

**DISTRICT  
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# REHABILITATION ASSESSMENT REPORT

## Sugar River Site D-2 Dam

Sullivan County, New Hampshire



National Inventory of Dams ID:      NH01000  
New Hampshire Dam Number:      D095025  
Hazard Classification:              High

August 2016



**Gannett Fleming**

*100 Years*

ANNAMORE, VT

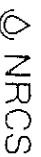


NEW HAMPSHIRE  
DEPARTMENT OF  
Environmental  
Services



**NRCS**

United States Department of Agriculture  
Natural Resources Conservation Service



Because the dam is a high hazard, structure, subsurface exploration including soil and rock sampling, field permeability testing and laboratory testing are recommended. The following action items are recommended.

1. Geotechnical Analyses
  - a. Shear strength testing of embankment and foundation soils
  - b. Embankment slope stability
  - c. Embankment and foundation seepage, including an evaluation of observed seepage, the potential for uncontrolled/unfiltered seepage, and groundwater influences
  - d. Filter compatibility of internal drain materials
  - e. Susceptibility of the embankment and spillway structures to liquefaction under seismic loading
2. Assess piezometer monitoring needs for the embankment and foundation. Design and install piezometers at appropriate locations, if appropriate.

Potential modifications related to the above items are not included in the rehabilitation alternatives Section 9 or the project costs contained in Section 10.

## **8. FAILURE AND RISK INDICES**

The risk of dam failure and the potential consequences of dam failure were evaluated by completing the "Evaluation of Potential Rehabilitation Projects-Priority Ranking Spreadsheet" (Exhibit 508.1 of the NRCS-National Watershed Manual) to determine whether the dam qualifies for rehabilitation as per Section 508 Subpart E of the National Watershed Manual. Based on the completed spreadsheet shown in Appendix F, the total failure index computed for the dam is 133, with a total risk index of 15,898.

## **9. DESIGN CRITERIA AND POTENTIAL REHABILITATION ALTERNATIVES**

Current deficiencies at the dam that are addressed by the rehabilitation alternatives are limited to overtopping of the dam and early activation of the auxiliary spillway. The rehabilitation alternatives analyzed as part of this assessment are based on the assumption that the existing top of dam elevation is at a constant elevation equal to the original top of dam design elevation.

Modifications modeled with the SITES program to meet current NRCS design criteria include combinations of modifying the principal spillway riser structure, raising the embankment, raising the auxiliary spillway crest elevation, widening the auxiliary spillway, and armorng the embankment so that it could be overtopped. Due to the depth of overtopping, armorng the embankment using articulated concrete block mats (ACBs) to provide overtopping protection appears to be viable. Table 3 provides a summary of the results of SITES runs.