

Report on the Impact of the Proposed Hudson River Landing Development on the Kingston Water Department



**Submitted to the Board of Water Commissioners
By Judith Hansen, Superintendent
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Table of Contents

The Hudson River Landing	2
Kingston Water Department Capacity	2
Current and Projected Demand	2
Financial Impact of the Landing	4
Summary	7

Tables and Figures

Table 1: Projected Flows for Hudson Landing Development	3
Table 2: Variable Cost of Water in 2007	5
Table 3: Annual Cost of Providing Water Service to the Landing	6
Table 4: Water Revenue Projections from the Landing	6
Figure 1: Average Daily Demand 1988 to 2006	4
Figure 2: 2007 Budget Expenses \$3,294,000	5

The proposed Hudson River Landing is currently under review by the City Planning Board. This report will analyze the impact of the proposed development on the City's Water Department should it receive Planning Board approval.

The Hudson River Landing

The project is proposed to consist of a mix of residential and commercial units that are to be constructed in 5 phases over a span of approximately 12 years. Table 1 shows projected flows for the project which were provided by Brinnier and Larios, P.C., the project's consultants. The design flows are based on 120 GPD per bedroom and are thought to be conservative projections, providing the requisite margin of safety for planning purposes. However, actual flows from similar developments in both Kingston and Esopus suggest that the flow is likely to be closer to 60 gpd per bedroom. At build-out, using design flows, the daily demand from the Landing is expected to increase the City's flows by 498,000 gallons per day. If the expected flows are used, the project will add approximately 253,000 gallons per day to the City's daily demand when it is completed.

Kingston Water Department Capacity

The safe or dependable yield of the City's water supply is 6.1 MGD. By definition, the safe yield of any water supply is the maximum dependable water supply that can be withdrawn continuously from a supply during a period of years in which the driest period or period of greatest deficiency in water supply is likely to occur¹. For the Kingston Water supply, that period continues to be the drought of 1957. The dependable yield of 6.1 MGD was calculated by Clinton Bogert Engineers² using stream yields and reservoir drawdown data during the period from June 1957 to January 1958. The nominal capacity of the City's Edmund T. Cloonan Water Treatment Plant is 8 MGD, the capacity of the transmission mains from the Plant to the City is 10 MGD, and there is 14.1 MGD in storage in the distribution system. Although the average daily demand should not routinely exceed the safe yield, the additional capacity in the plant, transmission mains, and storage are sufficient to meet the daily demand as well as peak demands and fire flows

Current and Projected Demand

In 2006, The Water Department's average daily demand was 3.28 million gallons and includes 0.2 MGD to the Town of Ulster as part of the Department's 2004 Agreement with the Town. Under that Contract, there is an additional 0.3 MGD that was sold to the Town in 2007 and another 0.2 MGD that is committed for future use. When that 0.5 MGD is added to the 2006 totals, the average daily demand becomes 3.78 million gallons. Using the design flow of 0.48 MGD for the Landing, the most conservative estimates available, the average daily demand would increase to 4.26 MG when the project is completed.

Figure 1 depicts the average daily demand since 1988. During the mid 1990's consumption was at 4.3 MGD and declined sharply in 1998. The decrease was due to

¹ From: *Volume 1 Introduction to Water Sources and transmission. Principles and Practices of Water Supply Operations.* 1985. American Water Works Association. Denver CO. Page 144

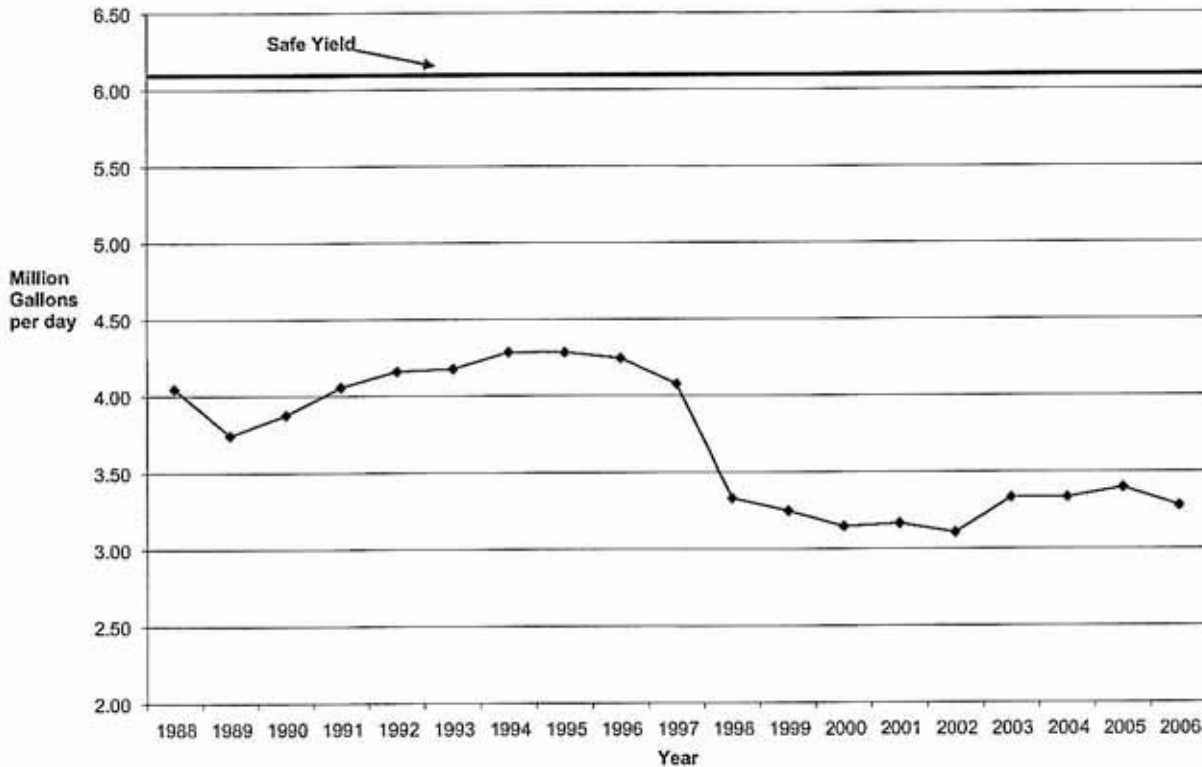
² Report available in KWD Business Office, 111 Jansen Ave., Kingston, NY 12401

Table 1: Projected Flows for Hudson Landing Development

Phase 1	Number of Units	Design (GPD)	Expected (GPD)
Single Family	32	11520	5760
Town homes	300	64080	32040
Apartments	124	28080	14040
live/wk town homes	6	1440	720
retail under town homes	6	600	600
nb rest	1	750	750
retail/rest	1	1500	1500
	470	107,970	55,410
Phase 2			
townhouses	310	94200	47100
live/wk town homes	14	3360	1680
retail under th	1	1400	1400
	325	98,960	50,180
Phase 3			
Town homes	346	116160	58080
apartments	100	22800	11400
apartments over retail	24	5280	2640
live/wk town homes	7	1680	840
retail under th	1	700	700
nb retail	1	750	750
hwy commercial	1	1500	1500
	480	148,870	75,910
Phase 4			
Apartments	110	24960	12480
Town homes	130	43200	21600
live/wk townhouse	14	3360	1680
retail under th	1	1400	1400
	255	72,920	37,160
Phase 5			
apartments	137	32880	16440
Town homes	110	36000	18000
	247	68,880	34,440
Total Flows	1777	497,600	253,100

the closure of the IBM Plant in Ulster as well as aggressive and on-going leak detection efforts within the Water Department. The result is that since 1998, flows have ranged from 3.1 MGD to 3.4 MGD. Adding both the Department's commitment to the Town of Ulster and the additional design flows for the Landing project, the projected daily demand is expected to return to its mid-1990 level of 4.3 MGD and that would not be realized until the project is completed, a period that is expected to last some 12 years. Most importantly, as can be seen in Figure 1, this flow is well below the safe yield of 6.1 MGD.

Figure 1: Average Daily Demand 1988 to 2006



Returning production to its previous level should pose little problem since the staffing and capacity already exists within the Department. However, although the supply is available, improvements may be required to deliver the supply to the project without adversely impacting existing customers. Should the Planning Board grant approval to this project, the determination of what, if any, improvements are required will be made by the Water Department, in consultation with its engineers. The cost of the improvements will be borne by the developer. Preliminary discussions with the developer suggest that it is likely that a tank and pumping station will be required to deliver water to at least a portion of the project.

Financial Impact of the Landing

The Kingston Water Department currently has 27 full time employees and operates on an annual budget of \$3,294,000.00. A copy of the 2007 Budget is available online at www.ci.kingston.ny.us or by contacting the Water Department . Figure 2 shows the breakdown of expenditures among various classes. Salaries and benefits account for 58 percent of all expenses while fixed expenses such as taxes, insurance, and bonds account for another 24 percent. As a mostly gravity system, 82 percent of the water

produced, flows to our customers without pumping. As a result, the majority of the remaining expenses are also largely fixed. Since no increase in capacity or staffing are anticipated, the only costs associated with providing flows to the Landing would be the variable costs of the water itself and those associated with servicing the new accounts. In 2007, the variable cost of operation is listed in Table 2.

Figure 2: 2007 Budget Expenses \$3,294,000

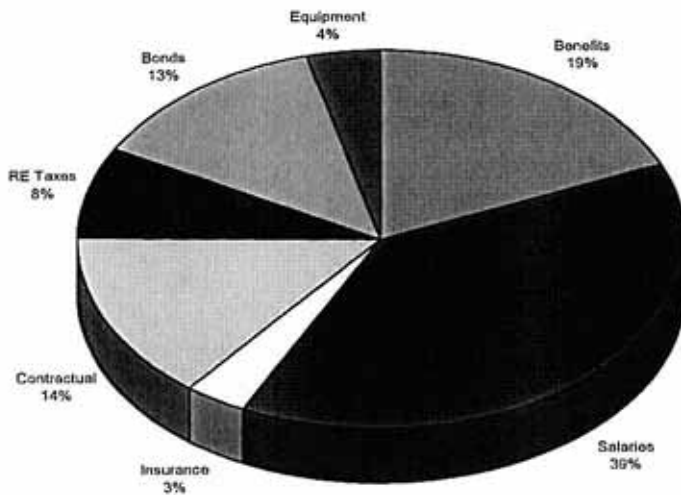


Table 2: Variable Cost of Water in 2007

Cost Factor	Unit	Cost
Treatment Chemicals	Per 1000 gallons	\$0.04
Pumping	Per 1000 gallons	\$0.07
Reading/servicing Meters ³	Per bill issued	\$0.07
Billing and Collections ¹	Per bill issued	\$0.24

³ Since the KWD bills for water and sewer, these per bill amounts represent half of the total cost. The remaining half should be allotted to the variable cost of sewer.

at current interest rates, is estimated to be about \$270,000 per year. Although the revenues from the Landing will take several years to be realized, they would help to mute the impact of these improvements on water rates, the principal source of Department revenues⁵. Similarly, it has been determined that the cost to read a meter and issue a water and sewer bill in 2007 is \$12.31⁶. With the Water Department's share of that cost at \$6.16 per bill, only \$0.31 is attributable to the variable cost of operations (Table 2). Therefore, when the 1,330 new accounts from this development are added, the cost per bill will decrease to \$9.40⁷. Other comparable economies of scale are expected to be achieved throughout the Department's operations as the customer base increases.

Summary

1. The Hudson Landing project is currently under review by the Kingston Planning Board
2. If approved, it will be constructed in 5 phases, over some 12 years and is expected to increase the Water Department's average daily demand by as much as 497,600 gallons per day and could add some 1,325 new customers within the City.
3. The Water Department has the water available to supply the project (Figure 1) and does not anticipate adding staff or capacity to do so. The specific improvements that may need to be made to deliver the water to the site will be determined by the Department during the site plan review phase (assuming the Planning Board approves the project). The cost of these improvements will be borne by the developer.
4. The variable cost of the Departments operations is relatively low: \$0.11 per 1000 gallons produced and \$0.31 per bill issued.
5. The annual cost to supply water to the project is anticipated to be \$21,622 if the more conservative design flows are used or \$11,805 if the flows are modeled on actual flows from similar projects. This would be an increase in current expenses of 7 percent and 4 percent, respectively.
6. Gross annual revenues from the project are expected to be \$599,672 when the design flows are used and \$341,238 when actual flows from similar projects are used. This would be an increase in current revenues of 18 percent and 10 percent, respectively.
7. The net annual income (in 2007 dollars) projected from the Hudson Landing is \$578,050 per year if design flow projections are used and \$329,433 if expected flow projections are used in the calculations.
8. In addition to the positive cash flow that is expected to be generated by the project, expanding the customer base will decrease unit costs across all phases of Department operations.

⁵ Based on the 2007 Budget, 92% of Department revenue is derived from the sale of water. The remaining 8% is derived from related activities.

⁶ In 2007, the total cost is \$394,069 per year and 32,000 are expected to be issued.

⁷ Total cost of \$350,712 (\$394,069 + \$1,643) divided by 37,300 bills per year (32,000 + 5,300)

Since the project will straddle the boundary between the City of Kingston and the Town of Ulster, it is estimated to add 1,325 new quarterly water and sewer accounts in Kingston when completed. Using the flows provided in Table 1 and the variable costs listed in Table 2, the total cost of providing water service to the landing can be found in Table 3. It assumes all water to the site is pumped and the new pumping station will be no more efficient than the existing facilities where the pumps range in age from 15 to 55 years old.

Table 3: The Annual Cost of Providing Water Service to the Landing

	Design Flow (497,600 gpd)	Expected Flow (253,100 gpd)
GPD	\$19,979	\$10,162
Bills/year (5,300)	\$1,643	\$1,643
Annual Cost	\$21,622	\$11,805

To determine the revenues to be realized from this project, the Department's 2007 rates, which can be obtained from the Department, were applied to the project demand listed in Table 1. The projected revenues from this project are summarized in Table 4.

Table 4: Water Revenue Projections from the Landing

	Design flows (497,600 gpd)	Expected Flows (253,100 gpd)
Total Water Revenue	\$665,160	\$424,191
Adjusted Revenue ⁴	\$599,672	\$341,238

Subtracting the costs listed in Table 3 from the revenues projected in Table 4, the net revenue from the development at completion is expected to be \$578,050 per year, based on 2007 figures, if design flow projections are used and \$329,433 if expected flow projections are used in the calculations. Therefore, the financial impact on the Water Department, should the Landing Project be approved by the Planning Board, is positive. Using the expected flow projections, the Hudson Landing would increase current expenses by less than 0.4 percent while increasing revenues by more than 10 percent.

Additionally, given the relatively low variable costs associated with the operation of the Department, the Landing, if constructed, will provide the economies of scale necessary to make needed improvements. Regardless of the disposition of this or similar projects currently before the Planning Board, the Department is facing more than \$2.7 million dollars in capital improvements in the next 5 years. These projects are required if we are to meet regulatory requirements and continue to provide our customers with water of the highest quality. The cost of bonding these capital improvements over 20 years,

⁴ It is estimated that approximately 25% of the projects demand will be supplied by the KWD through the Town of Ulster at the bulk rate of \$2.22 per 1000 gallons. Total water revenues were adjusted by this percentage and the bulk rate applied.