

**NEW HAVEN CITY PLAN COMMISSION INLAND WETLANDS REVIEW
NEW HAVEN CITY PLAN COMMISSION COASTAL SITE PLAN REVIEW**

RE: **ORANGE AVENUE (Adjacent to #30) and WEST RIVER**, Inland Wetlands Review and Coastal Site Plan Review for Replacement of Three Tide Gates with Self-Regulating Gates (Owner: City of New Haven; Applicant: Gwen Macdonald of CT Fund for the Environment/Save the Sound).

REPORT: 1446-03

FINDING: Approval with Conditions; Beneficial impact on coastal resources

CONDITIONS OF APPROVAL:

1. A Flood elevation certificate or Flood Development Permit shall be required to be furnished to the Building Department prior to commencement of site work.
2. Adequate soil erosion and sediment control measures shall be utilized by the contractor so that soil and other materials are not washed into the river during the construction period.
3. As-built site plan shall be filed with City Plan Department, with a copy to the City Engineer, prior to issuance of Certificate of Occupancy. Site Plan shall be submitted in both mylar and digital format [.DWG file based on the State Plane Coordinates (NAD1983)]. Provide version of AutoCAD with submission.

Submission: Application and Narrative dated 10/20/10 prepared by Gwen Macdonald of CFE/Save the Sound, 90% design Plans by Milone & MacBroom June 2010, revised August 2010; Title sheet with Project Site Vicinity Map, General Notes, Existing Conditions in project area, Existing Tide gate Structure, Proposed Timber Flap Gate Replacement, Maintenance and Protection of Traffic, Construction Staging, Site Details.

BACKGROUND:

West River Memorial Park is a 200-acre New Haven park bounded by Derby Avenue to the north, Ella T. Grasso Boulevard to the east, Orange Avenue to the south and Marginal Drive to the west. Although it is a New Haven park, a portion of the park that is west of the West River is in West Haven.

In the early 1900's a war memorial was designed by the Olmsted Brothers firm for a park for this area. The main feature of the design was a long linear water channel adjacent to the West River and a monument. Most of the area's 134 acres of salt marsh were to be filled in order to build the park; by 1917 all of the marshes had been ditched for mosquito control. In 1920 twelve 1-way flapper gates were installed on the West River as part of the development of the park, effectively eliminating tidal exchange since that time. Approximately 130 acres of salt marsh were eradicated through dredging and filling, along with the action of the tide gates, which reduced saltwater into the system. Funding of the park fell victim to the Great Depression of the 1930s and the monument and park design was never completed.

In 1998, the Mayors of New Haven and West Haven conducted a series of workshops to create a master plan for the development of the West River Memorial Park. Among the goals of the master plan were to improve water quality and animal and plant habitat in the park. Today the existing gates prohibit tidal exchange, thereby contributing to stagnant and low oxygen conditions in the linear channel adjacent to the West River known as the "reflecting pool", and reduced flushing in the river. The gates also prevent certain fish species from migrating up the West River.

In 2005 the City commissioned a study by Milone and MacBroom on tidal fluctuation, salinity and migration monitoring.

In 2009, Save the Sound/Connecticut Fund for the Environment, Inc. applied for and received a grant from the National Oceanic and Atmospheric Administration (NOAA) through the American Recovery and Reinvestment Act (ARRA), \$800,000 of which is designated for construction of three new tide gates on the West River and for repairs to the concrete in the structure that supports the tide gates.

Proposed activity: This application proposes to replace three of the existing timber flap tide gates (#s 2, 3, and 4) with nekton self-regulating tide gates (SRT) with appropriately sized vacuum relief vents, by pass doors, and interior mounted floats. The three gates will be fit with 48" stainless steel pipes to which sluice gates will be mounted on the north side.

In order to perform this work, a temporary cofferdam will be used to divert water around the construction zone while the SRTs are being installed and a dewatering sump in compliance with Connecticut DOT standards will also be used. Riprap will be permanently placed on the downstream side of the tide gates to minimize scouring and ensure fish passage. Some repairs will be made to the existing tide gate structure and bridge to ensure the long term success of the project and the remaining gates.

Site access: A construction staging and construction worker parking area will be created in West River Memorial Park to the north of Orange Avenue, either on the east or west side of the river. An anti-tracking pad will be installed at the entrance to the laydown area (although the preferred site is a gravel parking lot with driveway access to the west of the river actually in West Haven which likely would not need an anti-tracking pad.) Construction worker access will be from the West Haven side of the river either over private property or directly from the DOT right of way if a guard rail can be removed.

The new gates will allow more consistent tidal flow into the West River north of the gate structure, increasing tidal fluctuation in the river by approximately 2.8 feet, thereby improving water quality, fish passage, marsh habitat, and opportunities for recreational use. As a result of the greater tidal fluctuation, parts of Edgewood Park will be flooded twice daily. The second part of the ARRA project involves construction of a raised walkway along the edge of the Edgewood Park duck pond which will be covered in a separate CPC report 1446-04.

While the tide gates are largely surrounded by coastal resources, there are inland wetlands to the north of Orange Avenue. Due to the fact that a portion of the proposed activity is within a watercourse and that freshwater inland wetlands will be affected, an inland wetlands permit is required from the Inland Wetlands Commission.

Determination of Inland Wetland Classification: The Commission has reviewed the options for classification, as stated in Sections 4 and 5 of the Regulations and has determined that the wetlands application qualifies as a Class B Application. Fees have been waived, due to the fact that a City agency is making application for the improvements. The current Inland Wetland application is deemed complete and formally received by the Commission at its meeting of November 17, 2010.

Application Evaluation Criteria: In reviewing a Class B or C Application, the Commission must consider the following environmental impact criteria in its evaluation, as stated in Sections 7.2 and 7.3 of the City's Inland Wetlands and Watercourses Regulations:

- The ability of the regulated area to continue to absorb, store or purify water or to prevent flooding.
- Increased erosion problems resulting from changes in grades, ground cover, or drainage features.
- The extent of additional siltation or leaching and its effect on water quality and aquatic life.
- Changes in the volume, temperature, or course of a waterway and their resulting effects on plant, animal and aquatic life.
- Natural, historic, or economic features that might be destroyed, rendered inaccessible or otherwise affected by the proposed activity.
- Changes in suitability of the area for recreational and aesthetic enjoyment.
- Existing encroachment lines, flood plain and stream belt zoning and requirements for dam construction.
- Any change in the water effecting aquatic organisms or other wildlife, water supply and quality, or recreational and aesthetic enjoyment.
- The existing and desired quality and use of the water in and near the affected area.
- Reports from other City agencies and commissions not limited to the Environmental Advisory Council, Building Official, and City Engineer.
- The importance of the regulated area as a potential surface or ground water supply, a recharge area or purifier or surface or ground waters, a part of the natural drainage system for the watershed, a natural wildlife feeding or breeding

area, its existing and potential use for recreational purposes, existence of rare or unusual concentrations of botanical species, availability of other open spaces in the surrounding area, or its value for flood control.

The Commission must consider the following **additional** criteria:

- Alternatives which might enhance environmental quality or have a less detrimental effect, without increasing basic project costs.
- Short versus long term impacts.
- Potential loss of irrevocable resources or property impairment.
- Suitability of action for area.
- Mitigation measures which may be imposed as conditions.

INLAND WETLAND PLANNING CONSIDERATIONS

The plan for this project is based on years of research, planning and modeling. During the mid 1990's Yale University undertook a comprehensive investigation of the area to study habitat restoration in the West River. All aspects of restoration from hydrology, plants and soils to urban attitudes and social benefits were considered. Because of the elevations of existing infrastructure and the need to protect homes, associated private lawns and property, and some of New Haven's most important recreational centers (the Yale Bowl and the Connecticut Tennis Center at Yale), the restoration plan called for the installation of the self regulating tide gates, adjustable to elevation of flooding and outlined a number of techniques that might be implemented.

Subsequent hydrological studies showed a maximum water surface elevation of 4.5 feet NGVD can be achieved with three gates. Present water surface elevations in the river sit at about 0.45 feet NGVD. With the installation of the three new tide gates, river surface elevations will increase to 2.6 feet NGVD during dry weather and a maximum of 4.5 feet NGVD during rain events, spring tides and storm events. At this level private property and infrastructure within the vicinity of the park will be protected. There are no houses directly on the park, and local roads are all above 7 feet elevation at the lowest point, so they act as levees for the surroundings homes. In addition, Yale Bowl and the Tennis Center sit at an elevation of 5.0 feet NGVD; the Tennis Center was constructed with break away walls at its lowest level.

The design allows for adjustment of the level up or down, should it be necessary. Because of flooding concerns and the need to protect surrounding neighborhoods and infrastructure, close to the restored marsh areas, the self regulating tide gates have long been considered the best option. Self regulating gates can be carefully set to the upper flood elevations to achieve maximum restoration while still providing extensive flood protection (the gates automatically close at tides above the predetermined elevations). These gates are also adjustable and high water elevations can be changed as the need arises.

As the City must still provide flood protection during major storm events, alternative designs were considered to allow the City to control flows through the gates. The chosen alternative design includes the installation of manually controlled sluice gates backing each self regulator on the upstream side. In the event of a major flood, the sluice gates can be turned down to temporarily block all flows through the self regulators and provide upstream infrastructure additional flood protection from surges and high tides.

COASTAL SITE PLAN REVIEW

The Commission's Coastal Site Plan Review, in accordance with Section 55.C of the New Haven Zoning Ordinance shall consider the characteristics of the site, including location and condition of any coastal resources; shall consider the potential effects, both beneficial and adverse, of the proposed activity on coastal resources and future water-dependent development opportunities; follow the goals and policies of the Connecticut Coastal Management Act, as amended, and identify conflicts between the proposed use and any goal or policy of the Act.

Applications for development on waterfront parcels shall additionally consider protection of the shoreline where there is erosion or the development is likely to cause erosion; degree of water dependency; preservation of significant natural vistas and points or avenues of views of the waterfront; provision of meaningful public access; and insurance of outstanding quality of design and construction to produce an environment that enhances its waterfront location.

Characteristics and Condition of Coastal Resources at or Adjacent to the site:

Navigable waters: The West River south of the tide gates flows to Long Island Sound and is navigable and accessible by small craft.

Flood Hazard Area: The tide gate site and the affected marsh and river areas in West River and Edgewood Parks upstream are all located within Flood Zone A6 on Flood Rate Insurance Map 090084-0004C, dated 05/02/83, revised to reflect LOMR 04/17/08. The A6 zone is an area of 100 year flood where the base elevation has been determined to be 11. There are areas to the northeast on the perimeter of the A6 zone which are Zone B, an area of 100 to 500 year flood. The vast majority of flooding is currently due to freshwater inputs during storm events, not coastal or tidal flooding.

Tidal wetlands: There are tidal wetlands downstream and upstream of the tide gates along the West River in West River Park both in New Haven and West Haven. The upstream tidal wetlands are degraded as they have been deprived for the past 90 years of the salt water which would revive them to be active and healthy tidal wetlands. Much of the tidal wetlands was filled and no longer supports tidal marsh habitat. The remnants of tidal wetlands are dominated by *phragmites australis* and there are small pockets of *spartina alternaflora* along the river. Small pockets of *Spartina patens* high marsh can still be found scattered throughout the system but none of them are tidal and all of them are mixed brackish communities with *phragmites*, *ambrosia*, *solidago*, *aster*, and *polygonum*. There are also some introduced invasive species such as *rosa multiflora* and *polygonum cuspidatum*. Essentially there are no tidal functional wetlands left in the system.

Freshwater wetlands and watercourses: Inland wetlands soils and fresh water are currently present upstream of the tide gates.

Potential Adverse Impacts on Coastal Resources and Mitigation of Such Impacts: The only adverse impacts would occur in the present freshwater non-tidal meadows and wooded areas that are low enough to be inundated which would result in a loss of area of these non-tidal habitats. However overall beneficial impacts including the restoration of tidal marshes outweigh the potential adverse impacts in this case. (see beneficial impacts). Large storm events could potentially still affect the walkways and fields around the Tennis Center with increased flooding. Recently a large amount of fill has been placed in the field east of the Tennis Center to raise the grade.

Beneficial Impacts: At the lower end of the proposed tidal range (2.5 feet NGVD) it can be expected to restore 20 acres of non-tidal habitat to a brackish tidal marsh system. At the upper end of the proposed tidal range (4.5 feet NGVD) 50 plus acres of tidal habitat would be restored. Replacement of the three gates with self-regulating gates will increase fish migration up and down stream and will improve breeding habitat for the fish. Inundation of areas twice daily with tidal flow will improve habitats for migrant and resident bird populations and other wildlife.

Public Access: Public access to the parks will be improved for kayakers, canoers, and other small craft with the increased tidal inundations.

COASTAL FINDING

Taking into consideration all of the above information, the City Plan Commission finds the proposed activity consistent with all applicable goals and policies in Section 22a-92 of the Connecticut Coastal Management Act and incorporates as conditions or modifications all reasonable measures which would mitigate the adverse effects on both coastal resources and future water-dependent activities. The project will significantly improve tidal wetland habitat where there is none today, support increased access and habitat for wildlife especially migratory fish and improve water quality within the lower estuary and eventually the Long Island Sound. **The Commission therefore approves the Coastal Site Plan with conditions. (see page 1):**

INLAND WETLAND FINDING

Required Findings for a Class B Inland Wetlands Application:

The Commission must make the following findings for a Class B Application:

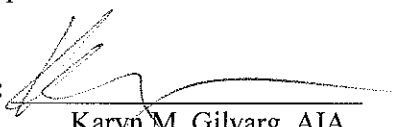
1. There is no preferable location on the subject parcel or no other available location could reasonably be required;
2. No further technical improvements in the plan or safeguards for its implementation are possible, or taking into account the resources of the applicant, could reasonably be required; and
3. The activity and its conduct will result in little if any reduction of the natural capacity of the wetlands or watercourses to support desirable biological life, prevent flooding, supply water, facilitate drainage, and provide recreation and open space.

The City Plan Commission, acting as the Inland Wetlands Commission, finds that there is no preferable location of the proposed activity on the site, nor are there further technical improvements required in the plans, nor are there mitigation measures to be imposed as conditions. The proposed construction will substantially increase the natural capacity of the watercourse to support desirable biological life, prevent flooding, supply water, and facilitate drainage. The Commission has considered all criteria and believes that execution of the project will not adversely impact the regulated area, but will improve the flow of water through the flood control improvements, to better protect private property and infrastructure in the case of a flood. **All of the required findings have been satisfied. An Inland Wetland Permit may be issued.**

Other Permits which may be required and are the responsibility of the applicant: DEP 401 Water Quality Certificate, Flood Management Certificate, Water Diversion Permit, and USACE 404 permit.

Project Timetable: will depend upon DEP and ACE permitting. It is anticipated that work will start in the summer of 2011 and take approximately 4 months.

ADOPTED: November 17, 2010
Edward Mattison
Chair

ATTEST: 
Karyn M. Gilvarg, AIA
Executive Director

Coastal Site Plan Review, based upon the application and materials submitted by the applicant, was conducted administratively without hearing by the City Plan Commission of the City of New Haven in accordance with the Connecticut Coastal Management Act (CGS, Sections 22a-90 to 22a-112). The Building Official hereby receives the above written findings and any conditions thereof are made conditions of the Building Permit.

DATE ADOPTED: 11/23/10

ATTEST: 
Andrew J. Rizzo, Jr.
Building Official