



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES



Thomas S. Burack, Commissioner

February 10, 2010

John Schwalbe
Casella Waste Management, Inc.
25 Greens Hill Lane
Rutland, VT 05701-3804

Subject: Bethlehem – North Country Environmental Services Landfill, 581 Trudeau Road, DES #198704033, Project #1737

November 2009 Water Quality Monitoring Results, prepared by Sanborn, Head & Associates, Inc., dated December 18, 2009

Dear Mr. Schwalbe:

On December 21, 2009, the Department of Environmental Services (Department) received a copy of the November 2009 Water Quality Monitoring Results Report (Report) which was submitted by Sanborn, Head & Associates, Inc., (SHA) on behalf of North Country Environmental Services, Inc. (NCES). This reports conveys the analytical results for the 31 monitoring locations required by Groundwater Management and Release Detection Permit GWP-198704033-B-005, as issued for the site on November 9, 2007, as well as a response to the Department's request for additional information regarding the increased well purging that was employed during a portion of 2009. Based on the Departments review of this report, we have the following comments:

- **MW-913M** – The volatile organic compound (VOC) 1,4-dioxane continues to be detected above the reporting limit in the groundwater samples analyzed from monitor well MW-913M. Sampling for this particular VOC began in November 2008. The highest concentration reported to date is 8 ug/l reported for the March 17, 2009 sampling event. The most recent round, taken on November 9, 2009, indicates the presence of 1,4-dioxane at a concentration of 4 ug/L which is above the previously reported concentration of 2 ug/l observed during the October 14, 2009 event. The Department also notes an increase in the concentration of bromide since the October 14, 2009 sampling event. Specifically bromide was detected at concentrations of 0.2 mg/L and 0.3 mg/L, in the November 9, 2009 and the December 8, 2009 sampling events, respectively. The December 8, 2009, bromide data was received after the subject Report was submitted. In SHA's November 24, 2009 Corrective Action Plan, they indicate that in regards to the VOCs and bromide detected in this well they believe the leachate-related sources of groundwater contamination at B-913M have been remediated. SHA also indicates the August 7, 2006 leachate spill is the predominant cause of contamination detected in B-913M, and while releases from the hole in the downchute may have contributed contaminants to B-913M the contaminant concentration trends in their view are inconsistent with an ongoing release. Leachate sampling data from the July 15, 2009 event that included analysis for 1,4-dioxane in leachate for the first time, confirmed the presence of this VOC in multiple samples. Future water quality data need to be closely analyzed to ensure that concentrations of VOCs and bromide continue to decrease, consistent with the proposed conceptual model that all sources of contamination for B-913M have been remediated. NCES shall continue the monthly monitoring to collect additional data to determine if the concentrations are decreasing.

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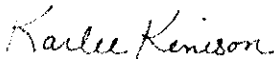
- **Bromide Increases at MW-902U, MW-103S and MW-103D** - As reported, bromide was detected in ten of the twenty nine wells analyzed for bromide. Of these detections, the bromide concentrations reported for B-103S, B-103D and B-902U represent an increase from recent previous well-specific results (note - as discussed above, subsequent data reported for MW-913M during a December 3, 2009 sampling event, also represents an increase in bromide). SHA's conceptual model for this occurrence is that recent earth-moving and regarding activities in the area of the B-103 well couplet, associated with the final phases of the Leachate Management Improvements Project, may be a contributing factor to the increased concentrations of bromide at these two wells. Other site operational/changes in the area of the wells were not identified. There is no specific discussion in regards to a cause for the increase of bromide at B-902U. SHA indicates that the recent detections are anticipated to be a transient, short-term effect and propose to use future monitoring results from these wells to further assess this condition. The Department requests: 1) a more detailed discussion of how the recent earth-moving and regarding activities in the area of the B-103 well couplet would cause a resulting increase in bromide concentration in groundwater at these sampling points; and 2) monthly monitoring of these three wells (B-103S, B-103D and B-902U) at least thru April 2010 to evaluate whether the detections are short term and transient. Based on the monthly monitoring results NCES should make recommendations whether to continue the monthly sampling, investigate for other potential sources as part of the CAP or revert back to triannual detection monitoring/sampling.
- **Extended Purging of Monitoring Wells** - Per the Department's request, SHA provided an explanation as to why during a portion of 2009 (between March and September) NCES requested an increase in well purging of some of the monthly sampling program wells. The Department does not fully understand the rationale provided that the additional purging may provide a better representation of true formation water, particularly given that samples were not collected after three well volumes and compared to samples collected after extended purging. However, the samples collected during this time period appear representative of formation water. Since the October 2009 sampling round, SHA has resumed use of a three-volume purging protocol. The Department requests that any future changes to sampling protocol be submitted for evaluation prior to making any such change. Given the CAP will include a statistical analysis of water quality trends over time we believe it is important to follow the same purging and sampling protocols to reduce any potential variability that may arise from changing protocols. We also note that if the additional purging was intended to "flush" the wells, we would consider this to be a remedial action that would need to be presented in a Corrective Action Plan for approval. Given the limited quantities of water involved we expect that purging 10 volumes versus 3 volumes would not effectively flush contaminants from the monitoring wells or have a significant impact on water quality in the aquifer.

John Schwalbe
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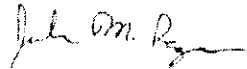
The Department requests that the detailed discussion regarding the presence of elevated bromide, as requested in the second bulleted item above, be provided by March 10, 2010.

Please contact us if you should have any questions or would like to further discuss the comments provided above.

Sincerely,



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