ENVIRON

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Federal Express

Mr. Javier Perez-Maldonado
Division of Environmental Remediation
Remedial Bureau B, Section B
New York State Department of Environmental Conservation
625 Broadway, 12th Floor
Albany, NY 12233-7020

Re: SUN/DIC Acquisition Corp.
441-443 Tompkins Avenue
Staten Island, New York
Site #C243024

Dear Mr. Perez:

As discussed during our November 4, 2011 meeting regarding the June 2011 draft Remedial Investigation Report (RIR) for the above-captioned Brownfield Cleanup Program (BCP) matter, and during a November 17, 2011 teleconference with NYSDEC and Christopher Doroski of the New York State Department of Health (NYSDOH), Sun Chemical and ENVIRON have prepared this Remedial Investigation Work Plan (RIWP) addendum to describe certain additional sampling activities to further support an Alternatives Analysis for the site. This sampling consists of certain additional off-site soil sampling, a soil vapor evaluation and additional groundwater monitoring. As NYSDEC indicated during the November 4 meeting, this addendum does not require public comment prior to NYSDEC and NYSDOH approval of the proposed work.

Soil Sampling

NYSDEC conceptually agreed during the November 4, 2011 meeting that sufficient on-site soil data have been collected to support an Alternatives Analysis. As such, no further on-site soil sampling appears warranted. However, certain off-site sampling is appropriate to more fully investigate soil conditions at two properties located south of the Site. The basis and scope of the proposed off-site soil sampling are described below.

- As discussed in detail in the September 2010 RIWP and in prior documents submitted for this BCP matter, Sun Chemical previously excavated soil from the south adjacent St. Joseph's Parochial School property at 139 St. Mary's Avenue as part of a remedial action related to a release of caustic solution in 1988. A retaining wall along the southern site boundary was also constructed at that time. Given the scope of the prior remedial action, the off-site sampling proposed on the St. Joseph's Parochial School property was primarily designed to confirm that constituents are not present above SCOs.

  This sampling was completed on July 25, 2011 during the summer school closure. Thirteen soil borings, B1427 through B1439, were completed in two staggered rows approximately 10 and 20 feet south of the Site property boundary, as shown on Plate 1. The off-site soil samples were collected from 0-2" and from six-inch intervals at 1-foot increments between 1.0-1.5' and 5.0-5.5', and analyzed in a staged manner. The samples were analyzed for PCB and the five metals detected above SCOs on-site at B1412 and B1417-B1421 (arsenic, barium, copper, lead and nickel). Initially, soil

samples from 0-2", 1.0-1.5', 2.0-2.5' and 3.0-3.5' at B1428-B1432 were tested, with additional samples from those borings, and other locations, analyzed as needed to delineate any constituent concentrations detected above the applicable SCOs. For purposes of this RI component (i.e., to determine which additional soil samples required analysis), the soil data were compared to the restricted-use residential SCOs, considered most appropriate for this portion of the off-site property (per DER-10 Section 1.12(b)2iii given that it is fully asphalt-paved and used primarily for parking.

The off-site soil sampling results are provided on Plate 1. As shown, concentrations of the metals (except copper) were detected above the restricted-use residential SCOs in at least one sample from the initial group of samples, with exceedances of the arsenic and barium SCOs present only in two sampling intervals at B1428. Based on these data, additional analyses were successively authorized to complete delineation of the identified exceedances. Ultimately, 50 off-site soil samples were analyzed for certain of the target metals. These data fully delineated the arsenic and barium exceedances and indicate that those exceedances are limited to boring B1428, completed close to several on-site locations at which those metals were detected above the commercial-use SCOs. Lead concentrations above the restricted-use residential SCO were detected at eight of the off-site borings. At each location, the sampling confirmed the maximum depth of lead exceedances, which ranges from 1.5 feet at contiguous borings B1432, B1438 and B1439, to 3.0 feet at contiguous borings B1427, B1428 and B1435. Based on these results, the extent of lead concentrations above the SCO has been largely defined although limited additional delineation is needed to south near borings B1434, B1435, B1438 and B1439. Last, in the initial sample group, nickel was detected above the restricted-residential SCO only in the deepest (3.0-3.5') sample from B1431. Delineation sampling related to that detection has not yet been conducted given that Sun Chemical and ENVIRON believe that all exceedances of nickel relate to native soil conditions. This issue will be addressed with NYSDEC in separate correspondence.

Based on the data collected to date at 139 St. Mary's Avenue, additional soil sampling is proposed to define the extent of lead exceedance that will be addressed via any remedy implemented for this property. The extent of the proposed soil sampling is shown on Plate 1 and would entail collection of surface soil samples (0-2") and from six-inch intervals at one-foot increments from 1.0-1-5' to 5.0-5.5' from 15 borings, B1443 through B1457. The analyses of these soil samples will be conducted in a staged manner consistent with the July 2011 sampling program, as reflected on Table 1.

- Off-site soil sampling will also be completed at the residential property located at 117 St. Mary's Avenue (Tax Block 2846, Lot 259). Sun Chemical proposes to complete borings B1424, B1425 and B1426 and B1440, B1441 and B1442 at 117 St. Mary's Avenue to evaluate the southern boundary of metals impacts detected at B1417 and B1423. Soil samples will be collected from 0-2" and from six-inch intervals at 1-foot increments between 1.0-1.5' and 4.0-4.5'. The samples from B1424 will be analyzed for the four metals identified above unrestricted-use SCOs at B1417, including arsenic, barium, copper and lead, whereas the samples from B1440 will be analyzed for arsenic and barium, the metals above unrestricted-use SCOs at B1423. The samples from B1425, B1426, B1441 and B1442 will be held for contingency purposes should any exceedances of SCOs be identified at the initial group of borings. The scope of this proposed sampling is also provided on Table 1.

Groundwater Sampling

During the November 4 meeting, NYSDEC concurred with the proposed on-site groundwater sampling identified in the June 2011 RIR and also suggested that additional evaluation of

groundwater quality downgradient of MW-1 would be required. Following further discussion of groundwater quality with NYSDEC and NYSDOH, Sun Chemical proposes to install six additional monitoring wells as shown on Plate 2. The rationale for each of those wells is described below. These wells will be installed and sampled consistent with the methodologies described in the September 2010 Remedial Investigation Work Plan.

- Based on the groundwater flow direction in the vicinity of MWs 3, 4 and 11, chlorinated VOC impacts at that those wells appear to be migrating generally to the north. These data, obtained during November 2010 and January 2011 sampling rounds, are summarized on Plate 2. The lower VOC concentrations at MW-4, located 55 feet downgradient of MW-11, indicate that VOC concentrations are attenuating in the downgradient direction. However, the existing monitoring well network can be enhanced downgradient of MWs 3 and 4 as needed to complete the lateral delineation of the VOC contamination. Accordingly, Sun Chemical proposes to install two additional downgradient shallow monitoring wells, MWs 15 and 16, at the locations shown on Plate 2. MW15 will be completed at a location approximately 190 feet downgradient of MW3 and MW16 will be positioned to be approximately 130 feet downgradient of MW4. These wells will be constructed to monitor the first saturated interval, consistent with the other on-site shallow monitoring wells.
- A deeper well will be installed adjacent to MW-15 to more fully understand the extent of VOC impacts in that deeper interval. This well, MW-15D, will be screened to monitor an interval of comparable elevation to that monitored at MW-3D. Based on the differences in ground surface elevation at the two locations (on the order of 22 feet), it is anticipated that MW-15D will be screened from approximately 25 to 35 feet. The construction of this deep well will also be based on the presence of any potentially confining peat layer, such as that encountered at the MW-5 well pair. Should such a confining unit be identified, MW-15D would be constructed as a double-cased well to prevent any groundwater contamination in the upper perched interval from affecting the deeper interval.
- Although VOC concentrations at MW-3D are lower than those at MW-3 (other than for 1,1,1-TCA), vertical delineation of the VOC contamination has not yet been achieved. In addition, NYSDEC requested that information about the vertical gradient at the MW-3 well pair be provided to assist in determining the nature of any additional groundwater monitoring at this location. Based on the groundwater elevations of 34.56’ at MW-3 and 29.13’ at MW-3D, per the most recent measurement event on January 26, 2011, there is a significant downward vertical gradient. As such, deeper well MW-3DD is proposed to further understand the vertical profile of VOC levels in the overburden. This well will be advanced into the overburden to monitor an interval at least 25 feet deeper than that evaluated at MW-3D, and thus, is anticipated to be screened at a minimum depth of 75 to 80 feet. Should bedrock be encountered above this target interval, however, MW-3DD will not be installed.
- The presence of 1,1-DCA above the Part 703.5 standard in combination with the easterly flow direction in this portion of the property suggests that groundwater at MW-1 is being affected by an on-site source upgradient of MW-1 but downgradient of MW-14, where no VOC contamination was identified. Accordingly, Sun Chemical and ENVIRON propose to install an additional shallow monitoring well, MW-17, approximately 60 feet upgradient of MW-1 at a location selected to be directly downgradient of the former WOL building.

  In addition, NYSDEC and NYSDOH have expressed concern that given the northwesterly component of groundwater flow evident based on the January 22, 2011

ground water elevations, the 1,1-DCA contamination at MW-1 might be migrating onto off-site downgradient commercial and recreational properties to the northwest. In light of the 1,1-DCA concentrations detected at MW-1, off-site well MW-18 is proposed in a sidewalk right-of-way approximately 50-75 feet northwest of MW-1 at the approximate location shown on Plate 2. The specific location of this well will be determined in consultation with City of New York officials relative to underground and aboveground utility locations, as well as City permitting requirements. This well will be installed to monitor the first saturated interval, consistent with the other on-site shallow monitoring wells.

- Following installation of the six wells proposed above, ENVIRON will complete a groundwater sampling round targeting all on-site wells for VOC analysis to provide a contemporaneous data set needed to fully evaluate the initial analytical results from the proposed wells. Groundwater elevations will also be collected to confirm the groundwater flow direction.

Vapor Intrusion Evaluation

Based on the groundwater data collected during the RI, Sun Chemical and ENVIRON evaluated any VOC detections relative to: (1) NYSDEC's October 2006 "Strategy for Prioritizing Vapor Intrusion Evaluations at Remedial Sites in New York (DER-13); (2) the NYSDOH's October 2006 "Guidance for Evaluating Vapor Intrusion in the State of New York." (NYSDOH 2006); and (3) NYSDEC's May 2010 DER-10. The evaluation of VOC concentrations in groundwater was completed in accordance with the three guidance documents referenced above[1].

These guidance documents do not specify screening levels for groundwater, concentrations above which a Soil Vapor Investigation (SVI) would be required. Rather, NYSDOH 2006 indicates in Section 2.1 that "data collected to date do not support the use of pre-determined concentrations of volatile chemicals (i.e., screening criteria) in either groundwater or soil to trigger a soil vapor intrusion investigation." Consequently, NYSDOH recommends evaluating the vapor intrusion pathway at a site where sampling has identified a subsurface source of VOCs or where current or future existing buildings might be constructed near any such source. NYSDOH further clarifies that for purposes of its guidance, "source" encompasses areas of contaminated groundwater.

As recommended in DER-10 in Section 3.6c3, the initial phase of the SVI will include sampling to evaluate subsurface vapor conditions, with the need for any further action, including indoor air sampling, determined based on those results. Sun Chemical and ENVIRON believe that there are several compelling reasons why on-site soil vapor sampling is the most appropriate initial step in the SVI. First, the ground water flow direction is generally to the north such that off-site properties to the south are upgradient of the site and areas of groundwater contamination. Second, VOC concentrations are markedly lower at MW-11 than at MW-3 (with one minor exception) such that any VOC levels potentially present south/upgradient of MW-11 are anticipated to be much lower than those at MW-11. Last, MWs 4 and 11 are at least 20 to 30 feet from the upgradient property boundary such that there is ample land area in which to complete soil vapor sampling points on-site upgradient of locations of known groundwater contamination. For these reasons, Sun Chemical proposals to collect soil vapor samples from locations SV01, SV02 and SV03, as shown on Plate 2.

[1] These guidance documents also recommend evaluating soil data as part of an SVI. As discussed in this and prior reports, no VOC soil contamination has been identified at the site.

Additionally, although redevelopment plans are uncertain, DER-10 suggests that soil vapor sampling is appropriate at locations where buildings might be constructed in the future. For that reason, soil vapor sampling point SV04 is proposed proximate to MW-3. This location will provide data at the on-site location with the highest VOC concentrations in groundwater, which will assist in evaluating any VOCs detected at the three proposed sampling locations along the southern property boundary in proximity to MW-11.

During the November 17 teleconference, NYSDOH agreed that proposed soil vapor sampling locations SV01 through SV04 were sufficient for the initial assessment of soil vapor conditions at the Site. In addition, NYSDOH recommended at that time that one soil vapor sample also be obtained along the three other sides of the property so that the SVI evaluates soil vapor along all property boundaries. Accordingly, Sun Chemical proposes to complete the following soil vapor sampling points: (1) SV05 along the eastern property boundary at a location downgradient of MW-3 where the highest overall VOC concentrations in groundwater were detected; (2) SV06 along the southern property boundary at a location downgradient of MW-12 where low concentrations of VOCs had been detected; and (3) SV07 along the western property boundary. Last, given the concerns regarding groundwater quality at MW-1 noted above, Sun Chemical will also collect a soil vapor sample (SV08) during installation of off-site well MW-18.

Given the site hydrogeology and NYSDEC/NYSDOH guidance, and consistent with discussions during the November 17 teleconference, soil vapor samples will be collected at SV01-SV08 at a depth comparable to elevations of basement slabs in nearby residences. As such, the samples will be collected from approximately 8 feet below grade. Each sample will be collected in a 1-liter SUMMA canister fitted with a 5-minute flow regulator and in accordance with NYSDOH 2006. The samples will be analyzed for VOCs by USEPA Method TO-15 and the results evaluated relative to the guidance noted above to determine if any additional actions are required. In accordance with our recent discussions, should VOCs not be identified at concentrations of potential concern, the SVI would be considered completed such that no additional sampling, including off-site indoor air sampling, would be required.

Proposed Schedule

Consistent with the potential redevelopment plans Sun Chemical described during the recent meeting, we are working toward completion of the remedial activities at the site as needed to secure a Certificate of Completion by the end of 2012, as reflected in the schedule provided below. Consequently, we would appreciate NYSDEC's and NYSDOH's prompt review and approval of this addendum as Sun Chemical intends to move forward with the proposed sampling expeditiously to enable Sun Chemical to meet the overall project schedule reflected below.

Task	Projected Completion Month
NYSDEC / NYSDOH review and approval of RIWP addendum	December 2011
Off-site soil sampling at 117 and 139 St. Mary's Avenue	January 2012
Permitting for installation of off-site well MW18 (see Note 1)	January 2012
Soil vapor investigation	January 2012
Installation of monitoring wells MWs 3DD, 15-18 and 15D	January 2012
Groundwater sampling of all on-site wells	February 2012
Submission of DRAFT Alternatives Analysis and Remedial Work Plan (for NYSDEC review) and issuance of draft for public review/comment	March 2012

Task	Projected Completion Month
Public review/comment on DRAFT Alternatives Analysis and Remedial Work Plan (45 days)	April 2012
Revisions to Remedial Work Plan per public comments and NYSDEC approval of revised plan	April 2012
Draft Environmental Easement to NYSDEC (see Note 2)	May 2012
Submission of Draft Site Management Plan	July 2012
Negotiations regarding and finalizing Environmental Easement	August 2012
Implementation of Remedial Work Plan for on-site and off-site soils (see Note 3)	August 2012
Submission of Draft Final Engineering Report detailing outcome of site remediation	September 2012
Execution of Final Environmental Easement	September 2012
Approval of Site Management Plan	October 2012
Submission of Final Engineering Report for approval	November 2012
Certificate of Completion	December 2012

Notes:

1. It is ENVIRON's understanding that NYSDEC will submit a letter to the New York State Department of Transportation to secure the sidewalk opening permit for installation of off-site well MW-18. As such, this schedule item is contingent of receiving said approval.
2. NYSDEC indicated during the November 4, 2011 that per NYSDEC's generic scheduling for BCP projects, submission of a draft environmental easement was required no later than June 1 to enable completion of the site remediation process and issuance of the Certificate of Completion by the end of 2012.
3. The remedial action schedule assumes that the remedy will consist of excavation of on-site and off-site soils to meet applicable Soil Cleanup Objectives. Based on available data, it is further assumed that active remedial measures will not be required to address groundwater or soil vapor.

Please do not hesitate to contact me with any questions or comments you have regarding the scope of work proposed herein.

Sincerely,

William D. Kraft, III
Senior Manager

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Enclosures

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