Update Report for Vermont

US Army Corps of Engineers®
New England District

Current as of August 31, 2019

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Introduction/Mission

Both the New England and New York districts provide service to the residents of the Green Mountain State. New England District is responsible for all civil works activities within the Connecticut River Basin, while New York District (https://www.nan.usace.army.mil/) handles activities in the Lake Champlain drainage area. The New England District is responsible for the entire state for the Regulatory and Defense Environmental Restoration Programs, all Emergency Operations and is the Corps' lead for the Planning Assistance to States Program. This division of responsibility between the New York and New England districts is seamless to our stakeholders, because the Corps strives to provide access to all our capabilities through a "One-Door-to-the-Corps" policy. Unless specifically noted, all activities included in this report are managed by the New England District.

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The missions of the New England District, U.S. Army Corps of Engineers, include flood risk management, emergency preparedness and response to natural disasters and national emergencies, environmental remediation and restoration, natural resource management, streambank and shoreline protection, navigation maintenance and improvement, support to military facilities and installations, and engineering and construction support to other government agencies. The six New England states cover 66,000 square miles and have 6,100 miles of coastline, 170 federal navigation projects (13 deep draft commercial waterways), 13 major river basins, and thousands of miles of navigable rivers and streams. The District operates and maintains 31 dams, three hurricane barriers and the Cape Cod Canal. Through its Regulatory program, the District processes nearly 2,500 applications per year for work in waters and wetlands of the six-state region. We employ about 500 professional civilian employees, with about 300 stationed at our headquarters in Concord, Mass. The other Corps of Engineers employees serve at Corps projects and offices throughout the region. For information on the New England District visit the website at: www.nae.usace.army.mil/; or on Facebook: facebook.com/CorpsNewEngland; or on Twitter: twitter.com/corpsnewengland; or on Flickr: www.flickr.com/photos/corpsnewengland.

Environmental Restoration

LAKE CHAMPLAIN WATERSHED ENVIRONMENTAL ASSISTANCE PROGRAM, VT & NY – The Lake Champlain watershed covers 8,234 square miles in Vermont, New York and Quebec, Canada. There are 11 major tributaries draining into the lake, ranging from 20 miles to 102 miles in stream length.

In December 2000, Public Law 106-541, the Water Resources Development Act of 2000 was signed by the President. Section 542 of WRDA 2000 authorized the Secretary of the Army to establish a program for providing environmental assistance to non-Federal interests in the Lake Champlain Watershed through the Corps of Engineers. Congress is authorized to appropriate funding for this program; $4.53 million for this program has been received to date.

The goal of the Lake Champlain Watershed Environmental Assistance Program is to provide assistance with planning, designing and implementation of large scale projects that protect and enhance water quality, water supply, ecosystem integrity and other related issues within the watershed.

The Lake Champlain Basin CBP is the administrative partner of the Corps of Engineers to implement this program under the terms of the General Management Plan.

The New York District is currently implementing two projects in the Lake Champlain watershed, has identified a third for consideration, and is working with the Lake Champlain Basin Program to identify new projects: 1) Bartlett Brook Tributary and Bartlett Brook North, South Burlington, VT; design and environmental assessment in 2012; and construction completion in 2017 to reduce pollution, flooding and runoff; and 2) A Feasibility Study of an invasive species barrier for New York state canals, partnering with the New England

Interstate Water Pollution Control Commission (NEIWPCC), initiated in 2017. There also is a potential Feasibility Study of modifications to the spillway at Waterbury Dam in Waterbury, VT, in order to reduce turbidity and water quality problems and enable conservation flows from the dam to improve cold water fish habitat and better mimic natural flows.

For more information on these projects visit the New York District website at: https://www.nan.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/487633/fact-sheet-lake-champlain-watershed-environmental-assistance-program-vermont-ne/.

Navigation on Lake Champlain

GORDON'S LANDING, VT – The existing project (adopted in 1887) provides for a rock breakwater, 800 feet long, extending from the shoreline out to the -16-foot contour of Lake Champlain. The breakwater protects a local cross-lake commercial ferry landing from wind and wave action and ice flows. Because of its age, the seaward head segment of the rock breakwater is in need of rebuilding and repair. Work would include a detailed assessment of the breakwater with subsequent engineering and design work for award of a construction contract to rehabilitate the breakwater.

Repairs to the breakwater are necessary for public safety to provide safe transit for commercial trucks, vehicles and passengers that use the ferries year round to travel between Vermont and New York state. The breakwater has experienced considerable subsidence and deterioration and can no longer adequately protect the harbor (and commercial ferry landing) from wave and ice flow damage.

Funding was provided in FY18 and a detailed condition assessment of the breakwater is scheduled to start in 2019 with a bathometric survey. Following the bathometric survey, cultural resources investigations, engineering and design work, and coordination with stakeholders will take place in order to prepare to perform extensive repairs to the structure. Additional funds are needed to complete full design and engineering work, as well as anticipated construction contracts to repair the breakwater, subject to the availability of funds.

The breakwater is located in a historically significant area necessitating extensive cultural resources investigation and documentation prior to awarding a repair contract. For more information visit the New York District website at: https://www.nan.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/487455/fact-sheet-gordons-landing-vt/.

NARROWS OF LAKE CHAMPLAIN, VT AND NY – The project (adopted in 1917) provided for a channel 12 feet deep and generally 200 feet wide from Whitehall, N.Y., to Benson Landing. It included the installation of fender booms at Putts Rock, Putts Leap, Narrows near Dresden, Pulpit Point and Cedar Mountain. The length is about 13.5 miles.

The existing project is about 77 percent complete, with a channel 12 feet deep and 150 feet wide, having been excavated throughout the entire length of the improvement, except at the Elbow, where the width is 110 feet. Fender booms have been placed at the Elbow and opposite of the Delaware and Hudson railroad trestle. The uncompleted work is inactive.

During FY2018, the requested $45,000 was used to perform caretaker status work, including hydrographic surveys and minor channel maintenance activities and inspection of fender booms. During FY2017, $45,000 was used to perform project condition surveys and minor maintenance to the east side fender boom anchoring system. Maintenance dredging of the channel was last performed during FY2002.

For more information visit the New York District website at: https://www.nan.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/487515/fact-sheet-narrows-of-lake-champlain-new-york-and-vermont/.

Support to the U.S. Environmental Protection Agency

WORK FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY – The New England District is designated as the Corps of Engineers total support agency for the U.S. Environmental Protection Agency's (EPA) Region I (New England) Superfund program for those federal-lead projects assigned to the Corps by EPA. This includes responsibility for design and/or construction execution of remediation projects. In addition, the District is providing technical assistance upon request to EPA New England for other federal-lead projects assigned by EPA to private firms as well as for some potentially responsible party (PRP) remediation.

Superfund

ELIZABETH MINE SUPERFUND SITE, SOUTH STRAFFORD – The Elizabeth Mine is an abandoned copper and iron-sulfate mine that was operated from 1806 until its closure in 1958. The operations consisted of open-pit type mining. The mine workings were abandoned without any closure measures to restrict access or prevent runoff from entering the mine. In addition, there were 43 acres of exposed tailings piles which were producing acid mine drainage (AMD), which created a high-metals, low pH environment in receiving waters of Copperas Brook, and

downstream in the West Branch of the Ompompanoosuc River.

The New England District was approached by the EPA in 1999 to assist in characterization of the AMD issues at this site. In 2002, New England District began environmental and engineering studies that have supported several response actions by the EPA. Prior to the 2011 construction season, New England District had stabilized the large mine tailing piles, diverted surface and groundwater away from acidic mine waste, consolidated the mine waste in preparation for capping, and operated a treatment plant to reduce iron load to the West Branch of the Ompompanoosuc River during construction activities.

Work completed in 2011 and 2012 included cut and fill operations to consolidate the mine waste and establish grades for drainage, creation of wetlands, removal of mine waste rock from the South Open Cut and South Mine and transport of that material to the remaining area to be capped, completion of the 43-acre engineered cap, and demolition of the decaying, hazardous original buildings from the mining operation. The foundations of those buildings were protected and clearly marked with a perimeter of rounded stone to preserve the historical significance of these structures.

Construction site closure, cap maintenance, erosion and sediment control, and water quality treatment/monitoring continued through 2017. A design was completed in September 2014 to address Operable Unit 1, which includes exposed waste rock in the area of the South Mine and South Open Cut and discharge from those areas into the Copperas Brook. A $25 million Indefinite Delivery/Indefinite Quantity (ID/IQ) contract was awarded on Dec. 19, 2017 to implement the OU1 design and to construct a passive water treatment system to replace the seasonal water treatment plant. That work is approximately 90 percent complete with the remaining work scheduled for 2019 and will be followed by repair of damages to Route 132 resulting from project-related truck traffic. Work in 2020 will include audit closure and site wide punch list items. The project team continues to work closely with stakeholders to minimize local impacts and to preserve historical significance of the site.

Defense Environmental Restoration Program

This Congressionally directed program (PL 98-212) provides for an expanded effort in environmental restoration. It emphasizes the identification, investigation and prompt cleanup of hazardous and toxic waste; unexploded ordnance; and unsafe buildings, structures and debris at current and former military facilities. Site and project eligibility investigations have been completed at all 13 formerly used defense sites in Vermont, which includes nine where no work was found to be necessary. The four sites where work remains includes: **Burlington International Airport, Fort Ethan Allen in Burlington,** and the **St. Albans** and **Lyndonville Air Force stations.**

For the Lyndonville Air Force Station the remedial investigation (RI) report and Feasibility Study (FS) report have been finalized. The Proposed Plan summarizing the preferred site remedy (excavation of contaminated soil) has been finalized. A public meeting to inform the community of the rationale for selection of the preferred remedy and to encourage and facilitate community participation was conducted on July 15, 2015. The Decision Document was finalized (signed by USACE) in September 2016. The Remedial Action contract to implement the site remedy was awarded in September 2016. The remedial action work plans have been finalized, and the site pre-design work began in May 2017. The remedial action (soil excavation) was completed in October 2017. A site closure report *was reviewed by* the Vermont Department of Environmental Conservation and has been finalized. *A Project Closeout Memorandum was signed in June 2019 and* the project is considered closed in the DERP-FUDS program.

For the Saint Albans Air Force Station, the RI report has been finalized (in May 2015). The Feasibility Study report, summarizing the Site alternatives, has been finalized (in January 2016). The Proposed Plan has been finalized and sent to stakeholders. The Proposed Plan public meeting was held on Nov. 15, 2016 in the town of Saint Albans, Vermont. The Decision Document was finalized (signed by USACE) in June 2017. The Remedial Action contract to implement the site remedy was awarded in July 2017. A Pre-Design Investigation to refine the amount of soil which requires removal was performed in November 2017. The Pre-Design Investigation Report has been finalized. The outcome of this investigation concludes that no soil removal is necessary based on the concentration of contaminants in soil, which did not exceed remedial goals based on human health risk assessment. Site restoration *has been completed* and the closure report for the project is underway and expected to be *finalized in September* 2019.

Planning Assistance

Cost sharing (50/50) for the Section 22, Planning Assistance to States Program has presented challenges to the state of Vermont in identifying funds that would be used for the nonfederal contribution. The state's interest in the program continues, and it plans to identify future needs within the state of Vermont. For more information visit the website at: https://www.nae.usace.army.mil/Missions/Public-Services/Planning-Assistance-to-States/

Flood Damage Reduction

WINOOSKI RIVER, MONTPELIER, VT – A reconnaissance study on flood damage reduction in the city of Montpelier, Vermont, was authorized under Section 309(I) of the Water Resources Development Act of 1992. A recommended report was completed in 1996 and updated in 2009. In 2010, a Feasibility Cost Sharing Agreement (FCSA) was executed with the city of Montpelier with support from the state of Vermont.

The focus of the study is to mitigate potential flood damages resulting from ice jams on the Winooski River in downtown Montpelier. Alternatives involving ice piers were ranked highest during the 1996 Reconnaissance Report and will be reviewed in greater detail during the feasibility phase.

Existing conditions, surveys, and hydrologic and hydraulic models have been completed and updated by the Corps' Cold Regions Research and Engineering Laboratory in Hanover, N.H. The project has been unfunded since 2010. The sponsor has advanced some work as per the FCSA and Project Management Plan to bring the study into cost-share balance. The total cost of the study is $1.5 million and is cost-shared 50/50 with the city of Montpelier and the state of Vermont.

For more project information visit the New York District website at: https://www.nan.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/487643/fact-sheet-winooski-river-montpelier/.

Flood Plain Management

VERMONT SILVER JACKETS TEAM – A quarterly Vermont Silver Jackets meeting was held at the Vermont DEMA on Feb. 8, 2019. The main topic was that proposed FPMS/SJ project proposals for FY20.

The FY19 FPMS/Silver Jackets Project awarded to the Vermont SJ team will consist of "A Dam Break Analysis and Emergency Action Plan (EAP)" will be performed at the Chestnut Dam within the Whetstone Brook watershed. Also, updated HEC-RAS modeling will be performed for the Whetstone Brook.

More details are available at https://silverjackets.nfrmp.us/State-Teams/Vermont.

Regulatory Activities

Department of the Army permits are required from the Corps under Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection, Research and Sanctuaries Act. The Corps reviews permit applications for work affecting navigable waters under its Section 10 authority and the discharge of fill material into all waters, including inland wetlands, under Section 404. A list of Monthly General and Individual Permit Authorizations is provided at https://www.nae.usace.army.mil/Missions/Regulatory/permits-Issued/. Relevant environmental documents are available upon written request. For information about Corps jurisdiction of wetlands and whether a permit is required for your work contact the Regulatory Division at 978-318-8338 or 978-318-8335 or by email to cenae-r@usace.army.mil or visit the website at: https://www.nae.usace.army.mil/Missions/Regulatory/.

GENERAL PERMITS – The District has comprehensive Regional General Permits (RGPs) in place for each of the six New England states that authorize work with no more than minimal adverse effect on the aquatic environment. Up to 98 percent of all permits issued in New England are RGPs. Work eligible under the RGPs is generally approved in less than 60 days. The current Vermont RGP is available at: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/.

On Dec. 6, 2017, the District issued the statewide Vermont General Permits (GPs) for minimal impact activities in waters of the U.S. within the state of Vermont. These GPs continue the expedited review process for activities subject to Corps jurisdiction under Section 404 of the Clean Water Act, and Section 10 of the Rivers and Harbors Act of 1899, in waters of the U.S., including navigable waters, within boundaries of the state of Vermont.

The VT GPs are organized into 21 activity-specific General Permits (Appendix A). This is intended to satisfy the requirements of Section 404(e) of the Clean Water Act, which allows the Corps to issue general permits for activities that are similar in nature and will cause only minimal individual and cumulative adverse environmental effects. Identifying specific activities allows the Corps to adequately assess cumulative impacts of permitted activities, as well as fully assess impacts on threatened and endangered species. Appendix A also combines work within Lake Champlain, Lake Memphremagog, Wallace Pond and adjacent wetlands and other navigable and non-navigable waters and wetlands in one table instead of the previous two tables. The general conditions have been updated according to current state and Federal law and policies.

For more information or to request a copy of the VT GPs contact Project Manager Michael Adams at (802) 872-2893 or at michael.s.adams@usace.army.mil.

AGRICULTURAL CONVERSIONS – The Corps of

Engineers continues to provide one-on-one assistance to farmers applying for Corps permits to convert wetland to cropland and is available for group outreach/educational meetings to assist the Vermont farming community in understanding the Corps permit process.

VERMONT IN LIEU FEE PROGRAM – Projects impacting over 0.1 acre may be required to provide compensatory mitigation to compensate for the functions and services of the aquatic resources to be impacted. On Jan. 6, 2011, the Corps of Engineers signed an In-Lieu Fee (ILF) instrument with Ducks Unlimited (DU) to establish a program that provides an alternative to permit applicants for compensatory mitigation.

Instead of doing mitigation themselves, for which the applicant is responsible in perpetuity, applicants can pay a fee based on the area and type of their impact to aquatic resources. The fee is deposited into an account held by DU which is then used to develop ecologically meaningful wetland restoration, rehabilitation, creation, and/or preservation projects selected based on a watershed approach. Funds are differentiated by watershed so that functions and services lost will be compensated for in the same watershed.

To date, more than $3.9 million has been paid into the program and in 2018 the first mitigation site was funded and constructed in Middlebury, Vermont in the Richelieu Service Area.

Two additional mitigation sites in the Connecticut and St. Francois Service Areas are currently in the planning stages of review and are expected to be approved in 2019.

Interagency and International Support

SUPPORT TO THE U.S. DEPARTMENT OF VETERANS AFFAIRS – The New England District has teamed up with a sister federal agency in an effort to improve the care Soldiers are receiving at military hospitals. The U.S. Department of Veterans Affairs (VA) and the Corps of Engineers entered into an interagency agreement in 2001 for the goods and services the Corps may provide to the VA when needed.

These include project management, design services, construction management services, environmental services, preliminary technical investigations, surveying, and historical presentation compliance at VA facilities. In 2008, the VA started exercising its agreement with the Corps in New England and NAE is now supporting the VA with services at several facilities in New England. Current or recent projects are in Massachusetts, Rhode Island and Connecticut.

Special Studies

AQUATIC PLANT CONTROL PROGRAM, LAKE CHAMPLAIN – Authorized by the River and Harbor Act of 1958, the Aquatic Plant Control Program for Lake Champlain authorizes the Corps to cooperate with other federal and non-federal agencies in comprehensive programs for the control of invasive aquatic plants, which have adverse effects on navigation and the ecosystem. The Aquatic Plant Control (APC) program for the state of Vermont is in the Lake Champlain Basin. Lake Champlain is located between New York on the west and Vermont on the east.

Approximately 1,615 acres of aquatic plants, water chestnuts and Eurasian water-milfoil infest the Lake Champlain Basin. Unharvested acreage of these foreign plants is a constant source of future infestation and requires removal, since they have adverse effects on navigation and the ecosystem, especially native aquatic plants. In 2016, six Lake Champlain Basin lakes hosted four APC projects – Lake Bomoseen, Caspian Lake, Lake Iroquois, and the Lake Catherine three-lake system. Areas of interest to target are coordinated between partners and updated as the control efforts evolve in order to maximize effectiveness and meet the project goals.

Some $500,000 of FY2017 federal funds are being used by New York District to continue the Aquatic Plant Control Program with the state of Vermont in the Lake Champlain Basin. APC Project Partnership Agreements are executed annually. For more information visit the New York District webpage at: https://www.nan.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/487394/fact-sheet-aquatic-plant-control-program-vt/.

CONNECTICUT RIVER ECOSYSTEM RESTORATION STUDY – Authority to conduct an ecosystem restoration study in the upper Connecticut River watershed is provided through a resolution adopted by the Committee on Environment and Public Works of the U.S. Senate on May 23, 2001. A reconnaissance report identified several ecosystem restoration opportunities along the main stem of the Connecticut River. Since then the Water Resources Development Act of 2007 authorized the Corps to partner with The Nature Conservancy (TNC). A feasibility study was initiated with TNC in 2008.

The study investigated alternatives to manage flow for the 73 largest dams in the basin with the goal of improving aquatic habitat while maintaining human uses such as flood control, hydropower, water supply and recreation. Various tools (e.g. operation and optimization computer models) have been developed to assess these management measures. A final report was completed in 2018 and is available at: http://www.nae.usace.army.mil/Missions/Projects-Topics/Connecticut-River/.

UPPER CONNECTICUT RIVER WATERSHED FLOOD RISK MANAGEMENT STUDY – Authority to conduct a flood risk management feasibility study in the upper Connecticut River watershed in Vermont is provided through a resolution adopted by the Committee on Environment and Public Works of the U.S. Senate on May 23, 2001 and the Bipartisan Budget Act of 2018 (P.L. 115-123). A feasibility study cost sharing agreement was executed with the study Non-Federal sponsor, the Vermont Department of Environmental Conservation in December 2018.

The Connecticut River is New England's great river and one of only 14 designated American Heritage Rivers. The Connecticut River is New England's largest watershed, river, and freshwater ecosystem ~11,000 square-miles, 410 miles, 7.2 million acres respectively. The Connecticut River flows through 4 states and connects 148 tributaries. New Hampshire and Vermont share approximately 67% of the river's length and 63% of the watershed (7,000 square miles). Within the state of Vermont, the watershed covers 41% of Vermont land area, including 114 Vermont towns of which 27 Vermont towns lie on the river. There are 5 USACE flood control dams within Vermont and hundreds of small dams with various uses (non-USACE) on tributaries. The study will investigate flood risk reduction alternatives (structural and non-structural) for the Vermont portion of the Connecticut River Watershed. Coordination is ongoing with the non-Federal sponsor and partner communities for the Feasibility study. Field visits were conducted on April 29-30, 2019 *and Aug. 5-8, 2019. The alternatives milestone meeting (an internal USACE agency checkpoint) was successful on June 5, 2019. The team is now working towards the Tentatively Selected Plan (TSP) milestone.* Public release and review of the draft Feasibility Report and EA identifying the tentatively selected plan is scheduled for spring 2020.

Flood Risk Management Dams, Recreation and Natural Resources Management

The New England District has constructed, operates and maintains five flood risk management project dams in Vermont. In addition to flood risk management activities, the Corps also manages the natural resources at these projects for multiple uses such as recreation and wildlife management. Information on each is provided below. The Corps of Engineers is responsible for the conservation of natural resources held in public trust at civil works water resources projects. Recreation areas at the 31 federal flood risk management projects and the Cape Cod Canal within New England are managed for multiple uses. In some areas, management is delegated to the states for specific purposes, e.g., campgrounds, wildlife management and forestry.

Recreation areas at these facilities are generally open from mid-May to mid-September. The Corps also works with state and local officials and the public to ensure that the Corps projects meet their recreation and natural resources needs. For information on Corps recreation in New England visit the website at www.nae.usace.army.mil/ and select "recreation" or for Vermont projects go directly to the link at https://www.nae.usace.army.mil/Missions/RecreationVermont/.

BALL MOUNTAIN LAKE DAM on the West River in Jamaica was constructed at a cost of $11 million in 1961. The 915-foot-long, 265-foot-high dam can impound a 54,600-acre-foot reservoir, which is equivalent to 17.8 billion gallons of water. During the 1987 floods, Ball Mountain Dam utilized 100 percent of its storage capacity and prevented damages of $18.3 million. Since it was placed in operation in 1961, it has prevented damages of $185.4 million. The reservoir area offers recreational opportunities, including swimming, picnicking, fishing, hunting, canoeing, nature study and camping at Winhall Brook Camping Area in South Londonderry. This popular camping area offers 111 sites for tent or RV campers; some sites have hookups and others have lean-to shelters for rent. A $455,675.00 contract for Gate 1 replacement at the Ball Mountain Lake dam was awarded on Aug. 29, 2018. The work consists of design and fabrication of one stainless steel hydraulic vertical lift gate (10 feet, 6 inches tall, and 6-feet, 8 inches wide); and installation of new hydraulic vertical lift gate at Ball Mountain Dam. This project will consist of installation and reassembly of operating machinery.

Ball Mountain welcomes more than 130,000 visitors each year. For more information call (802) 874-4881 or visit the website at https://www.nae.usace.army.mil/Missions/Recreation/Ball-Mountain-Lake/.

NORTH HARTLAND LAKE DAM on the Ottauquechee River in Hartland was completed in 1961 at a cost of $7.3 million. The 1,640-foot-long, 185-foot-high earthen structure can impound a 1,100-acre lake capable of storing 23.2 billion gallons of water, and the facility has prevented damages to date of $163.5 million. More than 377,000 visitors annually enjoy picnicking, swimming, fishing, hunting, hiking and snowmobiling. The New England District and the state of Vermont are partners in the management of part of the reservoir.

Vermont manages Quechee Gorge State Park in the upper third of the reservoir and provides a campground, picnic facilities and trails for the visiting public. North Hartland Lake has a large day-use area with 3 pavilions available for a nominal fee, a developed beach area and boat launch, picnic facilities and trails. The Corps also maintains the Quechee Gorge Visitor Center, which was constructed in 2005. The Corps, in conjunction with the Hartford Chamber of Commerce, helps staff the center and offers expertise

about the local area. For more information call (802) 295-2855 or visit the website at https://www.nae.usace.army.mil/Missions/Recreation/North-Hartland-Lake/.

NORTH SPRINGFIELD LAKE DAM on the Black River in North Springfield was completed in 1960 at a cost of $6.8 million. The 2,940-foot-long, 120-foot-high earthen dam can impound a 1,200-acre lake, capable of storing 16.5 billion gallons of water. Nearly $134.8 million in flood damages have been prevented by North Springfield Dam. Picnicking, swimming, hiking, hunting, fishing and snowmobiling are enjoyed at the 1,372 acres of land and water by more than 30,000 visitors each year. For more information call (802) 886-2775 or visit the website at https://www.nae.usace.army.mil/Missions/Recreation/North-Springfield-Lake/.

TOWNSHEND LAKE DAM on the West River in Townshend is 1,700 feet long, 133 feet high and cost $7.4 million to construct. Its lake can hold a 33,700-acre-foot reservoir with a capacity to store 11 billion gallons of water. During the 1987 floods, the dam utilized 100 percent of its storage capacity and prevented damages of $14.2 million. Since it was placed in operation in 1961, it has prevented damages of $149.1 million. The reservoir area offers recreational opportunities, including swimming, picnicking, fishing, hunting, canoeing, boating and nature study and annually attracts nearly 81,000 visitors.

Townshend Lake, in conjunction with Ball Mountain Lake, provides scheduled white water releases. More than 800 canoeists, kayakers and rafters take advantage of the event. For more information call (802) 365-7703 or visit the website at https://www.nae.usace.army.mil/Missions/Recreation/Townshend-Lake/. For more information go to the website at: https://reservoircontrol.usace.army.mil/NE/pls/cwmsweb/cwms_web.cwmsweb.cwmsindex and select whitewater/recreation.

A $480,200.00 contract to paint the spillway bridge at the Townshend Dam was awarded on Sept. 24, 2018. Work consists of construction of an access system to allow for access to the bridge substructure; preparation of steel surfaces by solvent cleaning and abrasive blasting; application of base and top coats of paint; replacing several nuts and bolts; application of sealant to the concrete approach slab on both approaches; replacing the damaged guardrail support posts, concrete and guardrail on the south side of the east end of the bridge, where it joins Highway 30; and installing grout around west bearing pad. The work to complete this painting project started in late April 2019 and *was completed by late July 2019.*

A $237,690.00 contract for valve removal and v-notch weir installation at the Townshend Dam was awarded on Sept. 20, 2018. Work involves the excavation and removal of seven cast iron valves ranging in depth from 2-8 feet, which connect the relief well system to a below ground collector pipe that outlets to a small pond on the downstream side of the dam. The valves will be replaced with sections of steel free flowing pipe. In addition, the construction of a reinforced concrete outlet structure that has a central dividing wall and a v-notch weir for both of the collector pipes also will be required. The contractor will connect the toe drain collector pipe to the new outlet structure. No other work will be required on the toe drain collector pipe, which runs parallel to the dam and outlets to the small pond. In addition to the outlet work construction, the pond will be dewatered and one-foot of material will be dredged from the area. All of the above work *took* place at the toe of the dam on the downstream side. *As of mid-July 2019, this work was substantially complete.*

UNION VILLAGE DAM, a dry-bed reservoir project **on the Ompompanoosuc River in Thetford**, is a 1,100-foot-long, 170-foot-high earthen structure capable of storing 12.3 billion gallons of water in a 740-acre lake. Construction on the $4.1 million dam was completed in 1950, and since that time the facility has prevented damages of more than $64.8 million. More than 41,000 visitors annually enjoy picnicking, including a pavilion which can be reserved for a nominal fee, swimming, hiking, fishing, hunting and snowmobiling available on Union Village's 991 acres of land and water. For more information call (802) 649-1606 or visit the website at https://www.nae.usace.army.mil/Missions/Recreation/Union-Village-Dam/.

On July 1, 2017 the Union Village Dam experienced extremely heavy rainfall (4.51") in a very short timeframe as did much of the neighboring town of Thetford. The East Access Road (Buzzell Bridge Road) sustained substantial damage and many places are impassible. Due to this significant damage, the Corps asks that visitors do not walk, bike, or swim in that area for their own safety, and for the safety of the first responders who would be responsible for rescuing any injured person.

In addition, the Corps' New York District (https://www.nan.usace.army.mil/) designed three dams in the Lake Champlain drainage area during the mid-1930s. These include **EAST BARRE DAM** on the Jail Branch of the Winooski River in Barre, **WATERBURY DAM** on the Little River in Waterbury, and **WRIGHTSVILLE DAM** on the North Branch of the Winooski River in Montpelier. These dams were constructed by the Civilian Conservation Corps under the direction of the Corps' New York District, and all are operated and maintained by the state of Vermont.