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Office of Proceedings
January 11, 2016
Part of
Public Record

December 30, 2015

Ms. Rachel D. Campbell
Chairperson, Office of Proceedings
Surface Transportation Board
395 E Street, SW
Washington, DC 20423



Subject: **Olin Chemicals Superfund Site – Wilmington, MA
Response to USEPA Letter to Surface Transportation Board (STB) dated 11/06/2015
Re New England Transrail, LLC, Docket No. FD-34797**

Dear Ms. Campbell:

Olin Corporation is in receipt of the letter written by the United States Environmental Protection Agency (USEPA) to Ms. Victoria Rutson, Chairperson of the STB Office of Environmental Analysis dated November 6, 2015. USEPA's letter purports to provide the STB both with an update on recent activities at the Olin Chemicals Superfund Site in Wilmington, MA (the "Site"), and set forth USEPA's current position regarding the appropriateness of future development of portions of the Site. As the current property owner and the party engaged in the investigation and remediation efforts at the Site, we are compelled to respond to certain assertions made in USEPA's letter regarding redevelopment of portions of the Site.

First, we agree with USEPA that current Site conditions do not warrant continued STB deferral on granting New England Transrail's (NET's) petition. Additionally, Site development by NET will in no way impact our ability to comply with our understood obligations to investigate and remedy, to the extent necessary, environmental media both on and off the Site property. We have reached a binding Option and Purchase Agreement with NET for continued access to the property for Olin, USEPA and its contractors for performance of any and all investigation and remediation that is deemed necessary both now and in the future. We previously provided a redacted version of this Agreement to USEPA.

However, we strongly disagree with USEPA's position that the Containment Area, the Plant B area, and the on-property portion of the lower south ditch are not suitable for redevelopment.

With regards to the Containment Area, USEPA states in the letter that:

"...The field work and risk assessments conducted on the Property did not evaluate data from the Containment Area... As a result, EPA is not in a position to make any statement about potential chemical exposure risks in the Containment Area, and this area, plus an

Olin Corporation

appropriate buffer zone around the Containment Area that will be determined in the future, is not suitable for redevelopment until further RI/FS work is completed.”

Contrary to USEPA’s position, the Remedial Investigation Report for Operable Units 1 and 2 (OU1/OU2 RI) approved by USEPA on July 2, 2015 *did* include a Human Health Risk Assessment for these areas, as discussed below. USEPA’s position further disregards the actions undertaken to date and to be taken with respect to Containment Area. For the benefit of the STB, we provide the following summary of the history and current status of the Containment Area, with citations to the OU1/OU2 RI report.

The Containment Area was the former location of unlined disposal pits (acid pits and drum disposal areas) when the former manufacturing facility at the Site was still in operation, prior to Olin’s ownership. Liquid wastes were released in these pits over time and the wastes percolated through the subsurface gravimetrically until they encountered bedrock. The wastes, which were generally heavier than water, flowed along the topographic surface of the local bedrock until it accumulated (i.e., pooled) in depressions in the bedrock surface. The on-site portion of this pooled waste was encircled by an approximately 3 ft. thick clay and bentonite-based wall (slurry wall) that was installed by Olin to prevent continued migration of chemical constituents from this material off Site. The wall was installed vertically into the top of bedrock. The design and construction of the wall was approved by the Massachusetts Department of Environmental Protection (MassDEP) as a Release Abatement Measure (RAM) while the Site was still regulated under the Massachusetts Contingency Plan (MCP). Additionally, impacted soils within the containment wall were excavated, stockpiled and segregated and managed appropriately. A significant amount of this stockpiled material was shipped off site for disposal. Remaining material that was less impacted was blended with non-impacted soil and placed back into the excavation within the confines of the containment wall. This exercise was also approved by the MassDEP. An accounting of the materials shipped off site for disposal and that which was placed back in the containment area was provided to USEPA in detail during discussions leading up to approval of the OU1/OU2 RI report and is provided also in the report itself (see Attachment 1).

The containment area is currently covered by scrim-reinforced plastic as a temporary cap that inhibits natural precipitation from entering the containment area. A permanent cap will be installed by NET following their purchase of the property as stipulated in the existing Option and Purchase Agreement.

In addition to the foregoing described remedial actions taken and to be taken, Olin has recorded with Middlesex County a binding restrictive covenant which runs with the land in perpetuity which restricts usage of the Site, including the Containment Area, in several important ways. The restrictive covenant is enclosed with this letter as Attachment 2. The restrictive covenant specifically prohibits disturbance of soils within the Containment Area except for that associated with installation of a permanent cap. The restrictive covenant also prohibits any use or extraction of groundwater from beneath the property except for that associated with investigation and potential remedial action to the extent remedial action is required at some time in the future.

Notwithstanding the foregoing remedial steps taken and to be taken and the recorded restrictive covenant, USEPA insisted that we conduct a human health risk assessment, using industrial workers and trespassers as potential receptors. Accordingly, we agreed to perform an assessment based on appropriate exposure scenarios and assumptions and known concentrations of impacts in the area.

Section 6 of the USEPA-approved Final OU1/OU2 RI report presents the Human Health Risk Assessment for these units. Page 6-4 of the report specifies that *“the exposure areas for OU1 have been identified as EA1, EA2, EA3, EA4, EA6, EA7, the Containment Area, South Ditch, on-PWD, Stormwater Detention Basin, and Central Pond.”* (emphasis added). Page 6-6 specifies that the receptors evaluated with respect to Future Land Use at the Containment Area included outdoor workers and trespassers. After significant discussion with James DiLorenzo, USEPA’s Project Manager for the Site, and USEPA’s oversight contractor, NOBIS Engineering, we agreed to evaluate risk for surface soils within the Containment Area for both of the receptors referenced above. The OU1/OU2 baseline human health risk assessment approved by USEPA states:

“There are no current land use receptors for the Containment Area. Future land use receptors for the Containment Area include outdoor workers and trespassers (adolescents and adults) (trespassers are potentially exposed to surface soil and the outdoor worker is potentially exposed to soil-derived dust). The risk calculations for the Containment Area are based on analytical data associated with surface soil samples collected during the RI from beneath the temporary cap. As previously discussed, the only potential exposure pathway for the containment area is by trespassers such that surficial soil data are appropriate for calculating risk.”

The result of the risk assessment for the Containment Area, as presented in the USEPA approved OU1/OU2 RI report, shows that the excess lifetime cancer risk associated with these receptors was calculated to be 2×10^{-6} (Future Trespasser) and 5×10^{-6} (Future Outdoor Worker) which are well within the USEPA acceptable cancer risk range of 1×10^{-4} to 1×10^{-6} . This additional evidence supports that there is no unacceptable risk associated with surficial soils within the Containment Area. All of this information is included in the Remedial Investigation Report for Operable Units 1 and 2 (Site-wide soil, sediment, and surface water) Section 6 (see Attachment 3), which was approved by the USEPA on July 2, 2015 (see Attachment 4).

With regards to deeper soils within the Containment Area, as mentioned above, there is now a recorded restrictive covenant in place which runs with the land which specifically prohibits disturbance of soils, including within the Containment Area, except for that associated with installation of a permanent cap. USEPA was provided with a copy of this restrictive covenant. Therefore, by the terms of the existing deed restriction and permanent cap installation, there is no potential exposure associated with these deeper soils.

Lastly regarding the Containment Area, James DiLorenzo stated publicly during a June 10, 2014 Public Meeting in Wilmington, MA that the OU1/OU2 RI effort has indicated that although there exists residual contamination in on-site media, concentrations of site-related impacts are not significant enough to cause any significant risk, with the potential exception of risk to ecological receptors in surficial soils and sediments in the lower reach of South Ditch, such that the property is now suitable for redevelopment (with no exceptions noted). At no point has USEPA ever communicated to Olin that there would need to be a buffer zone around the Containment Area that it would consider unsuitable for redevelopment, despite being fully aware that Olin has had an executed Option and Purchase Agreement with NET since 2003. The views expressed in the USEPA’s November 6, 2015 letter are inconsistent with its prior public

statements regarding the suitability of Site redevelopment, despite there being no material changes in the underlying data.

With regards to Plant B, which contains a groundwater extraction and treatment system, we will retain the obligation for its continued operation following sale of the property to NET. NET has agreed to this condition as part of the Agreement. However, the Plant B infrastructure can be installed anywhere on Site should redevelopment efforts be considered for the portion of the property where the Plant B treatment system is now located. Therefore, it is inaccurate to state that the area is not suitable for redevelopment by virtue of the treatment system infrastructure.

Regarding the on-site portion of the south ditch, remediation will be required for a portion of this area as per the USEPA-approved OU1/OU2 ecological risk assessment. However, nothing technically prohibits redevelopment of the subject area once remediation is complete. We notified USEPA earlier in 2015 that we intended to implement remediation of this area voluntarily at-risk during 2015. However, USEPA indicated in subsequent communication that we were prohibited from conducting the remediation without executing a remediation order with USEPA, which would have involved drawn out discussions that would delay the effort unnecessarily. We abandoned the voluntary effort following receipt of USEPA's comments and will address remediation of this area in due course.

In conclusion, we agree with USEPA's acknowledgement that the Site is ready for redevelopment and that current site conditions do not warrant continued STB deferral on granting NET's petition. In fact, the entire 51 Eames Street property is suitable for redevelopment. This is supported by our current understanding of site conditions and the lack of significant risk associated with environmental media on the property. We trust that the information contained herein provides adequate clarification to these important issues.

Please feel free to contact me with any questions regarding this matter.

Sincerely,

OLIN CORPORATION



Curtis M. Richards
Corporate Vice President
Environment, Health & Safety

cc: Victoria Rutson, Service Transportation Board, OEA
Phyllis Johnson-Ball, Office of Environmental Analysis
Robert Jones, New England Transrail, LLC
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Robert Cianciarulo, USEPA
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William Walsh-Rogalski, USEPA

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Joseph Coyne, Massachusetts Department of Environmental Protection
Nancy E. Harper, Massachusetts Attorney General's Office
Rep. James R. Miceli
Jeff Hull, Town of Wilmington, MA
Martha Stevenson, WERC
Garland Hilliard, Olin Corporation
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ATTACHMENT 1

2.0 STUDY AREA INVESTIGATIONS

Investigations have been conducted at the Site by several parties since the mid-1970s. Olin became involved in the investigation and remedial activities at the Site after its purchase of the facility in 1980. Most of the pre-1980 investigations were related to wastewater, groundwater, and surface water as well as the development and operation of the CSL. Earlier investigations and associated reports included groundwater and surface water investigations described in the document titled *Report on Groundwater and Surface Water Study, Stepan Chemical Company, Wilmington, Massachusetts* (GEI, 1978), soil and groundwater investigations along the eastern boundary of the facility concerning the LNAPL release in that area (New England Pollution Control Company [NEPCO], 1980), and the USEPA's Site Inspection Report for the Facility in December 1980 (Ecology & Environment, 1980) which focused on water pollution control and RCRA compliance. A Phase I Site Inspection Report for the Facility was prepared for the Massachusetts Department of Environmental Quality Engineering in 1986 (Wehran Engineering Corp., 1986). Olin conducted response actions to mitigate and control migration of LNAPL at the Plant B area in response to the 1980 Site Inspection Report. The Plant B groundwater recovery/treatment system for LNAPL was installed in 1981.

The Site was officially identified as a site subject to the MCP in a Notice of Responsibility letter from the MassDEP on May 28, 1992 (MassDEP Release Tracking Number 3-0471). Consequently, between that time and the listing of the Site on the NPL in 2006, investigations and response actions at the Site were conducted per the requirements of the MCP. The MCP requires a phased approach to site investigation and remediation that is modeled after the USEPA's NCP.

The 1993 Comprehensive Site Assessment Report, hereafter referred to as the 1993 CSA (Conestoga Rovers Associates [CRA], 1993), was focused on potential sources or release areas identified as Solid Waste Management Units (SWMUs). This report was not prepared in accordance with MCP requirements or terminology with respect to a Comprehensive Site Investigation Report (but more in line with a RCRA Facility Investigation Report). The associated investigations had been planned and initiated independent of the MCP Notice of Responsibility (NOR). The 1993 CSA was subsequently augmented by investigations intended to delineate nature and extent of release of oil and/or hazardous materials and to characterize the representative concentrations in environmental media to support risk characterizations and evaluation of remedial requirements. These supplemental investigations were conducted in a manner that is in substantive compliance with both the NCP and the MCP. In 1997, the *Supplemental Phase II Report; Wilmington Massachusetts, Olin Corporation. MassDEP RTN: 3-0471 (Smith, 1997)* was submitted to MassDEP per the MCP and approved. This Supplemental Phase II Report is referred to as the MCP "Phase II Comprehensive Site Assessment".

Additional MCP activities (including supplemental Phase Investigations, RAMs, Immediate Response Actions (IRAs), and monitoring activities associated with investigations, IRAs, and RAMs continued until the Site was listed on the NPL.

2.1 Previous Investigations and Response Actions

Previous investigations (conducted through 2006) and historical response actions for the Site have been reported in detail in the Focused Remedial Investigation Report (FRI) (MACTEC, 2007). This subsection (2.1) addresses previous investigations and response actions. As agreed with USEPA, the previous investigations and response actions are summarized in detail in the attached Section 2.1 of **Appendix A**, which is a reproduction of Sections 2.1 through 2.5 of the FRI (text and associated tables, figures, as well as Appendix A and B of the FRI that are

referred to in Section 2 of the FRI). Section 2.1 of **Appendix A** of this Draft RI Report summarizes previous investigations and response actions for OU1 and OU2. Section 2.2 summarizes monitoring programs for groundwater, surface water and sediment, including the Post-Construction Monitoring Plan (PCMP) activities related to the installation of the slurry wall/cap. The PCMP activities have continued as part of the Interim Response Steps Work Plan. Section 2.3 is a summary of the development, evolution, and application of groundwater models at the Site. Section 2.4 is a summary of the historical analytical programs and Section 2.5 is the analytical data quality review. **Appendix A** includes its own list of references.

Previous investigations summarized in Section 2.1 of **Appendix A** include the following: surface features characterization; contaminant source investigations and removal actions for (Lake Poly, Dense Aqueous Phase Liquid, Plant B, Former Drum and Debris Areas, Warehouse Investigations (acid pits), on-property sources of NDMA, Calcium Sulfate Landfill and Source Area Removals); meteorological investigations; surface water and sediment investigations for (on-PWD, South Ditch, off-PWD, East Ditch, Central Pond, North Pond, and Maple Meadow Brook Wetland); geological investigations; soil and vadose zone investigations (Initial CRA Investigation, Supplemental Phase II Investigations, and North Pond Investigation); groundwater investigations; indoor air investigations; biota; human population surveys; and ecological surveys.

The response actions (primarily IRAs and RAMs) described in Section 2.1.2 of **Appendix A** focused on source areas, highly impacted media, and some localized contamination and they have had a substantial impact in reducing the amount of contamination in soil and sediment within OU1. These response actions resulted in removal of impacted soils, waste materials, oil, and volatiles from soils and they have had a positive impact with respect to nature and extent of soil contamination at the Property. In particular, the following actions were conducted to remove impacted soil/sediment, TMPs from subsurface soil, and LNAPL from the Property:

Plant B. The Plant B groundwater recovery/treatment system for LNAPL has been operated by Olin since 1981 under an IRA in accordance with the MassDEP Conditional Approval since July 3, 1997. The system has been operated to prevent re-occurrence of LNAPL seepage and related sheen to the East Ditch in the vicinity of Plant B and system operations are also described in Section 1.3.1. There are currently three recovery wells in operation (IW-12, IW-11 and IW-13). The LNAPL removal was augmented with in-situ biostimulation and air sparging. The Plant B groundwater recovery and treatment system is operated continuously except for maintenance and repair activities. The containment of groundwater in the vicinity of Plant B is incidental to the primary objective of the system which is to maintain a cone of depression to prevent migration of the LNAPL toward East Ditch. The majority of LNAPL, which was a process oil, is mechanically recovered from IW-11. LNAPL recovery has varied from 1.8 to 3.2 gallons per year over the last five years (2010-2014). The three extraction wells operate at a combined flow rate of less than 10 gpm. Influent groundwater is pretreated with granular activated carbon to remove iron as well as dissolved organics. Ammonia is then treated by break point chlorination by hypochlorite addition. After ammonia removal, the water passes through a second granular activated carbon bed and finally an ion exchange resin to remove arsenic if present. Treated groundwater is discharged to the South Ditch below the weir via the on-PWD (**Figure 1.3-1**) under the conditions as set forth in the RGP number MAG910000 which is contained in **Attachment A**. Treated groundwater is discharged daily between Monday and Friday. Groundwater extracted on weekends is stored in tanks on the Olin property for treatment and discharge. Reporting for Plant B is included in the IRSWP Semi-annual Status reports.

Slurry Wall/Cap Containment Area. The installation of a containment structure was first evaluated in a Focused Feasibility Study in 2000, as one of several alternatives to achieve a permanent source control measure for on-Property DAPL, consistent with requirements of the

MCP. The remedial objective for the containment structure was eliminating, to the extent feasible, the on-Property DAPL as a source of the dissolved plume that was impacting ditches in the immediate vicinity of the area through groundwater discharge (GEI, 2000). The design of the slurry wall was based on a series of perimeter borings advanced to define the bedrock surface. Prior to constructing the slurry wall, a detention basin was constructed to manage surface water run-off. This structure required excavation into shallow bedrock. In December 2000, a three foot thick slurry wall was installed into the weathered bedrock surface to the extent bedrock could be removed by construction equipment. The containment structure was constructed with an equalization window on its western side to allow movement of shallow groundwater out of the structure, should head buildup occur from leakage of precipitation through the temporary cap. The location of the containment area is shown on **Figure 1.3-1**. The temporary cap was completed in April 2001 over the entire containment area using 6-mil reinforced polyethylene sheeting. A gravel roadbed was installed around the eastern and southern perimeter of the temporary cap to allow vehicle access to the southwest area of the Site. The 6-mil sheeting was replaced in 2003 with an 8-mil polyethylene sheeting utilizing ultraviolet resistant thread for sewn seams. Olin conducts quarterly inspections to monitor the integrity of the temporary cap material, evaluate the need for periodic maintenance and document maintenance activities and repairs.

Former Lake Poly. The former Lake Poly was a source area that had been the subject of several investigations and remedial actions. This area was an unlined pond that received acidic, chromium-containing liquid manufacturing wastes from manufacturing operation. Details of the investigation approvals and remedial actions are discussed in Section 2.1.2.1 of **Appendix A**. The initial remedial action at Lake Poly was intended to remove soil impacted with chromium and was conducted on November 17, 2000. The excavation was 10 feet wide, 10 feet long and 10 feet deep. The post-excavation confirmatory sample results indicated that additional excavation was required for the Lake Poly area.

Pursuant to additional investigations, the MassDEP approved the final scope of work and extent of additional excavations in the Lake Poly area on April 28, 2004. Consistent with that approved scope of work for the C-RAM, between June 7 and June 15, 2004 approximately 600 cubic yards (cy) of subsoil was excavated and disposed off-site in order to eliminate soil concentrations of ammonia and chromium above corresponding MCP soil upper confidence limits.

On-Property West Ditch and Adjacent Wetlands. Removal actions for shallow soil and sediment were also completed from adjacent portions in the on-PWD and adjacent wetland in (2000-2001). Removal of soil from most of the off-PWD wetlands adjacent to SWMU-27 and Lake Poly (C-RAM) occurred at this time in addition to removal and off-site disposal of 275 cy on-PWD sediments to address chromium, SVOCs, and metals.

Drum Disposal Area A, B and Buried Debris Area. The former Drum Disposal Areas were initially identified in the initial 1991-1993 CSA (CRA, 1993) by a magnetometer survey and follow-up test pit activities. Drum Area A and Drum Area B were evaluated by an MCP IRA from 1994 through 1996 and subsequently, in an MCP RAM during 2000 and 2001. The excavation and removals for Drum Area A and Drum Area B were conducted per the MassDEP approved January 24, 2000 RAM Plan. Between August 7 and December 9, 2000 approximately 3,200 cy of soil, 160 overpacks of old drums, crushed drums, and drum parts, and 34 tons of metal debris were excavated from Drum Area A. In addition, approximately 1,150 cy of soil, 3 overpacks of drum parts, and 2 tons of metal debris were excavated from Drum Area B. The debris materials were removed for off-site disposal and soils were segregated according to visual inspection according to the degree of potential impact. These soils were then sampled, tested and evaluated for disposal off-site or re-use as excavation backfill. The Drum Area A

excavation was backfilled with a mixture of excavated soil, blast rock and on-property borrow. Drum Area B was backfilled with a mixture of excavated soil and on-property borrow.

During September and October 2000, 2,315 cy of impacted peat and sediment were excavated and removed for off-site disposal from the Buried Debris Area.

Central Pond. During 2000 and 2001 approximately 2470 cy of sediment and underlying soil were excavated and removed for off-site disposal from Central Pond to address chromium, SVOCs, and metals. In addition, a removal action for 12 cy was undertaken for the removal of oil-impacted soils from the banks of Central Pond during the C-RAM. Final restoration of Central Pond was completed in 2001.

South Ditch. Under the C-RAM removal of sediments was conducted along the entire Upper South Ditch including the Delta and resulted in the removal of 430 cy of sediment down to the underlying mineral soil to address chromium, SVOCs, and metals in 2000 and 2001. The excavation included removal of adjacent bank material, and restoration by placement of jute mat and other erosion control materials and placement of an organic wetland sediment/soil. Hay bale check dams were installed to help control water velocities along various reaches of the stream. All the sediment was disposed off-site at a facility licensed to receive such material.

Off-Property West Ditch. On June 9 and 10, 1994, a vacuum truck was used to remove the floc precipitate from the off-PWD. Approximately 18,000 gallons of sediment/water were collected from the ditch and were stored on-Site in a FRAC tank for waste characterization results and off-site disposal.

RSO-6 and A8-CW-1. Removal of soil at locations RSO-6 (50 cy removed) and A8-CW-1 (10 cy removed to address polycyclic aromatic hydrocarbons [PAHs]) were conducted in 2000 and are discussed in Section 2.1.6.1.2.8 of **Appendix A**. These removal actions do not have any implications concerning the adequacy of PAH characterization data. The A8CW-1 excavation was 10 feet wide, 10 feet long and 3 feet deep. The RSO-6 excavation was 12 feet wide, 14 feet long and 8 feet deep. Four confirmatory sidewall samples (A8CW-1-N, A8CW-1-E, A8CW-1-S, A8CW-1-W and RSO-06-N, RSO-06-E, RSO-06-S, RSO-06-W) and one bottom of excavation sample (A8CW-1-B and RSO-06-B) were collected. The locations of the confirmation samples are shown on **Figure 4.1-1**.

EPH/VPH Area. From 2000 to 2005 Olin operated an AS/SVE system located west of the groundwater extraction and product recovery system (**Figure 1.3-1**) that removed more than 2,000 pounds of TMP from subsurface soils at the EPH/VPH area at Plant B. The principal contaminants in this area were TMPs. Treatment of the EPH/VPH area was modified in 2002 to include a shut down test for the AS/SVE system in the EPH/VPH area that was conducted in July 2004. In a letter dated March 21, 2005 the MassDEP approved the request to discontinue the operation of the AS/SVE system in the EPH/VPH area and the system was subsequently shut down and a portion of the system was dismantled in August 2005. The MassDEP concurred that the system had significantly reduced concentrations of volatiles in the soil and that the system had achieved or approached background conditions for volatile contaminants in groundwater within the EPH/VPH area. The remaining portion of the AS/SVE system located immediately adjacent to Plant B Tank farm is not currently operating with USEPA concurrence in anticipation of a proposed "Plant B Pumping Rate Reduction Test" which is currently on hold. Further detail can be found in Section 2.1.2.3.2 of the FRI (**Appendix A**) and Section 3.2.2 of the IRSWP (MACTEC, 2008).

BioCell. The Biocell is located adjacent to the CSL and was designed and constructed as a biological treatment location for SVOCs impacted sediment from South Ditch. Due the presence of chromium in the sediment, use of the Biocell was infeasible and the facility was not used. The facility was constructed with HDPE liner and a filter sand that both still remain. In 2002,

2003 and 2004, the drainage sands were sampled and evaluated for eventual use as upland fill for future redevelopment. In 2002, DEP granted approval to penetrate the liner to allow precipitation in the Biocell in infiltrate to groundwater.

OU1 Response Action Summary. In summary, a total of 10,887 cy of soil/sediment were excavated during these activities and approximately 7,850 cy were disposed at licensed off-Site facilities. Soil/sediments from some excavations remain on-Site to date. Approximately 50 cy of sediment excavated from the delta area in October 2000 was tested for re-use and was used as shallow fill in the Containment Area; approximately 250 cy of granular material excavated from the Buried Debris Area was used as backfill in the Containment Area in November 2000; approximately 3,000 cy of topsoil stripped from the Containment Area in August and September 2000 remain stockpiled at the Property.

As documented in Appendix B of Status Report No. 2, Part 2 Construction-related RAM, Olin Wilmington-Property, 51 Eames Street, Wilmington, MA, Release Tracking No. 3-0471 (GEI, 2001), those stockpiled soils were sampled (11 samples) and submitted for laboratory analysis for VOCs, SVOCs, metals, pesticides, TPH, and additional disposal analytical requirements. MassDEP approved the re-use of those soils as upland fill at the Property (MassDEP, 2000). A summary of the soil removal activities and disposition of the soil material is provided in the table below.

Summary of Disposition of Soil Materials from Previous Remedial Actions

Remediation Area or Action	Excavated Material (cy)	Disposed Off-Site (cy)	Returned to Excavation (cy)	Stockpiled (cy)
Containment Area Topsoil – Stripped and Tested	2,700 – 3,000	0	0	2,700 – 3,000 (approved by MassDEP for on-site upland re-use)
Drum Area A (1)	3,200 (segregated and tested)	Drums, drum pieces, clearly impacted soil	500 (in DA-B) ~2,500 (in DA-A)	0
Drum Area B (1)	1,150 (segregated and tested)	Drums, drum pieces, clearly impacted soil	500 - peat stabilized with cement used as shallow backfill 650 - backfill	
Buried Debris Area (1)	2,565 (segregated and tested)	2,315 (April-July 2001)	250 (granular material to Containment Area)	0
on-PWD (tested)	275	275 (May 2001)	0	0
on-PWD Wetland (tested pre-excavation and for disposal)	510	510 (May 2001)	0	0
South Ditch (tested)	530 + 50 (remediated sed plus floc)	530	50 (shallow fill in Containment Area)	0
Central Pond (tested)	2,600	2,600 (May – July 2001)	0	0
Slurry Wall – spoil and excess slurry, top two feet of wall removed and stabilized with cement	Volume not discussed	0	All – managed in the Containment Area as backfill	0
Lake Poly (tested for disposal)	Volume not discussed	All excavated material	0	0
Stormwater detention basin blast rock	Not reported	0	Bottom layer of backfill Drum Area A	0
Total Project Off-Site Disposal		1,300 Model city, NY		
Total Project Off-Site Disposal		5,950 (Turnkey Landfill, NH)		

Notes: Excavated material includes both soil and non-soil (drums, deteriorated drums, metal debris, etc) materials

Floc Composition, Stability and Bioavailability. Another important study that was historically conducted pertains to floc that forms in the ditch system in response to groundwater discharge. The floc that has been observed within the ditch system has been characterized and investigated in order to evaluate the fate and transport of the material, to assess potential bioavailability and potential risks of the material to aquatic receptors, if any, and to evaluate remedial requirements, if any. Details of the Floc investigations from the FRI are provided in Section 2.1.4.1.2.1.2 of the FRI provided in **Appendix A**.

Three investigations were conducted concerning the chemical, physical, and mineral composition of the floc material collected from the ditch system. It was observed that the physical appearance and chemical composition of floc was not consistent throughout the ditch system. Samples were therefore collected over several periods from off-PWD, South Ditch and East Ditch. To understand morphology of minerals present several samples were analyzed by Electron Micrograph Analysis (EMPA) at the University of Colorado at Boulder

The EMPA concluded the “white floc” consisted of pure aluminum hydroxide (gibbsite) and trivalent chromium was present with a composition of between 0.8% and 2%. The “red floc” (also referred to as “iron floc”) characterization suggested the material was similar to the mineral redingtonite (containing iron, chromium, aluminum, and sulfate) with a chromium content of 5% - 10%. The laboratory analysis indicated that the “white floc” sample contained 2,500 milligrams per kilogram (mg/kg; 0.25% by weight) total chromium while aluminum was the metal with the highest concentration (77,000 mg/kg) and the “red floc” sample contained 35,000 mg/kg (3.5% by weight) while iron was the predominant metal (180,000 mg/kg). The aluminum concentration in the “white floc” sample and the “red floc” sample were very similar. The “white floc” sample contained no detectable sulfate while the “red floc” sample contained 740 mg/kg sulfate.

The total chromium concentrations in five samples (Floc-1 through Floc-5) were 19,000 mg/kg, 7,400 mg/kg, 18,000 mg/kg, 930 mg/kg, and 5,200 mg/kg respectively. Sample Floc-1 was collected from the upper South Ditch, Floc-2 from between the weir and the Central Pond location, Floc-3 from the South Ditch near the eastern property boundary, and Floc-4, Floc-5, and Floc-6 from the wet area between the eastern property boundary and the East Ditch. It was concluded that “the existence of these precipitates in the floc samples indicates that these phases are thermodynamically stable under neutral, oxidizing conditions of the surface water environment” (Geomega, 1996 - **Appendix A** References).

An investigation of the stability of floc material was conducted beginning in June 2003 (Geomega, 2004 – **Appendix A** References). The study determined the chemical composition of each of the floc types and also determined the solubility of the floc constituents over a range of pH conditions. All of the floc types were “observed to have low metal solubility for iron, aluminum, manganese, and chromium over the range of pH conditions likely to occur at the site.” The report also concluded that none of the flocs are reported to contain any significant hexavalent chromium concentrations and no hexavalent chromium was detected in any of the water samples associated with the study. These studies concluded the floc is expected to be stable within the ditch system surface water. Collectively all the studies of floc indicate it is unlikely to represent an ecological risk to aquatic organisms due to the low solubility and bioavailability in surface water.

Ephemeral Drainage Area. Seven sediment samples were collected in January 2000 in this general area (RSD-09 through RSD-15) and is discussed further in the BHHRA. The only organics detected in any of the samples were TMPs (low concentrations only in RSD-09), acetone, and BEHP (only in RSD-10). There were no organic COIs detected in any of the RSD samples collected from the soil background area. Metal and inorganic concentrations in samples collected from samples RSD-11 through RSD-15 do not indicate evidence of any Site-

related impacts. Therefore, these sediment samples are considered representative of an area where no manufacturing activities are known to have occurred and where impacts did not occur.

2.2 OU1 Remedial Investigations

The following section identifies the OU1 and OU2 investigation activities that have been conducted since the USEPA approval of the Final IRSWP in August, 2008 and the USEPA conditional approval of the April 30, 2009 Draft Final RI/FS Work Plan (MACTEC, 2009c) on July 16, 2009 (USEPA, 2009).

For the RI, soil borings were advanced at 130 locations, with 398 samples submitted for laboratory analysis; surface soil samples were advanced at 90 locations with 90 samples submitted for laboratory analysis; sediment samples were advanced at 27 locations with 48 samples submitted for laboratory analysis; surface water samples were collected at 29 locations with 84 samples submitted for laboratory analysis.

Consistent with the Field Sampling Plan (FSP) contained in Volume III-A of the August 2009 Final RI/FS Work Plan (MACTEC, 2009a) the 2009 through 2013 RI sampling objectives for OU1 were to:

- Confirm and refine previous investigation findings;
- Confirm the nature and extent of site related contaminants (including the area south of the South Ditch);
- Investigate the manufacturing process areas; and
- Collect additional data for the human health and ecological risk assessments.

The 2009 through 2013 RI sampling in OU1 included the following sampling events:

- August/September 2009 – soil borings (surface, shallow subsurface, and deep subsurface soil samples) per 2009 FSP
- September 2009 – surface soil sampling per 2009 FSP
- November 2010 – soil borings in area of SB-405 and area east of the Plant B Treatment Building (surface, shallow subsurface, and deep subsurface soil samples) per Addendum V of the RI Work Plan (MACTEC, 2010b)
- November/December 2012 – soil borings and surface soil samples to fill data gaps per the November 16, 2012 Supplemental Work Plan (Olin, 2012)
- December 9-10, 2010 – surface water and sediment sampling in South Ditch per 2009 FSP
- June 6, 2011 - surface water and sediment sampling in South Ditch per 2009 FSP
- December 2012 – soil, surface water and sediment sampling in Central Pond and Storm Water Detention Basin per the November 16, 2012 Supplemental Work Plan (revised and resubmitted March 2013)
- June 17, 2013 – additional soil sampling to delineate PCBs

The 2007 through 2013 IRSWP (MACTEC, 2008) sampling in OU1 included the following sampling events:

- Quarterly groundwater, surface water, and sediment (annual) sampling related to the slurry wall/cap
- Quarterly groundwater sampling related to the operation of Plant B

The 2009 through 2012 RI sampling in OU1 included collection of surface and subsurface soil samples below buildings and foundations on the Property, around these buildings and foundations, near historical Property features (including USTs, transformers and leach fields), in

ATTACHMENT 2

ATTACHMENT B

DEED RESTRICTION
(Provided on CD)

12



2012 00053959
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NOTICE AND DECLARATION OF RESTRICTIVE COVENANT

THIS DECLARATION is made as of the 5th day of October, 2012, by OLIN CORPORATION, a Virginia corporation ("Declarant").

RECITALS

A. The Declarant owns fee simple title to the real estate and improvements referred to as 51 Eames Street, Wilmington, Middlesex County, Massachusetts, being legally described on Exhibit A attached hereto and incorporated herein by reference (the "Property").

B. The Property is at present listed on the National Priority List and certain hazardous substances are present in soil and groundwater at the Property.

C. The Declarant has completed certain remedial actions in two areas described as Area A and Area B in the map attached as Exhibit B hereto.

D. As of the date hereof, Declarant is investigating and evaluating the environmental conditions of the Property.

E. Declarant desires to impose upon and subject the Property to this Declaration, which shall become effective upon the recording of this Declaration in the land records of Middlesex County.

NOTICE AND DECLARATION

NOW, THEREFORE, the Declarant hereby declares that the Property and any portion thereof is and shall be held, transferred, sold, conveyed, used and occupied subject to the perpetual restrictive covenants hereinafter set forth, which restrictive covenants shall run with the Property and be binding upon all parties having any right, title or interest in the Property or any part thereof, their successors and assigns, and shall inure to the benefit of each owner thereof, and which are for the purpose of protecting the value and desirability of the Property.

1. Restricted Uses. Notwithstanding any laws, rules, regulations, ordinances or orders of any governmental or quasi-governmental entity, including, without limitation, local municipal and zoning ordinances, the Property, or any portion thereof, shall not be used for any residential, school, child day care center, playground or public recreation area purposes. The Property shall be used solely for commercial or industrial purposes.

2. Restriction on Groundwater Use. No groundwater shall be extracted from beneath the Property for any purpose, except to monitor the groundwater, or as part of an action to address groundwater conditions.

3. Excavation Restriction. No excavation of any kind shall occur in Areas A and B, except such excavation that is necessary to maintain the contours of the existing cap on Area A and shaping and grading as required to install a cap on Area B. Excavation in other areas of the Property shall be permissible only: 1) consistent with that certain Environmental and Open Space Restriction, dated October 31, 2006, and recorded in Book 20680, Page 234 of the land records of Middlesex County, Massachusetts, where applicable; and 2) in conformance with an appropriate soil management plan to address construction worker safety and soil management.

4. Runs with the Land. The perpetual restrictive covenants created in this Declaration are appurtenant to the Property and are (i) made for the direct benefit of the Property; (ii) shall run with the land; (iii) may be enforced as either equitable servitudes or real covenants; and (iv) shall bind and inure to the benefit of every person or entity having any property interest in the Property or any portion thereof.

5. Severability. If any portion of this Declaration shall to any extent be invalid or unenforceable, the remaining provisions of this Declaration shall not be affected thereby, and each provision of this Declaration shall be valid and enforceable to the fullest extent permitted by law.

6. Successors and Assigns Bound. This Declaration shall be perpetual and shall be binding upon and shall inure to the benefit of Declarant, any subsidiary of Declarant, division, parent or wholly owned corporation or affiliate now or hereafter existing, and their respective successors and assigns with respect to the Property and the tenants, subtenants, licensees,

vendees, concessionaires and successors and assigns of any of them with any fee, leasehold, license or other interest in the Property.

7. Governing Law: This Declaration shall be governed by and construed in accordance with the laws of the State of Massachusetts.

IN WITNESS WHEREOF, the said Olin Corporation has caused these presents to be signed, acknowledged and delivered in its name and behalf as a sealed instrument by Curtis M. Richards, its Corporate Vice President for Environment, Health & Safety, this ____ day of _____, 2012.

OLIN CORPORATION

By: Curtis M Richards
Name: Curtis M. Richards
Title: Corporate Vice President
Environment, Health & Safety

State of Tennessee ss,
County of Bradley

Personally appeared the above-named Curtis M. Richards, Corporate Vice President for Environment, Health & Safety and acknowledged the foregoing instrument to be his free act and deed and the free act and deed of said corporation, before me.

Angela J. Goodner
Notary Public

My commission expires: June 30, 2014



EXHIBIT A

LEGAL DESCRIPTION

Parcel A

A certain parcel of land situated in Wilmington, County of Middlesex, Massachusetts situated on the southerly side of Eames Street being comprised of several parcels of registered and unregistered hand as shown on a plan entitled "Plan of Land in Wilmington, Mass.," dated July 9, 1980 by Dana F. Perkins & Assoc., Inc. and recorded, being further bounded and described as follows:

Beginning at the most northerly point of the parcel herein described at a point on the southerly sideline of Eames Street and the westerly sideline of the land now or formerly of the Boston & Main Railroad as shown on said plan; thence running

Along the easterly sideline of the land now or formerly of the Boston & Maine Railroad by the following six (6) courses, S 37° 51' 09" E 285.43 feet by the remains of a stone wall, S 81° 51' 09" E 26.99 feet, S 37° 51' 09" E 389.00 feet, S 33° 49' 53" E 843.72 feet, 31.55 feet on a curve to the right having a radius of 5958.75 feet, and S 15° 51' 29" W 95.69 feet to a point at the land now or formerly of New England Resins & Pigments Corp.; thence

Along the land now or formerly of said New England Resins & Pigments Corp., S 10° 09' 31" E 832.50 feet to a point on the line between the City of Woburn and the Town of Wilmington; thence

By the town line along said land now or formerly of New England Resins & Pigments Corp., owners unknown and the City of Woburn, S 60° 32' 25" W 1048.38 feet to a point on the easterly sideline of other land now or formerly of the Boston & Main Railroad as shown on said plan;

Northerly along the easterly sideline of said land now or formerly of the Boston & Maine Railroad by the following two (2) courses, 510.21 feet on a curve line to the left having a radius

of 1951.10 feet, and N 14° 48' 27" W 1938.47 feet to a point on the southerly sideline of Eames Street; thence

Along the southerly sideline of Eames Street by the following three (3) courses N, 58° 11' 02" E 317.36 feet, 112.20 and N 43° 14' 02" E 103.11 feet to a point on the westerly sideline of said land now or formerly of the Boston & Maine Railroad and the point of beginning.

The above described parcel of land contains 49.2 acres, more or less and includes within it the following described parcel of registered land:

PARCEL B

That certain parcel of registered land situated in Wilmington, in the County of Middlesex and the Commonwealth of Massachusetts, bounded and described as follows:

Northwesterly by Eames Street, four hundred forty-three and 74/100 (443.74) feet;

Northeasterly two hundred eighty-five and 43/100 (285.43) feet;

Northerly twenty-six and 99/100 (26.99) feet, and

Northeasterly ten hundred thirteen and 4/100 (1,013.04) feet, by land now or formerly of the Boston and Main Railroad;

Easterly by lands now or formerly of Consolidated Chemical Industries and of Merrimac Chemical Co., nine hundred seventeen and 21/100 (917.21) feet;

Southeasterly by Phelps Street, five hundred twenty-two and 43/100 (522.43) feet;

Southwesterly by Wilmington Avenue, two hundred forty-five (245) feet;

Southeasterly by the end of said Wilmington Avenue, by land now or formerly of Ann Russo and by the end of Linwood Avenue, two hundred twenty (220) feet;

Northeasterly by said Linwood Avenue, seventy (70) feet;

Northwesterly by a line crossing Linwood Avenue and by said Anna Russo land, one hundred ten (110) feet;

Southwesterly thirty-five (35) feet, and

Northwesterly seventy (70) feet, by said Anna Russo land;

Northeasterly by said Wilmington Avenue, thirty-five (35) feet;

Southeasterly seventy (70) feet

Northeasterly one hundred five (105) feet, and

Northwesterly seventy (70) feet by other land now or formerly of Anna Russo;

Northeasterly by said Wilmington Avenue, seventy (70) feet;

Southeasterly by said Phelps Street, three hundred twenty (320) feet, and

Southwesterly by Longwood Avenue, nineteen hundred sixty-nine and 81/100 (1,969.81) feet.

All of said boundaries are determined by the Land Court to be located as shown on plan 27579-A, which is filed with Certificate of Title 11786, the same being compiled from a plan drawn by Emmons & Fleming, Surveyors, dated April 17, 1957, and additional data on file in the Land Registration Office, all as modified and approved by the Court, and said land is shown as Lot one (1) and two (2) on said plan.

So much of said Lot 2 as is included within the limits of said Phelps Street, Linwood Avenue and Longwood Avenue is subject to the rights of all persons lawfully entitled thereto in and over the same.

So much of the land hereby reentered as is located within the limits of said Wilmington Avenue is subject to the rights of all persons lawfully entitled thereto in and over the same.

So much of said Lot 2 as is included within the limits of the ditches, shown on said plan, is subject to such rights as may exist at the time of original decree.

For title of the grantor to said registered land see Middlesex County Northern District Land Court Transfer Certificate of Title No. 24003; for title to said unregistered land see deed of Stepan Chemical Company dated September 12, 1980 and recorded with Middlesex North District Registry of Deeds in Book 2438 at page 105.

PARCEL C

That certain land in Wilmington, Middlesex County, Massachusetts, being shown as Lots "A", "B", "C", "D" and "E" on a plan entitled, "Plan of Land in Wilmington, Mass., Scale 1"=6', March 31, 1981, Dana F. Perkins and Assoc., Inc., Civil Engineers and Surveyors, Reading-Lowell, Mass." to be recorded herewith, and bounded and described according to said plan as follows:

LOT A

SOUTHERLY: by land now or formerly of Olin Corporation 45.42 feet;

EASTERLY: by Longwood Avenue 105.00 feet;

NORTHERLY: by land now or formerly of Anna Russo 45.00 feet;

WESTERLY: by land now or formerly of Boston and Main Railroad 105.00 feet. containing 4,731 square feet of land according to said plan

LOT B

SOUTHERLY: by land now or formerly of Olin Corporation 45.00 feet;

EASTERLY: by Longwood Avenue 910.00 feet;

NORTHERLY: by land now or formerly of Harry L. Marshall 45.00 feet;

WESTERLY: by land now or formerly of Boston and Main Railroad 910.00 feet.

Containing 40,950 square feet of land according to said plan.

LOT C

SOUTHERLY: by land now or formerly of Harry L. Marshall 45.00 feet;

EASTERLY: by Longwood Avenue 105.00 feet;

NORTHERLY: by land now or formerly of Olin Corporation 45.00 feet;

WESTERLY: by land now or formerly of Boston and Maine Railroad 105.00 feet.

Containing 4,725 square feet of land according to said plan.

LOT D

SOUTHERLY: by land now or formerly of Olin Corporation 45.00 feet;

EASTERLY: by Longwood Avenue 35.00 feet;

NORTHERLY: by land now or formerly of Olin Corporation 45.00 feet;

WESTERLY: by land now or formerly of Boston and Main Railroad 35.00 feet.

Containing 1,575 square feet of land according to said plan.

LOT E

SOUTHERLY: by land now or formerly of Olin Corporation 45.00 feet;

EASTERLY: by Longwood Avenue 105.00 feet;

NORTHERLY: by land now or formerly of National Polychemicals, Inc. 45.00 feet;

WESTERLY: by land of Boston and Maine Railroad 105.00 feet.

Containing 4,725 square feet of land according to said plan.

Together with all the right, title and interest of the Grantor in and to the lot labeled "21" and "Harry L. Marshall" on said plan, being the lot located between the aforesaid Lot B and Lot C.

Together also with all right, title and interest of the Grantor in and to Longwood Avenue as show on said plan.

For title reference see Deed of Nicholas Triantos and Louis G. Manolis a/k/a Louis Manolis dated April 2, 1981 and recorded with Middlesex North District Registry of Deeds in Book 2471 at page 680

EXHIBIT B

MAP OF SOIL RESTRICTION AREAS

Document: Field_Waterfield_Data\projects\GIS\Wilmington\GIS\Map Documents\Site Plan\09_8X11_P_SitePlan.mxd PDF: Field_Waterfield_Data\projects\GIS\Wilmington\GIS\Figures\Site Plan_CSL_CA_Aerial.pdf 9/11/2012 1:08 PM brian.radem



Legend

- 51 Eames St. Property Boundary
- Area A Calcium Sulfate Landfill
- Area B Containment Area

N

0 150 300 Feet

Prepared/Date: BJR 09/21/12
Checked/Date: PHT 09/21/12



Site Plan
51 Eames Street
Wilmington, MA



190 Carondelet Plaza
Suite 1530
Clayton, MO 63105-3443

SPECIFIC AUTHORIZATION

TO

Curt M. Richards

Vice President, Environment, Health & Safety

Pursuant to the authority granted me, I hereby delegate to Curt M. Richards, Vice President, Environment, Health & Safety, the authority to execute and file in the name of, and on behalf of Olin Corporation, documents related to regulatory activities at Environmental Remediation Group (ERG) sites where the signature of an Officer of the Corporation is not needed.

Grantee is authorized to redelegate any part of the authority herein granted.

George H. Pain
Vice President, General Counsel & Secretary

Dated: 1/28/05

Distribution:

Grantor
Grantee
Corporate Secretary (Original)
Controller
Vice President, Auditing

OLIN CORPORATION

Middlesex North Registry of Deeds - 20/20 Perfect Vision i2 Document Detail Report

Current datetime: 7/24/2013 9:24:21 AM

Doc#	Document Type	Town	Book/Page	File Date	Consideration
62370	RESTRICTIONS		20680/234	11/07/2006	
Property-Street Address and/or Description					
51 EAMES ST					
Grantors					
OLIN CORP, WILMINGTON TOWN CONSERVATION, WILMINGTON TOWN SELECTMEN					
Grantees					
References-Book/Pg Description Recorded Year					
26507/220 NOT 2012					
Registered Land Certificate(s)-Cert# Book/Pg					

1 copy
4 copy



Bk: 20680 Pg: 234 Page: 1 of 25
Recorded: 11/07/2008 12:20 PM 27

ENVIRONMENTAL AND OPEN SPACE RESTRICTION
TO
THE TOWN OF WILMINGTON

THIS ENVIRONMENTAL AND OPEN SPACE RESTRICTION is made as of this 31st
day of October, 2006, by **Olin Corporation** ("Olin"), a Virginia corporation, with a
principal place of business in Clayton, Missouri:

WITNESSETH:

WHEREAS, Olin is the owner of those certain parcels of land located in Wilmington,
Middlesex County, Massachusetts, with the buildings and improvements thereon, known and
numbered as 51 Eames Street, which land is more particularly bounded and described in Exhibit
A attached hereto and made a part hereof (the "Property");

WHEREAS, the Property is part of a larger disposal site, known as the Olin Site (the
"Site") as the result of past releases of oil and/or hazardous materials (the "Contamination"),
which are present in soil, sediment and groundwater at the Site;

WHEREAS, Olin has agreed, in connection with certain remedial work performed on the
Property pursuant to the Massachusetts Contingency Plan, 310 CMR 40.0000 ("MCP"),
Massachusetts General Laws, Chapter 21E ("Chapter 21E") and Massachusetts Department of
Environmental Protection ("MassDEP") approvals and as a condition of the 401 Water Quality
Certification issued by MassDEP dated July 27, 2000 (the "401 Certification"), which 401
Certification was incorporated by reference in an Order of Conditions issued by the Wilmington
Conservation Commission, dated July 25, 2000 (the "Order of Conditions"), that the portion of
the Property, comprised of approximately 20± acres of land, the perimeter of which is described
in Exhibit B attached hereto, located south of the stream known as the South Ditch, and being
shown as the "Area Subject to Environmental and Open Space Restriction" on a plan entitled,
"ALTA/ACSM Perimeter Survey, Eames Street, Wilmington, MA", dated July 10, 2006,
prepared by Dana F. Perkins, inc., which plan is attached as Exhibit B and recorded herewith (the
"Restricted Area"), shall be preserved in its predominately natural, undeveloped condition,
subject to rights herein reserved to perform and/or maintain response actions required by
MassDEP and/or United States Environmental Protection Agency (the "EPA") at the Site; and

WHEREAS, this Environmental and Open Space Restriction has been voluntarily
negotiated by and between Olin, MassDEP, and the Town of Wilmington, acting by and through
its Conservation Commission, and such parties agree that this Environmental and Open Space
Restriction is in full settlement and satisfaction of the requirements for the imposition of a land
use restriction as provided in the 401 Certification and the Order of Conditions.

Please Return to: Foley Hoag LL
ATTN: Maureen A. - 11th FL.
155 Seaport Boulevard
BOSTON, MA 02210

I. GRANTOR CLAUSE:

NOW, THEREFORE, Olin ("Grantor", which expression includes its successors and
assigns) grants with QUITCLAIM COVENANTS to the **Town of Wilmington, a municipal**

Restricted Area Address: 51 Eames Street, Wilmington, Middlesex County, Massachusetts

corporation acting by and through its Conservation Commission, with an address at the Town Building, 121 Glen Road, Wilmington, MA 01887 (“Grantee”, which expression includes its successors and permitted assigns), in perpetuity, pursuant to Massachusetts General Laws, Chapter 184, Section 26, and exclusively for the purpose described herein, the following described Environmental and Open Space Restriction (hereinafter referred to as the “Restriction”) in, on, over, through and under the Restricted Area, and Grantee hereby accepts and holds this Restriction pursuant to Massachusetts General Laws, Chapter 40, Section 8C.

As this Restriction is a restriction “held by any governmental body” under Massachusetts General Laws, Chapter 184, Section 26(c), it is intended to conform thereto and shall run in perpetuity.

II. PURPOSE:

The purpose of this Restriction is the preservation of the Restricted Area in a predominately natural, undeveloped condition, subject to the reserved rights, as provided herein. The qualities of the Restricted Area preserved by this Restriction will benefit the public, including the limitation on development in such Restricted Area, which will provide relief from the density of industrial, commercial and other uses in the vicinity of the Property.

III. RESERVED RIGHTS, PERMITTED ACTS AND USES, AND PROHIBITED ACTS AND USES:

A. Background.

1. As provided above, the Property is part of the Site, a larger disposal site, as the result of past releases of the Contamination. The Site was listed by MassDEP as a confirmed disposal site pursuant to Chapter 21E and classified as a Tier IA Site (MADEP/RTN: 3-0471), pursuant to the MCP. In April 2006, the Site was listed by the EPA as a federal Superfund Site on the National Priorities List pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §9601 *et. seq.* (“CERCLA”). As of the date of this Restriction, the EPA has primary jurisdiction over response actions conducted at the Site.
2. Olin has performed certain investigations and response actions on the Property and has continued to perform such investigations and response actions on the Property and the Site in accordance with Chapter 21E and/or CERCLA, and other applicable laws, as required by MassDEP and/or EPA, or other cognizant governmental entity.
3. The retention of the following Reserved Rights in this Restriction will facilitate and permit the investigation and remediation of the Contamination at the Site as required by MassDEP and EPA and in accordance with Chapter 21E, CERCLA and other applicable environmental laws, while at the same time limiting industrial, commercial or other development in the Restricted Area.

B. Reserved Rights and Permitted Acts.

1. Notwithstanding anything herein to the contrary, Grantor expressly reserves to itself and its successors and assigns the right to conduct, or permit in, on, over, through and under the Restricted Area, any and all acts as may be required for the performance and/or maintenance of temporary or permanent response actions for the Site, including without limitation, the investigation and/or remediation of soils, sediments and groundwater, the construction or placement of temporary or permanent structures, such as treatment facilities, treatment wetlands, roads, conduits, pipes, monitoring wells, fences or other structures associated with investigation and/or remediation of the Site, and any other activities as may be required by MassDEP and/or EPA in order to implement the investigation and/or remediation of the Site in accordance with applicable law. Grantee hereby agrees that this Restriction is subject to the foregoing Reserved Rights. Grantee further agrees that it shall not interfere with any and all acts by the Grantor, MassDEP and/or EPA as may be required by MassDEP and/or EPA for the performance and/or maintenance of temporary or permanent response actions for the Site. Grantee agrees that it shall not, by virtue of its status as "Grantee", object to the investigation and/or remediation activities required by MassDEP and/or EPA within the Restricted Area or to Grantor's exercise of any of its reserved rights and permitted acts and uses in this Paragraph B.1.

2. Notwithstanding any provisions of Paragraph C of this Section III below, Grantor reserves to itself and its successors and assigns the right to conduct or permit the following activities in, on, over, under and through the Restricted Area, provided that such activities will not be undertaken except upon a determination by MassDEP and/or EPA that such activities shall present no significant risk of harm to health, safety, public welfare or the environment and shall not interfere with the performance of required response actions as have been or may be performed or maintained on the Restricted Area:
 - a. Any activities associated with prudent maintenance of the Restricted Area in its predominately natural, undeveloped condition, including, without limitation, selective pruning and clearing, in accordance with generally accepted forestry management practices, to control or prevent fire or disease or to preserve the present condition of the Restricted Area;
 - b. Erection of signs with respect to hunting, trespass and any limitations relating to public access;
 - c. The maintenance of piles of limbs, brush, leaves and similar biodegradable material originating from the Restricted Area,

provided such piles do not interfere with the purpose of this Restriction;

- d. The placing of fences that do not interfere with the purpose of this Restriction; and
 - e. Measures designed to restore native biotic communities, to control or remove invasive or exotic species, or to maintain or enhance the predominately natural, undeveloped condition of the Restricted Area.
3. All other acts and uses not explicitly prohibited by Paragraph C below are permitted, subject to Section IV (Notice and Approval) below.

C. Prohibited Acts and Uses.

The following acts and uses are prohibited in the Restricted Area, except as otherwise permitted in Paragraph B of this Section III above:

- 1. Construction or placement of any building, tennis court, landing strip, mobile home, swimming pool, fences, asphalt or concrete pavement, sign, billboard or other advertising display, antenna, utility pole, tower, conduit, line or other temporary or permanent structure or facility in, on, under, through or above the Restricted Area, unless such construction or placement is required in connection with response actions pursuant to Paragraph B.1 of Section III;
- 2. Mining, excavation, dredging or removing from the Restricted Area any soil, loam, peat, gravel, sand, rock or other mineral resource or natural deposit except as necessary for proper soil conservation and then only in a manner which does not impair the purposes of the restrictions recited herein;
- 3. Placing, filling, storing or dumping on the Restricted Area of any soil, refuse, trash, vehicle bodies or parts, rubbish, debris, junk, waste or other substance or material whatsoever or installation of underground storage tanks;
- 4. Cutting, removing or otherwise destroying trees, shrubs, grasses or other vegetation;
- 5. Any activities detrimental to wildlife habitat, drainage, flood control, water conservation, water quality, erosion control or soil conservation;
- 6. Engaging in agricultural activity or using the Restricted Area for cultivation of fruits, vegetables or other plants destined for human consumption;

7. Using the groundwater or surface water in the Restricted Area for a private water supply or any other potable or non-potable purpose without prior written approvals from MassDEP, EPA or other cognizant government entity in accordance with the MCP or other applicable laws and the conditions of this Restriction; and
8. Hunting or trapping.

IV. NOTICE AND APPROVAL:

A. Notice of Intention to Undertake Certain Actions.

Grantor agrees to notify Grantee before exercising any right which is permitted under Paragraph B.3 in Section III, but which is not otherwise permitted under Paragraphs B.1-2 in Section III. The purpose of said notification is to afford Grantee an adequate opportunity to monitor the activities in question and to ensure that they are designed and carried out in a manner that is consistent with the purpose of this Restriction. Notices shall be in writing and delivered by hand, or mailed postage prepaid by registered or certified mail return receipt requested, or delivered by a recognized overnight delivery service, not less than forty (40) days prior to the date Grantor intends to undertake the activity in question. Notices shall be effective upon such personal delivery, or if mailed or sent by delivery service upon the date shown on the return receipt. Notices shall describe the nature, scope, design, location, timetable, and any other material aspect of the proposed activity in sufficient detail to permit Grantee to make an informed judgment as to its consistency with the purpose of this Restriction.

B. Grantee's Approval.

Grantee shall grant or deny its approval within thirty (30) days from the effective date of Grantor's notice described in Section IV, Paragraph A above. Approval or denial by Grantee shall be in writing and delivered by hand, or mailed postage prepaid by registered or certified mail return receipt requested, or delivered by a recognized overnight delivery service. Failure of Grantee to respond within said period shall be deemed to constitute approval by Grantee of the request as submitted, so long as the request sets forth the provisions of this paragraph relating to deemed approval after the passage of time. Grantee's approval may be denied only upon a reasonable determination by Grantee that the action as proposed would be inconsistent with the purpose of this Restriction and/or would be inconsistent with those rights reserved under Section III hereof; such determination(s) together with the reasons therefor shall be set forth in the denial notice.

C. Limitation on Grantee's Notice and Approval Rights.

As provided in Paragraph A of this Section IV, Grantee shall have the right to notice of and the right to approve of Grantor's exercise of any right which is permitted under Paragraph B, 3 in Section III, but is not otherwise permitted

under Paragraphs B, 1-2 in Section III. However, nothing in this Section IV shall be construed to require notice to Grantee and/or Grantee's approval of any investigation and/or remediation activities at the Site required by and/or approved by MassDEP and/or EPA or of any reserved rights and permitted acts and uses under Paragraphs B, 1-2 in Section III above.

V. LEGAL REMEDIES OF GRANTEE:

A. Legal and Injunctive Relief.

The rights hereby granted shall include the right to enforce this Restriction by appropriate legal proceedings and to obtain injunctive and other equitable relief against any violations, including, without limitation, relief requiring restoration of the Restricted Area to its condition prior to the time of the injury complained of (it being agreed that Grantee may have no adequate remedy at law), and shall be in addition to, and not in limitation of, any other rights and remedies available to Grantee; provided, however, that Grantee's right to enforce this Restriction shall not apply to required response actions conducted by Grantor or as may be required by MassDEP and/or EPA. Grantor's exercise of any and all of the reserved rights and permitted acts and uses under Paragraph B, 1-2 in Section III above shall not constitute "injury" to the Restricted Area, the Property or the Site.

B. Reimbursement of Costs of Enforcement.

In the event that either party shall be required to engage counsel to enforce its rights hereunder the prevailing party in any action shall be entitled to its reasonable attorneys' fees.

C. Grantee's Disclaimer of Liability.

By its acceptance of this Restriction, Grantee does not undertake any liability or obligation relating to the condition of the Restricted Area, including with respect to compliance with Chapter 21E, CERCLA, or other environmental laws and regulations.

D. Grantor's Rights.

Notwithstanding anything to the contrary provided herein, Grantor shall not have any obligation to maintain the Restricted Area but shall have the right to do so if it so elects.

E. Natural Causes; Emergencies; Response Actions.

Nothing contained in this Restriction shall be construed to entitle Grantee to bring any action against Grantor for any injury to or change in the condition of the Restricted Area resulting (a) from natural causes beyond Grantor's control including, but not limited to fire, floods, storms, earth movement or from any prudent action taken by Grantor under emergency conditions to prevent, abate or

mitigate significant injury to the Restricted Area, and (b) from the exercise of any and all reserved rights and permitted acts and uses under Paragraph B, 1-2 in Section III above.

F. Severability Clause.

If any provision of this Restriction shall to any extent be held invalid, the remainder shall not be affected.

G. Non-Waiver.

Any election by Grantee as to the manner and timing of its right to enforce this Restriction or otherwise exercise its rights hereunder shall not be deemed or construed to be a waiver of such rights.

VI. ACCESS:

The Restriction hereby granted does not grant to Grantee, to the general public, or to any other person any right to enter upon the Restricted Area, except as provided below:

- A. There is granted to Grantee and its representatives the right to enter the Restricted Area by foot, with an escort provided by Olin, at reasonable times after reasonable notice to Olin and in a reasonable manner for the purpose of inspecting the same to determine compliance herewith. Grantee shall be permitted to exercise its right pursuant to this Paragraph A no more than two times per calendar year, except that Grantee may request additional inspections from Olin due to emergency circumstances, and Olin's consent to such inspections shall not be unreasonably withheld. Within five (5) business days after Olin's receipt of Grantee's request for a non-emergency inspection, Olin shall provide an escort and a route of access for Grantee's inspection. Grantee may be restricted from all or portions of the Property and/or the Restricted Area as required in connection with investigation and/or remediation activities as required by MassDEP and/or EPA. At such time that Grantee performs such an inspection, Olin shall provide Grantee with a route of access, by foot only, to the Restricted Area, in order that Grantee perform such inspection and for no other purpose. Grantee shall have no right to designate or to change the route of access to the Restricted Area, as designated by Olin in connection with such inspections.

Olin shall retain its rights and obligations provided in this Paragraph A (including but not limited to the right to provide an escort and to designate the route of such access to Grantee hereunder) so long as Olin exists as a duly organized corporation in the United States. However, that in the event that Olin ceases to have existence as such a corporation, the then holder(s) of title to the Property and/or the Restricted Area shall succeed to such rights and obligations of Olin provided in this Paragraph A, and in such event, Grantee thereafter shall deliver its request for such inspections to the then holder(s) of record of the Property and/or Restricted Area.

- B. There is granted to MassDEP a right of access to enter the Restricted Area for the purpose of performance, or causing or overseeing others to perform and maintain response actions, including without limitation, investigation and remediation activities related to the Site pursuant to Chapter 21E, the MCP and CERCLA. Notwithstanding anything herein to the contrary, Grantor shall also have the right to provide access to enter the Restricted Area to any person or entity for the purpose of performing and maintaining, or causing or overseeing others to perform and maintain, the actions permitted pursuant to Section III, Paragraph B of this Restriction.

VII. EXTINGUISHMENT:

- A. Grantee's Receipt of Restricted Area.

Grantor and Grantee agree that the conveyance of this Restriction gives rise for purposes of this paragraph to a real property right, immediately vested in Grantee, with a fair market value that is at least equal to the proportionate value that this Restriction, determined at the time of the grant, bears to the value of the unrestricted Restricted Area at that time. Notwithstanding the forgoing, Grantee shall not claim any rights or privileges, by virtue of its status as "Grantee", with respect to the investigation and/or remediation activities required by MassDEP and/or EPA within the Restricted Area, nor shall Grantee claim any rights or privileges, by virtue of its status as "Grantee", with respect to the portions of the Property or the Site not within the Restricted Area, except for the access rights provided in Section VI, Paragraph A in so far as such rights may affect the Property.

- B. Value of Grantee's Restricted Area Right.

Such proportionate value of Grantee's property right shall remain constant.

- C. Right of Grantee to Recover Proportional Value at Disposition.

If any occurrence ever gives rise to extinguishment or other release of the Restriction under applicable law, then Grantee, on a subsequent sale, exchange or involuntary conversion of the Restricted Area, shall be entitled to a portion of the proceeds equal to such proportionate value, subject, however, to any applicable law which expressly provides for a different disposition of proceeds.

- D. Grantor/Grantee Cooperation Regarding Public Action.

Whenever all or any part of the Restricted Area or any interest therein is taken by public authority under power of eminent domain or other act of public authority, then Grantor and Grantee shall cooperate in recovering the full value of all direct and consequential damages resulting from such action.

- E. Allocation of Expenses upon Disposition.

All related expenses incurred by Grantor and Grantee shall first be paid out of any recovered proceeds, and the remaining proceeds shall be distributed between Grantor and Grantee in shares equal to such proportionate value.

F. Continuing Trust of Grantee's Share of Proceeds of Restriction Disposition.

Grantee shall use its share of the proceeds in a manner consistent with the purpose of this Restriction.

VIII. ASSIGNABILITY; AMENDMENT:

A. Assignability - Running of the Burden.

The burdens of this Restriction shall run with the Restricted Area in perpetuity, and shall be enforceable against Grantor and its successors and assigns holding any interest in the Restricted Area.

B. Assignability - Running of the Benefit.

The benefits of this Restriction shall be in gross and shall not be assignable by Grantee, except in the following instances and from time to time:

1. The Grantee may assign this Restriction, in whole or in part, to the MassDEP, the EPA or other state or federal agency as may be required by the MassDEP or the EPA, provided the agency to be assigned the Restriction gives its prior written approval of the assignment;
2. As a condition of any assignment, Grantee requires that the purpose of this Restriction continue to be carried out;
3. The assignee, at the time of any assignment, qualifies under Section 170(h) of the Internal Revenue Code of 1986, as amended, and applicable regulations thereunder, and under Section 32 of Chapter 184 of the Massachusetts General Laws as an eligible donee to receive this Restriction directly;
4. If the assignee is a commission, authority or other instrumentality of the Grantee, or a charitable corporation or trust, then assignee, at the time of assignment, shall obtain any approvals as may be required by and comply with any requirements of Sections 31-33 of Chapter 184 of the Massachusetts General Laws; and
5. In the event of any assignment to an entity other than MassDEP or EPA, the Grantee shall deliver prior written notice to MassDEP and EPA of such assignment.

C. Amendment and Subordination.

Grantor and Grantee agree that this Restriction may be amended as required by MassDEP and/or EPA to facilitate the investigation, remediation and maintenance activities or other response actions at the Site; provided that such amendment is not inconsistent with the purpose of this Restriction (including the limitation on development in the Restricted Area). Grantor and Grantee, for themselves and any person holding rights and interests under them pursuant to this Restriction, hereby assent to and this Restriction shall be subject to such institutional controls, including without limitation a grant of environmental restriction, an activity and use limitation or other land use restriction as may be required by MassDEP and/or EPA on the Restricted Area, in connection with the investigation, remediation and long term operation and maintenance of response actions at the Site ("Institutional Controls"); provided, however, that such subordination of this Restriction to such Institutional Controls shall not create any new rights or obligations of Grantor or Grantee pursuant to this Restriction. Grantor and Grantee further agree that each party shall not interfere with and shall fully cooperate with MassDEP and/or EPA in connection with any such amendment to or subordination of this Restriction as may be required by MassDEP and/or EPA. Grantor and Grantee may amend this Restriction after completion of the remediation, provided that such amendment is consistent with the purpose of and the rights reserved under this Restriction, and such amendment is approved by MassDEP and/or EPA.

IX. SUBSEQUENT TRANSFERS:

Grantor agrees to incorporate a reference to this Restriction in any deed or other legal instrument by which it divests itself of any interest in all or a portion of the Restricted Area or the Property, including, without limitation, a leasehold interest. In the event of the transfer of title to the Property and/or the Restricted Area, or any portion thereof, by Grantor, or its successors and assigns, to another person or entity, Olin shall retain (i) its reserved rights to perform and/or maintain required response actions in the Restricted Area, as provided in Section III, Paragraph B.1 of this Restriction, (ii) a right of access to the Restricted Area, and (iii) its rights pursuant to Section VI, Paragraph A. Grantor further agrees to give written notice to Grantee of the transfer of any such interest at least ten (10) days prior to the date of such transfer. Failure of Grantor to do so shall not impair the validity of this Restriction or limit its enforceability in any way.

X. EFFECTIVE DATE:

This Restriction shall be effective when Grantor and Grantee have executed it, and it has been recorded and registered.

XI. RECORDATION:

Within (30) days of its date of execution of this Restriction, Grantor shall record this instrument with the Middlesex North Registry of Deeds and shall file for registration of this instrument with the Land Registration of the Middlesex North Registry District, and Grantor shall submit a certified registry copy of the same to the appropriate headquarters and regional office of MassDEP and EPA and to Grantee within fourteen (14) days of its date of recordation and/or

registration. This instrument is exempt from documentary stamp excise taxes pursuant to Section 1 of Chapter 64D of the Massachusetts General Laws.

XII. TERMINATION OF RIGHTS AND OBLIGATIONS:

Notwithstanding anything to the contrary contained herein, the rights and obligations under this Restriction of any party holding any interest in the Restricted Area terminate upon, and to the extent of, such party's transfer of its interest, except that liability for acts or omissions occurring prior to transfer, and liability for the transfer itself if the transfer is in violation of this Restriction, shall survive the transfer; provided, however, that Grantor shall retain its reserved rights to perform and/or maintain required response actions in the Restricted Area, as provided in Section III, Paragraph B.1 of this Restriction, in the event of the transfer of title to the Property and/or the Restricted Area by Grantor, or its successors and assigns, to another person or entity.

XIII. MISCELLANEOUS:

A. Controlling Law.

The laws of The Commonwealth of Massachusetts shall govern the interpretation and performance of this Restriction.

B. Liberal Construction.

Any general rule of construction to the contrary notwithstanding, this Restriction shall be liberally construed in favor of the grant to affect the purpose of this Restriction, the public policies and purposes of Massachusetts General Laws, Chapter 184, Sections 26 and 31-33 and the policies and purposes of Chapter 21E. If any provision in this instrument is found to be ambiguous, then an interpretation consistent with the purpose of this Restriction and the Reserved Rights under this Restriction that would render the provision valid shall be favored over any interpretation that would render it invalid.

C. Entire Agreement.

This instrument sets forth the entire agreement of the parties with respect to the Restriction and supersedes all prior discussions, negotiations, understandings, or agreements relating to the Restriction, all of which are merged herein.

D. Pre-existing Rights of the Public.

This Restriction shall not be construed as representing the existence or non-existence of any pre-existing rights of the public, if any, in and to the Restricted Area, and any such pre-existing rights of the public, if any, are not affected by the granting of this Restriction.

E. Captions.

The captions in this instrument have been inserted solely for convenience of reference and are not a part of this instrument and shall have no effect upon construction or interpretation.

F. Compliance with Applicable Law.

The exercise of any right reserved under this Restriction by Grantor or its successors and assigns shall be in compliance with the then-current Zoning By-Law of the Town of Wilmington, the state Wetlands Protection Act (Massachusetts General Laws, Chapter 131, Section 40, as amended) and all other applicable federal, state, and local laws.

G. Notices.

Any notice, demand, request, consent, approval, or communication that either party desires or is required to give to the other shall be in writing and either served personally or sent by recognized overnight courier or by first class certified mail, postage prepaid, return receipt requested, addressed as follows:

To Grantor: Olin Corporation
1186 Lower River Road
Charleston, TN 37310
Attn: Mr. Curtis M. Richards

With a copy to: Foley Hoag LLP
Seaport World Trade Center West
155 Seaport Boulevard
Boston, MA 02210
Attn: Laurie Burt, Esq.

To Grantee: The Town of Wilmington
Conservation Commission
121 Glen Road
Wilmington, MA 01887
Attn: _____

With a copy to: Town of Wilmington
Board of Selectmen
121 Glen Road
Wilmington, MA 01887
Attn: _____

And Deutsch Williams et al., P.C.
99 Summer Street
Boston, MA 02110
Attn: Paul R. DeRensis, Esq.

To MassDEP: Massachusetts Department of Environmental
Protection
Northeast Regional Office
206A Lowell Street
Wilmington, MA 01887

To EPA: United States Environmental Protection Agency
Region I New England
One Congress Street, Suite 1100
Boston, MA 02114-2023
Attn: Wesley Kelman, Esq.

or to such other addresses as the parties may give the other, from time to time, by written notice.

H. Rights under Law.

Except as provided herein, this Restriction is not intended to expand or limit the rights that the Town of Wilmington otherwise has under applicable federal, state, and local laws.

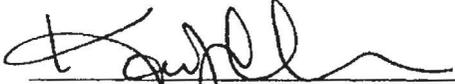
I. Status of Prior Declaration.

The Grantor had previously declared and imposed upon the Property a restrictive covenant, entitled "Declaration of Restrictive Covenant", for the benefit of the Grantor and its successors in interest to the Property and any portion thereof which includes the Restricted Area (the "Declaration"), which Declaration was recorded with the Middlesex North Registry of Deeds in Book 17927, Page 162 and filed as Document No. 227718 in the Middlesex North Registry District of the Land Court. Simultaneously with the recording of this Restriction, Grantor will record and register a Release of the Declaration.

[The remainder of this page is left intentionally blank]

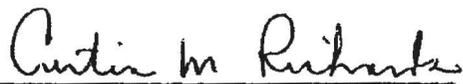
Executed under seal this 31st day of October, 2006.

WITNESSES:


Print Name: Karen L. Crocker

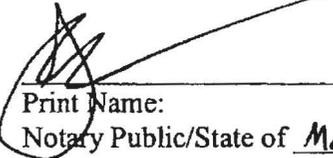
Print Name: GARLAND B. WILLIAMS

OLIN CORPORATION

By: 
Print Name: CURTIS M. RICHARDS
Its: VP- EH+S
Duly Authorized

STATE OF Massachusetts)
COUNTY OF Suffolk)

On this 27th day of September, 2006, before me, the undersigned, a notary public of the State of Massachusetts, duly commissioned and sworn, personally appeared Curtis M. Richards, personally known to me, as VP- EH+S of **OLIN CORPORATION**, signer and sealer of the foregoing instrument, and acknowledged the execution of the foregoing instrument to be his free act and deed as such VP- EH+S, and the free act and deed of Olin Corporation.

 [SEAL]
Print Name: _____
Notary Public/State of Massachusetts
My Commission Expires: May 15, 2009

 SHERYL A. HOWARD
Notary Public
Commonwealth of Massachusetts
My Commission Expires
May 15, 2009

Doc 00240947

MIDDLESEX NORTH LAND COURT

REGISTRY DISTRICT

RECEIVED FOR REGISTRATION

On: Nov 07 2006 at 12:02P

Document Fee 75.00 Rec Total \$375.00

NOTED ON: CERT 33902 BK 00172 PG 215

11-07-06
I HEREBY ATTEST AND CERTIFY ON THIS DATE THAT THE FOREGOING DOCUMENT IS A TRUE AND CORRECT COPY OF THE ORIGINAL AS FILED IN MY OFFICE AND IN MY LEGAL CUSTODY

RICHARD P. HOWE JR.
ASST. RECORDER
LAND COURT

BY: *Richard P. Howe Jr.*

Doc 00240947

MIDDLESEX NORTH LAND COURT
REGISTRY DISTRICT
RECEIVED FOR REGISTRATION

On: Nov 07, 2006 at 12:02P

Document Fee 75.00 Rec Total \$375.00

NOTED DN: CERT 33908 BK 00172 PG 215

I HEREBY ATTEST AND CERTIFY THAT THE FOREGOING IS A TRUE AND CORRECT COPY OF THE ORIGINAL OFFICE AND IN MY LEGAL CUSTODY
11-0706

RICHARD P. HOWE JR
ASST. RECORDER
LAND COURT

BY: *Richard P. Howe Jr.*

APPROVAL OF SELECTMEN

We, the undersigned, being a majority of the Board of Selectmen of the Town of
Wilmington, Massachusetts, hereby certify that at a meeting duly held on October 10
 , 2006, the Selectmen voted to approve acquisition by the Town of Wilmington
Conservation Commission of the foregoing Environmental and Open Space Restriction pursuant
to Massachusetts General Laws, Chapter 40, Section 8C.

BOARD OF SELECTMEN

[Signature]

[Signature]
[Signature]
[Signature]

COMMONWEALTH OF MASSACHUSETTS,
Middlesex County

On this 10 day of October, 2006, before me, the undersigned Notary Public, personally appeared
the above-named Raymond N. Lepore, Michael J. Newhouse, Charles R. Fiore, Jr, & Suzanne M.
Sullivan, proved to me by satisfactory evidence of identification, being [(check whichever applies): driver's
license or other state or federal governmental document bearing a photographic image, oath or
affirmation of a credible witness known to me who knows the above signatory, or my own personal
knowledge of the identity of the signatory,] to be the person whose name is signed above, and
acknowledged the foregoing to be signed by him/her voluntarily for its stated purpose.

[Signature]
Print Name: Beverly J. Dalton
Notary Public
My Commission Expires: September 26, 2008

EXHIBIT A

PARCEL A

A certain parcel of land situated in Wilmington, County of Middlesex, Massachusetts situated on the southerly side of Eames Street being comprised of several parcels of registered and unregistered land as shown on a plan entitled "Plan of Land in Wilmington, Mass.," dated July 9, 1980 by Dana F. Perkins & Assoc., Inc., being further bounded and described as follows:

Beginning at the most northerly point of the parcel herein described at a point on the southerly sideline of Eames Street and the westerly sideline of the land now or formerly of the Boston & Main Railroad as shown on said plan; thence running

Along the easterly sideline of the land now or formerly of the Boston & Maine Railroad by the following six (6) courses, S 37° 51' 09" E 285.43 feet by the remains of a stone wall, S 81° 51' 09" E 26.99 feet, S 37° 51' 09" E 389.00 feet, S 33° 49' 53" E 843.72 feet, 31.55 feet on a curve to the right having a radius of 5958.75 feet, and S 15° 51' 29" W 95.69 feet to a point at the land now or formerly of New England Resins & Pigments Corp.; thence

Along the land now or formerly of said New England Resins & Pigments Corp., S 10° 09' 31" E 832.50 feet to a point on the line between the City of Woburn and the Town of Wilmington; thence

By the town line along said land now or formerly of New England Resins & Pigments Corp., owners unknown and the City of Woburn, S 60° 32' 25" W 1048.38 feet to a point on the easterly sideline of other land now or formerly of the Boston & Main Railroad as shown on said plan;

Northerly along the easterly sideline of said land now or formerly of the Boston & Maine Railroad by the following two (2) courses, 510.21 feet on a curve line to the left having a radius of 1951.10 feet, and N 14° 48' 27" W 1938.47 feet to a point on the southerly sideline of Eames Street; thence

Along the southerly sideline of Eames Street by the following three (3) courses N, 58° 11' 02" E 317.36 feet, 112.20 and N 43° 14' 02" E 103.11 feet to a point on the westerly sideline of said land now or formerly of the Boston & Maine Railroad and the point of beginning.

The above described parcel of land contains 49.2 acres, more or less and includes within it the following described parcel of registered land:

PARCEL B

That certain parcel of registered land situated in Wilmington, in the County of Middlesex and the Commonwealth of Massachusetts, bounded and described as follows

Northwesterly: by Eames Street, four hundred forty-three and 74/100 (443.74) feet;

- Northeasterly: two hundred eighty-five and 43/100 (285.43) feet;
- Northerly: twenty-six and 99/100 (26.99) feet, and
- Northeasterly: ten hundred thirteen and 4/100 (1,013.04) feet, by land now or formerly of the Boston and Main Railroad;
- Easterly: by lands now or formerly of Consolidated Chemical Industries and of Merrimac Chemical Co., nine hundred seventeen and 21/100 (917.21) feet;
- Southeasterly: by Phelps Street, five hundred twenty-two and 43/100 (522.43) feet;
- Southwesterly: by Wilmington Avenue, two hundred forty-five (245) feet;
- Southeasterly: by the end of said Wilmington Avenue, by land now or formerly of Ann Russo and by the end of Linwood Avenue, two hundred twenty (220) feet;
- Northeasterly: by said Linwood Avenue, seventy (70) feet;
- Northwesterly: by a line crossing Linwood Avenue and by said Anna Russo land, one hundred ten (110) feet;
- Southwesterly: thirty-five (35) feet, and
- Northwesterly: seventy (70) feet, by said Anna Russo land;
- Northeasterly: by said Wilmington Avenue, thirty-five (35) feet;
- Southeasterly: seventy (70) feet
- Northeasterly: one hundred five (105) feet, and
- Northwesterly: seventy (70) feet by other land now or formerly of Anna Russo;
- Northeasterly: by said Wilmington Avenue, seventy (70) feet;
- Southeasterly: by said Phelps Street, three hundred twenty (320) feet, and
- Southwesterly: by Longwood Avenue, nineteen hundred sixty-nine and 81/100 (1,969.81) feet.

All of said boundaries are determined by the Land Court to be located as shown on plan 27579-A, which is filed with Certificate of Title 11786, the same being compiled from a plan drawn by Emmons & Fleming, Surveyors, dated April 17, 1957, and additional data on file in the Land Registration Office, all as modified and approved by the Court, and said land is shown as

Lot one (1) and two (2) on said plan.

So much of said Lot 2 as is included within the limits of said Phelps Street, Linwood Avenue and Longwood Avenue is subject to the rights of all persons lawfully entitled thereto in and over the same.

So much of the land hereby registered as is located within the limits of said Wilmington Avenue is subject to the rights of all persons lawfully entitled thereto in and over the same.

So much of said Lot 2 as is included within the limits of the ditches, shown on said plan, is subject to such rights as may exist at the time of original decree.

For title of the grantor to said registered land see Middlesex County Northern District Land Court Transfer Certificate of Title No. 24003; for title to said unregistered land see deed of Stepan Chemical Company dated September 12, 1980 and recorded with Middlesex North District Registry of Deeds in Book 2438 at page 105.

PARCEL C

That certain land in Wilmington, Middlesex County, Massachusetts, being shown as Lots "A", "B", "C", "D" and "E" on a plan entitled, "Plan of Land in Wilmington, Mass., Scale 1"=60', March 31, 1981, Dana F. Perkins and Assoc., Inc., Civil Engineers and Surveyors, Reading-Lowell, Mass.", and bounded and described according to said plan as follows:

LOT A

SOUTHERLY: by land now or formerly of Olin Corporation 45.42 feet;

EASTERLY: by Longwood Avenue 105.00 feet;

NORTHERLY: by land now or formerly of Anna Russo 45.00 feet;

WESTERLY: by land now or formerly of Boston and Main Railroad 105.00 feet.

containing 4,731 square feet of land according to said plan.

LOT B

SOUTHERLY: by land now or formerly of Olin Corporation 45.00 feet;

EASTERLY: by Longwood Avenue 910.00 feet;

NORTHERLY: by land now or formerly of Harry L. Marshall 45.00 feet;

WESTERLY: by land now or formerly of Boston and Main Railroad 910.00 feet, containing 40,950 square feet of land according to said plan.

LOT C

SOUTHERLY: by land now or formerly of Harry L. Marshall 45.00 feet;
EASTERLY: by Longwood Avenue 105.00 feet;
NORTHERLY: by land now or formerly of Olin Corporation 45.00 feet;
WESTERLY: by land now or formerly of Boston and Maine Railroad 105.00 feet.

Containing 4,725 square feet of land according to said plan.

LOT D

SOUTHERLY: by land now or formerly of Olin Corporation 45.00 feet;
EASTERLY: by Longwood Avenue 35.00 feet;
NORTHERLY: by land now or formerly of Olin Corporation 45.00 feet;
WESTERLY: by land now or formerly of Boston and Main Railroad 35.00 feet.

Containing 1,575 square feet of land according to said plan.

LOT E

SOUTHERLY: by land now or formerly of Olin Corporation 45.00 feet;
EASTERLY: by Longwood Avenue 105.00 feet;
NORTHERLY: by land now or formerly of National Polychemicals, Inc. 45.00 feet;
WESTERLY: by land of Boston and Maine Railroad 105.00 feet.

Containing 4,725 square feet of land according to said plan.

Together with all the right, title and interest of the Grantor in and to the lot labeled "21" and "Harry L. Marshall" on said plan, being the lot located between the aforesaid Lot B and Lot C.

Together also with all right, title and interest of the Grantor in and to Longwood Avenue as shown on said plan.

For title reference see Deed of Nicholas Triantos and Louis G. Manolis a/k/a Louis Manolis dated April 2, 1981 and recorded with Middlesex North District Registry of Deeds in Book 2471 at page 680.

Said Property being the same as that conveyed to Olin Corporation by quitclaim deeds (a) from Stepan Chemical Company, dated September 12, 1980 and recorded with the Middlesex North District Registry of Deeds on September 15, 1980 in Book 2438 at Page 105; (b) Middlesex County Northern District Land Court Transfer Certificate of Title No. 24003, dated September 15, 1980, evidencing the transfer of the registered land to Olin Corporation; and (c) from Nicholas Triantos and Louis G. Manolis a/k/a/ Louis Manolis, dated April 2, 1981 and recorded with Middlesex North District Registry of Deeds on April 3, 1981 in Book 2471 at page 680. For Grantor's title, see also (i) Quitclaim Deed from Olin Corporation to Olin Chemicals and Chlor Alkali, Inc., dated August 7, 1998, which deed was recorded with the Middlesex North District Registry of Deeds on October 6, 1998 in Book 9608, Page 34 and filed with the Middlesex North Registry District of the Land Court as Document 178754, and (ii) the Certificate of Merger merging Olin Chemicals and Chlor Alkali, Inc. into Olin Corporation, recorded with the Middlesex North District Registry of Deeds on February 16, 1999 in Book 9943, Page 58 and filed with the Middlesex North Registry District of the Land Court as Documents 181625 and 181626.

The Restriction is granted subject to all restrictions, agreements, encumbrances and other matters of record, as of the date hereof.

EXHIBIT B

PERIMETER OF THE PORTION OF THE OLIN PROPERTY SUBJECT TO ENVIRONMENTAL AND OPEN SPACE RESTRICTION

A certain parcel of land, situated in the Town of Wilmington, Middlesex County, Massachusetts, being shown as "Area Subject to Environmental and Open Space Restriction" on a plan prepared by Dana F. Perkins, inc., Consulting Engineers & Land Surveyors, Tewksbury, MA, entitled "ALTA/ACSM, Perimeter Survey, Eames Street, Wilmington, MA", dated July 10, 2006, attached hereto. Said Parcel being further bounded and described as follows:

Beginning at a point at the south east corner of said parcel at land now or formerly of the City of Woburn;

thence by land of said City of Woburn S60°32'25"W a distance of 1048.88' to a point at land now or formerly of the Boston & Maine Railroad(B&M);

thence by land of said B&M in two courses as follows:

by a curved line to the left having a length of 510.21' and a radius of 1951.10' to a point, N14°48'27"W a distance of 64.67' to a point at land now or formerly of the Town of Wilmington;

thence by land of said Town of Wilmington in three courses as follows:

N75°11'33"E a distance of 45.00' to a point;

N14°48'27"W a distance of 105.00' to a point;

S75°11'33"W a distance of 45.00' to a point at land of said B&M;

thence by land of said B&M N14°48'27"W a distance of 433.78' to a point within the South Ditch;

thence within said South Ditch in fourteen courses as follows:

N73°07'57"E a distance of 126.75' to a point;

S70°36'20"E a distance of 63.93' to a point;

S69°59'10"E a distance of 87.77' to a point;

N84°23'28"E a distance of 54.65' to a point;

N48°56'06"E a distance of 66.54' to a point;

N38°01'29"E a distance of 171.32' to a point;

N60°43'30"E a distance of 16.66' to a point;

S83°42'08"E a distance of 122.87' to a point;

S79°04'24"E a distance of 63.55' to a point;

N72°20'33"E a distance of 76.07' to a point;

S71°47'02"E a distance of 84.11' to a point;

S53°24'27"E a distance of 125.41' to a point;

S72°19'32"E a distance of 50.39' to a point;

N86°29'36"E a distance of 44.51' to a point at land now or formerly of New England Resins & Pigments Corp.;

thence by land of said New England Resins & Pigments Corp.

S10°09'31"E a distance of 643.85' to a point and the point of beginning.

Said parcel described above containing 20 acres more or less.

Said parcel being a portion of the Property conveyed to Olin Corporation by (a) quitclaim deed from Stepan Chemical Company, dated September 12, 1980 and recorded with the Middlesex North District Registry of Deeds on September 15, 1980 in Book 2438 at Page 105; (b) Middlesex County Northern District Land Court Transfer Certificate of Title No. 24003, dated September 15, 1980, evidencing the transfer of the registered land to Olin Corporation; and (c) quitclaim deed from Nicholas Triantos and Louis G. Manolis a/k/a/ Louis Manolis, dated April 2, 1981 and recorded with Middlesex North District Registry of Deeds on April 3, 1981 in Book 2471 at Page 680.

Doc 00240947

MIDDLESEX NORTH LAND COURT

REGISTRY DISTRICT

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Richard P. Howe Jr.

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Richard P. Howe Jr.

Please Return to:
ATTN: Maureen A. - 11th FL.
Foley Hoag LLP
155 Seaport Blvd.
Boston, MA 02210

ATTACHMENT 3

6.0 BASELINE HUMAN HEALTH RISK ASSESSMENT

The BHHRA has been developed for OU1 and OU2, which Olin and USEPA have agreed to address in this combined RI Report. The BHHRA is contained in **Appendix M** and the sections below are a summary of the BHHRA.

OU1 is defined in the SOW as the approximately 50-acre Olin Property (hereafter, the "Olin Property" or "Property"), including the former facility area, the established conservation area, the on-Property ditch system, the calcium sulfate landfill, and the slurry wall/containment area. The evaluation of OU1 includes soil and On-Property surface water and sediment. OU2 is defined as off-Property surface water and sediment areas, including, at a minimum, the off-Property East Ditch, South Ditch and West Ditch.

The objective of the BHHRA is to characterize health risks to human populations that are assumed to be potentially exposed to COIs associated with historical operations at the Property under the current and foreseeable future uses of the Site, in the absence of any additional remedial measures. COIs are chemicals that have been associated with the former facility (as a raw material, product, or a constituent of waste streams or accidental releases) and that have been released to one or more environmental media. The results of the BHHRA will be considered with other regulatory and technical information, to evaluate the need for remedial action at OU1 and OU2, and if remedial action is required, to develop and evaluate remedial alternatives.

The AOC and SOW were developed per the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The applicable regulatory requirement is the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300.

A complete list of regulation, guidance and policy documents that have been relied upon to complete the BHHRA is included in **Appendix M**. Specifically, the BHHRA is performed using USEPA CERCLA guidance for risk assessment.

The BHHRA is completed using a four-step process, consistent with the framework for risk assessment described in RAGS (USEPA, 1989). The four steps include Data Evaluation (sometimes also referred to as Hazard Identification), Exposure Assessment, Toxicity Assessment, and Risk Characterization.

6.1 Human Health Risk Conceptual Site Model

A CSM describes sources of releases to the environment, release mechanisms, the receiving media, the migration pathways through which COIs that were released to the environment have been and may continue to be transported and/or trans-located from source or release areas to other environmental media (secondary receiving media) where possible human and environmental exposure may occur. The physical CSM for OU1 and OU2 (sources, migration pathways, receiving media) is described in detail in Section 5.0 and potential human receptors have also been identified. The potential human receptors and exposure pathways are discussed below in the context of the physical CSM.

For the purposes of this BHHRA, it is assumed the northern portion of the Property will remain in industrial/commercial use, and an institutional control prohibits more sensitive land uses. Some portions of the Property have no active use, and it is expected that in the future, some areas will continue to have no active use. Approximately 20 acres of the Property, located to

the south of the South Ditch, is subject to a conservation restriction. Therefore, no development or active or passive recreational use is allowed for that portion of the Property. Other portions of the Property include resource areas and associated buffer zones at which construction, development, and active uses are not expected (but are none-the-less evaluated). Given that information and working assumptions, the following human receptors are considered for this BHHRA for OU1 and OU2.

- Current and future land use – indoor and outdoor industrial/commercial workers (adults)
- Future land use – construction (including excavation) workers (adults)
- Current and future land use – trespassers (adolescents and adults)

An exposure pathway is the course a chemical takes from its source to the person being contacted. Exposure pathway analysis links the sources, locations, and types of environmental releases with population locations and activity patterns to determine the significant pathways of human exposure. Exposure pathways generally consist of four elements: (1) a source and mechanism of chemical release, (2) a retention or transport medium, (3) a point of potential human contact with the contaminated medium (known as the exposure point), and (4) an exposure route at the contact point (e.g., ingestion of soil, inhalation of vapors) (USEPA, 1989). For the exposure pathway to be considered potentially complete, all four elements must be present.

An exposure point (also called an exposure area or exposure unit) is a location within which an exposed receptor may reasonably be assumed to move at random and where contact with an environmental medium (e.g., soil) is equally likely at all sub-locations. In addition to the behavior of receptors, the existing pattern of chemical constituents in environmental media is also considered in identifying exposure areas. The identified current and future receptors, the assumption of random exposure within an exposure area, and the nature and extent of contamination have been considered in identifying exposure areas for the BHHRA. Important factors in identifying the exposure areas at OU1 and OU2 include the current and anticipated future uses of the various areas of these operable units. Therefore, the BHHRA exposure areas for OU1 and OU2 reflect current and future receptors and the current and future uses of the various areas (considering resource areas and associated buffer zones as potential determinants of future land use as well as the institutional control that will maintain the northern portion of the Property as an industrial/commercial property).

Environmental media evaluated quantitatively for OU1 and OU2 in this BHHRA (exposure media) include surface soil (and airborne dust), subsurface soil (and airborne dust), surface water and sediment. Potential outdoor air (potential vapors released from soil during future excavation activities) and indoor air (potential vapor intrusion of VOCs in soils) exposures have been evaluated qualitatively.

Exposure routes are the mechanisms by which people are exposed to environmental media. Exposure routes that are typically evaluated in environmental risk assessments include ingestion of the environmental medium, skin (dermal) contact with the environmental medium, and inhalation of outdoor or indoor air.

The exposure pathways associated with Site-wide groundwater will be evaluated in the RI/FS for OU3. There is currently no use of groundwater for any purpose at the Property.

The CSM for the BHHRA is presented graphically in **Figure 6.1-1**. **Table 6.1-1** provides a summary of the receptors and exposure scenarios for OU1 and **Table 6.1-2** provides a

summary of the receptors and exposure scenarios for OU2 evaluated in the BHHRA. **Figure 6.1-2** presented the exposure areas for the BHHRA.

6.2 Hazard Identification

The hazard identification includes the evaluation, selection, and summarization of analytical data for the BHHRA and the selection of Chemicals of Potential Concern (COPCs). These two activities are described below.

6.2.1 Data Evaluation

The entire body of available medium-specific analytical laboratory data for soil, surface water, and sediment for OU1 and OU2 have been evaluated to determine the subsets of data that are appropriate to characterize human health risks for current and foreseeable future land uses and site conditions for OU1 and OU2.

The laboratory analyses associated with historical and RI investigation activities (beginning in 2009), periodic monitoring, and response actions have been conducted using USEPA published and approved laboratory analytical methods (if available). The investigations, monitoring programs, and response action sampling and analysis programs have incorporated Quality Assurance/Quality Control (QA/QC) samples and associated procedures, and the historical analytical data and all of the RI analytical data have undergone data validation as described for historical data in the 2007 Draft Focused RI (MACTEC, 2007) and for RI activities in the 2009 Quality Assurance Project Plan (QAPP) (MACTEC, 2009d), and **Appendix E**. The available analytical data overall are suitable for use in the BHHRA.

Some of the analytical data were not selected for use in the BHHRA. Those data were not selected because they are no longer representative of site conditions (they represent pre-remedial conditions or the medium (soil or sediment) that was sampled has been excavated and is no longer present or because there are elevated reporting limits for non-detects for certain samples that are not suitable for use in the BHHRA. **Appendix M, Attachment 1** documents the selection of data for use in the BHHRA.

Based on the preliminary evaluation of potential human exposure, **Tables 6.1-1** and **6.1-2** (summary of receptors and exposure pathways) and **Figure 6.1-1** (human health risk assessment CSM) provide the framework for evaluating data to be used in the BHHRA and for making decisions about grouping of the analytical data. **Figure 6.1-2** identifies the exposure areas, the soil background area, and other features (such as the Calcium Sulfate Landfill [CSL] which are not evaluated in the BHHRA).

The exposure areas have been identified based on the current and foreseeable future land uses and activities (considering the deed restriction (Notice and Declaration of Restrictive Covenant) for the entire 51 Eames Street Property and the Environmental and Open Space Restriction (Environmental Restriction) for the southern portion of the Property), physical configuration of OU1 and OU2, degree of development, the presence and location of environmental resource areas (wetlands and buffer zones), spatial coverage of environmental sampling, and the distribution of contaminant concentrations in soil.

The exposure areas for OU1 have been identified as EA1, EA2, EA3, EA4, EA6, EA7, the Containment Area, South Ditch, on-PWD, Stormwater Detention Basin, and Central Pond. The exposure areas for OU2 have been identified as EA5, Off-PWD, East Ditch, MMBW, and North Pond. As discussed in Section 4, impact to MMBW surface water and sediment are negligible

but this area is evaluated in the BHHRA. As discussed in Section 4, Landfill Brook is impacted by the WSL. Landfill Brook is not impacted by COIs released from OU1. Therefore, Landfill Brook has been evaluated, at the request of USEPA, only through COPC selection step of the BHHRA.

All of the analytical data selected for use in the BHHRA are included in **Appendix M, Attachment 2**. The analytical data have been grouped and summarized to support the selection of COPCs.

6.2.2 COPC Selection

The chemicals considered to be likely to pose more than a *de minimis* level of risk are identified, and subsequently included in the quantitative BHHRA. The COPCs are selected by reducing the number of chemicals to be considered by applying a concentration/toxicity screen and by eliminating essential nutrients. The procedure used to select COPCs for the BHHRA is summarized as follows, and the risk-based screening step is consistent with *USEPA Region I Risk Update Number 3* (USEPA, 1995).

- Concentration-Toxicity Screening
- Selected as a COPC in soil if the maximum detected concentration is greater than the USEPA RSL (adjusted) for industrial soils (USEPA, 2013a).
- Selected as a COPC in surface water if the maximum detected concentration is greater than the Ambient Water Quality Criteria (AWQC) for consumption of organisms only (USEPA, 2009) or the USEPA RSL (adjusted) for tap water (USEPA, 2013a).
- Selected as a COPC in sediment if the maximum detected concentration is greater than the USEPA RSL (adjusted) for industrial soils (USEPA, 2013a).

Chemicals for which no screening value is available are retained as COPCs unless they are essential nutrients.

The risk assessment dataset derived through the data evaluation process as described in **Appendix M** was utilized to produce subsets of data to be used for selecting COPCs for surface soil (all of OU1 and OU2, excluding the background data), shallow subsurface soil (all of OU1 and OU2), surface water (combined data set including: South Ditch, Central Pond, Detention Basin, East Ditch, Off-PWD, MMBW, and North Pond - Landfill Brook is evaluated separately.), and sediment (combined data set including: On-PWD/West Ditch Wetland, South Ditch, Central Pond, Detention Basin, East Ditch, Off-PWD, MMBW, and North Pond - Landfill Brook is evaluated separately). COPCs were selected Site-wide for surface and subsurface soil because the source of contamination for each exposure area is similar, and the COPC screening is based on the maximum detected concentration of each analyte (using site-wide data is a conservative, health-protective approach). COPCs were selected for Landfill Brook surface water and sediment separately because this area is not impacted by COIs that were released from OU1. Low frequency of detection (less than 5%) is typically used to eliminate COPCs. Low frequency of detection was not used in this BHHRA because COPCs were selected Site-wide, and using that criterion might mask a higher frequency in one portion of the Site.

Table 6.2-1 identifies the selected COPCs for surface soil, subsurface soil, surface water, and sediment.

As shown in **Appendix M**, COPCs selected in Landfill Brook surface water and sediments are not COIs. COPCs selected in surface water and sediment are mostly PAHs and metals which

would appear to be related to storm water runoff from surrounding developed areas. As discussed in Section 4.2.3.4.1, surface water quality within Landfill Brook is affected by groundwater discharge from the WSL and possibly other sources in the area. Since COPCs in surface water and sediment are not COIs and surface water quality is affected by other sources, Landfill Brook is not evaluated any further in the BHHRA.

6.3 Exposure Assessment

For OU1 and OU2, the exposure media evaluated quantitatively in the BHHRA include surface and subsurface soil, surface water, and sediments. The vapor intrusion pathway is addressed qualitatively. In the OU3 RI report, the groundwater-related vapor intrusion pathway will be evaluated quantitatively.

Based on the current and assumed future land uses for the EAs, receptors evaluated include:

Current Land Use – OU1

- Outdoor Worker – Surface Soil at EA1, EA2, EA3, EA6, and EA7
- Trespasser – Surface Soil at EA1, EA2, EA3, EA4, EA6, and EA7
- Trespasser – Surface Water at South Ditch, Central Pond and Stormwater Detention Basin
- Trespasser – Sediment at on-PWD, South Ditch, Central Pond and Stormwater Detention Basin

Current Land Use – OU2

- Trespasser – Surface Soil at EA5
- Trespasser – Surface Water at EA5, Off-PWD, East Ditch, MMBW, and North Pond
- Trespasser – Sediment at EA5, Off-PWD, East Ditch, MMBW and North Pond

Future Land Use – OU1

- Indoor Worker – Surface Soil at EA1, EA3 and EA7
- Indoor Worker – Subsurface Soil at EA1, EA3 and EA7
- Outdoor Worker – Surface Soil at EA1, EA2, EA3, EA6, EA7, and Containment Area
- Outdoor Worker – Subsurface Soil at EA1, EA3, and EA7
- Construction Worker – Surface Soil at EA1, EA2, EA3, EA6, and EA7
- Construction Worker – Subsurface Soil at EA1, EA3, and EA7
- Trespasser – Surface Soil at EA1, EA2, EA3, EA4, EA6, EA7, and Containment Area
- Trespasser – Subsurface Soil at EA1, EA3, and EA7
- Trespasser – Surface Water at South Ditch, Central Pond and Stormwater Detention Basin
- Trespasser – Sediment at on-PWD, South Ditch, Central Pond and Stormwater Detention Basin

Future Land Use – OU2

- Outdoor Worker – Surface Soil at EA5
- Construction Worker – Surface Soil at EA5
- Trespasser – Surface Soil at EA5

- Trespasser – Surface Water at EA5, Off-PWD, East Ditch, Maple Meadow Brook, and North Pond
- Trespasser – Sediment at EA5, Off-PWD, East Ditch, Maple Meadow Brook, and North Pond

The current land use at the Property has been described in detail in Section 1.3. The exposure setting and exposure pathways (including exposure media, receptors, exposure areas, and exposure routes) have previously been identified in **Tables 6.1-1** and **6.1-2**, and in **Figures 6.1-1** and **6.1-2**.

In accordance with USEPA guidance, Reasonable Maximum Exposure (RME) EPCs for surface soil, shallow subsurface soil, surface water, and sediment are based on the lesser of the 95 percent UCL on the arithmetic mean concentration (95% UCL value) or the maximum detected concentration in the data set (USEPA, 2002b).

The 95% UCL values are calculated using the ProUCL software (Version 5.0.00, USEPA, 2013b). The ProUCL software performs a goodness-of-fit test for data sets with or without non-detects to identify the distribution type for the data set (e.g., normal, lognormal, gamma, or non-discernable), and then calculates a conservative and stable 95 percent UCL value in accordance with the framework described in "Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites" (USEPA, 2002b). The software includes numerous algorithms for calculating 95% UCL values, and provides a recommended UCL value based on the algorithm that is most applicable to the statistical nature of the data set.

Exposures (average daily doses or average air concentrations) to COPCs are quantified by using numerical parameters that include ingestion rates, dermal contact areas, body weights, exposure times, exposure frequencies, and exposure durations. These parameters and the sources of their values are documented in **Appendix M**. The specific numerical values for each of these parameters are selected in consideration of the receptor activities and ages that the exposure scenarios are modeling, and are generally selected as the upper-end (generally 95th percentile) values for each quantitative parameter. Using receptor scenarios that are protective for all potentially exposed populations associated with a given land use, with numerical parameters that are generally based on the upper-end distributions, results in exposure scenarios are referred to as the RME. Exposure parameters are developed from USEPA Region I and USEPA national guidance (USEPA, 2002a; 2004; 2011).

6.4 Toxicity Assessment

The objective of the toxicity assessment is to identify potential health impacts of COPCs and to quantify the relationship between the intake, or dose, of COPCs and the likelihood of adverse health effects associated with exposure to the COPCs.

The BHHRA evaluates the potential for both carcinogenic (cancer) and non-carcinogenic health effects. Non-carcinogenic health effects refer to toxicological effects other than cancer, such as toxicity to the liver, skin, or central nervous system. Following USEPA guidance (USEPA, 1989), both non-carcinogenic and carcinogenic are evaluated separately.

Toxicity values used for evaluating health risks include cancer slope factors (CSFs) and UR values for carcinogens; and Reference Doses (RfDs) and Reference Concentrations (RfCs) for non-carcinogens. Because the potential for toxicity and/or carcinogenicity can depend on the route of exposure (i.e., oral or inhalation), unique dose-response values have been developed for the oral, dermal, and inhalation exposure routes.

The following hierarchy of sources for dose-response values for CERCLA sites (USEPA, 2003) has been utilized in identifying dose-response values for this BHHRA.

- Tier 1 – Integrated Risk Information System (<http://www.epa.gov/iris/>).
- Tier 2 - National Center for Environmental Assessment (NCEA) provisional peer reviewed toxicity values (PPRTVs) (<http://hhpprtv.ornl.gov/>).
- Tier 3 - Other Toxicity Values:
 - California Environmental Protection Agency (CALEPA) toxicity values (CALEPA, 2009).
 - Agency for Toxic Substances and Disease Registry (ATSDR) Minimal Risk Levels (MRLs) (ATSDR, 2009)
 - Toxicity values remaining in current versions of HEAST.
 - For the TMP compounds, toxicity values were not available from the sources identified above. Therefore, an ingestion RfD and an inhalation RfC have been derived for these compounds. The derivation of these values is documented in **Appendix M**.

The toxicity values utilized in the BHHRA are summarized in tabular form in Appendix M and toxicological profiles for each of the COPCs are provided in Appendix M, Attachment 10.

There are numerous detected parameters that were selected as COPCs because there were no RSLs available. For most of those COPCs, there are no readily available published toxicity values from Tier I, II, or III data sources. Those COPCs include, but are not limited to, ammonia, sulfate, bromide (detected in surface water only), chloride, nitrate, urea, nonylphenol (detected in surface water only), diphenylether, and diphenylmethanone (detected in surface water and sediment only). Since the lack of toxicity values prevents calculation of risks the BHHRA underestimates risk for those parameters. However, the underestimation of risk for these parameters is discussed further in Appendix M.

6.5 Risk Characterization

Quantitative estimates of both carcinogenic and non-carcinogenic risks are calculated for each exposure scenario selected for evaluation in the exposure assessment, in accordance with USEPA (1989) guidance.

An estimate of the excess lifetime cancer risk (ELCR) associated with exposure to each COPC in a given medium is calculated by multiplying the exposure route pathway-specific lifetime average daily dose (e.g., dermal exposure to surface soil) or lifetime average exposure concentration (e.g., inhalation of dust) by its exposure route-specific CSF (e.g., oral CSF) or UR.

$$ELCR = \text{Lifetime Average Daily Dose or Exposure (mg/kg/day or } \mu\text{g/m}^3) \times \text{CSF (mg/kg/day)}^{-1} \text{ or UR (}\mu\text{g/m}^3\text{)}^{-1}$$

The ELCR represents an upper bound of the probability of an individual developing cancer over a lifetime as the result of exposure to a COPC. The ELCR is calculated for each carcinogenic COPC for each medium and exposure route combination for each receptor at each exposure area. The ELCR for all COPCs in a given medium are summed to identify a route-specific total ELCR (e.g., soil ingestion) and the ELCR for all exposure routes for a given receptor/medium combination (e.g., soil ingestion and dermal contact) are summed to yield a total medium ELCR (e.g., for surface soil).

The non-cancer hazard quotient (HQ) associated with exposure to each COPC is calculated by dividing the exposure route pathway-specific average daily dose or exposure concentration by its exposure route-specific RfD or RfC.

$$HQ = \text{Average Daily Dose or Exposure (mg/kg/day or } \mu\text{g/m}^3) / \text{RfD (mg/kg/day) or RfC (} \mu\text{g/m}^3)$$

The HQ is calculated for each COPC for each medium and exposure route combination for each receptor at each exposure area. For a given medium/receptor/age group combination (e.g., surface soil and adult outdoor worker), HQs for all COPCs are summed by route (e.g., dermal contact) to identify a medium/route HI, and the HIs for multiple exposure routes (e.g., incidental ingestion and dermal contact) are summed to identify a medium-specific total HI (e.g., for surface soil ingestion and dermal contact). Because HIs are not additive across age groups (applies to the trespasser only in this assessment), the higher HI between the two age groups (adolescent and adult), in this case) is selected as the representative HI for the trespasser. An HI less than 1 indicates that non-carcinogenic toxic effects are unlikely to occur as a result of COPC exposure. HIs greater than 1 may be indicative of a possible non-carcinogenic toxic effect. As the HI increases above 1, so does the likelihood of adverse effects. Risk calculations are documented in **Appendix M**.

The calculated cancer and non-cancer risks are evaluated in the context of risk management criteria established in the NCP and discussed in the preamble to the NCP (USEPA, 1990). The results of the baseline risk assessment are compared to CERCLA risk management criteria. The cancer risk estimates for a site are compared to the cancer risk range of 10^{-6} (one in a million) to 10^{-4} (one in ten-thousand). Risks at or below 10^{-4} do not generally warrant a response action. Risks greater than 10^{-4} generally warrant development and evaluation of remedial alternatives. Non-cancer risks are compared to a HI value of 1, which corresponds to levels of exposure that people (including sensitive individuals) could experience without expected adverse effects.

Cancer and non-cancer risks for current and future exposure scenarios are summarized by exposure area and presented in **Tables 6.5-1** and **6.5-2**.

6.5.1 Risk Characterization for Vapor Intrusion from Soil

As discussed in **Appendix M**, there are chemicals present in shallow subsurface soils (1-10 ft bgs) that have sufficient volatility and toxicity to warrant evaluation of vapor intrusion from soil to indoor air. However, there are no current occupied buildings located in the vicinity of these chemicals in shallow subsurface soils. Therefore, the vapor intrusion pathway is not complete for current site uses.

In the future it is possible for redevelopment of the Property to occur and new industrial/commercial buildings could be constructed. **Appendix M** has identified four areas where there is the potential for future vapor intrusion if buildings were to be constructed. These areas include: EA7 (including the former EPH/VPH area), EA3, the area of the former Lake Poly, and the containment area. There is no foreseeable construction and occupancy of buildings in the containment area. The remaining three areas (EA7, EA3, and the former Lake Poly) have the potential for future buildings to be constructed.

There are no USEPA-published soil screening values which are protective of future vapor intrusion exposures. In addition, it is very difficult to quantitatively evaluate risks for future vapor intrusion from soil. Therefore, it is recommended that if future industrial/commercial buildings

are contemplated in the three areas listed above that vapor migration be addressed by additional investigation/risk assessment, or by institutional or engineering controls included in building design. This is discussed in more detail in **Appendix M**.

6.6 Risk Assessment Conclusions

The current and foreseeable future use of the portion of OU1 located north of the South Ditch is industrial/commercial. A deed restriction (Notice and Declaration of Restrictive Covenant) is on file with the Registry of Deeds will maintain that use and prohibit more sensitive land uses. The portion of OU1 at the Property is subject to the Environmental and Open Space Restriction (Environmental Restriction) that maintains the area as a conservation land and prohibits development and passive and active recreational use of that area. The areas within OU2 have also been evaluated in the BHHRA. Consistent with the current and foreseeable future land use, the BHHRA has evaluated potential exposures and risks as documented in **Appendix M**.

A screening evaluation has also been conducted to assess the potential vapor intrusion pathway associated with volatiles in surface soil and shallow subsurface soil for current and future occupied buildings at the Property. This BHHRA for OU1 and OU2 has not evaluated risks associated with direct contact with groundwater nor with any potable or non-potable uses of groundwater. The BHHRA for OU3 will address those potential exposures and risks.

The conclusions of the BHHRA can be summarized as follows:

- The cancer risk estimates for the current and future trespasser, current and future industrial/commercial outdoor worker and indoor worker, and the future construction worker at the OU1 exposure areas (EA1, EA2, EA3, EA4, EA6, EA7, on-PWD, South Ditch, Central Pond, and the Stormwater Detention Basin), are within or below the CERCLA acceptable risk range.
- The non-cancer HI estimates for the current and future trespasser, current and future industrial/commercial outdoor worker and indoor worker, and the future construction worker at the OU1 exposure areas (EA1, EA2, EA3, EA4, EA6, EA7, on-PWD, South Ditch, Central Pond, and the Stormwater Detention Basin), are below a value of 1.
- The cancer risk estimates for the current and future trespasser, current and future industrial/commercial outdoor worker, and the future construction worker at the OU2 soil exposure area (EA5) and for the current and future trespasser at the OU2 surface water/sediment exposure areas (Lower South Ditch, East Ditch, Maple Meadow Brook, and North Pond) are within or below the CERCLA acceptable risk range.
- The non-cancer HI estimates for the current and future trespasser, current and future industrial/commercial outdoor worker, and the future construction worker at the OU2 soil exposure area (EA5) and for the current and future trespasser at the OU2 surface water/sediment exposure areas (East Ditch, Maple Meadow Brook, off-PWD, and North Pond) are below a value of 1.
- The cancer risk estimate for the trespasser exposed to sediment and surface water in the off-PWD is above the CERCLA acceptable risk range. However, the predominant risk contributors are PAH compounds detected in surface water that are unrelated to historical activities or releases at the Property.
- Based on CERCLA criteria, the calculated human health risks associated with potential exposures to surface soil, shallow subsurface soil, surface water, and sediment at OU1 indicate that the northern portion OU1 (EA1, EA2, EA3, EA6, EA7, on-PWD, South

Ditch, Central Pond, and the Stormwater Detention Basin is suitable for current and future industrial/commercial use (more sensitive land uses are not foreseeable per the Notice and Declaration of Restrictive Covenant) and the southern portion of OU1 (EA4) is suitable for use as a conservation area (more sensitive land uses are not foreseeable per the Environmental and Open Space Restriction).

- Based on CERCLA criteria, the calculated human health risks associated with potential trespasser exposures to OU2 surface water and sediment at Lower South Ditch, East Ditch, Maple Meadow Brook, off-PWD, and North Pond do not warrant further investigation nor evaluation in a Feasibility Study.
- Based on CERCLA criteria, the calculated human health risks associated with potential trespasser, industrial/commercial worker, and construction worker exposures to OU2 surface soil at EA5 indicate the area is suitable for industrial/commercial use (more sensitive land uses are not foreseeable given the physical conditions and the close proximity to the commuter rail line).

Based on a qualitative evaluation of potential future conditions, concentrations of VOCs (primarily TMPs) in subsurface soils at EA3, EA7 and at one location in EA1 (former Lake Poly area) indicate that inhalation non-cancer risks potentially associated with vapor intrusion for future buildings (indoor workers) and for future excavation of soils (construction workers) should be controlled via institutional and engineering controls such as the incorporation of vapor mitigation features into building design.

ATTACHMENT 4



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND – REGION I
5 Post Office Square, Suite 100
Mail Code OSRR07-4
Boston, MA 02109-3912

July 2, 2015

James Cashwell
Olin Corporation
3855 North Ocoee Street
Suite 200
Cleveland, TN 37312

Subject: Review and Conditional Approval
Draft Final Remedial Investigation and Risk Assessment Report,
Operable Units 1 and 2, MACTEC, April 10, 2014 and Related
Documents.

Dear Mr. Cashwell:

In accordance with Paragraph 40 of the Administrative Settlement Agreement and Order on Consent (“AOC”), Region I of the United States Environmental Protection Agency (“EPA”) has completed a review of the Draft Final Remedial Investigation Report for OU1 and OU2, and companion reports for the Human Health and Ecological Risk Assessments dated April 10, 2014 (the “Report”); and a related Response to Comment letter dated December 12, 2014, a Chromium Bioaccumulation Memorandum dated March 26, 2015, and a South Ditch Toxicity Test Memorandum dated April 29, 2015; collectively prepared by Olin/AMEC (the “Documents”).

The Report and Documents are the culmination of more than four years of field investigations and more than two years of active review efforts. During the review cycles, numerous comment and response letters were exchanged resulting in supplemental text, tables, and figures. Collectively these Documents must be integrated into the Final Remedial Investigation and Risk Assessment Report for Operable Units 1 and 2.

Conditions

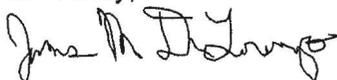
1. Final Remedial Investigation Report. This approval is made with the understanding that Olin will prepare a final RI Report for OU1/OU2 (print and electronic copies), along with new and revised Appendices and Attachments as necessary, which incorporates the comment/responses and supplemental information contained in the Documents. EPA also

requests that the main text of the final RI Report be provided to EPA only in a Microsoft Word file to aid in the development of an anticipated Proposed Plan and Record of Decision. EPA may request source files for specific tables at a later date.

2. Draft Feasibility Study. Consistent with a letter issued by EPA on April 14, 2015, the three operable units shall be combined into a single Feasibility Study to be submitted following approval of the anticipated OU3 Remedial Investigation Report.

Please submit the Final Remedial Investigation Report for OU1/OU2 within 90 days.

Sincerely,



James M. DiLorenzo
Remedial Project Manager
USEPA Region 1 - New England

Enclosures:

Cc: Heather Ford, Nobis
Rick Sugatt, EPA
Joe Coyne, MassDEP
Jeffrey Hull, Town of Wilmington
Martha Stevenson, WERC