

ANNUAL ENGINEER'S REPORT MAY, 2015

We are pleased to submit this annual engineer's report as a yearly summary of the engineering related activities involved in the operations and functions of the Fellsmere Water Control District (F.W.C.D.), as required under Chapter 298 of the Florida Statutes.

CLIMATOLOGICAL REVIEW

As reported by the National Oceanic and Atmospheric Administration in their 2014 Atlantic Hurricane Summary, the 2014 Atlantic Hurricane Season ended on November 30, 2014 with the 8 tropical cyclones being named in the Atlantic Basin. This is much lower than average, primarily due to persistent, unfavorable atmospheric conditions over the Gulf of Mexico, Caribbean Sea and Tropical Atlantic Ocean.

This unexpectedly low activity is linked to an unpredictable atmospheric pattern that prevented the growth of storms by producing very strong vertical wind shear, combined with increased atmospheric stability, stronger sinking motion and drier air in much of the main hurricane formation regions. Also, the West African monsoon was near to below average, making it more difficult for African easterly waves to develop.

Fortunately, much of the U.S. Coastline, including Florida, was spared this season with only one land falling hurricane (Hurricane Arthur, made landfall in North Carolina on July 4, 2014).

Hurricane Bertha brushed the Lesser Antilles with relatively minor impacts. Hurricane Cristobal's rip currents affected the states of Maryland and New Jersey, resulting in one fatality in each state. Tropical Storm Dolly made landfall in eastern Mexico and triggered flooding conditions. Hurricane Edouard became the first major hurricane of the season and never made landfall, two deaths near the coast of Maryland were attributed to strong rip currents from the storm. Hurricane Fay affected Bermuda, though its impacts were minimal. Hurricane Gonzalo was the most intense hurricane (Category 4) of the season, with destructive impacts in the Lesser Antilles and Bermuda. It caused 5 direct fatalities and at least \$200 million in damage. The last storm of the season made landfall in Central America in late October producing minimal impact.

According to Colorado State University Climatologists Dr. William Gray and Dr. Phil Klotzback, the 2015 Atlantic Basin Hurricane Season will be one of the least active seasons since the middle of the 20th Century. In their extended-range outlook, they note the likelihood of a moderate to strong El Nino will develop in the equatorial Pacific this summer and fall. This pattern, coupled with anticipated cooler temperatures of the tropical and subtropical temperatures in the Atlantic, is known to suppress tropical storm development in the Atlantic.

The extended range outlook mentioned above may already be challenged with the formation of Tropical Storm Ana off the East Coast of Florida during the first week of May. Ana's formation is the earliest appearance of a named storm in the Atlantic since a previous incarnation of Sub-tropical Storm Ana on April 20, 2003.

As a Tropical Storm, Ana had sustained winds of 50 MPH. When it made landfall just north of Myrtle Beach, South Carolina at 6 A.M. Sunday, (May 10, 2015), winds were at 45 MPH, producing heavy rainfall and storm surges. After making landfall, Ana was downgraded to a Tropical Depression as it moved northward over Eastern North Carolina.

Here's hoping the predicted El Nino forms quickly, that Ana is one of the "few" storms anticipated, and that long range outlook of "a least active hurricane season" is not severely modified through the upcoming hurricane season.

Once again, the F.W.C.D. has been blessed for another year without suffering a tropical storm event. Unlike much of the rest of the United States, the Lower Peninsula of Florida enjoyed a mild winter with the exception of one freeze warning event occurring on February 19th and 20th, immediately following a full moon, when temperatures dropped into the high twenties and low thirties for a few hours.

Total rainfall, as measured and recorded at the F.W.C.D. office/shop complex for the Year 2014, totaled 56.61 inches, nearly 5 inches above long term average annual rainfall. Soil moisture and water stage conditions remain good thus far during the current dry season with above normal rainfall in January (2015) of 1.04"; February 3.46"; March 1.99" and April 7.41".

WATER QUALITY IN MAIN CANAL

Water quality samples for F.W.C.D. are taken quarterly (every three months) from the County Road 507 (Babcock Road) bridge over the Main Canal.

The F.W.C.D. water quality readings, over the past year, for the most part, indicate a good water quality, with some exceptions. The dissolved oxygen (D.O.) concentration normally drops lower during the warmer months of the year due to increase in water temperature. The low D.O. concentrations observed this year were 40.9% on May 30, 2014 and 47.5% on September 2, 2014 and remain slightly above the minimum 38% acceptable under current numeric limits. The numeric nutrient thresholds for nitrogen have been met but are close to the upper limits. The numeric thresholds for phosphorous is a problem, with two of the reports indicating significant exceedances during the past year.

MAY 8, 2014 ANNUAL LANDOWNERS AND BOARD OF SUPERVISORS MEETING

At the May 8, 2014 annual landowners meeting, Jeff Bolling was elected to the Board of Supervisors of the District for a three year term.

At the following Board of Supervisors organizational meeting the following officers were elected/appointed to serve for the following year.

President	Richard Carnell
Vice-President	Mike Monroe
Secretary	Joyce Hertel
Treasurer	Rodney Tillman
Deputy Secretary	Jeff Bowen
Deputy Treasurer	Judy Warga

F.W.C.D. ANNUAL PERMIT SUMMARY

Fifteen (15) permit applications (Numbers 128-13 through 142-15) have been submitted/issued since the prior annual engineer's report.

Two (2) utility permits were issued, the first to AE Com for gas main extension, and the second to Florida Organic Aquaculture for electrical service. One (1) permit issued to the City of Fellsmere for construction of new entrance road to Florida Organic Aquaculture sites. Seven (7) new driveway crossing culverts, one (1) replacement crossing culvert, and two (2) outfall drainage culverts were issued to various landowners. One (1)

ownership transfer permit was issued. A permit for proposed Fountains of Fellsmere project remains open pending receipt of additional information requested and permit compliance criteria established by F.W.C.D.

A permit for the proposed Florida Organic Aquaculture site plan was issued in 2013 and work was started. The F.O.A. applicant/developer decided to revise the plan and submitted a permit modification request with plans and calculations prepared by a new Engineer. We have reviewed plans and issued “request for additional information” for multiple submittal revisions. The permit modification has not been issued. This is due to the lack of an adequate response to the FWCD concerns about the potential discharges into the FWCD system of the salt water used in the shrimp raceways and the developer’s on-going redesign of the site plan. The process has been frustrating for all and policy guidelines to prevent developers from building before permit modifications are approved are being pursued with the City of Fellsmere Planning Department.

A permit application from the F.D.O.T. from 2012, pertaining to replacement of the I-95 Bridge over the Main Canal remains open pending resolution of disputed design and construction issues. The F.W.C.D. requires additional fill and rock rip rap slope stabilization treatment for the transition sections of the realigned F.W.C.D. maintenance road. The matter was taken to a hearing in front of a Judge and the Judge issued a court finding that the F.D.O.T. would submit plans (including the requested rip rap) for approval by the F.W.C.D. The F.D.O.T. resubmitted the same plans that were submitted early on and ignored the request for additional rip rap. The Judge has now retired and the case will be continued before a new Judge. Unfortunately the needed additional rock rip rap was not constructed in conjunction with the FDOT Contractor’s base contract. Therefore the as-built condition is not acceptable and through the F.W.C.D. Attorney, the matter is being scheduled for trial.

CITY OF FELLSMERE (C.O.F.)

The City of Fellsmere continues to develop strategies and implement improvements to its street and drainage infrastructure, including additional paving and drainage grants and developing a city-wide drainage swale plan for driveway culverts.

During 2012, the C.O.F. adopted a Flood Plain Management and Stormwater Utility Ordinance (Ordinance Number 2012-19), entitled, “Stormwater Management Program” for the purpose of delivering to that area exclusive stormwater services, and exercising within that area the powers provided for by law. The stormwater reserve area contains all the lands lying within the corporate limits of the City.

The C.O.F. Stormwater Management Utility Program primarily addresses the secondary drainage system within the City and water quality issues mandated by other jurisdictional agencies, but does not overlap or duplicate the responsibilities of the F.W.C.D. in the maintenance and operations of the District’s primary drainage ditches, canals and flood protection functions.

The F.W.C.D. entered into an agreement with the City of Fellsmere to participate in the funding of an update to the F.W.C.D. East Master Drainage Plan and Stormwater Hydrologic Analysis of the Gravity Drainage System in late 2012. The update was then used in the development of the City of Fellsmere Master Stormwater Plan, which includes a system of regional lakes. The City of Fellsmere retained Carter Associates in the spring of this year to prepare construction plans and obtain the permits to construct the South Regional Lake. The City of Fellsmere is also pursuing the design of the North Regional Lake in conjunction with the Fountains of Fellsmere Site plan development. The City of Fellsmere is currently pursuing Grant opportunities to help fund the construction of the north and south regional lakes

The F.W.C.D. update was completed as of May 2014, and was adopted by the F.W.C.D. Board of Supervisors to replace the current model at the May 8, 2014 meeting. The model update improvements include the

conversion of the study to the NAVD datum, the use of recent Lidar topographic information, and the update of culvert pipe replacement data. The Lidar survey method of estimating the existing ground elevations is a significant improvement over the aerial photography method used in the original model and has improved the accuracy of the model results.

The City of Fellsmere has also completed the design and permitting associated with the Fellsmere CDBG Phase 6 Project. This project includes the paving and drainage improvements along Wyoming and South Carolina Avenues and Hickory and Pine Streets. The City is currently re-applying for Grant funding during this year's CDBG Grant Application Cycle.

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT (S.J.R.W.M.D.)

The construction of the new levee along the eastern boundary of S.J.R.W.M.D. property most recently acquired from Fellsmere Joint Venture (FJV) is nearing completion. The construction of the "Fellsmere Water Management Area" is scheduled for completion some time in 2015. This levee will be the east levee of the newly created stormwater management area and will serve as the new western levee of the F.W.C.D.

The levee is reported to be constructed to U.S.A.C.O.E. standards, and as such, designated as a U.S.A.C.O.E. certified levee, may be possible when the project is completed. The U.S.A.C.O.E. certification is important for F.E.M.A. flood zone mapping, as the levee will be recognized for flood protection and result in F.W.C.D. landowners receiving reduced flood insurance rates. The F.E.M.A. flood insurance rate maps will not be changed to recognize the benefits of a levee protected flood zone until a "certified levee system" is completed around the entire F.W.C.D. levee system. The balance of the perimeter levee system including the north, south and portion of the east boundary will have to be upgraded and certified to complete the F.E.M.A. certification process. At some point in the future, we anticipate this land will be developed and the benefits of the F.E.M.A. certification will justify the cost.

The proposed construction of roadway access along Ditch 24 east of Willow Street to and southerly along the "east boundary levee" alignment, to the Sand Lake Conservation Area still remains held in abeyance. Apparently, departmental issues between F.D.E.P. and S.J.R.W.M.D. have delayed permitting and construction of this project.

ANNUAL ENGINEERING RELATED ACTIVITIES

Engineering time during this past year continues to be expended on the non-compliance design and construction issues of the F.D.O.T. Interstate 95 Bridge under construction across the F.W.C.D. Main Canal. As-built topographic survey was performed at the bridge site. As described above, this matter currently remains unresolved and Carter Associates, Inc. continues to assist F.W.C.D. and legal counsel in on-going litigation.

Continue to represent and assist the F.W.C.D. in the public/stakeholders forums as scheduled and conducted by the FDEP on an annual basis to review progress on reducing the pollution currently being discharged into the Indian River Lagoon. The FDEP is in the process of developing pollution reduction allocations for each stakeholder which will take effect in the adoption of the second five year phase of the Best Management Action Plan. FDEP has notified stakeholders that the pollution allocations will be necessary due to the less than desirable sea grass inventories obtained recently.

Permitting issues with the Florida Organic Aquaculture project continues to remain unresolved. Technical engineering review and assistance to F.W.C.D. on this matter continues.

We performed a topographic survey and hydraulic modeling analysis of Sub-lateral Canals U-22 and U-23 (not previously included in the F.W.C.D. East Master Drainage Plan) to determine proper size and grade of culverts for City of Fellsmere roadways being constructed to the F.O.A. site. The Board approved the adoption of the proposed pipes for this drainage basin area.

Attended a pre-application meeting for the Fountains of Fellsmere project and provided FWCD drainage permit requirements to the applicant's engineer. The proposed project included a proposal to culvert a section of the North By-Pass Ditch. This proposal was to improve the aesthetics of the site landscaping and to provide additional area for road improvements. A permit criteria memo was prepared to summarize the design requirements of the "culverted" section of the ditch.

FWCD Board of Supervisors authorized Carter Associates to prepare a permit manual. We expect to provide the first draft of the permit manual at the May 2015 meeting. When completed and adopted the manual will be posted on the FWCD website and be available for land owners and developers to review.

On-going annual engineering activities include the following:

- 1) Attend all regularly scheduled meetings of the Board of Supervisors and maintain a District Engineering file.
- 2) Remain on daily call to provide technical assistance and information to District personnel, supervisors, landowners and other governmental and public agencies concerning the operations, functions and regulations of the District.
- 3) Continue to provide technical permit review assistance to Superintendent Rodney Tillman, and project consultants, in the submission and issuance of all permit applications to assure compliance with F.W.C.D. policies and requirements.
- 4) Attendance at pre-construction meetings for significant site plan or subdivision type projects in the FWCD. Also, provide limited construction inspection to check compliance with FWCD permit conditions and to minimize the discharge of turbidity from construction sites.
- 5) Review the County wide alternative water supply report.
- 6) Review the quarterly stormwater quality analysis from the District.
- 7) Monitor and review the actions and activities of other jurisdictional agencies and related organizations that may affect the operations and functions of the District.
- 8) Review records and files in preparation of the Annual Engineer's Report as required under Florida Statutes – Chapter 298.

Once again, we are pleased to report that Superintendent Rodney Tillman and his staff, under the direction, guidance and support of the District's Board of Supervisors, continues to maintain and protect the works of improvement of the District, and to provide the landowners within the District a cost-effective level of service for flood protection.

Respectively submitted,
CARTER ASSOCIATES, INC.

by: _____
George Simons, P.E.

Marvin E. Carter, Consultant