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March 28, 2013

VIA FEDERAL EXPRESS OVERNIGHT

David Denk, Regional Permit Administrator
New York State Department of Environmental Conservation
NYSDEC Region 9
270 Michigan Avenue
Buffalo, NY 14203-2915

Re: CWM Chemical Services, LLC (CWM), Hazardous Waste Management
Permit Renewal, DEC Permit No. 9-2934-00022/00097 (Towns of Porter and
Lewiston, Niagara County, NY)

Dear Administrator Denk:

On behalf of Niagara County, the Town of Lewiston, the Village of Lewiston and the Village of Youngstown, (hereafter, the "Municipal Stakeholders"), please accept the following comments on the Department's draft Renewal Permit proposed for the CWM hazardous waste management and disposal facility at Model City in Niagara County. The facility borders the Town of Lewiston and is within 1.5 miles of the Lewiston-Porter Central School campus. The Town of Porter, principally hosting the project, is precluded from submitting adverse comments under a host benefit agreement with CWM.

The comments below identify substantive and significant issues that warrant major modifications in the draft permit. See 6 N.Y.C.R.R. §§ 621.7(b), 621.7(d), 624.1(a)(1), 624.4(c), 624.5(b). Specifically, the Municipal Stakeholders request additional groundwater monitoring wells to characterize groundwater quality in the lower groundwater bearing zone to the west of the Process Area; recharacterization and enhanced corrective actions to remediate a former wastewater lagoon known as Fac Pond 8, now drained and undergoing closure; and more effective and stringent corrective actions and controls for PCBs, volatile organic compounds (VOCs), toxic metals and radioactive contamination found in site surface water, wastewater and groundwater.

The primary concern of the Municipal Stakeholders is that the Model City site be adequately remediated or cleaned up to accommodate future land uses that, unlike hazardous waste management, enhance the development potential of the land and eliminate exposure risks to the Lewiston-Porter Central School campus and nearby residents. The corrective measures adopted in the draft permit do not adequately address the Municipal Stakeholders' concerns, do not ensure that monitoring will detect migration and release of hazardous wastes or constituents on or off site, and do not minimize the risk of release of hazardous constituents.

In support of these comments are enclosed two reports by well-respected experts in their fields, hydrogeologist Dr. Andrew Michalski, and nuclear physicist Dr. Marvin Resnikoff. As discussed at greater length below, against the background of applicable rules and requirements, Dr. Michalski finds that CWM has been utilizing a flawed and obsolete groundwater flow model that is contradicted by groundwater monitoring data collected over the last two decades. As a result, additional monitoring wells are warranted.

Dr. Resnikoff finds that the 2010 characterization of Fac Pond 8 is unreliable. The number of soil borings CWM's contractor EnSol took in Fac Pond 8 is far less than required under applicable standards. A subsequent contractor discovered that EnSol missed 50 hotspots on the surface, and found 66 tons of contaminated subsurface soils had to be removed. A resurvey of Fac Pond 8 indicates radiological contaminants remain at concentrations prohibiting release or acceptance of the area as clean. Therefore, recharacterization and additional remediation of Fac Pond 8 is warranted.

Additionally, CWM has failed to comply with a 2005 New York State Department of Health (NYSDOH) directive, subsequently reiterated by Department Staff, that it fill data gaps left by previous site surveys and cleanups. CWM has also failed to comply with the existing permit condition, requiring that CWM investigate, identify and remove sources of PCB and VOC contamination in soils and surface water.¹ Instead, CWM has elected to stabilize *in situ* and divert contaminated site waters so that they do not trigger exceedences at monitoring points, and has avoided an effective survey of the site that could identify the location of buried legacy waste and contaminated media. Therefore more stringent permit conditions are warranted that will force effective corrective action.

All factual assertions made in these comments and supporting materials represent an offer to prove these facts. All documents cited here are on file with the author.

1. Corrective action is required at this facility regardless of the source of contaminants.

Because these comments focus on modifications to the corrective action requirements that should be made to the draft Renewal Permit, some background on applicable corrective action requirements is appropriate.

¹ See CWM Part 373 Sitewide Renewal Permit, Module I, pp. 50-51 (sec. V(2)(b)). Module II, p. 4 ("Volatile organic compounds (VOCs) and PCBs are the hazardous constituents which are most commonly observed in the soil and groundwater at the facility."). See also CWM, "Process Area Investigation Plan," rev. April 2006, p. 5 (SPDES permit exceedences for discharge of PCBs and VOCs typically occur in late winter and early spring); J.A. Banzak, CWM, Letter to D. Weiss, NYSDEC Region 9, April 27, 2012, attachment: Golder Assocs., "Design Report for Process Area IV Extraction Wells," rev. April 2012, p. 1 ("VOCs were detected in the surface water samples collected from the swale and the B Ditch").

“[RCRA] Section 3004(u), in essence, creates the broad duty to take corrective action as a *quid pro quo* to obtaining a permit.”² Section 3004(u) requires “corrective action for all releases of hazardous waste or constituents from any solid waste management unit [“SWMU”] at a treatment, storage, or disposal facility seeking a permit under this subchapter, regardless of the time at which waste was placed in such unit.”³ Section 3004(v) authorizes EPA or the Department to require that corrective actions be taken at adjacent or surrounding properties where necessary to protect human health or the environment.⁴ Required corrective actions must continue under “a post-closure permit” following termination of the facility’s “active life” permit, and must “address applicable 40 CFR part 264 groundwater monitoring, unsaturated zone monitoring, corrective action, and post-closure care requirements.”⁵

In 1996 EPA stated:

In 1990, EPA proposed to define the term “solid waste management unit” or “SWMU” to mean, “Any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released.” Pending resolution of the 1990 proposal, EPA has used this definition in corrective action implementation. The inclusion of units not specifically intended for the management of solid or hazardous waste is supported by the legislative history of RCRA sections 3004 (u) and (v), and this point has been applied in decisions by the EAB. (See, e.g., *In re General Motors Corp.*, RCRA Appeal No. 90-24 (EAB Nov. 6, 1992).)

² *United Technologies Corp. v. EPA*, 821 F.2d 714, 722 (D.C. Cir. 1987).

³ RCRA Section 3004(u), 42 U.S.C. § 6924(u); codified at 40 C.F.R. § 264.101(a). See 6 N.Y.C.R.R. § 373-2.6(l)(1). See also 40 C.F.R. § 264.90(a)(2) (“A surface impoundment, waste pile, and a land treatment unit or landfill that receives hazardous waste after July 26, 1982 (hereinafter referred to as a ‘regulated unit’) must comply with the requirements of §§ 264.91 through 264.100 in lieu of § 264.101 for purposes of detecting, characterizing, and responding to releases to the uppermost aquifer.”).

⁴ RCRA Section 3004(v), 42 U.S.C. § 6924(v); codified at C.F.R. § 264.101(c). See 6 N.Y.C.R.R. § 373-2.6(l)(3).

⁵ 40 C.F.R. § 270.1(c). See *In re Adcom Wire*, 5 E.A.D. 84, 91 (EAB 1994) (“We can find nothing in the federal statute or regulations to suggest that the corrective action obligation expires when the need for the State-issued [permit] portion no longer exists.”); *In re Brush Wellman, Inc., Elmore, Ohio Facility*, 4 E.A.D. 210, 212 n.5 (EAB 1992) (investigations for releases may be required at SWMUs designated as inactive).

As discussed in the 1990 proposal, not all areas where releases have occurred are considered SWMUs. In the 1990 proposal, EPA indicated a one-time spill which had been adequately cleaned up would not constitute a SWMU; on the other hand, a location at which wastes or other materials were released in a routine and systematic manner (such as a loading area where minor spills or leaks occurred routinely over time) would be a SWMU. The 1990 proposal indicated that industrial sewers used for collecting wastes would constitute SWMUs. This interpretation, which was based in part on earlier decisions in permit appeals, has been affirmed by the EAB in *In re Amoco Oil Co.*, RCRA Appeal No. 92-21 (EAB Nov. 23, 1993).

The definition of a SWMU is often a point of disagreement when corrective action permits or orders are issued. Facility owners/operators and representatives of the regulated community often argue that Congress intended the RCRA corrective action program to be focused on waste management units (i.e., SWMU) and that non-waste-management related releases (e.g., spills) should be addressed by other cleanup programs or authorities. EPA notes that authority exists for requiring corrective action for releases that are not attributable to SWMUs. Given the legislative history of RCRA section 3004(u), which emphasizes that RCRA facilities should be adequately cleaned up, in part, to prevent creation of new Superfund sites, EPA believes that corrective action authorities can be used to address all unacceptable risks to human health or the environment from RCRA facilities.⁶

EPA has said this is “the primary guidance for much of the corrective action program.”⁷

2. Additional monitoring wells screened in the lower aquifer west of the Process Area SWMUs should be required under the Renewal Permit.

As detailed in Dr. Michalski’s report, groundwater flows west beneath the highly contaminated Process Area and RMU-1, and there is “a significant hydraulic connection between the Upper and Lower Aquifer units,”⁸ contrary to CWM’s model which assumes flow is to the north-northwest and the groundwater bearing units are isolated by an effective aquitard. The Process Area has wells screened in the lower aquifer on the north, east and south sides of

⁶ 61 Fed.Reg. 19,431, 19,437, 19,442-19,443, “Corrective Action for Releases From Solid Waste Management Units at Hazardous Waste Management Facilities” (May 1, 1996).

⁷ 64 Fed.Reg. 54,604, 54,605 (October 7, 1999). *See also* EPA Region 2, “RCRA Corrective Action,” available at <<http://www.epa.gov/region2/rcra/>>.

⁸ Michalski report (enclosed), 4.

SWMUs, but none on the west side.⁹ Because there are no deep wells on the western (downgradient) side of SWMUs in this area, the network of monitoring wells screened in the lower aquifer in the vicinity of the Process Area is ineffective.¹⁰ The detection of DNAPL, acetone and other VOCs in the Process Area,¹¹ and the stratigraphy of the geological units beneath the site, show that overburden groundwater interacts with what CWM has termed the lower aquifer.¹²

These conclusions have significant implications for corrective actions at this facility. For over a decade the Department has asked CWM to achieve by means of corrective actions the following goals:

- A. Remediation of the overburden contamination and restoration of the overburden groundwater through the development of a groundwater extraction system, natural attenuation, or an alternative system as needed.
- B. Containment and control of the plume of overburden contamination to prevent its migration.
- C. Containment and control of the DNAPL contamination through the development of a groundwater/DNAPL extraction system or an alternative system as needed.
- D. Preclude the dispersal of the contaminated soil, fill and waste from closed Landfills and Surface Impoundments, and Areas of Contamination.¹³

⁹ *See id.*, Exhibit 7.

¹⁰ Contrary to 6 N.Y.C.R.R. § 373-2.6(k)(4).

¹¹ *Cf.* CWM, “RCRA Facility Investigation Summary Report, Model City TSDR,” January 1993, Table 5.24 at 5/38 and 23/38.

¹² The same conclusions are reached by Dr. Scott King, a hydrogeologist asked by Niagara County to comment on the scope of the proposed RMU-2 DEIS. *See* G. Abraham, letter to Steven J. Doleski, fmr. NYSDEC Region 9 Permit Administrator, “Re: CWM Chemical Services, LLC, Draft Public Scoping Document for the RMU-2 Landfill Proposal,” July 26, 2006, Exhibit B. Dr. King’s comments and resume are attached. It appears that Department Staff agree. *See* J. Strickland, NYSDEC Region 9, letter to CWM, January 26, 2006, enclosing comments on draft Radiation Env’tl. Mon. Plan (“there is a connection between the two [groundwater] flow zones, especially in the vicinity of former lagoons 1 and 2”).

¹³ NYSDEC, “Statement of Basis: Selection of Final Corrective Measures, CWM Chemical Services, LLC,” January 31, 2001, p. 6.

Twelve years later, it has become clear that corrective actions have failed to achieve these goals. For example, DNAPL has not been contained in the overburden groundwater and has instead migrated into the aquifer below. During CWM operations, an area of acetone-impacted groundwater has migrated 1,500 feet from its apparent source within the aquifer. Widespread contamination, apparently from isolated sources, has dispersed and migrated into the aquifer. Some of these contaminants, such as PCBs, DNAPL and (as discussed below) ionizing radiation, are not amenable to natural attenuation. The sources of overburden contamination have not been identified, and so the restoration of the overburden groundwater has been very limited. Groundwater extraction wells and shallow interception trenches have not prevented dispersal and migration of contaminants into the aquifer.¹⁴

There is therefore a compelling case for enhanced and expanded monitoring of the lower aquifer that reflects the groundwater flow direction and the interconnection of shallow and lower groundwater. Instructions should accompany a requirement to modify the groundwater monitoring system to implement additional corrective action as warranted by the results of enhanced and expanded monitoring. The additional wells and monitoring should be included in any analysis to fully characterize area groundwater to the west of the Process Area.

Pending further investigation of groundwater quality and flow, the detailed description of corrective actions incorporated into the draft Renewal Permit should be comprehensively revised to eliminate references to “final” remedies.¹⁵

3. The current permit has been ineffective in achieving cleanup of radiological contamination.

While DNAPL, PCBs and VOCs found at the Model City site could originate from either legacy or operational sources or both, radiological contaminants above background levels are likely entirely the legacy of past uses and failed cleanups at the site. The Model City site is part of the former Lake Ontario Ordnance Works (LOOW), which served as a storage and disposal¹⁶ site for wastes generated by the Manhattan Project during and following World War II, by experiments with high-level radiation exposure to animals at the University of Rochester, and by experiments to extract plutonium and uranium from spent nuclear fuel at the Knolls Atomic Power Laboratory in Schenectady, NY.

¹⁴ Each of these issues is discussed in the Michalski report (enclosed).

¹⁵ See Draft Renewal Permit, Module II, Attachment E.

¹⁶ Waste disposal at LOOW 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. The Aerospace Corporation, “Background and Resurvey recommendations for the Atomic Energy Commission Portion of the Lake Ontario Ordnance Works,” Contract No. DE-AC01-82EP15100, November 1982, pp. 28-29.

NYSDOH issued Orders in 1972 and 1974 prohibiting major excavation at Model City because legacy radiological contamination had not been properly remediated or surveyed.¹⁷ In 2005 NYSDOH considered and rejected a request by CWM¹⁸ to lift the orders to accommodate the proposed RMU-2 landfill.¹⁹ In 2003, at the time of the last renewal permit, the Department decided “to incorporate the DOH directives to CWM with respect to radiological surveys and environmental monitoring of radiation into conditions of the permit.”²⁰ These conditions are important for understanding how far CWM still needs to go to comply with its permit, and why the Municipal Stakeholders are calling for more stringent corrective measures in the proposed renewal permit to clean up radiological contamination.

In 2005 NYSDOH concluded that because development of the site occurred at the same time as the radiological surveys and analysis in 1982-1984 on which DOE release certifications rely, the surveys and analysis are incomplete and unreliable. At the time of these surveys CWM’s predecessor Chem-Trol was engaged in “on-going earthmoving activities . . . such as the construction of landfills, ponds and berms.”²¹ Earthmoving activities were occurring at DOE-designated “Vicinity Properties” (“VP”) on CWM property, including VP A, B, C, C', D, and F, “prevent[ing] ORAU [DOE contractor Oak Ridge Associated Universities] from conducting a complete characterization of the properties.”²² Such activities “had the potential to

¹⁷ 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; 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.

¹⁸ R. Sturges, District Manager, Model City Facility, Letter to Antonio C. Novello, NYSDOH [Commissioner], December 23, 2003.

¹⁹ S.M. Gavitt, Assistant Director, Bureau of Environmental Radiation Protection, NYSDOH, Letter to J.A. Knickerbocker, Technical manager, CWM, December 14, 2004.

²⁰ NYSDEC, Responsiveness Summary [to public comments in 2003 on CWM renewal permit], April 27, 2003, p. I-14, available at <http://www.dec.ny.gov/docs/materials_minerals_pdf/rmu1mdressum.pdf> Cf. Module II, Condition J in the current permit, requiring a suite of plans for investigating radiological site contamination, and radiation in monitored groundwater, ambient air and wastewater, and supplemental corrective actions “if locations with elevated [radiological] levels are identified and defined, . . . upon concurrence of NYSDOH.” Cf. *also id.*, Module II(J)(1), (J)(2), (J)(3)(a) (providing that modifications to investigation plans must also receive NYSDOH concurrence).

²¹ S.M. Gavitt, NYSDOH, Letter to J.A. Knickerbocker, CWM, December 14, 2004, at 2.

²² *Id.*

obscure the detection of contamination in the soil and to relocate contaminated soil to other parts of the property.”²³ 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.”²⁴

VP D was found to be subject to “continual construction and maintenance activities [having] the potential for relocating, distributing, and concealing contaminated residues that were identified by this survey,” according to ORAU, but no follow-up analysis of the fate of these materials or the characterization of the area after construction was conducted.²⁵

The DOE surveys failed to comply with guidelines for determining site acceptance. These guidelines require at least one sample for every 100 square meters, but ORAU obtained fewer than one sample for every 1,000 square meters.²⁶

DOE declined to certify VP E for release because access could not be gained to the entire area due to the presence of a lagoon. However, NYSDOH notes other VPs with lagoons were certified,²⁷ such as VP C, which was not fully accessible “due to the presence of 2 ponds, 4 landfill areas, [and] a swamp . . .”²⁸

NYSDOH concludes 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” will be necessary prior to any NYSDOH re-evaluation of whether areas have been properly surveyed and remediated.²⁹ The “data gaps” left by DOE,³⁰ therefore need to be filled for both surface and subsurface contamination. NYSDOH would expect CWM to comply with MARSSIM, a multi-agency federal standard for an adequate surface investigation of radiological contaminants, and NUREG-1727 regarding the number of soil cores required for an

²³ *Id.*, at 1.

²⁴ *Id.*

²⁵ *Id.* (quoting ORAU)

²⁶ *Id.*

²⁷ *Id.*, at 4-5.

²⁸ *Id.*, at 3.

²⁹ *Id.*, at 5.

³⁰ *Id.*, at 1.

adequate subsurface investigation.³¹

CWM has consistently resisted these directives. A principal element of the MARSSIM protocol, for example, 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, or even to evaluate the substantial history search produced for the LOOW site by DOE, as it relates to Model City.³²

On January 25, 2006, the Department requested that a surface radiation survey plan required under the 2005 permit investigate “the entire property owned by CWM”.³³ On July 19, 2006, CWM rejected the request, with the result that the plan includes no historical site investigation, no subsurface soil investigation, and no radiological surveys 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.”³⁴

In December 2008 CWM submitted a required report on the results of a surface gamma survey of accessible portions of the site. NYSDOH found that this 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.”³⁵ NYSDOH advised that, “[b]efore the DOH Orders can be lifted, remediation and a final status survey consistent with MARSSIM will need to be performed.”³⁶

MARSSIM also specifies that for radiological surface surveys the detector must be held

³¹ *Id.*, at 4. MARSSIM and NUREG-1727 standards are discussed at length in the Resnikoff report (enclosed).

³² U.S. Army Corps of Engineers (USACE), HISTORY SEARCH REPORT, LAKE ONTARIO ORDNANCE WORKS, NIAGARA COUNTY, NEW YORK (August 1998) (covering Department of Defense activities at the LOOW between 1938 and 1997).

³³ Department Comments on CWM, Revised Radiological Survey Plan, January 25, 2006, p. 17.

³⁴ CWM, Response to January 25, 2006 Department Comments on Revised Radiological Survey Plan, July 19, 2006, p. 17.

³⁵ NYSDOH letter to J. Devald, NCHD, July 16, 2010, at 2.

³⁶ *Id.*, at 3.

about 10 cm from the soil surface.³⁷ For its gamma walkover survey at the adjacent Niagara Falls Storage Site, the Army Corps positioned a gamma detector at ~10 cm. from the ground surface.³⁸ The Army Corps also measured background gamma radiation at the Lewiston-Porter schools at ~10 cm. from the ground surface.³⁹ In contrast, CWM's gamma walkover scan survey was performed with the gamma detector 30.8 cm (one foot) from the ground surface.⁴⁰

The consequence of CWM's failure to complete final status surveys on any of several areas found by its required investigations to contain elevated radioactivity is that these areas will need to be further investigated, remediated, and surveyed again until levels of radiation are at or below site acceptance levels. For example, this has been the consequence of CWM's effort to remediate the Fac Pond 8 area.

4. Recharacterization, remediation and resurvey of Fac Pond 8 to remove radiological contaminants from the area should be required under the Renewal Permit.

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 the areas of concern in regards to radiological contamination present" at Fac Pond 8.⁴¹ Staff also commented on CWM's plans for characterizing 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," and the contractor "should be licensed by the State Health Department to perform decontamination and decommissioning work in New York State, or be able to obtain reciprocity if licensed by the NRC or another Agreement State."⁴²

³⁷ 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).

³⁸ 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.

³⁹ FINAL GAMMA WALKOVER SURVEY REPORT, LEWISTON-PORTER SCHOOL PROPERTY YOUNGSTOWN, NEW YORK, Contract No. DACW49-00-R-0027 (February 6, 2002), p. 2.

⁴⁰ CWM, RESULTS OF GAMMA WALKOVER SURVEY, SOIL SAMPLING, AND LEGACY BUILDING SURVEYS (December 2008), p. 1-3.

⁴¹ T. Papura, NYSDEC Region 9, Letter to J. Banaszak, CWM, February 7, 2011, at 1.

⁴² *Id.*, at 2.

The substance of these comments were reiterated in Staff comments to CWM, dated July 8, 2011.⁴³ At that time Staff added that because “[d]evelopment of MARSSIM final status survey plans and implementation are dependent on the information obtained from [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.”⁴⁴ 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.”⁴⁵ However, no MARSSIM-compliant survey has been performed at Model City. As noted previously, CWM has performed surface scans with a gamma detector held at three times the height specified by MARSSIM.⁴⁶

Dr. Resnikoff’s report (enclosed) shows that CWM failed to obtain a NYSDOH- or NRC-licensed contractor, failed to comply with MARSSIM, performed no data gap analysis, and produced a final “completion” report characterizing Fac Pond 8 contamination that falls far short of a “final status survey.” CWM’s contractor EnSol performed a surface sample analysis that was invalidated by LATA. However, LATA’s subsequent reports are improperly termed final status surveys because they rely on enSol’s substandard sampling approach.

As detailed in Dr. Resnikoff’s report, after completion of the planned work by EnSol, LATA was brought in to resurvey the area, finding 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; and substantial contamination remains, including a vein of contaminated debris embedded 7-12 feet into a berm. As a result, additional remediation and resurveying will be needed.

Cleanups for areas contaminated with radioactive materials is governed by Department guidance that prescribes an iterative procedure to determine appropriate cleanup requirements.⁴⁷

⁴³ 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).

⁴⁴ *Id.* (Brydges Letter, 1).

⁴⁵ *Id.*

⁴⁶ *See above*, text at footnotes 36-39.

⁴⁷ DEC PROGRAM POLICY DSH-RAD-05-01: CLEANUP GUIDELINES FOR SOILS CONTAMINATED WITH RADIOACTIVE MATERIALS, rev. April 5, 2005, available at

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.”⁴⁸ There are three components of the 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.”⁴⁹

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.⁵⁰

The radionuclide most commonly found in contaminated media at Model City is Radium-226, with a half-life 1,600 years. The long half-life of Radium-226 means that example 2 is not available. As Dr. Resnikoff shows, example 1 (additional 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 Department and other cognizant agencies (NYS Department of Labor, NYS Department of Health).”⁵¹ Thus, the draft Renewal Permit should be modified to require an acceptable work plan for further remediation of Fac Pond 8.

<http://www.dec.ny.gov/regulations/23472.html>.

⁴⁸ *Id.*, at 2-3.

⁴⁹ *Id.*, at 3.

⁵⁰ *Id.*, at 4.

⁵¹ *Id.*

Once recharacterization and further remediation of Fac Pond 8 is completed, the site must be modeled again for dose estimates. “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.”⁵² Accordingly, modifications to the draft Renewal Permit should also provide that final modeling will follow further remediation of Fac Pond 8. As noted by Dr. Resnikoff, because radioactive contamination is primarily below the surface of the Fac Pond 8 berms, final modeling should be specified to require subsurface soil sampling at sufficient depth and spacing to make final modeling reliable. As he urges, the sufficiency of subsurface soil samples should be determined by complying with the method prescribed for investigating Class 1 contaminated sites under MARSSIM.⁵³

CWM has signaled that it does not plan to clean up the Fac Pond 8 area to achieve a dose limit of 10 mrem/year or lower. Instead, its cleanup goal is a dose estimate appropriate “to release Fac Pond 8 for subsequent RMU-2 construction.”⁵⁴ CWM’s goal is inappropriate.⁵⁵ Future development should not assume a new landfill for which no complete application has been accepted, let alone approved. Dose estimates should be modeled assuming future unrestricted use. That is the future Municipal Stakeholders aim to achieve, but less conservative dose estimates allow excessive residual contamination to remain in place, and the desired future for the site will never be achieved.

5. The Renewal Permit should require corrective actions be designed to achieve unrestricted release.

No institutional controls, such as deed and land-use restrictions, together with governmental monitoring of 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 radionuclides such as Radium-226, institutional controls are not a meaningful restriction on future land uses.⁵⁶ Nuclear Regulatory Commission release criteria require the annual whole body exposure level to be 25 mrem or less (the Department’s release criteria are less, 10

⁵² *Id.*

⁵³ This is consistent with NYSDOH findings. *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).”).

⁵⁴ LATA 2012b (enclosed Resnikoff reference list), at 1.

⁵⁵ *Cf.* Resnikoff report (enclosed), at 5.

⁵⁶ *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”).

mrem/yr.).⁵⁷ 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.”⁵⁸

A cleanup to “restricted release” levels relies on institutional controls. NRC policy allows a restricted release cleanup only where institutional controls can be shown to be reliable for 1,000 years:

Restricted release relies on 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. Satisfaction of the 25 mrem per year dose requirement under restricted release also relies on the predicted effectiveness of engineered controls over a 1000-year compliance period. 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.⁵⁹

In this case, because long-lived radionuclides contaminate site soils, surface water, wastewater and groundwater, CWM will need to clean up the site for unrestricted release. No corrective actions should therefore be identified as final remedies in the draft Renewal Permit unless they are designed to achieve unrestricted release.

6. Investigation of radiological contaminants in Fac Pond 3 should be required under the Renewal Permit.

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, because both lagoons were constructed from site soils moved from elsewhere on site, and thus should be presumed contaminated.

Fac. Pond 8 is located on DOE Vicinity Property C, and Fac Pond is located on VP F. DOE reports for these two VPs state that for both, surface radiological contamination was likely

⁵⁷ 10 C.F.R. § 61.41.

⁵⁸ 10 C.F.R. § 61.59.

⁵⁹ *In re Shieldalloy Metallurgical Corp.*, NRC No. 40-7102-MLA, 2011 NRC LEXIS 15, *61-62 (NRC 2011) (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).

relocated or covered and made inaccessible by waste treatment and construction operations.⁶⁰ In 2008, in response to concerns raised by NYSDEC 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.⁶¹ 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.⁶² 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 8.⁶³

To provide assurance that radioactive wastewater is not being discharged to the Niagara River, the current renewal permit requires CWM to take samples of wastewater from the upper, middle and bottom of 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.⁶⁴

Notwithstanding Staff's final discharge approval, two short-lived daughter isotopes of Radium-226 were detected in the bottom of the water column.⁶⁵ The presence of these radioisotopes in Fac. Pond 3, which indirectly measure Radium-226, has not been explained. The draft Renewal Permit should therefore be modified to require sampling and analysis of bottom sediments in Fac Pond 3, and corrective action as warranted by the analytic results of sampling.

7. Additional permit modifications to the corrective actions required under the proposed Renewal Permit are warranted.

The comments above may only scratch the surface of corrective actions that should be required at this facility. In view of the significant new information concerning groundwater

⁶⁰Berger J. D., ORAU, "Comprehensive Radiological Survey for Off-Site Property C, Niagara Falls Storage Site, Lewiston, NY, Final Report," March 1984; and *sub. nom.*, "Comprehensive Radiological Survey for Off-Site Property F, Niagara Falls Storage Site, Lewiston, NY, Final Report," February 1984.

⁶¹ CWM Chemical Services, LLC, "Faculative Ponds 1/2 and 3 Bottom Sampling & Assessment Procedure", April 2008.

⁶² URS, "Results of Subsurface Soil and Pond Sediment Sampling for RMU-2", April 2009, p. 13, Table 4.

⁶³ CWM, Investigation and Sampling Plan for Radiological Characterization of Faculative Pond 8, June 2009, Revised March 2010 & June 2010, p. 5, para. V.

⁶⁴ CWM, Banaszak, Jill A., CWM, Letter to D. Weiss, NYSDEC Region 9, "Re: 2012 Pre-Qualification Discharge Report for Faculative Pond 3," June 22, 2012.

⁶⁵ *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).

movement in the aquifer beneath the central portion of the facility site presented by Dr. Michalski (enclosed), the RCRA Facility Investigation (RFI) on which the permit proposes to rely is unreliable. The draft Renewal Permit should therefore require CWM to conduct a comprehensive review of all past RFI investigations of the central portion of the facility.

A comparable review of the Groundwater Monitoring Program and the Groundwater Sampling and Analysis Plan, also proposed to be incorporated into the Renewal Permit, should be a requirement in the final permit.

Radiological analysis of groundwater was, during the term of the current renewal permit, reduced from twice annually to once. In light of the widespread occurrence of radiological contamination on the site, the Renewal Permit should restore the previous condition, requiring radiological analysis of groundwater twice annually.

Finally, to the extent the draft Renewal Permit excuses CWM from corrective actions on former U.S. Department of Defense (DoD) properties at Model City, based on the assumption that DoD, DOE or USACE will be responsible for remediation of radiological contamination, the Renewal Permit should be modified to note that DoD and DOE bear no such responsibility. According to DOE's Office of Legacy Management:

Remediation of the completed NFSS VPs resulted in removal of FUSRAP and KAPL wastes to levels that permit unrestricted residential use of those properties. Sample and walkover gamma scan results indicate that no wastes remain in place that would cause referral to USACE for further remediation. No EM [DOE] involvement is required at these properties.⁶⁶

Accordingly, federal agencies are not responsible for the remediation of radioactive contamination at Model City. The Renewal permit should therefore require clear identification of responsibility for remediation of radioactive contamination.

Sincerely,



Gary A. Abraham

gas/eCCS.: 1. Andrew Michalski, Michalski & Associates, Inc., "Comments on Groundwater Issues of Site-Wide Permit Renewal; CWM Chemical Services Model City Site, Model City, New York, March 18, 2013

⁶⁶ DOE, "Assessment of Historical Knoll Atomic Power Laboratory Waste Storage Locations, NFSS FUSRAP Site, Lewiston, NY," February 2012, p. 25.

2. K. Scott King, King Groundwater Science, Inc., "Comments on Geology and Hydrogeology; RMU-2 Scoping Document, CWM Model City Facility, July 26, 2006

3. Marvin Resnikoff, Radioactive Waste Management Associates, "Fac Pond 8 Sampling," March 21, 2013

cc: Judith Enck, USEPA Regional Administrator, Region 2
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Stephen Gavitt, NYSDOH