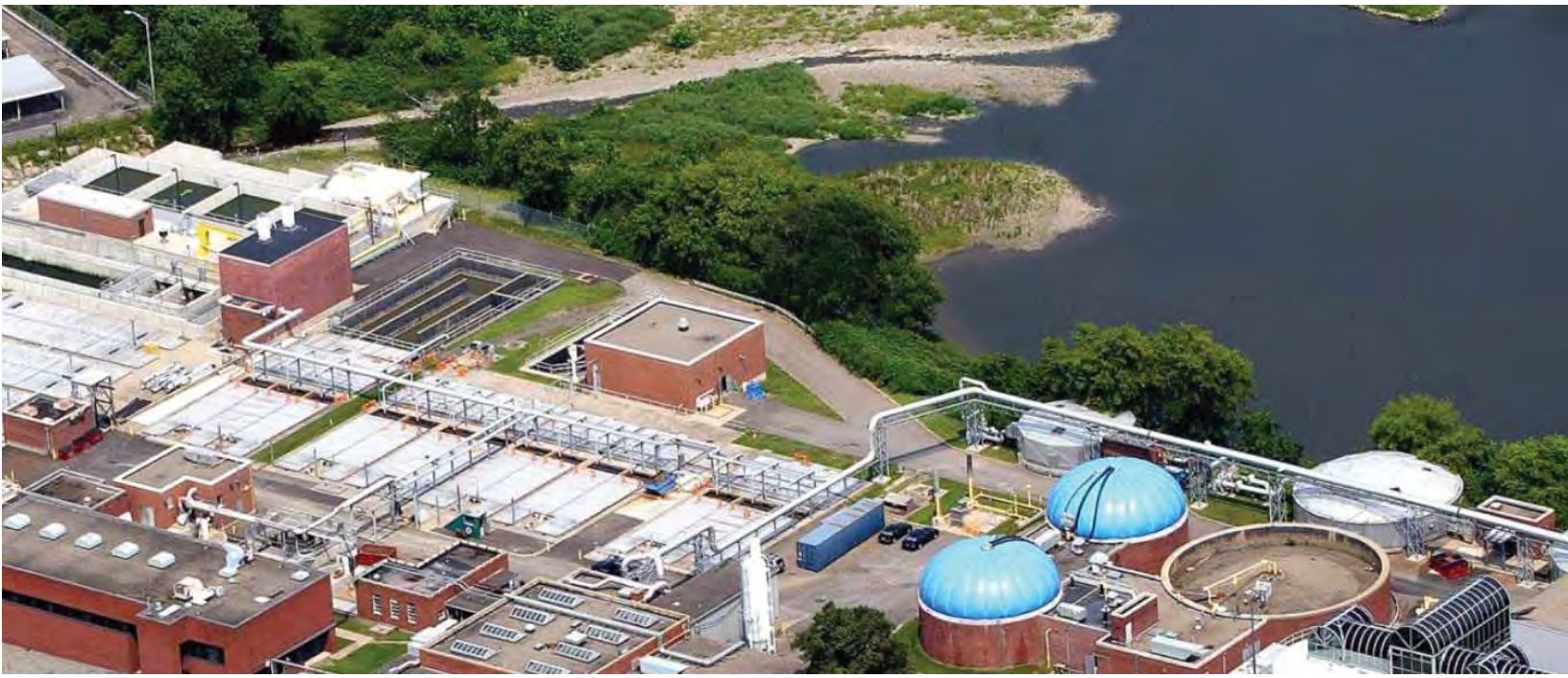
URL: <*www.bjcwwtp.com/sites/default/files/ExcerptOfChapter2_InfluentFlowsAndLoads.pdf*>

- EXCERPT -
(Influent Flows and Loads)



Binghamton-Johnson City Joint Sewage Treatment Plant

Restoration and Rehabilitation Engineering Report

December 2014 (revised March 13, 2015)

BINGHAMTON-JOHNSON CITY JOINT SEWAGE TREATMENT PLANT

RESTORATION AND REHABILITATION

CITY OF BINGHAMTON AND
VILLAGE OF JOHNSON CITY

BROOME COUNTY, NEW YORK

Prepared for

CITY OF BINGHAMTON AND VILLAGE OF JOHNSON CITY, NEW YORK

Prepared by

GHD CONSULTING SERVICES, INC
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March 2015

Project No. 8618134

New York State Department of Environmental Conservation
Division of Water, Region 7
615 Erie Boulevard West, Syracuse, New York 13204-2400
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Joe Martens
Commissioner

March 26, 2015

Binghamton Johnson City Joint Sewage Board
Attn. Mr. Gene Hulbert, Chair
4480 Old Vestal Road
Vestal, NY 13850

City of Binghamton
Attn: Hon. Rich David, Mayor
38 Hawley Street
Binghamton, NY 13901

Village of Johnson City
Attn: Hon. Greg Deemie, Mayor
243 Main Street
Johnson City, NY 13790

RE: Binghamton Johnson City Joint Sewage Treatment Plant
Plant Restoration and Rehabilitation Engineering Report
SPDES Permit No. NY 002-4414
DEC Case No. R7-20110628-59

Dear Chairman Hulbert, Mayor David, and Mayor Deemie:

The Department has reviewed the above referenced report dated December 2014 and revised March 13, 2015. On January 5, 2015, the preliminary engineering report, dated December 2014, was electronically submitted to the Department. On January 27, 2015, Department staff met with the City and their consultants to discuss the Department's comments on the subject report. These comments were fully addressed in a February 9, 2015 report revision. In subsequent meetings held on February 11 and February 25, your consultants indicated that they were proposing significant design changes to the BAF backwash tank and the plant head works. These changes were addressed in the March 13 revision to the engineering report.

This engineering report addresses only the waste treatment side of the plant. Your consultants have indicated that the solids handling processes (i.e. centrate treatment and anaerobic digester capacity) will be addressed in a separate report. Similarly, the hazard mitigation projects for both the treatment plant and the Terminal Pump Station are being addressed in a separate contract.

The Department approves the subject engineering report as revised on March 13, 2015. Our approval includes the following unit processes and plant modifications to restore the Binghamton Johnson City Joint Sewage Treatment Plant to full operation.

- Combining the influents from Binghamton and Johnson City in to one flow stream prior to the headworks.
- Installation of new 10 mm fine screen units.
- Construction of new aerated grit chambers to replace the existing vortex grit removal units.
- Installation of a permanent chemical feed system to enhance primary settling.
- Reversing the flow in primary clarifiers 7-10 from co-current flow to counter-current flow.
- Relocation of the secondary influent pump station (SIPS) and replacement of the existing dry well SIPS pumps with submersible pumps.
- Installation of a phosphoric acid feed system to ensure enough phosphorus is present for the biological treatment process to work properly.
- Construction of six new Biostyr Biological Aerated Filters (BAFs) to replace the eight failed C cell Biofor BAFs. Construction includes new blowers, new media and a clear well located above the BAFs.
- Installation of a duo-media process in the 6 new BAFs and the eight retrofitted N cell BAFs to achieve both carbon removal and nitrification in these BAFs.
- Retrofitting the existing N cell and DN cell BAFs from the Biofor design to the Biostyr design.
- Construction of a new backwash tank underneath the 6 new BAFs. The backwash tank will receive flow from all 18 BAF cells.
- Construction of a new high rate ballasted floc treatment system to treat the plant backwash water.
- Construction of a sludge distribution box to feed all three existing gravity thickeners at and even loading rate.
- Installation of a new emergency generator.
- Installation of all associated piping, aeration systems, pumps and other appurtenances related to the treatment system.

The Department understands that the design of the plant restoration project is constantly evolving. Changes to the approved report must be submitted to the Department for review and approval. The Department notes that the changes may be submitted as a letter addendum to the approved report. Please contact this office should there be any question.

Sincerely,

Sandra Lizlovs, PE
Environmental Engineer II

cc: J. Perticone, Esq.
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2. Influent Flows and Loads

The BJCJSTP SPDES Permit (dated March 6, 2008) has the following flow limits:

- Average flow: 35 mgd (12-month rolling average)
- Peak flow: 60 mgd (through C and N secondary treatment)
- Peak flow: 35 mgd (through DN tertiary treatment)

The hydraulic basis of design for the BIOSTYR BAF system is for a peak flow rate of 60 mgd through the C and N secondary process and a peak flow rate of 35 mgd through the DN process. Inasmuch, the average influent flow rate limit of 35 mgd can be hydraulically treated through the entire BJCJSTP.

The BJCJSTP SPDES Permit has effluent limits for solids, CBOD, nutrients, metals, and other pollutants. The solids, CBOD, and nutrient effluent limits are tiered and vary based on plant flow rate.

The BIOSTYR BAF system and ancillary processes are being designed to achieve the SPDES Permit effluent limits. A pollutant load basis of design has been developed using historical influent data (2004-2014) plus a 20 percent reserve. The basis of design and reserve capacity are shown in Table 2-1.

Table 2-1 Flow and Loads Data and Influent Basis of Design

	Plant Data 2004-2014	Proposed Basis of Design[(1)]
Flow (mgd)		
Average	20	24
Maximum month	38	38
Peak C-N		60
Peak DN		35
TSS (lbs/day)		
Average	24,500	31,000
Maximum month	40,000	48,000
CBOD (lbs/day)		
Average	25,500	32,000
Maximum month	34,500	41,500
NH_3 (lbs/day)		
Average	1,700	2,000
Maximum month	2,800	3,400
TKN (lbs/day)		
Average	3,600	4,300
Maximum month	5,300	6,400
TN (lbs/day)		
Average	3,500	4,300
Maximum month	5,300	6,400

(1) Includes 20 percent reserve capacity.

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