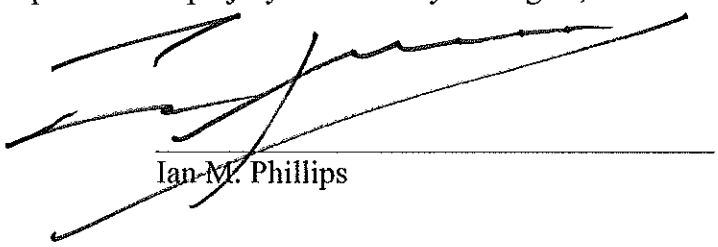
COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
BOARD OF REGISTRATION OF
HAZARDOUS WASTE SITE CLEANUP PROFESSIONALS

In the Matter of:	
James J. Decoulos, Respondent	Docket No.: LSP-10AP-01

AFFIDAVIT OF IAN M. PHILLIPS, LSP

I, Ian M. Phillips, under the pains and penalties of perjury, state that I am the Ian M. Phillips whose prepared direct testimony is attached to this affidavit. I further state that, if asked the questions contained in the text of such testimony, I would give the answers that are set forth in the text of such testimony. I adopt the aforesaid answers as my direct testimony in this proceeding.

Signed under the pains and penalties of perjury this 18th day of August, 2010.



Ian M. Phillips

Exhibit B-6

COMMONWEALTH OF MASSACHUSETTS
BOARD OF REGISTRATION OF HAZARDOUS WASTE SITE CLEANUP PROFESSIONALS
before the
OFFICE OF APPEALS AND DISPUTE RESOLUTION

In the Matter of James J. Decoulos Docket No. 10 AP 01

Prepared Direct Testimony of
IAN M. PHILLIPS, LSP,
Witness in support of the Initial Determination of the
Board of Registration of Hazardous Waste Site Cleanup Professionals

Q. Please state your name and business address.

A. My name is Ian M. Phillips and my business address is Roux Associates, Inc., 67 South Bedford Street, Burlington, MA 01803.

Q. How are you employed?

A. I am employed by Roux Associates, Inc., as a Principal Scientist. I have been with Roux Associates since 2003. While at Roux Associates and prior to Roux Associates, I have conducted and managed numerous investigations and remediations of hazardous waste sites impacted by petroleum contamination from leaking underground storage tanks (USTs) and fuel line failures. This work has also involved forensic work identifying sources and age-dating petroleum releases**.**

Q. What prior involvement, if any, have you had with the Board of Registration of Hazardous Waste Site Cleanup Professionals?

A. I have been licensed as a Licensed Site Professional ("LSP") since 1993. I have not previously served as an expert witness for the LSP Board.

Q. Are you sponsoring any exhibits in addition to your direct testimony?

A. Yes, I am sponsoring Exhibit B-7.

Q. Please describe your educational and professional background.

A. I received my Bachelor of Arts degree in Chemistry from Vassar College, and I received a Master of Science in Engineering in Environmental Studies from the University of Lowell. I also have more than 25 years of professional experience in environmental testing, engineering, and hazardous waste assessment and remediation. I have been licensed by the Commonwealth of Massachusetts as an LSP since the inception of the LSP program in 1993. I have directed projects involving hazardous waste sites, including federal Superfund sites, sites contaminated with chlorinated solvents, petroleum constituents, heavy metals, polychlorinated biphenyls, mercury, and acids in environmental media. My professional experience includes remedial investigation and feasibility studies; risk assessment; disposal site assessment; engineering, design, selection and implementation of remedial actions; modeling; sampling and laboratory analysis of hazardous chemicals; regulatory policy development and support; hazardous waste characterization; training and teaching; and fate and transport evaluation of contaminants in the environment.

As a registered LSP, I have performed preliminary and comprehensive response actions at over 30 Massachusetts disposal sites and filed hundreds of LSP Opinions in accordance with the Massachusetts Contingency Plan ("MCP"). Among the various LSP opinions I have filed, I have filed at least 25 Immediate Response Action ("IRA") Plans and IRA Status Reports, and I have filed at least 20 Response Action Outcome Statements. Please see my attached resume for additional details regarding my educational and professional background.

Q. What, if any, documents have you reviewed in developing your testimony?

A. I have reviewed the Complaint filed with the Board by Najib Badaoui, Mr. Decoulos's Answers dated January 20, 2006 and August 31, 2007, the Board's Order to Show Cause and Proposed Order, Mr. Decoulos's Answer to the Order to Show Cause, and documents from the files of the Massachusetts Department of Environmental Protection ("MassDEP") for the Eagle Gas site in Carver and the Speedy Lube site in Randolph, including the Exhibits in this adjudicatory hearing. I have also reviewed the Massachusetts Contingency Plan and relevant guidance documents, including Commonwealth of Massachusetts, Department of Environmental Protection, *Characterizing Risks posed by Petroleum Contaminated Sites: Implementation of MADEP VPH/EPH Approach*, Final Draft, June 2001 (Exhibit B-10).

Q. Do you believe there were any problems with Mr. Decoulos's work in regard to the initial release of diesel fuel at the Eagle Gas station in Carver?

A. Yes.

Q. What were these problems?

A. Fundamentally, there were four problems with the work performed by Mr. Decoulos as part of Immediate Response Actions related to the detection of light non aqueous phase liquid (LNAPL) at the Eagle Gas Station in Carver. Mr. Decoulos failed, in a timely manner, to:

1. Assess adequately the extent and migration pathways of LNAPL associated with the release of diesel at the Eagle Gas Station;
2. Collect adequate data to design and construct an active remedial system as required by the Massachusetts Department of Environmental Protection (MassDEP);
3. Respond to MassDEP's directives to complete an Imminent Hazard (IH) evaluation and assess conditions of Substantial Release Migration (SRM) and Critical Exposure Pathways (CEPs); and
4. Act in a manner consistent with time-critical releases, threats of release and/or site conditions requiring Immediate Response Actions (IRAs).

Mr. Decoulos did not adequately address the potential for the diesel release at the Eagle Gas site to migrate into the municipal stormwater drainage piping that was in the Main Street right of way. The LNAPL was first detected in monitoring well BP5-RR, which was within ten feet of the concrete stormwater drainage pipe. As soon as the LNAPL release was reported to MassDEP, MassDEP required Eagle Gas to "inspect stormwater system for potential impacts." See Release Log Form Attachment January 27, 2003, Exhibit B-14. Because of the proximity of the LNAPL to the stormwater drainage system, there was an immediate concern that the LNAPL could migrate in the backfill around the outside of the stormwater drainage pipe (backfill commonly consists of gravel that is more permeable than the surrounding soils) or enter the stormwater drainage piping through any joints, cracks, or other openings that might exist and migrate through the piping and discharge out the outfall. In either case, these preferred migration pathways could result in a condition of SRM and/or discharge out of the outfall directly

into South Meadow Brook. Mr. Decoulos took several soil borings and placed three groundwater monitoring wells in the vicinity of the stormwater drainage piping. See Figure 4 of July 3, 2003 IRA Status Report, Exhibit B-21. He did not detect LNAPL or high concentrations of petroleum contaminants in the monitoring wells, and he concluded that the LNAPL migration was not occurring associated with the stormwater drainage piping. However, he did not assess the potential for LNAPL to enter the stormwater drainage piping through joints and or cracks and, therefore, his conclusion that the piping was not acting as a preferential pathway was not supported.

In addition, Mr. Decoulos abandoned his IRA Plan for active remediation, as required by MassDEP, of the initial diesel release (vacuum the LNAPL from well BP5-RR and if it returned, install a 12-inch diameter recovery well and construct a trench that would include an active recovery system for the LNAPL). Furthermore, he did not gather the site-specific data that was required to design and construct such a system.

Conditions such as the discovery of greater than ½ an inch of LNAPL in a monitoring well is considered to be a time critical condition that requires further assessment and other response actions to abate, prevent or eliminate a potential Imminent Hazard to health, safety, public welfare or the environment. Mr. Decoulos did not implement an active recovery system until December 2004, two years after the diesel release was detected. Furthermore, he failed to complete in a timely manner an Imminent Hazard evaluation or assess conditions of Substantial Release Migration and Critical Exposure Pathways. These activities were not completed until the December 22, 2004 IRA submittal, Exhibit B-42, despite the fact that on April 5, 2004, MassDEP had

directed them to be completed, and Mr. Decoulos had proposed to complete such evaluation by June 15, 2004.

Q. In a July 2003 IRA Status Report for the diesel release (Exhibit B-21), Mr. Decoulos stated, "The results of hand bailing have been beneficial and it does not appear productive or cost effective to install a recovery well to collect NAPL from the low yielding silt and clay stratas." Do you believe that statement was adequately supported?

A. No. DEP had required active recovery of LNAPL, and this sentence is the only justification Mr. Decoulos offered for not conducting active LNAPL recovery. Mr. Decoulos did not include adequate data or technical information to support the statement that active recovery would not be productive. The Cape Cod area, including Carver, is characterized by sandy soils which are generally permeable. The Status Report does not include boring logs that would depict the soil types encountered in the drilling of soil borings and monitoring wells throughout the Eagle Gas Station. Drilling was a significant portion of the work performed during the time period covered by the Status Report, and therefore the boring logs should have been included as attachments to support Mr. Decoulos' opinion. Even assuming the boring logs confirmed Mr. Decoulos's description of the soils, Mr. Decoulos had not tried a pump test or a bail-down test on the monitoring wells, which would provide important data to support his conclusion or to design the active remedial system required by MassDEP.

Q. On May 16, 2003, Mr. Decoulos reported a sheen on South Meadow Brook to MassDEP, and DEP issued a Notice of Responsibility to Mr. Decoulos's client, Eagle Gas, for the release to South Meadow Brook. Do you believe there were any problems with Mr. Decoulos's work in regard to the release to South Meadow Brook?

A. Yes.

Q. What were these problems?

A. In his IRA submittals, Mr. Decoulos drew conclusions that appeared inconsistent with actual observations in the field and that were not supported by the data he obtained in his investigation. He concluded that the release of diesel fuel had not caused the impact to the brook when it was clear from visual observation and from laboratory analysis of the water at the outfall that there was a significant volume of oil at the outfall that consisted primarily of diesel-range petroleum hydrocarbons. Mr. Decoulos proposed an alternate theory that rainwater runoff over petroleum on the surface of the gas station was the source of the outfall contamination, but that theory was inconsistent with the field observations and the high concentrations of diesel compounds at the outfall.

In June 2003, Mr. Decoulos obtained laboratory analysis of surface-water samples from the outfall showing concentrations of over three million parts per billion (ppb) total Extractable Petroleum Hydrocarbons ("EPH"), the petroleum fractions associated with heavy-weight products such as diesel fuel and heating oil. See the July 3, 2003 IRA Status Report (Exhibit B-21). These EPH concentrations were extremely high,

much higher than one would expect if surface runoff from the gas station was the only source. These results were listed in the tables to the July 2003 IRA Status Report, and in later submittals, but the text of Mr. Decoulos's reports does not evaluate or explain these results.

A photograph attached as Figure 6 to the July 3, 2003 IRA Status Report showed many absorbent booms and pads placed on the water at the outfall. This level of response is inconsistent with the lower concentrations of petroleum that one would expect from rainwater runoff from the paved surface at a gas station. In photographs taken by MassDEP on March 11, 2004, Exhibit B-25, the amounts of contamination at the outfall showed gross contamination clearly from a larger source than surface runoff at the Eagle Gas Station.

The photographs of the outfall taken by both Mr. Decoulos and MassDEP clearly indicated that, at a minimum, additional assessment was needed to determine whether the diesel release was migrating into the stormwater drainage piping. Mr. Decoulos did not perform the assessment needed to disprove the strong evidence that the diesel release was infiltrating the stormwater drainage pipe, nor did he adequately support his own alternate theory.

Q. In the July 3, 2003 IRA Status Report, Exhibit B-21, Mr. Decoulos stated, "it is clear from the recent investigations that the diesel delivery line failure has not caused the impact to the stormwater system." Do you believe that statement was adequately supported?

A. No. Those conclusions were premature in July 2003. There were strong indications that a diesel release was the source of the petroleum discharging from the stormwater drainage pipe. The LNAPL was first detected in monitoring well BP5-RR adjacent to the storm pipe, and therefore presented a risk that the LNAPL would come into contact with the stormwater pipe and possibly infiltrate it. Mr. Decoulos and MassDEP measured petroleum vapor in the storm pipe, and the readings showed that vapor was absent upgradient of the gas station but it was present downgradient of the gas station, indicating the station was a potential source of the petroleum contamination in the storm drain pipe. See Figure 3 of the July 3, 2003 Status Report. In addition, the amount of contamination observed on the surface water at the outfall was more than would be caused by ordinary surface runoff even from a gas station and the EPH concentrations in surface water at the outfall were extremely high.

The data that Mr. Decoulos relied on was not adequate to contradict the strong evidence that the diesel release may have been a source of the contamination at the outfall. He relied on laboratory analysis of soil samples from soil borings that were later completed as monitoring wells DCW-2 and DCW-3, to show that the diesel release had not migrated along the outside of the pipe toward the brook. See Table 2 and Figure 4 of Exhibit B-21. However, that soil data does not support his conclusion because those downgradient samples were only analyzed for volatile petroleum hydrocarbons ("VPH"), which are associated primarily with lighter petroleum products such as gasoline, and not primarily with diesel fuel. In fact, soil samples collected from other, more upgradient locations (DCA, DCB, and DCE) immediately adjacent to the stormwater drainage piping exceeded cleanup standards for EPH petroleum fractions associated with diesel fuel.

Mr. Decoulos primarily drew his opinion from the low concentrations of diesel analytes in groundwater from monitoring wells downgradient of the release (DCW-1, DCW-2 and DCW-3). See Figure 4. But that said, it was clear that the surface water at the outfall was heavily impacted by diesel-range petroleum hydrocarbons, e.g., the very high EPH concentrations detected. The large difference between these results should have prompted Mr. Decoulos to do more groundwater assessment before stating that the diesel release was not a source of the release to the stormwater drainage system and South Meadow Brook.

In addition, the fact that LNAPL or high EPH concentrations were not present in wells DCW-1 and DCW-2 in the downgradient direction outside the storm water drainage pipe does not rule out the potential for LNAPL or contaminated groundwater to be in contact with the storm pipe at other locations. Clearly, there was diesel contamination in the soil along the storm drain pipe, as indicated by the EPH concentrations in the soil borings DCA, DCB, and DCE, which were proximate to the pipe, according to Figure 4 of the July 3, 2003 Status Report.

Q. Mr. Decoulos's July 3, 2003 IRA Status Report, and his IRA submittals thereafter, stated that that "the drainage structures in front of the Site did not show any signs of petroleum impact." Do you believe the available data supported Mr. Decoulos's statement?

A. No. As mentioned above, Mr. Decoulos's Figure 3 includes vapor data from the storm drain system on May 16, 2003, showing that there was potential petroleum impact to the stormwater drainage piping downgradient but not upgradient of

the gas station, indicating that the gas station may have been a source. In the pipe's upstream direction to the north and in front of Eagle Gas, the readings are zero and .5 parts per million by volume ("ppmv"). Then 100 feet downstream to the south of the station, the concentration rises to 27 ppmv. While 27 ppmv is not a particularly high reading, the increase from upstream to downstream indicates that the gas station may be a source, and thus the vapor readings did not support Mr. Decoulos's statements that the storm drain structures did not show signs of petroleum impact.

Q. Do you believe there were any problems with the Immediate Response Actions that Mr. Decoulos proposed in his January 21, 2004 IRA Plan (Exhibit B-24) for the release to the brook?

A. Yes. Mr. Decoulos's entire premise for the Immediate Response Actions proposed in his IRA Plan submitted in January 2004 was his alternate theory that storm surface flows were the source of the contamination at the outfall. See page 18 of the January 21, 2004 IRA Plan, (Exhibit B-24). However, he based this alternate theory on the same subsurface soil and groundwater data that he had presented in the July 2003 Status Report. As discussed above, that data did not adequately support his conclusion that the diesel release was not a source of the contamination at the outfall. Mr. Decoulos did not present data or technical information about runoff from the site to support his alternate theory in the January 2004 IRA Plan.

All of Mr. Decoulos's proposed Immediate Response Actions for the release to the brook revolved around preventing surface water from flowing to the storm drain: he proposed to reconstruct the concrete pad over the underground storage tanks, install an

overhead canopy to minimize runoff over the concrete pad, and install an oil-water separator to collect oil from any runoff from the paved surfaces,. These were "best management practices" for preventing runoff over the gas station pump island, but they did not address the impact of the subsurface diesel release to the storm drain system.

The fourth action Mr. Decoulos proposed in January 2004, to clean the petroleum residue out of the stormwater system, was a reasonable activity to propose because residual petroleum was likely present in the stormwater drainage piping. However, this activity would have been premature, as the source of petroleum entering the stormwater drainage piping had not been eliminated or controlled. The January 2004 proposal to clean the pipe did not address the underlying issue of the potential for infiltration of the diesel release into the stormwater drainage pipe.

Q. In his January 21, 2004 IRA Plan (Exhibit B-24), Mr. Decoulos stated at page 18, "The analytical results show that the diesel delivery line failure has <u>not</u> migrated along a potentially preferred pathway outside the stormwater piping in Main Street" (emphasis in original). Do you believe this statement was adequately supported?

A. No, that statement was not supported, because there were elevated concentrations of EPH in the soil from borings DCA, DCB, and DCE immediately adjacent to the stormwater piping. His statement relies on the absence of high contaminant concentrations in groundwater samples, but in fact there were some lower-level concentrations of diesel analytes in the groundwater from DCW-1**.**

Q. If an LSP disagrees with the Department's requirements for an IRA condition, what, if any, recourse does the LSP have?

A. In my experience, an LSP who disagrees with MassDEP's IRA requirements can have a meeting with DEP to review the alternatives and reach an agreement about the Immediate Response Actions to be taken. The LSP needs to present data and/or an investigative approach that would yield the information necessary to evaluate the site and allow conclusions to be drawn about the actions needed to address the condition requiring an Immediate Response Action. In my experience, MassDEP is willing to consider alternative approaches provided that they meet the intent of being protective of human health, safety, welfare and the environment in a time critical manner. I have been able to persuade MassDEP to adjust several requirements for Immediate Response Actions using this process.

Q. What, if any, information do you believe should have been obtained to adequately support Mr. Decoulos's assertions that the diesel release was not a source of the petroleum impact at the outfall?

A. First, in the immediate area of the release, the depth to groundwater and the pipe elevations should have been obtained, and a cross section should have been prepared with those elevations, so that Mr. Decoulos could assess whether the groundwater was in contact with the stormwater drain pipe. These field measurements and cross sections help to better understand those conditions, and they should have been one of the first assessment activities performed to show if groundwater or petroleum was in contact with the stormwater drain pipe. In addition, a video inspection inside the storm

drain system should have been performed to assess if petroleum product was in the pipe and whether the pipe had been compromised. Another technique to assess the condition of the piping would have been to advance test pits adjacent to the piping to allow for their visual inspection. These investigative activities would have been appropriate at the Immediate Response Action stage, and should have been performed even if MassDEP did not specify them as requirements (which in the case of the cross section and video inspection, the MassDEP later specified).

Mr. Decoulos did not perform the video survey. Furthermore, his reports did not provide the elevations of the inverts (i.e., the bottom) of the stormwater drain pipe until January 2005, two years after the discovery of the LNAPL in well BP5-RR.

Finally, to support his position, Mr. Decoulos's assessment should have investigated the reasons for the high concentrations of EPH at the outfall. This was never done.

Faced with the reported concentrations in the surface water at the outfall, as well as the presence of LNAPL in BP5-RR and the absence of any other potential source in the area, an LSP acting with reasonable care and diligence and applying the knowledge and skill ordinarily exercised by LSPs would have investigated the interior of the piping as a potential migration pathway to rule out this route for the diesel to migrate to South Meadow Brook. The LSP's goal should have been to prove or disprove a connection between the LNAPL associated with the diesel release and the high concentrations of EPH in the surface water at the outfall.

Q. What, if any, additional information do you believe should have been obtained to adequately support Mr. Decoulos's assertions that surface water runoff from the Eagle Gas station was the source of oil at the outfall?

A. In addition to investigating and demonstrating that the LNAPL was not the source of the discharges to the South Meadow Brook as discussed above, Mr. Decoulos should have, at a minimum, collected water samples entering the storm drain system to document that the concentrations were higher than the concentrations in South Meadow Brook. In addition, forensic testing may have been appropriate to demonstrate that the petroleum products running off the paved surface of the Eagle Gas Station were the same petroleum products detected in the South Meadow Brook.

Q. What did you observe in the photographs taken by MassDEP on March 11, 2004, Exhibit B-25, and how do they influence your testimony?

A. The photographs taken by MassDEP on March 11, 2004 show gross petroleum contamination discharging from the outfall into South Meadow Brook. The conditions in these photographs are inconsistent with Mr. Decoulos's conclusions that surface runoff was causing the conditions at the outfall. The photographs show heavy staining inside the storm drain pipe at the outfall and heavy petroleum product on the surface water at the outfall. For these conditions to have been caused by the surface runoff from the gas station, the conditions at the gas station would have to have been similar to the conditions at the outfall. That is, there would have to be similar or greater gross amounts of product in the surface runoff at the gas station to cause the gross contamination at the outfall. Although MassDEP observed poor housekeeping and

staining on the paved area around the garage and the concrete surface at the pump island, this is common at gas stations. The amount of drips and small splashes and overfills that are commonly present on paved or concrete surfaces at gas stations is not a gross amount of oil that would be expected to result in the gross amount of oil photographed on the surface water and storm drain outfall on March 11, 2004.

Q. Mr. Decoulos submitted a Phase I report (Exhibit B-30) that stated at page 25, "Soil migration of VOCs could be intercepted by the stormwater collection system along Main Street. This interception would open a direct pathway to South Meadow Brook. Investigations and sampling to date show that this route has not developed." Do you believe this reasoning was adequately supported?

A. No. The results of Mr. Decoulos's investigation included soil contamination with EPH proximate to the drainage system in borings DCA, DCB, and DCE. These results indicate a potential for soil contamination to be in contact with the storm drain pipe and therefore do not support Mr. Decoulos's statement in his Phase I report.

Q. Mr. Decoulos's Phase I stated at page 25, "Petroleum contaminated groundwater could infiltrate into the stormwater collection system and discharge directly into South Meadow Brook. Again, subsurface investigations and sampling to date show that this route has not developed." Do you believe this reasoning was adequately supported?

A. No. There was evidence that contradicted this statement, as discussed above. Furthermore, over six feet of LNAPL had been measured in well BP5-RR within ten feet of the storm drain pipe, that is, immediately adjacent to that pipe, in April and May 2003, as described in the July 2003 Status Report, Exhibit B-21. Thus the infiltration of the pipe could not be ruled out because of the close proximity. Most importantly, gross contamination with diesel range organics was observed in South Meadow Brook strongly indicating that this migration pathway may have developed. Although the groundwater data from samples taken in June 2003 showed low or no detectable contamination in the DCW wells, this particular migration pathway should have received further assessment**.**

Q. LNAPL was detected in a second monitoring well in June 2004. Do you believe Mr. Decoulos adequately supported the IRA Modifications he proposed in his June 15, 2004 IRA Status Report and Modification (Exhibit B-33) to address that finding?

A. No.

Q. Please explain?

A. Mr. Decoulos proposed to construct an interceptor trench in which LNAPL would be captured by perforated piping and a recovery well with a passive skimmer. However, he had not done adequate testing to show that the trench in fact would intercept the horizontal extent of the LNAPL plume. He also did not have

sufficient information to demonstrate that the groundwater and LNAPL were in the vertical capture zone of the proposed perforated piping.

Unfortunately, Mr. Decoulos had not performed adequate assessment of the extent of contamination at the site to demonstrate that the proposed system would be effective and the proposed IRA Modification did not reflect that he gave reasonably complete thought to the design, operation and long-term monitoring of the system.

Q. Were there any problems with Mr. Decoulos's November 5, 2004 IRA Modification (Exhibit B-37), and if so, what were they?

A. Although Mr. Decoulos's November 2004 IRA Modification presented an acceptable approach to removing LNAPL and provided a reasonable level of detail for parts of the proposed system, a number of details of the system remained unknown. The extent of the contamination had not yet been fully characterized and, therefore, the effect of the pumping of the groundwater on the extent of the contamination was unknown. Thus, at the time of this submittal, it was unknown whether one or both of the proposed extraction wells would provide adequate capture of the LNAPL and dissolved phase contamination. Mr. Decoulos proposed a pump test to evaluate the capture zone of one or both of the proposed recovery wells, yet no testing was proposed to determine whether the size of the proposed infiltration gallery (a leaching area for treatment) was adequate to infiltrate the extracted/treated groundwater. Finally, the recovery wells and passive skimmer had been installed during the reporting period without previously consulting MassDEP.

The status report portion of the November 5, 2004 report presented some additional information that was not explained or approved. First, the soil samples that Mr. Decoulos submitted for testing were submitted for VPH compounds, not for the parameters associated with the diesel release (EPH). In addition, significant additional testing was performed on samples from the Site that was not reported or discussed in the text. No explanation/rationale for the VPH and additional testing was provided. Finally, the status report indicates that a passive recovery system was installed and operated in one of the new recovery wells. There is no indication that MassDEP was consulted on this response action.

Q. In a letter to MassDEP dated November 24, 2004, Exhibit B-38, Mr. Decoulos stated that the release to the brook "appears historic, with many potential surface sources contributing…There are no facts before the Department to suggest that the NAPL release has caused an impact to any wetland resource… The diesel release has not migrated into the stormwater collection system or wetland resources." Were these statements adequately supported?

A. No. There were facts that strongly suggested that the LNAPL release at the Site had caused the contamination of the wetland resources and South Meadow Brook. Those facts included over six feet of product in well BP5-RR immediately adjacent to the stormwater collection pipe; the EPH detected in soil borings DCA, DCD, and DCE immediately proximate to that pipe; and the high concentrations of EPH in surface water at the outfall. Also, by November 2004, Mr. Decoulos and his client had been maintaining the absorbent booms and pads at the outfall for almost two years, and

oil was continuing to be discharged at the outfall, which indicates an ongoing release. See, e.g., December 6, 2004 e-mail from Mr. Decoulos to Ms. Baran, Exhibit B-40, Item #9, proposal to control the sheen at the outfall. In addition, there was no surface release that would account for the volume of oil contamination at the outfall. Therefore, there were many lines of evidence indicating that it was likely that the LNAPL release caused the contamination at the outfall.

Q. Do you believe there were any problems with Mr. Decoulos's work in regard to the IRA Modifications submitted in December 2004 and January 2005, Exhibits B-42 and B-44, and if so, what were these problems?

A. There were problems with the IRA Modifications submitted in December 2004 and January 2005. Before the interceptor trench was installed, MassDEP had, appropriately, expressed concerns to Mr. Decoulos about the proposed trench that I believe were justified. DEP was requiring 14 tasks that Mr. Decoulos listed in his December 6, 2004 e-mail to Ms. Baran, Exhibit B-40, and several of those tasks were activities that would be required to support a proposal made by any LSP for a recovery trench such as the one proposed by Mr. Decoulos. Mr. Decoulos constructed the trench before these tasks were performed. The first task was to delineate the extent of NAPL, which still had not been done almost two years after the diesel release had been detected. The requirement to conduct a percolation test or similar type of analysis is a task that I would expect any LSP to have done before proposing a system that included re-infiltration of the treated groundwater into the ground. Furthermore, it is critical to conduct a pump test to determine the volume of water that will be removed and treated as

part of the recovery trench in order to design an infiltration system large enough to accommodate that volume of water to be treated. All this information must be gathered as part of the design of the system, not after the system is installed.

Q. Do you believe there were any problems with Mr. Decoulos's work in regard to the construction of the interceptor trench in December 2004?

A. From my review of the e-mail between Mr. Decoulos and MassDEP on December 15, 2004 , Exhibit B-41, and Mr. Decoulos's December 22, 2004 IRA Plan Modification, Exhibit B-42, I believe that Mr. Decoulos did not do adequate planning for the construction of the trench. Mr. Decoulos's plans for the installation of a trench were conceptual only, and lacked design specifications such as the rate of groundwater removal, treatment volumes, and the rate at which the treated water could be re-infiltrated into the ground. Furthermore, the fact that soil collapsed into the trench and that there was difficulty in installing the impermeable downgradient barrier is not a surprise to me given the sandy soil layers and the lack of design plans for excavation support.

Q. Mr. Decoulos submitted an IRA Status Report dated May 6, 2005 (Exhibit B-49). Do you believe there were any problems with the following statements on page 20 of the May 6, 2005 report? "The contaminant levels within the drain pipe may be affected by groundwater elevation. Data from the nearest United States Geological Survey (USGS) monitoring well (located in Lakeville, MA)indicates groundwater levels were fluctuating widely…we have estimated that the storm drain system is impacted by groundwater petroleum contamination when

groundwater at the USGS Lakeville well is approximately 10.6 feet below land surface."

A. Yes, there are problems with these statements. They do not adequately identify any basis for relating the groundwater elevations recorded at the USGS well to the Eagle Gas site. Although I understand from these statements that Mr. Decoulos was trying to identify the groundwater elevation that would result in an adverse effect on the storm drain system, the changes of groundwater elevation at the USGS well are not the same as the changes of groundwater elevations at the site. In the quoted statement, Mr. Decoulos is indicating that in wet periods there was more oil coming out of the storm drain outfall. However, there simply is not enough information presented to support that statement. The twelve days of measurements were not sufficient to show how fluctuations in groundwater elevations impact the discharge of petroleum from the storm drain. Measurements of site-specific groundwater elevations over a longer time period than 12 days would have been more appropriate to establish the relationship. This data would have also supported the design of the recovery trench.

Q. Mr. Decoulos stated on page 23 of his July 8, 2005 IRA Modification, Exhibit B-50, "Although the Department has argued vigorously for active recovery of LNAPL on Site, recent standards and practices for LNAPL recovery with similar site characteristics do not support this need." Do you believe there are any problems with this statement?

A. Yes. This statement is in contradiction to Mr. Decoulos' proposed active remediation system of a recovery trench and related groundwater extraction and treatment.

Q. In your opinion, did Mr. Decoulos's work in regard to his submittals for the Eagle Gas site violate the standard of care set forth in 309 CMR 4.02(1)?

A. Yes. 309 CMR 4.02(1) states:

> In providing Professional Services, a licensed site professional shall act with reasonable care and diligence, and apply the knowledge and skill ordinarily exercised by licensed site professionals in good standing practicing in the Commonwealth at the time services are performed.

In my opinion, Mr. Decoulos did not act with reasonable care and diligence in regard to his work at the Eagle Gas site. Mr. Decoulos failed to adequately assess the extent of the LNAPL contamination, failed to adequately characterize the migration pathways at the Site that resulted in diesel being released into South Meadow Brook, and failed to collect data to adequately design and construct a remedial system. He also failed to act in a timely manner to implement Immediate Response Actions to address the risks at this site, including an ongoing petroleum discharge to wetlands and South Meadow Brook, which may have posed a substantial risk to the environment. He also failed to respond in a timely manner to directives from the DEP including requirements to complete an imminent hazard evaluation and assess conditions of substantial release migration and critical exposure pathways. By failing to adequately assess the extent of contamination, characterize the migration pathways, implement remedial actions, and respond to MassDEP directives, Mr. Decoulos did not act with reasonable care and diligence.

Q. In your opinion, did Mr. Decoulos's work in regard to his submittals for the Eagle Gas site violate the Board's Rule of Professional Conduct 309 CMR 4.03(3)(b))?

A. Yes. 309 CMR 4.03(3)(b) in effect when Mr. Decoulos did the work at issue reads as follows:

> In providing professional services, a licensed site professional shall follow the requirements and procedures set forth in applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000.

As I explained above, I believe that Mr. Decoulos's IRA submittals for the Carver site failed to meet MCP requirements for Immediate Response Actions.

1. Mr. Decoulos failed to adequately assess conditions in a time critical manner including the assessment of Imminent Hazards, Conditions of Substantial Release Migration and Critical Exposure Pathways (310 CMR 40.0411 (1)). Furthermore, he failed to meet MCP required deadlines such as his failure to submit a plan to DEP to perform these activities by July 8, 2003.
2. Mr. Decoulos failed to adequately assess in a time critical manner the nature and extent as well as the potential migration pathways of the contamination that was likely resulting in adverse impact to the environment.
3. Mr. Decoulos did not perform IRA activities directed by DEP.
4. Mr. Decoulos failed to conform with deadlines specified in written correspondence from DEP as well as requirements of the MCP.

RANDOLPH SPEEDY LUBE SITE

Q. Do you believe there were any problems with Mr. Decoulos's work in regard to the Response Action Outcome Statement submitted in June 2002, Exhibit B-55?

A. Yes.

Q. What were these problems?

A. Fundamentally there were three problems with the RAO submitted in June 2002. First, the LSP failed to demonstrate that the source of contamination had been controlled or eliminated as contaminant concentrations were found to increase between sampling rounds. Second, only two rounds of groundwater samples, collected within approximately one month of each other, were used to support the RAO and no technical justification was provided to demonstrate that these data adequately and accurately represented groundwater conditions and exposure concentrations at the Site. Furthermore, the samples were field filtered which would reduce the concentrations of the volatile components of VPH prior to testing. Third, the site was not adequately characterized because the horizontal extent of contamination was not determined, the stated groundwater flow direction may not be correct, and the source(s) of the contamination are not evident from the RAO.

Q. Do you believe that Mr. Decoulos adequately defined the vertical and horizontal extent of contamination at the Randolph site?

A. I do not believe he determined the horizontal extent of the contamination as concentrations are elevated in the most downgradient well indicated and thus he should have assessed farther downgradient. Also, the monitoring wells are in an approximate straight line indicating that the actual direction of groundwater flow may not be correct.

Q. Do you believe that Mr. Decoulos adequately supported a finding of No Significant Risk in his 2002 Response Action Outcome Statement?

A. No. He did not demonstrate that the source(s) of contamination were either eliminated or controlled at the time he filed the 2002 RAO. Mr. Decoulos did not adequately identify the source(s) of the contamination and the reported concentrations showed an increasing trend indication that the source(s) were still present on the site and not being controlled.

Q. Have you ever personally performed a Method 2 Risk Characterization?

A. Yes.

Q. Do you believe that Mr. Decoulos appropriately averaged the high and low soil gas results from separate locations in performing his Method 2 Risk Characterization?

A. No. The concentration differences were very large between the two sampling locations and in many cases contaminants of concern were not detected in both samples.

Q. Do you believe that Mr. Decoulos appropriately omitted MTBE from his Method 2 Risk Characterization?

A. No. MTBE is a contaminant of concern at sites where gasoline was released, and should have been included in the risk characterization.

Q. Do you believe that Mr. Decoulos appropriately omitted an assessment of the potential risk to indoor air from benzene in performing his Method 2 Risk Characterization?

A. No. Benzene is a contaminant of concern at sites where gasoline was released and should have been included in the risk characterization.

Q. Do you believe that Mr. Decoulos appropriately described his methods and calculations in performing his Method 2 Risk Characterization?

A. No. The RAO report does not include Mr. Decoulos' calculations and the inputs used are not clear.

Q. Mr. Decoulos has stated that it was appropriate to file the RAO after only two rounds of groundwater sampling because the source of the contamination had been removed. Do you concur?

A. No. The basis for his opinion is not demonstrated in the RAO or supported by the data provided in the RAO. It is unclear what the source(s) of contamination are at the site as the contaminant concentrations were increasing, indicating the source may still be present on the site.

Q. Mr. Decoulos has stated that the trends of contamination were increasing because groundwater elevations were dropping as summer approached, and this was one of the circumstances that made it appropriate to file the RAO after only two rounds of groundwater sampling. Do you concur?

A. No. The data are not provided that show that the groundwater elevations had changed between the sampling rounds. Furthermore, he does not provide any justification that at this site groundwater elevations are lower in the summer or that there are seasonal groundwater elevation changes at the Site. Finally, the VPH concentrations are likely biased low as a result of field filtering the samples.

Q. In your opinion, did Mr. Decoulos's work in regard to his June 14, 2002 Response Action Outcome submittal for the Randolph site violate the standard of care set forth in 309 CMR 4.02(1)?

A. Yes. 309 CMR 4.02(1) states:

> In providing Professional Services, a licensed site professional shall act with reasonable care and diligence, and apply the knowledge and skill ordinarily exercised by licensed site professionals in good standing practicing in the Commonwealth at the time services are performed.

In my opinion, Mr. Decoulos did not act with reasonable care and diligence in regard to the RAO submittals for the Randolph site. By failing to adequately characterize the source(s) and extent of contamination, Mr. Decoulos did not act with reasonable care and diligence. He also did not collect adequate information to support his conclusions that the source(s) had been controlled or eliminated. I also believe that he failed to act with reasonable care and diligence with regard to assessing groundwater conditions at the site. He failed to sample the groundwater on a seasonal basis or, alternatively, provide the data to reasonably demonstrate that the samples that he collected in May and June of 2002 represent the "worst case" concentrations at the Randolph site. In addition, he field filtered the samples which would likely result in VPH concentrations that were biased low.

Q. In your opinion, did Mr. Decoulos's work in regard to his June 14, 2002 Response Action Outcome submittal for the Randolph site violate the Board's Rule of Professional Conduct 309 CMR 4.03(3)(b)), which requires LSPs to follow the requirements of Chapter 21E and the MCP?

A. Yes. 309 CMR 4.03(3)(b) in effect when Mr. Decoulos did the work at issue reads as follows:

> In providing professional services, a licensed site professional shall follow the requirements and procedures set forth in applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000.

As I explained above, I believe that Mr. Decoulos's RAO submittals for the Randolph site failed to meet MCP requirements for Response Action Outcomes. Mr. Decoulos failed to:

1. Determine the extent of contamination (310 CMR 40.0904);
2. Demonstrate that the source of contamination was either eliminated or controlled (310 CMR 40.1003 (5));

Q. Does this conclude your testimony?

A. Yes.

CERTIFICATE OF SERVICE

I hereby certify that on this date a true copy of the Direct Testimony of Ian M. Phillips was served upon each party in this action by electronic mail, to the following address: jamesj@decoulos.com, and that by agreement, the Exhibits in this matter were served upon each party in this action by overnight mail for delivery to the following address:

James J. Decoulos, LSP
Decoulos & Company
185 Alewife Brook Parkway
Cambridge, MA 02138

8/25/10
Date

Lynn Peterson Read