



The State of New Hampshire  
**DEPARTMENT OF ENVIRONMENTAL SERVICES**



**Thomas S. Burack, Commissioner**

November 2, 2011

Michele V. Leone  
National Grid  
40 Sylvan Road  
Waltham, NH 02451-1120

**Subject: Gilford** – Lower Liberty Hill Road, DES Site #200411113, Project #14262  
**Comments on NHDES October 8, 2010 Preliminary Decision,**  
dated January 28, 2011

Dear Ms. Leone:

The New Hampshire Department of Environmental Services (Department) has reviewed the comment letter referenced above. This letter was prepared by National Grid in response to the Department's preliminary decision on Remedial Action Plan Addendum No. 2 that was issued on October 8, 2010. Based on the Department's review, we offer the following:

National Grid asserts that since the Department's preliminary approval of remedial action alternative RAA5 on February 29, 2008 that "nothing significant or substantive has changed...that would justify the Department's [change in position]". The Department respectfully disagrees. RAA5 as originally proposed was a passive containment system that only required long term monitoring to verify its performance. After additional site investigation work and groundwater modeling was performed to evaluate the effectiveness of RAA5, National Grid concluded that the proposed slurry wall system would not meet Department standards for containing the source material that remained after excavation and treatment of the tar saturated soils. Subsequently, RAA5a was proposed and included the addition of a groundwater pump and treat system that would have to be operated, maintained, and monitored over an indeterminate period of time, and potentially modified in order to ensure its proper function. As a result, the Department does in fact view this change as being significant and substantive. Furthermore, in our letter to National Grid dated June 30, 2009 the Department indicated that the proposed modifications to RAA5, which later became known as remedial alternative RAA5a, constituted a new remedial alternative.

National Grid goes on to assert that there is no basis for the Department's change in the selected remedy and indicates that our decision to recommend implementation of remedial action alternative RAA1 was "arbitrary and capricious" because the Department did not apply the same level of analysis as we did for RAA5a. The Department recommended implementation of RAA1 simply because it was the other alternative retained for evaluation in the Remedial Action Plan Addendum No. 2. At no time has National Grid indicated that RAA1 was infeasible. Regardless, the Department has prepared the following analysis consistent with that which was performed when evaluating RAA5a:

*Env-Or 606.13 Remedial Action Plan Approval. The Department shall approve the remedial action plan upon determining that:*

(a) *Human health and the environment will be protected* - Human health and the environment are protected when it can be demonstrated that there are no complete exposure pathways to contaminants of concern originating from the site. Exposure pathways are the various mechanisms by which humans or ecological receptors may be exposed to contaminants originating from a site. Exposure pathways can include: 1) direct contact with contaminated soil; 2) use of and contact with contaminated groundwater; 3) human or ecological receptor exposure to contaminated surface water and/or sediments; and 4) inhalation of vapors or particulates.

1. Soil Exposure Pathway. RAA1 includes full excavation of the source material (tar-saturated and tar impacted soil) from the site. Complete removal will eliminate future direct contact to the contaminated soil.

2. Groundwater Exposure Pathway. Contaminants attributable to coal tar have not been detected in any drinking water wells. The characteristics of the site hydrogeology (i.e., deep glacial till deposits and a groundwater flow regime beneath the site which has strong upward gradients and discharges to Jewett Brook) act to limit the migration of contaminated groundwater and provide protection to nearby drinking water supplies. There are no water supply wells located within the plume of contaminated groundwater and no contamination above AGQS has been detected in the bedrock which is the primary source of drinking water for nearby residences. A groundwater management permit (GMP) is required which will control of the use of groundwater within the Groundwater Management Zone (GMZ) and address any potential exposure pathways in the future.

3. Surface Water Exposure Pathway. In November 2008 a small seep adjacent to Jewett Brook where groundwater discharged to surface water was remediated by the placement of fill, resulting in the elimination of the potential exposure pathways (e.g., oral, inhalation, direct contact) for the contaminated groundwater. All water samples collected from Jewett Brook meet applicable surface water quality standards which were developed to be protective of aquatic life and human health. There will be continued sampling of Jewett Brook under a GMP. Additionally, the quality of the groundwater discharging to Jewett Brook is expected to improve, albeit slowly, over time.

4. Inhalation Exposure Pathway. Contaminant concentrations exceed GW-2 groundwater standards (ref. NHDES Risk Characterization and Management Policy (revised May 2007) in portions of the dissolved contaminant plume. As a result, any GMP approved by the Department would include a condition requiring routine sub-slab vapor and indoor air monitoring for any occupied buildings within the GMZ. It is noted that previous sampling collected during the site investigation and when the residences were occupied did not identify any unacceptable risks due to vapor inhalation. Particulates will be controlled during the removal of contaminated soil and construction at the site, thereby addressing this potential exposure pathway.

*Preliminary Determination:* Remedial action alternative RAA1 appears to address all potential exposure pathways and is protective of human health and the environment.

*(b) The groundwater quality criteria specified in Env-Or 603.01 will be met* – Env-Or 603.01 Groundwater Quality Criteria requires that: a) groundwater be suitable for use as drinking water; b) groundwater shall not contain any regulated contaminant at a concentration greater than the ambient groundwater quality standards (AGQS); and 3) groundwater shall not contain any regulated contaminant at a concentration such that the natural discharge of that groundwater to surface water will cause a violation of surface water quality standards as established in Env-Wq 1700. The water supply wells outside the proposed GMZ have been sampled and meet drinking water standards for the chemicals of concern. For both of the remedial action alternatives evaluated, the existing plume is predicted to attenuate and meet AGQS within 140 years (Note: the benzene plume is expected to be substantially attenuated within 30 years and naphthalene is estimated to meet AGQS within approximately 140 years). AGQS are based on drinking water standards and have been established to be protective of human health. Samples of the surface water in Jewett Brook have met the surface water standards of Env-Wq 1700 for the contaminants of concern. Jewett Brook will continue to be sampled under a GMP.

*Preliminary Determination:* Remedial action alternative RAA1 appears to result in the groundwater quality standards of Env-Or 603.01 being met.

*(c) Sources of contamination will be controlled to reduce or eliminate further discharges* – Pursuant to RAA1, approximately 100 percent of the source material (tar-impacted and tar-saturated soil) is to be excavated and treated off-site.

*Preliminary Determination:* Remedial action alternative RAA1 controls the source of contamination and reduces further discharges.

*(d) Contaminated soil will be removed, treated, or contained to reduce the human health risk associated with direct exposure via dermal contact, ingestion, and inhalation* – As indicated above, All source material (tar-impacted and tar-saturated soil) is to be excavated and treated off-site. The removal of contaminated soil will eliminate direct exposure via dermal contact, ingestion, and inhalation.

*Preliminary Determination:* Remedial action alternative RAA1 appears to address the direct contact risks associated with contaminated soil.

*(e) The risk to human health and the environment will be reduced to the greatest extent practicable, balancing costs and benefits by evaluating the risk to human health and the environment by the methods described in the ASTM E2081-00 (2004)<sup>e1</sup> entitled "Standard Guide for Risk Based Corrective Action" (ASTM E2081)* - In the Department's preliminary determination dated October 8, 2010, we concluded that both RAA1 and RAA5a appeared to reduce the risk to human health and the environment to the greatest extent practicable. With respect to the cost aspect of this criterion, the Department acknowledges that there are cost sensitivities associated with both RAA1 and RAA5a and concur that a contingency of 30 percent is reasonable given the potential uncertainties associated with each alternative. That said, the estimated contingencies are approaching the cost differential, before adding in contingencies, between RAA1 and RAA5a.

*Preliminary Determination:* Remedial action alternative RAA1 appears to reduce the risk to human health and the environment to the greatest extent practicable. However, the Department continues to believe that the cost differential does not significantly affect the evaluation/comparison of RAA1 and RAA5a.

(f) *Long-term management, including operation and maintenance [O&M] of the remediation equipment and site monitoring requirements, will be minimized* - In order to evaluate whether or not long-term management will be minimized, the Department believes it is necessary to compare RAA1 and RAA5a. The following is a summary of anticipated long-term O&M and site monitoring requirements for the respective remedial alternatives:

<b>Table 2: Comparison of Long-Term Management Requirements</b>		
<b>Remedial Alternative</b>	<b>Operation and Maintenance</b>	<b>Site Monitoring</b>
RAA1	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Sampling of monitoring wells downgradient of the former source area</li> <li>• Surface water sampling (Jewett Brook)</li> <li>• Sampling of residential water supply wells on adjacent properties</li> </ul>
RAA5a	<ul style="list-style-type: none"> <li>• Inspection and maintenance (if necessary) of cap system</li> <li>• Routine maintenance and periodic replacement of pumps used for hydraulic control</li> <li>• Routine maintenance and periodic replacement of treatment system components and media</li> <li>• Replacement of leach field</li> <li>• Adjustment of pump flow rates to preclude advection under the slurry wall or flux through the wall.</li> </ul>	<ul style="list-style-type: none"> <li>• Sampling of monitoring wells downgradient of containment system</li> <li>• Monitoring of wells inside and outside of slurry wall for assessing the performance of the containment and groundwater pumping systems</li> <li>• Monitoring of groundwater treatment system effluent</li> <li>• Surface water sampling (Jewett Brook)</li> <li>• Sampling of residential water supply wells on adjacent properties</li> <li>• Compliance monitoring with respect to Activity and Use Restrictions (AUR)</li> </ul>

For both of the remedial action alternatives evaluated, the existing plume is predicted to attenuate and meet AGQS within 140 years. However, for RAA5a, operation of the pump and treat system and associated monitoring would have to continue beyond 140 years for as long as groundwater within the slurry wall exceeds AGQS.

*Preliminary Determination:* In consideration of the comparison above and the O&M requirements for RAA5a well beyond 140 years, RAA1 will minimize long-term management requirements.

(g) *The potential need for modification of the remedy will be minimized* – Since RAA1 includes full removal of the source material and long-term monitoring of the GMZ, modification of the remedy would not be anticipated.

*Preliminary Determination:* Removal of the source material and monitored natural attenuation is essentially a presumptive remedy. Therefore, the potential need for modification of RAA1 appears to be minimized.

(h) *Resource value of groundwater impacted by the contamination will be protected to the greatest extent practicable taking into account current and anticipated future land use* – Groundwater impacted by site contaminants has been limited to groundwater in the overburden (i.e. soil above bedrock) on six properties with the exception of the one time detection of benzene at a concentration less than ambient groundwater quality standards (AGQS) in onsite bedrock monitoring well MW111BR in February 2011 (Note: National Grid has indicated that they will verify the presence of benzene in MW111BR during the next sampling round scheduled for August 2011 and monitor for trends as appropriate). Groundwater in the overburden is not expected to be used as a source of drinking water for any of the six properties. The drinking water wells used to supply the former residences on the properties now owned by National Grid are bedrock wells. Adjacent properties also use groundwater as the supply for their drinking water and most of the individual drinking water wells adjacent to the site are also bedrock wells. Site investigation work performed to date indicates that bedrock water quality at and adjacent to the site, with the exception of the recent detection of benzene in onsite monitoring well MW111BR, has not been impacted by coal tar related contaminants and the site hydrogeology and expected flow of groundwater (i.e., toward Jewett Brook) should act to protect the drinking water supplies from the contaminant plume. In the event contamination from the site is confirmed to be present in the bedrock, that would represent a fundamental change in the conceptual site model which in turn would require additional investigation and/or remedial actions. The Department believes that it is unlikely that nearby drinking water wells will be impacted by the Lower Liberty Hill Road site in the future. Regardless of the remedial action alternative ultimately approved by the Department, use of groundwater within the GMZ will be managed and controlled and routine monitoring of drinking water wells adjacent to the site will be required pursuant to a GMP. In summary, while the groundwater in the Lower Liberty Hill Road neighborhood is used as a source of drinking water for individual lots, the recommended remedy will provide for protection of the groundwater and wells used to provide drinking water to residents in the area.

*Preliminary Determination:* The proposed remedial action alternative appears to protect the resource value of groundwater to the extent practicable, taking account current future land use.

(i) *Long-term institutional and engineering controls will be reliable* – Institutional controls are the legal or administrative restriction on the use of or access to the site to eliminate or minimize potential exposure to contaminants. As provided for in Env-Or 607, the groundwater management permit (GMP) and the groundwater management zone (GMZ) established under the permit will serve to control and manage contaminated groundwater and ensure that drinking water supply wells are protected. Monitoring of the groundwater contaminant plume will be required under the permit to ensure compliance with the GMZ boundary and to ensure that groundwater quality is being restored over time as a result of remedy implementation. RAA1 does not include any engineering controls.

*Preliminary Determination:* Remedial action alternative RAA1 appears to have reliable institutional controls and no engineering controls are required for this alternative.

(j) *Financial assurance pursuant to Env-Or 606.20 and Env-Or 606.21 will be available*  
– Financial assurance is required for active remediation or active containment that will be ongoing for 10 or more years. RAA1 does not include active remediation or active containment.

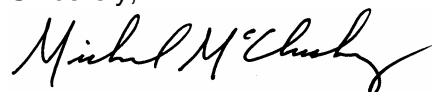
*Preliminary Determination:* The requirements of Env-Or 606.20 and Env-Or 606.21 are not applicable with respect to RAA1.

The Department evaluates proposed remedial alternatives for conformance with the criteria for RAP approval found in Env-Or 606.13 of New Hampshire Administrative Rule Env-Or 600, *Contaminated Site Management* taking into consideration the unique circumstances of each site. Based on the Department's evaluation of RAP Addendum No. 2, we have concluded that both RAA1 and RAA5a are protective of human health and the environment; however, while RAA1 appears to meet the criteria for RAP approval, RAA5a does not. Specifically, the Department found that the RAA5a: 1) will not minimize long-term management requirements; and 2) will not minimize the potential need to modify the remedy over the long term.

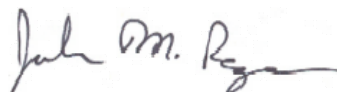
In consideration of the above, the Department hereby requests that National Grid proceed with the development of remedial design plans and construction specifications for the implementation of RAA1 pursuant to Env-Or 606.15(b). Within 30 days of receipt of this letter, please submit to the Department a schedule for preparation of the aforementioned design plans and construction specifications and subsequent implementation of RAA1.

Should you have any questions, please contact us at the Department's Waste Management Division.

Sincerely,



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