Stormwater Management

Existing Drainage System

Stormwater runoff on site generally sheet flows overland from south to north to the Merrimac River. Two catch basins exist on site but appear to function as leaching basins if at all. Stormwater runoff from a portion of Merrimac Street and an area of Newburyport, south of Merrimac Street is collected in a 42-inch drain that runs along the east side of the site and discharges into the Merrimack River at a bulkhead located in the northeast corner of the property. A second drainage trunk line along the west side of the site collects runoff from the site and presumably discharges to the Merrimack River. An investigation to determine the location of the outlet to the river revealed that the pipe is in serious disrepair and barely functioning, if at all.

On-Site Conditions

The existing on-site drainage system consists of two catch basins that function essentially as leaching basins, infiltrating any captured storm runoff into the ground. Other than existing building roofs and paved parking areas around Michael's Harborside and the Black Cow restaurants, ground cover on site consists entirely of compacted gravel resulting in a variable rate of stormwater runoff.

No water quality management features exists on site. The catch basins are not equipped with deep sumps or inverted hoods and there are no oil/particle separators present on site. Thus, the addition of these BMPs as part of the proposed drainage system will result in a significant improvement to the water quality of runoff discharged from the site compared to the current condition.

Stormwater Management Objectives for the Project

The proposed stormwater management system will be designed to significantly improve upon current runoff conditions in terms of downstream water quality. This will be accomplished by incorporating into the design specific Best Management Practices that are not currently used on site including: catch basins with deep sumps and inverted outlets, oil/particle separators, a pavement sweeping regime and scheduled catch basin cleaning. In addition, the existing deteriorated 24-inch pipe is proposed to be replaced.

Drain Pipe Replacement

Currently there is an existing 24-inch pipe originating onsite to an existing outlet located within the limits of the existing salt marsh. Based upon review of prior investigations, the location of this pipe is approximate as well as partially collapsed. There appears to be flow discharging into the existing salt marsh from this assumed 24-inch pipe. The approximate location of the outlet was determined based upon review of existing aerial orthographic photography obtained through Mass GIS, as there is an existing channel flowing from the salt marsh to the Merrimack River. The proposed project will replace the existing 24-inch pipe from the salt marsh to origin (once determined). The design will incorporate a headwall with a Tideflex check valve to prevent backflow from the tides into the closed drainage system. Stone rip rap is proposed to minimize erosion from the flow from Merrimac Street.

Phased Drainage Buildout

The project site has been subdivided into three separate design points for the analysis of the existing drainage patterns. The runoff from the area in the vicinity of the Black Cow restaurant flows overland towards the restaurant and eventually into the Merrimack River without treatment. The second area in the center part of the project site, runoff flows overland towards the existing bulkheads directly into the Merrimack River without treatment. The final area, in the area north and east of Michael's Harborside restaurant, runoff flows overland towards the existing bordering vegetated wetland and salt marsh area. In addition, there is an existing drainage trunk pipe that collects runoff from an area upstream of Merrimac Street and flows to a 42-inch pipe east of the Black Cow. There is also an existing 24-inch pipe collecting runoff from the one story brick building just south of Michael's Harborside. This 24-inch pipe appears to be partially collapse and it is proposed to be replaced.

The proposed development will be phased. The first phase will be initiated in the Brown's Wharf area. The runoff of from this phase will be collected in a closed drainage system and treated prior to discharging runoff into the Merrimack River. It is proposed the closed drainage system will connect to the existing 42-inch pipe east of the Black Cow restaurant.

The second phase of the development will be in the central part of the project site. The runoff in this area will be directed to a closed drainage system and treated prior to discharging to the Merrimack River. The runoff from this area will be diverted to both the 42-inch pipe and 24-inch pipe as necessary to balance the runoff exiting the project site.

The third phase of the development will be in the west part of the project site. The runoff in this area will be directed to a closed drainage system and treated prior to discharging to the Merrimack River. The runoff from this area will be diverted to the 24-inch pipe east of Michael's Harborside restaurant, prior to discharging to the Merrimack River.

The proposed project proposes to treat to the greatest extent possible all runoff exiting the site. It is anticipated that areas primarily used for pedestrian walkways and minimal vehicular traffic directly abutting the Merrimack River will runoff untreated into the Merrimack River.

This is the anticipated phasing development program at this time, though it may be altered as the tenant program becomes more defined and the final design is refined. In any and all phases of this project, there will be a substantial improvement compared to existing conditions.

Sewer

Existing

The existing capacity of the Newburyport waste treatment plant is 3.4 million gallons per day (MGD). Current average daily flows to the Newburyport waste treatment plant 2.30 MGD, leaving about 1.10 MGD in excess capacity.

With the exception of the building located in the southwest corner of the site that discharges by gravity, sewage from existing buildings on site is pumped in one of three force mains to the sewer in Merrimac Street. Sewage flows by gravity, eastward in Merrimac Street to the Wastewater Treatment facility on

Water Street. Based on a meeting with staff from the Department of Public Services, there are potential capacity issues with the existing 42-inch brick sewer that conveys sewage eastward in Merrimac Street. The applicant will evaluate the data provided by the City and implement a sanity flow assessment program, if required, to determine if there is adequate capacity, and to verify the condition of, the sanitary line.

Proposed

The proposed design flow is approximately 45,500 Gallons per Day (GPD). The excess capacity of the treatment plant after the project build-out is anticipated to be approximately 1.05 MGD. The applicant will work with the Town's Sewer and Planning Departments to verify existing flows to the treatment plant, evaluate proposed design flows from current projects in planning, incorporate design flows from the proposed project, and verify the anticipated excess capacity.

Eight-inch polyvinyl chloride sewer mains will be installed on the south and north sides of the site to serve the proposed buildings and flow by gravity to a proposed pump station located at the southwest corner of Building 3. Sanitary flows will be pumped via a proposed force main located in Brown's Wharf Way and will discharge into a manhole in Merrimac Street. Service connections to the proposed buildings will be a minimum of 6-inch diameter and will connect to the new sewer at manholes on the main line. Separate waste lines will be provided for all restaurants and food handling facilities and exterior grease tanks will be installed on kitchen waste lines to intercept and separate grease, if required, minimizing the potential for impacting sanitary sewers.

Water

Existing

The existing capacity of the Newburyport water treatment plant is 3.77 MGD. Current average daily flows is 1.86 MGD, leaving about 1.91 MGD in excess capacity.

There is a 16-inch water main in Merrimac Street. Existing buildings on site are served by an 8-inch water line which runs along the east side of the site to the west of the Black Cow restaurant. There is an 8-inch stub located on the west side of the site, at Tournament Wharf which connects to the 16-inch water line in Merrimac Street.

Proposed

The proposed design flow is approximately 45,500 GPD. The excess capacity after the project buildout will be approximately 1.86 MGD. An 8-inch water line will be installed in the drive aisles at the north side of the site and will be tied into the existing 8-inch line to the east and the existing 8-inch stub to the west, providing a looped system to the 16-inch water main in Merrimac Street. The loop will supply fire protection and domestic water to the proposed buildings. It will be sectionalized with zone control valves and new hydrants will be installed throughout the site to provide adequate fire protection coverage.

Electric

Existing

Currently, National Grid provides electrical distribution to the existing buildings on the site via existing utility poles and overhead wires routed along the existing right-of-ways. Additionally, there appears to be no ground mounted transformers, with all transformers mounted to the existing utility poles.

Proposed

The existing electric services will be maintained until a new overhead and underground systems are installed throughout the site to service new and existing buildings to remain. The systems will consist of a combination of overhead wires, concrete encased conduits, manholes and switchgear as necessary based upon National Grid's requirements.

Gas

Existing

Currently National Grid has an 8-inch gas main in Merrimac Street that services the existing businesses on the project site. There is a 4-inch gas service installed to Michael's Harborside, a 1-1/4 – inch gas service installed in McKay's Wharf to the Windward Yacht Yard, and 2-inch gas service installed in Brown's Wharf to the Black Cow and Plum Island Coffee Shop.

Proposed

The proposed gas service layout will utilize the same right-of-ways to provide service for the proposed project. The gas line in each right-of-way may need to be replaced with a larger diameter pipe in order to meet the proposed demand of the development.