

PROJECT MEMORANDUM

TO: David Newton, Project Manager,
Sarah White, New England Community Involvement Coordinator,
United States Environmental Protection Agency (USEPA)

FROM: Alice Clemente, Blackstone River Watershed Council/
Friends of the Blackstone (BRWC/FOB) and
William Gibbons, Christene Binger, and Michael Penney, GeoInsight, Inc.

SUBJECT: Peterson Puritan Superfund Site Operable Unit 2 (OU2)
Cumberland and Lincoln, Rhode Island
Feasibility Study – Questions/Concerns/Comments

DATE: February 4, 2013

INTRODUCTION

GeoInsight, Inc. prepared the following list of questions, comments and expectations on behalf of BRWC/FOB regarding the Feasibility Study (FS) that is currently in preparation by the Potentially Responsible Parties (PRPs) for OU2 of the Peterson Puritan Superfund Site. The list was compiled based upon review of the Remedial Investigation (RI) and associated risk assessments, discussions with the BRWC/FOB, information presented at the December 12, 2012 public meeting, and preliminary discussions with our geotechnical engineering department head. A separate Project Memorandum that will identify questions, comments, and concerns regarding the RI is being prepared.

OU2 is located within the floodplain of the Blackstone River, between the towns of Cumberland, and Lincoln, Rhode Island. OU-2 includes approximately one-half mile of riparian environments associated with the Blackstone River, ponds, forested uplands, wetlands, and backwater channels. Impacts in OU2 consist of waste deposits and debris fields, associated with the JM Mills Landfill (referred to herein as the “Landfill”), the Unnamed Island, and the Nunes Parcel. Landfill operations began in 1954 and ended in approximately 1986.

The RI presented the results of investigation and assessment activities, and included risk assessments for human health and the environment. Primary concerns identified that relate to the FS evaluation include:

- the downgradient toe of the Landfill is directly adjacent to the Blackstone River in an area where it is difficult to monitor and install controls;
- little information is available on characteristics of waste in the Landfill; and
- little information is available on ground water quality within and under the Landfill.



GENERAL FS COMMENTS, QUESTIONS, AND SUGGESTED CONSIDERATIONS

BRWC/FOB's primary goal is to protect the river from the cumulative effects of continued migration of leachate and sediment from the Landfill and to restore the Peterson Puritan Superfund Site to a sound ecological system conducive to the support of wildlife habitat and to passive recreation for the area's residents. The following is a list of general comments and concerns relevant to that goal, water quality being of the utmost importance.

- Adding an impermeable cap to the Landfill may alter geochemical conditions, possibly exacerbating reducing conditions under the Landfill. The FS should consider how adding an impermeable cap to the Landfill may change geochemical and hydraulic conditions.
- The FS should include a comprehensive stormwater control system and landfill gas management system for alternatives that include the Presumptive Remedy approach.
- The RI indicated that leachate was present along the downgradient toe of the Landfill, on the western and southern flanks of the Landfill that abut the Blackstone River. Presumptive Remedies at other sites typically include both a cap and a leachate control system.
- Could a permeable cap with natural vegetation be an alternative to an impermeable cap and still provide long-term surficial stability, allow maintenance, and minimize disruption to the ecosystem that would otherwise occur by construction of an impermeable cap? Does pre-selecting the Presumptive Remedy prohibit the evaluation of a permeable cap alternative in the FS? BRWC/FOB would like to see among the alternatives explored a no-cap option with extensive leachate control. There is some evidence that natural elements utilized at other sites to recover and contain leachate - certain trees, mushrooms, etc.—have been successful. Such options should be investigated.
- The RI indicated that the Nunes Parcel is now being considered as a “landfill” and being evaluated for the Presumptive Remedy approach. Does this approach limit the possible re-use options for the Nunes Parcel?
- The Blackstone River is subject to flooding conditions and the effects of climate change may increase flooding potential in the future. How will the long-term integrity of the Landfill be ensured against flooding and erosion? Scour potential and scour protection must be evaluated and included in the FS alternatives. The option of reducing fill elevations to the level of surrounding wetlands should also be explored as a possible solution to accommodating floodwater and reducing leachate problem.
- How much of the waste material in the Landfill and the Nunes Parcel is located below the water table? The FS should address data gaps and be more specific about the nature and disposition of existing waste materials.



- Debris Fields (Debris Fields 1 to 3) were identified along the railway line north of OU2. Will these be addressed as part of OU2? Will the feasibility of relocating the waste of Debris Field 4 be evaluated?
- Will additional stability analyses of the Landfill be performed for the FS? Preliminary review of the existing December 2003 slope stability analysis identified the following issues:
 - poor definition of the selection of input parameters;
 - incorrect or inappropriate input parameters (for instance, physical densities of waste, base and cover materials);
 - explanation of appropriate Safety Factors was not provided;
 - discussion of the critical profile was not provided;
 - discussion of seismic versus normal loading conditions were not provided;
 - inappropriate conclusion “Not likely to experience global failure” - based upon the data presented in the 2003 analysis, it appears relatively close to failure under non-seismic conditions; and
 - only cursory recommendations regarding scour protection for the toe of the Landfill are mentioned, which is important for this Landfill because the steepest Landfill slope is on an outside river corner which is subject to potential undercutting during high river flows.
- Current conditions on the Landfill are anecdotally reported as “overgrown” and “well vegetated”, at least on its lower slopes near the river. To support a non-cap option, evaluation of the existing cover should include shallow pits to evaluate thickness, type of soil, and organic content and a review with regard to its ability to support vegetative growth.
- Does the USEPA/PRPs know how much imported shaping and grading material was used in the Landfill (i.e., what portion of Landfill is soil and not solid or hazardous waste?).
- The BRWC/FOB is aware that Providence & Worcester Railroad (P&W RR) wants to install a second railway line adjacent to the existing line that extends directly adjacent to the Landfill and the Nunes Parcel. Who is coordinating with P&W RR about the new railway line? Will this complication be addressed in the FS?

FS ALTERNATIVE CONCEPTS

The BRWC/FOB would like the PRPs to include the following concepts when establishing and evaluating “alternatives” to be considered in the FS.

- **Landfill Stability Analysis** – How will the Landfill need to be contoured, compacted, or consolidated for proper stability such that a cap could be applied to the surface? The Landfill slopes appear to range from 2.5:1 to 4:1; from our experience, slopes greater than 3:1 can be very difficult to cap, construct, and maintain; the FS should include an updated comprehensive stability analysis from a qualified geotechnical engineer so that



obstacles and challenges are identified early in the process, and the analysis should consider short-term and long-term stability under both normal gravity and seismic events, and flooding/water immersion events.

- **Landfill Containment** – FS alternatives will likely include alternatives that use sheet piles to reduce flow through the potentially submerged waste at the base of the Landfill. The FS should include information on how sheet piles may be used to isolate or contain submerged waste. The FS should contemplate whether sheet piles will be installed along a portion of or the full perimeter of the Landfill, and evaluate how deep sheet piles will need to be installed. Sheet pile could be extended above grade to create a way to channel leachate (i.e., funnel and gate approach) to a treatment area. The FS should include evaluation regarding how each alternative may impact river hydrology.
- **Landfill Cover Assessment** – The FS should consider non-cap options in the list of alternatives evaluated. The quality and condition of the existing cover material needs to be further evaluated so that non-cap options can be technically evaluated.
- **Permeable or No-Cap Alternatives** – It is our understanding that not all landfills in the Superfund program are capped with an impermeable cap, if a viable alternative approach is identified. If current Landfill configuration is deemed to be adequately stable or could be modified to increase stability, could a permeable cap or enhancement of current cover material replace the impermeable cap approach?
- **Sustainable Leachate Control** – Leachate control and ground water extraction (GWE) systems at other sites are often shut down after several years. Leachate control is a primary issue for the BRWC/FOB who do not want the continued discharge of leachate to the Blackstone River. FS alternatives should consider long-term approaches (in perpetuity?) for leachate control commensurate with different zones of leachate present; both active and passive leachate control alternatives should be evaluated.
- **Waste Consolidation** – It is our understanding that waste consolidation may be used to remove waste from the Unnamed Island, given the smaller size of the waste footprint and its presence below the water table. The evaluation of the relevant FS alternatives should summarize the objectives and proposed plans for waste removal and/or consolidation, so that the proposed final disposition of waste is well defined.
- **Landfill Mining and Recycling** – It is understood that the Landfill is considered “too large” to move; however, for comparative purposes, the FS should include an alternative using mining or recycling as an approach for all or a portion of the waste material so that the true cost for such an endeavor is identified to increase public understanding of the alternative. For example, it may be possible to remove and recycle inert demolition debris from at least select areas.
- **Coordination with Army Corp of Engineers (ACE)** – Given the potential that increased flooding due to climate change and the possibility that future flood control measures by the ACE, up to and including the removal of the Pratt Dam to return the



river to a natural flow, would impact a cap at OU2, the USEPA/PRPs must engage in direct discussion with ACE to fully assess constructability of any remedy in the context of flood control and dam management to make the FS meaningful and realistic. The flood control initiative currently under consideration by the ACE for the Martin Street area is a matter of considerable and immediate concern.

EXPECTATION FOR RESTORATION/RE-USE

It is the expectation of the BRWC/FOB that the FS will evaluate “realistic” options for long-term protectiveness and risk reduction. The 2004 Ashton-Pratt Corridor Redevelopment Plan prepared by Crossman Engineering, Inc. (referred to herein as the 2004 Redevelopment Plan) included passive recreation for the Landfill, natural habitat restoration for the Unnamed Island, and indicated that future reuse of the Nunes Parcel was uncertain because of lack of community agreement.

The BRWC/FOB holds the following expectations for restoration and re-use:

- Unnamed Island – The BRWC/FOB has the expectation that the Unnamed Island is a candidate for complete waste removal and restoration of wildlife habitats, and that this area needs to be protected from potential leachate impacts identified immediately downgradient from the Landfill.
- Nunes Parcel – The 2004 Redevelopment Plan indicated uncertainty with regard to potential reuse options for this parcel. Because potential future uses were not identified prior to the RI and FS, the BRWC/FOB will engage town officials, local residents and the John H. Chafee National Heritage Corridor to establish the current public expectation for this parcel. A concern is that this area is currently at similar topographic grades with the surrounding area. If this area is used for waste consolidation under an impermeable cap, it could limit potential re-use options.
- Potential Re-use of JM Mills Landfill Surface – the BRWC/FOB is most concerned with recreational safety, wildlife habitat protection, and eliminating leachate discharge to the Blackstone River. For this area and throughout the Peterson Puritan Superfund Site, BRWC/FOB would like to see solutions that would, as much as possible, restore the area to a natural state and ensure long-term maintenance of such a state. The Blackstone Valley has before the U.S. Congress a proposal for the creation of a Blackstone Valley National Park that would have as one of its focal points Ashton Village, just upstream from the Superfund Site. The restoration of the site to a viable open space compatible with such a vision would be a major contribution and compensation for years of abuse.

At some future date, BRWC/FOB would also like to see an educational component for this site to address not only such issues as stormwater problems but to serve as a reminder of the lessons learned from centuries’ worth of errors.