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6.) TAs Report
3.) Loker Field

October 29, 2019 (revised 11/21/19)

Wayland Board of Selectmen
41 Cochituate Road
Wayland, MA 01778

**Re: Preliminary Document Review Findings
Former Dow Chemical Property
412 Commonwealth Road, Wayland MA
Release Tracking Number (RTN) 3-3866
CMG ID 2019-131**

Dear Selectmen:

CMG Environmental, Inc. (CMG) has completed our initial review of publicly-available documentation on the former Dow Chemical property located at 412 Commonwealth Road (Route 30) in Wayland, Massachusetts (the Site) as found on the Massachusetts Department of Environmental Protection (DEP) webpage for RTN 3-3866 (<https://eeaonline.eea.state.ma.us/EEA/fileviewer/Rtn.aspx?rtn=3-0003866>). This letter presents the findings of our initial review.

There are 36 scanned .pdf files available for download on this webpage, the majority of which are individual reports submitted to DEP between September 1992 and March 2000. In addition, the 'Correspondence File' for RTN 3-3866 contains 1,762 pages of scanned documents that DEP obtained, dating between July 1961 and March 2000. Due to time constraints and the large body of available documentation, CMG limited our initial review to the following reports:

- 9/20/95 "Reference Doses and MCP Risk-Based Soil Standards for Selected Organotin and Organomercury Compounds" prepared by the Gradient Corporation (Gradient) of Cambridge, Massachusetts;
- 3/31/99 "Phase II Comprehensive Site Assessment, Former Dow Chemical facility" (volume I of IV) prepared by Ransom Environmental Consultants, Inc. (Ransom) of Newburyport, Massachusetts;
- 1/10/00 "Phase II Comprehensive Site Assessment Addendum and Errata Sheet, Former Dow Chemical Facility" prepared by Ransom;
- 2/25/00 "Method 3 Risk Characterization, Former Dow Chemical Facility" (M3RC) prepared by Gradient; and
- 3/30/00 "Response Action Outcome (RAO) Statement, Former Dow Chemical Facility" prepared by Ransom.

CMG also reviewed online DEP information for RTN 3-3866.

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DEP STATUS

DEP first listed the Site as a “Reserved Site” (Case #3-3866) in July 1992. During transition to the ‘new’ MCP (Massachusetts Contingency Plan, 310 CMR 40.0000 – first promulgated in its current form on 10/31/93), DEP listed the Site as a “Confirmed Disposal Site” effective July 15, 1993 and cited both the Dow Chemical Company and NED Wayland Realty Trust (NED, property owner at that time) as Potentially Responsible Parties (PRPs).

The Grass Roots Group (a/k/a Dow Neighbors, Inc.) petitioned DEP to name the Site a Public Involvement Plan (PIP) site on March 15, 1993 and DEP designated RTN 3-3866 as a PIP site on March 26, 1993.

NED submitted ‘Waiver of Approvals’ application to DEP in July 1993 but DEP denied this application and classified RTN 2-3866 as a ‘Priority Site’ in April 1994. As such the Site transitioned to Tier 1A status (meaning all response actions conducted at the Site were under direct DEP oversight). DEP expressed concern regarding the potential presence of specialty chemicals at the Site not identifiable through standard environmental analyses, and a lack of information regarding past chemical usage at the Site. DEP and Dow executed a Tier IA Permit for RTN 2-3866 effective November 18, 1994.

Environmental Science Services, Inc. of Providence, Rhode Island submitted a Release Abatement Measure (RAM) Plan to DEP in May 1994 on behalf of NED. Ransom conducted RAM activities at the Site between October 1994 and January 1998 to investigate four areas of environmental concern at the Site (upper septic system area, underground storage tank [UST] area, burn bucket & fire training area, and shallow glass disposal area). RAM activities included:

- Seismic refraction study to determine bedrock contours;
- Removal of a 1,000-gallon No. 2 fuel oil UST and a 6,000-gallon No. 4 fuel oil UST, with collection of post-removal soil samples;
- Advancement of 14 soil borings throughout the Site, with completion of 7 of these as groundwater monitoring wells (at least 13 other monitoring wells existed at the Site as of 1999, previously installed by others);
- Excavation of test pits in the burn and glass disposal areas;
- Laboratory analysis of soil, groundwater, sediment, and surface water samples via EPA Methods 8140, 8150, 8260 & 8270, along with testing for 38 metals/elements and mass spectrophotometry library searches of the organic analyses (8260 & 8270) to identify specialty chemicals;
- Removal of the concrete ‘burn pad’ from the solvent burning/fire training area and approximately 200 cubic yards of impacted soil for proper disposal, with collection of post-excavation confirmatory samples;
- Removal of approximately 4 cubic yards of soil from the glass disposal area (along with broken and intact vials, bottles, and other laboratory glassware) for transport to the Dow facility in Midland MI for disposal by high-temperature incineration;
- Removal of an additional 200 cubic yards of soil from the glass disposal area, with collection of post-excavation confirmatory samples; and

- Collection of soil samples to determine background concentrations for Site contaminants of concern.

Ransom prepared documentation to reclassify the Site, which Dow submitted in October 1997. DEP allowed reclassification of the Site to Tier IC effective June 15, 1998.

Ransom prepared a Phase II Comprehensive Site Assessment report for the Site, which Dow submitted to DEP on March 31, 1999. Ransom also prepared a Phase II Addendum and errata sheet, which Dow submitted to DEP on January 10, 2000. Gradient prepared a Site-specific M3RC, which Dow submitted to DEP on February 25, 2000. Finally, Ransom prepared a Class A-2 RAO Statement based on the RAM & Phase II investigations and the Gradient M3RC, which DOW submitted to DEP on March 30, 2000 to close out RTN 3-3866.

PROPERTY OWNERSHIP

South Middlesex County Registry of Deeds records indicate the following ownership of the Site:

PROPERTY OWNERSHIP

DATE OF TRANSFER	SITE OWNER	REFERENCE
May 9, 2000	Town of Wayland	Land Court Certificate 218188 (L.C. Book 1221, Page 38) Registry Book 31387, page 167
February 10, 1995	The Dow Chemical Company	Land Court Certificate 201533 (L.C. Book 1137, Page 183) Registry Book 25175, Page 174
March 2, 1989	NED Wayland Realty Trust (Stephen R. Karp and Steven S. Fischman, Trustees)	Land Court Certificate 184889 (L.C. Book 1054, Page 139) Registry Book 19677, Page 325
October 17, 1962	The Dow Chemical Company	Land Court Certificate 111719 (L.C. Book 688, Page 169) Registry Book 10146, Page 486
March 14, 1958	Estate of Leonard Anzivino	Registry Book 9114, Page 83

Thus DEP information for the Site generally identifies both Dow and NED as PRPs until February 1995 but only Dow from then through May 2000. Any current or future DEP submittals for the Site would need to reference both Dow and the Town of Wayland as PRPs.

HUMAN HEALTH RISK

Ransom's March 2000 RAO Statement for RTN 3-3866 relies on Gradient's February 2000 M3RC to demonstrate 'No Significant Risk' to health, safety, public welfare, or the environment. Gradient used standard risk assessment methodologies to estimate numeric values of excess lifetime cancer risk (ELCR) and hazard index (HI) for ten different reasonably foreseeable human receptors. For the two most at-risk receptors ('hypothetical future resident' and 'community gardener') they derived separate HI values for four discrete areas at the Site and ELCR values for three of these areas. They then compared the estimated ELCR and HI values to the 'significant risk' numeric thresholds set forth by DEP (1×10^{-5} for ELCR and 1 for HI).

The estimated ELCR values Gradient derived for potential human receptors range from 1×10^{-10} (1 in 10 billion) to 1×10^{-6} (1 in 1 million), all of which are substantially lower than the DEP

standard of 1×10^{-5} (1 in 100,000). The estimated HI values Gradient derived for potential human receptors range from 0.0001 to 0.1, all of which are substantially lower than the DEP standard of "one." Furthermore, these estimated ELCR and HI values are almost certainly overstated because Gradient followed the standard risk assessment procedure of assuming that human receptors would accrue all (or nearly all) of their health risk from exposure to Site contaminants (e.g., a resident would remain at the Site 24/7 for 30 years and a community gardener would consume all their vegetables from what they grew at the Site during the 6-month growing season).

Gradient's 'hypothetical future resident' and 'community gardener' potential receptors provide conservative exposure estimates for potential future recreational use of the Site. Their assumptions of human exposure for these two potential receptors was as follows:

- Resident – Exposure duration 30 years (ages 1 through 31); on-Site 24 hours/day, 7 days/week, 350 days/year; direct exposure to Site soil 5 days/week for 7 months/year (260 days/year); consumption of produce grown on-Site 350 days/year.
- Community Gardener – Adult, direct contact exposure to soil duration 2 hours/day, 3 days/week, 5 months/year (130 hours/year) for 30 years; consumption of produce grown on-Site 350 days/year.

Gradient did not consider use of the Site for recreational purposes (soccer field) and resulting exposures to child or adolescent players, adult coaching staff, or children or adult spectators. However, CMG opines that potential soccer players, coaches, and spectators would not be exposed to as much Site contamination as the hypothetical future resident and community gardener receptors would be. Therefore, we conclude that Gradient's determination of 'No Significant Risk' would also be valid for future recreational soccer field use of the Site.

OTHER CONCERNS

CMG's primary concern regarding environmental assessment of the Site was the storage, use, and synthesis of specialty chemicals by Dow, in particular if there were any such chemicals released at the Site which standard laboratory analyses would not detect. Evidently many others had the same concern, and DEP requested that Dow provide a list of specialty chemicals used or stored at the Site in at least three separate 'Request for Information' letters (sent in January 1992, September 1992, and February 1994). Dow provided a list of 178 such chemicals to DEP in June 1994, and this list was used to develop the scope of work for RAM and Phase II investigation of the Site from October 1994 through January 1998.

Among the specialty chemicals reported by Dow are 12 organotin compounds and 4 organomercury compounds. Gradient developed Reference Dose values for the three most toxic organotin compounds (trimethyltin, triphenyltin & tributyltin oxide) and the two most toxic organomercury compounds (methylmercury & phenylmercury). DEP retained Dr. David K. Ryan of UMass/Lowell to assist them in reviewing the organometals information presented by Gradient on behalf of Dow. Gradient incorporated comments provided by DEP in their final M3RC of the Site. Ransom submitted samples for specialized organotin and organomercury analyses during RAM and Phase II investigation of the Site. The only detection was of 4 $\mu\text{g}/\text{Kg}$ triphenyltin in a sample collected from Test Pit 2 (in the glass disposal area) on November 13, 1996. This value is substantially below the 1.9 mg/Kg (1,900 $\mu\text{g}/\text{Kg}$) S-1 soil standard Gradient derived for triphenyltin. CMG concludes that Ransom conducted sufficient investigation to determine there was no significant release of organotin or organomercury compounds at the Site.

ADDITIONAL REVIEW

CMG is able to conduct additional review of documents pertaining to the Site either available from the DEP webpage for RTN 3-3866 or at the Wayland Board of Health PIP repository for the Site. Please advise if you have specific questions you would like us to address through such additional research.

Please contact the undersigned with any questions regarding the information presented in this letter, or if CMG can be otherwise be of assistance to you.

Sincerely,
CMG ENVIRONMENTAL, INC.



Benson R. Gould, LSP, LEP
Principal

2019-131\Preliminary Findings (11-21-19).doc