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# *The Commonwealth of Massachusetts*

*Executive Office of Environmental Affairs*

*Department of Environmental Quality Engineering*

*Division of Water Pollution Control*

*One Winter Street, Boston, Mass. 02108*

March 24, 1989

Joseph L. Ignazio, Chief  
Planning Division  
Impact Analysis Branch  
U.S. Corps of Engineers  
424 Trapelo Road  
Waltham, MA 02254

Re: Water Quality Certification  
Chapter 91 Application  
#87W-045  
Storm Water Discharge  
Town River, Town Brook  
Quincy

and

William Geary, Commissioner  
Metropolitan District Commission  
20 Somerset Street  
Boston, MA 02108

Gentlemen:

This Division has reviewed the proposed construction for the Town Brook Flood Protection Project, a joint project of the Corps of Engineers and the Metropolitan District Commission.

Work along Town Brook consists of the following activities. Between Town River Bay and the Southern Artery, riprap will be placed along one 450 ft. bank of the Town River. Excavation for toe of the slope will create temporary turbidity in the adjacent waters. Where the Southern Artery crosses Town River, three box culverts, 16' x 7' in cross section and providing a 48 foot wide opening, will be placed to carry river flows. These culverts will replace the existing bridge and will extend for approximately 300 feet. This work at the bridge will be done in three phases and will include temporary steel sheeting to divert river flows around the work area and through the existing 6 foot culverts. These existing culverts will be temporarily extended upstream and downstream.

For 900 feet upstream of the Southern Artery there will be channel and bank work requiring removal of existing soil and sediments and placing of filter fabric, gravel and 12 inch gabion mattresses consisting of rock enclosed in a polyvinylchloride coated mesh.

A 4,000 foot long by 12 foot diameter tunnel 200 feet underground will be built to carry all storm flows from the Burgin Parkway and flows from Town Brook in excess of 100 cfs for a total capacity of 1200 cfs. The brook overflow structure and the intake structure are to be located next to MBTA property at School Street. The tunnel outlet structure will be located near Vining Street and storm water will flow to Town River via a proposed outlet channel lined with gabion rock mattresses. This outlet channel will enter the tidal portion of Town River.

Water in the deep relief tunnel will be aerated 1) by releasing compressed air at the bottom of the outlet shaft to induce circulation in the shaft, and 2) by taking aerated water from the surface of the outlet shaft and releasing it at the bottom of the inlet shaft. These measures are intended to counteract potentially high BOD and resulting oxygen depletion in the urban storm water runoff stored for long periods of time in the tunnel. Monitoring of various water quality parameters in the water discharged from the tunnel is specified below and will determine whether these aeration measures are sufficient to protect water quality in the river and the bay.

Further work for this flood relief project includes 1) changes to the spillway at Old Quincy Reservoir in Braintree, 2) reconstruction of the dam embankment, 3) dredging of the bottom of the Reservoir adjacent to the spillway, and 4) construction of a dike and drainage way to protect urban areas immediately downstream of the Reservoir dam.

In accordance with the provisions of Section 401 of the Federal Water Pollution Control Act as amended (Public Law 95-217), this Division issues the following conditions:

1. No construction in the waterway or on the banks of Town River shall take place during the smelt spawning period from March 15 through May 15.
2. Work along the bank of Town River downstream of the Southern Artery shall take place during fall and winter months only, from the 15th of October through the 15th of March. This condition is required since no feasible engineering measures have been proposed to limit suspended solids in the river during this phase of the construction. A cross-channel silt curtain at the mouth of the Town River is specifically prohibited as its effect is likely to be counter productive.
3. Temporary steel or wood sheeting shall be used to divert River flows into the two existing 6 foot diameter concrete culverts during construction of the three proposed culverts under the Southern Artery.
4. Any gravel fill placed in Town Brook or Town River shall consist of less than 15% fines. Fines shall mean material which passes a #200 sieve.

5. Tidal flows shall be kept out of the work area upstream of the Southern Artery. This shall be accomplished by temporary flap gates installed on the Southern Artery culverts. Channel widening, excavation, and construction of the gabion rock channel and bank protection shall not proceed until these flap gates are installed and effective.
6. Upstream of the Southern Artery river flows shall be pumped downstream past the tide gates to eliminate excess water in the channel improvement work area.
7. Upstream of the Southern Artery effective silt barrier(s) shall be placed and maintained across the channel to limit the downstream migration of suspended sediment. Sandbags or other effective measures shall be used to prevent channel scouring due to flows passing under any silt fabric barrier.
8. During improvements to the 300 feet of Town Brook channel upstream of the underground tunnel inlet, stream flows shall be diverted through temporary pipe or to one side of the channel using silt fence and hay bales or sand bags to reduce water quality degradation in this work area.
9. Turbidity shall be effectively minimized in all phases of this channel improvement work as well as in all phases of the Old Quincy Reservoir Dam work.
10. All areas of channel and bank excavation shall be left in stable condition at the end of each work day. Extra measures shall be used to protect the stream from erosion and turbidity in advance of forecast storms.
11. River bank and channel bottom soils removed and stored shall be stored out of wetland areas and shall be maintained with adequate erosion controls in place to prevent erosion into wetlands or into Town Brook and Town River.
12. Disposal of excavated channel and bank soils/sediments shall be at a site approved by the DEQE Division of Solid Waste Regional Office appropriate to the disposal site proposed.
13. Aeration of waters in the deep tunnel shall be provided as proposed by 1) the release of compressed air at the bottom of the outlet shaft and 2) the pumping of aerated water from the top of the outlet shaft down to the bottom of the inlet shaft. Aeration of tunnel waters shall be (a) provided continuously or (b) shall be triggered on automatically whenever dissolved oxygen values drop below 6.0 mg/l.

14. Continuous monitoring of dissolved oxygen in water in the tunnel shall be conducted and provided monthly to this Division. Such monitoring shall be accomplished using an automatic water quality monitoring device which records dissolved oxygen, temperature, and conductivity or salinity hourly on a continuous basis. The location of the probe shall be in the tunnel at least 100 ft. from either the intake or outlet shaft. Appropriate maintenance and calibration records shall be submitted with the data.
15. Monitoring of storm waters discharged from the tunnel shall be conducted by the Metropolitan District Commission following completion of the tunnel system. Specifically:
  - a) During the first month after the tunnel is completed and fully operational, unless there is no storm event sufficient to cause a tunnel discharge, a discharge shall be sampled at the tunnel outlet. Two to three grab samples shall be obtained at hourly intervals during the tunnel discharge. These samples may be composited and should reflect the initial two or three hours of tunnel discharge, which ever is appropriate to the rainfall event.
  - b) The tunnel discharge shall be sampled once during a major storm event. The sampling shall be done during the first major storm which occurs after the tunnel becomes operational. Major shall be defined as at least 0.7 inch of rainfall in a 24 hour period. Sampling shall be as described in (a) above.
  - c) A sample shall be obtained from Town Brook at the same time that samples as specified in (a) and (b) are obtained. The brook sample shall be a single grab sample, preferably taken just after the last grab sample from the tunnel outlet is taken. The sampling site shall be 300 to 500 ft. upstream of the brook's confluence with the tunnel outlet channel.
  - d) The parameters to be measured shall include: dissolved oxygen, temperature, pH, salinity, Kjeldahl nitrogen, nitrate-nitrogen, ortho-phosphate, coliform bacteria, total suspended solids, and oil and grease. These analyses shall be conducted by a laboratory currently certified for these parameters by DEQE.
  - e) Reports of the above monitoring detailing the precise sampling times, tide cycle times, and dates together with the analytical results shall be submitted to DWPC (One Winter Street, Attn: ~~G. Gilmore~~ *Robert J. [unclear]*) within 30 days.
  - f) Other sampling of storm events may be required by this Division depending on the results of the above sampling.

16. No discharge from the tunnel shall occur during the March 15th to May 15th smelt spawning period unless DWPC has received at least two months of tunnel dissolved oxygen monitoring data and has determined that the aeration system is functioning and that water quality standards will be met. If the data do not indicate sufficient maintenance of D.O., the tunnel discharge shall be prevented or additional dissolved oxygen shall be supplied to ensure that the discharge meets water quality standards.
17. Deviation from these conditions shall not occur without prior written approval from this Division.
18. The Corps of Engineers shall provide this Division (292-5655) with one week prior notice of the start of construction in or adjacent to Town Brook/Town River and shall allow DEQE personnel upon presentation of proper credentials the right to inspect the proposed activity for compliance with the terms and conditions of this certification.
19. The name and phone number of the resident engineer shall be provided to this Division in advance of the start of each phase of construction in or near the waters of Town Brook/Town River.
20. The Corps of Engineers shall notify this Division in writing when construction of all aspects of this flood protection project have been completed such that the tunnel is operational.

Should any violation of the water quality standards or the terms of this certification occur as a result of the proposed activity, this Division will direct that the condition be corrected. Non-compliance on the part of the permittee will be cause for this Division to recommend the revocation of the permit(s) issued therefor or to take such other action as is authorized by the General Laws of the Commonwealth. Substantial civil and criminal penalties are authorized under MGL Ch. 21, Section 42 for discharging into Massachusetts waters in violation of an order or permit issued by this Division.

This certification does not relieve the applicant of the duty to comply with any other statutes and regulations.

Very truly yours,

*C. J. O'Leary (wfo)*

Cornelius J. O'Leary  
Acting Director

cc: Licenses & Permits, DWR  
Ed Reiner, Water Quality Branch, EPA Region I, WQE-1900,  
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