# COST- JUSTIFIED WATER AND WASTEWATER SYSTEM DEVELOPMENT FEES REPORT

## TOWN OF OAK ISLAND

## BRUNSWICK COUNTY, NC

McGill ASSOCIATES

CONSULTING ENGINEERS
SHALLOTTE, NORTH CAROLINA

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## BRUNSWICK COUNTY, NC

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# EXECUTIVE SUMMARY and PURPOSE STATEMENT

## Executive Summary:

The North Carolina General Assembly passed House Bill 436 in July 2017, amending Chapter 162A of the General Statutes by adding "Article 8, System Development Fees." This amendment was enacted as "An Act to Provide for Uniform Authority to Implement System Development Fees for Public Water and Sewer Systems in North Carolina and to Clarify the Applicable Statute of Limitations" which requires compliance with designated calculation methodology by July 1, 2018.

In response to the House Bill 436, the Town of Oak Island has retained McGill Associates to complete a system development fee analysis. Based on the Town of Oak Island's combination of existing system capacity and planned capital improvements to expand capacity, the development fee, in accordance with HB 436 rules for an Equivalent Residential Unit (ERU) for water and sewer was calculated to be $5,999. ERU is defined as the water and sewer capacities required to serve the most typical user type, which is a three-bedroom single-family dwelling.

The fee for other types of development can be calculated by applying the calculated cost of capacity per gallon of flow per day to the water and wastewater demands for various uses as defined by NC Administrative Code 15A NCAC 18C .0409 and 15A NCAC 02T .0114 using the following table:

| Oak Island System Development Fees: Cost per Gallon per Day Calculation | | |
|---|---|---|
| Item | Cost-Justified System Development Fee Calculation | Cost of Capacity $ / GPD |
| 1 | Water System | $ 7.23 |
| 2 | Sewer System | $ 8.63 |

**Purpose Statement:**

This report documents the results of the approach, methodology and calculations for establishing system development fees in accordance with North Carolina General Statue 162A, Article 8 "System Development Fees". Through House Bill 436 (HB 436), the General Assembly of North Carolina established a uniform approach and associated methodology required for local governmental units to calculate and implement System Development Fees (SDF) for public water and sewer systems. All SDF are required to be conformed to HB 436. The SDF must be determined by a qualified engineer or financial professional using industry standard practices. A copy of HB 436 is included in Appendix A.

The Town of Oak Island retained McGill Associates (McGill) to review and make recommendations for revisions as necessary to water and sewer SDF to conform with HB 436. The approach, methodology and calculations are based on American Water Works Association (AWWA) Manual of Water Supply Practices – M1, Principles of Water Rates, Fees, and Charges, Seventh Edition.

McGill Associates is qualified in engineering disciplines and financial analysis and has the expertise and experience to determine system development fees. The firm has a long history of working with cities, towns, counties and special districts to provide professional advice on the setting of fees, the development of water and wastewater master plans and capital improvement programs, and the development of asset management plans.

Oak Island has made significant investments in water and sewer capital assets that provide capacity that is, and will be available for new development, and desires to use System Development Fees to recover a portion of the costs associated with providing capacity.

The overall result of this effort will be establishing the maximum cost-justified System Development Fees allowable under HB 436. Oak Island may elect to implement fees of lesser value; however, any adjustment must be calculated on a cost per unit volume basis, meaning the same cost per gallon adjustment must be applied equally to all applicable customer types.

This report does not constitute a recommendation of any SDF amount. The Town Council has full authority to charge any amount, up to the maximum, provided it is applied to the relative demands of new development proportionally.

## 1.0 APPROACH

System Development Fees are defined as a charge imposed on each new customer or development that generally offsets the incremental cost of replacing existing and/or constructing new capital assets to provide capacity that will continue to meet the demands placed on the system by each new customer or development. Since water and sewer system capacity must, without exception, exceed customer demands, the major infrastructure components providing this capacity, such as water treatment plants, reservoirs, wells, pump stations, wastewater treatment plants, etc., must be planned and constructed well in advance, and in large enough increments to keep pace with anticipated demand on the available system capacity.

AWWA methodology cites legal consideration for determining SDF. A Rational Nexus, or reasonable relationship, must be established between the fee charged and the cost associated with providing capacity to new customers. The Rational Nexus Test consists of three elements and will be addressed by 1) a review of available planning documents to verify general alignment between capacity demands driven by projected development patterns and planned capital improvements that will be needed to create the required capacity; 2) a determination of the proportionate share of costs to be borne by new development through appropriate methodology and calculation and 3) establishing a reasonable apportionment of the cost to new development in relation to the benefits the new development will reasonably receive through appropriate methodology and calculations.

The first element of the Rational Nexus test was determined to be favorable based on a review of the Town of Oak Island 2017 Comprehensive Land Use Plan, and the current Capital Improvements Projects (CIP) schedule. Water and sewer flow projections demonstrate adequate capacity has been secured through long-term contracts with Brunswick County to purchase water supply and wastewater treatment capacity. Existing infrastructure appears to be adequate (including two wastewater treatment plants owned and operated by the Town) to meet projected demands without the need for constructing additional capacity-related assets during the planning period.

The elevated water storage tank listed in the Comprehensive Plan has been determined to be unnecessary by Town Staff and is not considered in the calculation. Sections of the Land Use Plan and CIP Schedule are included in Appendix A.

The remaining elements of the Rational Nexus Test 2) determining proportionate share of costs to be borne by new development and 3) establishing a reasonable cost to new development in relation to the benefits received by the new development will be determined through appropriate methodology and calculations in the following sections.

## 2.0 METHODOLOGY

Three methods for calculating SDF meet the definition of HB 436 and will satisfy the Rational Nexus Test:

### Buy-In Method

The Buy-In Method is used where existing system capacity is available to provide service to new development. New customers essentially "buy" their proportionate share of system capacity from the current customer base ("system owners") at the current cost or value of the existing facilities. HB 436 requires appropriate adjustments to be made to the replacement cost such as "debt credits, grants, and other generally accepted valuation adjustments."

### Incremental Cost Method

The Incremental Cost (or Marginal Cost) Method is used to assign new development the incremental cost of capital assets required for preserving and/or providing additional system capacity. This method should include supporting details identifying construction costs, scheduling, financing, funding source(s), etc., tied to a capital improvements plan (CIP), utilities master plan, and/or other approved planning document(s) that cover a planning horizon of 10 to 20 years. HB 436 requires a revenue credit to be applied "against the projected aggregate cost of water or sewer capital improvements."

### Combined Method

The Combined Approach is a combination of the Buy-In and Incremental Cost Methods and is used where existing assets provide some system capacity to accommodate new development, and applicable capital plan(s) also identify significant capital investment proposed to add infrastructure required to address future growth and capacity needs.

## 3.0 CALCULATION of SYSTEM DEVELOPMENT FEES

The **Buy-In Method** is the appropriate approach to calculate Oak Island's system development fees. Existing system capacity is available to provide service to new customers and expected to accommodate projected growth through the planning period. Capacity related capital projects are therefore not considered in the CIP schedule.

### 3.1 Existing System Capacity Availability

Water and Sewer system design capacities are determined using average day demands and incorporate appropriate peaking factors that will adequately address maximum flow conditions that occur during high water use conditions and wet weather flows for the sewer system. Using historical data, the average day flows for the water and sewer systems indicate available system capacities as follows:

**Table 3.1.1 – Oak Island Water and Sewer System Available Capacity**

| | Oak Island Water and Sewer System Available Capacity | | | |
|---|---|---|---|---|
| Item | System Capacity - Million Gallons Per Day (MGD) | Design Capacity | Average Day | Available Capacity |
| 1 | Water System | 2.00 | 0.896 | 1.10 |
| 2 | Sewer System | 3.80 | 0.750 | 3.05 |
| Water System Capacity based on Brunswick County Purchase Agreemet | | | | |
| Sewer System Capacity based on Oak Island WWTP Permits and Brunswick County Purchase Agreement | | | | |

### 3.2 Buy-In Calculation - After demonstrating capacity is available, the value per gallon is calculated to determine the cost per gallon that will be applied to reimburse existing customers for constructing and maintaining available capacity in advance.

The preferred AWWA valuation approach is "replacement cost new less depreciation" (RCNLD). This approach is based on the premise that System Development Fees should reflect the value of providing any given amount of new capacity at the cost of constructing the assets at the time the new customer is connected. This fairly compensates existing customers for carrying the costs of constructing and maintaining capacity built into the system in advance of when the new customers connect.

Replacement cost in the RCNLD calculation used the RS Means Historical Cost Index. RS Means has been publishing a construction cost index for over 70 years, collecting data from all facets of

the industry to accurately track costs directly related to building and construction. This allows the present value (replacement cost new) of capital construction projects to be calculated on data provided by a very reliable, long-time industry leader. Depreciation assigned by the Town's fixed asset inventory uses the straight-line method, based on a 5 to 50-year assignment of useful life according to the type of asset, to represent a general decline in the asset's original value over time.

Replacement Cost New (RCN) is therefore determined by applying the RS Means index to the original cost, then deducting the accumulated depreciation to reach RCNLD.

Assets included in the buy-in valuation are those that provide the available capacity of the system, are "owned" by the ratepayers, and therefore provide a benefit to all customers. Typically, these assets are water supply, treatment, pump stations, storage and mains; wastewater treatment plant, lift stations and sewers. Assets contributed by or paid for by developers are deducted from the calculation since these costs were not "paid" by the existing customers. Non-capacity related assets such as vehicles, computers and software are also excluded from the calculation.

**Table 3.2.1 – Water System Cost per GPD of Existing Utility Assets Providing Available Capacity**

| | Oak Island Water System Development Fee Buy-In Valuation | | | |
|---|---|---|---|---|
| Item | System Asset Description | RCNLD | Excluded | Amount Eligible |
| | Water System Assets | | | |
| W1 | Land | $ 238,547 | $ - | $ 238,547 |
| W2 | Water Main Infrastructure | $ 14,216,631 | $ - | $ 14,216,631 |
| W3 | Vehicles | $ 24,722 | $ 24,722 | $ - |
| W4 | Equipment | $ 101,590 | $ 101,590 | $ - |
| | Subtotal - Water System Assets | $ 14,581,489 | $ 126,312 | $ 14,455,178 |
| | | | | |
| | Less Revenue Credit: Outstanding Debt Principal | | | $ - |
| | Equals: Net Water System Value | | | $ 14,455,178 |
| | Divide by: Water System Capacity (MGD) | | | 2.00 |
| | Equals: Unit Valuation of Water System ($/MGD) | | | $ 7,227,589 |
| | Divide by: 1,000,000 gallons ($/GPD) | | | $ 7.23 |

**Table 3.2.2 – Sewer System Cost per GPD of Existing Utility Assets Providing Available Capacity**

| | Oak Island Sewer Collection System Development Fee Buy-In Valuation | | | |
|---|---|---|---|---|
| Item | System Asset Description | RCNLD | Excluded | Amount Eligible |
| | Sewer Collection System Assets | | | |
| S1 | Land | $ 4,636,570 | $ - | $ 4,636,570 |
| S2 | Sewer Main Infrastructure | $ 108,695,936 | $ - | $ 108,695,936 |
| S3 | Vehicles | $ - | $ - | $ - |
| S4 | Equipment | $ 3,754,383 | $ 97,800 | $ 3,656,582 |
| | Subtotal - Sewer Collection System Assets | $ 117,086,888 | $ 97,800 | $ 116,989,088 |
| | | | | |
| | Less Revenue Credit: Outstanding Debt Principal | | | $ (84,177,563) |
| | Equals: Net Sewer Collection System Value | | | $ 32,811,525 |
| | Divide by: Sewer Collection System Capacity (MGD) | | | 3.80 |
| | Equals: Unit Valuation of Sewer Collection System ($/MGD) | | | $ 8,634,612 |
| | Divide by: 1,000,000 gallons ($/GPD) | | | $ 8.63 |

## 3.3 Purchased Capacity

In December 2005 Oak Island purchased treatment capacity in the Brunswick County Regional Wastewater Treatment Plant in the amount of 3.0 million gallons per day. The Town has determined ownership of capacity is an eligible cost that can be included in the SDF calculation. Assignment of value for this capacity will follow AWWA "replacement cost new" methodology since the Town will not need to address the physical deterioration of the assets providing treatment capacity and will therefore have no need to adjust value through depreciation. The Town includes this value in its fixed asset register which allows applicable revenue credits to be applied along with all other assets.

## 3.5 Valuation Adjustments – The above system valuations include applicable credit adjustments for revenues anticipated from exiting user charges, donated infrastructure and grants.

HB 436 requires revenue credits to be applied to debt that is issued to construct water and sewer system assets that provide capacity for potential customers and are repaid by retail water rates and charges. To ensure that repayment for this debt is not collected twice from new customers; once through the SDF and again through retail rates and charges, the remaining outstanding debt principal amount is required to be applied as a credit against the projected aggregate cost of the capital improvements in the SDF calculation.

Contributed capital provided by new development, that exceeds the development's proportionate share of connecting facilities, shall also be credited. Contributed capital is identified as part of fixed asset review and included in the summary of ineligible assets in the above calculation.

### 3.6 Cost per Unit Volume – Dollar valued that can be applied uniformly to all potential customer.

This measure becomes the starting point for determining the maximum cost-justified water and sewer system development fee. Fees for different types of customers are based on this cost of capacity multiplied by the amount of capacity needed to serve each type or class of customer.

## 4.0 SERVICE UNIT CALCULATIONS: EQUIVALENT RESIDENTIAL UNITS

HB 436 requires SDF calculations to be applied to various categories of customer demands based on service units or Equivalent Residential Unit (ERU). ERU is defined as the water and sewer capacities required to serve the most typical user type, which is a three-bedroom single-family dwelling. North Carolina Division of Water Resources (DWR) design standards for constructing water and sewer systems, NC Administrative Code 15A NCAC 18C .0409 and 15A NCAC 02T .0114 respectively, establish daily flow requirements based this type of service connection. ERU can therefore be defined as 400 gallons per day for water and 360 gallons per day for sewer.

**Table 4.0.1 – Cost-Justified System Development Fees: Equivalent Residential Unit Water and Sewer**

| | Oak Island System Development Fees: Equivalent Residential Unit Calculation | | | |
|---|---|---|---|---|
| Item | Cost-Justified System Development Fee Calculation | Capacity $ / GPD | Demand GPD | Cost per Unit Capacity |
| 1 | Water System | $ 7.23 | 400 | $ 2,892 |
| 2 | Sewer System | $ 8.63 | 360 | $ 3,107 |
| | Total ERU | | | $ 5,999 |

## 5.0 APPLICATION of SYSTEM DEVELOPMENT FEES and SERVICE UNIT EQUIVALENCY

NC Administrative Code 15A NCAC 18C .0409 and 15A NCAC 02T .0114, included in Appendix A, further define other service connection types and the associated water system demands sewer system flows on a per gallon per day basis. Therefore, these tables serve as an equivalency or conversion for use in determining applicable SDF for various categories of demand.

## 6.0 CONCLUSION

McGill Associates has calculated costs for water and wastewater capacity on a per gallon per day basis for the Town of Oak Island. This calculation was performed using the Buy-In Method to account for the Town's combination of existing capacity and current improvements under construction. This calculation resulted in a development fee ceiling of $5,999 for an Equivalent Residential Unit (ERU). ERU is defined as the water and sewer capacities required to serve the most typical user type, which is a three-bedroom single-family dwelling. The fee for other types of development can be calculated by applying the calculated the cost of capacity per gallon of flow per day to the water and wastewater demands for various uses as defined by NC Administrative Code 15A NCAC 18C .0409 and 15A NCAC 02T .0114.

Using NC Administrative Code 15A NCAC 18C .0409 and 15A NCAC 02T .0114 ensures that the same standard used to plan, design, construct and finance capital assets is applied as the same cost recovery basis to be applied to new development.

This report does not constitute a recommendation of any SDF amount. The Town Council has full discretion and authority to charge any amount, up to the maximum, provided fees are applied to new development proportionally to the various customer types.

**Appendix A**
House Bill 436
NC Administrative Code 15A NCAC 18C .0409
NC Administrative Code 15A NCAC 02T .0114
Revenue Credit: Outstanding Debt Principal
2017 Comprehensive Land Use Plan: Public Utilities Section
Oak Island Capital Improvements Schedule
RS Means Historical Cost Index

**GENERAL ASSEMBLY OF NORTH CAROLINA**
**SESSION 2017**

**SESSION LAW 2017-138**
**HOUSE BILL 436**

AN ACT TO PROVIDE FOR UNIFORM AUTHORITY TO IMPLEMENT SYSTEM DEVELOPMENT FEES FOR PUBLIC WATER AND SEWER SYSTEMS IN NORTH CAROLINA AND TO CLARIFY THE APPLICABLE STATUTE OF LIMITATIONS.

The General Assembly of North Carolina enacts:

**SECTION 1.** Chapter 162A of the General Statutes is amended by adding a new Article to read:

"Article 8.
"System Development Fees.

"**§ 162A-200. Short title.**

This Article shall be known and may be cited as the "Public Water and Sewer System Development Fee Act."

"**§ 162A-201. Definitions.**

The following definitions apply in this Article:

(1) Capital improvement. – A planned facility or expansion of capacity of an existing facility other than a capital rehabilitation project necessitated by and attributable to new development.

(2) Capital rehabilitation project. – Any repair, maintenance, modernization, upgrade, update, replacement, or correction of deficiencies of a facility, including any expansion or other undertaking to increase the preexisting level of service for existing development.

(3) Existing development. – Land subdivisions, structures, and land uses in existence at the start of the written analysis process required by G.S. 162A-205, no more than one year prior to the adoption of a system development fee.

(4) Facility. – A water supply, treatment, storage, or distribution facility, or a wastewater collection, treatment, or disposal facility, including for reuse or reclamation of water, owned or operated, or to be owned or operated, by a local governmental unit and land associated with such facility.

(5) Local governmental unit. – Any political subdivision of the State that owns or operates a facility, including those owned or operated pursuant to local act of the General Assembly or pursuant to Part 2 of Article 2 of Chapter 130A, Article 15 of Chapter 153A, Article 16 of Chapter 160A, or Articles 1, 4, 5, 5A, or 6 of Chapter 162A of the General Statutes.

(6) New development. – Any of the following occurring after the date a local government begins the written analysis process required by G.S. 162A-205, no more than one year prior to the adoption of a system development fee, which increases the capacity necessary to serve that development:

a. The subdivision of land.

b. The construction, reconstruction, redevelopment, conversion, structural alteration, relocation, or enlargement of any structure which increases the number of service units.

c. Any use or extension of the use of land which increases the number of service units.

(7) Service. – Water or sewer service, or water and sewer service, provided by a local governmental unit.

(8) Service unit. – A unit of measure, typically an equivalent residential unit, calculated in accordance with generally accepted engineering or planning standards.

(9) System development fee. – A charge or assessment for service imposed with respect to new development to fund costs of capital improvements necessitated by and attributable to such new development, to recoup costs of existing facilities which serve such new development, or a combination of those costs, as provided in this Article. The term includes amortized charges, lump-sum charges, and any other fee that functions as described by this definition regardless of terminology. The term does not include any of the following:

a. A charge or fee to pay the administrative, plan review, or inspection costs associated with permits required for development.

b. Tap or hookup charges for the purpose of reimbursing the local governmental unit for the actual cost of connecting the service unit to the system.

c. Availability charges.

d. Dedication of capital improvements on-site, adjacent, or ancillary to a development absent a written agreement providing for credit or reimbursement to the developer pursuant to G.S. 153A-280, 153A-451, 160A-320, 160A-499 or Part 3A of Article 18, Chapter 153A or Part 3D of Article 19, Chapter 160A of the General Statutes.

e. Reimbursement to the local governmental unit for its expenses in constructing or providing for water or sewer utility capital improvements adjacent or ancillary to the development if the owner or developer has agreed to be financially responsible for such expenses; however, such reimbursement shall be credited to any system development fee charged as set forth in G.S. 162A-207(c).

(10) System development fee analysis. – An analysis meeting the requirements of G.S. 162A-205.

"**§ 162A-202. Reserved.**

"**§ 162A-203. Authorization of system development fee.**

(a) A local governmental unit may adopt a system development fee for water or sewer service only in accordance with the conditions and limitations of this Article.

(b) A system development fee adopted by a local governmental unit under any lawful authority other than this Article and in effect on October 1, 2017, shall be conformed to the requirements of this Article not later than July 1, 2018.

"**§ 162A-204. Reserved.**

"**§ 162A-205. Supporting analysis.**

A system development fee shall be calculated based on a written analysis, which may constitute or be included in a capital improvements plan, that:

(1) Is prepared by a financial professional or a licensed professional engineer qualified by experience and training or education to employ generally accepted accounting, engineering, and planning methodologies to calculate system development fees for public water and sewer systems.

(2) Documents in reasonable detail the facts and data used in the analysis and their sufficiency and reliability.

(3) Employs generally accepted accounting, engineering, and planning methodologies, including the buy-in, incremental cost or marginal cost, and combined cost methods for each service, setting forth appropriate analysis as to the consideration and selection of a method appropriate to the circumstances and adapted as necessary to satisfy all requirements of this Article.

(4) Documents and demonstrates the reliable application of the methodologies to the facts and data, including all reasoning, analysis, and interim calculations underlying each identifiable component of the system development fee and the aggregate thereof.

(5) Identifies all assumptions and limiting conditions affecting the analysis and demonstrates that they do not materially undermine the reliability of conclusions reached.

(6) Calculates a final system development fee per service unit of new development and includes an equivalency or conversion table for use in determining the fees applicable for various categories of demand.

(7) Covers a planning horizon of not less than 10 years nor more than 20 years.

(8) Is adopted by resolution or ordinance of the local governmental unit in accordance with G.S. 162A-209.

"**§ 162A-206. Reserved.**

"**§ 162A-207. Minimum requirements.**

(a) Maximum. – A system development fee shall not exceed that calculated based on the system development fee analysis.

(b) Revenue Credit. – In applying the incremental cost or marginal cost, or the combined cost, method to calculate a system development fee with respect to water or sewer capital improvements, the system development fee analysis must include as part of that methodology a credit against the projected aggregate cost of water or sewer capital improvements. That credit shall be determined based upon generally accepted calculations and shall reflect a deduction of either the outstanding debt principal or the present value of projected water and sewer revenues received by the local governmental unit for the capital improvements necessitated by and attributable to such new development, anticipated over the course of the planning horizon. In no case shall the credit be less than twenty-five percent (25%) of the aggregate cost of capital improvements.

(c) Construction or Contributions Credit. – In calculating the system development fee with respect to new development, the local governmental unit shall credit the value of costs in excess of the development's proportionate share of connecting facilities required to be oversized for use of others outside of the development. No credit shall be applied, however, for water or sewer capital improvements on-site or to connect new development to water or sewer facilities.

"**§ 162A-208. Reserved.**

"**§ 162A-209. Adoption and periodic review.**

(a) For not less than 45 days prior to considering the adoption of a system development fee analysis, the local governmental unit shall post the analysis on its Web site and solicit and furnish a means to submit written comments, which shall be considered by the preparer of the analysis for possible modifications or revisions.

(b) After expiration of the period for posting, the governing body of the local governmental unit shall conduct a public hearing prior to considering adoption of the analysis with any modifications or revisions.

(c) The local governmental unit shall publish the system development fee in its annual budget or rate plan or ordinance. The local governmental unit shall update the system development fee analysis at least every five years.

"**§ 162A-210. Reserved.**

"**§ 162A-211. Use and administration of revenue.**

(a) Revenue from system development fees calculated using the incremental cost method or marginal cost method, exclusively or as part of the combined cost method, shall be expended only to pay:

(1) Costs of constructing capital improvements including, and limited to, any of the following:

a. Construction contract prices.

b. Surveying and engineering fees.

c. Land acquisition cost.

d. Principal and interest on bonds, notes, or other obligations issued by or on behalf of the local governmental unit to finance any costs for an item listed in sub-subdivisions a. through c. of this subdivision.

(2) Professional fees incurred by the local governmental unit for preparation of the system development fee analysis.

(3) If no capital improvements are planned for construction within five years or the foregoing costs are otherwise paid or provided for, then principal and interest on bonds, notes, or other obligations issued by or on behalf of a local governmental unit to finance the construction or acquisition of existing capital improvements.

(b) Revenue from system development fees calculated using the buy-in method may be expended for previously completed capital improvements for which capacity exists and for capital rehabilitation projects. The basis for the buy-in calculation for previously completed capital improvements shall be determined by using a generally accepted method of valuing the actual or replacement costs of the capital improvement for which the buy-in fee is being collected less depreciation, debt credits, grants, and other generally accepted valuation adjustments.

(c) A local governmental unit may pledge a system development fee as security for the payment of debt service on a bond, note, or other obligation subject to compliance with the foregoing limitations.

(d) System development fee revenues shall be accounted for by means of a capital reserve fund established pursuant to Part 2 of Article 3 of Chapter 159 of the General Statutes and limited as to expenditure of funds in accordance with this section.

"**§ 162A-212. Reserved.**

"**§ 162A-213. Time for collection of system development fees.**

For new development involving the subdivision of land, the system development fee shall be collected by a local governmental unit either at the time of plat recordation or when water or sewer service for the subdivision or other development is committed by the local governmental unit. For all other new development, the local governmental unit shall collect the system development fee at the time of application for connection of the individual unit of development to the service or facilities.

"**§ 162A-214. Reserved.**

"**§ 162A-215. Narrow construction.**

Notwithstanding G.S. 153A-4 and G.S. 160A-4, in any judicial action interpreting this Article, all powers conferred by this Article shall be narrowly construed to ensure that system development fees do not unduly burden new development."

**SECTION 2.** G.S. 130A-64 reads as rewritten:

"**§ 130A-64. Service charges and rates.**

(a) A sanitary district board shall apply service charges and rates based upon the exact benefits derived. These service charges and rates shall be sufficient to provide funds for the maintenance, adequate depreciation and operation of the work of the district. If reasonable, the service charges and rates may include an amount sufficient to pay the principal and interest maturing on the outstanding bonds and, to the extent not otherwise provided for, bond anticipation notes of the district. Any surplus from operating revenues shall be set aside as a separate fund to be applied to the payment of interest on or to the retirement of bonds or bond anticipation notes. The sanitary district board may modify and adjust these service charges and rates.

(b) The district board may require system development fees only in accordance with Article 8 of Chapter 162A of the General Statutes."

**SECTION 3.** G.S. 153A-277 reads as rewritten:

"**§ 153A-277. Authority to fix and enforce rates.**

(a) A county may establish and revise from time to time schedules of rents, rates, fees, charges, and penalties for the use of or the services furnished or to be furnished by a public enterprise. Schedules of rents, rates, fees, charges, and penalties may vary for the same class of service in different areas of the county and may vary according to classes of service, and different schedules may be adopted for services provided outside of the county. A county may include a fee relating to subsurface discharge wastewater management systems and services on the property tax bill for the real property where the system for which the fee is imposed is located.

...

(a2) A county may require system development fees only in accordance with Article 8 of Chapter 162A of the General Statutes.

...."

**SECTION 4.(a)** G.S. 160A-314 reads as rewritten:

"**§ 160A-314. Authority to fix and enforce rates.**

(a) A city may establish and revise from time to time schedules of rents, rates, fees, charges, and penalties for the use of or the services furnished or to be furnished by any public enterprise. Schedules of rents, rates, fees, charges, and penalties may vary according to classes of service, and different schedules may be adopted for services provided outside the corporate limits of the city.

...

(e) A city may require system development fees only in accordance with Article 8 of Chapter 162A of the General Statutes."

**SECTION 4.(b)** G.S. 160A-317 is amended by adding a new subsection to read:

"(a4) System Development Fees. – A city may require system development fees only in accordance with Article 8 of Chapter 162A of the General Statutes."

**SECTION 5.(a)** G.S. 162A-6(a) is amended by adding a new subdivision to read:

"(9a) To impose and require system development fees only in accordance with Article 8 of this Chapter."

**SECTION 5.(b)** G.S. 162A-9 is amended by adding a new subsection to read:

"(a5) An authority may require system development fees only in accordance with Article 8 of this Chapter."

**SECTION 6.(a)** G.S. 162A-36(a) is amended by adding a new subdivision to read:

"(8a) To impose and require system development fees only in accordance with Article 8 of this Chapter."

**SECTION 6.(b)** G.S. 162A-49 reads as rewritten:

**"§ 162A-49. Rates and charges for services.**

(a) The district board may fix, and may revise from time to time, rents, rates, fees and other charges for the use of land for the services furnished or to be furnished by any water system or sewerage system or both. Such rents, rates, fees and charges shall not be subject to supervision or regulation by any bureau, board, commission, or other agency of the State or of any political subdivision. Any such rents, rates, fees and charges pledged to the payment of revenue bonds of the district shall be fixed and revised so that the revenues of the water system or sewerage system or both, together with any other available funds, shall be sufficient at all times to pay the cost of maintaining, repairing and operating the water system or the sewerage system or both, the revenues of which are pledged to the payment of such revenue bonds, including reserves for such purposes, and to pay the interest on and the principal of such revenue bonds as the same shall become due and payable and to provide reserves therefor. If any such rents, rates, fees and charges are pledged to the payment of any general obligation bonds issued under this Article, such rents, rates, fees and charges shall be fixed and revised so as to comply with the requirements of such pledge. The district board may provide methods for collection of such rents, rates, fees and charges and measures for enforcement of collection thereof, including penalties and the denial or discontinuance of service.

(b) The district board may require system development fees only in accordance with Article 8 of this Chapter."

**SECTION 7.(a)** G.S. 162A-69 is amended by adding a new subdivision to read:

"(8a) To impose and require system development fees only in accordance with Article 8 of this Chapter."

**SECTION 7.(b)** G.S. 162A-72 reads as rewritten:

**"§ 162A-72. Rates and charges for services.**

(a) The district board may fix, and may revise from time to time, rents, rates, fees and other charges for the use of and for the services furnished or to be furnished by any sewerage system. Such rents, rates, fees and charges shall not be subject to supervision or regulation by any bureau, board, commission, or other agency of the State or of any political subdivision. Any such rents, rates, fees and charges pledged to the payment of revenue bonds of the district shall be fixed and revised so that the revenues of the sewerage system, together with any other available funds, shall be sufficient at all times to pay the cost of maintaining, repairing and operating the sewerage system the revenues of which are pledged to the payment of such revenue bonds, including reserves for such purposes, and to pay the interest on and the principal of such revenue bonds as the same shall become due and payable and to provide reserves therefor. If any such rents, rates, fees and charges are pledged to the payment of any general obligation bonds issued under this Article, such rents, rates, fees and charges shall be fixed and revised so as to comply with the requirements of such pledge. The district board may provide methods for collection of such rents, rates, fees and charges and measures for enforcement of collection thereof, including penalties and the denial or discontinuance of service.

(b) The district board may require system development fees only in accordance with Article 8 of this Chapter."

**SECTION 8.** G.S. 162A-85.13 is amended by adding a new subsection to read:

"(a1) The district board may require system development fees only in accordance with Article 8 of this Chapter."

**SECTION 9.** G.S. 162A-88 reads as rewritten:

**"§ 162A-88. District is a municipal corporation.**

(a) The inhabitants of a county water and sewer district created pursuant to this Article are a body corporate and politic by the name specified by the board of commissioners. Under that name they are vested with all the property and rights of property belonging to the corporation; have perpetual succession; may sue and be sued; may contract and be contracted with; may acquire and hold any property, real and personal, devised, sold, or in any manner conveyed, dedicated to, or otherwise acquired by them, and from time to time may hold, invest, sell, or dispose of the same; may have a common seal and alter and renew it at will; may establish, revise and collect rates, fees or other charges and penalties for the use of or the services furnished or to be furnished by any sanitary sewer system, water system or sanitary sewer and water system of the district; and may exercise those powers conferred on them by this Article.

(b) The district board may require system development fees only in accordance with Article 8 of this Chapter."

**SECTION 10.(a)** G.S. 1-52(15) reads as rewritten:

"(15) For the recovery of taxes paid as provided in ~~G.S. 105-381.~~G.S. 105-381 or for the recovery of an unlawful fee, charge, or exaction collected by a county, municipality, or other unit of local government for water or sewer service or water and sewer service."

**SECTION 10.(b)** This section is to clarify and not alter G.S. 1-52.

**SECTION 11.** Sections 1 through 9 of this act become effective October 1, 2017, and apply to system development fees imposed on or after that date. Section 10 of this act, being a clarifying amendment, has retroactive effect and applies to claims accrued or pending prior to and after the date that section becomes law. Nothing in this act provides retroactive authority for any system development fee, or any similar fee for water or sewer services to be furnished, collected by a local governmental unit prior to October 1, 2017. The remainder of this act is effective when it becomes law and applies to claims accrued or pending prior to and after that date.

In the General Assembly read three times and ratified this the 29th day of June, 2017.

s/ Daniel J. Forest
President of the Senate

s/ Tim Moore
Speaker of the House of Representatives

s/ Roy Cooper
Governor

Approved 4:13 p.m. this 20th day of July, 2017

**15A NCAC 18C .0409 SERVICE CONNECTIONS**

(a) Local Water Supply Plan. Units of local government which are operating under a local water supply plan in accordance with G.S. 143-355(l) shall not be limited in the number of service connections.

(b) No local water supply plan. A public water system which does not have a local water supply plan as stated in Paragraph (a) shall limit its number of service connections as follows:

(1) A public water system shall meet the daily flow requirements specified in Table 1:

Table 1: Daily Flow Requirements

| Type of Service Connection | Daily Flow for Design |
|---|---|
| Residential | 400 gallon/connection |
| Mobile Home Parks | 250 gallon/connection |
| Campgrounds and Travel Trailer Parks | 100 gallon/space |
| Marina | 10 gallon/boat slip |
| Marina with bathhouse | 30 gallon/boat slip |
| Rest Homes and Nursing Homes | |
| with laundry | 120 gallon/bed |
| without laundry | 60 gallon/bed |
| Schools | 15 gallon/student |
| Day Care Facilities | 15 gallon/student |
| Construction, work, or summer camps | 60 gallon/person |
| Business, office, factory (exclusive of industrial use) | |
| without showers | 25 gallon/person/shift |
| with showers | 35 gallon/person/shift |
| Hospitals | 300 gallon/bed |

or;

(2) A public water system serving different types of service connections shall meet the maximum daily demand calculated as follows:

(A) Where records of the previous year are available that reflect daily usage, the average of the two highest consecutive days of record of the water treated shall be the value used to determine if there is capacity to serve additional service connections (unusual events such as massive line breaks or line flushings shall not be considered).

(B) Where complete daily records of water treated are not available, the public water system shall multiply the daily average use based on the amount of water treated during the previous year of record by the appropriate factor to determine maximum daily demand, as follows:

(i) A system serving a population of 10,000 or less shall multiply the daily average use by 2.5; or

(ii) A system serving a population greater than 10,000 shall multiply the daily average use by 2.0.

*History Note:* *Authority G.S. 130A-315; 103A-317; P.L. 93-523;*
*Eff. July 1, 1994.*

**15A NCAC 02T .0114 WASTEWATER DESIGN FLOW RATES**

(a) This Rule shall be used to determine wastewater flow rates for all systems covered by this Subchapter unless alternate criteria are provided by a program specific rule and for flow used for the purposes of 15A NCAC 02H .0105. These are minimum design daily flow rates for normal use and occupancy situations. Higher flow rates may be required where usage and occupancy are atypical, including, those in Paragraph (e) of this Rule. Wastewater flow calculations must take hours of operation and anticipated maximum occupancies/usage into account when calculating peak flows for design.

(b) In determining the volume of sewage from dwelling units, the flow rate shall be 120 gallons per day per bedroom. The minimum volume of sewage from each dwelling unit shall be 240 gallons per day and each additional bedroom above two bedrooms shall increase the volume by 120 gallons per day. Each bedroom or any other room or addition that can reasonably be expected to function as a bedroom shall be considered a bedroom for design purposes. When the occupancy of a dwelling unit exceeds two persons per bedroom, the volume of sewage shall be determined by the maximum occupancy at a rate of 60 gallons per person per day.

(c) The following table shall be used to determine the minimum allowable design daily flow of wastewater facilities. Design flow rates for establishments not identified below shall be determined using available flow data, water-using fixtures, occupancy or operation patterns, and other measured data.

| Type of Establishments | Daily Flow For Design |
|---|---|
| Barber and beauty shops | |
| Barber Shops | 50 gal/chair |
| Beauty Shops | 125 gal/booth or bowl |
| Businesses, offices and factories | |
| General business and office facilities | 25 gal/employee/shift |
| Factories, excluding industrial waste | 25 gal/employee/shift |
| Factories or businesses with showers or food preparation | 35 gal/employee/shift |
| Warehouse | 100 gal/loading bay |
| Warehouse – self storage (not including caretaker residence) | 1 gal/unit |
| Churches | |
| Churches without kitchens, day care or camps | 3 gal/seat |
| Churches with kitchen | 5 gal/seat |
| Churches providing day care or camps | 25 gal/person (child & employee) |
| Fire, rescue and emergency response facilities | |
| Fire or rescue stations without on site staff | 25 gal/person |
| Fire or rescue stations with on-site staff | 50 gal/person/shift |
| Food and drink facilities | |
| Banquet, dining hall | 30 gal/seat |
| Bars, cocktail lounges | 20 gal/seat |
| Caterers | 50 gal/100 sq ft floor space |
| Restaurant, full Service | 40 gal/seat |
| Restaurant, single service articles | 20 gal/seat |
| Restaurant, drive-in | 50 gal/car space |
| Restaurant, carry out only | 50 gal/100 sq ft floor space |
| Institutions, dining halls | 5 gal/meal |
| Deli | 40 gal/100 sq ft floor space |
| Bakery | 10 gal/100 sq ft floor space |
| Meat department, butcher shop or fish market | 75 gal/100 sq ft floor space |
| Specialty food stand or kiosk | 50 gal/100 sq ft floor space |
| Hotels and Motels | |
| Hotels, motels and bed & breakfast facilities, without in-room cooking facilities | 120 gal/room |
| Hotels and motels, with in-room cooking facilities | 175 gal/room |
| Resort hotels | 200 gal/room |
| Cottages, cabins | 200 gal/unit |
| Self service laundry facilities | 500 gal/machine |
| Medical, dental, veterinary facilities | |
| Medical or dental offices | 250 gal/practitioner/shift |

| | |
|---|---|
| Veterinary offices (not including boarding) | 250 gal/practitioner/shift |
| Veterinary hospitals, kennels, animal boarding facilities | 20 gal/pen, cage, kennel or stall |
| Hospitals, medical | 300 gal/bed |
| Hospitals, mental | 150 gal/bed |
| Convalescent, nursing, rest homes without laundry facilities | 60 gal/bed |
| Convalescent, nursing, rest homes with laundry facilities | 120 gal/bed |
| Residential care facilities | 60 gal/person |
| Parks, recreation, camp grounds, R-V parks and other outdoor activity facilities | |
| Campgrounds with comfort station, without water or sewer hookups | 75 gal/campsite |
| Campgrounds with water and sewer hookups | 100 gal/campsite |
| Campground dump station facility | 50 gal/space |
| Construction, hunting or work camps with flush toilets | 60 gal/person |
| Construction, hunting or work camps with chemical or portable toilets | 40 gal/person |
| Parks with restroom facilities | 250 gal/plumbing fixture |
| Summer camps without food preparation or laundry facilities | 30 gal/person |
| Summer camps with food preparation and laundry facilities | 60 gal/person |
| Swimming pools, bathhouses and spas | 10 gal/person |
| Public access restrooms | 325 gal/plumbing fixture |
| Schools, preschools and day care | |
| Day care and preschool facilities | 25 gal/person (child & employee) |
| Schools with cafeteria, gym and showers | 15 gal/student |
| Schools with cafeteria | 12 gal/student |
| Schools without cafeteria, gym or showers | 10 gal/student |
| Boarding schools | 60 gal/person (student & employee) |
| Service stations, car wash facilities | |
| Service stations, gas stations | 250 gal/plumbing fixture |
| Car wash facilities (if recycling water see Rule .0235) | 1200 gal/bay |
| Sports centers | |
| Bowling center | 50 gal/lane |
| Fitness, exercise, karate or dance center | 50 gal/100 sq ft |
| Tennis, racquet ball | 50 gal/court |
| Gymnasium | 50 gal/100 sq ft |
| Golf course with only minimal food service | 250 gal/plumbing fixture |
| Country clubs | 60 gal/member or patron |
| Mini golf, putt-putt | 250 gal/plumbing fixture |
| Go-kart, motocross | 250 gal/plumbing fixture |
| Batting cages, driving ranges | 250 gal/plumbing fixture |
| Marinas without bathhouse | 10 gal/slip |
| Marinas with bathhouse | 30 gal/slip |
| Video game arcades, pool halls | 250 gal/plumbing fixture |
| Stadiums, auditoriums, theaters, community centers | 5 gal/seat |
| Stores, shopping centers, malls and flea markets | |
| Auto, boat, recreational vehicle dealerships/showrooms with restrooms | 125 gal/plumbing fixture |
| Convenience stores, with food preparation | 60 gal/100 sq ft |
| Convenience stores, without food preparation | 250 gal/plumbing fixture |
| Flea markets | 30 gal/stall |
| Shopping centers and malls with food service | 130 gal/1000 sq ft |
| Stores and shopping centers without food service | 100 gal/1000 sq ft |
| Transportation terminals – air, bus, train, ferry, port and dock | 5 gal/passenger |

(d) Design daily flow rates for proposed non-residential developments where the types of use and occupancy are not known shall be designed for a minimum of 880 gallons per acre or the applicant shall specify an anticipated flow based upon anticipated or potential uses.

(e) Conditions applicable to the use of the above design daily flow rates:

(1) For restaurants, convenience stores, service stations and public access restroom facilities, higher design daily flow rates shall be required based on higher expected usage where use is increased because of its proximity to highways, malls, beaches, or other similar high use areas.

(2) Residential property on barrier islands and similar communities located south or east of the Atlantic Intracoastal Waterway used as vacation rental as defined in G.S. 42A-4 shall use 120 gallons per day per habitable room. Habitable room shall mean a room or enclosed floor space used or intended to be used for living or sleeping, excluding kitchens and dining areas, bathrooms, shower rooms, water closet compartments, laundries, pantries, foyers, connecting corridors, closets, and storage spaces.

(f) An adjusted daily sewage flow design rate shall be granted for permitted but not yet tributary connections and future connections tributary to the system upon showing that a sewage system is adequate to meet actual daily wastewater flows from a facility included in Paragraph (b) or (c) of this Rule without causing flow violations at the receiving wastewater treatment plant or capacity related sanitary sewer overflows within the collection system as follows:

(1) Documented, representative data from that facility or a comparable facility shall be submitted by an authorized signing official in accordance with Rule .0106 of this Section to the Division as follows for all flow reduction request:

(A) Dates of flow meter calibrations during the time frame evaluated and indication if any adjustments were necessary.

(B) A breakdown of the type of connections (e.g. two bedroom units, three bedroom units) and number of customers for each month of submitted data as applicable. Identification of any non-residential connections including subdivision clubhouses/pools, restaurants, schools, churches and businesses. For each non-residential connection, information as identified in Paragraph (c) of this Rule (e.g. 200 seat church, 40 seat restaurant, 35 person pool bathhouse).

(C) Owner of the collection system.

(D) Age of the collection system.

(E) Analysis of inflow and infiltration within the collection system or receiving treatment plant, as applicable.

(F) Where a dedicated wastewater treatment plant serves the specific area and is representative of the residential wastewater usage, at least the 12 most recent consecutive monthly average wastewater flow readings and the daily total wastewater flow readings for the highest average wastewater flow month per customers as reported to the Division.

(G) Where daily data from a wastewater treatment plant cannot be utilized or is not representative of the project area: at least 12 months worth of monthly average wastewater flows from the receiving treatment plant shall be evaluated to determine the peak sewage month. Daily wastewater flows shall then be taken from a flow meter installed at the most downstream point of the collection area for the peak month selected that is representative of the project area. Justification for the selected placement of the flow meter shall also be provided.

(H) An estimated minimum design daily sewage flow rate shall be taken by calculating the numerical average of the top three daily readings for the highest average flow month. The calculations shall also account for seasonal variations, excessive inflow and infiltration, age and suspected meter reading/recording errors.

(2) The Division shall evaluate all data submitted but shall also consider other factors in granting, with or without adjustment, or denying a flow reduction request including: applicable weather conditions during the data period (i.e. rainy or drought), other historical monitoring data for the particular facility or other similar facilities available to the Division, the general accuracy of monitoring reports and flow meter readings, and facility usage (i.e., resort area).

(3) Flow increases shall be required if the calculations in Subparagraph (f)(1) of this Rule yield design flows higher than that specified in Paragraphs (b) or (c) of this Rule.

(4) The applicant/owner shall retain the letter of any approved adjusted daily design flow rate for the life of the facility and shall transfer such letter to any new system owner.

*History Note:* *Authority G.S. 143-215.1; 143-215.3(a)(1);*
*Eff. September 1, 2006.*

**TOWN OF OAK ISLAND DEBT SERVICE SCHEDULE**
**ENTERPRISE FUND ONLY**

| Fiscal Year | Wastewater Project Revenue Bonds 2009 | | Wastewater Project Revenue Bonds 2015A | | State Revolving Loan 1st Allocation $9,000,000 | | State Revolving Loan 2nd Allocation $8,500,000 | | Wastewater Project Rev Bonds 2011 | | Enterprise Refunding Bonds Series 2017 | | Total Annual Payments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Financed By | DTC thru U.S. Bank | | DTC thru U.S. Bank | | NCDENR | | NCDENR | | DTC thru U.S. Bank | | DTC thru U.S. Bank | | |
| Original Issue Amt | $ 49,420,000 | | $ 41,110,000 | | $7,524,846 | | $6,579,167 | | $10,670,000 | | $32,695,000 | | |
| Date | 3/26/2009 | | 7/1/2015 | | 4/1/2012 | | 4/1/2012 | | 1/20/2011 | | 2/23/2017 | | |
| Interest Rate | 4.0-6.0% | | 2.0-5.0% | | 2.10% | | 2.48% | | 2.25-5.75% | | 2.25-5.75% | | |
| Pymt Date | SA 6/1 & 12/1 | | SA 6/1 & 12/1 | | SA 5/1 & 11/1 | | SA 5/1 & 11/1 | | SA 6/1 & 12/1 | | SA 6/1 & 12/1 | | |
| Fund-Dept | 31-830 | | 31-830 | | 31-830 | | 31-830 | | 31-830 | | 31-830 | | |
| | Principal Payment | Interest Payment | Principal Payment | Interest Payment | Principal Payment | Interest Payment | Principal Payment | Interest Payment | Principal Payment | Interest Payment | Principal Payment | Interest Payment | |
| 2018-2019 | 1,425,000 | 67,688 | 195,000 | 1,868,538 | 369,897 | 94,751 | 312,454 | 106,779 | 310,000 | 26,213 | 1,020,000 | 1,424,981 | 7,221,300 |
| 2019-2020 | | | 1,695,000 | 1,864,638 | 377,665 | 86,983 | 320,202 | 99,030 | 325,000 | 13,813 | 1,055,000 | 1,384,181 | 7,221,512 |
| 2020-2021 | | | 1,780,000 | 1,779,888 | 385,596 | 79,052 | 328,143 | 91,089 | | | 1,450,000 | 1,331,431 | 7,225,200 |
| 2021-2022 | | | 1,865,000 | 1,690,888 | 393,693 | 70,955 | 336,281 | 82,951 | | | 1,525,000 | 1,258,931 | 7,223,700 |
| 2022-2023 | | | 1,960,000 | 1,597,638 | 401,961 | 62,687 | 344,621 | 74,611 | | | 1,600,000 | 1,182,681 | 7,224,200 |
| 2023-2024 | | | 2,060,000 | 1,499,638 | 410,402 | 54,246 | 353,168 | 66,065 | | | 1,680,000 | 1,102,681 | 7,226,200 |
| 2024-2025 | | | 2,160,000 | 1,396,638 | 419,020 | 45,628 | 361,926 | 57,306 | | | 1,760,000 | 1,018,681 | 7,219,200 |
| 2025-2026 | | | 2,270,000 | 1,288,638 | 427,820 | 36,828 | 370,902 | 48,330 | | | 1,850,000 | 930,681 | 7,223,200 |
| 2026-2027 | | | 2,380,000 | 1,175,138 | 436,804 | 27,844 | 380,101 | 39,132 | | | 1,940,000 | 838,181 | 7,217,200 |
| 2027-2028 | | | 2,500,000 | 1,056,138 | 445,977 | 18,671 | 389,527 | 29,705 | | | 2,035,000 | 741,181 | 7,216,200 |
| 2028-2029 | | | 2,575,000 | 981,138 | 443,130 | 9,306 | 399,187 | 20,045 | | | 2,135,000 | 639,431 | 7,202,237 |
| 2029-2030 | | | 2,705,000 | 852,388 | | | 409,087 | 10,145 | | | 2,205,000 | 575,381 | 6,757,002 |
| 2030-2031 | | | 2,795,000 | 764,475 | | | | | | | 2,270,000 | 509,231 | 6,338,706 |
| 2031-2032 | | | 2,935,000 | 624,725 | | | | | | | 2,345,000 | 438,294 | 6,343,019 |
| 2032-2033 | | | 3,040,000 | 522,000 | | | | | | | 2,460,000 | 321,044 | 6,343,044 |
| 2033-2034 | | | 3,185,000 | 370,000 | | | | | | | 2,580,000 | 198,044 | 6,333,044 |
| 2034-2035 | | | 3,345,000 | 210,750 | | | | | | | 2,670,000 | 110,969 | 6,336,719 |
| 2035-2036 | | | 1,160,000 | 43,500 | | | | | | | 115,000 | 4,169 | 1,322,669 |
| Total Debt $ | 1,425,000 | 67,688 | 40,605,000 | 19,586,756 | 4,511,963 | 586,953 | 4,305,601 | 725,189 | 635,000 | 40,025 | 32,695,000 | 14,010,175 | 119,194,350 |

| Enterprise Fund | | Total Funds | |
|---|---|---|---|
| Total Principal | 84,177,563 | Total Principal | 89,078,446 |
| Total Interest | 35,016,786 | Total Interest | 35,294,994 |
| Grand Total | 119,194,350 | Grand Total | 124,373,440 |

Based on the tremendous public support for tree preservation, the ordinance requirement should be refined to provide a more clear and enforceable mechanism for maintaining natural vegetation in Oak Island. The following items are suggested to enhance the "Vegetation Management Program":

- Require tree protection standards for preserved trees.
- Create a tree removal permit process.
- Place greater emphasis on tree preservation. Incentivize the preservation of trees through a more stringent replacement schedule.
- Clarify replacement schedule for removed trees.
- Define and provide clarity regarding "essential site improvements".
- Increase the civil penalty for unauthorized tree removal.
- Provide a tree replacement species list.

**Specimen Tree.**
Any perennial woody plant, such as a lane shade or pine tree, which usually has one main stem or trunk and the following caliper measurements taken at breast height: a hardwood tree, six inches; a conifer other than species of southern pine, six inches; southern pine, 14 inches; and any small flowering tree, such as crepe myrtle, five inches.

In addition, grant funds are available through the NC Forestry Service – Urban & Community Forestry Program to assist the town in crafting a tree preservation ordinance that is tailored specifically to the needs of Oak Island. More information can be found on the following website: http://ncforestservice.gov/Urban/urban_grant_overview.htm

## COMMUNITY FACILITIES

A previous discussion of community facilities and services was detailed in the Existing Conditions section of the plan, beginning on page 3-39. Discussion contained in this section refers to future needs and concerns of community facilities identified by Oak Island staff, department heads, the Comprehensive Plan Advisory Committee (CPAC), and the general public. Future studies, budgetary discussions, and priorities for identified concerns must take place prior to an implementation of improvements.

### Public Works

As mentioned previously, the Town of Oak Island Public Works Department performs many important functions for the Town of Oak Island. The following are just a few of the services performed by the Public Works staff: facilities maintenance, fleet maintenance, stormwater systems management, street maintenance, street sign maintenance, public right-of-way mowing, yard waste collection, household hazardous waste collection, beach trash collection, and mosquito control.

The following needs have been identified by the Department:

- Stormwater mitigation and drainage concerns at SE 70th Street and SE 17th Street
- Yard waste collection delays and backlog
- Staff shortages during summer months

## Public Utilities

### *Wastewater System Capacity*

On July 5, 2015, Oak Island's municipal sewer system received its highest peak usage to date at 1.7 million gallons. The wastewater system has a total capacity of 3.6 million gallons per day (gpd), of which 200,000 gallons per day are allocated for use by Caswell Beach. Based on this peak usage, approximately 1.7 million gallons of capacity remain in the system for use by Oak Island residents and businesses. To calculate future wastewater demand, the number of additional users (population) must be multiplied by a per capita consumption rate. The island build-out analysis, seasonal population estimates, and population projection methodologies are used to calculate the number of additional persons that will be using the system. NCDEQ standard per capita design flow rates for residential and non-residential development are used to calculate the future wastewater demand. Sewer service provided by the Town of Oak Island is available primarily on the island (see Map 19). There are no plans to provide sewer service for land located on the mainland. Thus, calculations for wastewater demand are based on use attributed to the island.

Residential and Non-Residential Wastewater Design Flow Rates:

- Residential Design Flow .
    - Peak Day – July 5th, 2015 = 43.8 gallons per person were used based on an estimated seasonal overnight population of 38,808.
    - NCDENR Recommended Design Standard: 60 gallons per person per day (gpcd) when occupancy of a dwelling unit exceeds two persons per bedroom.
- Non-Residential Design Flow
    - NCDENR bases design flow rates for non-residential development on the type of establishment that will be served by the system.
    - Retail and office uses are the primary non-residential establishment type on the island.
    - An average design flow rate of 100 gallons per 100 square feet of floor space is used.

Residential Wastewater Demand at Build-Out on the Island:

- 3,802 additional housing units.
    - 2,305 seasonal housing units x 5.8 persons per household = 13,369 seasonal population.
    - 1,497 permanent housing units x 2.02 persons per household = 3,024 permanent population.
    - Peak day population increase = 3,780 (3,024 permanent population plus a 25% increase).
    - Estimated additional users at build-out on the island = 17,149 persons.
    - 17,149 persons x 60 gpcd = 1,028,940 gallons per day.

Non-residential Wastewater Demand at Build-Out on the Island:

- 265,703 square feet of non-residential development.
    - 265,703 gallons per day.

Estimated Additional Peak Day Demand for Wastewater on the Island at Build-out:

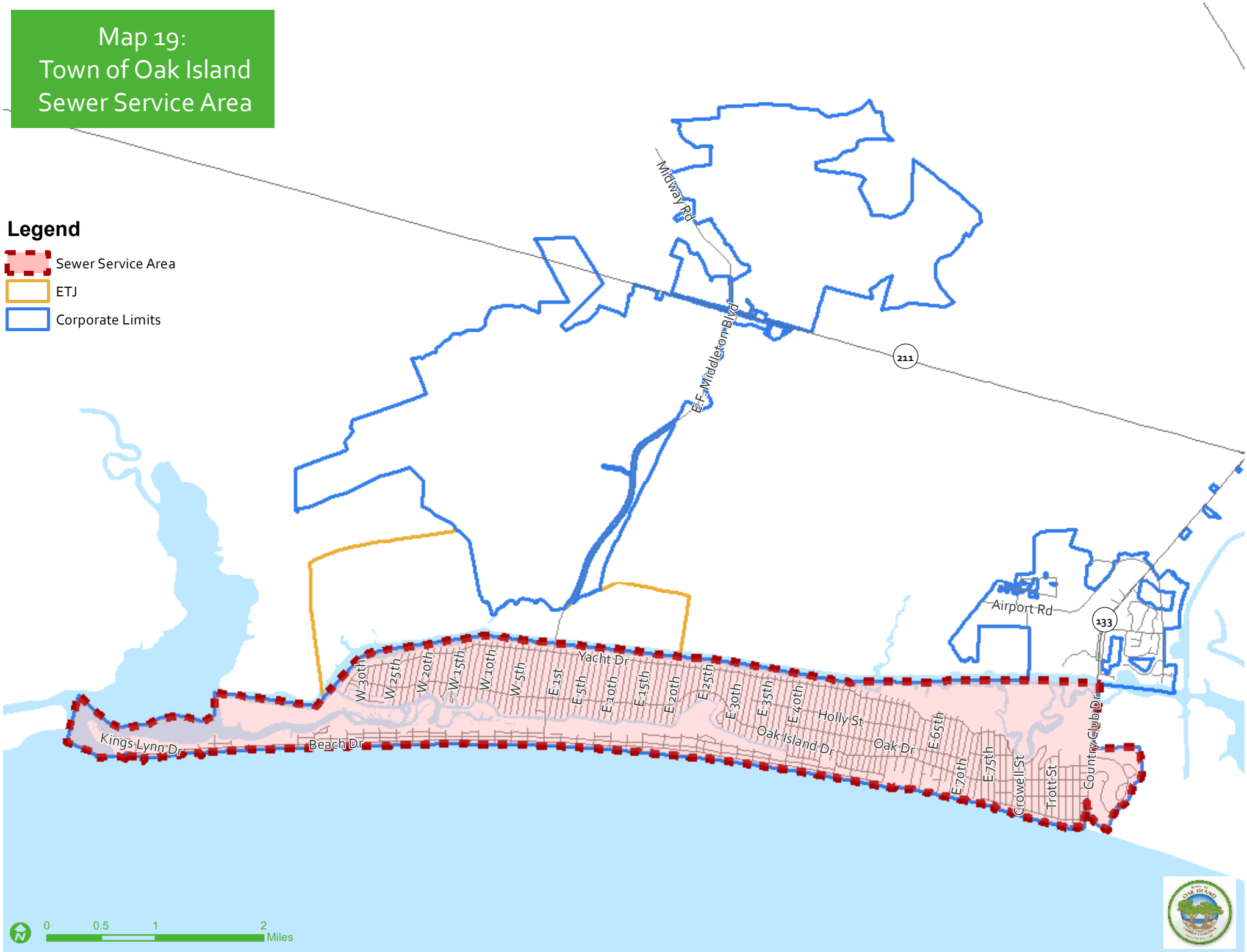
- 1,294,643 gallons per day.

Total Peak Day Demand for Wastewater on the Island at Build-out:

- 1,700,000 gpd peak day current + 1,294,643 gpd peak day future demand = 2,994,643 gpd.
    - At build-out on a peak day, the system is estimated to operate at 88% of capacity.
    - Estimated excess capacity at build-out on the island = 405,357 gpd (excluding 200,000 committed to Caswell Beach).

The calculations above do not account for potential non-residential development such as resorts or hotels. The build-out calculations are based upon existing zoning development regulations and available vacant land.

# Map 19: Town of Oak Island Sewer Service Area



*Water Service*

As noted in previous sections, the town's water source comes from a purchase agreement with Brunswick County. The purchase agreement provides the amount of water necessary for the town to meet its projected 2040 year-round demand without exceeding supply. By 2040, the demand for water is projected to account for 76% of the capacity. For more information on water supply, please see the Local Water Supply Plan on the town's website. The Town's identified needs include the following:

- Automatic meter system
- New water tower on west end of island

## Parks and Recreation

As stated previously, the Parks and Recreation Department is in the process of updating the parks and recreation master plan. Recommendations for future improvements will be included in the updated Parks and Recreation Master Plan. Needs identified by the CPAC and recreation department staff are provided below.

- New Island Future Park
  - Playground
  - Kayak/Canoe Launch
  - Splash Pad
- Recreation Center Expansion
  - Gymnasium
  - Fitness Center
  - Aerobics Room
  - Office Space
  - Storage
- Greenways/bike paths throughout the Town
- Additional mainland park facility
- Maintain beach and marsh as public trust areas
- Provide ICWW access via the NC 133 bridge and the EF Middleton Boulevard bridge.

## Police

According to the department, many of the staff, training, and vehicle needs are currently met. Future needs identified by the CPAC are provided below.

- Increase staff and patrols during summer months, holidays, and peak crime periods (use of cameras at various locations may reduce this need).

# Town of Oak Island, North Carolina
## Capital Improvement Plan

| PROJECT ID | FACILITY | IMPROVEMENT | TIMEFRAME | COST ESTIMATE |
|---|---|---|---|---|
| FF-2 | FISH FACTORY WRF | REPLACE ALL CORRODED PIPING AT EXTENDED AIR PROCESS | 2-YEAR | $8,000 |
| FF-3 | FISH FACTORY WRF | REHIBILITATE OR REPLACE ELECTRICAL MAIN DISCONNECT | 2-YEAR | $15,000 |
| FF-4 | FISH FACTORY WRF | REPLACE OLDER GENERATOR AUTOMATIC TRANSFER SWITCH | 2-YEAR | $25,000 |
| FF-5 | FISH FACTORY WRF | REPLACE CONTROL CABINET AT FILTER BAY/MUD PUMP STATION | 2-YEAR | $50,000 |
| FF-14 | FISH FACTORY WRF | REPAIR FILTER LAUNDERS AND CONCRETE | 2-YEAR | $10,000 |
| | | | | $108,000 |
| SW-2 | SATELITE WRF | REPLACE MISSING MIXER AT ANOXIC END OF BASIN | 2-YEAR | $25,000 |
| | | | | $25,000 |
| VSP-2 | VACUUM STATIONS - ALL | REPAIR FLOW METERING MANHOLE VAULTS | 2-YEAR | $45,000 |
| VSP-4 | VACUUM STATIONS - ALL | COMPLETE INSTALLATION OF AIR CONDITIONING UPGRADES AT ALL STATIONS (6 remaining installs) | 2-YEAR | $400,000 |
| VSP-5 | VACUUM STATIONS - ALL | RE-ROUTE PORTABLE GENERATOR POWER LEADS I.E. PLACE IN CABLE TRAYS | 2-YEAR | $40,000 |
| VSP-9 | VS-1 | REPLACE GENERATOR SERVICE CONNECTION | 2-YEAR | $35,000 |
| VSP-13 | VS-2 | REPLACE CORRODED ELECTRICAL JUNCTION BOXES AND CONDUIT | 2-YEAR | $25,000 |
| VSP-16 | VS 5 | INSPECT AND RESEAL ALL CONDUITS. SEVERE WATER INTRUSION | 2-YEAR | $10,000 |
| | | | | $555,000 |
| OLS-13 | LS NO. 11 | REPLACE ELECTRICAL AND CONTROL PANEL | 2-YEAR | $50,000 |
| OLS-17 | LS NO. 12 | REPLACE GENERATOR | 2-YEAR | $60,000 |
| OLS-18 | LS NO. 12 | REPLACE MULTIRODE WET ELL CONTROLS | 2-YEAR | $2,000 |
| OLS-23 | LS NO. 17 | REPLACE PORTABLE GENERATOR | 2-YEAR | $30,000 |
| | | | | $142,000 |
| NLS-9 | LS NO. 16 | REPLACE AC UNIT | 2-YEAR | $5,000 |
| | | | | $5,000 |
| T-3 | 56TH STREET TANK | REPLACE ELECTRICAL VALVE VAULT | 2-YEAR | $10,000 |
| T-5 | MIDDLETON AVE TANK | REPLACE ELECTRICAL VALVE VAULT | 2-YEAR | $10,000 |
| T-7 | TROTT ST REUSE TANK | REPLACE 110V PANELS | 2-YEAR | $5,000 |
| T-8 | 31ST STREET TANK | REPLACE ELECTRICAL CABINET | 2-YEAR | $10,000 |
| T-9 | SOUTHERN CORROSION CONTRACT SERVICES | INSPECTION AND REPAIR SERVICES FOR ALL TANKS (Within Maintenance Contract) | 2-YEAR | $131,000 |
| | | | **TOTAL** | **$166,000** |

**Total** $1,001,000

| FACILITIES | 2-YEAR |
|---|---|
| **FISH FACTORY WRF** | **$108,000** |
| **SATELITE WRF** | **$25,000** |
| **VACUUM PUMP STATIONS** | **$555,000** |
| **OLDER LIFT STATIONS** | **$142,000** |
| **NEWER LIFT STATIONS** | **$5,000** |
| **ELEVATED STORAGE** | **$166,000** |
| **TOTAL** | **$1,001,000** |

# Historical Cost Indexes

The table below lists both the RSMeans® historical cost index based on Jan. 1, 1993 = 100 as well as the computed value of an index based on Jan. 1, 2018 costs. Since the Jan. 1, 2018 figure is estimated, space is left to write in the actual index figures as they become available through the quarterly *RSMeans Construction Cost Indexes*.

To compute the actual index based on Jan. 1, 2018 = 100, divide the historical cost index for a particular year by the actual Jan. 1, 2018 construction cost index. Space has been left to advance the index figures as the year progresses.

| Year | Historical Cost Index Jan. 1, 1993 = 100 | | Current Index Based on Jan. 1, 2018 = 100 | | Year | Historical Cost Index Jan. 1, 1993 = 100 | Current Index Based on Jan. 1, 2018 = 100 | | Year | Historical Cost Index Jan. 1, 1993 = 100 | Current Index Based on Jan. 1, 2018 = 100 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Est. | Actual | Est. | Actual | | Actual | Est. | Actual | | Actual | Est. | Actual |
| Oct 2018* | | | | | July 2003 | 132.0 | 61.2 | | July 1985 | 82.6 | 38.3 | |
| July 2018* | | | | | 2002 | 128.7 | 59.6 | | 1984 | 82.0 | 38.0 | |
| April 2018* | | | | | 2001 | 125.1 | 58.0 | | 1983 | 80.2 | 37.1 | |
| Jan 2018* | 215.8 | | 100.0 | 100.0 | 2000 | 120.9 | 56.0 | | 1982 | 76.1 | 35.3 | |
| July 2017 | | 213.6 | 99.0 | | 1999 | 117.6 | 54.5 | | 1981 | 70.0 | 32.4 | |
| 2016 | | 207.3 | 96.1 | | 1998 | 115.1 | 53.3 | | 1980 | 62.9 | 29.1 | |
| 2015 | | 206.2 | 95.6 | | 1997 | 112.8 | 52.3 | | 1979 | 57.8 | 26.8 | |
| 2014 | | 204.9 | 94.9 | | 1996 | 110.2 | 51.1 | | 1978 | 53.5 | 24.8 | |
| 2013 | | 201.2 | 93.2 | | 1995 | 107.6 | 49.9 | | 1977 | 49.5 | 22.9 | |
| 2012 | | 194.6 | 90.2 | | 1994 | 104.4 | 48.4 | | 1976 | 46.9 | 21.7 | |
| 2011 | | 191.2 | 88.6 | | 1993 | 101.7 | 47.1 | | 1975 | 44.8 | 20.8 | |
| 2010 | | 183.5 | 85.0 | | 1992 | 99.4 | 46.1 | | 1974 | 41.4 | 19.2 | |
| 2009 | | 180.1 | 83.5 | | 1991 | 96.8 | 44.9 | | 1973 | 37.7 | 17.5 | |
| 2008 | | 180.4 | 83.6 | | 1990 | 94.3 | 43.7 | | 1972 | 34.8 | 16.1 | |
| 2007 | | 169.4 | 78.5 | | 1989 | 92.1 | 42.7 | | 1971 | 32.1 | 14.9 | |
| 2006 | | 162.0 | 75.1 | | 1988 | 89.9 | 41.6 | | 1970 | 28.7 | 13.3 | |
| 2005 | | 151.6 | 70.3 | | 1987 | 87.7 | 40.6 | | 1969 | 26.9 | 12.5 | |
| 2004 | | 143.7 | 66.6 | | 1986 | 84.2 | 39.0 | | 1968 | 24.9 | 11.5 | |

## Adjustments to Costs

The "Historical Cost Index" can be used to convert national average building costs at a particular time to the approximate building costs for some other time.

**Time Adjustment Using the Historical Cost Indexes:**

$$\frac{\text{Index for Year A}}{\text{Index for Year B}} \times \text{Cost in Year B} = \text{Cost in Year A}$$

## Example:

Estimate and compare construction costs for different years in the same city.

To estimate the national average construction cost of a building in 1970, knowing that it cost $900,000 in 2018:

INDEX in 1970 = 28.7

INDEX in 2018 = 215.8

$$\frac{\text{INDEX 1970}}{\text{INDEX 2018}} \times \text{Cost 2018} = \text{Cost 1970}$$

$$\frac{28.7}{215.8} \times \$900{,}000 = .133 \times \$900{,}000 = \$119{,}694$$

The construction cost of the building in 1970 was $119,694.

**Note:** The city cost indexes for Canada can be used to convert U.S. national averages to local costs in Canadian dollars.

## Example:

To estimate and compare the cost of a building in Toronto, ON in 2018 with the known cost of $600,000 (US$) in New York, NY in 2018:

INDEX Toronto = 110.8

INDEX New York = 134.6

$$\frac{\text{INDEX Toronto}}{\text{INDEX New York}} \times \text{Cost New York} = \text{Cost Toronto}$$

$$\frac{110.8}{134.6} \times \$600{,}000 = .823 \times \$600{,}000 = \$493{,}908$$

The construction cost of the building in Toronto is $493,908 (CN$).

*Historical Cost Index updates and other resources are provided on the following website:
**http://info.thegordiangroup.com/RSMeans.html**