requirements of section 373-2.6(k) of this Part."<sup>102</sup> However, the Department may not allow CWM to defer "a characterization of the contaminated ground water" to some time in the future.<sup>103</sup> Such a characterization must be included in the Part 373 permit application.<sup>104</sup>

CWM failed obtain prior authorization for a corrective action plan for DNAPL contaminants found in the site's lower groundwater bearing zone, and has not provided any characterization or delineation of one or more DNAPL plumes in that zone. CWM's 1993 RFI reports deep aquifer and likely bedrock DNAPL contamination west of the Central Area.<sup>105</sup> The DNAPL contaminants include PCBs measured at concentrations as high as 35,000 ppb.<sup>106</sup> The current corrective action program at Model City acknowledges only shallow groundwater

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<sup>102</sup> 6 NYCRR § 373-1.5(a)(3)(viii).

<sup>103</sup> 6 NYCRR § 373-1.5(a)(3)(vii)(b).

<sup>104</sup> *Id.*

<sup>105</sup> See Michalski report, pp. 19-20 (discussing Golder, 1993 RFI, analytical results of Process Area groundwater samples). The 1993 RFI was not provided with the application. The application relies on a 2009 groundwater report that does not disclose the PRO-9 results. See GWSAP.

<sup>106</sup> Michalski report, p. 20. CWM's failure to adequately report this release violates CERCLA Section 103, which is not preempted by RCRA's permitting provisions. See 40 CFR § 270.30(i)(10) (all instances of noncompliance with a RCRA permit must be reported). The violation can be avoided by notifying the National Response Center or EPA's designated on-scene coordinator. 40 CFR § 264.56(d). However, it does not appear CWM has reported the release.

contamination, and concludes erroneously that no groundwater contamination has traveled any significant distance from its presumed source, and has not penetrated the site's lower aquifer.<sup>107</sup>

However, in addition to DNAPL plumes that were detected in 1993 several hundred feet from their presumed source, acetone has migrated through the glaciolacustrine clay and then within the lower aquifer for a distance of some 1,500 ft.<sup>108</sup>

Recovery of DNAPL contaminated groundwater is currently limited to the shallow aquifer. However, even shallow DNAPL recovery has been ineffective. About 99% of recently recovered DNAPL has been recovered from three wells in the Process Area south of Lagoons area. DNAPL recovery there began in 1997 (thus late in the site history) and was enhanced after 2004, utilizing a groundwater interceptor trench. However, this trench penetrated into the underlying Glaciolacustrine Silt/Sand unit, allowing DNAPL to migrate into the GSS unit.<sup>109</sup>

In the West Drum Area, a small amount of DNAPL was recently recovered from wells TW-16S and TW-17S but none has been recovered from a number of recovery sumps associated with groundwater extraction trenches installed in the area, attesting to the ineffectiveness of the trenches. All of these trenches and sumps extract groundwater from the shallow zone. There is no

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<sup>107</sup> See DEIS, 107 (“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.”). This assertion is a verbatim reiteration of DEC’s finding, in *Statement of Basis, Selection of Final Corrective Measures, CWM Chemical Services, L.L.C., USEPA ID No. NYD049836679, Model City, NY 14107* (January 31, 2001), 3. The *Statement of Basis* is among the “documents incorporated by reference” into CWM Part 373 Application, and is discussed further at DEIS, 108-109. The quoted assertion is evaluated at Michalski report, 23.

<sup>108</sup> Michalski report, 14.

<sup>109</sup> Michalski, report, 22.



monitoring of the deeper groundwater zone. Furthermore, no analyses of water co-produced with DNAPL have been provided in the *Groundwater Sampling and Analysis Plan* accompanying the Part 373 Application. Nor is any data provided in the GWSAP to evaluate the depth and construction of two wells/DNAPL sumps (DS24 and DS25) that produced 98% of all recently recovered DNAPLs.<sup>110</sup>

Because a layer of clay that would otherwise protect the lower aquifer is thin or missing in the area of the DNAPL extraction trenches installed in the West Drum Area, it is reasonable to conclude that the failure to extract DNAPL from the trench sumps indicates DNAPL is migrating downward into the deep aquifer, and thereby escaping the shallow trench collection sumps. However, CWM must provide sufficient information in the first instance to describe the plumes of DNAPL and acetone contamination that have entered the lower groundwater zone.<sup>111</sup> Based on the information, these plumes must be characterized and delineated.<sup>112</sup>

## **7. Conclusion**

In light of actual groundwater flow direction and transmissivity in the Central Area, as established in Petitioner's Michalski expert report, the adequacy and effectiveness of the existing groundwater monitoring network for each facility unit of the Model City site should be revisited. A revised monitoring program is warranted for all units at the facility based on a revised

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<sup>110</sup> See GWSAP, Table 3 (Well Construction Summary) (December 2013). Note that these wells are completed in an area where the Glaciolcaustrine Clay is thin.

<sup>111</sup> Failure to detect and remediate the DNAPL plumes discussed in the Michalski report, 21-22, also poses an additional challenge to monitoring releases from RMU-2.

<sup>112</sup> 6 NYCRR §§ 373-1.5(a)(3)(iv), (viii).

hydrogeologic model. Once that information is provided, we look forward to commenting on the implications of the information for the facility corrective action program, and the ability to monitor releases from any new landfill.

## **B. RMU-2 PROJECT ENGINEERING PLANS ARE DEFICIENT**

### **1. Sufficient information to demonstrate the RMU-2 landfill and Fac Pond 5 will avoid hydraulic uplift has not been provided**

Part 373 applications for a new landfill must provide sufficient information to demonstrate that the landfill bottom liner will be “placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients . . . below the liner to prevent failure of the liner due to . . . compression, or uplift.”<sup>113</sup> The same requirement applies to surface impoundments such as proposed Fac Pond 5.<sup>114</sup> The RMU-2 Project proposal relies on a thick clay subgrade in the area of the RMU-2 landfill and Fac Pond 5<sup>115</sup> to protect the bottom liners of both from hydrostatic uplift that could occur if the liners are exposed to the shallow aquifer, the unit below the clay subgrade. However, as Dr. De shows, to achieve the bottom of liner elevations proposed by CWM, excavations between 8.5 ft and 10.4 ft deep will be required and such excavations will penetrate through the clay layer, which is only about five feet thick.

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<sup>113</sup> 6 NYCRR § 373-2.14(c)(1)(i)(b). *Cf.* 6 NYCRR § 373-1.5(h)(2)(i)(a) (requiring landfill applications to provide information regarding liner systems sufficient to demonstrate compliance with 6 NYCRR § 373-2.14(c)(1)).

<sup>114</sup> 6 NYCRR § 373-2.11(b)(1)(ii). *Cf.* 6 NYCRR § 373-1.5(d)(2).

<sup>115</sup> *Cf.* DEIS, 46-47 (discussing the Fac Pond 5 proposal).

However, CWM's Part 373 application assumes more favorable distances to the aquifer and thicknesses for the clay layer, for both the proposed new landfill and the new Fac Pond. As a result, CWM has failed to show that the bottom liners and leachate collection sumps for these two units will not fail due to hydrostatic compression and uplift.<sup>116</sup>

**2. Sufficient information to demonstrate the RMU-2 landfill will avoid a slope failure has not been provided**

Water uplift pressures acting below the liner system for the RMU-2 landfill can be expected to threaten a slope failure.<sup>117</sup> This threat to slope stability is exacerbated by “the substitution of GCL [geosynthetic clay liner] for compacted clay in the primary liner system,” compared to the way RMU-1 was designed as RMU-1 lacks any GCL in its liner system.<sup>118</sup> CWM's engineering report, provided with the Part 361 Application, fails to analyze the consequences of this change in design for slope stability.

**3. Proposed Fac Pond 5 does not comply with the required minimum depth to groundwater**

Part 373 applications must also demonstrate that, where the surface impoundment leak detection system “is not located completely above the seasonal high water table . . . the operation of the leak detection system will not be adversely affected by the presence of ground water.”<sup>119</sup>

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<sup>116</sup> De report, 6-11.

<sup>117</sup> De report, 10.

<sup>118</sup> *Id.*

<sup>119</sup> 6 NYCRR § 373-2.11(b)(3)(iv).

However, despite acknowledging in its application that the Fac Pond 5 leak detection system<sup>120</sup> is six feet below the seasonal high water table, the application fails to provide the required demonstration.

**4. Proposed RMU-2 landfill does not comply with the required minimum depth to groundwater**

A demonstration that groundwater will not interfere with the operation of the leak detection system also applies to new landfill proposals.<sup>121</sup> However, groundwater reaches 2.3 feet higher than the proposed RMU-2 landfill bottom liner, and CWM's applications fail to provide the required demonstration.<sup>122</sup>

**5. Storage capacity of proposed Fac Ponds is insufficient**

The *Engineering Report* accompanying CWM's Part 373 application fails to take into account actual landfill leachate generation rates for all closed and operating landfills. Landfill leachate accounts for most of the wastewater treated and stored in site Fac Ponds. When CWM's past actual leachate generation rates are considered, the proposed storage capacity for Fac Ponds needed under the RMU-2 project proposal is insufficient by as much as a factor of three.<sup>123</sup>

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<sup>120</sup> "The leachate collection and removal system between the liners, and immediately above the bottom composite liner in the case of multiple leachate collection and removal systems, is also a leak detection system." 6 NYCRR § 373-2.11(b)(3)(ii). The Fac Pond 5 proposal provides that a "sump," apparently installed outside the liner system, "will be used as a monitoring point to detect potential leaks in the primary baseliner system," but the sump elevation (307 feet (amsl)) is the same as the bottom of the pond liner. DEIS, 47.

<sup>121</sup> 6 NYCRR § 373-2.11(b)(3)(iv).

<sup>122</sup> De expert report, 4.

<sup>123</sup> *Id.*, 15-16.

**6. Pore water drainage beneath the RMU-2 landfill would not be effective.**

The Part 373 application acknowledges that the Glaciolacustrine Silt/Sand Unit (or shallow aquifer) beneath the proposed active area of the site must be relied upon to drain pore water extruded from the clay substrate under load pressures from the proposed RMU-2 landfill. The application asserts that the shallow aquifer will function as an effective drainage system because the shallow aquifer (GSS) unit is thick and continuous in the area. However, as shown in Dr. Michalski's report on the site hydrogeological setting, the GSS unit is quite heterogenous, and is thin or missing in some areas within and in close proximity to the RMU-2 landfill footprint. Dr. De's report shows that, as a result, the GSS will not function consistently as a drainage unit for extruded pore water. Because contradictory information regarding the hydraulic conductivity of the GSS unit is provided by the applicant, the application is inadequate to assure that the proposed design for draining pore water from beneath the RMU-2 landfill would succeed.<sup>124</sup>

**C. POTENTIAL DISPERSAL OF RADIOLOGICAL  
CONTAMINATION MAKES PROJECT EXCAVATION UNSAFE**

Legacy surface and subsurface radiological contamination in the areas to be excavated for the RMU-2 Project has not been adequately characterized. For this reason, major excavation threatens to disperse these contaminants into the air, posing an unacceptable health risk to workers and nearby sensitive receptors, including residents and Lewiston-Porter school students,

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<sup>124</sup> *Id.*, 11-14.

staff and visitors one-quarter mile away. Because groundwater levels can reach the surface, excavation could also release radiological contaminants to surface and groundwater.

### **1. Brief history of site management of radioactive wastes**

“Sub-surface radiological contamination remains a concern on this site due to its history of usage and soil relocations.”<sup>125</sup> Accordingly, an understanding of potential radiological contamination of this site in the vicinity of proposed areas of disturbance requires a review of the site’s radiological history, and the history of recent correspondence regarding protective measures recommended by the Department and the New York State Department of Health (“NYSDOH,” “DOH”).

Beginning in 1944, the Manhattan Engineer District (MED) and its successor, the Atomic Energy Commission (AEC) obtained permission to use portions of the 1,511 acre production area of the 7,500 acre Lake Ontario Ordnance Works (LOOW). When the Department of Defense decommissioned LOOW in 1943, AEC acquired the production area, renamed the area Lake Ontario Storage Area (LOSA) and used it for radioactive material storage and waste disposal.<sup>126</sup> The CWM Model City site is part of the former LOSA site, which served as a storage area for radioactively contaminated metal, wood, concrete and ceramics from decommissioning of AEC wartime plants and post-war operations in Missouri, Pennsylvania, Ohio, New Jersey and

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<sup>125</sup> DEC, *Responsiveness Summary*, 6 NYCRR PART 373 HAZARDOUS WASTE MANAGEMENT PERMIT RENEWAL FOR CWM CHEMICAL SERVICES L.L.C. MODEL CITY FACILITY, NIAGARA COUNTY, at I-104, available at <[http://www.dec.ny.gov/docs/remediation\\_hudson\\_pdf/cwm2013response1.pdf](http://www.dec.ny.gov/docs/remediation_hudson_pdf/cwm2013response1.pdf)>.

<sup>126</sup> U.S. Army Corps of Engineers (USACE), HISTORY SEARCH REPORT, LAKE ONTARIO ORDNANCE WORKS, NIAGARA COUNTY, NEW YORK (August 1998), 1-1.

Massachusetts generated by the Manhattan Project during and following World War II.<sup>127</sup>

Disposal of wastes included wastes generated by experiments with radiation exposure to animals at the University of Rochester, and wastes generated by a pilot plant to extract plutonium and uranium from spent nuclear fuel at the Knolls Atomic Power Laboratory (KAPL) in Schenectady, NY. In the early 1950s LOSA was also used as an interim storage site for uranium and thorium billets and rods processed by several New York companies. Up to the mid-1950s, waste disposal at LOSA was characterized by poor recordkeeping and general mismanagement with radioactive waste being buried, left on the surface in several areas of the site, and openly burned.<sup>128</sup>

Most of the site came under private ownership in the 1970s, when the U.S. Atomic Energy Commission (AEC) began investigations of the Model City site and the adjacent Niagara Falls Storage Site (NFSS) to the immediate south. In 1974 the federal Formerly Utilized Sites Remedial Action Program (FUSRAP) was created by Congress “to clean up radiological contamination resulting from the early development of nuclear weapons.”<sup>129</sup> Administration of the FUSRAP program was assumed by the U.S. Department of Energy (DOE) in 1977 and, in

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<sup>127</sup> The Manhattan Engineer District, or MED, was a research and development project that produced the first atomic bombs during World War II under the direction of the U.S. Army Corps of Engineers and the Los Alamos National Laboratory. Known as the Manhattan Project, MED operated from 1942 until 1947, when it was incorporated into the Atomic Energy Commission.

<sup>128</sup> The Aerospace Corporation, *Background and Resurvey Recommendations for the Atomic Energy Commission Portion of the Lake Ontario Ordnance Works*, DOE Contract No. DE-AC01-82EP15100, November 1982, pp. 6, 28-29.

<sup>129</sup> U.S. General Accounting Office, Report to the Chairman, Committee on Commerce, House of Representatives, *Nuclear Waste: Corps of Engineers' Progress in Cleaning Up 22 Nuclear Sites*, GAO/RCED-99-48 (February 1999), 1 (available at <<http://www.gpo.gov/fdsys/pkg/GAOREPORTS-RCED-99-48/pdf/GAOREPORTS-RCED-99-48.pdf>>).

1997 the U.S. Army Corps of Engineers (USACE) took over the program.<sup>130</sup>

Within the 1,511-acre LOSA, AEC designated specific areas for radioactive residue storage and radioactive waste disposal. The area used as a burial site and above ground dump for AEC generated wastes is the Central Area of CWM's property. In 1955 this area was released from AEC control without being properly decontaminated. Radioactive wastes remained buried on the property. By 1968 most of LOSA was declared excess land by AEC and was sold to the public. Reduced to 213 acres, the AEC site continued to be used for residue storage and became known as the Niagara Falls Storage Site (NFSS).

In 1970 AEC became aware of radioactive contamination on the NFSS. Spot checks on the former LOSA revealed land outside AEC control was also contaminated. These contaminated areas include the present day CWM site. Accordingly, in addition to investigating the NFSS, in the 1970s AEC designated federal "Vicinity Properties" ("VPs" or "VPX") on the LOSA site, including CWM property.

## **2. Major excavation at Model City without NYSDOH approval is prohibited**

AEC, followed by DOE, surveyed and made repeated attempts to remediate radiological contamination on the VPs. However, the remediation efforts were incomplete and unsuccessful, and remediation was hampered on account of interference by hazardous waste operations by CWM and its predecessor hazardous waste facility operators Chem-Trol Pollution Services

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<sup>130</sup> *Id.*



(1972) and SCA Chemical Services (1973-1984).<sup>131</sup> In 1972 and 1974 NYSDOH issued Orders prohibiting major excavation at Model City, upon finding that legacy radiological contamination had not been properly remediated or surveyed.<sup>132</sup> Specifically:

any deliberate or intentional movement, displacement or excavation, by whatever means, of the soil of said lands is hereby prohibited unless otherwise expressly permitted after the submission to and approval by the Commissioner of Health, or his authorized representative, of acceptable plans therefore, except any official agency having jurisdiction or responsibility, whether State or Federal, shall not be subject to such prohibition.<sup>133</sup>

In 2003-2005 NYSDOH considered and rejected a request by CWM<sup>134</sup> to vacate the 1972/1974 Orders to accommodate the proposed RMU-2 Project.<sup>135</sup> In rejecting CWM's request, NYSDOH concluded that because "on-going earthmoving activities . . . such as the construction of landfills, ponds and berms" occurred during the radiological surveys and analysis in 1982-1984 on which DOE release certifications rely, the DOE surveys and analysis are incomplete and

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<sup>131</sup> In 1984, a Waste Management, Inc. holding company acquired the parent corporation of SCA Chemical Services, Inc. In 1986, SCA Chemical Services, Inc. became a wholly owned subsidiary of CWM. Two years later the corporate name SCA Chemical Services, Inc. was changed to CWM. CWM, *Site Management Plan* (February 2014), 5.

<sup>132</sup> Hollis S. Ingraham, NYSDOH Commissioner, Order, *In the Matter of Certain Property of the Fort Conti Corporation Located in the Town of Lewiston, Niagara County, State of New York*, April 27, 1972 ("1972 Order"); Robert P. Whalen, NYSDOH Deputy Commissioner, Supplemental Order, *In the Matter of Certain Property of the Fort Conti Corporation Located in the Town of Lewiston, Niagara County, State of New York*, June 21, 1974 ("1974 Order").

<sup>133</sup> 1972 Order, Sec. III.

<sup>134</sup> R. Sturges, District Manager, Model City Facility, Letter to Antonio C. Novello, NYSDOH [Commissioner], December 23, 2003.

<sup>135</sup> S.M. Gavitt, Assistant Director, Bureau of Environmental Radiation Protection, NYSDOH, Letter to J.A. Knickerbocker, Technical Manager, CWM, December 14, 2004.

unreliable.<sup>136</sup> Site development at DOE-designated Vicinity Properties on CWM property, including VPA, VPB, VPC, VPD, VPE, VPE', VPF, and VPG, “prevented ORAU [DOE contractor Oak Ridge Associated Universities] from conducting a complete characterization of the properties.”<sup>137</sup> Except for VPA and VPB, these VPs are within or overlap with the RMU-2 landfill footprint.<sup>138</sup> Such activities “had the potential to obscure the detection of contamination in the soil and to relocate contaminated soil to other parts of the property.”<sup>139</sup> Resurveying “should have included conducting subsurface investigations in impacted areas that had been covered or disturbed by earthmoving activities and areas where soils from the impacted areas had been relocated.”<sup>140</sup>

DOE declined to certify VPG for release because access could not be gained to the entire area due to the presence of CWM’s Fac Ponds 1&2. However, NYSDOH notes other VPs with lagoons were certified,<sup>141</sup> such as VPC, which was also not fully accessible “due to the presence of 2 ponds, 4 landfill areas, [and] a swamp . . .”<sup>142</sup> As discussed in the Appendix to this Petition, Fac Ponds 1 and 2 were constructed in the location of the Castle Garden Dump Site. These ponds

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<sup>136</sup> S.M. Gavitt, NYSDOH, Letter to J.A. Knickerbocker, CWM, December 14, 2004, at 2.

<sup>137</sup> *Id.*

<sup>138</sup> *See* DEIS, Fig. 3-13 (map of all VPs).

<sup>139</sup> NYSDOH Letter to CWM, December 14, 2004, at 1.

<sup>140</sup> *Id.*

<sup>141</sup> *Id.*, at 4-5.

<sup>142</sup> *Id.*, at 3.

obstruct USACE's proposed Remedial Investigation of VPG. The proposed development of RMU-2 calls for the continued use of Fac Ponds 1 and 2 and the creation of a wetland in VPG on soils which historical research indicates are chemically and radiologically contaminated.

The DOE surveys also failed to comply with current guidelines for determining site acceptance:

ORAU only performed a limited number of cores for each VP apparently based, in part, on accessibility. There was no grid system established for cores and, given the size of each VP, it would appear that the number of cores taken is much less than the number advised by NRC . . .<sup>143</sup>

Current guidelines also require at least one sample for every 100 square meters, but ORAU obtained fewer than one sample for every 1,000 square meters.<sup>144</sup>

NYSDOH concluded from these and other shortcomings of the DOE certification process that “small isolated areas of contamination exceeding the guidelines could be present in areas released by DOE” such that “detailed information from CWM on historical soil movements on the affected properties”<sup>145</sup> in order to fill “data gaps” left by DOE for both surface and subsurface contamination<sup>146</sup> must be provided. Specifically, NYSDOH found that past subsurface investigations (core sampling) either “did not occur,” occurred without any effort to detect

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<sup>143</sup> *Id.*, at 4 (discussing NRC, *NMSS Decommissioning Standard Review Plan*, NUREG-1727 (September 2000), Appx. E, “Implementing the MARSSIM [*Multi-Agency Radiation Survey and Site Investigation Manual*] Approach for Conducting Final Radiological Survey”, available at <<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1727/>>). MARSSIM and NUREG-1727 standards are further discussed in Dr. Resnikoff’s expert report, provided herewith.

<sup>144</sup> *Id.*, at 3.

<sup>145</sup> *Id.*, at 5.

<sup>146</sup> *Id.*, at 1.

important radiological contaminants that would be expected in the subsurface soils, found such contaminants at levels above then-applicable release guidelines and released those areas as clean anyway, or failed to prevent land development from burying, relocating or otherwise concealing on site excavated soils that were radiologically contaminated. NYSDOH advised CWM to submit for approval any excavation plans together with sufficient and “technically defensible”<sup>147</sup> data “before we would approve plans to move soil.”<sup>148</sup>

On May 14, 2004, in lieu of providing the information NYSDOH requested, CWM requested approval for a “phased approach” to soil disturbing projects. CWM noted that the phased approach is “necessary to accommodate the permitting of the proposed RMU-2 landfill.”<sup>149</sup> On June 9, 2004 NYSDOH accepted the phased approach and directed CWM to submit for approval a suite of plans for investigating radiological site contamination, and radiation in monitored groundwater, ambient air and wastewater, contemplating supplemental corrective actions “if locations with elevated [radiological] levels are identified and defined, . . . upon concurrence of NYSDOH.”<sup>150</sup>

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<sup>147</sup> S. M. Gavitt, NYSDOH, to J. Hino, CWM, October 21, 2004, p. 2.

<sup>148</sup> S. M. Gavitt, NYSDOH, to J. Knickerbocker, CWM, June 17, 2005, pp. 1. More specifically, NYSDOH directed CWM to survey for “wastes from KAPL [Knolls Atomic Power Laboratory] and the University of Rochester,” in addition to Manhattan Project wastes, and to survey the Central Drainage Ditch, the west drainage ditch, and “subsurface contamination” in excavated and stockpiled soils. *Id.*, pp. 2-3.

<sup>149</sup> Richard Sturges, CWM, to S. Gavitt, NYSDOH, May 14, 2004, p. 1.

<sup>150</sup> NYSDEC, 2005 Part 373 Permit, CWM Model City Facility, No. 9-2934-00022/00097, Module II(J)(1). *See generally id.*, Module II (J) (providing that modifications to investigation plans must also receive NYSDOH concurrence).

Small excavations are conducted in accordance with a *Generic Site Soil Monitoring and Management Plan* that requires, among other things, hand radiological scanning of every six-inch lift of soil. CWM has adhered to that protocol for both small and major excavations at Model City until now. The Department relies on the *Generic Small Project Excavation Plan* to conclude that “the proper management of these materials” has been achieved.<sup>151</sup> As discussed further below, the RMU-2 Project proposal would abandon this protocol.

The Department decided “to incorporate the DOH directives to CWM with respect to radiological surveys and environmental monitoring of radiation into conditions of the [2005 Part 373 renewal] permit.”<sup>152</sup> Accordingly, since 2005 CWM’s Part 373 permit has required compliance with “supplemental corrective action requirements” that “pertain to the investigation and control of historic chemical and radiological contamination that is known or potentially present in the environmental media on the property of the Permitted facility,”<sup>153</sup> including the following:

- a *Site Radiological Survey Plan*, including a gamma walkover survey “conducted to provide a surface scan of the property, except for any areas deemed inaccessible by the Permittee, with the Department’s concurrence,” and a *Building Interior Survey* “to investigate potential surface contamination in specified buildings and radon levels inside all facility buildings.”

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<sup>151</sup> DEC, *Responsiveness Summary*, at I-104 (*above*, footnote 125).

<sup>152</sup> NYSDEC, *Responsiveness Summary*, [to public comments in 2003 on CWM renewal permit], April 27, 2003, at I-14.

<sup>153</sup> 2005 Sitewide Renewal Permit, Module II(J).

- a *Site Radiological Monitoring Plan* to “provide for routine environmental monitoring of groundwater, air, surface water and wastewater to track the potential for off-site migration of contamination,” including radiological contaminants in groundwater, air particles, surface water and wastewater, with the results of sampling and analysis reported monthly.
- *Site Soil Monitoring and Management Plans* “to characterize, and if deemed necessary, remediate the detected chemical and/or radiological contamination in the project area” and, “if an area of radiological contamination is remediated a final status survey must be performed in that area using procedures consistent with the *Multi Agency Radiation Survey and Site Investigation Manual* (MARSSIM). Specific plans required under this condition include a *Generic Site Soil Monitoring and Management Plan*, covering small excavations defined as excavations less than 1,000 square meters and less than 150 cubic meters of earth. No prior approval is required for such small excavations. However, CWM must notify the Department and NYSDOH prior to starting each project and must report data collected during each project within 60 days of completion. CWM must also “characterize any chemical contamination which is tentatively identified by screening techniques” under the *Generic Site Soil Monitoring and Management Plan*.
- *Project-Specific Site Soil Monitoring and Management Plans* for excavations that exceed the limit for small excavations must be submitted 30 days in advance of the planned excavation, but the excavation may not commence without prior Department approval “with the concurrence of NYSDOH.”<sup>154</sup>

The RMU-2 Project is the first major excavation for which CWM has sought approval under these planning and remediation requirements.

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<sup>154</sup> *Id.*

**3. The RMU-2 Project would depart from the safety standard established for small excavations.**

As noted above, under the current Part 373 permit, NYSDOH and DEC have provided blanket approval for small project excavations if they comply with an approved *Generic Small Project Excavation Plan*. This plan requires among other things that soils be scanned at every six-inch lift for radiological contaminants. This is a minimum safety standard with which the Municipal Stakeholders agree.

It has been the position of the Municipal Stakeholders since 2003, when commenting on the draft 2005 Part 373 renewal permit, that prior to approval of the RMU-2 Project CWM should fill the DOE data gaps and comply with MARSSIM and NUREG-1727 regarding the number of soil cores required for an adequate subsurface investigation. In light of the extensive major excavation required for the project as proposed, approval of the project as proposed would be the equivalent of lifting the 1972/1974 Orders.

A principal element of the MARSSIM protocol is a survey of the historical record of the site to determine the location of contaminants that may need to be cleaned up. CWM has made no effort to perform such a survey, despite the availability of copious sources that could be surveyed or even to evaluate the substantial history search produced for the LOOW site by DOE, as it relates to Model City.<sup>155</sup> Accordingly, the Appendix to this Petition summarizes the history

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<sup>155</sup> USACE, HISTORY SEARCH REPORT. This report covers Department of Defense activities at the LOOW between 1938 and 1997. In addition to this valuable USACE report, in the early 1980s ORAU prepared separate reports on each of the Vicinity Properties summarizing the history of waste management and remediation efforts for each. There is no indication in any of the RMU-2 Project application materials that CWM has consulted these sources.

of radioactive waste management on the site. The Appendix serves several purposes relevant to this proceeding. First, it shows that copious historical information is readily available that would assist in a preliminary determination as to where CWM should look for buried radioactive waste. This, in turn, demonstrates that compliance with the directive in MARSSIM to investigate the site history is feasible. Second, the historical information shows how serious potential radioactive contamination is, in the areas specifically proposed for excavation for the RMU-2 Project. This is crucial for any assessment of the safety of major excavation on this site. Finally, the historical information shows that, within the 7,500 acres of the former LOOW, only 1,511 acres were devoted to actual storage and dumping of radioactive waste, and most such storage and dumping occurred in the vicinity, or within the RMU-2 footprint and the proposed Fac Pond 5 location. This, in turn, confirms the concerns underlying NYSDOH's restriction on major excavation at Model City.

**4. CWM has resisted appropriate surface and subsurface investigation of proposed areas of disturbance.**

CWM's resistance to any hard look at these facts is evident from its responses to Department and NYSDOH requests that it undertake effective investigations of its site. On January 12, 2005, NYSDOH asked CWM to provide the results of radiological surveys and the analysis of groundwater samples obtained from deep aquifer wells during its 1993 RCRA Facility Investigation (RFI), in light of the narrative portion of the report identifying "test results [obtained in 1984] (radiological) that were 'higher than in previous samples.'"<sup>156</sup> CWM

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<sup>156</sup> S.M. Gavitt, NYSDOH, Letter to J. A. Knickerbocker, CWM, January 12, 2005, p. 1.



previously reported to NYSDOH that the 1993 RFI was followed with a “Corrective Measures Study . . . completed in 1996, proposing measures to address contaminated areas.”<sup>157</sup>

Accordingly, NYSDOH requested the results of surveys and sampling, and a description of the corrective measures implemented. On March 4, 2005, CWM responded to NYSDOH, indicating that “no other radiological testing was conducted” after 1984; “no radiological surveys, sampling or analyses were conducted as part of the RFI”; and “CWM has not implemented any corrective measures for radiological contamination.”<sup>158</sup> Instead, “[a] general Solid Waste Management Unit (SWMU) was designated for Low Level Radioactive Contamination as part of the category of U.S. Government Investigations being addressed by the Department of Defense (DOD).”<sup>159</sup>

On January 25, 2006, the Department requested that a surface radiation survey plan required under CWM’s 2005 permit investigate “the entire property owned by CWM”.<sup>160</sup> On July 19, 2006, CWM rejected the request, again declining to perform any historical site investigation.<sup>161</sup> In addition, CWM declined to conduct any surface radiation investigation in areas that are “inaccessible due to dense vegetation, thick brush, trees, steep slopes and ponds” or areas that “are not part of CWM’s current operations.”<sup>162</sup>

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<sup>157</sup> *Id.*, p. 2 (quoting CWM corresp., dated October 6, 2004).

<sup>158</sup> J. A. Knickerbocker, CWM, Letter to S.M. Gavitt, NYSDOH, March 4, 2004, pp. 1, 3.

<sup>159</sup> *Id.*, 3.

<sup>160</sup> *Department Comments on CWM, Revised Radiological Survey Plan*, January 25, 2006, p. 17.

<sup>161</sup> CWM, Response to January 25, 2006 *Department Comments on Revised Radiological Survey Plan*, July 19, 2006, p. 17.

<sup>162</sup> *Id.*

In December 2008 CWM submitted a required report on the results of its surface gamma walkover survey of “accessible” portions of the site. The proposed RMU-2 landfill footprint and proposed Fac Pond 5 are located in Investigation Areas 5, 8, 9, 14 and 15.<sup>163</sup> Despite positioning the gamma survey meter three times higher than specified in applicable radiological investigation guidelines,<sup>164</sup> elevated readings were found in Investigation Area 5, immediately east of the proposed location for Fac Pond 5.<sup>165</sup>

Investigation Area 8 is located north of Fac Pond 3 and “includes the old scale house, a garage, a laydown area for rolloff containers, and the Drum Warehouse.”<sup>166</sup> All of these buildings and “an area of heavy brush” were omitted from the survey, with the result that almost half of the area was not surveyed.<sup>167</sup>

Investigation Area 9 includes the north berm of closed landfill SLF-10, the north berm of Fac Pond 8 and uncapped section of the active landfill, RMU-1 north of the fac pond.<sup>168</sup> All of these specific areas were omitted.<sup>169</sup>

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<sup>163</sup> See URS Corporation, *Results of Gamma Walkover Survey, Soil Sampling, and Legacy Building Surveys*, CWM Chemical Services LLC, Model City, New York (December 2008), Appx. A, p. 2-1, Fig. 2-1 (map of investigation areas).

<sup>164</sup> *Id.*, p. v. (noting that the survey utilized “a 2X2 in. sodium iodide meter at 1 ft. above grade”). *Cf. below*, pp. 58-59.

<sup>165</sup> *Id.*, p. A-7 (map of location of elevated readings).

<sup>166</sup> *Id.*, p. A-29.

<sup>167</sup> *Id.* (survey coverage map).

<sup>168</sup> *Id.*, p. A-31 (survey coverage map).

<sup>169</sup> *Id.*, p. A-31.

“Investigation Area 14 includes the eastern portion of closed landfill SLF-1-6 and Fac Pond 3.”<sup>170</sup> In addition to Fac Pond 3, “wetlands and heavy brush” were omitted from the survey, with the result that more than half of the area was not surveyed.<sup>171</sup>

Investigation Area 15 includes a portion of the active RMU-1 landfill, closed landfill SLF-10, and Fac Pond 8.<sup>172</sup> The berms of the closed landfill, Fac Pond 8 and “heavy brush” were omitted from the survey, with the result that more than half of the area was not surveyed.<sup>173</sup>

Finally, Fac Pond 8 was surveyed separately, but again most of the area of the pond was omitted, including the berms and most of the interior, according to CWM because “[a] few areas of the pond floor were covered with ponded storm water.”<sup>174</sup>

NYSDOH found that CWM’s December 2008 report “incorrectly stated the purpose of the survey was to confirm the findings of the USDOE, which certified the property as properly decontaminated. . . . CWM has confused matters by stating that the surveys demonstrate that most of their property has been adequately decontaminated.”<sup>175</sup>

Fac Pond 8 is entirely within the RMU-2 footprint and scheduled for initial excavation

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<sup>170</sup> *Id.*, p. A-42.

<sup>171</sup> *Id.* (survey coverage map).

<sup>172</sup> *Id.*, p. A-44.

<sup>173</sup> *Id.* (survey coverage map).

<sup>174</sup> *Id.*, p. A-54 and included survey coverage map.

<sup>175</sup> NYSDOH letter to J. Devald, NCHD, July 16, 2010, at 2.

under CWM's proposed fill progression plan for the new landfill.<sup>176</sup> Under the current operating facility permit, a "final status survey" must be completed before Fac Pond 8 can be clean closed in accordance with MARSSIM.<sup>177</sup> However, Fac Pond 8 has not been clean-closed, no final status survey has been prepared and, in fact the pond berms have been found to contain substantial areas of seriously contaminated soils, contaminated with radiological residues. As detailed in Dr. Resnikoff's report, CWM has still not performed a subsurface investigation of that area in accordance with MARSSIM. Until it does so, CWM cannot perform a final status survey. Until a final status survey is completed and demonstrates the area is clean, CWM cannot commence construction for RMU-2.

Fac Pond 3 is also located within the RMU-2 landfill footprint and can be expected to be similarly contaminated, as its berms were constructed about the same time from similar site soil sources. However, no subsurface investigation of that area in accordance with NUREG-1727 has been performed.

CWM can be expected to seek deferral of these basic investigation requirements until after it receives required permits and a siting certificate for the RMU-2 Project. In addition, CWM lists federal "vicinity properties" on its property, including those where soil would be excavated for the RMU-2 Project proposal, as "deferred" solid waste management units, planned for clean closure. The deferral of characterization and remediation of these areas is based on the

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<sup>176</sup> See Part 373 Applic., *Engineering Report*, Drawing 8.

<sup>177</sup> 2013 *Sitewide Renewal Permit*, Mod. V Supp., Ex. E.D.2. The Fac Pond 8 final status survey is due by August 21, 2015, or 730 day after the effective date of CWM's 2013 *Sitewide Renewal Permit*, Mod. I.C.

assumption that federal agencies will some day perform the required remediation.<sup>178</sup> However, this would contravene DEC's policy requiring a reasonable assurance that it can comply with all applicable requirements prior to issuance of the approvals it seeks.<sup>179</sup> It is clearly unreasonable to hope that, once proper subsurface investigations are commenced, CWM can demonstrate that remediation is feasible, and final status surveys will show the areas can be safely excavated. CWM has not yet successfully completed the first step that process, characterization of the area, informed by a search of the historical record.

Deferral of an appropriate characterization of "inaccessible" areas would also contravene CWM's current Part 373 permit. Under the permit, CWM is obligated to conduct a radiological survey of "inaccessible" areas whenever they become accessible.<sup>180</sup>

Characterization should start with a surface survey scan of the area of concern and a subsurface investigation, involving soil borings in a sufficient density and in an ordered array. MARSSIM specifies that for radiological surface surveys the detector must be held about 10 cm (~4 in.) from the soil surface.<sup>181</sup> For its gamma walkover surveys at the adjacent Niagara Falls

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<sup>178</sup> See *Statement of Basis* (2001), 8 (*above*, footnote 107). However, in the current Part 373 permit the Department acknowledges that federal agencies may not remediate these areas, and the Department could require CWM to do so. *2013 Sitewide Renewal Permit*, Mod. II Supp., Ex. B, Condition C. See also *id.*, Mod. II.A.2. ("The Permittee must initiate and complete the corrective action process for all SWMUs and AOCs at the Facility.).

<sup>179</sup> See *above*, Section IV.C.

<sup>180</sup> *2013 Sitewide Renewal Permit*, Mod. I, Sched. I, Ex. F, Condition D.1.

<sup>181</sup> MARSSIM 2000 (NUREG-1575, Rev. 1, August 2000), p. 6-44. See also NUREG-1507 (June 1998), p. 6-21 ("average height of the NaI scintillation detector above the ground during scanning" should be 10 cm).

Storage Site, and the nearby Lewiston-Porter schools the Army Corps followed this procedure.<sup>182</sup>

In 2004 investigations of radiological contamination at an on site employee locker room, and at a separate pipeline excavation, CWM's contractor (Golder) positioned its detector "2-3 inches above the surface."<sup>183</sup> In contrast, CWM's gamma walkover scan survey of "accessible" site areas was performed with the gamma detector 30.8 cm (one foot) from the ground surface.<sup>184</sup>

For small radiologically contaminated particles, with a radius of 1 cm, measured radioactivity declines by a factor of 9 when the height of the detector changes from 10 cm to 30 cm. For larger particles such as slag, assuming ~100 cm radii, and low-level radioactivity, ~700 pCi/g (or > 700 times background), the ability of the detector to measure radioactivity is reduced by about one-half when the height of the detector changes from 10 cm to 30 cm.<sup>185</sup> In addition, plutonium-contaminated waste shipped to CWM property in the 1940s and 1950s, (see Appendix A), is a weak gamma emitter unlikely to be detected by the gamma detector utilized for both

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<sup>182</sup> USACE, Remedial Investigation Report for the Niagara Falls Storage Site, Contract No. W912P4-04-D-0001 (December 2007), Appendix B, *Gamma Walkover Survey (Continued Remedial Investigation Characterization Report)* (May 30, 2003), p. 5-1; USACE, *Final Gamma Walkover Survey Report, Lewiston-Porter School Property Youngstown, New York*, Contract No. DACW49-00-R-0027 (February 6, 2002), p. 2.

<sup>183</sup> CWM to NYSDOH, *Re: Submittal of Historical Data -- Partial Response to January 12, 2005, NYSDOH Letter*, March 4, 2005, Attach. 3, respec. Analytical Reports (December 15, 2004) (December 16, 2004), p. 6 of 6 at each.

<sup>184</sup> CWM, RESULTS OF GAMMA WALKOVER SURVEY, SOIL SAMPLING, AND LEGACY BUILDING SURVEYS (December 2008), p. 1-3.

<sup>185</sup> Jackie Travers and Marvin Resnikoff, Ph.D., Radioactive Waste Management Associates, *Critique of CWM Walkover Survey & Radiological Investigation* (March 2009), 12-13.

CWM's sitewide survey of "accessible" areas, and its survey of the RMU-2 landfill footprint.<sup>186</sup>

In addition, one foot of soil attenuates gamma radiation in the U-238, Th-232 decay chains by 98%.<sup>187</sup> Accordingly, surface survey scans are ill-equipped to detect subsurface radiological contamination.<sup>188</sup>

Clearly, CWM has failed to conduct an appropriate surface and subsurface investigation of RMU-2 Project proposed areas of disturbance.

### **5. The soil excavation plan accompanying the RMU-2 application is unsafe.**

Among the Reference Documents provided with CWM's Part 373 Application is an "RMU-2 Soil Excavation Monitoring and Management Plan and RMU-2 Corrective Action Plan," dated November 8, 2013 (SEMMP). The SEMMP proposes to surface scan areas planned for major excavation "for all areas not previously scanned during the Sitewide Survey."<sup>189</sup> However, as noted above, the previous sitewide survey is seriously deficient.

For those areas planned for major excavation, the SEMMP would depart from the approved protocol for small project excavations, requiring scanning with a hand-held gamma detector of each six-inch lift of soil.<sup>190</sup> Instead, large volumes of soil would be excavated without

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<sup>186</sup> Cf. Daniel J. Stapleton, Public Health Director, Niagara County Department of Health, letter to M. Mahar, CWM, September 18, 2007.

<sup>187</sup> Resnikoff report, provided herewith, at 6.

<sup>188</sup> *Id.* ("Surface gamma surveys cannot identify contamination that resides one to three feet below the surface.").

<sup>189</sup> SEMMP, 4.

<sup>190</sup> Cf. *above*, Subsection 3.

any subsurface scans and loaded onto haul trucks, and the trucks would then pass through radiation monitoring truck portals.<sup>191</sup> The SEMMP asserts that “[p]revious subsurface investigations support the use of this method,” but no previous investigations are identified.<sup>192</sup>

If truck portal detectors detect radiation above the screening level,<sup>193</sup>

the contents of the truck will be dumped onto a prepared surface and spread with a bulldozer, or equivalent piece of machinery, in an approximate 6-inch depth layer. The truck will remain in the alarm investigation area. The 6-inch layer of soil will then be surface scanned by walking the entire soil surface in a serpentine pattern with a standard 2-inch by 2-inch NaI gamma scintillation detector. A technician will scan the surface of the soil with the detector at a height of no more than 6 inches from the soil surface.<sup>194</sup>

However, no provisions are identified to prevent dusting and release during excavation, dumping of the contents of the truck, mechanical spreading of the contents, and surface scanning of the dumped contents, all of which presumably would take some time, allowing the surface of the dumped soil to be subject to wind dispersal.

The SEMMP provides that radiological surface scanning would be conducted by “passing the detector within 6 inches of the ground surface.”<sup>195</sup> As noted above, this does not comply with applicable guidelines.

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<sup>191</sup> *Id.*

<sup>192</sup> *Id.*

<sup>193</sup> *I.e.*, 16,000 counts per minute (cpm). The Petitioners agree that this is an appropriate screening level but, as indicated in the text, do not agree that the proposed protocols under the SEMMP effectively utilize this screening level.

<sup>194</sup> SEMMP, 6.

<sup>195</sup> SEMMP, 5.



Radiological scanning of trenches to be excavated would scan every six inch lift of soil excavated, but only down to four feet in depth. “Below 4 feet, the excavated soil will be scanned only by the portal monitors.”<sup>196</sup> However, no justification is provided for departing from the six-inch-lift-scan protocol below four feet.

As discussed in Appendix A, the vicinity of proposed Fac Pond 5 is the location of a burial site for University of Rochester radioactive lab debris and the carcasses of animals injected with plutonium for experimental purposes, and the area has been subject to historical excavation and movement of soils. Accordingly, the SEMMP endeavors to address the consequences of uncovering such wastes during excavation: “In the event that the excavation of soil uncovers any items indicating the presence of laboratory waste (such as test tubes, petri dishes, animal bones, or instruments), excavation activities will cease in the affected area.”<sup>197</sup> However, very little is provided by way of further responses that would be taken, beyond contacting the DEC on site monitor, and analyzing soil samples for plutonium.<sup>198</sup> No dust dispersal prevention measures are provided in the event laboratory waste is encountered.

Even under these inadequate protocols, substantial subjectivity will be allowed to determine whether elevated readings indicate isolated or wider area contamination. “If [upon hand-held manual scanning] it appears that there is a localized spot of activity (<10 square foot),

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<sup>196</sup> SEMMP, 4.

<sup>197</sup> SEMMP, 12.

<sup>198</sup> *Id.*

the soil may be excavated and placed in a container for further evaluation.”<sup>199</sup> “If characterization is desired, the soil will be sampled, and the samples sent to an off-site laboratory for isotopic uranium, thorium, and gamma spectroscopy (including radium), analysis.”<sup>200</sup>

If the area appears to be >10 square foot, the excavation in that area will be suspended and the agencies consulted. If the excavation is suspended, prevention of air dispersion and run-on/run-off control will be priorities while the finding is discussed with the agencies. The excavation area may be covered with a tarp, or backfilled with soil while options are evaluated. Access to the area will be restricted until a decision is reached.<sup>201</sup>

Otherwise, where a contaminated area appears to be <10 square foot, “[e]fforts will be made to *minimize* dusting and release during excavation (eg. soil may be wetted prior to removal).”<sup>202</sup> It is unclear what additional measures would be taken to prevent dusting and release during excavation for larger areas of contamination.

Some basic information necessary to evaluate the effectiveness of the truck portal monitors is absent in the SEMMP, which provides that this information will be developed in the field. For example: “Prior to radiological surveying of haul trucks a background level will be established.”<sup>203</sup> However, published values are available indicating that background soil radiation

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<sup>199</sup> SEMMP, 6.

<sup>200</sup> *Id.*

<sup>201</sup> *Id.*

<sup>202</sup> *Id.* (emphasis added)

<sup>203</sup> SEMMP, 5.

in Niagara County is 0.85 pCi/g.<sup>204</sup>

In addition to the SEMMP, a Health and Safety Plan (HASP) is included among the Reference Documents for the Part 373 Application. “The objective of this HASP is to provide a mechanism for establishing safe working conditions for personnel of contracted companies working for CWM at the Model City Facility.”<sup>205</sup> Under the HASP, during excavation “radiological support staff will evaluate field instrument readings to determine the extent of the hazard potential based on known or suspected radionuclides present at the facility.”<sup>206</sup> However, as noted above, CWM has so far not provided any history of site activities that would inform determinations regarding known or suspected radionuclides are present at the facility. It is therefore unclear how support staff would achieve this important goal of the HASP. In the absence of the established safety protocol, hand scanning of each six-inch lift of excavated soil at the height prescribed under applicable guidelines, it appears that excavation itself is the principal method of detecting potentially hazardous materials in soils.

In addition, the RMU-2 Application Reference Documents include an “RMU-1 to RMU2 Transition Plan,” addressing management of contaminated soils encountered during excavation. However, the Plan fails to consider Category 4 radiological SWMUs and addresses

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<sup>204</sup> T. Myrick, *et al.*, Oak Ridge National Laboratory, *State Background Radiation Levels*, ORNL/TM-7343 (1983), available at <<http://web.ornl.gov/info/reports/1981/3445605600481.pdf>>.

<sup>205</sup> HASP, 1.

<sup>206</sup> HASP, 5.

only chemical contamination SWMUs.<sup>207</sup>

CWM's proposed safety protocols are clearly inadequate to protect worker health and safety and prevent releases of radionuclides to the environment and off-site receptors. CWM's failure to adequately survey the Model City site, including the RMU-2 footprint in compliance with applicable guidelines, and to complete any final status survey anywhere on its site should require areas proposed for excavation, soil movement or soil stockpiling to be further investigated, remediated, and surveyed again until levels of radiation are at or below site acceptance levels. No approvals for major excavation should be granted for the RMU-2 Project until final status surveys as appropriate show the areas are clean.

Two areas within the proposed RMU-2 landfill footprint that must be clean-closed before excavation can commence illustrate how far CWM still needs to go to reasonably assure agencies and the public that major excavation would be safe. These areas are Fac Pond 8 and Fac Pond 3, either found to be radiologically contaminated, or very likely to be contaminated given the history of the location.

## **6. Failed remediation of Fac Pond 8**

On February 7, 2011, Department Staff directed CWM to contract for the "remedial design and final status survey plans (and all associated supporting documentation)" for contaminated areas at Fac Pond 8.<sup>208</sup> Staff also commented on CWM's plans for characterizing

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<sup>207</sup> CWM, *RMU-1 to RMU-2 Transition Plan, Development of Residuals Management Unit No. 2*, Appendix 3, rev. November 2013.

<sup>208</sup> T. Papura, NYSDEC Region 9, Letter to J. Banaszak, CWM, February 7, 2011, at 1.

Fac Pond 8: “The remedial design and final status survey plan (for post remedial closure) must be consistent with the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM),” and “the contractor should perform a data gap analysis to determine if enough information is present for a remedial design with the information available.”<sup>209</sup>

The substance of these comments were reiterated in Staff comments to CWM, dated July 8, 2011.<sup>210</sup> At that time Staff added that because “[d]evelopment of MARSSIM final status survey plans and implementation are dependent on the information obtained from [CWM’s contractor EnSol’s] characterization,” it would be necessary for CWM’s contractor Los Alamos Technical Associates (LATA) to critically review EnSol’s report “to ensure that the Radiological Program does not delay work at the site.”<sup>211</sup> LATA responded to this comment by stating EnSol’s report was adequate and obviates the need for any further investigation. LATA based this conclusion “upon (1) previous scoping surveys performed throughout WM property (including Fac Pond 8 Area) that followed MARSSIM and supports the current classification of Fac Pond 8 Survey units, and (2) subsequent remedial action support surveys and final status surveys will also be performed in accordance with the MARSSIM.”<sup>212</sup> However, no MARSSIM-compliant survey has been performed at Model City. In addition, LATA performed no data gap analysis,

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<sup>209</sup> *Id.*, at 2.

<sup>210</sup> J. Banaszak, CWM, Letter to D. Weiss, NYSDEC Region 9, dated August 1, 2011, attaching J.M. Brydges, LATA, Letter to J.P. Rizzo, CWM, July 29, 2011 (LATA responses to NYSDEC Staff comments, reproducing the comments).

<sup>211</sup> *Id.* (Brydges Letter, 1).

<sup>212</sup> *Id.*

and produced a final “completion” report characterizing Fac Pond 8 contamination that falls far short of a “final status survey.”

EnSol divided up the surface area of Fac Pond 8 into twelve survey units. The Department identified two “hotspots” during EnSol’s survey and interpreted those as “likely resulting from discrete ‘nugget’ sources of radioactivity.”<sup>213</sup> LATA resurveyed the area found 50 surface hotspots had been missed by Ensol; radiologically contaminated subsurface soil was missed by Ensol and subsequently required additional removal of 66 tons of soil from Survey Unit 9; an additional 54 tons and 4.5 tons were removed from Suvey Units 6 and 10; and substantial contamination remains, including a vein of contaminated debris embedded 7-12 feet into a berm. As a result, additional remediation and resurveying is required and has yet to be completed.<sup>214</sup>

Cleanups for areas contaminated with radioactive materials are also governed by Department guidance that prescribes an iterative procedure to determine appropriate cleanup requirements.<sup>215</sup> A dose analysis begins the procedure, and “should be appropriate to the complexity of the contaminated site and to the potential for harm,” and should determine “[c]oncentration profiles as a function of depth in the soil.”<sup>216</sup> There are three components of the

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<sup>213</sup> J.G. Strickland, P.E., NYSDEC, Letter to J.A. Banaszak, CWM, August 26, 2009, enclosure (comment 3).

<sup>214</sup> See Resnikoff report, 6.

<sup>215</sup> DEC PROGRAM POLICY DSH-RAD-05-01: CLEANUP GUIDELINES FOR SOILS CONTAMINATED WITH RADIOACTIVE MATERIALS, rev. April 5, 2005, available at <http://www.dec.ny.gov/regulations/23472.html>.

<sup>216</sup> *Id.*, at 2-3.

dose analysis. The first includes modeling for dose estimates, and the model must be “conservative.” The second component includes “a rationale for potential use of the site,” assuming that “the maximally exposed individual of concern is a member of the general public not associated with the use of radioactive materials.” The third component requires an analysis of exposure pathways. “Pathways that must be considered are: (a) Doses from direct exposure to radiation emitted from the contaminated soil and, where applicable, from contaminated ground or surface waters; and (b) Doses from internal exposure - including inhalation of contaminated dust (including radon progeny if present), ingestion of contaminated soil, ingestion of food raised on contaminated soil, and ingestion of drinking water (both aquifer and surface waters) or contaminants from irrigation water.”<sup>217</sup>

The second step in the procedure is an analysis of remediation alternatives that will achieve an individual dose limit of 10 mrem/year or lower, including:

1. Removal of contaminated soil for disposal at a licensed facility;
2. Isolation of contamination such as covering the contamination with clean soil. This technique may be acceptable for short-lived isotopes assuming that restrictions to land use are used until the radionuclides no longer pose a threat; and
3. Other remediation techniques, if applicable, considered and approved on a case-by-case basis.<sup>218</sup>

The radionuclide most commonly found in contaminated media at Model City is Radium-226, an alpha-emitting radionuclide with a half-life 1,600 years. The long half-life of

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<sup>217</sup> *Id.*, at 3.

<sup>218</sup> *Id.*, at 4.

Radium-226 means that example 2 is not available. Accordingly, example 1 (site remediation) must be employed in order to achieve an appropriate dose limit.

“If site remediation is needed to achieve the 10 mrem/year dose limit, it will be necessary to prepare a work plan that is acceptable to the Department and other cognizant agencies (NYS Department of Labor, NYS Department of Health).”<sup>219</sup> CWM has not yet provided a work plan for further remediation of Fac Pond 8. None is provided in the RMU-2 project application materials.

Once recharacterization and further remediation of Fac Pond 8 is completed, it must be re-graded to “conform to the overall site drainage patterns,” and if contaminated soils are removed from the berms, regrading will need to “utiliz[e] clean backfill from on-site borrow sources.”<sup>220</sup> “In addition, it should be understood that all matters related to the Fac Pond’s radiological contamination must be fully resolved prior to re-grading activities.”<sup>221</sup> Once all radiological contamination issues are resolved, the site must be modeled again for dose estimates, parallel to the final status survey requirement under MARSSIM for Class 1 areas,

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<sup>219</sup> *Id.* This final step results in site-specific “acceptance criteria” for areas of contamination. When commenting on an early draft of CWM’s Site Radiological Survey Plan, the Department noted that acceptance criteria would not be determined until “after the contaminated areas are adequately characterized.” DEC (J. Strickland, P.E.), Letter to CWM, January 26, 2006, attaching comments on draft Site Radiological Survey Plan (“We advised CWM on June 10, 2005 and again on July 12, 2005 that the ‘DEC acceptance criteria’ referred to in the plan are cleanup criteria that were developed specifically for the Linde FUSRAP site, and cannot be used at CWM to determine where remediation is required. The question of whether or not remediation is required on the CWM site can only be answered after the contaminated areas are adequately characterized and site-specific criteria are developed for the CWM site.”).

<sup>220</sup> J.G. Strickland, P.E., NYSDEC, Letter to J.A. Banaszak, CWM, August 26, 2009, 1.

<sup>221</sup> *Id.*, 2.



those suspected of being contaminated.<sup>222</sup> “The final modeling step will need to show that release of the site, with any radionuclide concentrations still remaining after remediation, will not cause the dose limit to be exceeded.”<sup>223</sup> However, the radiological sampling plan CWM submitted for the EnSol and LATA survey and remediation work at Fac Pond 8 was judged by the Department to fall short of a plan for clean closure,<sup>224</sup> and CWM has not yet submitted a plan for clean closure of Fac Pond 8.

CWM has signaled that it does not plan to clean up the Fac Pond 8 area to achieve the Department’s clean up standards (a dose limit of 10 mrem/year or lower). Instead, CWM’s cleanup goal is a dose estimate appropriate “to release Fac Pond 8 for subsequent RMU-2 construction.”<sup>225</sup> CWM’s goal is inappropriate. Workers within berms and excavated areas face potential harm as a result of exposure to doses exceeding 10 mrem/yr.

In addition, no institutional controls, such as deed and land-use restrictions, and engineered barriers, would prevent excavation of subsurface soils for as long as known radiological contamination remains a threat to public health and the environment. For long-lived

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<sup>222</sup> All federal Vicinity Properties on the CWM site are MARSSIM Class 1 areas. *See* S.M. Gavitt, NYSDOH, Letter to J.A. Knickerbocker, CWM, December 14, 2004, at 3 (“each VP [on the Model City site] (except C) had areas requiring remediation (Class 1).”).

<sup>223</sup> *Id.*

<sup>224</sup> *See* J.G. Strickland, P.E., NYSDEC, Letter to J.A. Banaszak, CWM, August 26, 2009, at 2 (“This plan is not adequate to prove radiological clearance of the area. Any such plan would require the development of applicable and appropriate clean up standards, and a pre-approved survey and sampling plan.”).

<sup>225</sup> LATA, *Completion Report for the Subsurface Radiological Investigation of Survey Unit #9 Within Fac Pond 8 at CWM Chemical Services, LLC (CWM), Model City* (July 2012), sec. 1.0.

radionuclides such as Radium-226, institutional controls are not a meaningful restriction on future land uses.<sup>226</sup> Nuclear Regulatory Commission release criteria require the annual whole body exposure level to be 25 mrem or less (as noted above, the Department's release criteria are less, 10 mrem/yr.).<sup>227</sup> NRC release criteria state that "institutional controls may not be relied upon for more than 100 years following transfer of control of the disposal site to the owner."<sup>228</sup>

A cleanup to "restricted release" levels relies on reliable institutional controls over future use of the property. NRC policy allows a restricted release cleanup only where "the sustained effectiveness of institutional controls over a 1000-year compliance period to restrict future access and use to meet the 25 mrem per year dose requirement."<sup>229</sup>

Such engineering controls over this 1000-year period would be depended upon to perform numerous complex functions, including shielding, erosion protection, and limiting infiltration of water that could result in leaching radionuclides out of the restricted area. Monitoring and maintenance over 1000 years also would be necessary to ensure that the engineered controls remain effective. Finally, sufficient long-term funding would be required by an independent third party to further ensure that the controls sustain protection over the 1000-year period.<sup>230</sup>

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<sup>226</sup> Cf. 10 C.F.R. § 61.55 (tables) (Table 1 lists certain long-lived radionuclides and Table 2 lists certain short-lived radionuclides; Table 1 includes "Alpha emitting transuranic nuclides with half-life greater than 5 years").

<sup>227</sup> 10 C.F.R. § 61.41.

<sup>228</sup> 10 C.F.R. § 61.59.

<sup>229</sup> *In re Shieldalloy Metallurgical Corp.*, NRC No. 40-7102-MLA, 2011 NRC LEXIS 15, \*61-62 (NRC 2011)

<sup>230</sup> *Id.* (citing and discussing NUREG-1757, Vol. 1, Rev. 2, § 17.7.1, at 17-64; Vol. 2, Rev. 1, § 3.5.3, at 3-13).

Future generations 3,200 years from now, when one-quarter of the Radium-226 in site soils will remain, should be protected when farming or otherwise developing this land. Because such long-lived radionuclides contaminate the site, dose estimates should be modeled assuming future unrestricted use.

### **7. Uncertainty regarding radiological contaminants in Fac Pond 3**

The nature and extent of radiological contamination at Fac Pond 8 reflects directly on the condition of Fac Pond 3, currently used to store, treat and discharge treated wastewater to the Niagara River. As discussed in Appendix A, both lagoons were constructed from site soils moved from elsewhere on site, and thus should be presumed contaminated.

In 2008, in response to concerns raised by the Department regarding the potential for radiological contamination on the floor of Fac Ponds 1& 2 and Fac Pond 3, CWM proposed a plan to characterize the bottom sediments of both lagoons.<sup>231</sup> The plan called for one *random* sediment sample to be taken from each 10,000 square foot grid, the sample depth to be 6 inches or more. Sediment samples were analyzed for isotopic uranium and isotopic thorium and radium-226. All sediment samples taken from the floor of Fac Pond 3 were consistent with background levels.<sup>232</sup> However, sediment sampling under the plan did not investigate the clay liner of Fac Pond 3, which is where dispersed radioactive contamination was found in Fac Pond 8.<sup>233</sup>

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<sup>231</sup> CWM Chemical Services, LLC, “Faculative Ponds 1/2 and 3 Bottom Sampling & Assessment Procedure”, April 2008.

<sup>232</sup> URS, “Results of Subsurface Soil and Pond Sediment Sampling for RMU-2”, April 2009, p. 13, Table 4.

<sup>233</sup> CWM, Investigation and Sampling Plan for Radiological Characterization of Faculative Pond 8, June 2009, Revised March 2010 & June 2010, p. 5, para. V.

To provide assurance that radioactive wastewater is not being discharged to the Niagara River, the current Part 373 renewal permit requires CWM to take samples of wastewater from the upper, middle and bottom of the Fac Pond 3 water column and analyze the samples for radium, uranium and thorium. In 2012 CWM reported that the water in Fac Pond 3 met all of the required specifications and requested NYSDEC approval to discharge to the Niagara River.<sup>234</sup>

Notwithstanding Staff's final discharge approval, two short-lived daughter isotopes of Radium-226 were detected in the bottom of the water column.<sup>235</sup> The presence of these radioisotopes in Fac Pond 3, which indirectly measure Radium-226,<sup>236</sup> has not been explained.

Fac Pond 3 will need to be investigated to same degree as Fac Pond 8 because the site history creates a presumption that both are likely radiologically contaminated. However, nothing in CWM's RMU-2 applications indicates that CWM would appropriately investigate either areas prior to commencing major excavation.

## **8. Conclusion**

Until CWM conducts meaningful surface and subsurface investigations of areas proposed for major excavation under the RMU-2 Project proposal, no approvals for the proposal should be issued. If CWM continues to reject measures necessary to characterize and remediate areas

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<sup>234</sup> CWM, Banaszak, Jill A., CWM, Letter to D. Weiss, NYSDEC Region 9, "Re: 2012 Pre-Qualification Discharge Report for Facultative Pond 3," June 22, 2012.

<sup>235</sup> *Id.* (reporting Lead-214 at a concentration of 1,390pCi/L + or – 111pCi/L and Bismuth-214 at a concentration of 1,490 pCi/L + or – 94.5 pCi/L).

<sup>236</sup> Ra-226 concentrations can be expected to be comparable to Lead-214 and Bismuth-214 concentrations.

known or suspected to be radiologically contaminated, there can be no reasonable assurance that major excavation in those areas will be safe for workers or potential off-site receptors. In that case, alternatives to approval should be seriously considered.

The obvious alternative is no action under SEQRA, and permit denial under Part 373. Arguably, this is contemplated under the 1972/1974 NYSDOH Orders restricting excavation at this site. The 1972 Order prohibits development or use of the land “for industrial, commercial or residential purposes,” but the 1974 Order modifies this to allow “industrial and commercial development” if such development is limited to “slab construction,” without major excavation.<sup>237</sup> No action on CWM’s application means alternative development at substantial portions of this site can be pursued.

#### **D. RMU-2 PROJECT DISCHARGES OF PCBs DISQUALIFIES THE PROJECT FOR A STATE WATER QUALITY CERTIFICATION**

##### **1. The Siting Board should consider RMU-2’s contribution to the degradation of the Great Lakes**

The 2010 Siting Plan advises the Siting Board, when determining whether a facility proposal is “otherwise necessary” or “in the public interest” to consider, among other things, whether the facility plays a role in “safeguarding New York’s unique natural assets, including wetlands; watersheds and water supplies . . .”<sup>238</sup> In this regard, the Plan invites the Board to

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<sup>237</sup> NYSDOH 1974 Order, sec. III (*above*, note 132).

<sup>238</sup> 2010 Siting Plan, 9-6.

review the Department's "Lands and Waters website: <http://www.dec.ny.gov/61.html>".<sup>239</sup> Doing so provides summary information, and a further invitation to review information linked on the website. "Lakes and Rivers" is among ten of these links, and that webpage provides a map of the state's watersheds headed, "Click on a watershed area to learn about its programs." Clicking on "Great Lakes Watershed" provides the following information.

In 1987, the governments of the United States and Canada committed to develop and implement Lakewide Management Plans (LaMP) for the Great Lakes, including Lake Erie and Lake Ontario. In 2012, the name of these plans was changed to Lakewide Action and Management Plans (LAMP). The LAMPs guide the work of U.S. and Canadian government agencies to reduce the amounts of contaminants entering the lakes and to address causes of lakewide problems. DEC, in cooperation with the U.S. Environmental Protection Agency, Environment Canada, the Ontario Ministry of the Environment, and many regional and local governments, industry, and public interest organizations work together to achieve the goals of the LAMPs. . . . Areas of Concern (AOC) are geographic areas around the Great Lakes that are environmentally degraded. In 1987, the Great Lakes Water Quality Agreement designated 43 AOCs in the U.S. and Canada as a way to focus clean up work on these areas. Of the 43 AOCs, 26 are in the U.S., 12 are in Canada, and 5 are shared by both countries. New York State has 6 Areas of Concern: Buffalo River, Eighteenmile Creek, Rochester Embayment, Oswego River/Harbor, Niagara River, and St. Lawrence River at Massena.<sup>240</sup>

It is therefore apparent that in order to determine whether the proposed RMU-2 Project plays a role in "safeguarding New York's unique natural assets"<sup>241</sup> and to further determine whether the proposal is "otherwise necessary" or "in the public interest," it is appropriate for the Siting Board to consider the facility in light of the goal to "reduce the amounts of contaminants entering the

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<sup>239</sup> *Id.*

<sup>240</sup> DEC, "Great Lakes Watershed", <<http://www.dec.ny.gov/lands/25562.html>>.

<sup>241</sup> 2010 Siting Plan, 9-6.

lakes and to address causes of lakewide problems.”<sup>242</sup>

## **2. CWM is subject to a virtually zero discharge limit for PCBs discharged to the Great Lakes Basin**

The RMU-2 Project proposal requires a state Water Quality Certification pursuant to 6 NYCRR § 608.9. Section 608.9 requires the Applicant to demonstrate that the proposed activity will not cause any violation of various water quality requirements, including effluent (discharge) limitations.<sup>243</sup> The limit for PCB concentrations in CWM’s discharges is 0.001 nanograms per liter (ng/l), or 0.001 parts per trillion (ppt).<sup>244</sup> Accordingly, virtually any discharge of PCBs will cause a violation of the applicable discharge limit.

CWM operates under a 2003 administratively extended Clean Water Act discharge permit, administered by the Department under the State Pollutant Discharge Elimination System (SPDES). Discharges of stormwater and direct discharges of wastewater to the Niagara River are permitted under the SPDES permit, subject to the PCB discharge limit.<sup>245</sup> According to the Department, the RMU-2 Project proposal is anticipated to require only minor modifications to

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<sup>242</sup> DEC, “Great Lakes Watershed”, <<http://www.dec.ny.gov/lands/25562.html>>.

<sup>243</sup> *Fact Sheet*, II.C.2.

<sup>244</sup> DEC, *SPDES Permit Fact Sheet [for CWM, Model City]*, dated October 10, 2007, 22; 40 C.F.R. § 129.105(a)(4).

<sup>245</sup> *See id.*, *passim*; DEIS, 8-9. The same conditions with minor modifications are set forth in CWM’s pending draft SPDES permit. *See* DEC, *SPDES Permit Fact Sheet [for CWM, Model City]*, dated September 23, 2009, 23, available at <[http://www.dec.ny.gov/docs/permits\\_ej\\_operations\\_pdf/cwmfctsheet.pdf](http://www.dec.ny.gov/docs/permits_ej_operations_pdf/cwmfctsheet.pdf)>.

CWM's SPDES permit.<sup>246</sup>

PCBs are a subject of concern because they belong to a class of “Bioaccumulative Chemicals of Concern” (BCCs), BCCs have been detected in site wastewater or site soils and collected stormwater at Model City,<sup>247</sup> and PCBs are subject to a virtual elimination goal for facilities that discharge to the Great Lakes Basin.

PCBs are highly resistant to breakdown by heat, light, air or metabolic processes. Those congeners [PCB chemical species] that are broken down by ultra-violet light tend to produce degradation products or “daughter compounds” that are more toxic than the “parent” or original PCB compound.

PCBs have low water solubility but are highly fat-soluble. PCBs also bind to organic matter in soils and sediments. Because of the low solubility of PCBs in water, they tend to accumulate in river sediments and lakes near their discharge points where they accumulate in fairly high concentrations. . . . Plants and animals can concentrate PCBs at levels far above those in sediments and water. For example, studies in 1970 and 1971 indicated that shrimp and oysters exposed to 10 parts per billion (ppb) of Aroclors 1254 had bioaccumulated PCBs in their fatty tissues at levels 130 to 330 times the ambient concentrations. Some species exhibited bioaccumulations from 40,000 to 75,000 times the ambient levels. Organic solvents in soils can also mobilize PCBs.<sup>248</sup>

According to EPA, “the types of PCBs likely to be bioaccumulated in fish and bound to

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<sup>246</sup> *Fact Sheet*, II.C.3.

<sup>247</sup> *SPDES Permit Fact Sheet*, 23 (noting in addition that Mercury, Pesticides, and Dioxins/Furans, as well as PCBs are considered BCCs, and all have been detected in site soils and surface water at Model City).

<sup>248</sup> Lawrence P. Schnapf, *Environmental Law Practice Guide* § 36B.02[1] (Matthew Bender 2013).



sediments are the most carcinogenic PCB mixtures.”<sup>249</sup> In addition to causing cancer, PCBs are linked to several non-cancer health effects:

Impaired neurological development, including visual recognition, short-term memory and learning deficiencies as well as decreased birth weight and shortened gestational age have been reported in infants of mothers who consumed PCB-contaminated fish. Some studies have found an association between elevated blood levels of PCBs and low sperm counts. Other studies also suggest that PCBs may act as endocrine disrupters, including affecting thyroid hormone levels which are critical for normal growth and development, as well as impairing the functioning of the immune systems.<sup>250</sup>

Because PCBs are relatively immobile in groundwater, once they contaminate site groundwater (for example, by their presence in DNAPL), PCBs can be expected to be released downgradient slowly over long periods of time.<sup>251</sup>

In 1997, EPA provided a report to Congress describing the extent of contamination of the nation’s aquatic environment.<sup>252</sup> The report finds that sediments in the Great Lakes are predominantly contaminated with PCBs.<sup>253</sup> PCB concentrations in Great Lakes sediments are several orders of magnitude greater than PCB concentrations in Great Lakes water, as PCBs are

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<sup>249</sup> *Id.* § 36B.02, note 3.

<sup>250</sup> *Id.* § 36B.02[3].

<sup>251</sup> Kathryn A. Laukonen, Beth L. Parker and John A. Cherry, *Solvent plume characteristics elucidated from a DNAPL experiment at the Borden site* (2001), available at <<http://www.containment.fsu.edu/cd/content/index.htm>>.

<sup>252</sup> U. S. EPA, *The Incidence and Severity of Sediment Contamination in Surface Waters of the United States* (3 vols.), EPA 823-R-97-006, Washington, DC, (1997).

<sup>253</sup> *Id.*, at 3-48.

hydrophobic.<sup>254</sup> The public is advised that consumption of fish from the Great Lakes should be limited due to PCB concentrations in the fish.<sup>255</sup>

Mixing zones for the discharge of bioaccumulative chemicals of concern (BCCs), including PCBs, were banned in 2000, providing for a 10-year phase-out for existing dischargers into the Great Lakes Basin.<sup>256</sup>

EPA has judged that mixing zones for BCCs . . . for existing discharges should be prohibited to the greatest extent technically and economically possible. A large number of scientists, policy makers, and other stakeholders in the Great Lakes and Canada agree on the need to virtually eliminate BCCs from the Great Lakes Basin and to reduce the size of BCC mixing zones to the maximum extent possible. This is because BCCs, due to their persistent and bioaccumulative nature, are incompatible with mixing zones. By definition, BCCs are chemicals that do not degrade over time. These chemicals accumulate in organisms living in the water and become more concentrated as they move up the food chain—from biota to fish and wildlife to humans. Because the effects of these chemicals are not mitigated by dilution, using a mixing zone to “dilute” BCC discharges is not appropriate. Commenters pointed out that dilution and dispersion are inadequate substitutes for removing and treating the BCCs before they are discharged to the Great Lakes’ waters. *EPA agrees with these commenters because it*

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<sup>254</sup> R. J. Allan and A. J. Ball, *An Overview of Toxic Contaminants in Water and Sediments of the Great Lakes, Part I*, 25 WATER POLL. RES. J. CANADA 387, 396 (1990). *See also id.*, at 413 (“persistent, hydrophobic organic chemicals are associated with the fine particulate phases which accumulate in the major depositional basins”).

<sup>255</sup> U.S. EPA, *Deposition of Air Pollutants to the Great Waters: Second Report to Congress* (1997), at 24-25.

<sup>256</sup> EPA, *Final Rule To Amend the Final Water Quality Guidance for the Great Lakes System To Prohibit Mixing Zones for Bioaccumulative Chemicals of Concern*, 65 Fed.Reg. 67638 (November 13, 2000). This rule eliminated a previous exception allowing a mixing zone “if a facility with an existing BCC discharge can demonstrate that it is reducing that discharge to the maximum extent feasible (considering technical and economic factors) but cannot meet WQBELs for that discharge without a mixing zone.” 60 Fed.Reg. 15366, 15376 (1995).

*is the mass of BCCs that poses a problem, not just the concentration.* Because dioxins, mercury, polychlorinated biphenyls (PCBs) and other BCCs degrade over long periods of time or do not degrade at all, their buildup in pockets of sediments creates “hot spots” in the environment in which bioaccumulation of toxics in fish and other aquatic organisms can occur at levels that significantly exceed safe levels for consumption by wildlife and humans.<sup>257</sup>

To implement the ban on mixing zones for PCBs, for existing dischargers like CWM after November 15, 2010, “NPDES [including SPDES] permit limitations for BCCs discharged to the Great Lakes System must be set no higher than water quality criteria,”<sup>258</sup> or 0.001 ppt for PCBs.<sup>259</sup>

As previously noted, the Niagara River is a designated “Area of Concern” under the Great Lakes Critical Program Act, enacted by Congress in 1990. The Act amended section 118 of the federal Clean Water Act.<sup>260</sup> Section 118(c)(2)(C) of the Clean Water Act implementing the Great Lakes Water Quality Agreement between the U.S. and Canada, (GLWQA), and federal regulations implementing Section 118, including 40 CFR Part 132, effect a virtual ban on PCB waste management facilities in the Basin like CWM’s.

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<sup>257</sup> 65 Fed.Reg. at 67640-67641 (emphasis added).

<sup>258</sup> 65 Fed.Reg. at 67639.

<sup>259</sup> 40 C.F.R. § 129.105(a)(4).

<sup>260</sup> Pub. L. 101-596, November 16, 1990 (directing EPA to issue the Great Lakes Water Quality Initiative). The Initiative was finalized in 1995 as the Final Water Quality Guidance for the Great Lakes System. 60 Fed. Reg. 15366 (1995). Great Lakes states had until March 1997 to implement the provisions of the Initiative. *Id.*

### **3. RMU-2 cannot meet the virtually zero discharge limit for PCBs**

At the Model City facility, PCBs have been detected in site stormwater,<sup>261</sup> groundwater<sup>262</sup> and wastewater.<sup>263</sup> All three sources of water potentially discharge to the Niagara River, either directly (wastewater), through surface stream Four-Mile Creek draining the site (shallow groundwater, stormwater),<sup>264</sup> or through groundwater seepage. CWM directly discharges annually about 20 million gallons of treated wastewater (mostly treated landfill leachate) to the Niagara River, through an underwater pipeline to a diffuser at the bottom of the center of the river. This discharge occurs over the course of about four weeks in late summer or early fall. The location of the diffuser for this discharge serves to create a mixing zone, reducing the aquatic life subject to

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<sup>261</sup> DEC, *Responses to Comments on Draft SPDES Permit Modification, CWM Chemical Services, LLC*, SPDES Permit No. NY 007 2061 (September 1, 2009), 26 (available at <[http://www.dec.ny.gov/docs/permits\\_ej\\_operations\\_pdf/cwmrspsumm.pdf](http://www.dec.ny.gov/docs/permits_ej_operations_pdf/cwmrspsumm.pdf)>):

Although certain runoff controls are in place to prevent soil and sediment migration in storm water, organics contamination on the CWM site is not limited to only . . . construction areas, landfills, or secondary containment systems. This fact was solidly demonstrated by the Department's November 2006 soil and sediment PCB survey, which found relatively high levels of PCB contamination in several site drainage areas tested. Further, retaining and releasing storm water in a controlled manner has little or no bearing on preventing dilution, before reaching Outfall 002. Such dilution of potentially-contaminated storm water with downgradient runoff which may not be contaminated, could effectively mask the contamination through such dilution to below detection levels. Finally, it is known that, due to significant quantities of precipitation overwhelming the storm water retention system, retained storm water occasionally by-passes the gate.

<sup>262</sup> For example, a concentration of 35,000 µg/l (35 million ppt) in a single PCB cogener (PCB-1260) was detected in groundwater in the central Process Area. Michalski report, 20 (discussing findings in Golder, 1993 RFI).

<sup>263</sup> *SPDES Permit Fact Sheet*, 23.

<sup>264</sup> In addition, surface waters drain to Eighteen-Mile Creek, within the Great Lakes Basin and flowing to Lake Ontario.

exposure to the highest concentration of residual contaminants in the discharge.

Because PCBs have been detected in site stormwater, groundwater and wastewater, PCBs have not been contained at the CWM site, and would not be contained under the RMU-2 Project proposal. Accordingly, CWM cannot assure that it will achieve the applicable discharge limit for PCBs.

CWM's Part 373 permit, as proposed for the RMU-2 Project, also does not assure compliance with the PCB discharge limit. Under the analytical method prescribed by CWM's permit (EPA Method 608),<sup>265</sup> the detection level for PCBs is identified as 65 ng/L, or 65,000 times the water quality based effluent limit (0.001 ng/L).<sup>266</sup>

CWM's permit places limits on seven Aroclors, which are commercial forms of PCB oils manufactured by Monsanto, not speciated PCBs. Aroclors are a combination of solvents and PCBs. Speciated PCBs are termed "congeners." There are 209 PCB congeners, 12 of which are dioxin-like in their toxicity. EPA Method 1668 has a detection limit of 16 pg/L (picograms-per-liter; parts-per-quadrillion) (0.016 ppt) for PCB-1260 in water,<sup>267</sup> or 16 times 0.001 ng/L. Under Method 1668 most other PCB congeners are detectable at concentrations closer to 20 ppb, or

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<sup>265</sup> Draft SPDES Permit (September 1, 2009), 15n.8; 2010 Draft SPDES Permit, 15n.8; Sitewide Renewal Permit (2013), Supp. to Mod. II, Sched. 1, Cond. A.1; *id.*, Vol. 1-B, Appx. A, "Standard Analytical Procedures"; Proposed Part 373 Permit (RMU-2), Attachment C, Appx. A, "Standard Analytical Procedures" (noting no modification to 2013 Sitewide Renewal Permit). Method 608 is undergoing Revision A, in draft dated June 16, 2013, in part because according EPA's independent Environmental Laboratory Advisory Board, some of the published detection limits are "not believable." Cf. <<http://www.epa.gov/elab/pdfs/epa-method-608-revision-a.pdf>>, comment to item 1.6.

<sup>266</sup> 2010 Draft SPDES Permit, 11.

<sup>267</sup> U.S. EPA, *Method 1668C - Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue* by HRGC/HRMS, EPA-820-R-10-005, April 2010, available at <[http://water.epa.gov/scitech/methods/cwa/upload/M1668C\\_11June10-PCB\\_Congeners.pdf](http://water.epa.gov/scitech/methods/cwa/upload/M1668C_11June10-PCB_Congeners.pdf)>, 1.

20,000 times 0.001 ng/L.<sup>268</sup> The proposed final limits on PCBs under CWM's current and draft SPDES permits are 200 ng/L daily for each of the seven Aroclors, or 1400 ng/L "total PCBs".<sup>269</sup>

CWM's SPDES permit also requires a "PCB Pollutant Minimization Plan." However, the permit provides:

EPA Method 1668B shall be used for all sampling and analyses for PCBMP purposes. *No result from any sampling for PCBMP purposes shall be used for determining compliance with any permit limit.*<sup>270</sup>

The combined effect of these permit provisions is to preclude meaningful progress toward achieving the actual applicable discharge limits for PCBs discharged with site waters to the Niagara River. The facility cannot avoid discharging PCBs into the river in excess of its permitted limit, which incorporates the virtual elimination rule for such discharges under the Great Lakes Water Quality Agreement between the U.S. and Canada. Therefore, there is no assurance that the applicable discharge limit will be (and has in the past been) met.

#### **4. CWM does not recognize the virtual zero discharge limit for PCBs**

CWM asserts that the special protections for Great Lakes Basin waters require only that it

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<sup>268</sup> Agency for Toxic Substances and Disease Registry, *Toxicological Profile for Polychlorinated Biphenyls (PCBs)* (November 2000), ch. 7, Table 7-1, "EPA Method 1668-Estimated Method Detection Limits (EMDL) and Estimated Minimal Levels (EML) of Selected PCB Congeners" (available at <<http://www.atsdr.cdc.gov/toxprofiles/tp17.pdf>>). See also George M. Frame, *Comprehensive, Quantitative, Congener-Specific PCB Analysis: When Is It Required and What Is Necessary to Achieve It?*, PROCEEDINGS, 13TH ANNUAL WATER TESTING AND QUALITY ASSURANCE SYMPOSIUM, JULY 6-9, 1997, 125-130, 126, 129-130, available at <<http://www.epa.gov/wastes/hazard/testmethods/pdfs/final97a.pdf>> (discussing Method 1668).

<sup>269</sup> "Interim limits" under the 2010 Draft SPDES permit would allow 2,600 ng/L (ppt), or 2.6 million times 0.001 ng/L for 18 months. 2010 Draft SPDES Permit, 16n.11.

<sup>270</sup> SPDES Permit (September 1, 2009), 22, Special Condition 2.A (emphases added).

“cost-effectively work toward meeting water quality objectives.”<sup>271</sup> For this conclusion CWM relies on 40 CFR Part 132 Appendix F, *Procedure 8: Water Quality-Based Effluent Limitations Below the Quantification Level*.<sup>272</sup> Part 132 “constitutes the Water Quality Guidance for the Great Lakes System (Guidance) required by section 118(c)(2) of the Clean Water Act as amended by the Great Lakes Critical Programs Act of 1990” and “identifies minimum water quality standards, antidegradation policies, and implementation procedures for the Great Lakes System to protect human health, aquatic life, and wildlife.”<sup>273</sup> Appendix F provides the “implementation procedures” for Part 132.<sup>274</sup>

The plain terms of Procedure 8 are contrary to CWM’s interpretation. The Procedure applies where, as with PCBs discharged by CWM, the discharge (or effluent) limit is below the analytical detection limit. Under that circumstance, Procedure 8 imposes four requirements (A through D): (A) the discharge limit must be the same as the water quality-based effluent limitation (for CWM for PCBs, 0.001 ppt); (B) the detection (or quantification) limit must be “the most sensitive, applicable, analytical method, specified in or approved under 40 CFR part 136”; (C) the facility’s permit must provide for reopening or revocation of the permit “if new information generated as a result of special conditions included in the permit indicates that presence of the pollutant in the discharge at levels above the WQBEL”; (D) the facility must

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<sup>271</sup> O’Brien & Gere, *CWM Comments to the January 4, 2010 Revised Draft Permit Modifications* (April 28, 2010), p. 5 of 82.

<sup>272</sup> *Id.*, fn. 3.

<sup>273</sup> 40 CFR § 132.1(a) (citations and amendments omitted).

<sup>274</sup> 60 Fed.Reg. 15366, 15380 (1995).

develop a “pollutant minimization program” (PMP) “to maintain the effluent at or below the WQBEL.”<sup>275</sup>

At a minimum, the PMP must include five elements: (1) “An annual review and semi-annual monitoring of potential sources of the pollutant”; (2) “Quarterly monitoring for the pollutant in the influent to the wastewater treatment system”; (3) “a control strategy designed to proceed toward the goal of maintaining the effluent below the WQBEL”; (4) “[i]mplementation of appropriate, cost-effective control measures consistent with the control strategy”; and (5) an annual status report that includes monitoring results, identification of “potential sources of the pollutant”. Finally, monitoring and other requirements can be enhanced or reduced based on the reported results of the PMP.<sup>276</sup>

Thus, it is apparent that while “cost-effective control measures” are a required part of a pollutant minimization program, that requirement is one of four requirements under Procedure 8. Moreover, the PMP “is not limited to” the five listed elements required in a PMP.<sup>277</sup>

As noted, CWM’s PMP must also identify “potential sources of the pollutant”.<sup>278</sup>

However, CWM has for years resisted this requirement.

The requirement to identify sources of PCB contamination in surface waters and soils at

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<sup>275</sup> 40 CFR Part 132 Appendix F, Procedure 8(D)(6).

<sup>276</sup> *Id.*

<sup>277</sup> 40 CFR Part 132 Appendix F, Procedure 8(D), Preamble. *See also* 60 Fed.Reg. 15366 at 15380 (“pursuant to section 510 of the CWA, part 132 specifies that nothing in the final Guidance [*i.e.* 40 CFR Part 132] prohibits States or Tribes from adopting provisions more stringent than the final Guidance”).

<sup>278</sup> 40 CFR Part 132 Appendix F, Procedure 8(D)(5).



its facility was included as a condition in CWM's Part 373 permit in 2005, following a series of detections in site surface water. This prompted the Department to include in the permit enhanced monitoring of the Process Area in the central portion of the site, assumed to be the source of the detections. CWM commented on the draft permit urging that the monitoring condition be omitted and replaced with conductivity testing of site surface waters to screen for PCBs. The Department responded as follows:

The DEC does not agree that this condition should be eliminated, but does believe that certain revisions to this condition are appropriate. Surface water from the process area drains to two SMPs (surface water monitoring points), SMP-03 and SMP-04. Most SMPs on site, including SMP03 and SMP04 have flow control gates which are normally kept closed so that accumulated runoff can be tested before surface water discharge. When storm water is released from either SMP-03 or SMP-04, it flows into a drainage swale which eventually discharges through SPDES Outfall 002. Past detections of certain contaminants at this outfall warrant on-site investigation, and call into question the reliability of the conductivity criteria as an appropriate screening tool. However, the NYSDEC acknowledges that a limited investigation may be more appropriate to this situation, than additional long-term monitoring. The NYSDEC considers that an investigation which begins with surface water sampling at SMP03 and SMP04 and expands to other areas and environmental media as necessary *to identify potential contaminant migration sources within the process area* is a prudent approach. Therefore, the NYSDEC has revised this condition to require submission of an investigation plan instead of an additional monitoring plan, with initial surface water sampling at SMP03, SMP04 and SMP05 and provisions to expand the investigation as needed to identify potential sources of surface water contamination.<sup>279</sup>

Specifically regarding CWM's discharge of PCBs into site surface waters, the Department

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<sup>279</sup> NYSDEC, CWM Permit Renewal, *NYSDEC Responsiveness Summary, Section II - CWM Comments & Responses* (August 5, 2005), at II-76 (DEC response to Comment 94) (emphases added).

responded:

Following a third consecutive month (April 2001) of PCB detections at Outfall 002 (SMP06), which discharges storm water originating in part from the process area, CWM was required to submit a report (**Stormwater PCB Evaluation Report**) to the DEC's Division of Water identifying long-term measures to be taken to eliminate and prevent future detections. Subsequent to this, additional PCB detections occurred with in-stream samples collected in October and November of 2001. In a PCB DETECTION REPORT attached to the **Stormwater PCB Evaluation Report**, the company indicated that PCB exceedences may have occurred due to soils being disturbed during construction and excavation activities associated with upgrading internal storm water control gates. As part of the follow-up activities following the initial PCB detections, CWM conducted internal water sampling to identify and track the source(s) of the PCBs. During most of this monitoring period (June through December 2001), Aroclors 1232, 1242, 1254, and 1260 were detected at various times and at various SMPs, including SMP04 and SMP05, indicating that the PCBs may have originated from the process area. To eliminate the PCB detections at the outfalls, CWM initiated in the Spring of 2002 corrective actions, including scraping several inches of soil immediately upstream and in some cases downstream of the faceplates, replacing it with clean fill, and installing fabric filters and rock check dams at several of the SMPs. As recently as April 2003, following the corrective actions, a violation for Aroclor 1260 occurred at SPDES Outfall 002 (<1400 ng/l daily average, 5400 ng/l daily maximum), and detections have been noted at this same outfall in February and May 2003. It is noted however, that CWM suspects the 5400 ng/l result as possibly due to laboratory error. In mid-2003, CWM performed additional corrective actions in the form of carbon filter cloths and rock check dams at SMPs upgradient of Outfall 002, in an effort to eliminate PCB detections. During the January 2004 through April 2005 period there have been two (2) detections of PCBs out of 37 samples analyzed at Outfall 002, one at 62 ng/l and the other at 77 ng/l. This indicates that PCBs are still originating upstream of SMP06 (Outfall 002), which receives surface water from SMP03, SMP04 and SMP05. As part of the *Proposed Future Corrective Measures* section in CWM's **Stormwater PCB Evaluation Report**, the facility stated that it would "... evaluate areas of the

Model City Facility, previously identified in the RFI, which contained PCBs greater than 1 mg/kg, i.e., 1 ppm [1 million ppt], in surface soil samples. CWM will evaluate the possibility of either covering the areas with a low permeability soil, paving, or initiating removal of the soils”. In addition to the above considerations, Specific Conductivity, used as an indicator parameter to indicate the presence of organic contaminants, may not provide an acceptable level of confidence, and to our knowledge direct sampling of SMP04 and SMP05 for PCBs has not taken place. Such direct sampling would confirm with an acceptable degree of confidence the presence or absence of PCBs. . . . PCB contamination of surface water originating upstream of SMP06 has been documented and still occurs . . .<sup>280</sup>

Accordingly, a Process Area Investigation Plan and implementation was added as a condition to CWM’s Part 373 2005 renewal permit.

On September 1, 2009, the Department rejected objections submitted by CWM to proposed SPDES permit conditions that were substantially similar to CWM’s objections to PCB control requirements included in its 2005 Part 373 renewal permit. In its responses, the Department reiterated its concern that PCB concentrations in surface waters would be diluted without additional controls, and found that CWM’s control measures were “not a properly-designed treatment system (for removal of PCBs).”<sup>281</sup>

At the time of CWM’s 2010 Part 373 renewal permit, CWM’s Process Area investigation had not identified potential contaminant migration sources for PCBs, as required under the 2005 permit. The Department proposed to add PCB detection to treated wastewater held in the final tank in CWM’s onsite wastewater treatment plant, prior to discharge into Fac Pond 1&2.

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<sup>280</sup> *Id.*, at II-76 to II-77.

<sup>281</sup> DEC, *Responses to Comments on Draft SPDES Permit Modification*, (September 1, 2009), 26.

Detection would be in accordance with EPA Method 1668, which has a lower detection limit than Method 608, the method that continues to be prescribed under CWM permits for analyzing PCBs in discharge outfalls (*i.e.*, external to the wastewater treatment system). However, it should be recalled that detection limits under Method 1668 are generally 20,000 times higher than CWM's 0.001 ng/L discharge limit.<sup>282</sup>

The purpose of the new permit condition is to detect PCBs prior to their dilution in the Fac Pond. CWM commented to the Department objecting to the condition, questioning Department Staff's finding that dilution of PCB-contaminated stormwater could occur and avoid detection without internal outfalls.<sup>283</sup> In response Staff noted that sediment sampling behind stormwater monitoring point (SMP) control gates, and to and from the SMPs have detected PCBs. Although noting that these facts "are not in dispute,"<sup>284</sup> CWM reasserted its view, rejected by the Department in 2005, that conductivity screening for PCBs is sufficient and obviates the need for a new internal monitoring point. However, contrary to CWM's comment, PCBs are not well detected by means of a conductivity analysis. PCBs are dielectric fluids, used in transformers and capacitors, in heat transfer and hydraulic systems, because they do not conduct electricity.<sup>285</sup> Accordingly, analysis of electrical conductivity in water samples is an ineffective

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<sup>282</sup> See above, text at footnote 268.

<sup>283</sup> O'Brian & Gere Engineers, Inc., *CWM Comments to the January 4, 2010 Revised Draft Permit Modifications*, April 28, 2010.

<sup>284</sup> *Id.*, 3.

<sup>285</sup> United Nations Environment Programme, *Guidelines for the Identification of PCBs and Materials Containing PCBs*, August 1999, p. 2, available at <<http://www.chem.unep.ch/Publications/pdf/GuidIdPCB.pdf>>.

means to detect PCBs.<sup>286</sup>

CWM's comment also asserts: "The mixing of water from non-point sources is not considered dilution by USEPA . . ."<sup>287</sup> This is asserted in opposition to the sampling of internal outfalls for PCBs, and in favor of monitoring for PCBs at the property line. However, EPA has stated that the dilution prohibition should not apply to PCBs only where they are managed in a treatment train, not when they are managed in non-point stormwater where "where a treatment standard is expressed as a specified method."<sup>288</sup> For CWM, the specified method is identification and removal of the source of PCBs in site soils.<sup>289</sup> Thus, CWM is in error when asserting that EPA does not consider the mixing of potentially PCB-contaminated wastewater with stormwater in its storage ponds impermissible dilution.

CWM's position creates the appearance that CWM wishes to avoid obtaining information it is required to obtain that could trigger Procedure 8(C), authorizing permit revocation "if new information generated indicates that presence of the pollutant in the discharge [is] at levels above the WQBEL,"<sup>290</sup> *i.e.*, the discharge limit of 0.001 ppt for PCBs.

CWM's desire to avoid PCB detections is also reflected in its assertion that 40 CFR Part

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<sup>286</sup> "It is the Department's opinion that Specific Conductance data is meaningless for purposes of screening for the presence of PCBs." *Responses to Comments on Draft SPDES Permit Modification*, CWM Chemical Services, LLC (September 1, 2009), 26.

<sup>287</sup> O'Brian & Gere Engineers, *CWM Comments*, 4.

<sup>288</sup> 55 Fed.Reg. 22520 (June 1, 1990). *See also id.*, Part 3, sec. V.G., "Regulatory Overlap of Polychlorinated Biphenyls (PCBs) Under the Toxic Substances Control Act (TSCA) and Resource Conservation and Recovery Act".

<sup>289</sup> *See above*, footnote 281.

<sup>290</sup> 40 CFR Part 132 Appendix F. Procedure 8(C).

132 Appendix F. Procedure 8 requires of it no more than it “cost-effectively work toward meeting water quality objectives.”<sup>291</sup> In the first instance, the water quality based effluent limit (WQBEL) of 0.001 ppt for PCBs applies to all discharges from the site because the receiving water body is a designated Area of Concern in the Great Lakes Basin. Secondly, the Department has adopted a policy requiring, as a condition for qualifying for a permit, a reasonable assurance that applicable requirements can be complied with.<sup>292</sup> Finally, the detection limits for detecting PCBs in wastewater are several orders of magnitude greater than CWM’s permitted discharge limit. Although CWM must utilize “the most sensitive, applicable, analytical method, specified in or approved under 40 CFR part 136,”<sup>293</sup> because the available methods allow PCB concentrations substantially greater than CWM’s discharge limit to be discharged to the Niagara River, the proposed permit fails to provide a reasonable assurance that the facility can comply with the limit applicable to PCB discharges. CWM’s resistance to identifying and removing the sources of PCBs on site means that discharges of PCBs can be expected to continue.

#### **5. CWM cannot obtain a Water Quality Certification for the proposed Drum Management Building**

The Department must also provide a Water Quality Certification certifying that excavation of approximately 32,171 square feet of the protected buffer area around State Wetland RV-8 to accommodate a proposed new Drum Management Building would not result in the

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<sup>291</sup> O’Brien & Gere, *CWM Comments*, 5.

<sup>292</sup> *Cf. above*, Subsection IV.C.

<sup>293</sup> 40 CFR Part 132 Appendix F. Procedure 8(B).

release of PCBs into surface waters that drain into the Niagara River.<sup>294</sup>

No soil testing is provided in advance of excavation to determine whether PCBs may be released to surface waters and discharged from the site to the river. Thus, no demonstration of compliance with the virtual discharge limit governing such discharges has been provided. The permit conditions include silt fencing, and allows spoils from excavation to be stabilized 100 feet from the wetland buffer area, but this is insufficient to prevent low concentrations of PCBs in the spoils from running into drainage channels or draining into groundwater that eventually discharges to the river.<sup>295</sup> Accordingly, there is no basis for certifying that construction of the Drum Management Building would comply with applicable limits and standards under the Clean Water Act, even if all conditions in the proposed permits are met.

#### **E. AIR IMPACTS HAVE NOT BEEN ADEQUATELY ASSESSED**

Sufficiently detailed information on the potential for harmful air emissions is required in CWM's Part 373, Part 361 and SEQRA applications but has not been provided.

CWM submitted an application to the Department for an Air State Facility Permit for existing operations on January 8, 2014, four months before its Part 361 and Part 373 applications were accepted as administratively complete. The air permit was issued in October 2014. There is no reason that prior to acceptance of its Part 361 and Part 373 applications for the RMU-2 Project CWM could not have estimated potential emissions from the proposed RMU-2 Project,

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<sup>294</sup> See DEC, proposed Water Quality Certification and Permit, at <[http://www.dec.ny.gov/docs/legal\\_protection\\_pdf/cwm00031.pdf](http://www.dec.ny.gov/docs/legal_protection_pdf/cwm00031.pdf)>.

<sup>295</sup> See above, footnote 81.

which include emissions of particulate matter (PM) resulting from construction, which could, when added to ongoing facility emissions, be significant. If significant, the RMU-2 Project would be subject to major source permitting under Part 201 of the Department's regulations implementing Title V of the Clean Air Act.<sup>296</sup> As a result, DEC, the Siting Board and the public cannot evaluate the air emissions impacts of the project proposal.

The Municipal Stakeholders' air emission expert Dr. Sahu has provided a report that preliminarily concludes, in the absence of modeling and estimations CWM is obligated to provide in the first instance, that facility emissions will exceed major source thresholds with the addition of the RMU-2 Project. As a result, the RMU-2 Project could be subject to additional permitting, beyond a modification of the Air State Facility permit. Dr. Sahu also concludes that CWM has provided an incomplete account of potential air emissions sources, specifically omitting an inventory of emissions sources and their expected releases to the atmosphere, and omitting any consideration of emissions from the proposed RMU-2 landfill and Fac Pond 5. These omissions are justified, according to CWM, because it will seek to modify its facility air permit later.

Part 373 applications must include "[a] description of procedures, structures or equipment used at the facility to . . . prevent releases to the atmosphere."<sup>297</sup> In addition, an application for a certificate of environmental safety and public necessity must include all "completed applications for all permits and other entitlements required under the ECL for the proposed facility," unless

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<sup>296</sup> See 6 NYCRR § 621.4(g) and the supplemental requirements for Part 201 applications for "major" projects under 6 NYCRR § 621.4(g)(2)(i) through (viii).

<sup>297</sup> 6 NYCRR § 373-1.5(a)(2)(viii)(f).



the applicant can “show[ ] good cause not to submit any such application at this time.”<sup>298</sup> In addition, SEQRA requires that a DEIS provide information on potential adverse impacts, including air pollution. Under SEQRA, a DEIS “must analyze the significant adverse impacts and evaluate all reasonable alternatives.”<sup>299</sup> “[A] substantial adverse change in existing air quality” is deemed “significant”.<sup>300</sup>

CWM has indicated it will submit an application to modify the October 2014 air permit for the existing operating facility to permit potential RMU-2 Project air pollutants, which would increase emissions compared to the existing operating facility, but only after the RMU-2 Project is approved. Accordingly, CWM has not provided an application to modify its permit to emit air pollutants. However, CWM has failed to show good cause for not doing so.

According to the Department’s *Fact Sheet*, the information in CWM’s air permit application (and now its air permit), and any information required to modify the air permit to regulate additional emissions expected from the RMU-2 Project will not be considered in this proceeding. Instead, it appears the Department is accepting CWM’s request to consider an application by CWM for an air permit modification once approvals for the RMU-2 Project are issued, following the conclusion of this proceeding. Only then would controls or mitigations, as determined appropriate, be incorporated into the terms and conditions of CWM’s air permit.<sup>301</sup>

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<sup>298</sup> 6 NYCRR § 361.3(e)(1). *See also* 6 NYCRR § 621.4 (“Supplemental information that the department determines is necessary to review the application may be requested at any time.”).

<sup>299</sup> 6 NYCRR § 617.9(b)(2).

<sup>300</sup> 6 NYCRR § 617.7(c)(1)(i).

<sup>301</sup> *Cf. Fact Sheet*, II.C.5.

By electing not to provide the information required 6 NYCRR § 373-1.5(a)(2)(viii)(f), CWM asserts there is good cause for the Siting Board not to consider the information under Part 361.<sup>302</sup> However, there is no justification for withholding information required for applications under Part 373. This circular and rather convoluted reasoning should not be accepted as a “good cause” excuse for failing to provide this information.

Nor does CWM have an excuse for failing to provide this information under SEQRA.<sup>303</sup> “An EIS [including a DEIS] must assemble relevant and material facts upon which an agency’s decision is to be made.”<sup>304</sup> These facts include “a statement and evaluation of the potential significant adverse environmental impacts at a level of detail that reflects the severity of the impacts and the reasonable likelihood of their occurrence,” and “a description of the mitigation measures.”<sup>305</sup>

It is not acceptable to allow CWM to withhold its air permit modification application, which it acknowledges is an applicable requirement, and the information it provides from review. As involved agencies under SEQRA, DEC and the Siting Board are required to take a hard look at the potential for adverse air impacts of the proposed project.

When CWM complies with the Part 373, Part 361 and SEQRA application requirements for information relevant to releases of emissions to the atmosphere, and provides sufficient

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<sup>302</sup> See 6 NYCRR § 361.3.

<sup>303</sup> See 6 NYCRR § 621.3(a)(4) (“If a project requires more than one department permit, the applicant must simultaneously submit all the necessary applications, or demonstrate to the department's satisfaction that there is good cause not to do so.”).

<sup>304</sup> 6 NYCRR § 617.9(b)(1).

<sup>305</sup> 6 NYCRR §§ 617.9(b)(5)(iii), (iv).

information to enable the Department, the Siting Board and involved agencies to assess risks or impacts of releases of emissions to the atmosphere under Part 361 and SEQRA, we look forward to commenting on the adequacy and regulatory implications of the information.

## **F. OTHER SPECIFIC DEFICIENCIES IN CWM'S APPLICATIONS**

### **1. No Stormwater Pollution Prevention Plan**

As noted previously, an application for a certificate of environmental safety and public necessity must include all “completed applications for all permits and other entitlements required under the ECL for the proposed facility.”<sup>306</sup> CWM acknowledges it must apply for approval of a Stormwater Pollution Prevention Plan (SWPPP), which would describe in detail all the site modifications to drainage patterns needed to control potentially polluted runoff from the site, and assess the adequacy of such modification in light of the extension alterations to the site required for the RMU-2 Project. However, CWM has not provided a proposed SWPPP for the proposed project. Instead, CWM states it “will be prepared for RMU-2 development” in the future.<sup>307</sup>

CWM's failure to provide a proposed SWPPP makes its Part 361 application deficient. Once CWM provides a proposed SWPPP, we look forward to commenting on its adequacy.

### **2. No Application to Modify CWM's Sitewide Discharge Permit**

The SWPPP would also inform an application to modify CWM's sitewide water discharge permit to accommodate the proposed RMU-2 Project. This application was submitted

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<sup>306</sup> 6 NYCRR § 361.3(e)(1).

<sup>307</sup> CWM, Part 361 Applic., 4.

to the Department in July 2013, but has also not been submitted to the Siting Board in violation of 6 NYCRR § 361.3(e)(1). The requested modifications to this permit would be extensive and substantial. They “include modifications to the Storm Water Flow Schematic & Monitoring Locations diagram of the draft SPDES Permit to add RMU-2, remove Facultative Ponds 3 and 8 upon closure, add new Facultative Pond 5, and revise surface water flow directions.”<sup>308</sup>

CWM’s failure to provide an application to modify its site discharge permit makes its part 361 application deficient. Once CWM provides this application, we look forward to commenting on its adequacy.

### **3. No demonstration of site suitability and safety**

The deficiencies in CWM’s Part 361 application flow from several erroneous claims about the safety and suitability of the Model City site, many of which have been previously addressed here at length.

In addition the Part 361 application makes an erroneous legal argument that should the Siting Board accept the 2010 Siting Plan’s finding, that there is no need for the RMU-2 Project, the Board will put the State’s hazardous waste program at risk because that finding is somehow inconsistent with the federal RCRA-C program. This argument confuses the heightened burden of proof placed on CWM by the finding regarding need in the 2010 Siting Plan with the basis for the Board’s siting determination, which should address the risks presented by the site, and the ability of CWM to comply with all applicable requirements.

Compliance with applicable requirements is the minimum that should be expected to

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<sup>308</sup> CWM, Part 361 Applic., 4.

qualify for a certificate of environmental safety and public necessity, but as shown in Section 5, *above*, the RMU-2 Project as proposed fails to meet even that standard. Equally important, the deficiencies in all of CWM's applications, together with its apparent insistence that the Board not look at its air permit and water quality certification applications, show that it has failed to meet the burden of assuring that operations would be safe.

A decision to grant or deny a certificate of environmental safety and public necessity based on whether the RMU-2 Project proposal is safe for public health and the environment is clearly consistent with the federal RCRA-C program, and with the consistency requirement under 40 CFR § 271.4(b), on which CWM endeavors to rely.<sup>309</sup> 40 CFR § 271.4(b) provides: "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 or disposal of hazardous waste in the State may be deemed inconsistent." (emphasis added). Accordingly, the discussion that follows clarifies the finding regarding need in the 2010 Siting Plan, and then shows that the RMU-2 Project as proposed is not otherwise necessary or in the public interest, because it would not sufficiently protect human health or the environment.

The 2010 State Siting Plan has determined there is no need for additional land disposal or liquid hazardous waste management in New York for the foreseeable future.<sup>310</sup> EPA is in agreement, finding that sufficient hazardous waste management capacity exists in the nation such

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<sup>309</sup> CWM, Part 361 Applic., 18-19.

<sup>310</sup> 2010 Siting Plan, at 6-9 and 9-3.

that there is no longer any need for the states to provide capacity assurance.<sup>311</sup>

The Hazardous Waste Facility Siting Law has always contemplated that a State Siting Board may deny a certificate of environmental safety and public necessity to construct a hazardous waste facility without regard to the scoring of “siting criteria” provided for in section 27-1103 of the law. The Siting statute provides several grounds for denial of the certificate only one of which refers to the scoring mechanism:

The board shall deny an application to construct or operate a facility if residential areas and contiguous populations will be endangered, if it otherwise does not conform to the siting criteria established for such facility pursuant to section 27-1103 of this title or, upon final adoption of the statewide hazardous waste facility siting plan established pursuant to section 27-1102 of this title, 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.<sup>312</sup>

Thus, since the need for the proposed RMU-2 Project is not identified in the Siting Plan, and the proposed project is not consistent with the Plan,<sup>313</sup> denial of a certificate is authorized if the Siting Board finds nearby populations will be endangered, or if “the board finds that the facility is not otherwise necessary or in the public interest.”<sup>314</sup>

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<sup>311</sup> *Id.*, at Appx. E. *See also id.*, at 6-8 (noting that according to EPA, “there is sufficient RCRA-C hazardous waste capacity in the country through at least 2034”).

<sup>312</sup> ECL § 27-1105(3)(f). *See also* 6 NYCRR § 361(c)(4) (“Nothing herein shall limit the authority of the board to deny an application if residential areas and contiguous populations will be endangered, if construction or operation of such facility would be contrary to local zoning or land use regulations in force on the date of the application or the board finds that the facility is not necessary or is otherwise not in the public interest.”).

<sup>313</sup> *See* 2010 Siting Plan, at 9-5 (“Facilities which will promote moving up the hierarchy for management of hazardous waste are consistent with the Plan.”).

<sup>314</sup> ECL § 27-1105(3)(f).

Only if all other factors favor siting a proposed facility must the Board turn to the scoring mechanism. Thus, if proposed protective measures would result in no significant endangerment to nearby populations, and if the proposed facility is deemed consistent with the Siting Plan, the Board must turn to the siting criteria to determine whether the proposal conforms to the criteria.

In this instance, the Siting Board should deny a certificate for the RMU-2 Project for any one of the following compelling reasons:

- The site hydrogeological setting, particularly in the area of the proposed RMU-2 landfill, makes the site unusually insecure. As a result, not only will it be impossible as a practical matter to contain a release from RMU-2, but it will be impossible to detect whether hazardous constituents found in the aquifer beneath the area have been released from RMU-2 or other units on site, past or present.
- The site contains potentially widespread buried radiological contamination that could be dispersed to the local atmosphere by major excavation.
- Discharges of stormwater and treated wastewater at this site are subject to one of the most stringent limits in the nation, a virtual zero discharge limit for some of the most dangerous substances known, owing to its location in the Great Lakes Basin and to the fact that site waters are discharged to the Niagara River, a designed “Area of Concern” under the Clean Water Act.
- Surface soils and the aquifer beneath the CWM site are already polluted with VOCs in excess of state groundwater protection standards.<sup>315</sup> The RMU-2 Project is thus clearly in conflict with applicable law and policy for this location.

Any of these four reasons establish that the RMU-2 Project proposal is not in the public interest, as each of these are extraordinary threats that go well beyond the inherent threats of this kind of

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<sup>315</sup> CWM, *Site Management Plan* (February 2014), 9.

facility to the community and the environment.<sup>316</sup>

In addition, there is no basis for finding the proposal is otherwise necessary. As noted above, nearly all municipalities in Niagara County have concluded that continued operation of the Model City facility is an impediment to economic growth. Moreover, CWM has adequate alternative hazardous waste disposal facilities for managing the waste that it proposes to accept at Model City. Indeed, CWM operates more such facilities than any other company in the nation.

According to its most recent 10-K filing with the U.S. Security and Exchange Commission, CWM operates four other hazardous waste disposal facilities elsewhere in the North America,<sup>317</sup> and the State Siting Plan finds that proximity to generation facilities is normally not a factor in determining to which commercial facility a generator will ship a particular waste because the market for hazardous waste disposal services is national and international, not regional.<sup>318</sup> CWM therefore has no compelling private need to continue operations at Model City. Its other facilities can be expected to share in the market that will absorb the services it now provides. Indeed, CWM has been operating for several years under a substantially reduced waste acceptance rate compared to a decade ago, and no deleterious effects have been registered among New York hazardous waste generators.

Finally, an expected effect of denying a certificate for the RMU-2 Project proposal is to

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<sup>316</sup> *Cf. below*, footnotes 320, 321, and 330 (discussing inherent threats).

<sup>317</sup> Waste Management, Inc., Form 10-K (February 18, 2014), 6 (“At December 31, 2013, we owned or operated 262 solid waste landfills and five secure hazardous waste landfills, which represents the largest network of landfills in North America.”), available at <https://www.sec.gov/edgar/searchedgar/companysearch.html> (search on “waste management”).

<sup>318</sup> 2010 Siting Plan, at 6-2, 6-7.



advance the State's hierarchy of waste management methods, which makes land disposal the least favored method, and favors reduction in generation, reuse of generated hazardous waste, and recycling of the waste.<sup>319</sup> The waste management hierarchy reflects an acknowledgment that land disposal of hazardous waste is inherently insecure,<sup>320</sup> and poses inherent threats to nearby populations and the environment.<sup>321</sup>

CWM has offered a perspective on the hazardous waste facility siting rules that is glaringly at odds with the one above. However, its perspective grows out of a false assumption, that the 2010 Siting Plan guidance to siting boards regarding the foreseeable need for new or expanded land disposal capacity does not apply to this proceeding. According to CWM, the

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<sup>319</sup> *Id.*, at 2-9

<sup>320</sup> Industry argued during the early development of the regulations requiring engineered liner systems for hazardous waste landfills that liner systems could contain landfills forever. EPA disagreed: "Some have argued that liners are devices that provide a perpetual seal against any migration from a waste management unit. EPA has concluded that the more reasonable assumption, based on what is known about the pressures placed on liners over time, is that any liner will begin to leak eventually. Others have argued that liners should be viewed as a means of retarding the movement of liquids from a unit for some period of time. While this view accords with how liners do in fact operate, EPA does not believe that this is a sound regulatory strategy for ground-water protection because it is principally designed to delay the appearance of ground water contamination rather than to achieve a more permanent solution." USEPA, *Hazardous Waste Management System; Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; and EPA Administered Permit Programs*, 47 Fed.Reg. 32274, 32284-32285 (1982).

<sup>321</sup> Inherent threats to the host community are recognized under New York's hazardous waste facility siting law, which requires a "community advisory committee" be established by the host county "for the purpose of entering into dialogue with the applicant to develop mutually acceptable solutions to problems which may be created by the siting of the facility in the community." ECL § 27-1113(1). *See also Final Decision of the Commissioner, In the Matter of Applications by SCA Chemical Waste Systems, Inc. Applications 32E10, 32B12, 32B17 and Renewal of Permit NY-0072061, Phase II* (April 21, 1981) (renewing the SCA facility permit and denying a permit for SLF-10 on, among other grounds, "the ever-present potential for environmental exposure of hazardous wastes which have not been detoxified or rendered harmless prior to landburial"). *See also below*, text at footnotes 330-331 (indicating that land burial of "macroencapsuled" toxic wastes is inherently insecure).

Siting Board should rely on the siting statute's emphasis on "capacity assurance," as if the current siting plan has not addressed that question:

As contemplated by § 27-1102, the purpose of the Siting 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. 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.<sup>322</sup>

CWM's statement is an accurate account of one purpose of the Siting Plan, but that purpose cannot be understood in a vacuum. In 1987, when Section 27-1102 was enacted, an assurance of adequate hazardous waste treatment and disposal capacity was important, but as recognized in the 2010 Siting Plan, this has not been true since 1995:

In 1995, USEPA made a determination that sufficient national capacity for hazardous waste TSD facilities existed for years to come and no longer required states to make individual State capacity assurances. USEPA has assumed responsibility for the capacity assurance program on behalf of States, *dropping the need for interstate agreements referenced in 27-1102*. National capacity has continued to be available since that time to meet hazardous waste management needs across the country. USEPA re-confirmed in July 2009 that adequate national capacity exists through December 31, 2034.<sup>323</sup>

Chapter 4 of the 2010 Siting Plan advises that the State's hazardous waste Land Disposal Restrictions ("LDRs") do not obviate the need for landfill capacity for residual waste, including

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<sup>322</sup> CWM, Part 361 Applic., 14.

<sup>323</sup> 2010 Siting Plan, at Intro-5 (emphases added).

macroencapsulated (immobilized) wastes, that remain after hazardous waste is treated to the minimum LDR standards:

The Department continues to consider land disposal as the least desirable management method, even when LDR standards have been achieved. However, the Department recognizes that for many treated hazardous waste residuals and immobilized hazardous waste debris, land disposal is a necessary management method. Therefore, hazardous waste landfill capacity continues to be needed for the management of hazardous wastes.<sup>324</sup>

However, the 2010 Siting Plan also finds that the continuing need for hazardous waste landfill capacity is met for the foreseeable future, although not in state.<sup>325</sup> The need for land disposal of residual waste therefore provides no support for additional landfilling capacity at Model City.

Perhaps more importantly, it should be noted that the State's policy to phase out land disposal is relaxed only for "treated residuals posing no significant threat to public health or to the environment."<sup>326</sup> Much of the most toxic waste disposed at CWM, including "decommissioned transformers formerly containing PCB dielectric fluid," "[f]luorescent light ballasts and small capacitors," and "[t]ransformer carcasses"<sup>327</sup> are "PCB items"<sup>328</sup> and therefore must be macroencapsulated, or containerized, because according to the Department such wastes are "extremely difficult to treat" and "there are currently no alternatives other than

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<sup>324</sup> 2010 Siting Plan, note 4, at 4-6.

<sup>325</sup> *Id.*, at 6-9 and 9-3.

<sup>326</sup> *Id.*, at 4-6 (quoting ECL § 27-1102(d)(2)).

<sup>327</sup> CWM, Part 361 Applic., 10-11.

<sup>328</sup> *Id.*, 5.

macroencapsulation.”<sup>329</sup> However, containerized wastes, including macroencapsulated wastes, are inherently insecure. When adopting the RCRA Subtitle C method for requiring liquid wastes to be containerized prior to disposal, for non-hazardous waste landfills, EPA stated:

The problems associated with the landfill disposal of containerized liquid wastes arise upon the eventual deterioration of the waste container. Liquids escaping from leaking containers will migrate to the bottom of the landfill, acting as a transport and leaching medium for the wastes contained in the landfill. Liquids accumulating on landfill liners can contribute to liner failure through increased hydraulic pressure and/or chemical interactions. Increased hydraulic head due to liquid accumulation can increase the amount and rate of contaminant movement from the landfill to the ground water. Additionally, when waste containers degrade, allowing their contents to escape, they collapse under the pressure of the landfill. This situation can create voids in the landfill, which can lead to slumping and subsidence of the final cover. Once the integrity of the landfill cover is lost, infiltration of precipitation will increase, contributing to the leachate generation in the landfill. Collapse of deteriorated waste containers and subsequent damage to the cover material could occur after the post-closure care period of the landfill, when ground-water monitoring systems are not maintained to detect ground-water contamination.<sup>330</sup>

The 2010 Siting Plan is in accord with EPA’s conclusions, advising that “macroencapsulation does not meet the State statutory definition of treatment, and as such, does not result in ‘treated residuals.’”<sup>331</sup>

As discussed above, PCB wastes also cannot be considered a residual waste that, even after treatment, “pos[es] no significant threat to public health or to the environment,”<sup>332</sup> *at this*

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<sup>329</sup> 2010 Siting Plan, at 2-3, 2-4.

<sup>330</sup> 53 Fed.Reg. 33314, 33340 (1988).

<sup>331</sup> 2010 Siting Plan, at 4-6.

<sup>332</sup> ECL § 27-1102(d)(2)).

*site*. That is because the potential for release or discharge of PCBs must be virtually eliminated in the Great Lakes Basin. However, CWM has not shown the ability to contain PCB contaminants in surface water runoff, or to prevent the release of PCBs to groundwater eventually discharged to the Niagara River. Thus the LDR standard for PCBs is clearly inadequate to assure that RMU-2 would not contribute to the loading of the most environmentally destructive toxins to the Niagara River.

Contrary to CWM's Part 361 application, denial of a siting certificate based on a significant threat to public health or to the environment would not implicate the requirement that New York's hazardous waste program be consistent with the federal RCRA-C program.<sup>333</sup> Lack of any State (or national) need for additional waste disposal capacity would not be the basis for such a denial. The question of need is, rather, as discussed *above* in Section 4.4, relevant to the burden CWM bears to demonstrate its project proposal would not threaten public health or the environment. Petitioners do not urge that facility need be treated as a substantive basis for denial because the facts regarding the threats posed by this facility are sufficient basis, and CWM has failed to demonstrate otherwise.

To avoid this conclusion CWM appears to be urging that the Siting Board simply get of out the way of "the free market and the private sector" and disregard the threats this site poses.<sup>334</sup>

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<sup>333</sup> See CWM, Part 361 Applic., 21 ("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").

<sup>334</sup> *Id.*, 21-22 ("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.").

Petitioners, however, urge the Siting Board not to abdicate its responsibility to determine whether the RMU-2 Project as proposed would pose a significant threat to public health or the environment.

#### **4. Inadequate compliance history disclosure**

The Department's policy is that permit applicants generally must include with their applications a record of compliance "to ensure that persons who are unsuitable to carry out responsibilities under Department permits, certificates, licenses, or grants, are not authorized to do so."<sup>335</sup> Applicants for a hazardous waste facility permit must by law must provide certain information regarding their records of compliance, in order to

assure that permits authorizing hazardous waste treatment, storage, disposal or transportation are not issued to nor held by unqualified or unsuitable persons. To effectuate this purpose, and *in addition to any other available grounds*, the commissioner may, consistent with the policies of article twenty-three-A of the correction law and the provisions of section 70-0115 of this chapter, deny, suspend, revoke or modify any permit, renewal or modification thereto for the treatment, storage, disposal or transportation of hazardous waste, after determining in writing that such action is required to protect the public health and safety.<sup>336</sup>

Under the policy, the Department "will initially consider" the history of incidents that resulted in a civil penalty or fine in excess of \$25,000 within the last ten years from "the date of [submission of] the record of compliance form."<sup>337</sup>

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<sup>335</sup> NYSDEC, *Record of Compliance, Enforcement Guidance Memorandum*, Enforcement Directive No. II.24 (February 1993), 1 (hereafter, "ROCEGM").

<sup>336</sup> ECL § 27-0913(3) (emphases added).

<sup>337</sup> ROCEGM, 6.

As explained in the ROCEGM, the Department has both “explicit authority” under the ECL to consider the fitness of an applicant to hold a hazardous waste facility permit,<sup>338</sup> “as well as both implied legislative authority,” under its authority to grant permits to fit and proper parties, “and the general authority provided in ECL Sections 1-0101, 3-0301 and for Uniform Procedures Act permits, [ECL Section] 70-0115.”<sup>339</sup> Accordingly, the Department has ample “other available grounds” to consider an applicant’s compliance history.<sup>340</sup>

The ROCEGM policy requires the applicant to disclose whether any of several kinds of non-compliance events have occurred “within ten years of the date of completion of the record of compliance form.”<sup>341</sup> ECL Section 27-0913 requires disclosure of similar information “within two years from the date on which the application for a permit, renewal or modification is submitted to the department.”<sup>342</sup>

CWM submitted its Part 373 and Part 361 applications for the RMU-2 Project to the Department on May 15, 2003.<sup>343</sup> On July 20, 2005, CWM submitted non-compliance information (but not an ROC form) pursuant to ECL 27-0913(3) “for the past two years involving Chemical Waste Management, Inc. or any incorporated subsidiaries managing hazardous waste within the United States as required by Condition W. (1) of Module II of CWM’s [then current] Part 373

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<sup>338</sup> *Cf.* ECL § 27-0913(3).

<sup>339</sup> ROCEGM, 3-4.

<sup>340</sup> ECL § 27-0913(3).

<sup>341</sup> ROCEGM, 4 (sec. IV.3.).

<sup>342</sup> ECL § 27-0913(4).

<sup>343</sup> *Fact Sheet*, 3, 4.

Sitewide Permit.”<sup>344</sup> The disclosure included violations at facilities in Alabama, California, Louisiana, Oregon and New York (Model City), resulting in fines from \$0 to \$1,500.00.<sup>345</sup>

On December 10, 2013, at the Department’s request, CWM submitted a supplement to its record of compliance, a completed ROC form and an enclosure listing violations within the last ten years.<sup>346</sup> However, these violations are limited to violations of the ECL by CWM’s Model City facility, resulting in fines ranging from \$0 to \$175,000.00.<sup>347</sup>

On March 21, 2014, at the Department’s request, CWM submitted another supplement to its record of compliance, providing “documentation of criminal violations and civil matters in excess of a penalty of \$25,000 at CWM/Waste Management subsidiaries licensed to, and engaged in, hazardous waste management for [a] ten-year period.”<sup>348</sup> This disclosure included violations at facilities in Alabama, California, and New York (Model City), resulting in fines from \$0 to \$302,100.00.<sup>349</sup>

The Department’s history of compliance requirements are clearly expansive. The

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<sup>344</sup> D. Ames-Cassick, Compliance Manager, CWM, Letter to J. Strickland, P.E., NYSDEC, July 20,2005.

<sup>345</sup> *Id.*, enc.

<sup>346</sup> M.D. Mahar, District Manager, CWM Model City Facility, Letter to D. Denk, Regional Permit Administrator, NYSDEC, December 10, 2013.

<sup>347</sup> *Id.*, encs., Item No. 8.

<sup>348</sup> J.A. Banaszak, Technical Manager, CWM Model City Facility, letter to D.F. Stever, Assistant Regional Attorney, NYSDEC, March 21, 2014.

<sup>349</sup> *Id.*, enc.



ROCEGM identifies “the need to scrutinize permit applicants,”<sup>350</sup> the need “to ensure that *the applicant* is a fit and proper person to engage in the permitted or licensed activity,”<sup>351</sup> and “use of the ROC form as part of a complete application.”<sup>352</sup> As noted above, the two-year compliance history required of applicants for a hazardous waste facility permit is measured “from the date on which the application for a permit . . . is submitted to the department.”<sup>353</sup> In addition, under both the ECL (for hazardous waste facilities) and the ROCEGM, the required compliance history must embrace both the applicant and its corporate parent and affiliates:

For purposes of considering the suitability of a permittee or applicant, the above guidelines should be applicable not only to the immediate entity but to any other corporation, partnership, association or organization in which the permittee or applicant holds or has held a substantial interest or in which it has acted as a high managerial agent or director or any other individual, corporation, partnership or organization which holds a substantial interest or the position of high managerial agent or director in the permittee or applicant.<sup>354</sup>

“In the event the Department determines further inquiry is warranted due to questionable compliance history, it may require the applicant to submit additional information regarding

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<sup>350</sup> ROCEGM, 2.

<sup>351</sup> *Id.*, 3 (emphases added).

<sup>352</sup> *Id.*, 6.

<sup>353</sup> ECL § 27-0913(4).

<sup>354</sup> ROCEGM, 5. The compliance history of those with a “substantial interest” in the applicant, including specifically corporate parents and affiliates, is also required under ECL § 27-0913(3)(f). *See also* ALJ Rulings on Issues and Party Status and Environmental Significance, *In the Matter of the Application for a Solid Waste Management Facility Permit [and other permits] by American Marine Rail, LLC*, 2000 N.Y. ENV LEXIS 63, \*173 (August 25, 2000) (“The Department has placed a great deal of importance on the compliance history of permit applicants. Without an opportunity to examine the record of the entity that has responsibility for a project or segment of it and its role, the Department is stymied in its ability to ensure that this entity will carry out the terms and conditions of any permit that may be issued.”) (citations omitted).

environmental offenses both within and without the United States.”<sup>355</sup>

CWM’s disclosures to date are insufficient to satisfy the Department’s compliance history policy. The Department has determined that CWM’s compliance history should embrace its corporate parent and affiliates, but the Department has allowed CWM to limit its disclosures to violations that occurred ten years prior to submission of its ROC form, on December 10, 2013. As a result, disclosure has been avoided for violations that occurred prior to submission of the RMU-2 project application on May 15, 2003. Arguably under the Department’s policy, a full record of noncompliance consistent with the policy would reach back ten years prior to the submission of CWM’s application. Stated differently, the policy does not allow the applicant to determine the compliance history period by delaying submission of an ROC form until ten years after submission of its application.<sup>356</sup>

Thus, disclosure was avoided for at least 27 enforcement actions between 1995 and 2002 against CWM or its corporate parent and affiliates in other states, including criminal felonies contributing to the denial of approval to expand a hazardous waste landfill in Indiana.<sup>357</sup> Also

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<sup>355</sup> ROCEGM, 6.

<sup>356</sup> Among other things, the ROCEGM form asks: “Has the applicant, and if the applicant is a corporation, has any officer, director, or large stockholder (owner of 25 percent or more of not publicly traded stock) of the corporation, within the last ten (10) years, been . . . found in an administrative, civil or criminal proceeding to have violated any provision of the Environmental Conservation Law (ECL), any related order or determination of the Commissioner, any regulation promulgated pursuant to the ECL, the condition of any permit issued thereunder, or any similar statute, regulation, order or permit condition of any other state or federal government agency?” *See* M.D. Mahar, CWM Model City Facility, Letter to D. Denk, NYSDEC, December 10, 2013, completed ROCEGM Form, item 8.

<sup>357</sup> This information was provided by the Department (not by CWM) in response to concerns about CWM’s record of compliance voiced in public comments on the proposal to renew RMU-1’s permit in 2005.

avoided was disclosure of 45,000 lbs. of PCB debris exceeding the Land Disposal Restrictions (<500 ppm concentration PCBs) and thus not permitted for disposal at Model City.<sup>358</sup> Also avoided were several violations by affiliate Waste Management of New York (WMNY) and its former subsidiary Waste Management of New York City, and violations involving WMNY and “Waste Management of Virginia, a sister corporation” that “resulted in substantial penalties” in the period 1998-1999.<sup>359</sup>

The ROCEGM policy was modified by the Commissioner in 2000, requiring that before the policy can reach the compliance history of corporate parents and affiliates, the compliance history of the applicant must warrant permit denial or imposition of special conditions in the proposed permit:

The threshold focus should be on the applicant with the principal inquiry being whether the actual compliance history of the permittee or applicant warrants permit denial or imposition of special conditions. . . . In the event that the compliance history objections concern an entity related to the applicant, such as a parent company or affiliate, the next inquiry is whether such entity has held a “substantial interest” in the applicant (e.g. the applicant is a wholly owned subsidiary), or has acted as a “high managerial agent or director” in the applicant (e.g. applicant shares same board of directors or same corporate officers). If the related entity has held a “substantial interest” or maintained a “high managerial relationship” in the applicant, the query then becomes whether the interest or relationship amounts to a “substantial influence” over

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<sup>358</sup> Per manifests from General Electric, dated December 22, 1010, on file with the undersigned.

<sup>359</sup> Rulings of the Administrative Law Judge on Party Status and Issues, *In the Matter of the Application of Waste Management of New York, LLC for permits to operate a solid waste management facility, the Towpath Environmental & Recycling Center, in the Town of Albion, Orleans County*, No. 8-3420-00019/00005, 1999 N.Y. ENV LEXIS 36, \*20-21 (December 31, 1999) (listing and discussing the record of violations).

the management of the applicant's site.<sup>360</sup>

The Commissioner reversed the ALJ's ruling as to whether affiliates of the applicant (WMNY) should be reached under the ROCEGM policy in that case. As subsequently affirmed by the Third Department Appellate Division,

The Commissioner favored local experience with WMNY over alleged wrongdoing by its parent corporation in other states. He found that local management of WMNY was of sufficient independence as to overcome any claim of control by WMI and that any prior noncompliance by WMNY was *de minimus*.<sup>361</sup>

However, here it appears that Department Staff have determined that local experience with CWM warrants consideration of the compliance history of CWM's corporate affiliates in other states, and CWM is not sufficiently independent of its parent company to overcome a claim that its corporate parent might control CWM's compliance decisions. The limitation to the ROCEGM policy applied in the Towpath Landfill matter therefore does not apply here.

The only remaining question is whether the compliance history period covered by CWM's disclosures under the policy is adequate. We assert that CWM has not fully disclosed the history of violations of itself and its affiliates, as CWM's disclosures do not go beyond the date of submission of its RMU-2 Project applications. Under the ROCEGM policy, it is a *history* of noncompliance that must be considered, in order to provide an indication of the applicant's

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<sup>360</sup> Interim Decision of the Commissioner, *In the Matter of Application for permits to operate a solid waste management facility, the Towpath Environmental & Recycling Center, in the Town of Albion, Orleans County by Waste Management of New York, LLC*, No. 8-3420-00019/00005, 2000 N.Y. ENV LEXIS 36 (May 15, 2000), \*15-17 (citing ROCEGM, 4-5; other citations omitted).

<sup>361</sup> *Stop Polluting Orleans County, Inc. v. Crotty*, 787 N.Y.S.2d 681, 2004 N.Y. Misc. LEXIS 811, \*3 (Albany Co. 2004).

future conduct, and to assure the Department and the public that future compliance will characterize newly permitted activities.

Once CWM supplements its compliance history disclosure with relevant violations that pre-date submission of its application, we look forward to commenting on the completeness or adequacy of the disclosures.

### **5. The RMU-2 Project is not consistent with Town of Porter zoning**

Part 361 applications must include information regarding “the status of the site under local zoning or land use regulations in force on the date of application.”<sup>362</sup> In New York, zoning must be “in accordance with a comprehensive plan.”<sup>363</sup> Indeed, “the comprehensive plan is the essence of zoning. Without it, there can be no rational allocation of land use.”<sup>364</sup> Accordingly, the Town of Porter Comprehensive Plan guides all zoning decisions in the Town. In order to “ensure that future land use conflicts are minimized,” the Town’s Comprehensive Plan provides: “The Town should limit future expansion of CWM in the Town of Porter” and seek “assurances that, in the future, the landfill will not expand.”<sup>365</sup>

CWM provides information on the consistency of current operations with the Town of

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<sup>362</sup> 6 NYCRR § 361.3(e)(11). *See also* 6 NYCRR §§ 361.1(c)(11), (12) (recognizing the role of the “master land use plan” in authorizing local zoning rules and regulations).

<sup>363</sup> N.Y. Town Law § 263.

<sup>364</sup> *Udell v. Haas*, 21 N.Y.2d 463, 469, 235 N.E.2d 897, 900-01, 288 N.Y.S.2d 888, 893-94 (1968).

<sup>365</sup> Town of Porter, *A Comprehensive Plan for the Town of Porter: Connecting Our Past With the Future* (August 2004), 24.

Porter's zoning.<sup>366</sup> However, whether the RMU-2 Project would be approved under the Town's zoning is not addressed.

## V. CONCLUSION

The prospect of continued discharges of low levels of PCBs into the Niagara River, in light the environmental sensitivity of the river as an Area of Concern under the Great Lakes Treaty, reflected in the virtually zero discharge to which CWM is subject, makes expanded operations unsafe and in conflict with the national goals of the U.S. and Canada, and the New York rules implementing these goals. Accordingly, the Siting Board should conclude that, as proposed, the RMU-2 Project would pose an unacceptable threat to the health of those who fish in the Niagara River, and to the environment of the river and the Great Lakes Basin.

The prospect of continuing pollution of groundwater at the Model City site also makes expanded operations unsafe. There is no technological fix for the poor hydrogeology of the site. That is why Part 373 requires the ability to monitor and remediate polluted sites, and why New York has authorized independent siting board review of new hazardous waste facilities.

The prospect of continuing resistance by CWM to the implementation of required protections and remediation of its site also makes expanded operations unsafe. There can be no reasonable assurance of compliance with permit requirements given CWM's history of resistance.

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<sup>366</sup> CWM, Part 361 Applic., 28-29.

For these reasons and those identified elsewhere in this Petition, the Department and the Siting Board should not approve the RMU-2 Project proposal.

Dated: November 24, 2014

By: \_\_\_\_\_

Gary A. Abraham

*Attorney for the Municipal Stakeholders*

Copies to: David Stever, Esq., NYSDEC Region 9  
Daniel M. Darraugh, Esq.

**APPENDIX: History and Present Status of Radiological Investigations of the  
Model City Site**

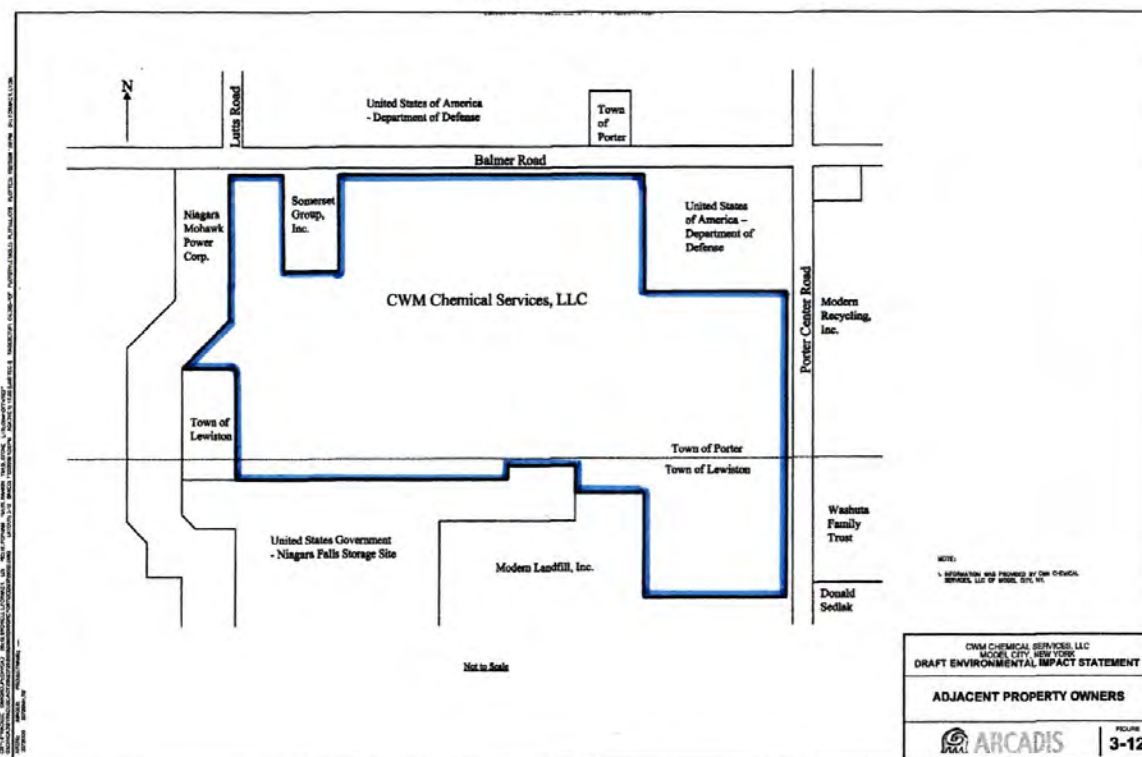


## APPENDIX

### History and Present Status of Radiological Investigations of the Model City Site

CWM Chemical Services, LL.C. (CWM) owns and operates a Treatment, Storage and Disposal (TSD) facility in Model City, New York. The facility occupies 710 acres and is situated south of Balmer Road on the boundary between the Towns of Lewiston and Porter in Niagara

Figure A1  
CWM Location



County. See Fig. A1 (from DEIS, Fig. 3-12). The site was originally part of a TNT manufacturing plant, occupying 7,500 acres, known as the Lake Ontario Ordnance Works (LOOW), which operated from 1942 until 1944. The TNT production and production support facilities were constructed on 1,511 acres, south of Balmer Road. The TNT storage bunkers, which occupied another 1,000 acres, were sited north of Balmer Road. The remaining 5,000 acres, located to the west of the developed area, were not developed and served as a buffer zone for the site.<sup>1</sup>

### Radioactive Waste Disposal on CWM Property, 1948 to 1954

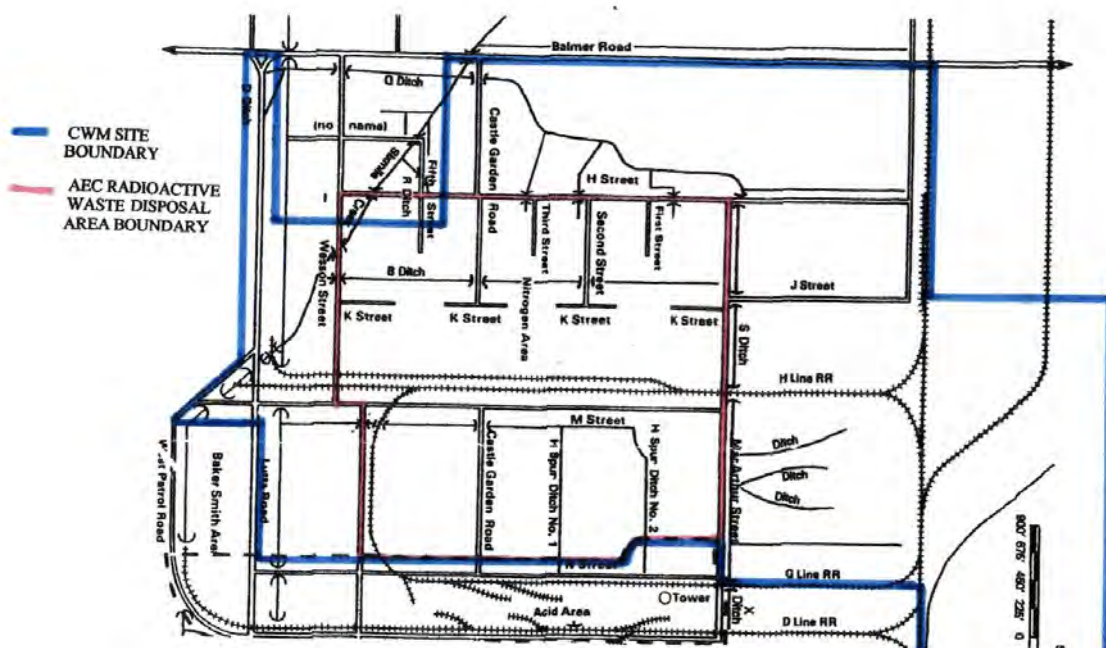
<sup>1</sup> U.S. Army Corps of Engineers, 2011, Fact Sheet, Lake Ontario Ordnance Works Site, Lewiston-Porter, New York, Defense Environmental Restoration Program for Formerly Used Defense Sites, November 2011.

Beginning in 1944, the Manhattan Engineer District (MED) and its successor, the Atomic Energy Commission (AEC), obtained a small portion of the 1,511 acre production area for the storage of radioactive residues generated by uranium refinery operations at the Linde Plant in nearby Tonawanda.<sup>2</sup> In 1948 the Department of Defense (DOD) decommissioned the Ordnance Works and the AEC acquired the entire LOOW production area, which included the existing residue storage areas. The area of LOOW under AEC control was often referred to as the Lake Ontario Storage Area, or LOSA.

AEC used the 1,511 acres to store additional residues from Linde Plant as well as highly radioactive residues (K65) from the Mallinckrodt Chemical Works in St. Louis, Missouri.<sup>3</sup> LOSA was also used for the interim storage of uranium and thorium billets and as a disposal site for radioactive wastes.<sup>4</sup> At the end of World War II, uranium refining operations ceased at Linde.

Figure A2

The Central Area of CWM is the Former Atomic Energy Commission  
Radioactive Waste Disposal Site



<sup>2</sup> Holladay, J. A., 1943, Vice President, Union Carbide and Carbon Research Laboratories, Inc., to Capt. E.L. Van Horn, Area Engineer, Tonawanda Area, Recommendation for Bulk Storage of L-30 Sludge, December 30, 1943.

<sup>3</sup> Wolf, B. S., 1949, AEC Medical Director, memorandum to Belmore, F. M., AEC Director, Production Division, Storage of K-65 at LOOW, May 2, 1949.

<sup>4</sup> EA Engineering, Science, and Technology, 1998, History Search Report Lake Ontario Ordnance Works (LOOW), Niagara County, New York, Prepared for U.S. Army Corps of Engineers Baltimore District, August 1998, pp. 3-4.

The plant was decommissioned and contaminated equipment was sent to the AEC site at LOOW for disposal.<sup>5</sup> A September 1954 radiological survey report identifies the portion of the LOOW site used by the AEC for radioactive waste disposal.<sup>6</sup> The area is bordered by Campbell Street and Wesson Street on the east, H Street on the north, McArthur Street on the west and a line 100 feet north of N Street on the south. *See* Fig. A2. This area was used as a burial site and above ground dump for AEC generated radioactive wastes and occupies approximately 40% of the CWM site.

### **A Wide Variety of Radioactive Wastes were Stored and/or Buried on the CWM Site**

After Linde was decommissioned, numerous types of radioactively contaminated materials were sent to the AEC disposal site. During the late 1940s and early 1950s, contaminated metal, wood, concrete and ceramics from decommissioning of other AEC wartime plants and a number of post-war operations in Missouri, Pennsylvania, Ohio, New Jersey and Massachusetts were sent there.<sup>7</sup> A significant amount of the contaminated scrap and debris was dumped in a specific area of the site called the Castle Garden Dump Site. In February 1949, radioactive electron tubes containing strontium-90 (Model 1 gaps) and electron tubes containing cesium-137 (Model 3 gaps) were sent to LOOW for storage or burial.<sup>8</sup> A 1954 radiological survey later found the highly radioactive gaps strewn on the ground in the Castle Garden Dump.<sup>9</sup>

During the Manhattan Project years, the University of Rochester was called upon to support radiation safety. Records show that contaminated scrap material was sent to LOOW for disposal from Strong Memorial Hospital in Rochester New York as early as 1948.<sup>10</sup> As part of this mission, the University of Rochester carried out extensive testing on animals to investigate the toxicity of different radioactive materials, including plutonium and strontium-90. In 1951, a separate animal graveyard was established at LOOW for the disposal of radioactively contaminated animal carcasses and animal waste generated in the course of the experiments. The University of Rochester animal graveyard is located south of the Castle Garden Dump, in the vicinity of the southern portion of CWM's Facultative Ponds 1 & 2.

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<sup>5</sup> Epp, F.J., 1949, Chief, Tonawanda Sub Office, to Quidor, J. S., Directory Administrative Division, New York, Disposal of Contaminated Equipment in Steps I and II, June 28, 1949.

<sup>6</sup> Health & Safety Laboratory, 1954. p. 3, "History".

<sup>7</sup> AeroSpace Corporation, 1982, Background and Resurvey Recommendations for the Atomic Energy Commission Portion of the Lake Ontario Ordnance Works. Prepared for U.S. DOE, Contract No. DE-AC01-82EP15100, November 1982. p. 6.

<sup>8</sup> Hayden, R. E., 1949, AEC, Medical Division, New York, Memorandum to Epp, F., AEC, Area Manager, Tonawanda Area, "Disposal of Uesless Gaps," February 3, 1949.

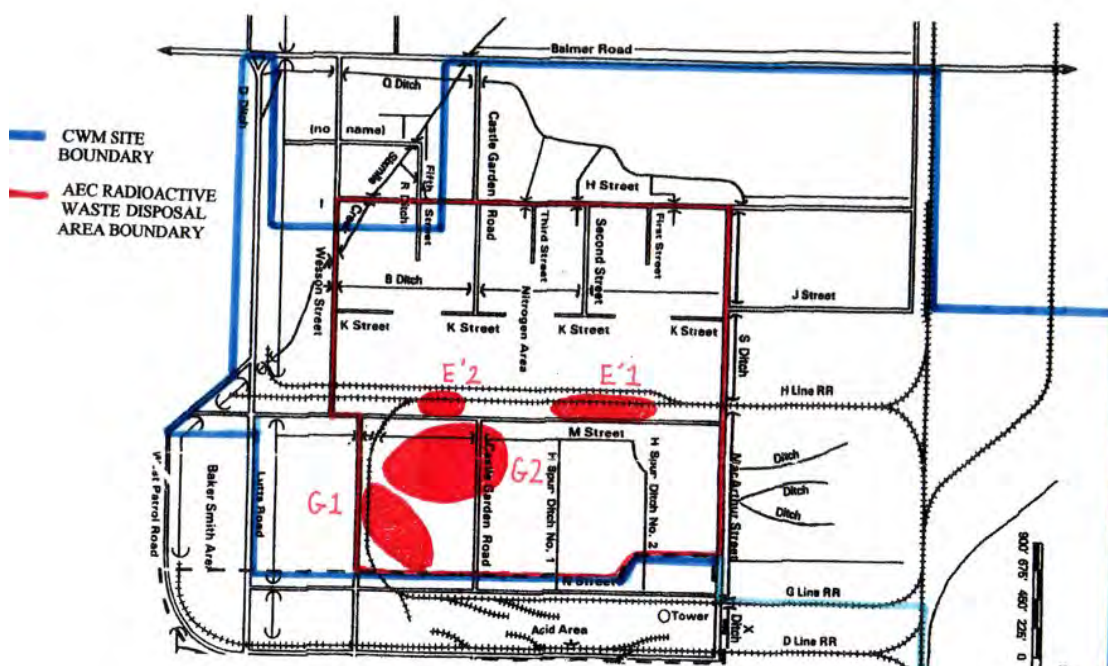
<sup>9</sup> Health & Safety Laboratory, 1954, p. 4.

<sup>10</sup> Quidor, J. S., 1948, Director, Office of Administrative Operations, New York to Epp, F., Tonawanda Area, "Disposition of Contaminated Scrap".

In 1951 the AEC allowed fission product and plutonium waste to be transported to LOOW from the Knolls Atomic Power Laboratory at Schenectady, New York (KAPL).<sup>11</sup> These wastes were semisolid neutralized radioactive waste, placed in steel and carbon steel drums and consisted of fission products from evaporator bottoms of a pilot nuclear fuel reprocessing plant and plutonium contaminated wastes. In addition, crates of contaminated combustible wastes were also sent to LOOW for storage and possible incineration.<sup>12</sup> The first shipment of KAPL wastes arrived at LOOW in January 1952, and was unloaded and transported to the concrete

Figure A3

Areas of the CWM Site Used for Surface Disposal or Burial of Radioactive Wastes in the 1940s and 1950s



blockhouse on M Street.<sup>13</sup> This building still exists on the CWM property today and is currently called the Compressor Building.

Review of reports and records from the 1940s to 1950s identifies additional areas of the CWM site that were used as disposal areas for contaminated rubble and debris or were used as burial sites for wastes.<sup>14</sup> These areas are shown in red on Fig. A3. Areas discussed previously are

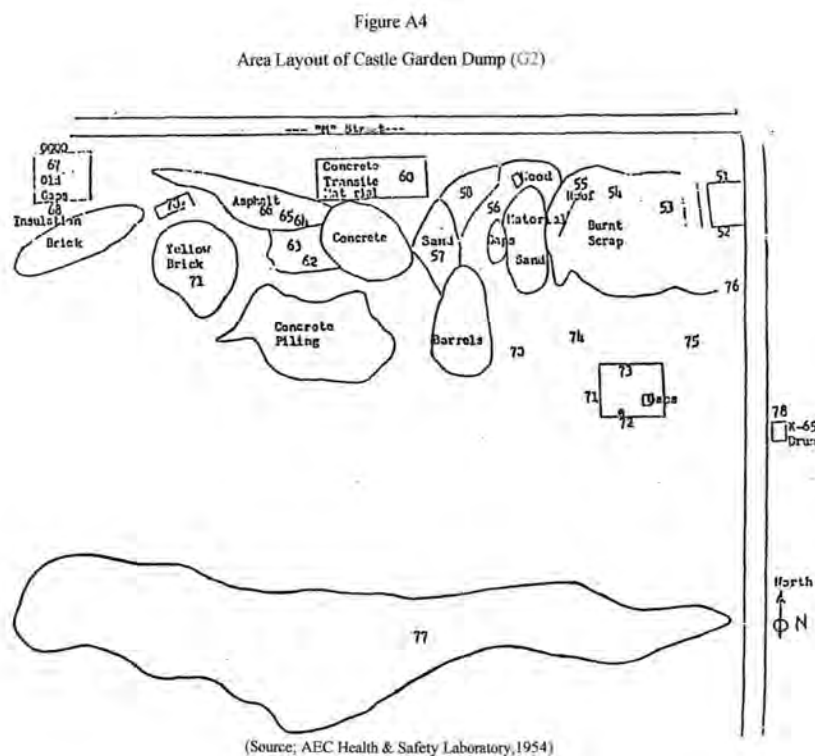
<sup>11</sup> Baum, H., 1951, to Files, Minutes of Meeting on Disposal of KAPL Contaminated Waste, November 19, 1951.

<sup>12</sup> Ibid., p. 1.

<sup>13</sup> James, B., 1952, Health Physics Unit, Report on KAPL Waste Shipment and Storage at Lake Ontario Ordnance Works, Model City, New York, February 1952.

<sup>14</sup> Aerospace Corporation, 1982, pp. 3, 5, 36, p. 38 (Fig. 8).





identified on the figure as G1 and G2: G1 is the University of Rochester Burial Grounds and Surrounding Areas; it includes the animal graveyard and a contaminated metal burial site.<sup>15</sup> G2 is the Castle Garden Dump Area, shown in Fig A4 as recorded by the 1954 AEC survey. Additional disposal areas are E'1, a burial ground north of M Street, along the railway line and E'2, an area north of M Street, between the

Campbell Street and Castle Garden Road Intersections.

### **First Failed Cleanup, AEC 1954-1955 Buried Radioactive Contamination Remains (Confirmed by AEC Re-Survey, 1971)**

In the early 1950s plans were in place to release the contaminated AEC disposal area to the Navy and its contractor, Olin Mathieson.<sup>16</sup> In preparation for the release of the property, the AEC Health & Safety Laboratory surveyed the waste disposal area on June 23, 1953.<sup>17</sup> The survey had two objectives, to assess the degree of contamination of scrap and waste stored or buried on site, and to provide a basis for recommendations for removal of wastes in order to release the land from AEC control.

The secrecy of AEC operations and the lack of available records for many of the radioactive wastes sent to LOOW for disposal proved problematic for the surveyors. The unknown nature of the radioactive wastes received from KAPL required the surveyors to telephone AEC

<sup>15</sup> Malone, F. W., 1953, Administration Officer, Cleveland Area, to Files, "Health & Safety Meeting Between Hooker, NYCO & Cleveland," September 17, 1953, p. 1 (4).

<sup>16</sup> Walker, A. P., 1955, Dept. Head Plant 31, letter to Malone, F. W., Site Representative, Niagara Falls Site, "Clean-up of radioactive waste deposits in Olin-Mathieson-Navy Area," July 15, 1955.

<sup>17</sup> Eisenbud, Merrill, 1953, Director, Health and Safety Division, to Quidor, J. S., Director, Admin. Oper. Div., THRU Duncombe, Virginia C., Asst. General Counsel, "Radiation Survey of Contaminated Scrap and Waste Buried or Stored at LOSA, Model City, New York," July 10, 1953.

Schenectady to determine the kind and type of wastes.<sup>18</sup> Similar problems due to a lack of records were encountered on several other wastes. In 1953 Merrill Eisenbud, director of AEC Health and Safety reported:

The surveyors were unable to obtain any records as to the source, composition or list of inventory of waste materials stored in several open areas located on the land declared excess by the AEC. The LOSA office gave us the following information concerning these wastes:

1. Farmhouse Area – Castle Garden Load Wastes

Two waste piles located directly north of road were possibly sent from Rochester and Mallinckrodt.

Burial ground south of road is composed of Rochester experimental animal carcasses and manure.

2. Scrap Yard Outside Blockhouse

The material and equipment buried in the long trench was probably 95% Mallinckrodt and 5% Harshaw scrap waste.<sup>19</sup>

(Mallinckrodt and Harshaw operations both involved refining of uranium.)

The results of the survey showed that waste exceeding permissible radiological levels was present on land scheduled for release from AEC control. The permissible level at the time was 0.63mr/hr for direct gamma radiation.<sup>20</sup>

Recommendations were made to move certain wastes, including the KAPL wastes, to the LOOW property retained by the AEC. Buried wastes were to be left in place and the location and nature of the burials recorded and passed on to the future property owner, the Navy.<sup>21</sup> In September 1953, AEC representatives met with a number of employees of Hooker Electrochemical Co. regarding the cleanup of the property to be released to the Navy.<sup>22</sup> Hooker was operating a boron-10 separation plant on the AEC property at the time and also acting as site caretaker for the AEC site.<sup>23</sup> The meeting was arranged to acquaint Hooker personnel with the

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<sup>18</sup> Eisenbud, Merrill, 1953, pp.1-2, "Schenectady Wastes."

<sup>19</sup> Ibid., p. 2, "Other Wastes."

<sup>20</sup> Ibid., p. 3, "Procedures."

<sup>21</sup> Ibid, p. 3, 4, 5, "Conclusion."

<sup>22</sup> Malone, F. W., 1953, p.1

<sup>23</sup> EA Engineering, Science, and Technology, 1998, p.3-6.

Health & Safety hazards involved in the handling, storing and burying of radioactive materials. Hooker personnel were to chart all areas where radioactive material or equipment were stored or buried.<sup>24</sup> Several areas on CWM property were reviewed with Hooker and the following actions were recommended:

The concrete Block House north of the K-65 tower and located on M Street will be emptied within the week of the Schenectady waste.

Contaminated, scrap metal is buried on M Street about 50' from the road and approximately 150' east of the concrete block house. There is an old radium contaminated drum laying on the surface which will be removed to the classification area. Hooker will include this area on their map and post the area.

There is an open trench 50' long by 8' deep approximately 150' north of the farmhouse in the Castle Garden Area. Within the next month, Hooker will place the contaminated material on the surface into this trench and when a bulldozer is available will cover same. The partially filled drums of unidentifiable material will be sampled and sent to New Brunswick Laboratory for analysis. If necessary, this material will then be repackaged and shipment made as directed. Hooker will include this area on their map and post the area.

In an area located west of the Castle Garden Street between M and O Streets, there are various Linde scraps stored on the surface such as transite, transite stacks, wood agitators, laboratory hoods, etc. Mr. Klevin recommended burning all of the wood scrap and burying the ashes, burying the transite and metals strewn about the surface. Until such time as Hooker is advised by the commission to proceed with these actions, they will indicate this area on their map and post the area.”<sup>25</sup>

Hooker personnel followed the recommendations of the AEC and on October 12 and 13, 1954, Health & Safety Laboratory personnel returned to conduct a follow up radiation survey of the AEC disposal area.<sup>26</sup> The results of the October survey showed that sources of waste contamination still exceeded the permissible level on the land being released to the Navy.<sup>27</sup> However, the AEC determined that the release of the land would give rise to no health and safety issues provided a number of further recommendations were followed:

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<sup>24</sup> Malone, F.W., 1953, p. 3.

<sup>25</sup> Ibid., p. 1, p. 2.

<sup>26</sup> Health & Safety Laboratory (AEC), 1954.

<sup>27</sup> Ibid., p. 5, “Conclusion.”

### 1. Compressor House Area

The building proper (Building 8212) can be used without any restrictions. However, drum and residue behind building should be recovered and removed to the AEC area. All other material (Items 15 -16) should be handpicked and buried.

### 2. Burial Ground North of M Street

(a) Inasmuch as all waste materials have already been buried and since average 3 feet radiation readings taken over the covered burial area were only 0.05 mr/hr, it is my opinion that excavation of such wastes to another storage area would cause unnecessary safety hazards, radiation exposure and labor costs. However, there was found, as shown in the Table, items which include nuts, bolts etc., need to be manually recovered and buried.

(b) The U. S. Navy and any future land owner should be informed of the exact burial locations of the contaminated wastes. Figures 1-4 attached, and any additional information should be transmitted with the property deed.

### 3. Rochester Burial Area.

(a) The radiation hazard signs can be removed from the area surrounding the Rochester experimental animal burial ground.

(b) The cesium gaps, process material found adjacent to the Rochester burial should be manually recovered. The process material should be channeled to the proper production facility while the gaps should be removed from the area, and processed for burial on land or sea.

### 4. Castle Garden Road Waste.

This large dump area as shown by the survey findings is composed of excessively hazardous, hazardous, semi-hazardous, and non-hazardous bulk contaminated materials. The following actions should be taken:

(a) Excessively contaminated materials such as gaps, process material, pipe, K-65 drums, etc., should be manually removed and either processed for burial or materials recovery.

(b) Semi-hazardous, contaminated material, especially that which may be attractive, should be recovered and processed for eventual burial on land or sea.

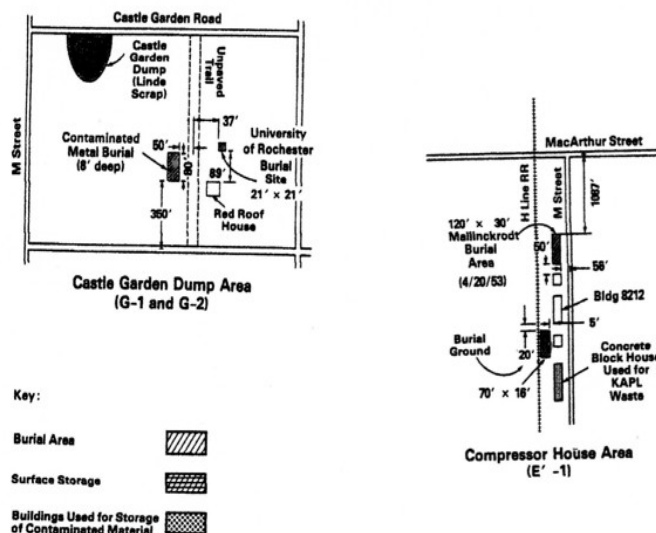
(c) Non-hazardous bulk material. i.e. concrete piles, transite etc., can be used for fill by the contractor with no restrictions.”<sup>28</sup>

<sup>28</sup> Health & Safety Laboratory (AEC), 1954, pp. 5- 6.



Following the October survey, Hooker personnel began to carry out the recommended actions, but winter conditions interrupted the work. In April 1955, AEC Health & Safety returned to inspect progress.<sup>29</sup> Further work was recommended. A number of actions were completed by Hooker personnel in the following months: The burial area directly east of the Compressor Building was removed to a depth of 12 inches. The same procedure was carried out for a burial west of the building. Burnt combustibles and other contaminated materials were removed from north of the Cement Pad. A cesium gap was removed from the Rochester Burial Area and fresh soil added to improve cover. All surface material reading in excess of 0.63 mr/hr was removed from the Castle Garden Dump. The railroad siding north of M Street was found to be contaminated with process waste and a considerable amount of railroad ballast was removed. It was felt that the addition of fresh ballast by Olin Mathieson would bring about a sufficient reduction in radiation levels to ensure worker safety. Hooker personnel recorded known storage and burial areas on a map. Storage and burial areas on the CWM property (taken from this map, Hooker Electrochemical Company, Drawing A-D-53, Rev. 2, April 30, 1957) are shown in Figure A5.

Figure A5  
Recorded Storage and Burial Areas on CWM  
(Taken From Hooker Electrochemical Company, Drawing A-D-53, Rev. 2, April 30, 1957)



### Results of the 1954-55 Cleanup Effort:

AEC left all radioactive waste burials in place, taking the view that disturbance of buried wastes would increase safety hazards, radiation exposure and labor costs.<sup>30</sup> A significant amount of radioactive waste located on the surface was removed, but further on-site burials of radioactive surface wastes also took place.<sup>31</sup> Aware of the hazard, AEC recommended that future landowners be informed of the exact burial locations of the contaminated wastes by way of all relevant maps and information accompanying the property deed.<sup>32</sup>

<sup>29</sup> Walker, A. P., 1955, p. 1.

<sup>30</sup> Health & Safety Laboratory, 1954 pp. 6, item 2a.

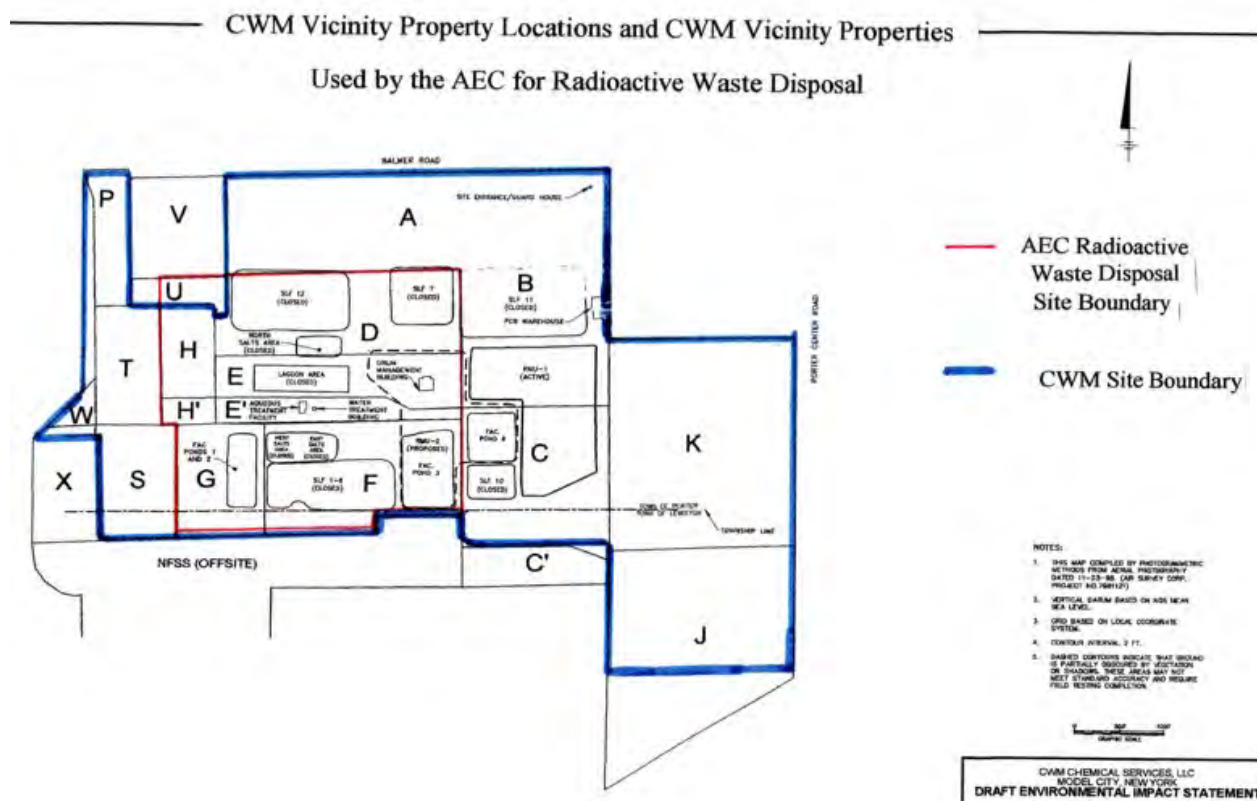
<sup>31</sup> Malone, F.W., 1953, p. 1 (4).

<sup>32</sup> Health & Safety Laboratory, 1954 p. 6, item 2b.

In 1956 the Navy Interim Pilot Production Plant (IPPP) was constructed along M Street, on what is now the central area of CWM property.<sup>33</sup> The plant was built to produce boron-based high energy fuel and utilized some of the existing TNT production buildings. The parcel of land had been declared excess to current needs by AEC to make way for construction of the Navy Plant and was in the process of being transferred to the Navy. However, the property transfer was never completed. The IPPP operated until 1960, at which point it was still owned by the U.S. General Services Administration. In 1966 the parcel of land was sold to the Fort Conti Corporation.<sup>34</sup>

No information on radioactive waste burials was provided to the Fort Conti real estate group and radioactive contamination present on the former AEC disposal site was overlooked. A covenant was added to the title prohibiting use of the property as a garbage dump and specifying, “No littering or deposition of any refuse or residuals that would tend to breed vermin or cause obnoxious or noxious fumes or odors.”<sup>35</sup>

Figure A6



<sup>33</sup> EA Engineering, Science, and Technology, 1998, p. 3-5.

<sup>34</sup> Ibid.

<sup>35</sup> United States of America, 1966, Quitclaim Deed to Fort Conti Corp., July 28, 1966.

AEC became the Energy Research and Development Administration (ERDA) and finally the U.S. Department of Energy (DOE). Since 1955 a total of 1,309 acres of the original 1,500 acres under AEC control have been declared excess to federal needs and returned to private ownership. Currently 191 acres of the AEC LOSA remain under DOE control and continue to be used for the “temporary” storage of large quantities of radioactive residues and wastes. Accordingly, the AEC portion of LOOW (LOSA) immediately south of the CWM site is now known as the Niagara Falls Storage Site (NFSS).

As part of the 1971-72 survey and remediation, AEC divided up former AEC acreage into several survey units. Each survey unit was given an alphabetic letter for identification purposes and the survey units were designated as the LOOW Vicinity Properties (VPs). Subsequently the LOOW VPs became known as the NFSS VPs. Locations of the individual VPs making up the Fort Conti property, now CWM property, are shown in Fig. A6. Apart from 39 acres retained by the Somerset Group, all of the Fort Conti property is currently owned by CWM. Fig. A6 also identifies the CWM owned VPs formerly used by the AEC for radioactive waste disposal, including VPs D, E, E', F, G, H, H' and a portion of U.

### **1970 Investigation**

On October 16, 1970, spot checks by AEC confirmed that levels of radiation exceeded AEC working standards on several of the LOOW Vicinity Properties, including those owned by the Fort Conti Corporation.<sup>36</sup> Not surprisingly, the contaminated areas on Fort Conti property are all located within the former AEC radioactive waste disposal area, now CWM property. State authorities were alerted to the fact that unsafe levels of radioactivity (at least 50 times the level considered acceptable for release from AEC control) was found on private land.<sup>37</sup> Areas of contamination ranged in size from a few square feet to several acres. *See Fig. A7, below* (showing locations of these areas on the Fort Conti property).

At a meeting in Albany between state representatives and AEC it was agreed that in order to protect the public, further survey work to define the magnitude and extent of the contamination would be carried out.<sup>38</sup> On November 30, 1970, a ten man radiation survey team was assembled and began surveying the Vicinity Properties.<sup>39</sup> However, bad weather forced suspension of the survey in December 1970, after only 300 acres had been surveyed. Discussions in the following

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<sup>36</sup> Thornton, W. T., 1970, Health and Nuclear Safety Branch, Atomic Energy Commission to Johnson, W. A., “Radiation Survey of the LOOW Site,” October 1970.

<sup>37</sup> Lenhard, Joseph A., Director Safety & Environmental Control Division, AEC, memo to Keller, C. A., Director Production Division, AEC and McCasland, K. D., Office of Chief Counsel, AEC, “Radioactive Contamination of AEC Niagara Falls Site,” October 23, 1970.

<sup>38</sup> Kelleher, W., 1970, NYSDEC Albany internal memo to Cashman, Lake Ontario Ordnance Works Meeting, November 18, 1970.

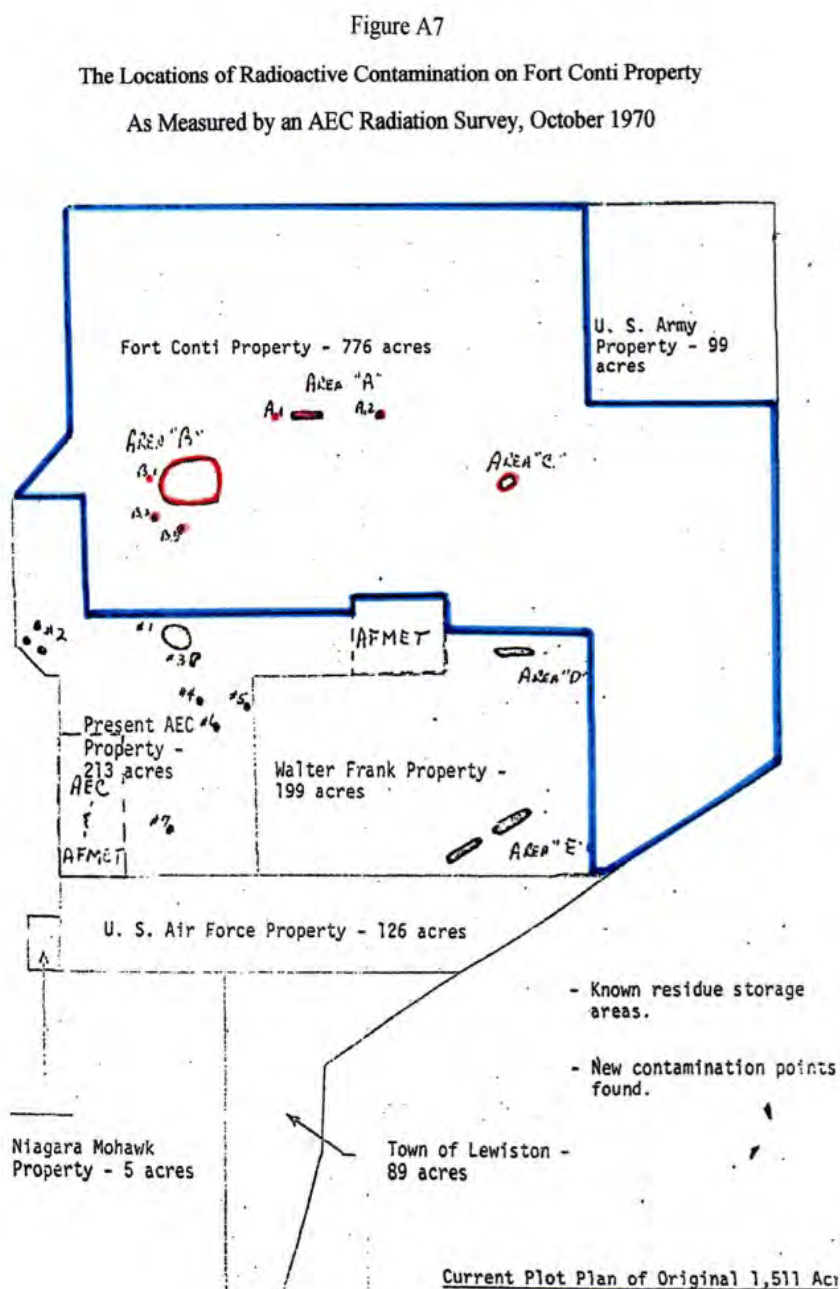
<sup>39</sup> Robinson, B. W., 1971, “Lake Ontario Ordnance Works, Niagara Falls Storage Site,” January 15, 1971.

spring revealed a difference of opinion between NY State and AEC regarding the level of clean up necessary to protect the public from radiation exposure. AEC proposed a cleanup level of 50 microrentgens/hour (uR/hr), considered as consistent with the whole-body dose limit.<sup>40</sup> New York State Department of Health (NYSDOH) believed that the 50 uR/hr decontamination level was not safe for unrestricted use of the Vicinity Properties (VPs). NYSDOH insisted on a more stringent clean up level of 20uR/hr.

### Second Failed Cleanup by the AEC, 1972

In June 1971, AEC completed a gamma walkover survey of approximately 1,300 acres of Vicinity Property land.<sup>41</sup> (Note, the survey was conducted with the gamma detector set at three feet above the ground surface.) The results of the survey identified 95 acres of land exceeding the state's recommended level of 20 uR/hr.

The areas where radiation levels exceeded 20 uR/hr on CWM property are shown in Fig. A8.



<sup>40</sup> Robinson, B. W., 1972, Waste Management Division, Oak Ridge Operations to DeBoer, T. K., 1972, Director, Technological Development Programs, Department of Commerce, State of New York, "LOOW Decontamination Proposal, January 28, 1972.

<sup>41</sup> Oak Ridge Operations, AEC, 1973, "Radiation Survey and Decontamination Report of the Lake Ontario Ordnance Works Site," January 1973, pp. 5, 6, and 7.



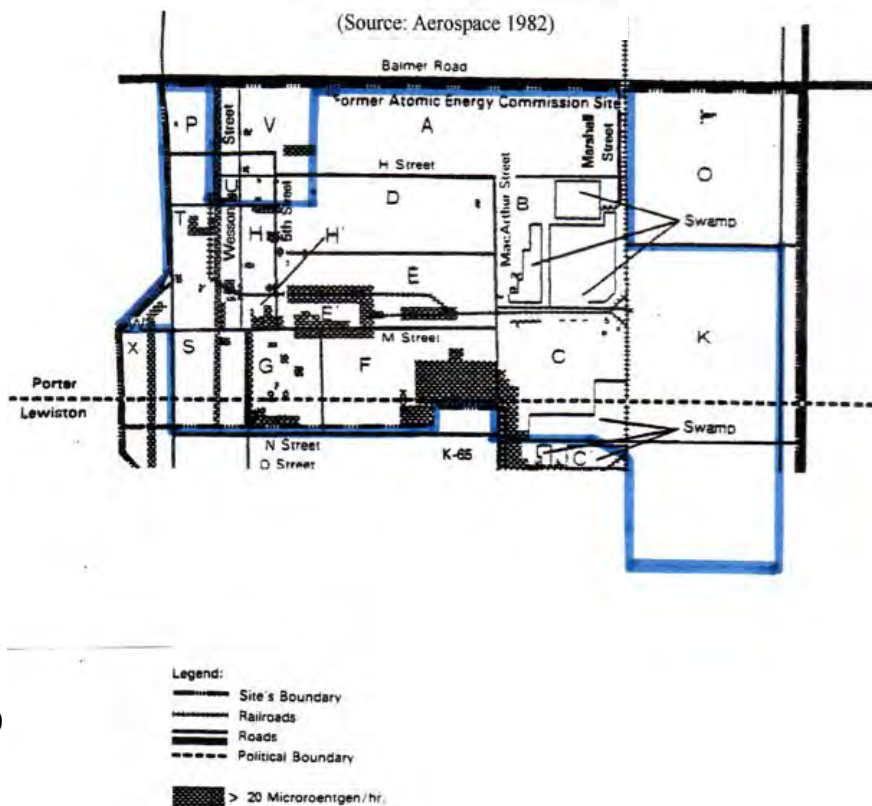
Radiation levels were elevated along M Street and VPs E and E' in the vicinity of the railroad tracks. AEC identified 6.5 acres of LOOW where radiation levels exceeding the AEC recommended level of 50 uR/hr. Based on the results of the 1971 survey, NYSDEC recommended placing restrictions on the 95 acres:

There are three distinct areas on private property where the external dose rate from residual contamination exceeds 2 mr/hr from gamma radiation. This means that a person would only have to occupy the area for 250 hours out of the year before exceeding an allowable exposure of 500 mrem per year. . . .

The recommended immediate restrictions to be placed on the property are attached.

1. Any area that has an external dose rate greater than 20 uR/hr at the 3 foot level shall be considered to be contaminated with radioactive material. These areas should not be disturbed in any manner such as clearing of land for access roads, preparation for foundation construction , or leveling of land for eventual construction.
2. Any area where the external dose rate at the 3 foot level exceeds 65 uR/hr shall be posted and restricted against permanent occupancy. The areas should be posted with a sufficient number of signs to warn the occasional traveler not to linger in the area.
3. Any area where the external dose rate at the 3 foot level exceeds 2 mr/hr (2000 uR/hr) shall be posted and barricaded (or fenced) to prevent access except by duly authorized personnel.

Figure A8  
Surface Gamma Survey, 1971-1972

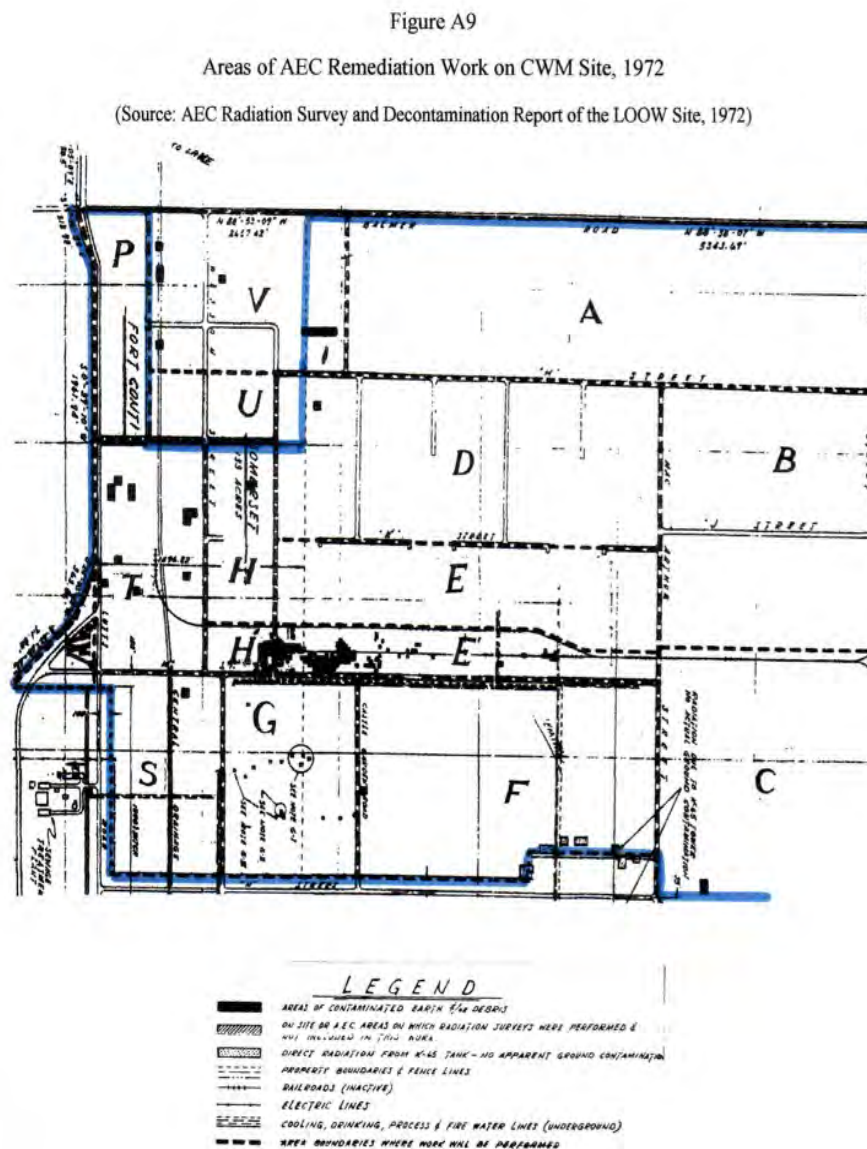


Any person wishing to perform construction activities on the 95 acres should contact the State Health Department, State Department of Environmental Conservation or Niagara County Health Department to ascertain requirements to prevent the spread of contaminated soil or to prevent possible overexposure to radiation.<sup>42</sup>

Despite state agency insistence that a decontamination level of 20 uR/hr was needed to ensure public safety, AEC agreed to remediate only 6.5 acres where radiation levels were in excess of 50 uR/hr. On April 27, 1972, in response to the proposed AEC remediation, NYSDOH placed restrictions on the LOOW VPs including those owned by the Fort Conti Group (now CWM).<sup>43</sup>

The NYSDOH Order stipulated that the affected properties should not be developed or used for industrial, commercial or residential use, except for any use in existence at the time of the Order, provided that such existing use not be expanded or broadened. The properties could be used for occasional recreational use only. Deliberate or intentional movement of soil was prohibited on the properties unless expressly permitted by the Commissioner of Health.

In May 1972 the AEC contracted with John H. Gross Plumbing and Heating



<sup>42</sup> Kelleher, W., 1971, NYSDEC Albany internal memo to Cashman, Lake Ontario Ordnance Works, December 30, 1971.

<sup>43</sup> NYSDOH, 1972, Order in the Matter of Certain Property of the Fort Conti Corporation Located in the Town of Lewiston, Niagara County, State of New York, New York State Department of Health, April 27, 1972.

Company of Niagara Falls, NY to remediate portions of contaminated VPs. Between May 30 and June 23, 1972, the AEC oversaw the remediation of 8 to 10 acres of the contaminated properties to achieve a remediation level of 50 uR/hr. Areas remediated by the AEC contractor on CWM property are recorded on an AEC map reproduced *above* as Fig. A9. The failure of AEC to decontaminate the VPs to the standard required by NYSDOH can be seen by comparing areas exhibiting radiation in excess of 20uR/hr (Fig. A8) with those of AEC remediation work (Fig. A9).

The presence of highly radioactive K65 residues in the former LOOW water tower, just south of M Street, and to the west of the AEC site, made identification of contamination in surrounding VPs difficult. AEC attributed elevated radiation readings on VP C and VP F to the high activity residues stored in the former LOOW water storage tower and declared the VPs free of contamination.<sup>44</sup> AEC also declared VP A, VP E, VP J and VP K free of contamination. All other VPs on the Fort Conti (now CWM) property were found to contain surface or surface and subsurface radioactive contamination.

### **Relation to the RMU-2 Project Proposal**

CWM proposes to develop areas of VP C, VP D, VP E, VP E' and VP F for the RMU-2 footprint and new Fac Pond 5 and to flood an area of VP G for wetland mitigation. Construction of a new Drum Management Building is proposed on VP K. The AEC survey and decontamination report documents the condition of these properties in 1971 and efforts to decontaminate the properties in 1972.<sup>45</sup> The following summarizes the report findings for VPs proposed for major excavation under the RMU-2 Project proposal. The VPs are designated "Areas" with the same letters later assigned to NFSS VPs.

Area C, 66 acre VP surveyed on 50 ft. spacing.

Radiation levels on 260,000 sq ft. in excess of 20 uR/hr. Not decontaminated by AEC.

Radiation levels on 5,000 sq ft. were found to be in excess of 50 uR/hr. Contamination detected during the June 1971 survey was found, during the 1972 remediation effort, to have been disturbed by the property owners (Chem-Trol Pollution Services Inc.) and could not be decontaminated by AEC.

Area D, 65 acre VP surveyed on 50 ft. spacing.

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<sup>44</sup> Robinson, Berwyn M., 1973b, Robinson, B. W., 1973, AEC, Chief Waste Management Branch, Research & Technical Support Div., letter to DeBoer, T. K., Director Technological Development Programs, State of New York AEC, Department of Commerce, Albany, NY, Radiological Survey and Decontamination Report of the Lake Ontario Ordnance Works Site, January 18, 1973

<sup>45</sup> Oak Ridge Operations, 1973

Radiation levels on 5,000 sq ft. were found to be in excess of 20 uR/hr. Not decontaminated by AEC.

Radiation levels on 2,500 sq ft. were found to be in excess of 50 uR/hr. Decontaminated by removal of 10-12 inches of soil and gravel over an area of 100 sq ft.

Area E, 37 acre VP surveyed on 50 ft. spacing.

Radiation levels on 32,500 sq ft. were found to be in excess of 20 uR/hr. Not decontaminated by AEC.

Area E', 19 acre VP surveyed on 20 ft. spacing

Radiation levels on 300,800 sq ft. were found to be in excess of 20 uR/hr. Not decontaminated by AEC.

Radiation levels on 77,600 sq ft. were found to be in excess of 50 uR/hr. Four areas of VP E' were scheduled for decontamination but only three areas were decontaminated.

E'1. Decontaminated by removal of soil, concrete and debris to a depth of 1-3 ft. over an area of 134,000 sq ft.

E'2. Not decontaminated. Noted as a special area in the report: "In Area E2 the contaminated areas, found previously, could not be relocated for decontamination because Chem-Trol development activities had covered over or otherwise obscured the readings."

E'3. Decontaminated by removal of soil and debris to a depth of 3-4 ft. over an area of 1,500 sq ft. followed by backfilling. Noted as a special area in the survey report: "Some burned debris (valves, conduit, gasket material, drum lids, etc.) was found in Area (E-3) and its removal required an excavation to about 3-4 feet."

E'4. Decontaminated by removal of soil and Railroad ballast and ties to a depth of 1-3 ft. over an area of 2,700 sq ft. Noted as a special area in the survey report: "Below the surface contamination, an old railroad bed was unearthed in the northern portion of Area E' and found to be contaminated. It was removed to about a depth of 3 feet. Four catch basins were found to be contaminated and were completely removed."

Area F, 52 acre VP surveyed on 50 ft. spacing.

Radiation levels on 535,000 sq ft. were found to be in excess of 20 uR/hr. Not decontaminated by AEC.

Radiation levels on 5,000 sq ft. were found to be in excess of 50 uR/hr. Not decontaminated by AEC because either AEC attributed the elevated radiation levels solely to the presence of high activity residues on the neighboring AEC property or the contamination identified for



remediation on VP F during the June 1971 survey, was found during the May and June 1972 cleanup to have been disturbed by the property owners.

Area G, 29 acre VP surveyed on 20 ft. spacing.

Radiation levels on 156,000 sq ft. were found to be in excess of 20 uR/hr. Not decontaminated by AEC.

Radiation levels on 7,600 sq ft. were found to be in excess of 50 uR/hr. Seven out of eight areas of VP G found to be in excess of 50 uR/hr were decontaminated.

G1. Decontaminated by removal of timbers over an area of 30 sq ft.

G2. Decontaminated by removal of rubble over an area of 5,100 sq ft.

G3. Decontaminated by removal of soil and debris to a depth of 10-12 inches over two individual areas of 100 sq ft. and 150 sq ft.

G4. Decontaminated by removal of soil to a depth of 8-10 inches over two individual areas of 10 sq ft. respectively.

G6. Decontaminated by removal of soil and gravel to a depth of 10-18 inches over an area of 900 sq ft. followed by backfilling.

G7. Decontaminated by removal of soil and drums to a depth of 6-10 ft. over an area of 1,500 sq ft. followed by backfilling.

G8. This area of contamination was located during the June 1971 survey, but was found during the May and June 1972 cleanup to have been disturbed by the property owner, so could not be remediated.

Area K, 110 acre VP surveyed on 50 ft spacing.

No radiation levels above 20 uR/hr detected. No decontamination necessary.

### **Results of the AEC 1971-72 Survey and Decontamination Effort**

AEC conducted a gamma walkover to identify areas of surface contamination and known burial areas targeted for remediation. Only VPs A, J and K were found to be free of contamination. VP E was found to be contaminated to the extent that radiation levels were in excess of the 20 uR/hr threshold set by NYSDOH, but sufficiently clean by AEC standards (50 uR/hr) that it was not decontaminated.

During the 1971 survey, VP F was found to be contaminated in excess of 50uR/hr. However, by May/June of 1972, Chem-Trol earth moving operations had disturbed the contamination, so VP F could not be decontaminated.

Decontamination was carried out on other VPs, such as C, D, E' and G, but it was only sufficient to meet the ACE criterion of 50 uR/h. However, extensive earth movement by Chem-Trol, the property tenant/owner, interfered with the AEC remediation of VPs C, E', F and G. Contamination identified during the June 1971 survey was found by AEC's contractor to be disturbed, redistributed or covered over during the May and June 1972 cleanup. Since NYSDOH considered the AEC remediation had failed to restore the Vicinity Properties to a condition safe for unrestricted use, the NYSDOH 1972 Order forbidding development remained in place.

### **Chem-Trol Site Development, 1972-1974**

Immediately following the imposition of NYSDOH restrictions in April 1972, further development of the affected properties was halted, with one exception: property leased by Chem-Trol Pollution Services, a hazardous waste treatment company, continued to be developed. In August 1969, Chem-Trol began hazardous waste treatment operations in the village of Blasdell, a suburb of Hamburg, New York. Two and a half years later, in February 1972, Chem-Trol transferred its operations to the LOOW site, leasing a 5,600 sq ft. building next to 240 acres of property Chem-Trol was purchasing from the Fort Conti Group.<sup>46</sup> Chem-Trol also leased concrete storage reservoirs on adjacent property (Somerset Group) to store large volumes of liquid hazardous waste. Construction of several waste treatment lagoons vital to Chem-Trol operations on the 240 acres of Fort Conti property began almost immediately.

Aerial photographs of the Chem-Trol operation taken in May 1972 and August 1972, are shown in Figs. A10 and A11. The May 13, 1972 photograph shows filled impoundments in the far western portion of the site, consistent with the reported Chem-Trol lease of impoundments from the Somerset Group. In the central portion of the site, several lagoons (Lagoons 1, 2, 3, 4 and 5) have been excavated and contain liquids. Activity in the area just north of Lagoons 1 and 2 suggests the use of the area as a borrow source for the construction of lagoon berms. In the southwestern portion of the site, a square liquid containment area has been constructed in the vicinity of the Rochester Animal Burial, which coincides with the current location of the southern section of Fac Ponds 1 & 2. Just east of this location clearing has begun, possibly in preparation for future landfills SLF 1 and SLF 2.<sup>47</sup>

In the August 1972 photograph, ground clearing and excavation for new lagoons (Lagoons 6 and 7) has taken place, compared to the May 1972 photograph. Extensive soil disturbance is evident in the West Drum Area to the west and southwest of the operating lagoons shown in May. Additionally lagoons under construction in May are now operational. Landfills SLF 1 and

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<sup>46</sup> Dearlove, Ray, 1974, Newspaper Article, "Chem-Trol Turns Waste into Profit," Buffalo NY Courier Express

<sup>47</sup> Golder, 1989, Aerial Photographic Interpretation report, Model City TSD Facility, Model City, New York, Submitted to CWM Chemical Services Inc., Order of Consent No. II RCRA-3008h-88-0207, February 1989, 883-3669.14, pp. 9, 10

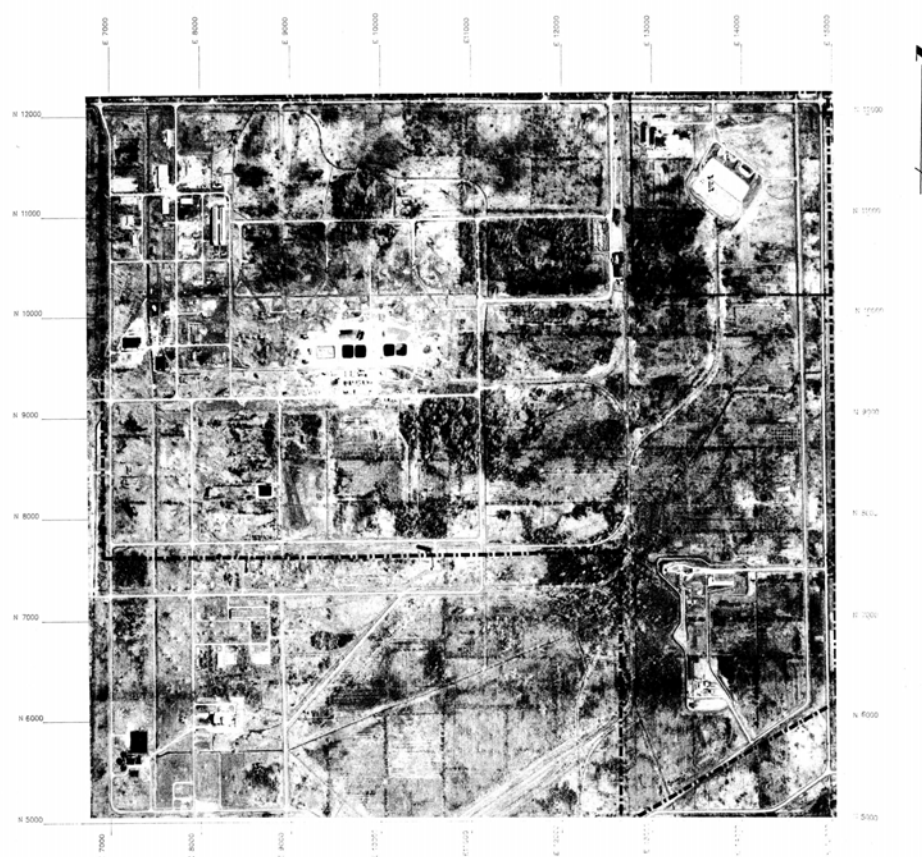
SLF 2 are now present and may be receiving wastes. Soil disturbance south of SLF 1 is probably related to construction.<sup>48</sup>

It is not known whether Chem-Trol obtained permission from the NYS Commissioner of Health to continue moving soil in the period April 1972 to August 1972, but soil movement is recorded as interfering with the AEC remediation, which took place from May to June 1972.<sup>49</sup>

In 1973, Chem-Trol was purchased by SCA Services Inc. The site management staff and facility name remained the same until late 1978.<sup>50</sup>

The April 1972 NYSDOH Order prohibiting further development or use for industrial, commercial or residential use, except for any use in existence at the time of the Order, remained in effect for the Chem-Trol property until 1974. On June 21, 1974 the NYS Commissioner of Health issued a supplementary order concerning the 240 acres of Fort Conti property leased or purchased by Chem-Trol Pollution Services Inc. The supplementary order documents the Commissioner's apparent satisfaction that radioactive emissions from the Chem-Trol property had been reduced to levels that are acceptably safe for certain uses. Paragraph I of the 1972 Order was modified to permit lands leased or owned by Chem-Trol Pollution services to be used for industrial and commercial development, provided that any future construction of industrial or commercial structures utilize slab construction, and providing that the lands were not developed for residential, school or hospital purposes, except for any use existing at the time of the 1972 Order.<sup>51</sup>

Figure A10  
Aerial Photograph of CWM Site Dated May 13, 1972  
(Source: Golder, 1989, Aerial Photographic Interpretation Report, Model City, NY)



<sup>48</sup> Golder, 1989, p. 10

<sup>49</sup> Oak Ridge Operations, 1973, p. 17

<sup>50</sup> Golder, 1989, p. 5

Figure A11

Aerial Photograph of CWM Site Dated August 15, 1972

(Source: Golder, 1989, Aerial Photographic Interpretation Report, Model City, NY)

It is unclear what evidence of reduced levels of radioactive emissions from Chem-

Trol lands was presented to the Commissioner of Health to allow industrial and commercial development of the Chem-Trol property, since there is no record of subsequent clean-up of Fort Conti property between the unsatisfactory AEC cleanup in May/June of 1972 and June 1974.

### Third Failed Cleanup Effort, DOE 1983-1987

In 1979, DOE tasked Battelle Columbus Laboratory with carrying out a comprehensive radiological characterization of the NFSS. Since 1972, the National Lead Company

of Ohio had responsibility for security and caretaker maintenance of the site. Under DOE's Nuclear Remedial Action Program, which had responsibility for DOE Surplus Sites, and under the Formerly Utilized Sites Remedial Action Program (FUSRAP) plans were made to decommission and if necessary decontaminate the NFSS.

In March 1980, Battelle issued a comprehensive characterization report which revealed that the NFSS was contaminated in excess of regulatory guidelines and that contamination was migrating off-site via a series of drainage ditches.<sup>52</sup> The discovery that the NFSS exceeded Department of Energy guidelines for effluent release led DOE to re-evaluate the radiological condition of the surrounding VPs. The Aerospace Corporation was selected to compile all available records, develop a historical view of the operations carried out on the NFSS and VPs

<sup>51</sup> NYSDOH, 1974, Supplementary Order in the Matter of Certain Property of the Fort Conti Corporation Leased or Purchased by Chem-Trol Pollution Services Inc.s Located in the Town of Lewiston and Porter, Niagara County, State of New York, New York State Department of Health, June 21 1974.

<sup>52</sup> Battelle 1981, Columbus Laboratories, "Final Report on a Comprehensive Characterization and Hazard Assessment of the DOE- Niagara Falls Storage Site," Prepared for U.S. Department of Energy, Remedial Action Program, 1981, Significant Findings, p. v.



and make recommendations accordingly for resurveying the VPs.<sup>53</sup> DOE now considered it prudent to objectively determine, on a statistical sampling basis, the current status of the NFSS VPs. Aerospace noted that the VPs now owned by SCA, CWM's predecessor, had the greatest potential to be contaminated.<sup>54</sup>

### *Vicinity Property E'*

Based on the 1982 Aerospace findings of poor traceability of some of the residual radioactive material, changing land use and less sensitive

radiological survey techniques than were now available, DOE decided to conduct a comprehensive radiological survey of the NFSS and surrounding VPs. The VPs on CWM ranked high in the priority list for survey and investigation, with VP E' ranked the highest. The prior use of VP E' for radioactive waste disposal, coupled with the ongoing intensive use of the property to support active hazardous waste landfill operations, suggested that unrestricted use of the property could result in adverse health effects.<sup>55</sup>

VP E' is located immediately north of M Street and is bordered by 5<sup>th</sup> Street on the west and McArthur Street on the east. (See Fig. A12). An abandoned railway line separates VP E' from VP E on the north. VP E' is one of the most actively used areas of the CWM site and encompasses the CWM aqueous waste treatment facilities.

During 1950 and 1951, miscellaneous contaminated metal scrap and equipment was stored along the railroad track (the track extended along the entire length of the property along grid line 43N, as shown *above*, on Fig. A2). Rubbish and construction debris contaminated with uranium and uranium processing

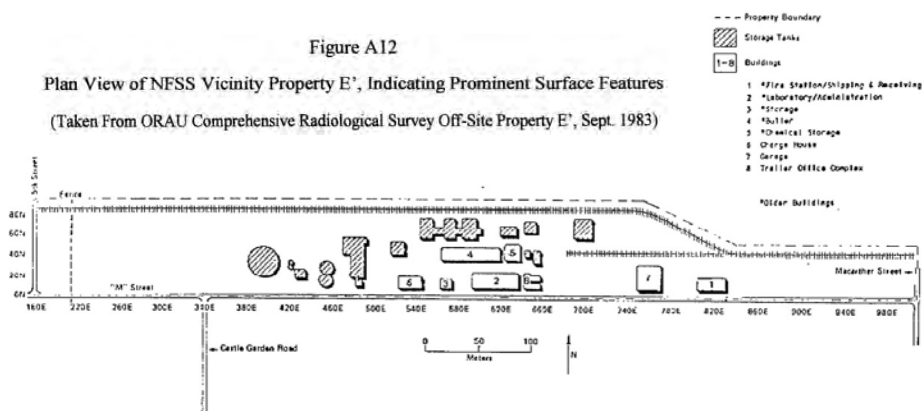
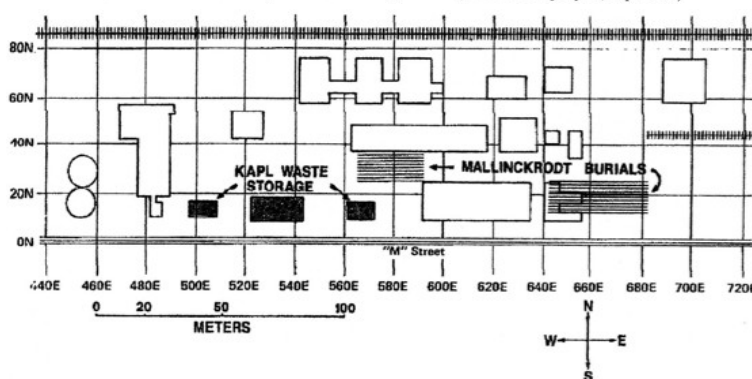


Figure A13

Map of the Central Portion of VP E', Indicating Areas Previously Used for Burial or Storage of Radioactive Wastes  
(Taken From ORAU Comprehensive Radiological Survey Off-Site Property E', Sept. 1983)



<sup>53</sup> Aerospace Corporation, 1982, "Background and Resurvey Recommendations for the Atomic Energy Commission Portion of the Lake Ontario Ordnance Works," November 1982.

<sup>54</sup> Wallo, III, Andrew, 1980, Aerospace Corporation, Environmental Controls and Analysis Directorate Eastern Technical Division, letter to Mott, Dr. William E., Acting Director Environmental & Safety Engineering Division, U.S. DOE, "Restrictions on the Lewiston Land Formerly Owned by the Federal Government," August 11, 1980.

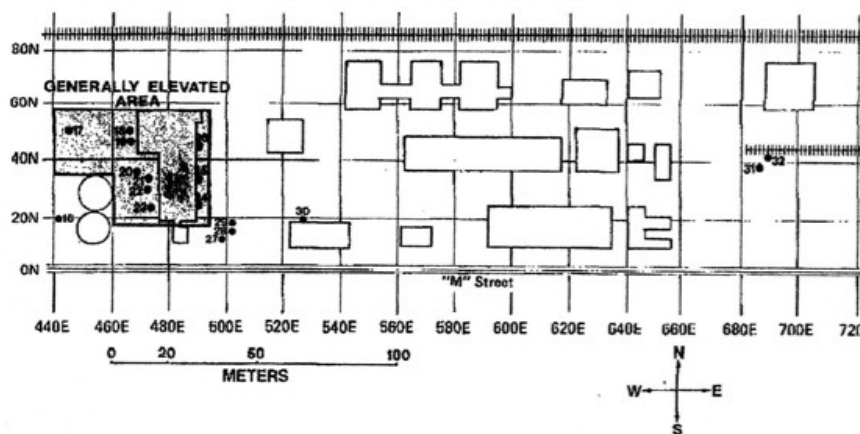
<sup>55</sup> Aerospace Corporation, 1982. Appendix A.



The ORAU survey revealed numerous small isolated areas with elevated surface radiation levels. At some locations the contamination extended greater than 15 cm below the surface and/or was diffused rather than in small discrete pieces. The locations of the elevated surface radiation levels in the west, central and eastern portions of VP E' are shown in Figs. A 14 through A 16. Generally elevated areas of surface radiation and elevated radionuclide concentrations in soil were identified in the central and eastern portions of the property. Elevated radiation levels and soil concentrations were found in the vicinity of buildings in the central area of VP E'. Subsurface sampling of boreholes near the aqueous waste water treatment building revealed an extensive layer of subsurface contamination with Ra-226 in the range of 300 pCi/g. The layer was buried approximately two feet below the surface and was found to be 10 inches thick, extending over an area of 450 sq. meters.<sup>59</sup> This area of subsurface contamination did not

Figure A15

Central Portion of VP E', Indicating Areas of Elevated Surface Radiation  
(Taken From ORAU Comprehensive Radiological Survey Off-Site Property E', Sept. 1983)



correspond with any of the historical burials recorded on Fig. A13. A bermed area surrounding two large PCB storage tanks was also found to be contaminated with radium-226. CWM's Aqueous Waste Water Treatment operations are north of these tanks.

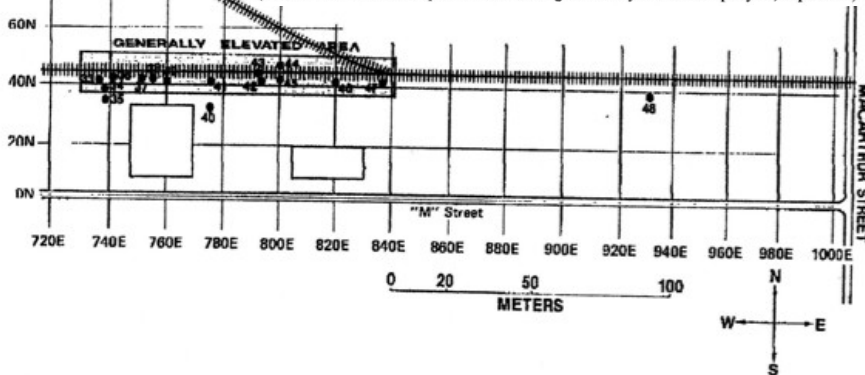
In 1984 SCA constructed a new liquid waste treatment facility on VP E'. This required removal of soil containing Ra-226 at levels up to 1,100 pCi/g. Portions of VP E' west and south of the construction area were not

thoroughly surveyed and, based on limited monitoring those areas contained residual contamination.<sup>60</sup>

In the eastern section of VP E' elevated radiation levels generally occurred along a 100 meter section of railroad line. The comprehensive survey

Figure A16

Eastern Portion of VP E', Indicating Areas of Elevated Surface Radiation  
(Taken From ORAU Comprehensive Radiological Survey Off-Site Property E', Sept. 1983)



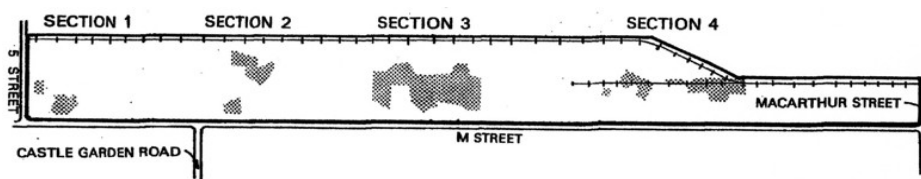
<sup>59</sup> Berger, Jim, July 1982, ORAU, Prog  
"Update on Surveys of LOOW Properties E' and H'," July 26, 1982.

<sup>60</sup> Manpower Educational Research and Training, "Radiological Survey and Remedial Action on a Portion of SCA Chemical Services Property, Lewiston, NY," October 1984.

Figure A17

## Excavated Areas on Vicinity Property E'

(Taken From Bechtel, Post-Remedial Action Report for the NFSS VPs 1985 and 1986, Jan. 89)

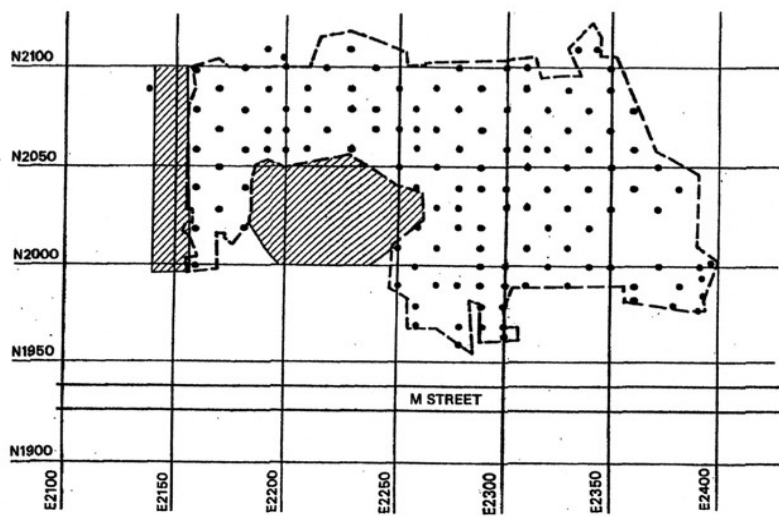


showed that the major contaminant in soils on the property was Ra-226 with several areas of high uranium concentration. The contamination is associated with previous AEC waste disposal and storage operations on VP E' and include lead cake, uranium metal and scrap metal contaminated with Ra-226.<sup>61</sup> Throughout VP E', soil samples from locations of elevated direct radiation levels were found to contain cesium-137 and strontium-90 as well as radium and uranium. This is consistent with the historical use of the property for the storage of KAPL nuclear reprocessing waste. The survey determined that VP E' was contaminated with low level radioactive residues resulting from previous use of the property. Given the occupancy of VP E' for extended periods of time, the survey report also included an evaluation of radiation exposures to SCA employees working on VP E'.<sup>62</sup>

Figure A18

## Areas of Unexcavated Contamination on Vicinity Property E'

(Taken From Bechtel, Post-Remedial Action Report for the NFSS VPs 1985 and 1986, Jan. 89)



EXCAVATION DEPTH WAS 0.5 FEET UNLESS OTHERWISE NOTED

 UNEXCAVATED CONTAMINATION, AVERAGE CONCENTRATION < 5 pCi/g


Following the ORAU survey Bechtel National Inc. (BNi) as Project Management Contractor for the DOE removed radioactively contaminated soils from VP E'.<sup>63</sup> (See Fig. A 17). Sixteen areas on VP E' were decontaminated and backfilled. The typical depth of soil removal was 0.5 feet. During the decontamination several external radiation measurements, taken near some of the excavations, indicated the presence of additional contamination. Additional samples were taken in unexcavated areas in order to verify that the concentration of Ra-226 in surface soil was less than the remedial action guideline of 5 pCi/g. Two contaminated areas of VP E' were found to be

<sup>61</sup> ORAU, 1983a, p.15.

<sup>62</sup> Ibid., Appendix D.

<sup>63</sup> Bechtel National Inc., 1989, Post Remedial Action Report for the Niagara Falls Storage Site Vicinity Properties – 1985 and 1986, January 1989, pp. 18,19



inaccessible for remediation: the contaminated area beneath two PCB storage tanks, and an area near the Aqueous Waste Water Treatment Plant. (See Fig. A18.) The area under the tanks was suspected to be contaminated with both Ra-226 and PCBs. Based on the ORAU survey results, DOE declined to certify VP E' as decontaminated.

#### *Vicinity Property F*

In April 1983, ORAU began a comprehensive survey of Vicinity Property F.<sup>64</sup> VP F is an approximately rectangular plot of land, bounded on three sides by roads: Castle Garden Road on the west, M Street on the north and MacArthur Street on the east. The southern boundary is the property line with the adjacent Niagara Falls Storage Site. A plot diagram of VP F is shown in Fig. A19. ORAU noted that extensive development had occurred on VP F:

The property is almost entirely occupied by landfills, salts areas, and waste treatment ponds; much of the original land surface has been disturbed. There are no permanent buildings on the site. The land is essentially free of brush and weeds. The southwest corner of the property is covered by a swamp.<sup>65</sup>

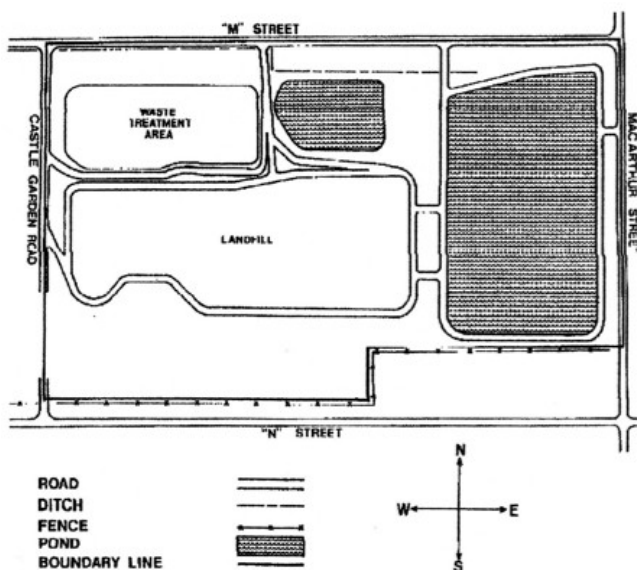
ORAU also noted the likelihood that radioactive wastes were stored and probably spilled on VP F because elevated radiation levels on the property were detected:

There is no evidence of contaminated waste burials on property F. However, it is likely that portions of Property F were occasionally used for temporary storage due to its proximity to other properties, e.g. properties C, C' E', and the present NFSS, where burials or storage of radioactive waste were conducted. Contamination, if any, from previous activities has been relocated during disturbances of the site by the present occupants. Previous surveys have identified spotty contamination and elevated direct radiation levels along the streets forming property boundaries. Higher radiation levels are present throughout the southern portion of the site, due to the materials stored on the adjacent DOE property.<sup>66</sup>

Figure A19

Plan View of Vicinity Property F

(Taken From ORAU Comp. Rad. Survey Report Off-Site Property F, NFSS, February 1984)



<sup>64</sup> ORAU, 1984d. Comprehensive Radiological Survey, Off-Site Property F Niagara Falls Storage Site Lewiston, New York. Prepared for the Department of Energy by Oak Ridge Associated Universities, February 1984.

<sup>65</sup> Ibid., pp. 1-2.

ORAU conducted a gamma walkover survey on accessible portions of the property. The presence of Fac Pond 3 and another smaller pond on VP F precluded a gamma walkover on approximately 30% of the property.

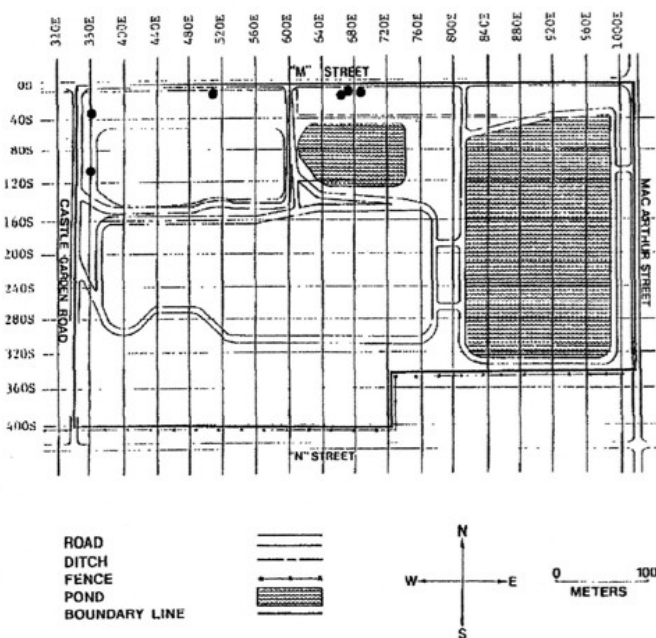
Note that the proposed construction of RMU-2 requires the closure and excavation of Fac Pond 3. The pond was first constructed in 1978,<sup>67</sup> approximately the same time that Fac Pond 8 was constructed, and expanded in 1981.<sup>68</sup> In 2005 CWM discovered extensive radioactive contamination within Fac Pond 8. The contamination is presumed to have been inadvertently incorporated into the fac pond during construction.

In the areas ORAU surveyed numerous isolated areas of elevated radiation were recorded. At some of these locations, soil sampling reduced the contact exposure rates, but at other locations the contact exposure rates were not significantly altered by soil sampling, suggesting that at these locations the contamination extended further than six inches below the surface or that the contamination was diffuse rather than the result of discrete particles. (Note, the survey was conducted with the detector held 1 meter above the ground.)

Many of the isolated areas of contamination were located adjacent to main roads – a situation noted on other offsite properties and suggesting small quantities of residues or wastes from containers during transportation, loading and unloading or temporary roadside storage. Other isolated areas were associated with earthen berms and regions of fill. It is suspected that some of the contamination was relocated to property F from off-site properties during construction of the landfills and treatment ponds.<sup>69</sup>

Figure A20

Locations on VP F Where Radium-226 Exceeds Criteria in Surface Soil  
(Taken From ORAU Comp. Rad. Survey Report Off-Site Property F, NFSS, February 1984)



<sup>66</sup> ORAU, 1984b, p. 2.

<sup>67</sup> Golder, 1989, p. 11

<sup>68</sup> Dunn Engineering Company, 1982, Final Construction Report Facultative Pond No. 3, SCA Chemical Services Inc. Model City, New York, August 23, 1982, p. 1

<sup>69</sup> ORAU 1984, p. 7

Locations on VP F, where Radium-226 concentrations in surface soil exceed the 5 pCi/g criteria are shown on Fig. A20. A number of boreholes were drilled around the perimeter of VP F to investigate subsurface contamination, but, owing to the presence of landfills and other waste areas, no boreholes were drilled in the property interior. The results from perimeter boreholes were unremarkable.

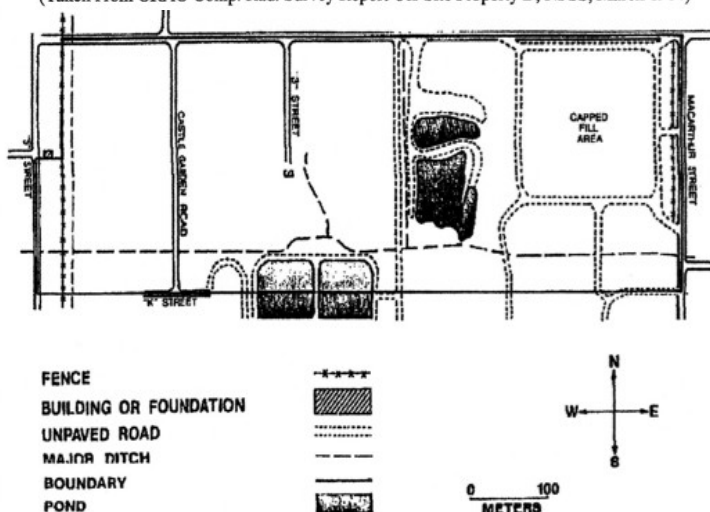
Subsequently, Bechtel decontaminated and backfilled one small area on the north-central portion of VP F.<sup>70</sup> (See Fig. A21.) Post remedial survey sampling of the small remediated area was also carried out<sup>71</sup> and in 1992 DOE certified VP F as fit for unrestricted use.<sup>72</sup>

#### *Vicinity Property D*

Figure A22

Plan View of Vicinity Property D

(Taken From ORAU Comp. Rad. Survey Report Off-Site Property D, NFSS, March 1984)



<sup>70</sup> Bechtel National Inc., 1989, p. 19

<sup>71</sup> Ibid., p. 48

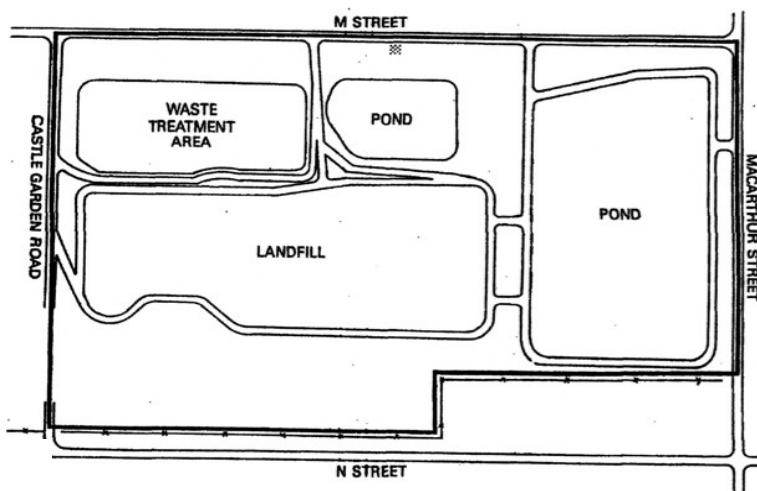
<sup>72</sup> BNI, 1992, Certification Docket for the Remedial Action Performed at the Niagara Falls Storage Site Vicinity Properties in Lewiston, New York, from 1983 through 1986. Prepared for the DOE by Bechtel National Inc., Former Sites Restoration Division, Oak Ridge Field Office, July 1992.

<sup>73</sup> ORAU, 1984c, Comprehensive Radiological Survey, Off-Site Property D Niagara Falls Storage Site Lewiston, New York. Prepared for the Department of Energy by Oak Ridge Associated Universities, March 1984.

Figure A21

Excavated Area on Vicinity Property F

(Taken From Bechtel, Post Remedial Action Report for the NFSS VPs 1985 and 1986, Jan. 89)



In May 1983 ORAU began a comprehensive survey of Vicinity Property D.<sup>73</sup> Fig. A22 is a plot plan of VP D. The property is rectangular in shape and is bounded on three sides by roads: H Street to the north, MacArthur Street on the east and 5<sup>th</sup> Street to the west. The western portion of the property is where SLF-11 is presently located. At the time of the ORAU survey, this area was devoted to SLF-11 development and construction was taking place. The eastern section of VP D was occupied by the closed landfill SLF-7. ORAU noted four

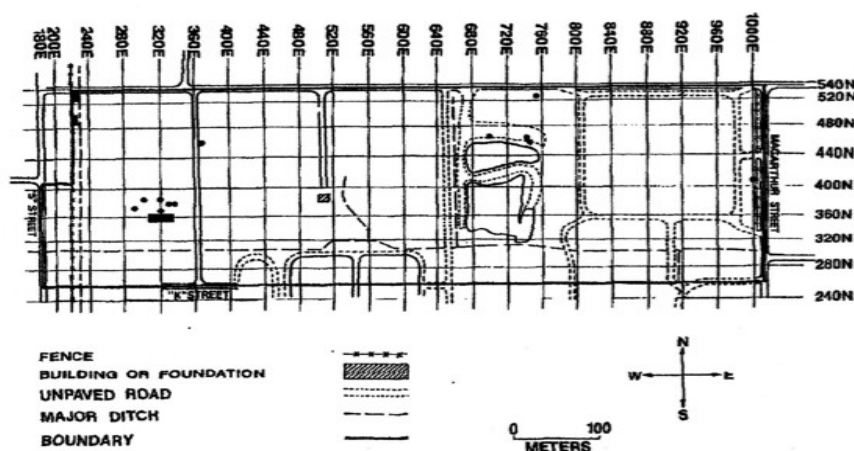
waste treatment or retention ponds on the property, including two in the central area where CWM now proposes to construct Fac Pond 5.

In reviewing the radiological history of VP D, ORAU identified the potential for landfill construction activities to disturb contamination:

There is no evidence of contaminated material burials on property D; however, the 1971-72 AEC survey identified two small areas of possible surface contamination. One of these was located near the northwest corner of the property, about 60m south of H Street and 80m west of Castle Garden Road. Direct radiation levels in this area ranged up to 40uR/hr following the 1972 cleanup operation. The second elevated area was in the mid-eastern section of the

property, near the south end of First Street. This area, which had direct radiation levels up to 25 uR/hr, is presently covered by a chemical landfill. A 1980 mobile scan by the Oak Ridge National Laboratory indicated above-background levels along H Street

Figure A23  
Locations of Areas of elevated Direct Radiation on VP D  
(Taken From ORAU Comp. Rad. Survey Report Off-Site Property D, NFSS, March 1984)



and minor spots along the north-south roads. It is possible that some of these areas may have been disturbed or relocated as a result of on-going construction and property maintenance activities conducted by SCA.<sup>74</sup>

A gamma walkover survey of all accessible areas of VP D revealed numerous isolated spots of elevated contact radiation levels. *See* Fig. A23. Sampling and analysis of these areas revealed Ra-226 concentrations of up to 11,200 pCi/g in soil.<sup>75</sup> The maximum concentration was measured in a piece of rock-like material from the central area of VP D, where CWM proposes to construct Fac Pond 5. Most of the other samples which contained high Ra-226 levels were also pieces of this same material, which ranged in size from approximately 200g to 1.5 kg. Other contaminated materials identified included a large metallic-looking mass, weighing 30-40 kg, which was found to have a Ra-226 concentration of 4,250 pCi/g, a cesium gap containing 25.4

<sup>74</sup> *Ibid.*, p. 2.

<sup>75</sup> *Ibid.*, p. 7.



uCi of Cs-137 and high activity white chips, suspected to be lead cake residue. These materials are consistent with the prior use of VP D for radioactive waste disposal. According to ORAU:

Many of the small isolated sources of radiation were removed by the survey sampling procedure; however, there was no attempt to remove all such sources. It is also possible that additional materials are present beneath the fill and piles of earth which have been accumulated in the section of the site (near 360N, 320E). It is

estimated that less than 2 cu. m. of the rock-type material and other isolated

objects with radionuclide levels exceeding the criteria, are present on this property.<sup>76</sup>

A limited number of bore holes were drilled on VP D to investigate the presence of subsurface contamination. The location of boreholes is shown in Fig. A24. Subsurface investigation of VP D was extremely limited owing to landfills and ponds on the property. The limited subsurface investigation found no subsurface contamination

on VP D.

Based on the results of the survey, ORAU found VP D to be contaminated in excess of the DOE guidelines and the property was designated for remedial action. BNI removed

Figure A24

Locations of Boreholes for Subsurface Investigation on VP D

(Taken From ORAU Comp. Rad. Survey Report Off-Site Property D, NFSS, March 1984)

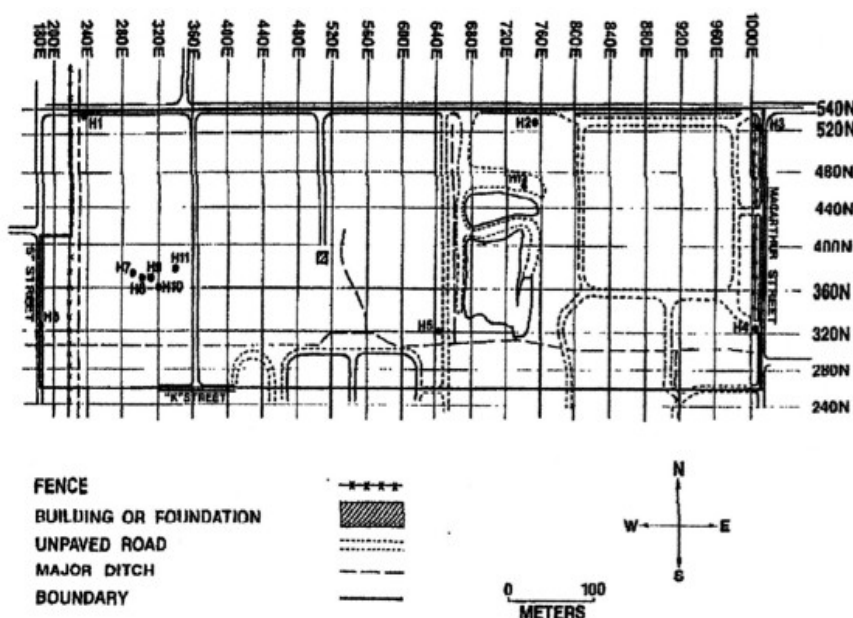
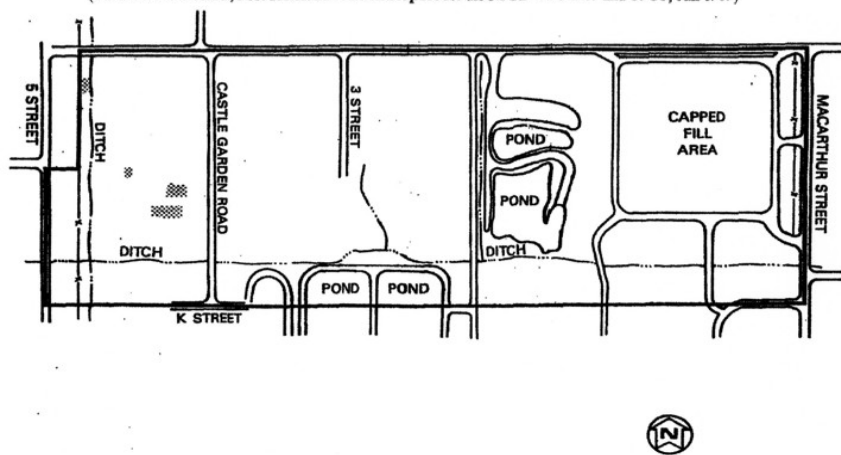


Figure A25

Excavated Areas on VP D

(Taken From Bechtel, Post Remedial Action Report for the NFSS VPs 1985 and 1986, Jan 1989)



1" = 375'0"

<sup>76</sup> ORAU, 1984c, p.11.

radioactively contaminated soil from VP

D.<sup>77</sup> Eight areas on VP D were decontaminated. One area was addressed as part of a remediation effort on VP U and one area, containing numerous pieces of slag-like material of MED origin was decontaminated as part of the verification survey.<sup>78</sup> The areas of soil removed are shown in Fig. A25. After verification of the remediated areas<sup>79</sup>, DOE certified Vicinity Property D as fit for unrestricted use.<sup>80</sup>

### *Vicinity Property E*

In May and June 1983, ORAU conducted a radiological survey of VP E.<sup>81</sup> Fig A26 is a plot plan of the property as it appeared in 1983. It is bounded on the west by 5<sup>th</sup> Street and on the east by MacArthur Street. The west-central section of the property contains several waste treatment ponds known as lagoons 1, 2, 5, 6 and 7. Another waste treatment pond known as the North Salts Area is located north of lagoons 1, 2 and 5. All ponds were part of the original open air waste treatment system, which has since been replaced by SCA's closed Aqueous Waste Treatment Facility. (The lagoons and North Salts Area have since been closed in place and covered over.) A drainage ditch occupies a major portion of the southern boundary and also encloses much of the waste treatment area. In

<sup>77</sup> Bechtel National Inc., 1989.

<sup>78</sup> Ibid., p. 16.

<sup>79</sup> Ibid., p. 35.

<sup>80</sup> J.E. Baublitz, Director, Division of Remedial Action Projects, Office of Nuclear Energy, Letter to G.H. Spira, General Manager, SCA, June 4, 1984.

<sup>81</sup> ORAU, 1984d. Comprehensive Radiological Survey, Off-Site Property E Niagara Falls Storage Site Lewiston, New York. Prepared for the Department of Energy by Oak Ridge Associated Universities, March 1984.

Figure A26

### Plan View of Vicinity Property E

(Taken From ORAU Comp. Rad. Survey Report for Off-Site Property E, NFSS, March 1984)

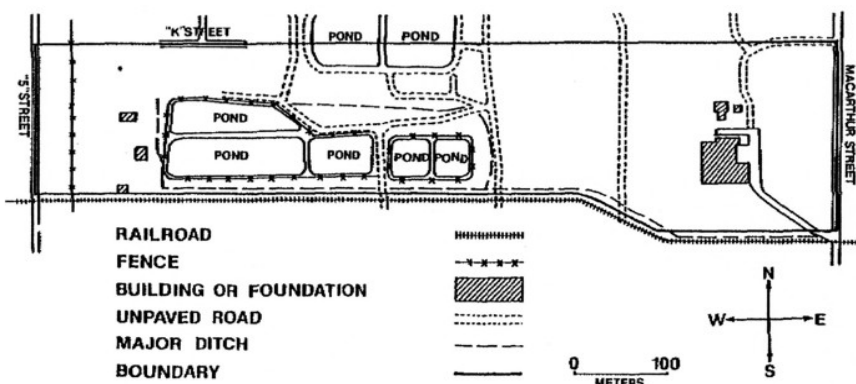
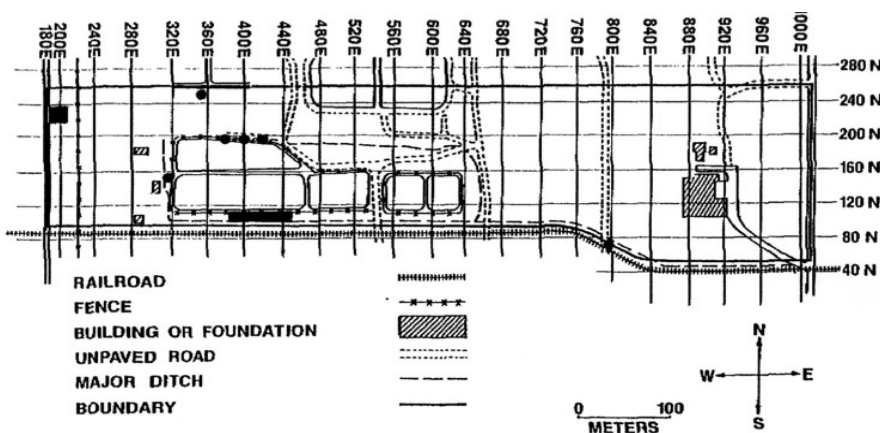


Figure A27

### Areas of Elevated Direct Radiation on Vicinity Property E

(Taken From ORAU Comp. Rad. Survey Report for Off-Site Property E, NFSS, March 1984)



Locations of Areas of Elevated Direct Radiation. (Darkly shaded areas represent regions of generally elevated radiation levels. Dots indicate isolated "hot spots.")

the eastern section of the property ORAU noted one occupied building, recently constructed for the storage and handling of drums of chemicals.

ORAU described the radiological history of VP E:

There is no history of contaminated material burials on property E. Previous surveys have identified a few small areas of elevated radiation levels in the northeast section (landfill activities may have disturbed these areas) and above background levels along the railroad tracks near the southwest boundary.<sup>82</sup>

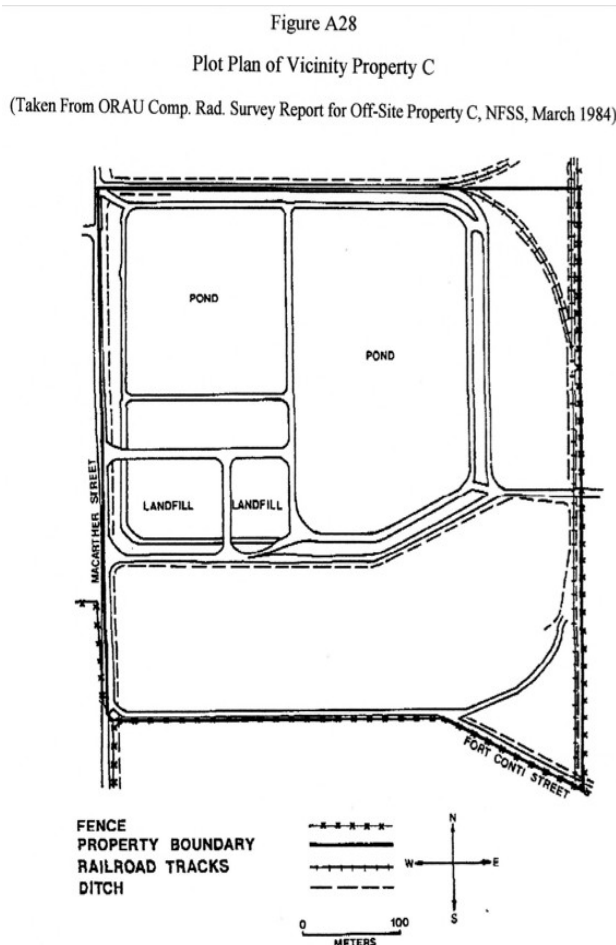
On Vicinity Property E, ORAU found two areas with contained elevated radioactivity in soil in the southwest and northwest portions of the property. The elevated radioactivity in the southwest appeared to be associated with buried metal containers in the berm of Lagoon 6. These contaminated drums had been inadvertently buried in the lagoon during construction operations by the landfill operator. The locations of elevated activity are shown in Fig. A27. In 1992, owing

to residual radiological contamination remaining on VP E, DOE declined to certify VP E as in compliance with applicable decontamination criteria and standards set for the NFSS. Vicinity Property E is an open Vicinity Property.

#### *Vicinity Property C*

ORAU conducted a comprehensive survey of VP C in August and September of 1983.<sup>83</sup> The property is square in shape and bounded by MacArthur Street on the west and abandoned railway tracks to the north and east. A haul road runs parallel with the southern fence, which is the boundary with the neighboring Modern Landfill. Much of the property was occupied by an active landfill (SLF 10) and liquid treatment and retention ponds (Fac Ponds 8 and 9). *See Fig. A28.* Areas in the south central part of the property were being used as sources of fill for various SCA construction and landfill activities. The southeastern section of the property was overgrown with brush and trees and contained a number of swampy areas.

<sup>82</sup>, Off-Site Property E Niagara Falls Storage Site Lewiston, New York Ridge Associated Universities, March 1984, p. 2.



<sup>83</sup> ORAU, 1984e. Comprehensive Radiological Survey, Off-Site Property C Niagara Falls Storage Site Lewiston, New York. Prepared for the Department of Energy by Oak Ridge Associated Universities, March 1984.

Although not officially designated a disposal area, VP C is reported to have a history of storage and shallow burial of radioactive waste:

A review of the site history conducted by Aerospace Corp. did not indicate evidence of contaminated waste burials or storage on property C. The 1971-72 survey, however, identified surface contamination near the southwest corner of the property (decontamination operations were subsequently performed in this area.) This finding suggests possible storage or shallow burial of contaminated material may have occurred. Conversations with a previous site employee confirm this possibility. It is likely that any surface contamination which may have been present on this property as a result of AEC/MED operations has been relocated or is covered and inaccessible due to waste treatment and construction operations of the current property occupants.<sup>84</sup>

A gamma walkover of the accessible portions of VP C revealed no surface contamination.

ORAU investigated an area in the southern part of the property identified as a possible burial site by drilling several boreholes, but found no subsurface contamination. *See Fig. A29.* The presence of ponds and landfills precluded coring and subsurface sampling of almost 40% the interior of the property. In spite of these limitations, DOE later reported that Vicinity Property C is free of contaminated material.<sup>85</sup>

#### *Vicinity Property G*

In April and June 1983, ORAU surveyed VP G.<sup>86</sup> (Although not part of the RMU-2 footprint, VPG is slated for use in wetland mitigation associated with RMU-2 development.) It

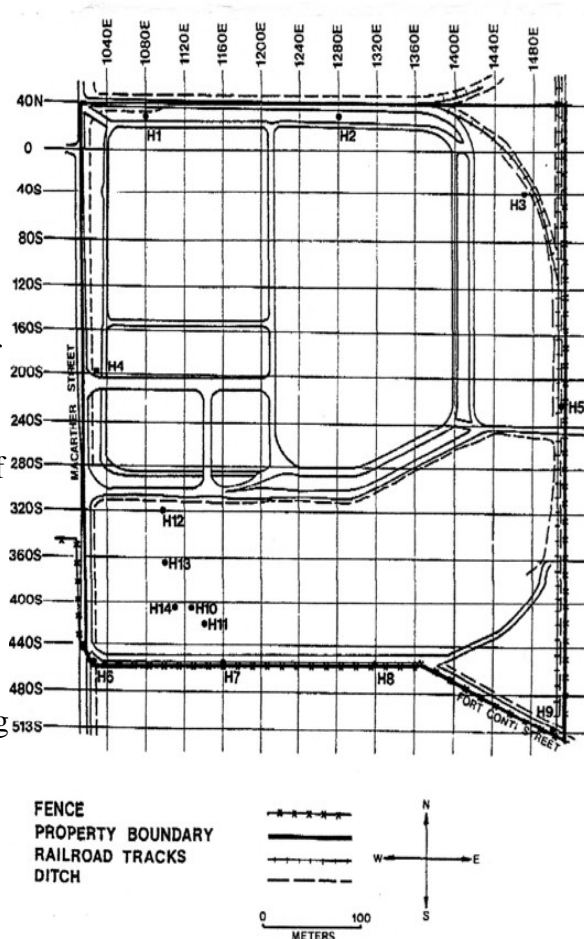
<sup>84</sup> *Ibid.*, p. 2.

<sup>85</sup> BNI, 1992

<sup>86</sup> ORAU, 1984e, Comprehensive Radiological Survey, Off-Site Property G Niagara Falls Storage Site Lewiston, New York. Prepared for the Department of Energy by Oak Ridge Associated Universities, April 1984.

Figure A29

Locations of Boreholes for Subsurface Investigation of Vicinity Property C  
(Taken From ORAU Comp. Rad. Survey Report for Off-Site Property C, NFSS, March 1984)





is rectangular in shape and bounded on three sides by roads: M Street to the north, Castle Garden Road on the east and Campbell Street on the west. A chain link fence separates the property from the neighboring Niagara Falls Storage Site to the south. The central eastern and north-eastern sections of VPG are occupied by Fac Ponds 1 & 2. An old frame farmhouse remains in the southern portion of the property; a remnant of agricultural use prior to federal acquisition.

ORAU found the western section of VPG to be unused and overgrown with brush and trees. Piles of construction rubble and scrap metal lay scattered throughout the western section of the site. The southern section contained a series of low swampy areas.

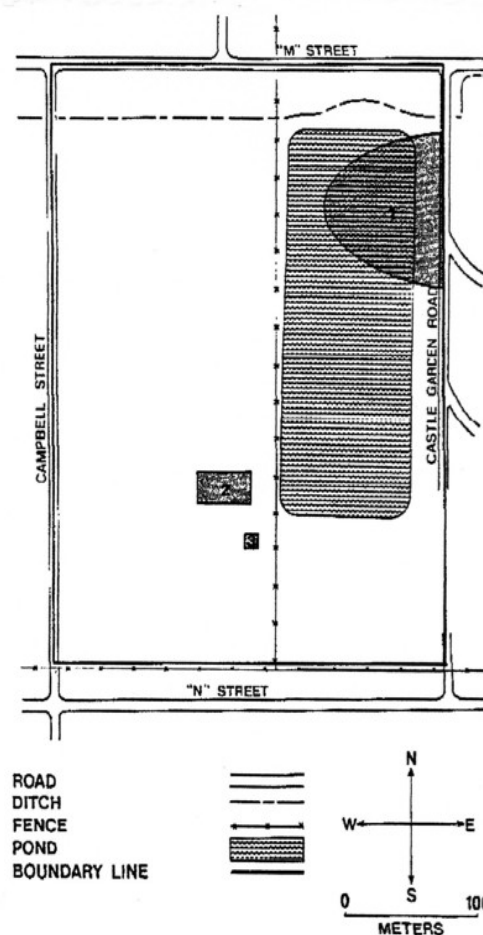
As previously discussed, VPG has an extensive radiological history. In the 1950s radioactive wastes were stored on the surface, in the Castle Garden Dump, and buried at two locations on the site, recorded as a contaminated metal burial area and the University of Rochester burial for the disposal of contaminated animal carcasses and other wastes. Fig. A30 is a plot plan of the property showing the location of the surface dump and two burial areas. It was noted that although the two burial areas had been excavated in 1972, subsequent surveys indicated areas of contamination remained in the northeast and southwest portions of the property and along Campbell Street and M Street.<sup>87</sup> ORAU also commented:

It should be noted that records describing the storage and burial sites are inconsistent or incomplete as to the exact locations and areas involved. Also, more recent construction activities on this property are likely to have disturbed remaining contaminated material, deleting it or covering it such that it is no longer accessible.<sup>88</sup>

Figure A30

## Plot Plan of Vicinity Property G

(Taken From ORAU Comp. Rad. Survey Report for Off-Site Property G, NFSS, April 1984)



Plan View of NFSS Off-Site Property G Indicating Prominent Surface Features and Locations of Three Previous Storage and Burial Areas. (Shaded areas 1, 2, and 3 are previous locations of contaminated waste storage and burial.)

<sup>87</sup> Ibid., p. 2.

<sup>88</sup> Ibid.

A gamma walkover conducted at 1-2 meter intervals, identified numerous isolated areas where radiation levels were significantly elevated. (See Fig. A31.) Soil sampling using a 20m grid system confirmed radionuclide concentrations exceeded DOE criteria levels at these locations. Because of the number of elevated radiation readings within gridlines 140S to 270S and 50E to 220E, this area was surveyed and sampled at 10m intervals.

Contact gamma exposure rates ranged from 13 to 660 uR/hr; the maximum was measured at grid coordinate 289S, 136E. Exposure rates at 1m above the surface ranged to 76 uR/hr. Beta-gamma dose rates ranged to 1,400 urad/h. The maximum dose rate was recorded at grid coordinate 269S, 190E. Contact radiation

Figure A32

Locations of Boreholes for Subsurface Investigation of Vicinity Property G

(Taken From ORAU Comp. Rad. Survey Report for Off-Site Property G, NFSS, April 1984)

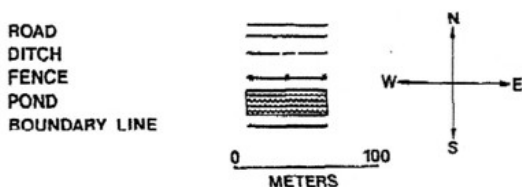
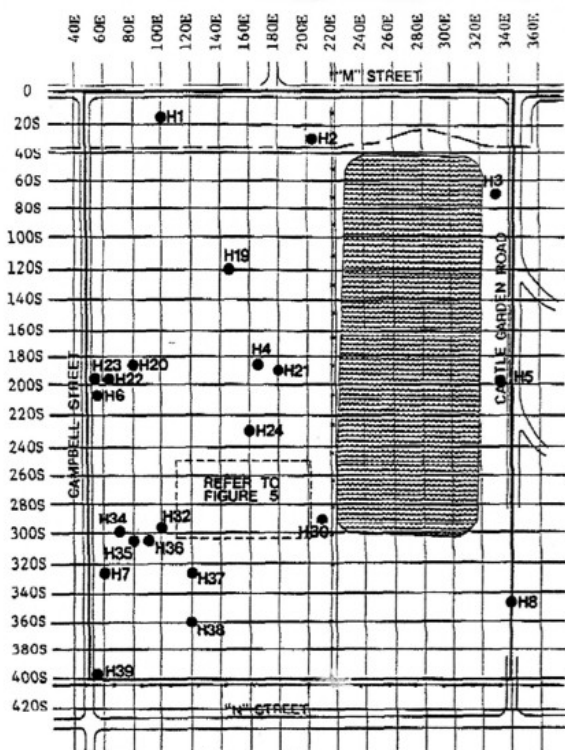
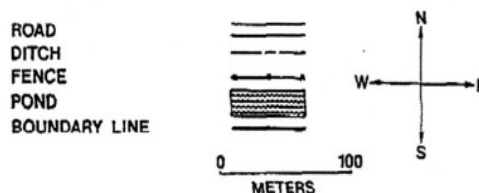
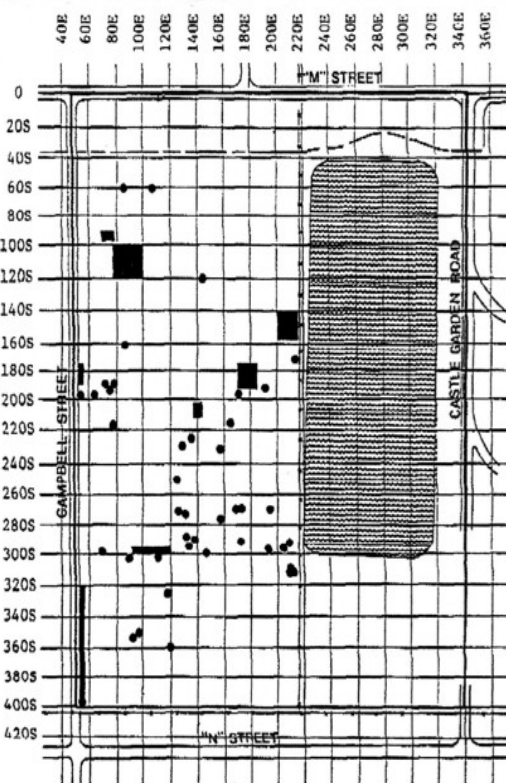


Figure A31

Areas of Elevated Direct radiation on Vicinity Property G

(Taken From ORAU Comp. Rad. Survey Report for Off-Site Property G, NFSS, April 1984)



Locations of Areas (shaded) of Elevated Direct Radiation.

levels were not reduced by soil sampling at many of these locations; at some locations the levels actually increased, following sample removal.<sup>89</sup>

Samples from the locations of elevated contact radiation levels contained up to 1,400 pCi/g of Radium-226. Uranium-238 was also found above the 150 pCi/g criteria

level: a piece of scrap lumber contained 1,410 pCi/g. An electron tube containing 27.4 uCi of Cesium-137 (a cesium gap) was also recovered at one location. In the west central portion of the site, most of the areas of contamination were associated with pieces of slag (related to MED/AEC activities), building rubble and residues. In the southwestern section of the property, contamination appeared to be associated with pieces of debris and scrap metal. Here most of the contamination appeared to be located close to a previous metal burial site that was reportedly remediated in 1972.<sup>90</sup>

Boreholes drilled at the locations of surface contamination indicated that the contamination appeared to be limited to the upper 6 to 12 inches of soil. Borehole locations are identified in Fig. A32. Ground penetrating radar was used to assure that drilling of boreholes did not damage subsurface utility lines. It was also used in the area of the contaminated metal burial to determine whether any metal remained after the 1972 remediation effort.<sup>91</sup> VP G was divided up into three sections for the radar survey: a northern section, a southern section and Area S, a swampy area within the southern section, identified as the location of the previous metal burial. The northern section, was surveyed between 50E and 160E, running from 140S to 210S. The survey report noted:

Construction debris were noted during visual inspection of this section. Sheet metal, pipes, and concrete slabs were showing above the surface of the ground on the east side of Castle Garden Road. The radar signatures indicate that there are buried concentrations of solid material. It is likely that these concentrations of buried material are the same types of material as observed at the surface. With two exceptions, the radar signatures observed in the Northern Section of Area G are all due to solid materials. These two exceptions are zones with high dielectric readings, indicating the presence of non-ionic liquids in the ground. One of the high-dielectric zones extends from 160S to 180S on grid line 110E. There is an average of 5.5 feet of cover this high dielectric earth. The second high dielectric zone extends from 185S to 190S on grid line 130E. Here, the depth of the covering earth averages 5.5 feet.

The remaining radar anomalies are foundation slabs and foundation walls. Reinforcing steel is evident in some of the slabs and walls. . . .

The Southern Section of Area G lies between 60E and 220E, running from 240S to 330S. . . . Visual examination of the surface of this Southern Section showed the rusted remains of several 55-gallon drums either partially or totally exposed above ground. The presence of these drums suggests that this location may have

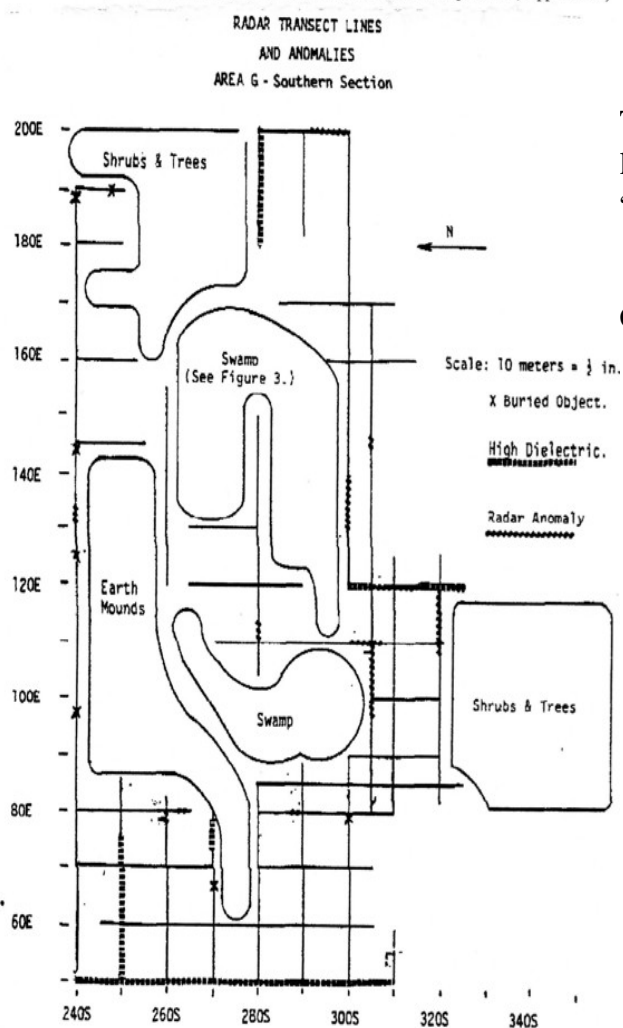
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<sup>90</sup> Oak Ridge Operations, AEC, 1973.

<sup>91</sup> ORAU, 1984e, Appendix C, "Final Report: Report of Ground-Penetrating Radar Survey of Area G, Former Lake Ontario Ordnance Works, Lewiston, New York" (August 1983).

Figure A33

Ground Penetrating Radar Survey of Southern Section of Vicinity Property G  
(From ORAU Comp. Rad. Survey Report Off-Site Property G, NFSS, April 1984, Appendix C)



been used as a disposal area. The radar charts show buried objects whose signatures are the type that would be observed from a 55 gallon drum.<sup>92</sup>

The location of the buried targets having drum-like radar signatures are marked with the symbol "X" on Fig. A33.

ORAU summed up the characterization of VP G:

The results of the survey indicated numerous, small, isolated areas of elevated direct radiation and surface soil contamination believed to be associated with previous MED/AEC activities. The major contaminant was Ra-226; however, U-238, Th-232, and Cs-137 contamination was also noted. Most of these areas were associated with pieces of rock-like material (possibly a chemical processing slag), building rubble, and residues located in a previous waste burial site. The ground radar indicates subsurface metallic objects

remaining in a previous burial site area. Two locations of subsurface contamination were also noted; it is possible that additional regions of subsurface contamination exist in this area.<sup>93</sup>

<sup>92</sup> Ibid., 3, 8.

<sup>93</sup> ORAU, 1984e, p. 11.



Following the ORAU identification of residual surface and subsurface radiological contamination exceeding AEC guidelines on VP G, BNI removed contamination from VP G.<sup>94</sup> Forty five areas on VP G were decontaminated and backfilled. *See* Fig. A34. According to BNI, all of VP G was cleaned up in 1986 except for one small area containing several buried drums.<sup>95</sup> One radiologically contaminated drum was excavated in 1986 and its contents analyzed. The drum was found to contain constituents of coal tar and its derivatives. A further 31 drums were removed in 1987, along with 49 drums of contaminated soils.<sup>96</sup> DOE did not certify VP G as decontaminated because Fac Ponds 1&2 prevented access to the area.<sup>97</sup>

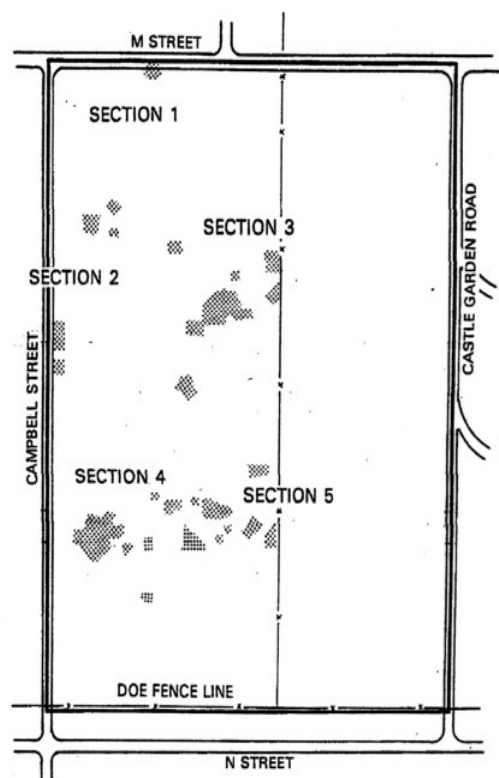
#### *Vicinity Property K*

In October and November of 1983, ORAU carried out a comprehensive radiological survey of VP K.<sup>98</sup> A plot plan of VP K, as it looked in 1982, reveals drainage ditches traversing much of the eastern section of the property. The central and northwestern portion is largely occupied by ponds and the southwestern is a designated state wetland. At the time SCA was using the property as a source of construction fill dirt. *See* Fig. A35.

Figure A34

#### Excavated Areas on Vicinity Property G

(Taken From Bechtel, Post Remedial Action Report for the NFSS VPs 1985 and 1986, Jan 1984)



<sup>94</sup> BNI, 1992

<sup>95</sup> *Ibid.*, p. 20.

<sup>96</sup> Ahrends, S. W., 1987, DOE, Director Technical Services Division, Oak Ridge Operations, letter to Gable, Ted, EPA, Air and Waste Management Division, New York, Excavation of Drums From the NFSS Vicinity Property G.

<sup>97</sup> L.K. Price, Director, DOE Former Sites Restoration Division, Letter to G.H. Spira, SCA, May 7, 1992.

<sup>98</sup> ORAU, 1984g, Comprehensive Radiological Survey, Off-Site Property K Niagara Falls Storage Site Lewiston, New York. Prepared for the Department of Energy by Oak Ridge Associated Universities, March 1984.

VP K has no significant radiological history other than past detections of slightly elevated uranium and radium concentrations in surface soil.<sup>99</sup> The comprehensive survey of VP K included surface radiation scans, measurements of direct radiation levels and analyses for radionuclide concentrations in soil and water samples, both surface and subsurface. The results of the survey indicated that no areas of elevated direct radiation or soil contamination are present on the property.

### Results of the ORAU 1982-83 survey work and decontamination by Bechtel

ORAU found that all VPs surveyed were contaminated in excess of DOE guidelines and required further remediation.<sup>100</sup> Previous survey and decontamination work carried out by AEC in 1971-72 had not succeeded in cleaning up the site to the required level of decontamination for uncontrolled release. Development of the CWM site by successive hazardous waste landfill operators Chem-Trol, SCA Scientific Services Inc. and CWM compromised AEC decontamination efforts. VPs E, E' and G were found to contain residual contamination that could not be immediately remediated because structures were built over soils containing radioactive contamination. In the case of VP E' extensive subsurface contamination was identified outside areas previously recorded as historical burial areas, raising the possibility of further uncharted areas of subsurface contamination within the former AEC radioactive disposal site or relocation of contamination.

On VP G, ORAU found that the documented metal burial site had not been fully remediated and still contained contaminated drums. Another unrecorded drum burial was found in the southern portion of VP G at the end of 1986.

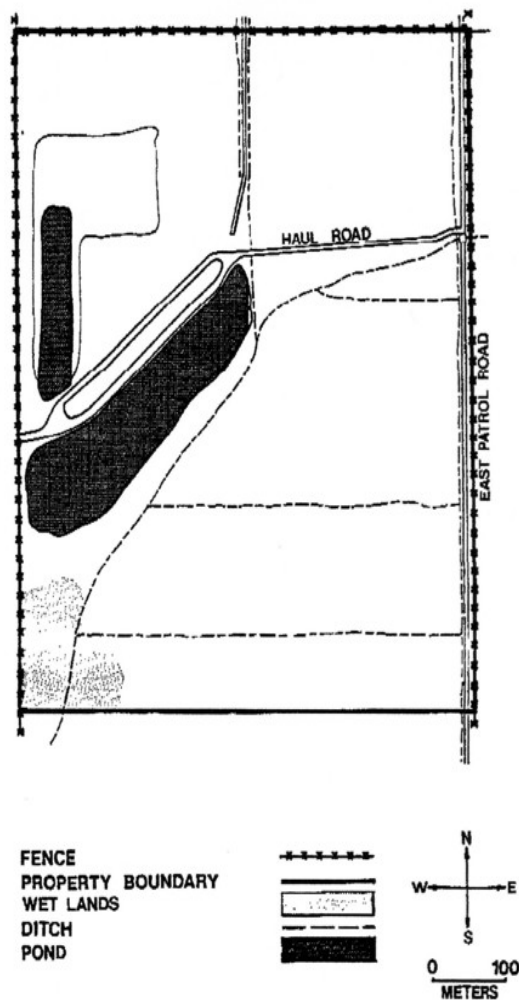
<sup>99</sup> AeroSpace Corporation, 1982, Background and Resurvey Recommendations for the Atomic Energy Commission Portion of the Lake Ontario Ordnance Works. Prepared for U.S. DOE, Contract No. DE-AC01-82EP15100, November 1982, p. 44.

<sup>100</sup> BNI, 1992, pp. 10, 11.

Figure A35

#### Plan View of Vicinity Property K

(From ORAU Comp. Rad. Survey Report of Off-Site Property K, NFSS, March 1984)



Plan View of NFSS Off-Site Property K Indicating Prominent Surface Features.

Because of hazardous waste operations, ORAU did not conduct core sampling in many areas occupied by landfills, waste treatment lagoons or retention ponds. ORAU also indicated that in many of these areas it was likely that surface contamination was relocated or was covered and inaccessible, owing to the waste treatment and construction activities of the current occupants. The subsequent remediation by Bechtel of VPs C, D, E, E', F and G was therefore compromised by significant data gaps. Bechtel's verification of remediation was confined to resurvey of the excavated areas only.<sup>101</sup> Accordingly, areas of contamination missed by ORAU during the characterization surveys were not identified for remediation by Bechtel and were not included in the verification surveys. In 1992, based on the incomplete characterization and flawed verification surveys, DOE certified VPs C, D and F as meeting the DOE release criteria for unrestricted use.<sup>102</sup> VPs E, E' and G remained open because of the areas of suspected or known contamination which remained on the individual properties.

### **CWM and Residual Radioactive Contamination, 1984-2002**

In October 1984, SCA Scientific Services became a wholly-owned subsidiary of Waste Management Inc. Golder Associates was hired almost immediately to review the existing hydrogeologic characterization of the site and groundwater monitoring data.<sup>103</sup> As part of the 1985 evaluation of groundwater monitoring data, Golder identified and documented areas of the CWM site with potential chemical and radiological contamination at or near the surface of the CWM site. The resulting plot of potential surface contamination was based on review of DOD reports and interviews with CWM site personnel. *See Fig A36.* Areas of radiological contamination are colored red and the proposed RMU-2 footprint is outlined in blue. Note that several areas of potential radiological contamination lie within the proposed RMU-2 footprint, including the northern section of Fac Pond 8, the southern section of Fac Pond 3, which was part of an expansion in 1981 and an area along the abandoned railway line in VP E'.

The areas of radiological contamination identified by Golder include areas identified in the first survey of the AEC Radioactive Waste Disposal Site in 1955. These areas were later designated as E'1, E'2, G1 and G2. (*See Fig A3.*) The radiologically contaminated PCB warehouse on Marshall Street is also identified. In addition, Golder identifies some new areas, presumably as a result of discussion with CWM site personnel. The individual areas are located south of landfills SLF 1-6, west of the PCB Warehouse and south of the original Fac Pond 3 and appear to be associated with movement of soils.

In 1986, SCA (now part of Waste Management Inc.) was required to submit a report to NYSDEC identifying all past or present Solid Waste Management Units (SWMUs) on its Model

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<sup>101</sup> BNI, 1989, p.12.

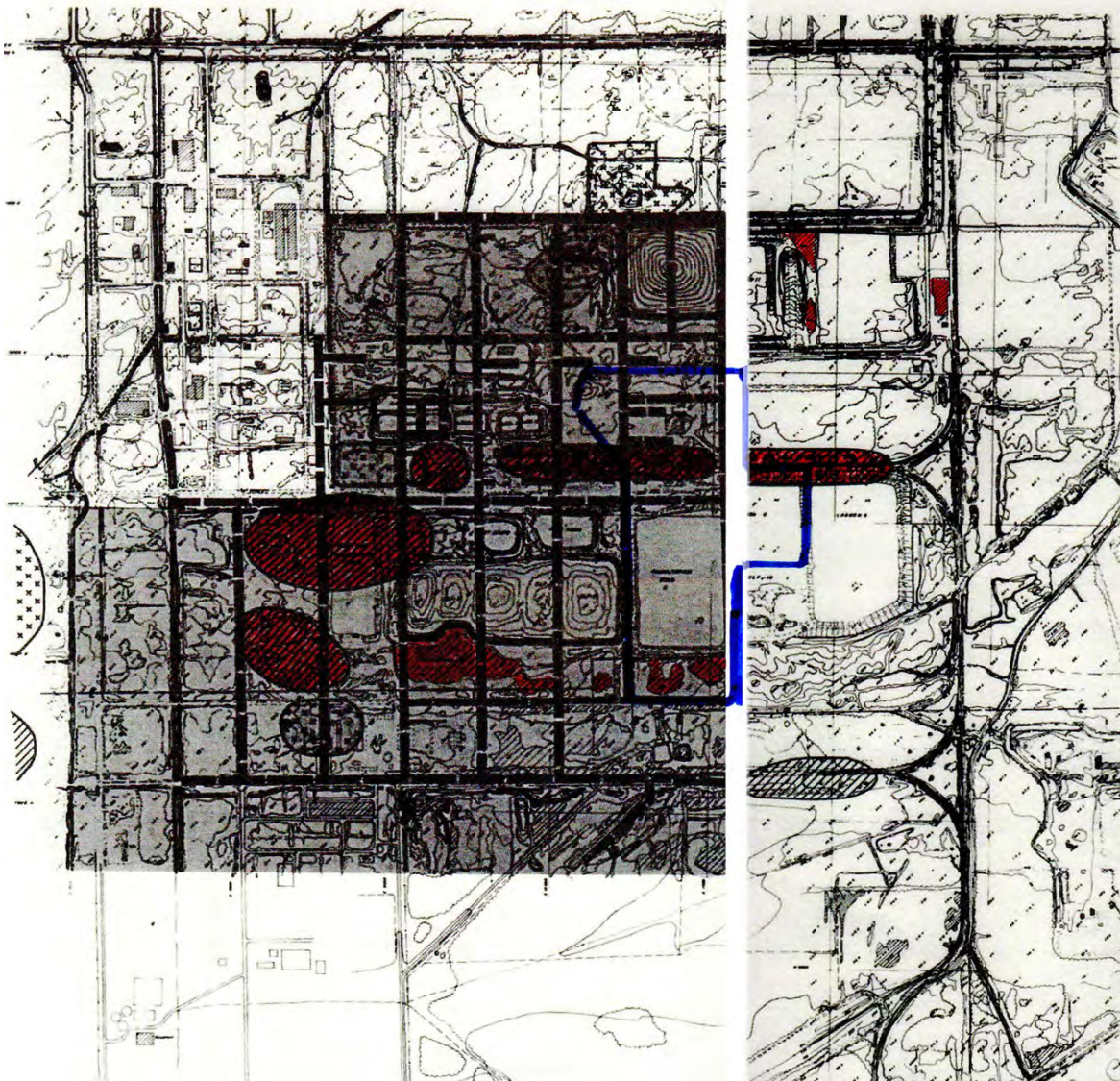
<sup>102</sup> BNI, 1992.

<sup>103</sup> Golder, 1985, Evaluation of Groundwater Monitoring Data, Chemical Waste Management, Model City Facility, April 1985.



Figure A36

Areas of Potential Surface Contamination on the CWM Site



City site.<sup>104</sup> Radiological contamination is identified in the report as an SWMU.<sup>105</sup> However, the report states that no investigation of radioactive contamination is required because investigation and remedial work is being carried out by DOE.<sup>106</sup>

In July 1988 CWM changed the facility name from SCA Chemical Services Inc. to CWM Chemical Services Inc. A RCRA Facility Investigation (RFI) on CWM's behalf was conducted

<sup>104</sup> URS, 1986, Identification of Known Past and Present Waste Areas and Solid Waste Management Units, for SCA Chemical Services, Model City, NY, August 1986.

<sup>105</sup> Ibid., Table 6.6.3.

<sup>106</sup> Ibid., Table 7.6.



by Golder Associates Inc. from 1988 through 1992, required under the corrective action program mandated by the Resource Conservation and Recovery Act. The results of the RFI were presented in a report in early 1993.<sup>107</sup> The RFI report includes a list of SWMUs CWM considers to be related to former government use of the CWM site. “Low Level Radioactive Contamination” is identified as among the SWMUs CWM regards as being the responsibility of the Department of Defense.<sup>108</sup> Accordingly, “[n]o further action will be evaluated” for such areas, and radiologically contaminated areas are excluded from the final stage of the RCRA corrective action program, the 1995 Corrective Measures Study (CMS).<sup>109</sup> With one exception, no details are provided in the CMS about the nature or location of such areas.

The CMS notes in passing that DOE would be conducting “further investigation for potential radiological contamination” for the area where PCB tanks were located off M Street (disposed in SLF 12).<sup>110</sup> In 1995, DOE directed BNI to conduct a characterization study on areas of VP E' in the vicinity of the bermed area surrounding former Tanks 64 and 65, to determine levels of PCB and radium-226 contamination.<sup>111</sup> Within the bermed area, levels of radium-226 ranged from 5.4 pCi/g to 230 Pci/g and Th-230 from 9.8 pCi/g to 38.1 pCi/g respectively. PCB concentrations in soil ranged from 31 ppm to 350 ppm. In March 1999, the U.S. Army Corps of Engineers (USACE) conducted a radiological human health assessment for VP E' and concluded that the area inside the berm is unsuitable for either industrial or residential future use because of radioactive material in the soil.<sup>112</sup>

In 2000, NYSDEC proposed Final Corrective Measures to address the presence of contamination at the CWM facility at Model City and invited public comment. Following a public comment period and informational meeting, a “Final Statement of Basis” was issued by NYSDEC in January 2001, documenting the Final Corrective Measures to be implemented by CWM for the Model City facility.<sup>113</sup> Under “Final Corrective Measures for Category 4 SWMUs,” Low Level Radioactive Contamination is listed as a “Deferred” SWMU. However, in contrast to

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<sup>107</sup> Golder, 1993, Final Report on RCRA Facility Investigation Summary Report, Model City TSDR Facility, Model City, NY, Submitted to CWM Chemical Services, Inc. Model City, January 1993.

<sup>108</sup> Ibid., pp. 7-2, Table 7-2.

<sup>109</sup> RUST, 1995, Environment & Infrastructure Inc., Site-Wide Corrective Measures Study Model City TSD Facility, Vols. I to III, January 1995, p. 5-8. Fig. 5.4 in the report identifies so-called Third Party FUSRAP (radiological contamination) Category 4 (“deferred”) SWMUs.

<sup>110</sup> Ibid, p. 5-10.

<sup>111</sup> Bechtel, 96, FUSRAP, Niagara Falls Storage Site – Property E' Technical Memorandum, Jan 25, 1996

<sup>112</sup> U.S. Corps of Engineers, 1999, Technical Memorandum, Radiological Human Health Assessment for the E' Vicinity Property of the Niagara Falls Storage Site, Lewiston, NY., March 1999.

<sup>113</sup> Hammond, Stephen, P. E., 2001, NYSDEC, Director Division of Solid & Hazardous Materials, Statement of Basis: Selection of Final Corrective Measures, CWM Chemical Services L.L.C., Model City, NY.

CWM's 1995 CMS, NYSDEC notes that, if the Department of Defense fails to remediate these areas, the agency may require CWM to do so:

Category 4 – Deferred SWMUs... Third Party SWMUs-. . .

Low Level Radioactive Contamination

The Department of Defense (DOD) is in the process of investigating and, in some instances, remediating these SWMUs. The Department anticipates that the DOD will assume responsibility for remediation in these areas. If the Department determines that the DOD has failed to accomplish the necessary remediation of these SWMUs, the department may require CWM, as the owner of the property on which the SWMUs are located, to remediate the SWMUs.<sup>114</sup>

### **Results of the 1984-2002 Investigations**

Following the conclusion of decontamination efforts by Bechtel, residual radiological contamination on the CWM site was largely ignored. With the exception of VPs E, E' and G, VPs were certified as decontaminated to DOE criteria for unrestricted use. CWM classified remaining areas as contaminated with “low level” radioactivity and specified the locations in the Site-Wide Corrective Measures Study (CMS) as “deferred” SWMUs and assumed that DOD would remediate the contamination.

### **New Evidence of Residual Radioactive Contamination, 1990s to the Present**

In the 1990s, concern was expressed that the ORAU surveys and Bechtel decontamination efforts in the 1980s were unreliable. In 1992, Bechtel resurveyed and fenced the NFSS in preparation for release of 135 acres in the eastern section of the 191 acre site.<sup>115</sup> The NFSS is managed under FUSRAP, a program to decontaminate and otherwise control sites where residual radioactive materials remain from the nation's atomic energy program or associated commercial operations. The DOE administered FUSRAP up to 1997 when the program was abruptly taken away from DOE and given to USACE.<sup>116</sup> On assuming responsibility for the NFSS, which is still owned by DOE, the Army Corps of Engineers began a Remedial Investigation (RI) to characterize the site. As RI results were obtained, concern grew that the NFSS was still contaminated above DOE criteria for unrestricted release, despite decontamination by the DOE.

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<sup>114</sup> Ibid., p. 11.

<sup>115</sup> EA Engineering, Science, and Technology, 1998, pp. 3-4.

<sup>116</sup> Pefia, Frederico, Secretary of Energy to Cohen, The Honorable William S., letter announcing impending transfer of FUSRAP from DOE to USACE, October 10, 1997

In 2007, the Army Corps of Engineers released a report confirming that the NFSS was still contaminated above DOE criteria for unrestricted release.<sup>117</sup> The Environmental Protection Agency, commenting on the RI report findings, expressed concerns:<sup>118</sup>

Some data suggests that areas off-site which were remedied previously by the DOE may be contaminated to an extent that warrants further review to assure that the public health and the environment are protected in accordance with current radiation protection guidance.

General Comments:

G4- It seems that the objectives of the DOE previous remedial actions are less stringent than those of the USACE. This seems evident because the USACE remedial investigations concluded that elevated levels of radioactivity still exist within the on-site areas previously remediated by DOE. As such, it is prudent that the USACE re-investigates all vicinity properties. If this is not possible because of pre-existing agreements between the USACE and DOE at the time of FUSRAP responsibility transfer, then other means are needed to assure vicinity properties and any other off-site areas potentially impacted from former operations of the LOOW site are properly remedied.

The concerns raised about the radiological condition of the VPs formerly decontaminated by DOE were especially relevant to the CWM site because of the site's prior use as the AEC radioactive waste disposal area and subsequent site development. A particular source of concern was the plutonium contaminated animal burial site reportedly located on VP G. The property is one of three open or incompletely investigated vicinity properties owned by CWM; the other two open properties are VP E and VP E'.

In March 2001, the Restoration Advisory Board (RAB) for the LOOW requested that USACE investigate the former University of Rochester burial site.<sup>119</sup> In November 2001, the Corps conducted an electromagnetic survey over the southern portion of VP G to locate the burial.<sup>120</sup> In May 2002, trenching activities began. Trenching identified detectable concentrations of plutonium in animal bones, laboratory equipment and soils ranging from 0.409 to 17.6 pCi/g

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<sup>117</sup> USACE, 2007, Remedial Investigation Report for the Niagara Falls Storage Site FUSRAP Site, Lewiston, New York, December 2007.

<sup>118</sup> EPA, 2007, Giardina, Paul A., Environmental Protection Agency, "Comments on the Remedial Investigation Report for the Niagara Falls Storage Site," letter to W. Kowaleski, PE, PMP, Project Manager, USACE, Buffalo, NY, September 8, 2008.

<sup>119</sup> (USACE 2004), U.S. Corps of Engineers, FUSRAP, Former University of Rochester Burial Area, VPG, NFSS Fact Sheet, June 2004

<sup>120</sup> Ibid, p. 3.

and strontium-90 ranging from 0.576 to 306 pCi/g. A small quantity of high activity residue, presumed to be K65 material, was also recovered. This material exhibited gamma radiation of over 1,000,000 CPM associated with radium-226. In January 2009, the Corps of Engineers released a report, detailing the results of the U of R animal burial ground investigation and describing removal of remnants of abandoned drums.<sup>121</sup> The executive summary notes:

Samples collected from VPG trenches were analyzed and radiological constituents were found at levels above the background levels defined for the Remedial Investigation of the NFSS. Additionally, chemical constituents, analyzed to characterize soils for disposal purposes were found above background levels also defined during the RI on the NFSS. Chemical and radiological parameters determined to be site-related compounds (SRCs, chemicals found above the background screening value, as defined in Section 5) include metals, volatile and semivolatile organics, PCBs, pesticides and a range of radionuclides. . . .

The investigation performed at VPG confirmed the presence of chemical and radiological SRCs in surface and subsurface soils. These SRCs are evidence of materials that remain on this parcel after three cleanups of the property. The presence of SRCs in subsurface soils at VPG is consistent with the historical use of the property as a burial area. The horizontal and vertical extent of additional laboratory debris, K-65 residues, and other chemical and radiological SRCs is unknown. Further investigation is planned (See Recommendations, Section 8).

## 8.0 RECOMMENDATIONS

The investigation performed at VPG confirmed the presence of chemical and radiological SRCs in surface and subsurface soils. The extent of this contamination, as well as the presence of additional laboratory debris, K-65 residues, and other chemical and radiological SRCs is unknown. Evaluation of the VPG property will be conducted in accordance with the CERCLA process. A thorough Remedial Investigation will be initiated once funding is available, a site access agreement is completed, and physical obstructions are removed to allow access to the entire site for investigative purposes.

### **CWM's 2004 Effort to Obtain Relief from the 1972/1974 NYSDOH Orders**

As previously noted, DOE closed all except three of the NFSS Vicinity Properties on the CWM site in 1992. These closed Vicinity Properties were certified by DOE as decontaminated

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<sup>121</sup> Tetra Tech, 2009, Final Report, Results of Site Investigation and Drum Removal Vicinity Property G, Niagara Falls Storage Site, Lewiston, NY, Submitted to SAIC under subcontract agreement 4400155143, Contract DACW-62-03-D-0003, Issued by the Nashville District USACE, Work performed for the Buffalo District USACE, January, 2009.

and fit for unrestricted use.<sup>122</sup> Vicinity Properties E, E' and G remained open because of known or suspected radiological contamination. The 1972/1974 NYSDOH Orders remain in place on all of the CWM property.

In December 2003, to prepare for the RMU-2 Project, and relying on the 1992 DOE certifications of decontamination, CWM requested that NYSDOH vacate the 1972 and 1974 NYSDOH Orders pertaining to all closed CWM Vicinity Properties.<sup>123</sup> In response, NYSDOH began an evaluation of the ORAU survey work and subsequent remediation and verifications carried out by the DOE contractor.<sup>124</sup> In July 2004, CWM presented NYSDOH with a report prepared by its contractor Shaw Environmental Inc., concluding that none of CWM's closed Vicinity Properties pose a significant health and safety concern under their current use. According to Shaw only Vicinity Properties E, E' and G have the potential for isolated areas to be in excess of the applicable acceptance criteria.<sup>125</sup> In November 2004, Shaw followed up with an evaluation of the ORAU comprehensive Vicinity Property surveys in light of current decommissioning methodologies, such as the *Multi-Agency Radiological Survey and Site Investigation Manual* (MARSSIM). Shaw concluded that the ORAU surveys provided sufficient assurance that CWM's closed Vicinity Properties do not pose a significant radiological hazard to CWM workers, the public or the environment.<sup>126</sup>

On December 14, 2004, NYSDOH responded to CWM.<sup>127</sup> Based on its own review of the work conducted by ORAU and DOE, NYSDOH concluded that all Vicinity Properties on CWM property have the potential to contain isolated areas of elevated radioactive contamination. NYSDOH noted that for VPs C, D and F, the ORAU characterization reports indicate that it is probable that any surface contamination which may have been present has been relocated or is

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<sup>122</sup> BNI, 1992, Certification Docket for the Remedial Action Performed at the Niagara Falls Storage Site Vicinity Properties in Lewiston, New York, from 1983 through 1986. Prepared for the DOE by Bechtel National Inc., Former Sites Restoration Division, Oak Ridge Field Office, July 1992.

<sup>123</sup> Sturges, Richard, District Manager, CWM Chemical Services, LLC to Novello, Antonia C., New York State Department of Health, Request to Vacate 1972 NYSDOH Order, December 23, 2003.

<sup>124</sup> Gavitt, Stephen M., Assistant Director, NYSDOH, Bureau of Environmental Radiation Protection, letter to Sturges, Richard, District Manager, CWM Chemical Services, LLC, "Re: Request to Partially Rescind and Vacate 1972 NYSDOH Order," April 5, 2004.

<sup>125</sup> Knickerbocker, Jill A., Technical Manager, CWM Chemical Services, LLC, letter to Gavitt, Stephen M., Assistant Director, NYSDOH Bureau of Environmental Radiation Protection, "Re: Summary Report-Historical Radiological Assessment," July 2, 2004.

<sup>126</sup> Prowse, James J., CHP, Senior Consultant, Shaw Environmental Inc., letter to Hino, John, CWM Chemical Services, Inc., "Re: Response to NYSDOH request for MARSSIM Evaluation," November 15, 2004.

<sup>127</sup> Gavitt, Stephen M., Assistant Director, Bureau of Environmental Radiation Protection, NYSDOH, letter to Knickerbocker, Jill A., Technical Manager, CWM Chemical Services, "Response to letter dated November 16, 2004," December 14, 2004.

covered and inaccessible due to waste treatment and construction operations of the current property occupants. Note VPs C, D and F, along with open Vicinity Properties E and E' are all proposed for excavation under the RMU-2 project plan.

Accordingly, NYSDOH declined to vacate the 1972/1974 Orders, and NYSDEC added corrective action requirements to CWM's 2005 renewal permit, including surface, air, water and subsurface investigations.

### **CWM's Post-2005 Site Investigations**

CWM has found extensive radiological contamination in Fac Pond 8, where the company proposes to construct the first cell of the RMU-2 landfill. Contamination was first detected in the course of a site-wide gamma walkover, conducted by URS in August, 2005.<sup>128</sup> Fac Pond 8 is located on VP C, which is a closed VP certified by DOE as decontaminated to regulatory criteria.

In January 2008, CWM notified the Army Corps of Engineers of the identification of additional radioactive contamination on site:

The majority of the areas with elevated readings lead to a "source" of rock-like material. Once the rock is removed, the reading in the area returns to background. Examples include the following:

A "rock" removed from closed landfill SLF 10 had the following activity: 794 pCi/g Ra-226, 421 pCi/g Th-230, 802 pCi/g Bi-214, 66 pCi/g U-234, 2.45 pCi/g U-235 and 66.3 pCi/g U-238. About a dozen similar "rocks" were located and removed from the cap of SLF 11. Based on a field survey by DEC personnel, Ra-226 is the predominant radioisotope.

As CWM performed some limited excavation work to improve drainage around a groundwater well east of SLF 11, several similar "rocks" were identified and removed. Laboratory analysis of one of the "rocks" showed 1020 pCi/g Ra-226, 1328 pCi/g Th-230, 1030 pCi/g Bi-214, 67.9 pCi/g U-234, 3.75 pCi/g U-235 and 67.7 pCi/g U-238.

Two items (dime to nickel size) were identified with much higher activity. One was found in the cap of SLF 7; the field survey showed Ra-226 to be the major radioisotope with an exposure estimated at 25 mrem/hr, on contact. The other item was found along with two "rocks" on the Syms property side of our common storm-water ditch, across from SLF 12.

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<sup>128</sup> Riggi, Jerry, NYSDEC, "Site Investigation Report, Re: URS detection of elevated readings Fac Pond 8 and Roadway south of VP V," August 11, 2005.



Another higher activity item includes a 16" piece of 2.5" diameter stainless steel pipe, whose ends are plugged with soil that was found buried in the clay liner of Fac Pond 8. There is contamination on the surface of the pipe as well as the source contained within the pipe. A field survey by DEC personnel identified the major radioisotope as Ra-226.

Fac Pond 8 is one area that does not appear to have a discrete "source(s)". The pond is in the footprint of the proposed RMU-2 landfill. . . .

Samples taken and analyzed by DEC showed preliminary Ra-226 concentrations of 2490 – 264,996 pCi/g (sample included a rust colored chunk); these analyses also identified U-235 progeny: Rn-219 (62.3 pCi/g and Th-227 (5250 pCi/g). . . .

Very recently, another area of interest was located just west of CWM's surface water monitoring ditch and north of M Street. There is an open brick lined manhole in a small stand of trees with readings of about 30,000 cpm. Almost due east from the manhole, there is an area of about 10 feet by 10 feet above the edge of the ditch with scattered elevated readings. The maximum reading in this area was 20,000 cpm at one foot and 250,000 on contact.<sup>129</sup>

The results of the 2005 gamma walkover survey, soil sampling and legacy building surveys were presented in a December 2008 report.<sup>130</sup> Independent review of the CWM gamma walkover and soil sampling revealed several deficiencies, which served to avoid the detection of contamination and minimize confirmatory sampling of contaminated soils.<sup>131</sup>

CWM has also found elevated levels of uranium in groundwater, signifying numerous areas of subsurface contamination.

CWM has also found numerous detections of elevated gamma radiation in soil.

CWM has also found significant areas of radiological contamination on the former AEC radioactive waste disposal site (the central portion of the CWM site) where soil has been disturbed. In 2000, the Army Corps of Engineers constructed a storage pad of compacted stone on CWM property as part of a removal of TNT contaminated pipelines in the Contaminated Material Storage Area (CMSA).<sup>132</sup> The CMSA is located on Vicinity Property, H'. Although the

<sup>129</sup> (CWM, 2008), Banaszak, Jill A., CWM Technical Manager, letter to USACE, Kowalewski, William E., "Re: Sitewide Radiation Survey of CWM's Property."

<sup>130</sup> (URS, 2008), Results of Gamma Walkover Survey, Soil Sampling, and Legacy Building Surveys, December 2008.

<sup>131</sup> (RWMA, 2009) Travers, Jackie and Resnikoff, Marvin, Ph.D., Radioactive Waste Management Associates, "Critique of CWM Walkover Survey & Radiological Investigation," March 2009.

<sup>132</sup> (USACE, 2005), USACE, Buffalo, DERP-FUDS Fact Sheet, "Contaminated Material Storage Area (CMSA) Pad," May 2005.

Corps of Engineers has no authority under the DERP-FUDS program to characterize or remediate radioactive material, monitoring for health and safety is permitted. Monitoring during the removal of the CMSA pad detected elevated gamma readings in an area of subsurface soil beneath the pad. Subsequent sampling and analysis identified radium-226 in concentrations up to 836 pCi/g and thorium-230 up to 394 pCi/g.<sup>133</sup>

In April 2009, CWM wrote to the U. S. Secretary of Defense and the U.S. Attorney General acknowledging that radioactive contamination in soils exceeds acceptable levels on the CWM property and requesting that DOD promptly remove the contamination from the property.<sup>134</sup>

Monitoring of excavations for elevated gamma levels continues to identify new areas of subsurface contamination.

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<sup>133</sup> Ibid., p. 3.

<sup>134</sup> (CWM, 2009), Mahar, Michael D., District Manager, CWM Chemical Services, LLC, letter to Gates, Robert, Secretary, Department of Defense, and Holder, Eric, Attorney General, U.S. Department of Justice.



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