

Planning Commission

Regular Session Agenda

June 9, 2014

6:00 P.M.

1. Call to Order – Planning Commission Regular Session
 - a. Roll Call – Establish a quorum
2. Invocation and Pledge of Allegiance
3. Public Comments
4. Consent Agenda
 - a. Approval of Agenda Format
 - b. Approval of Minutes
 - c. Reports
5. Old Business
 - a. Backyard Chickens – Discuss survey results
6. New Business
 - a. Floodplain Ordinance – Discuss model floodplain ordinance
7. Announcements
8. Adjourn



DRAFT
PLANNING COMMISSION
COMPREHENSIVE PLAN WORK SESSION WITH
ACCOMACK-NORTHAMPTON PLANNING DISTRICT COMMISSION
Town Hall
April 28, 2014

At 6:00 p.m. in the Town Hall, Chairman Dennis McCoy, having established a quorum, called to order the Work Session of the Planning Commission with Ms. Elaine Meil, Executive Director of the Accomack-Northampton Planning District Commission (ANPDC). In addition to Chairman McCoy, present were Commissioners Dan Burke, Joan Natali, Sandra Salopek and Bill Stramm. Commissioners Andy Buchholz and Mike Strub were not in attendance. Also present were Town Planner Rob Testerman and Town Clerk Libby Hume. There were two members of the public in attendance.

A moment of silence was observed followed by the Pledge of Allegiance.

Dennis McCoy stated that the business for the evening would be to discuss the Comprehensive Plan update process with Ms. Elaine Meil of the ANPDC.

Ms. Meil described the process to the Commissioners, adding that the Commissioners had done an excellent job identifying many areas of the Comprehensive Plan needing to be updated and she hoped to have those changes included in the text for review at the next meeting. A public information session could be scheduled as part of a regular meeting but a public hearing must be held prior to adoption of the Comprehensive Plan.

There was some discussion on how to disseminate the information to the public regarding the Comprehensive Plan update. Suggestions included information placed on the Town's website, in the Gazette, copies at the Library, and requests to the Cape Charles Wave regarding inclusion of the article or press release regarding the update. Rob Testerman stated that when he worked for Accomack County, several copies were printed, placed in binders and placed at popular spots, such as restaurants, for people to review. It was suggested that copies could be placed at Rayfields, the Cape Charles Coffee House, etc.

Ms. Meil stated that she could also research and provide information regarding census and employment data, and public services provided by other towns of similar size in Virginia. The intent was to provide the most current, relevant information available. Ms. Meil requested input from the Commissioners regarding a list of items for possible inclusion in the updated plan. The Commissioners reviewed a list provided by Ms. Meil and the following ideas were suggested by the Commissioners for inclusion in the updated plan: i) Bar charts to break out population data by age, race, etc.; ii) the number of platted lots vs. those with houses; iii) affordable housing information; iv) the need for an emergency medical department and urgent care facilities; v) Historic Town Entrance Corridor; vi) the Cape Charles Civic Center which was the new name for the former library building; vii) the Walkability Study; viii) possible reverse parking along Mason and Bay Avenues; and ix) the Master Trail Plan.

Ms. Meil stated that she would include all the Commissioners' comments into the draft plan and asked for guidance regarding priorities. The Commissioners agreed that the first priority was an emergency medical department, followed by parking and the Harbor (Master Plan, Access Road, Yacht Center and Bayshore Concrete Products).

The next work session with the ANPDC was scheduled for Monday, June 2, 2014, beginning at 6:00 PM.

OTHER MATTERS

Rob Testerman stated that the Northampton County staff and representatives from FEMA would be holding a public information meeting on May 12th at the Social Services building in Eastville. Affected property owners were mailed a postcard regarding the meeting.

Motion made by Joan Natali, seconded by Bill Stramm, to adjourn the Planning Commission work session. The motion was unanimously approved.

Chairman Dennis McCoy

Town Clerk

DRAFT



DRAFT
PLANNING COMMISSION
Regular Meeting
Town Hall
May 5, 2014

At 6:00 p.m. in the Town Hall, Chairman Dennis McCoy, having established a quorum, called to order the Regular Meeting of the Planning Commission. In addition to Chairman McCoy, present were Commissioners Dan Burke, Joan Natali, Sandra Salopek, Bill Stramm and Mike Strub. Commissioner Andy Buchholz was not in attendance. Also present were Town Planner Rob Testerman and Town Clerk Libby Hume. There were no members of the public in attendance.

A moment of silence was observed followed by the Pledge of Allegiance.

PUBLIC COMMENTS

There were no comments from the public nor any written comments submitted prior to the meeting.

CONSENT AGENDA

Motion made by Bill Stramm, seconded by Joan Natali, to accept the agenda format as presented. The motion was unanimously approved.

The Commissioners reviewed the minutes for the April 1, 2014 Regular Meeting.

Motion made by Joan Natali, seconded by Mike Strub, to approve the minutes from the April 1, 2014 Regular Meeting as presented. The motion was unanimously approved.

REPORTS

Rob Testerman reported the following: i) He attended the Transportation Advisory Committee meeting on April 16th at the VDOT Residency office where VDOT's long-range plan for roads needing repair was reviewed; ii) The ANPDC was continuing their work regarding the Bike Trail along the shore. Funding had been obtained for a feasibility study and construction drawings; iii) The State changed their Stormwater Management requirements effective July 1, 2014 and certain counties could not opt out and choose to fall under the plan for the State and DEQ. In the past, this option was only available to towns which could choose to fall under their county's plan. If Northampton County decided to opt out, the Town had the option of following suit or developing its own Stormwater Management Plan. There was some discussion regarding the Town's option and the effect on staffing, etc.; and iv) He attended a Living Shoreline Workshop at Camp Occohannock on May 1st. Environmental agencies expressed a preference to living shorelines with regards to wetlands management but he learned that in Cape Charles, living shorelines would not work as well due to the wave action and energy produced.

OLD BUSINESS

A. *Backyard Chickens – Discuss draft ordinance language*

Rob Testerman stated that the Backyard Chicken Survey had been extended through the end of May in order to get a better response rate from property owners. Notice of the survey was included on the May utility bill in order to ensure that all property owners were aware of its existence. As of April 30th, 62 responses had been received with the number of responses in favor and against backyard chickens about even. One issue that was raised was the effect on vacation rentals which were next door to a property with backyard chickens. It was stated that this could be a possible deterrent for renters. Rob Testerman went on to state that he had

checked with Code Official Jeb Brady regarding fire hazards and safety issues of lighting and heating elements used in chicken coops as brought up last month. Jeb Brady did not think it would be an issue as long as the lighting/heating element was rated for outdoor use.

The Commissioners reviewed the revised language for Section 3.2 as drafted by Rob Testerman after the April meeting and discussed the following: i) Item 8.b. was changed to state that the person raising the hens must be a full-time resident of the property; ii) Item 8.d. would state that no person shall slaughter any hens outdoors or in public view; iii) Item 8.e.2. – There was some discussion regarding the requirement of two square feet vs. cubic feet as well as a possible maximum height restriction. No changes were made at this time; iv) Items 8.g. and 8.h. were discussed for clarification but no changes were made; and v) Item 8.i. was changed to state that eggs or meat shall not be sold.

The survey responses would be reviewed in June. There was some discussion regarding scheduling a public hearing for June, but no decision was made.

B. *Tourism Zone – Discussion*

Rob Testerman stated the Planning Commission had begun discussion and work on a Tourism Zone. At the January 28, 2011 Town Council Retreat, Council agreed that Technology and Tourism Zones should both be adopted by the Town. Both zones would encompass the entire Town and a list of targeted businesses needed to be developed as well as appropriate incentives. The Technology Zone was adopted by the Town Council on March 8, 2012, but no further work had been done on the Tourism Zone. A Tourism Zone allowed for qualifying businesses to receive tax credits or other incentives that would not be available to that business elsewhere, thus encouraging the business to locate within the Town and increasing employment opportunity and economic growth. Creation of a tourism zone was authorized by VA Code § 58.1-3851. The language of the Tourism Zone would be similar to that of the Technology Zone and would be adopted into the Town Code if approved. The qualifying businesses and incentives would differ from those existing in the Technology Zone. Rob Testerman added that he had included the State Code section, information from the State and other localities as well as the Town's Technology Zone language.

Bill Stramm stated that he liked the language included in the ordinance from the Town of Pocahontas.

Rob Testerman stated that the first step would be to identify the types of businesses that would qualify for the Tourism Zone. The following businesses were cited:

- Miniature golf
- Golf cart, boats, jet ski, bicycle rentals
- B&Bs, hotels and other lodging
- Restaurants
- Outdoor sporting goods merchandisers and rentals
- Gift shop
- Harbor-related businesses, water taxi
- Art gallery
- Farmers market
- Health related/Fitness center (not medical offices)
- Grocery/convenience stores
- General retail merchandising
- Used/antique merchandising
- Bowling alley
- Theaters
- Arcades

- Museums
- Conference and event services/centers
- Air, land and water-based excursions

Bill Stramm noted that the Town of Onancock recently built a kayak launch area at their harbor.

Businesses that would not qualify included churches, appliance store, gun shop, banking, and auto repair facility.

Rob Testerman stated that he would try to contact a representative from the Town of Pocahontas as well as Northampton County Economic Development Director Charles McSwain for more information and ideas regarding possible incentives for review at the June meeting.

Joan Natali stated that the Technology Zone required the business to initially pay the appropriate tax. The Town would review the businesses' accomplishments relating to the requirements of the Technology Zone and would rebate the appropriate amount as outlined in the ordinance.

NEW BUSINESS

There was no new business to review.

ANNOUNCEMENTS

- Tomorrow, May 6, was Election Day.
- On May 12, beginning at 6:30 PM, the County and FEMA representatives were holding a public information meeting at the Social Services Building in Eastville regarding the new flood maps.

Motion made by Joan Natali, seconded by Bill Stramm, to adjourn the Planning Commission meeting. The motion was unanimously approved.

Chairman Dennis McCoy

Town Clerk



DRAFT
PLANNING COMMISSION
COMPREHENSIVE PLAN WORK SESSION WITH
ACCOMACK-NORTHAMPTON PLANNING DISTRICT COMMISSION
Town Hall
June 2, 2014

At 6:00 p.m. in the Town Hall, Chairman Dennis McCoy, having established a quorum, called to order the Work Session of the Planning Commission with Ms. Elaine Meil, Executive Director of the Accomack-Northampton Planning District Commission (ANPDC). In addition to Chairman McCoy, present were Commissioners Dan Burke, Joan Natali, Sandra Salopek, Bill Stramm and Mike Strub. Commissioners Andy Buchholz and Dan Burke were not in attendance. Also present were Town Planner Rob Testerman and Town Clerk Libby Hume. There was one member of the public in attendance.

A moment of silence was observed followed by the Pledge of Allegiance.

Dennis McCoy stated that the business for the evening would be to continue discussion regarding the Comprehensive Plan update with Ms. Elaine Meil of the ANPDC.

Ms. Meil stated that the items considered by the Commission since October 2013 had been incorporated into the draft plan. Ms. Meil proceeded to review her Comprehensive Plan Update presentation with the Commissioners which included information regarding emergency services, parking reform, Cape Charles Harbor environs, and economic vitality. (Please see attached.) Ms. Meil also showed a presentation of the vision of the Eastern Shore Land Company's (ESLAND) Cape Charles Yacht Center Project.

Throughout the presentation, the Commissioners discussed the various issues as follows:

1. **Emergency Services:** The various statistics provided in the presentation were discussed. Ms. Meil asked for guidance regarding the language to be included in the draft plan. After much discussion regarding available and potential medical services, the Commissioners agreed that a positive message was preferred with language stating that the Town would work with the County to pursue every opportunity to increase medical and emergency services and facilities to the vicinity of Cape Charles. There was some discussion regarding the Northampton County Ad-Hoc Emergency Care Committee's report which was presented to the Board of Supervisors earlier this year. Libby Hume would send a copy of the report to the Commissioners for their review.
2. **Parking Reform:** The Virginia regulations for perpendicular and angled parking were reviewed and Ms. Meil informed the Commissioners that reverse angle parking had been approved by the State last year. There was currently one VDOT project where reverse angle parking was planned (Charles Town Pike Traffic Calming Project in Purcellville, VA). Information regarding angled parking was reviewed and potential streets were identified. Ms. Meil asked for guidance regarding the language to be included in the Transportation and Utilities section of the draft plan. The Commissioners agreed that the goal was to focus on Mason Avenue recommending reverse angled parking. Bay Avenue would be studied after the parking on Mason Avenue was implemented. Language regarding the Community Trail would be reiterated.

3. Cape Charles Harbor Environs:
 - a. Harbor Access Road & Harbor Master Plan: Ms. Meil noted that the Commissioners had previously suggested adding a subsection under the Cape Charles Harbor with language regarding harbor dredging and water transportation businesses. The Commissioners reviewed draft verbiage and offered additional suggestions regarding the upcoming dredging of the Harbor and the Harbor Access Road. Ms. Meil would present the revised language for review at the next Comprehensive Plan Work Session.
 - b. Bayshore Concrete Products: Proposed language was reviewed regarding Bayshore Concrete Products and their contribution to the town and county. The Commissioners suggested that language be added regarding Bayshore's recently announced \$4M investment, the increased jobs and their taking advantage of the Technology Zone incentives.
 - c. Eastern Shore Land Company: There was much discussion regarding ESLAND's vision of the Harbor area. Joan Natali explained some of the items in ESLAND's plan as presented to the Town Council by Mr. Eyre Baldwin. The Commissioners agreed that language regarding ESLAND's plans should be included in the Comprehensive Plan. The Town needed to be promoted as a center for offshore development for wind, power, oil, etc. and the maritime industry needed to be capitalized upon. Ms. Meil would provide language for review at the next work session as well as information regarding ports vs. harbors.
4. Economic Vitality: Ms. Meil stated that Town Manager Heather Arcos suggested that the Commission consider incorporating a message of Cape Charles being a great place to raise a family and went on to review statistics regarding demographics pulled from the 2010 Census. The statistics showed that the majority of the Town's population was over the age of 62 and of the 516 total households, only 85 households had persons under the age of 18. Dennis McCoy suggested that education sources, such as the Cape Charles Christian School and other private schools, needed to be highlighted, which could encourage families to come to Town. Ms. Meil would draft language regarding families and the Cape Charles Christian School for review at the next work session.

OTHER MATTERS

Rob Testerman reminded the Commissioners of the Art Walk Public Input Meeting scheduled for Tuesday, June 3, beginning at 6:00 PM at the Palace Theatre. The next regular meeting was rescheduled for next Monday, June 9, so the Commissioners could attend the Art Walk meeting.

The meeting was opened up for public participation.

Mr. George Proto began by stating that he was impressed with the work on the Comprehensive Plan update and offered the following suggestions: i) Golf cart parking – consider when discussing the parking plan. Space could be saved by providing designated golf cart parking spaces since they were smaller and took up less space than other vehicles; ii) Maximum number of people at the beach – take a head count of the number of people at the beach, determining a maximum number and matching the number of parking spaces to the estimated number of people. Ms. Meil recommended a beach census which was basically a count of the number of people at the beach at various times – regular days, weekends and holidays. Dennis McCoy added that this would also be good to do every year for comparison purposes; and iii) Year-round jobs – possible advertising to attract a call center or individuals working from home. The Town needed to capitalize on the broadband availability to promote these types of industry.

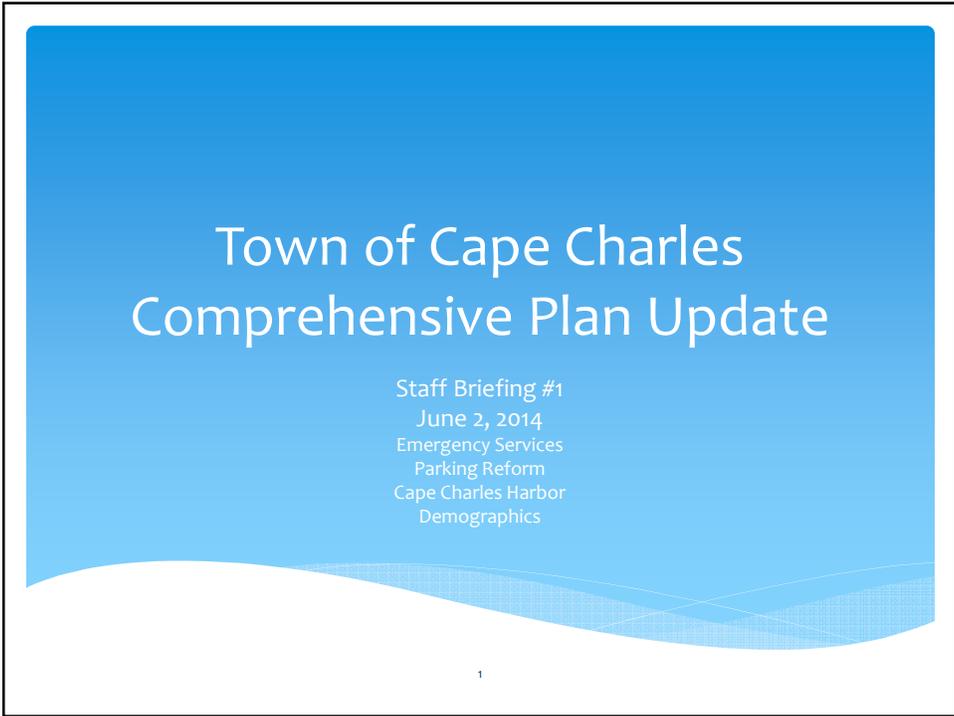
Ms. Meil asked how far the Commissioners wanted to go regarding the plan and whether they wanted to just include language in the Comprehensive Plan or move forward with trying to lure businesses to the Town. Ms. Meil suggested *Wired* magazine for advertisements or possibly participation in certain trade shows. Dennis McCoy stated that the Commission was an advisory board so was not the body to move on any initiatives. Joan Natali agreed stating that language needed to be included in the Comprehensive Plan to promote home offices, etc. George Proto stated that a Comprehensive Plan was similar to a road map which showed where the Town wanted to go in the future.

The next Comprehensive Plan Work Session with the ANPDC was scheduled for Monday, June 30, 2014, beginning at 6:00 PM. The focus of this meeting would be Town services and facilities. There was discussion regarding the timeframe for adoption of the revised Comprehensive Plan. The Commissioners requested two public meetings prior to scheduling the public hearing so the draft plan could be presented to the Town's citizens and their questions could be addressed.

Motion made by Mike Strub, seconded by Joan Natali, to adjourn the Planning Commission work session. The motion was unanimously approved.

Chairman Dennis McCoy

Town Clerk

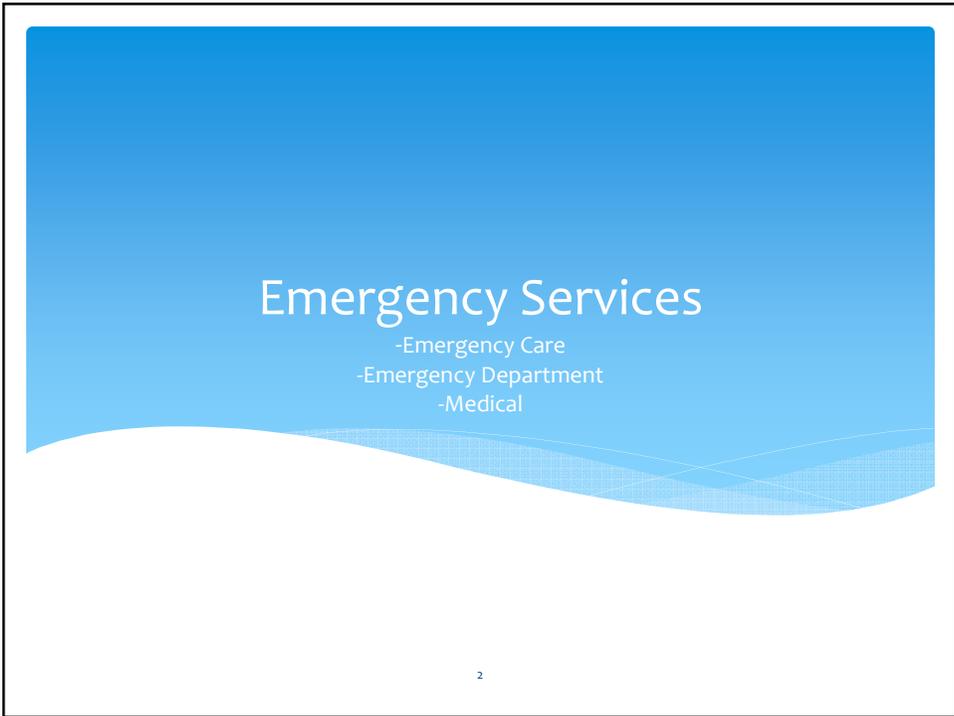


Town of Cape Charles
Comprehensive Plan Update

Staff Briefing #1
June 2, 2014
Emergency Services
Parking Reform
Cape Charles Harbor
Demographics

1

This slide features a blue gradient background with a white wavy pattern at the bottom. The title 'Town of Cape Charles Comprehensive Plan Update' is centered in white. Below it, the agenda items are listed in a smaller white font.

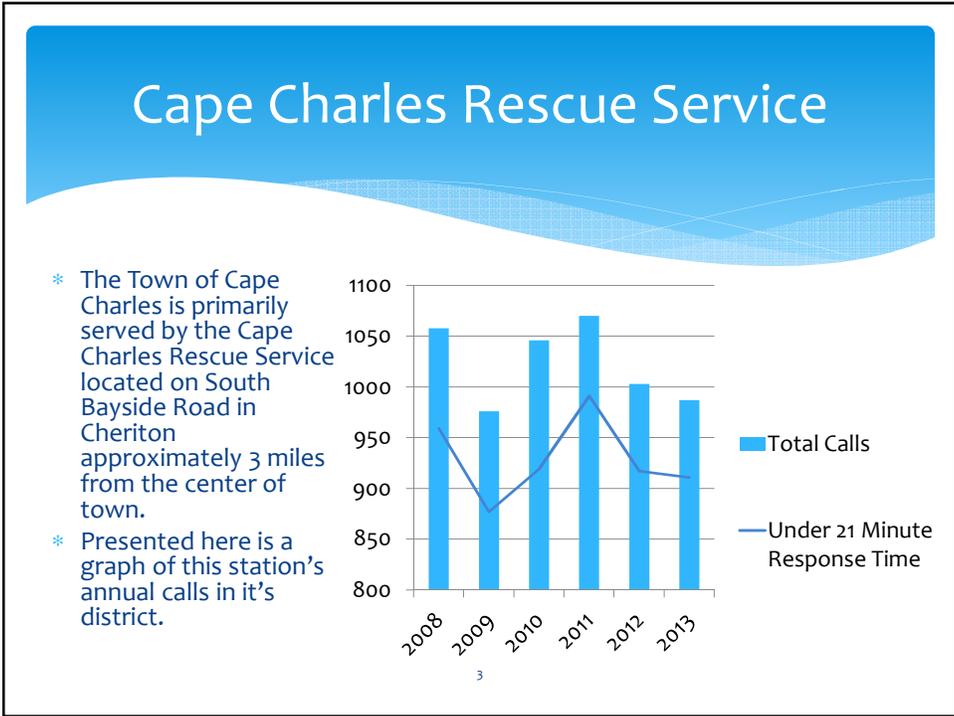


Emergency Services

- Emergency Care
- Emergency Department
- Medical

2

This slide features a blue gradient background with a white wavy pattern at the bottom. The title 'Emergency Services' is centered in white. Below it, three bullet points are listed in a smaller white font.



Cape Charles Rescue Service

- * The Cape Charles Rescue Service is a volunteer company. Northampton County does supplement the staffing with career EMTs, however, these do not cover all time periods.
- * In the latest year 2013, response time in Northampton County averaged 9.06 minutes daytime (6am to 6 pm) weekdays and 11.42 minutes nighttime weekdays and weekends

4

Bayview Community Health Center

- * The Bayview Community Health Center is located on South Bayside Road and is less than three miles from the center of the Town of Cape Charles.
- * According to the Eastern Shore Rural Health System, they are the medical provider for more than half the Eastern Shore community's population. They offer primary medical and dental services, health education, pharmacy assistance, digital x-ray, labwork, travel immunizations and other services. In partnership with the Chesapeake Bay Bridge-Tunnel, they offer toll passes for qualifying residents who have a medical visit with a specialist across the Bay.

5

Acute Care Changes

- * In November 2010, the Riverside Health System - Shore Memorial Hospital applied to relocate the hospital currently located in Nassawadox, Virginia to the outskirts of Onley, Virginia.
- * In October 2013, the health system broke ground on the new location.
- * Riverside is projecting that the Nassawadox site will be completely vacated and the hospital will be operating near Onley by 2019.

6

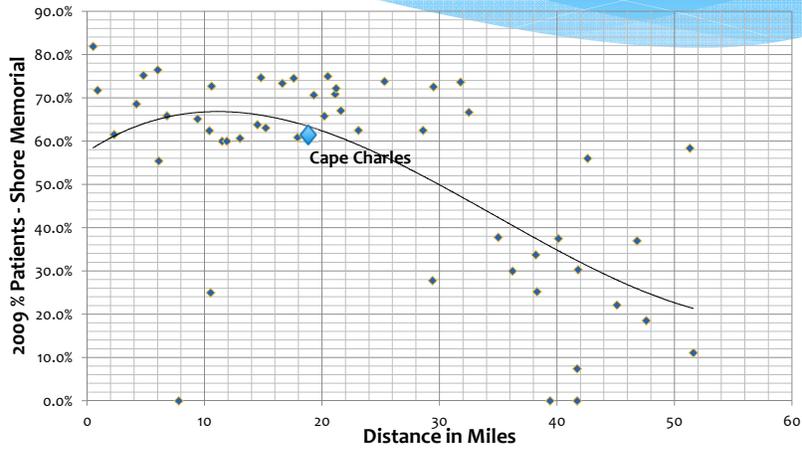
Cape Charles Hospital Data

- * Shore Memorial Hospital as part of their Certificate of Public Need application provided the following information for the Cape Charles area defined by the zip code 23310.
- * In 2009, the Cape Charles area had 311 total inpatient admissions representing 4.5% of admissions from the Eastern Shore of Virginia in that year to all hospitals (Maryland, Shore Memorial, other Virginia Hospitals). These 311 patients represented 16% of Northampton County admissions. The Cape Charles origin admissions (2009) are broken down below.

Maryland Hospital Admissions	Virginia Hospital Admissions (excluding Shore Memorial)	Shore Memorial Hospital
9 (2.9%)	111 (35.7%)	191 (61.4%)

7

Percent of Patients that went to Shore Memorial in 2009 by Distance in Miles



8

Impact Discussion

- * Impact to the Town of Cape Charles – The hospitals in Virginia Beach and Norfolk will be comparable distances to the new Shore Memorial location. These hospitals are 9-10 miles further than the Nassawadox location and are on the other side of the Chesapeake Bay Bridge Tunnel, a toll road.
- * Riverside Shore Memorial (new location) will be a 69 bed facility. The current location has 143 beds.
- * Sentara Virginia Beach General is a 276 bed facility and is a Level III Trauma Center. Virginia Beach General is ranked the No. 12 Hospital in Virginia by US News and World Report (2013-2014).
- * Sentara Norfolk General is a 525 bed facility and is a Level I Trauma Center. Norfolk General is ranked the No. 1 Hospital in Virginia by US News and World Report (2013-2014). It was also nationally ranked in two specialties (cardiology and nephrology).

9

Side by Side Comparison

- * Under a federal program (source: U.S. News & World Reports 2013-2014), a sample of discharged patients are asked whether they would recommend the hospital to family and friends. Here are the results for the three closest hospitals to Cape Charles.

Name	Definitely Recommend	Would Not Recommend
Virginia Beach General	79%	3%
Norfolk General	81%	3%
Shore Memorial	43%	10%
Virginia Average	69%	5%
National Average	71%	5%

10

Distance to Hospital, EMS Response Time Data

- * “The relationship between distance to hospital and patient mortality in emergencies: an observational study” found an increase in mortality as distance from the hospital increased, especially among those with respiratory issues. However, the Nassawadox location is already further from the Cape Charles location than the study distances. The increase was approximately 1% additional mortality for each additional km.
- * In another study related to EMS response times (Emergency medical services response time and mortality in an urban setting.), mortality increased by 0.7% for one additional minute in EMS response time (from 7 minutes to 8 minutes).

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Staff Analysis

- * Prior to the Shore Memorial Announcement, almost 40% of Cape Charles residents were choosing to go to other hospitals.
- * Distance appears to strongly control 60-70% of hospital visits when one hospital is clearly closer than another.
- * There is one example of a community that was also distance split between Shore Memorial and Maryland hospitals yet Shore Memorial was still the closest hospital by at least 6 miles. Here 60% chose to go to other Maryland or Virginia hospitals. This community is about evenly split between two hospitals. It is currently in much the same place the Town of Cape Charles will be when Shore Memorial moves.
- * Reviewing averages, about 56% of Cape Charles patients will now choose Sentara hospitals over Shore Memorial in the Onley location. This represents an change of 55 patient visits annually.
- * Shore Memorial has been able to draw between 10-35% of hospital visits of Eastern Shore of Virginia residents regardless of there being another hospital closer.
- * Staff reviewed the Virginia Certificate of Public Need Program and a record of VDH's actions regarding the addition of new medical care facilities. It appears that it is unlikely that the Virginia Department of Health would approve the addition of a second emergency room in planning district 22. VDH's [COPN Criteria for Determining Need](#) include not only criteria for need of the area but the effect of the facility on utilization and efficiency of existing facilities.
- * Staff reviewed scientific literature regarding hospital distance to mortality. Most of this literature focused on time that EMS services arrive. One observational study did find that mortality did increase with distance.

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Staff Recommendation

- * Staff recommends the Planning Commission consider a strategy that puts forward a positive message about emergency services available to the town residents and concentrate on emergency services goals that have a high likelihood of accomplishment.

Potential Positive Message

- Access to the best hospital in Virginia where twenty-three miles (more than half of the distance) is the Chesapeake Bay Bridge Tunnel facility, a roadway with no obstructions and very good traffic conditions
- Emergency rescue services within three miles of town

- * Have staff develop a bullet under III-B.4 Current and Planned Infrastructure and Amenities. Access to the Best Hospitals in Virginia
- * Consider whether improved EMS response time is important enough to the town to supplement Cape Charles Rescue Service career staff. Consider whether the Town can assist the Rescue Service in other ways by promoting fund raising or increasing volunteerism. Include discussion under III-B.5.5 Goal: Attract Retirees

13

Parking Reform

14

Reverse Angle Parking

Virginia Regulations

Appendix B(1) D. PERPENDICULAR AND ANGLE PARKING (SEE APPENDIX C FOR MORE DETAILS) *
 Perpendicular and angle parking along streets is normally prohibited. However, perpendicular and angle parking may be allowed on low-speed (25 mph and less), low volume collector and local streets with ground floor commercial uses, primarily those serving as main streets and local streets in Traditional Neighborhood Development (TND) or similar higher-density developments. * Rev. 7/13

Appendix C: Perpendicular or Angled Parking Spaces (See Appendix B(1) for more details)
 Perpendicular or angled parking spaces along street are normally prohibited. All off-street parking areas must include on-site maneuvering areas and aisles to permit vehicles to enter and exit the site in forward drive without hesitation.

Accessible parking spaces shall be at least 8 feet wide. Access aisles adjacent to accessible spaces shall be 8 feet wide minimum and shall be provided at street level the full length of the parking space and shall connect to a pedestrian access route serving the space. Access aisles shall be marked so as to discourage parking in them. Two accessible parking spaces may share a common access aisle (See Figure C-1-3). C-3

The "Universal Parking Space Design" is an acceptable alternative to providing a percentage of spaces with a 5 feet wide aisle. Under this design all accessible spaces are a minimum of 11 feet wide with 5 feet wide access aisles. Since all spaces using this design are van accessible, no additional signage is needed to denote which spaces will accommodate vans. This design allows vehicles to park to one side or the other within the 11 feet space.

Accessible parking spaces for persons with mobility impairments are to be located and designed to provide the shortest possible route to rest area facilities. If there are curbs between the access aisle and parking perimeter, then curb cut ramps, Standard CG-12, are to be provided. The Location and Design Traffic Engineering Section Division and Environmental Division should be contacted to coordinate the signing and placement of curb cuts. Figure C-1-3 is to be used to provide ample space for the Accessible Parking and Passenger Loading Zones.

Parked vehicle overhangs shall not reduce the clear width of an accessible route (overhang distance 2 feet), which shall be accomplished by the installation of wheel stops as shown in Figure C-1-3. Accessible parking spaces shall be designated as reserved by a sign showing the symbol of accessibility. Van accessible spaces shall have an additional sign "Van-Accessible" mounted below the symbol of accessibility. Such signs shall be located so they cannot be obscured by a vehicle parked in the space. Provide minimum vertical clearance of 9.5 feet at accessible passenger loading zones and along at least one vehicle access route to such areas from site entrance(s) and exit(s).

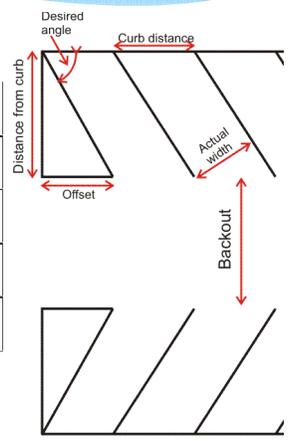
(VDOT Road Design Manual, revised 2013)

15

Dimensions

Dimensions are determined by the angle. Below is a table on pull in angled dimensions.

Angle	From base line	Along curb	Offset	Backout
90	18	9	0	24
75	17	9'4"	4'6"	22
60	16	10'4"	9	20
45	15	12'7"	15	19

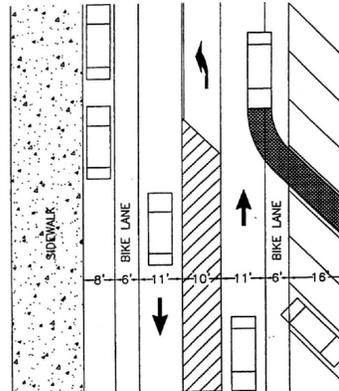


16

Complete Streets

- * Aside from parking, streets may also need to consider space for other needs such as bicycle lanes.
- * Guidelines found that refer to the AASHTO Green Book that lane width should be:

10'-12' on arterials with a speed of 35 mph or less
 10'-11' on collectors with a speed of 35 mph or less



17

Streets that Could Potentially be Modified

- * Staff measured by aerial photograph the **approximate** width of a variety of streets in the Town. It was measured from the street pavement edges and does not represent VDOT right of way.
- * Bay Avenue 65'
- * Mason Avenue 45'
- * Peach Street 60'
- * Monroe Street 60'
- * Washington Avenue 36'



18

Bay Avenue

- * Bay Avenue Represents the Most Potential for a Complete Street. At approximately 65' of Pavement, it may be possible to have:
 - Two 11' Lanes
 - Two 6' Bicycle Lanes
 - Two Reverse Angle 45° 15' Parking Areas

19

Mason Avenue Potential

- * Mason Avenue may have some potential for increasing parking.
 - * Two 11' Lanes
 - * One 8' Parallel Parking Area
 - * One Reverse Angle 45° 15' Parking Area

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Staff Analysis

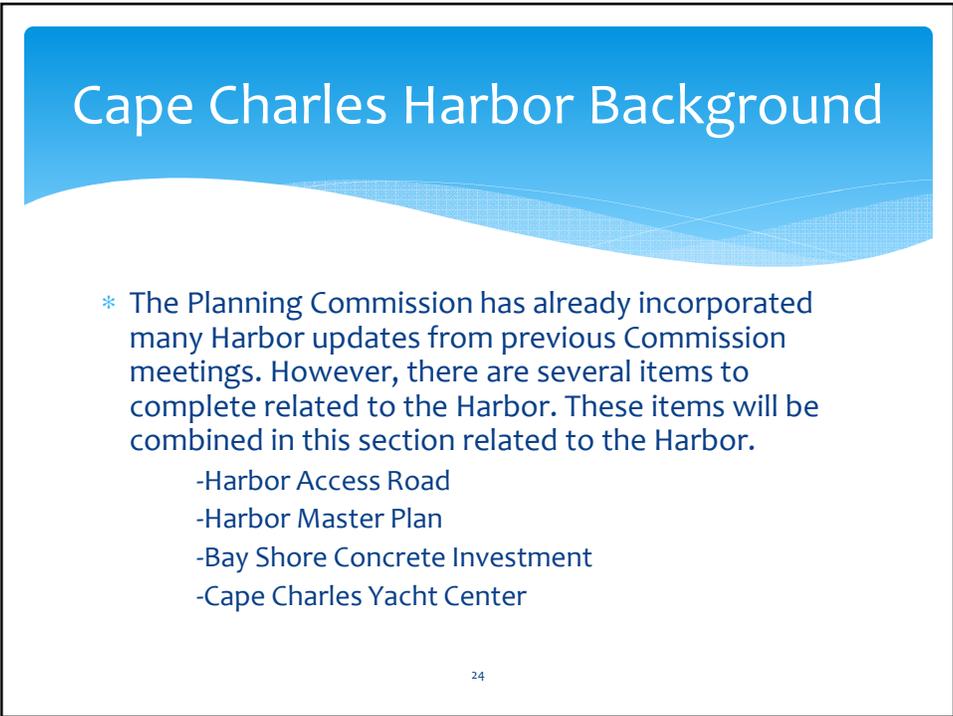
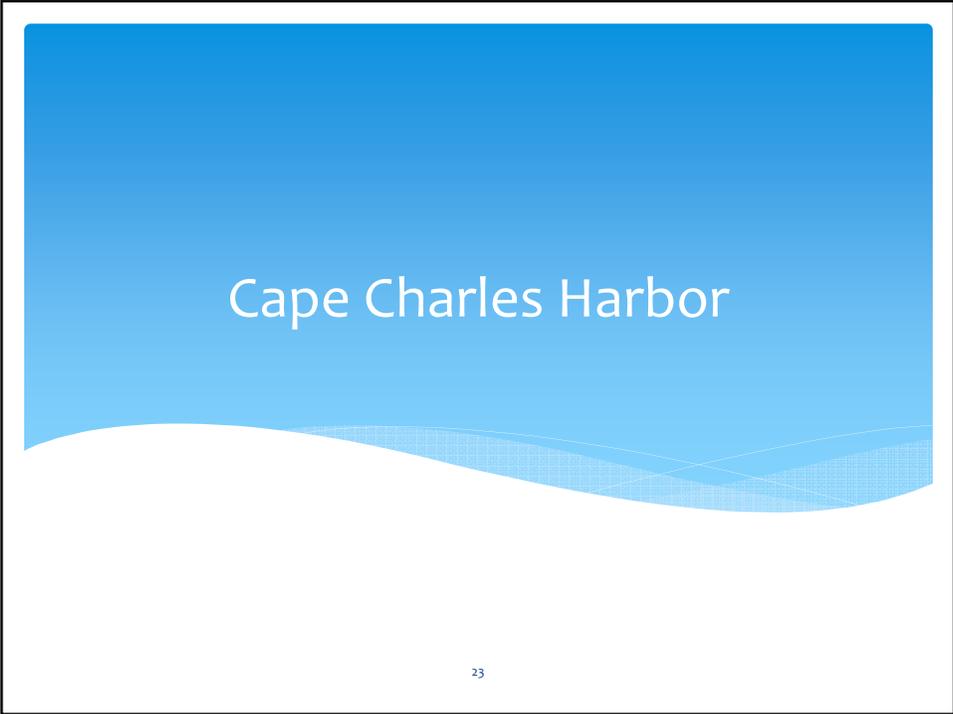
- * Some potential exists for reverse angle parking along selected Cape Charles streets.
- * Bay Avenue represents the most potential for a complete street.
- * VDOT does not appear to prohibit reverse angle parking but the changes are recent and this may represent an obstacle in receiving approval to make changes.
- * Staff found one VDOT project in Virginia where reverse angle parking is planned along with other improvements. (Charles Town Pike Traffic Calming)

21

Staff Recommendation

- * Staff recommends the Planning Commission consider whether the Town should pursue a project to make significant changes to Bay Avenue, Mason Avenue or other potential streets and discuss the changes desired.
- * If the Commission wants to pursue a Traffic Calming or Complete Street project, have staff develop a new section under III-C Transportation and Utilities

22



Harbor Access Road

Construction is Expected to Begin 2022
 Estimated Cost: \$6.5 million
 Design is Underway

Current Element of Section III-C Transportation and Utilities:

“The “hump” has been a signature feature of Town for years but is another problem area. An at-grade crossing alternative has been proposed and should be designed to straighten out Old Cape Charles Road from Mason Avenue to Bay Creek. The “hump” should be maintained as an alternate emergency vehicular route.

New developments around the Harbor have sparked interest in a new, more direct road, from the industrial area near Bayshore Concrete to Old Cape Charles Road. This is under consideration by private land owners and has had favorable reviews.”



Credit: Eastern Shore News, Esland

Harbor Master Plan

Address Planning Commission Notes

- * Section III-C - Transportation and Utilities Notes: Subsection needs to be added for the Cape Charles Town Harbor with language regarding harbor dredging and water transportation businesses.
- * Current plans are that permitting will be complete in November 2014. Dredging will commence in January 2015 and be complete by April 2015. The channel will be 18' in depth.

Bayshore Concrete Products

February 2014

- * The Governor of Virginia announces Skanska USA will invest \$4 million to expand Bayshore Concrete Products in Cape Charles and make harbor improvements.

Section III-6.3 Future Land Use Recommendations

“Bayshore Concrete Products is an important economic anchor for both the town and the county. All properties adjacent to the harbor have an alternative future land use of Harbor Mixed Use designation.”



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The Eastern Shore Land Company (ESLand) & Cape Charles Yacht Center

- * The Cape Charles Yacht Center is being developed to host an industry cluster of marine based businesses with a focus on provisioning, repair and associated support business for yachts, including super yachts.
- * Plans include operations to clear yachts through Customs and Border Protection.
- * In addition to owners and guests, there is a high likelihood that super yachts will be professionally crewed.

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Demographics

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Population Statistics, 2010

- * Census 2010 found the Town has 1,009 residents.
- * 403 residents were over the age of 62 in 2010.
- * Median Age was 53.5
- * Males are 46.7%
- * Females are 53.3%

2010 Population Numbers by Age

Age Group	Population
0 to 4	50
5 to 9	45
10 to 14	50
15 to 19	35
20 to 24	55
25 to 29	45
30 to 34	45
35 to 39	42
40 to 44	42
45 to 49	50
50 to 54	65
55 to 59	75
60 to 64	120
65 to 69	70
70 to 74	55
75 to 79	35
80 to 84	35
85+	40

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Household Statistics, 2010

- * 516 Total Households
- * 217 Households with Person Living Alone
- * 186 Husband-Wife Families
- * 85 Households with Persons under the age of 18
- * 226 Households with Persons 65 and over

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Housing Statistics, 2010

Occupied Housing Units	Vacant Housing Units
* 516 Total	* 442 Total
* 485 Persons Living in Owner Occupied Houses (247 Units)	* 290 Seasonal, Recreational or Occasional
* 524 Persons Living in Renter Occupied Houses (269 Units)	* 60 Other Vacant
	* 50 For Rent
	* 40 For Sale
	* 2 Sold, Not Occupied

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IRS Data 2011 vs. 2005

Zip Code 23310, 2005

- * 1,141 Returns
- * Average Income Per Return: \$53,858
- * 573 Returns Income Under \$25,000 (Avg. \$10,939)
- * 452 Returns Income Between \$25,000-\$100,000 (Avg. \$50,155)
- * 116 Returns Income Over \$100,000 (Avg. \$248,433)

Zip Code 23310, 2011

- * 1,281 Returns
- * Average Income Per Return: \$48,656
- * 570 Returns Income Under \$25,000 (Avg. \$11,768)
- * 559 Returns Income Between \$25,000-\$100,000 (Avg. \$50,417)
- * 152 Returns Income Over \$100,000 (Avg. \$180,507)

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Staff Analysis

- * The Town has focused and is successful in attracting retirees, and second homeowners.
- * Conversion of up to 442 vacant units into occupied units represents a major opportunity for the Town's businesses.
- * The Town should consider strategies that maximize the use of the vacant housing stock.
- * US wealth statistics show that wealth is controlled by age. Younger persons (less than 35) are less wealthy than other age groups. In the US, wealth is highest in households with heads in the mid 50s to mid 70s.

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Planning Commission Staff Report

From: Rob Testerman

Date: June 4, 2014

Item: 4C – Reports

Attachments: None

1. The Historic Review Board had no applications and did not meet in May.
2. Town Council has adopted two resolutions to send to the Northampton County Board of Supervisors. The first resolution encourages the County to adopt the draft Historic Town Entrance Overlay district into their zoning ordinance. The second resolution encourages the County to keep the Planning Commission as part of the review process for Special Use Permits, as the proposed zoning ordinance changes would cut them out of the process.
3. A land reclamation and beach nourishment project is underway at Bay Vistas. It was approved by the local wetlands board, and the Army Corps of Engineers. Work on the beach should be completed by June 6.
4. The Urban Chicken survey results were compiled and are included later in the packet.
5. Work on the Tourism Zone will resume once the Planning Commission is finished with the Chicken ordinance. In the meantime, Commissioners should be thinking about appropriate incentives to offer in the zone. When we resume discussion, staff will bring forward draft text to the Commission.
6. Staff has contacted VDOT regarding reverse angle parking on town streets. VDOT has advised that since this method of parking is allowed in Virginia, if we would like to implement it, we must submit an official request to VDOT, showing the desired location. VDOT's planning department and engineers would then review the request.
7. The ACOE harbor dredging project's most current schedule is as follows:
 - a. November 2014: Permitting approvals
 - b. January 2015: Construction begins
 - c. April 2015: Construction finished

Should there be any unforeseen delays, the Town has requested that the town beach spoils site be constructed first, and should the project run into tourist season that at least half of the beach remain open at any given time.

Planning Commission Staff Report

From: Rob Testerman
Date: June 4, 2014
Item: 5A – Backyard Chickens
Attachments: Chicken Survey Results, Wordles

Background

The chicken survey information has been gathered, and attached for your review. As you can see on the attachment, we received 81 responses from Cape Charles property owners. Additionally there were 10 responses from non-property owners, 2 anonymous and 3 duplicates, these responses were omitted since we are attempting to gauge the interest of people who would be directly affected (Cape Charles property owners).

Discussion

Of those responses, 75 respondents live in Town, 55 of those responders live in the historic district, and the other 20 live in Bay Creek. Six respondents live outside of town, but own property within town.

Of the responders, 35 (43.2%) were in favor; 7 (8.6%) may support, but need more information; and 39 (48.1%) were opposed to allowing “urban chickens” in town.

Comments left by the respondents are attached for your review. I have also attached “wordles” created from the responses. A wordle is a “word cloud” that is generated from text, greater prominence is given to words that appear more frequently in the source text. One was created for the “in favor” responses, and a separate one for the “oppose” responses. This is mainly just a graphic representation to observe the most common words that kept popping up in the responses.

Recommendation

With the survey results in mind, the Commission should discuss the next steps in the process. Prior to scheduling a public hearing, the Commission has expressed that a public information/input session should be held. If the Commission feels that we are at a point that this can be done, we should discuss a date.

Additionally, the Commission should advise staff as to whether they would like to reach out to Dr. Brigid McCrea to come speak to the Commission and public on the topic of backyard/urban chickens prior to scheduling a public input session.

Urban Chicken Survey Responses

Totals:

Responses – 81 from Cape Charles property owners.

10-from non-property owners, 2-anonymous & 3-duplicates. (These have been omitted.)

Live in Cape Charles – 75

Live in Historic District – 55

Live in Bay Creek – 20

Own property in Town – 6

In support – 35

Maybe, need more information – 7

Not in support – 39

Comments:

In Support:

1. As the dollar is increasingly undermined, raising food will become paramount.
2. I have concerns about the portion of the population that is allergic or highly allergic to chicken feathers, but this is balanced by my support of vegetable gardening and other sustainable homesteading practices.
3. 3-4 chickens... NO ROOSTERS... must be housed in a clean, movable, at least partially covered coop.
4. We have worse eye sores in this town than clean, egg-producing chickens.
5. At this point a fairly large number of urban communities throughout Virginia and the United States allow residents to keep a few hens. They have done this for a number of good reasons. It's great to know where your food is coming from. Chickens provide natural fertilizer. Chickens eat insects. I encourage Cape Charles to allow owners to raise a few chickens. On a separate note, there seem to be a number of folks in Cape Charles that just let their dog wander around the city. Dogs should be with their owner when they are outside, unless they are in a fenced yard.
6. I feel that chickens are fine but a limit to 6 per lot should be enforced. Chickens have proven to be a great way to control bugs and ticks. Chickens are very interesting and make great pets while providing a variety of benefits.
7. There is no harm in keeping a few chickens as pets or whatever you prefer to call them, or rabbits as long as they have enough room and do not disturb the immediate neighbors.
8. Having observed 'up close and personal' chicken keeping in a fenced residential setting I wholeheartedly support the idea and the practice as long as the guidelines set by the town are followed. I built my little 'granny cottage' on the rear of my daughter's home and was interested to learn about and interact with her six hens. My grandsons helped care for the chickens, helping to build and paint their very artistic chicken coop, changing their bedding every day, helping to feed and water them every day and gathering the daily fresh eggs. The chickens naturally went into their coop at sundown every day and were in general very quiet. They did come to 'visit' me as I sat on my swing in good weather. They got along well with my two cats...the kitties did not chase the hens. I observed the hens pecking at and eating bugs out of my garden and would settle under a bush to rest. Occasionally they

would hop up on my swing to say 'hello' and to softly 'talk' to with gentle clucks, and study, this human creature- which I enjoyed. The hens were definitely good pets and educational for the boys. And, the very fresh eggs they provided every day were delicious! We did not keep our hens for slaughter, only for the companionship and education they provided. At 74 years of age, my only prior interaction with chickens was when I was a child, observing my grandmother running after one of her chickens with a cleaver in her hand. So I was entranced by our fascinating chicken pets, their place in our family and in our fenced yard, and would recommend the practice of keeping a few hens to anyone.

9. We plan to retire to CC in a few short years and my answer will remain the same. Yes, I support the chickens! (FYI, we are having this exact same discussion in Lexington VA.)
10. The urban chicken trend is so widespread COSTCO is now selling upscale chicken coops. There is a sample on display in the Norfolk store plus two more versions online: <http://goo.gl/4250n5>. I think the rules as written are fair and enforceable.
11. Bring on the chickens!!
12. Living once in Key West the roosters wake the whole town up. As long as there are no roosters I favor the keeping of chickens as long as the no rooster portion is enforced.
13. As long as the chickens and property are kept up, than it should be no bodies business what they have or do on their property.
14. Mr. Testerman did a great job with this draft. I feel it is fair and unobtrusive, and should meet the approval of most residents.
15. Not a problem. Sounds like a really interesting way to enrich the town.

Maybe:

1. I think the town has more important things to worry about than chickens, but if allowing chickens will stop the squawking (pun intended) of those who need to have something to complain about, please move forward with the chicken study. Please do not hire an outside consultant or use town funds to study this somewhat frivolous issue.
2. Do they have to be full-time resident, or could part-timer do it and have someone come in to check-in/care for chickens when homeowner isn't here? What would coop requirements be? Would fence around property be required? How many chickens? Would people be required to sell eggs according to Dept of Health regulations or would we turn a blind eye and just let them sell if they want to? If they sell, will they be allowed to put sign on property? Will you have to have business license if you sell eggs? Will you be allowed to do by right or will you have to have permit/zoning approval? Will there be only so many permits/total number of chickens allowed within Town limits? I support no roosters. I'd like more information on my questions before I can make an informed decision.
3. I have two concerns: there would be run off into the Bay from badly managed chicken coops. Also, that people would let the chickens run loose. Absolutely, no roosters.

Not in Support:

1. I can't believe that you would allow such a dirty and loud animal in the city where the houses are so close together.
2. My greatest concerns are; (1) The burden of code enforcement for keeping chickens given that the average lot within town is less than 5000 square feet. (2) Code enforcement should be consistent for the common good of the community. Bay Creek residents cannot keep

chickens and neither should property owners within town. (3) The effect that chicken keeping would have on Tourism.

3. Go to Key West and check out the chicken problems there.
4. Salmonella could be a problem with chickens kept in an area with the density in the Historic District not to mention the odor from the waste from the chickens. In addition over time chicken coops will be maintained to varying standards some very good and some very poorly. This could turn out to be a real liability to the reputation of the town. The state of these coops, I am concerned could turn into an enforcement nightmare.
5. I feel that chickens should not be allowed in the town of Cape Charles. We start allowing people to have chickens, next it will be something else. I know that people have said that this is a little Mayberry and want to get the town to be their ideal place since moving here. I am sure that the areas where some of them moved from did not allow chickens. Please do not allow this town to become rural as it is out of town. For people who want chickens, I would suggest that they lease some property out of town in order to raise their chickens. Unfortunately, many of the decisions about this town are made on personal agendas. Plus people moving here realize that most of the things they ask for they usually get. This survey is unfair because many of the locals do not have a computer to complete such a survey. It is always said that people can go to the library. They should not have to do this when others have computers that they are using all the time. No! No! No!
6. Chickens don't belong in a town where houses are almost touching each other. And if they are not almost touching, the distance provided by property lines aren't far greater. Noise, smell and even loud conversations can travel far enough to be annoying. There are people who let their dogs run free or never clean up after them while in public. Chickens don't belong because raising them is not cost effective in an urban setting, it requires additional responsibility on a daily basis from the owner (I hope the owner is not the one who let's Fido run freely) and it imposes the ill-behaviors of a few so that all the citizens must endure the consequences. Chickens shouldn't be on the list of priorities for the Town of Cape Charles.
7. I'm concerned about vermin and predators being attracted by the chickens. I believe chickens should be kept on farms or larger plots of land than we typically see in the Historic District.
8. Chickens are not pets. They're poultry. Honestly, the town is already overrun with stray cats; I wish the town would address that problem before it permits more critters. Thanks for the survey. Nice to have input.
9. This is a terrible idea. Chickens are noisy and should not be allowed in a residential town like CC where the houses are in such close proximity to one another. They would disrupt the quiet enjoyment of the property owner's homes.
10. My opinion is if you wish to have barnyard animals live on a farm.
11. Chickens and other farm animals do not belong within city limits, which is what most towns follow. This is not Green Acres but a beach community!
12. I don't understand your questions, why it matters whether we "live" (supposing full time) or whether we simply own property (without a house I presume) within the town limit or historic district (zoning issues? - not explained in this survey). Property owners are property owners and should have equal status whether they live within the town limits full time, part-time or simply own property. As one property & home owner in the historic district who will be directly impacted by this proposed ordinance, and affected by an abut

property owner where chickens were illegally allowed for seven months and will no doubt be affected if an ordinance is allowed, we are against this wholeheartedly. There is an abundance of rural land in Northampton County where farms and associated animals are allowed. The founding fathers purposely made accommodations to not allow such activities within the Town of Cape Charles for those seeking an oasis from farm activity as evidenced by the current zoning ordinance. We the people of this town chose to live in a "TOWN" and not on or next to a farm and being exposed to farm animals and farm activities. Please keep Cape Charles a TOWN and don't turn it into a FARM!! What will you be asked to consider next pigs and then goats? Please, no Chickens!

13. Houses in Cape Charles are built on small lots. The noise & smell of chickens cannot be buffered. Even hens make noise. In many cases houses in town are very close together limiting air flow. People cannot be trusted to properly keep the chicken pens clean. If they don't the town would do nothing about it. We have ordinances now covering building maintenance & trash that are not enforced. One cannot expect any different if chickens were allowed.
14. I am strongly opposed to the maintenance of chickens within the historic district where I own my home. I believe the chickens pose both a health and noise problem. Additionally, I think livestock in town is inconsistent with the overall peace and enjoyment of living in a residential historic town.
15. This is a community with many vacation rentals, second homeowners and full time residents with very close proximity from house to house, especially within the town limits. We have enough challenges with owner's lack of responsibility with dogs and other pets. We have a significant population of feral cats in town. I do not think the potential "hobby" benefit of a small group that wishes to partake in the latest "fad" outweighs the potential (and probable) negative impact for others. If you are renting a beach house for a week - do you really want to be next door to farm animals? Not the right environment. Nothing against chickens or fresh eggs. It's usually the negligent owners cause issues. We already hear the neighbor's dogs constantly barking, running loose and their fecal matter on our property. We have feral cats invading our deck and backyard. While chickens are relatively quiet (I grew up on a farm) they do require proper housing & husbandry to keep odor away from close neighbors. Please - not another animal to deal with. Thank you!

Planning Commission Staff Report

From: Rob Testerman

Date: June 4, 2014

Item: 5B – Flood Plain Ordinance

Attachments: Model Flood Plain Ordinance, suggested higher standards

Background

As the Planning Commission is aware, FEMA is currently in the process of updating the Flood Insurance Rate Maps. In addition to this, the Town is required to update its Flood Plain Ordinance, within six months of adoption of the FIRMs. We have been provided with the model flood plain ordinance. This ordinance lays out the NFIP minimum requirements. As a Community Rating System (CRS) community, we are eligible for credit under the CRS program for enacting more restrictive floodplain management programs. The CRS provides insurance premium discounts to policyholders in the community.

After preparing the Floodplain Ordinance, we must send it to the Department of Conservation and Recreation for review, prior to a public hearing. We should aim to send it to DCR prior to September.

Discussion

As a CRS community, we are encouraged to go above and beyond the minimum requirements put forward in the model ordinance. Many of the “higher standards” provided are not necessarily applicable to locations within Cape Charles, as most of the Town has been removed from the flood zones.

One suggestion that has been given is to increase the freeboard requirements. The minimum requirements regarding freeboard state that in new construction, the lowest floor shall be elevated to or above the base flood elevation level. However, it is recommended that we require that the lowest floor to be elevated one foot or more above the base flood level.

Requiring the lowest floor to be elevated to one to two feet above base flood level would be reasonable. Given that the majority of new home construction includes a crawl space, a freeboard requirement of one to two feet would typically not affect property owners wishing to build a new home.

Additionally, staff has included the higher standard for Floodway Determination, in Section 3.1 A 3 of the model ordinance. Code Enforcement Official, Jeb Brady, has also recommended that we require that mechanical units such as air conditioner units be required to be elevated, staff is currently working on developing language for this addition.

Recommendation

Staff recommends that the Planning Commission review the model floodplain ordinance (staff edits bolded and italicized), as well as the attached “higher standards.” Determine if the suggested additions are acceptable, and discuss if any additional requirements are needed.

ARTICLE VI. Flood Plain District

AN ORDINANCE AMENDING **ARTICLE VI**, THE ZONING ORDINANCE OF **CAPE CHARLES**, VIRGINIA, BY ESTABLISHING FLOODPLAIN DISTRICTS, BY REQUIRING THE ISSUANCE OF PERMITS FOR DEVELOPMENT, AND BY PROVIDING FACTORS AND CONDITIONS FOR VARIANCES TO THE TERMS OF THE ORDINANCES.

BE IT ENACTED AND ORDAINED BY THE **TOWN OF CAPE CHARLES**, Virginia, as follows:

ARTICLE I - GENERAL PROVISIONS

Section 1.1 – Statutory Authorization and Purpose [44 CFR 59.22(a)(2)]

This ordinance is adopted pursuant to the authority granted to localities by Va. Code § 10.1-600 et. seq.

The purpose of these provisions is to prevent: the loss of life and property, the creation of health and safety hazards, the disruption of commerce and governmental services, the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base by

- A. regulating uses, activities, and development which, alone or in combination with other existing or future uses, activities, and development, will cause unacceptable increases in flood heights, velocities, and frequencies;
- B. restricting or prohibiting certain uses, activities, and development from locating within districts subject to flooding;
- C. requiring all those uses, activities, and developments that do occur in flood-prone districts to be protected and/or flood-proofed against flooding and flood damage; and,
- D. protecting individuals from buying land and structures which are unsuited for intended purposes because of flood hazards.

Section 1.2 - Applicability

These provisions shall apply to all privately and publicly owned lands within the jurisdiction of **the Town of Cape Charles** and identified as areas of special flood hazard according to the flood insurance rate map (FIRM) that is provided to the **Town of Cape Charles** by FEMA.

Section 1.3 - Compliance and Liability

- A. No land shall hereafter be developed and no structure shall be located, relocated,

constructed, reconstructed, enlarged, or structurally altered except in full compliance with the terms and provisions of this ordinance and any other applicable ordinances and regulations which apply to uses within the jurisdiction of this ordinance.

- B. The degree of flood protection sought by the provisions of this ordinance is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study, but does not imply total flood protection. Larger floods may occur on rare occasions. Flood heights may be increased by man-made or natural causes, such as ice jams and bridge openings restricted by debris. This ordinance does not imply that districts outside the floodplain district or land uses permitted within such district will be free from flooding or flood damages.
- C. This ordinance shall not create liability on the part of **the Town of Cape Charles** or any officer or employee thereof for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made thereunder.

Section 1.4 – Records [44 CFR 59.22(a)(9)(iii)]

Records of actions associated with administering this ordinance shall be kept on file and maintained by the Floodplain Administrator.

Section 1.5 - Abrogation and Greater Restrictions [44 CFR 60.1(b)]

This ordinance supersedes any ordinance currently in effect in flood-prone districts. Any ordinance, however, shall remain in full force and effect to the extent that its provisions are more restrictive.

Section 1.6 - Severability

If any section, subsection, paragraph, sentence, clause, or phrase of this ordinance shall be declared invalid for any reason whatever, such decision shall not affect the remaining portions of this ordinance. The remaining portions shall remain in full force and effect; and for this purpose, the provisions of this ordinance are hereby declared to be severable.

Section 1.7 - Penalty for Violations [44 CFR 60.2(e)]

Any person who fails to comply with any of the requirements or provisions of this article or directions of the director of planning or any authorized employee of the **Town of Cape Charles** shall be guilty of the appropriate violation and subject to the penalties therefore.

The VA USBC addresses building code violations and the associated penalties in Section 104 and Section 115. Violations and associated penalties of the Zoning Ordinance of **the Town of Cape Charles** are addressed in Section **2** of the Zoning Ordinance.

In addition to the above penalties, all other actions are hereby reserved, including an action in equity for the proper enforcement of this article. The imposition of a fine or penalty for any violation of, or noncompliance with, this article shall not excuse the violation or noncompliance or permit

it to continue; and all such persons shall be required to correct or remedy such violations within a reasonable time. Any structure constructed, reconstructed, enlarged, altered or relocated in noncompliance with this article may be declared by the **Town of Cape Charles** to be a public nuisance and abatable as such. Flood insurance may be withheld from structures constructed in violation of this article.

ARTICLE II - ADMINISTRATION

Section 2.1 - Designation of the Floodplain Administrator [44 CFR 59.22(b)]

The **Zoning Administrator** is hereby appointed to administer and implement these regulations and is referred to herein as the Floodplain Administrator. The Floodplain Administrator may:

- (A) Do the work themselves. In the absence of a designated Floodplain Administrator, the duties are conducted by the **Town of Cape Charles** chief executive officer.
- (B) Delegate duties and responsibilities set forth in these regulations to qualified technical personnel, plan examiners, inspectors, and other employees.
- (C) Enter into a written agreement or written contract with another community or private sector entity to administer specific provisions of these regulations. Administration of any part of these regulations by another entity shall not relieve the community of its responsibilities pursuant to the participation requirements of the National Flood Insurance Program as set forth in the Code of Federal Regulations at 44 C.F.R. Section 59.22.

Section 2.2 - Duties and Responsibilities of the Floodplain Administrator [44 CFR 60.3]

The duties and responsibilities of the Floodplain Administrator shall include but are not limited to:

- (A) Review applications for permits to determine whether proposed activities will be located in the Special Flood Hazard Area (SFHA).
- (B) Interpret floodplain boundaries and provide available base flood elevation and flood hazard information.
- (C) Review applications to determine whether proposed activities will be reasonably safe from flooding and require new construction and substantial improvements to meet the requirements of these regulations.
- (D) Review applications to determine whether all necessary permits have been obtained from the Federal, State or local agencies from which prior or concurrent approval is required; in particular, permits from state agencies for any construction, reconstruction, repair, or alteration of a dam, reservoir, or waterway obstruction (including bridges, culverts, structures), any alteration of a watercourse, or any change of the course, current, or cross section of a stream or body of water, including any change to the 100-year frequency floodplain of free-flowing non-tidal waters of the State.
- (E) Verify that applicants proposing an alteration of a watercourse have notified adjacent communities, the Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management), and other appropriate agencies (VADEQ, USACE) and have submitted copies of such notifications to FEMA.

(F) Advise applicants for new construction or substantial improvement of structures that are located within an area of the Coastal Barrier Resources System established by the Coastal Barrier Resources Act that Federal flood insurance is not available on such structures; areas subject to this limitation are shown on Flood Insurance Rate Maps as Coastal Barrier Resource System Areas (CBRS) or Otherwise Protected Areas (OPA).

(G) Approve applications and issue permits to develop in flood hazard areas if the provisions of these regulations have been met, or disapprove applications if the provisions of these regulations have not been met.

(H) Inspect or cause to be inspected, buildings, structures, and other development for which permits have been issued to determine compliance with these regulations or to determine if non-compliance has occurred or violations have been committed.

(I) Review Elevation Certificates and require incomplete or deficient certificates to be corrected.

(J) Submit to FEMA, or require applicants to submit to FEMA, data and information necessary to maintain FIRMs, including hydrologic and hydraulic engineering analyses prepared by or for the **Town of Cape Charles**, within six months after such data and information becomes available if the analyses indicate changes in base flood elevations.

(K) Maintain and permanently keep records that are necessary for the administration of these regulations, including:

(1) Flood Insurance Studies, Flood Insurance Rate Maps (including historic studies and maps and current effective studies and maps) and Letters of Map Change; and

(2) Documentation supporting issuance and denial of permits, Elevation Certificates, documentation of the elevation (in relation to the datum on the FIRM) to which structures have been floodproofed, other required design certifications, variances, and records of enforcement actions taken to correct violations of these regulations.

(L) Enforce the provisions of these regulations, investigate violations, issue notices of violations or stop work orders, and require permit holders to take corrective action.

(M) Advise the Board of Zoning Appeals regarding the intent of these regulations and, for each application for a variance, prepare a staff report and recommendation.

(N) Administer the requirements related to proposed work on existing buildings:

1) Make determinations as to whether buildings and structures that are located in flood hazard areas and that are damaged by any cause have been substantially damaged.

(2) Make reasonable efforts to notify owners of substantially damaged structures of the need to obtain a permit to repair, rehabilitate, or reconstruct, and prohibit the non-compliant repair of substantially damaged buildings except for temporary emergency protective measures necessary to secure a property or stabilize a building or structure to prevent additional damage.

(O) Undertake, as determined appropriate by the Floodplain Administrator due to the circumstances, other actions which may include but are not limited to: issuing press releases, public service announcements, and other public information materials related to permit requests and repair of damaged structures; coordinating with other Federal, State, and local agencies to assist with substantial damage determinations; providing owners of damaged structures information related to the proper repair of damaged structures in special flood hazard areas; and assisting property owners with documentation necessary to file claims for Increased Cost of Compliance coverage under NFIP flood insurance policies.

(P) Notify the Federal Emergency Management Agency when the corporate boundaries of the **Town of Cape Charles** have been modified and:

(1) Provide a map that clearly delineates the new corporate boundaries or the new area for which the authority to regulate pursuant to these regulations has either been assumed or relinquished through annexation; and

(2) If the FIRM for any annexed area includes special flood hazard areas that have flood zones that have regulatory requirements that are not set forth in these regulations, prepare amendments to these regulations to adopt the FIRM and appropriate requirements, and submit the amendments to the governing body for adoption; such adoption shall take place at the same time as or prior to the date of annexation and a copy of the amended regulations shall be provided to Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management) and FEMA.

(Q) Upon the request of FEMA, complete and submit a report concerning participation in the NFIP which may request information regarding the number of buildings in the SFHA, number of permits issued for development in the SFHA, and number of variances issued for development in the SFHA.

(R) It is the duty of the Community Floodplain Administrator to take into account flood, mudslide and flood-related erosion hazards, to the extent that they are known, in all official actions relating to land management and use throughout the entire jurisdictional area of the Community, whether or not those hazards have been specifically delineated geographically (e.g. via mapping or surveying).

The Floodplain Administrator shall make interpretations, where needed, as to the exact location of special flood hazard areas, floodplain boundaries, and floodway boundaries. The following shall apply to the use and interpretation of FIRMs and data:

(A) Where field surveyed topography indicates that adjacent ground elevations:

(1) Are below the base flood elevation, even in areas not delineated as a special flood hazard area on a FIRM, the area shall be considered as special flood hazard area and subject to the requirements of these regulations;

(2) Are above the base flood elevation, the area shall be regulated as special flood hazard area unless the applicant obtains a Letter of Map Change that removes the area from the SFHA.

(B) In FEMA-identified special flood hazard areas where base flood elevation and floodway data have not been identified and in areas where FEMA has not identified SFHAs, any other flood hazard data available from a Federal, State, or other source shall be reviewed and reasonably used.

(C) Base flood elevations and designated floodway boundaries on FIRMs and in FISs shall take precedence over base flood elevations and floodway boundaries by any other sources if such sources show reduced floodway widths and/or lower base flood elevations.

(D) Other sources of data shall be reasonably used if such sources show increased base flood elevations and/or larger floodway areas than are shown on FIRMs and in FISs.

(E) If a Preliminary Flood Insurance Rate Map and/or a Preliminary Flood Insurance Study has been provided by FEMA:

(1) Upon the issuance of a Letter of Final Determination by FEMA, the preliminary flood hazard data shall be used and shall replace the flood hazard data previously provided from FEMA for the purposes of administering these regulations.

(2) Prior to the issuance of a Letter of Final Determination by FEMA, the use of preliminary flood hazard data shall be deemed the best available data pursuant to Section 1.5(C) and used where no base flood elevations and/or floodway areas are provided on the effective FIRM.

(3) Prior to issuance of a Letter of Final Determination by FEMA, the use of preliminary flood hazard data is permitted where the preliminary base flood elevations or floodway areas exceed the base flood elevations and/or designated floodway widths in existing flood hazard data provided by FEMA. Such preliminary data may be subject to change and/or appeal to FEMA.

Section 2.4 - Jurisdictional Boundary Changes [44 CFR 59.22, 65.3]

The County floodplain ordinance in effect on the date of annexation shall remain in effect and shall be enforced by the municipality for all annexed areas until the municipality adopts and enforces an ordinance which meets the requirements for participation in the National Flood Insurance Program. Municipalities with existing floodplain ordinances shall pass a resolution acknowledging and accepting responsibility for enforcing floodplain ordinance standards prior to annexation of any area containing identified flood hazards. If the FIRM for any annexed area includes special flood hazard areas that have flood zones that have regulatory requirements that are not set forth in these regulations, prepare amendments to these regulations to adopt the FIRM and appropriate requirements, and submit the amendments to the governing body for adoption; such adoption shall take place at the same time as or prior to the date of annexation and a copy of the amended regulations shall be provided to Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management) and FEMA.

In accordance with the Code of Federal Regulations, Title 44 Subpart (B) Section 59.22 (a) (9) (v) all NFIP participating communities must notify the Federal Insurance Administration and optionally the State Coordinating Office in writing whenever the boundaries of the community have been modified by annexation or the community has otherwise assumed or no longer has authority to adopt and enforce floodplain management regulations for a particular area.

In order that all Flood Insurance Rate Maps accurately represent the community's boundaries, a copy of a map of the community suitable for reproduction, clearly delineating the new corporate limits or new area for which the community has assumed or relinquished floodplain management regulatory authority must be included with the notification.

Section 2.5 - District Boundary Changes

The delineation of any of the Floodplain Districts may be revised by the **Town of Cape Charles** where natural or man-made changes have occurred and/or where more detailed studies have been conducted or undertaken by the U. S. Army Corps of Engineers or other qualified agency, or an individual documents the need for such change. However, prior to any such change, approval must be obtained from the Federal Emergency Management Agency.

Section 2.6 - Interpretation of District Boundaries

Initial interpretations of the boundaries of the Floodplain Districts shall be made by the Zoning Officer. Should a dispute arise concerning the boundaries of any of the Districts, the Board of Zoning Appeals shall make the necessary determination. The person questioning or contesting the location of the District boundary shall be given a reasonable opportunity to present his case to the Board and to submit his own technical evidence if he so desires.

Section 2.7 – Submitting Technical Data [44 CFR 65.3]

A community's base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six months after the date

such information becomes available, a community shall notify the Federal Emergency Management Agency of the changes by submitting technical or scientific data. Such a submission is necessary so that upon confirmation of those physical changes affecting flooding conditions, risk premium rates and flood plain management requirements will be based upon current data.

Section 2.8 – Letters of Map Revision

When development in the floodplain causes a change in the base flood elevation, the applicant, including state agencies, must notify FEMA by applying for a Conditional Letter of Map Revision or a Letter of Map Revision.

Examples:

1. Any development that causes a rise in the base flood elevations within the floodway.
2. Any development occurring in Zones A1-30 and AE without a designated floodway, which will cause a rise of more than one foot in the base flood elevation.
3. Alteration or relocation of a stream (including but not limited to installing culverts and bridges) *44 Code of Federal Regulations §65.3 and §65.6(a)(12)*

ARTICLE III - ESTABLISHMENT OF ZONING DISTRICTS

Section 3.1 - Description of Special Flood Hazard Districts [44 CFR 59.1, 60.3]

A. Basis of Districts

The various special flood hazard districts shall include the SFHAs. The basis for the delineation of these districts shall be the FIS and the FIRM for **the Town of Cape Charles**, prepared by the Federal Emergency Management Agency, Federal Insurance Administration, dated _____, and any subsequent revisions or amendments thereto.

The **Town of Cape Charles** may identify and regulate local flood hazard or ponding areas that are not delineated on the FIRM. These areas may be delineated on a “Local Flood Hazard Map” using best available topographic data and locally derived information such as flood of record, historic high water marks or approximate study methodologies.

The boundaries of the SFHA Districts are established as shown on the FIRM which is declared to be a part of this ordinance and which shall be kept on file at the **Town of Cape Charles** offices.

1. The **Floodway District** is in an **AE Zone** and is delineated, for purposes of this ordinance, using the criterion that certain areas within the floodplain must be capable of carrying the waters of the one percent annual chance flood without increasing the water surface elevation of that flood more than one (1) foot at any point. **The areas included in this District are specifically defined in Table _____ of the above-referenced FIS and shown on the accompanying FIRM.**

The following provisions shall apply within the Floodway District of an AE zone [44 CFR 60.3(d)]:

- a. Within any floodway area, no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted unless it has been demonstrated through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that the proposed encroachment will not result in any increase in flood levels within the community during the occurrence of the base flood discharge. Hydrologic and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used correctly reflect currently-accepted technical concepts. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the Floodplain Administrator.

Development activities which increase the water surface elevation of the base flood may be allowed, provided that the applicant first applies – with the **Town of Cape Charles’** endorsement – for a Conditional Letter of Map Revision (CLOMR), and receives the approval of the Federal Emergency Management Agency.

If Article III Section 3.1 A 1 a is satisfied, all new construction and substantial

improvements shall comply with all applicable flood hazard reduction provisions of Article 4.

b. The placement of manufactured homes (mobile homes) is prohibited, except in an existing manufactured home (mobile home) park or subdivision. A replacement manufactured home may be placed on a lot in an existing manufactured home park or subdivision provided the anchoring, elevation, and encroachment standards are met.

2. The **AE, or AH Zones** on the FIRM accompanying the FIS shall be those areas for which one-percent annual chance flood elevations have been provided and the floodway has **not** been delineated. The following provisions shall apply within an AE or AH zone [44 CFR 60.3(c)]:

Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within the areas of special flood hazard, designated as Zones A1-30 and AE or AH on the FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the **Town of Cape Charles**.

Development activities in Zones A1-30 and AE or AH, on the **Town of Cape Charles'** FIRM which increase the water surface elevation of the base flood by more than one foot may be allowed, provided that the applicant first applies – with the **Town of Cape Charles'** endorsement – for a Conditional Letter of Map Revision, and receives the approval of the Federal Emergency Management Agency.

3. The **A Zone** on the FIRM accompanying the FIS shall be those areas for which no detailed flood profiles or elevations are provided, but the one percent annual chance floodplain boundary has been approximated. For these areas, the following provisions shall apply [44 CFR 60.3(b)]:

The Approximated Floodplain District shall be that floodplain area for which no detailed flood profiles or elevations are provided, but where a one hundred (100)-year floodplain boundary has been approximated. Such areas are shown as Zone A on the maps accompanying the FIS. For these areas, the base flood elevations and floodway information from federal, state, and other acceptable sources shall be used, when available. Where the specific one percent annual chance flood elevation cannot be determined for this area using other sources of data, such as the U. S. Army Corps of Engineers Floodplain Information Reports, U. S. Geological Survey Flood-Prone Quadrangles, etc., then the applicant for the proposed use, development and/or activity shall determine this base flood elevation. For development proposed in the approximate floodplain the applicant must use technical methods that correctly reflect currently accepted non-detailed technical concepts, such as point on boundary, high water marks, or detailed methodologies hydrologic and hydraulic analyses. Studies,

analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the Floodplain Administrator.

The Floodplain Administrator reserves the right to require a hydrologic and hydraulic analysis for any development. When such base flood elevation data is utilized, the lowest floor shall be elevated to **one foot or greater** above the base flood level.

During the permitting process, the Floodplain Administrator shall obtain:

- 1) The elevation of the lowest floor (including the basement) of all new and substantially improved structures; and,
- 2) if the structure has been flood-proofed in accordance with the requirements of this article, the elevation (in relation to mean sea level) to which the structure has been flood-proofed.

Base flood elevation data shall be obtained from other sources or developed using detailed methodologies comparable to those contained in a FIS for subdivision proposals and other proposed development proposals (including manufactured home parks and subdivisions) that exceed fifty lots or five acres, whichever is the lesser.

Prior to any new development in an approximate A zone, the floodway must be determined through a hydrologic study by a certified engineer using currently accepted methods. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the Floodplain Administrator.

4. The **AO Zone** on the FIRM accompanying the FIS shall be those areas of shallow flooding identified as AO on the FIRM. For these areas, the following provisions shall apply [44 CFR 60.3(c)]:
 - a. All new construction and substantial improvements of residential structures shall have the lowest floor, including basement, elevated to or above the flood depth specified on the FIRM, above the highest adjacent grade at least as high as the depth number specified in feet on the FIRM. If no flood depth number is specified, the lowest floor, including basement, shall be elevated no less than two feet above the highest adjacent grade.
 - b. All new construction and substantial improvements of non-residential structures shall
 - 1) have the lowest floor, including basement, elevated to or above the flood depth specified on the FIRM, above the highest adjacent grade at least as high as the depth number specified in feet on the FIRM. If no flood depth number is specified, the lowest floor, including basement, shall be elevated at least two feet above the highest adjacent grade; or,

- 2) together with attendant utility and sanitary facilities be completely flood-proofed to the specified flood level so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.
 - c. Adequate drainage paths around structures on slopes shall be provided to guide floodwaters around and away from proposed structures.
5. The **Coastal A Zone** shall be those areas, as defined by the VA USBC, that are subject to wave heights between 1.5 feet and 3 feet, and identified on the FIRM as areas of **Limits of Moderate Wave Action (LiMWA)**. For these areas, the following provisions shall apply:

Buildings and structures within this zone shall have the lowest floor elevated to or above the base flood elevation plus one foot of freeboard, and must comply with the provisions in Article III, Section 3.1 A 2 and Article IV, Sections 4.2 and 4.3.

6. The **VE or V Zones** on FIRMs accompanying the FIS shall be those areas that are known as Coastal High Hazard areas, extending from offshore to the inland limit of a primary frontal dune along an open coast. For these areas, the following provisions shall apply [44 CFR 60.3(e)]:
- a. All new construction and substantial improvements in Zones V and VE (V if base flood elevation is available) shall be elevated on pilings or columns so that:
 - 1) The bottom of the lowest horizontal structural member of the lowest floor (excluding the pilings or columns) is elevated to **one foot or greater** above the base flood level if the lowest horizontal structural member is parallel to the direction of wave approach or elevated at least one foot above the base flood level if the lowest horizontal structural member is perpendicular to the direction of wave approach; and,
 - 2) The pile or column foundation and structure attached thereto is anchored to resist flotation, collapse, and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Wind and water loading values shall each have a one percent chance of being equaled or exceeded in any given year (one-percent annual chance).
 - b. A registered professional engineer or architect shall develop or review the structural design, specifications and plans for the construction, and shall certify that the design and methods of construction to be used are in accordance with accepted standards of practice for meeting the provisions of Article III, Section A 6 a.
 - c. The Floodplain Administrator shall obtain the elevation (in relation to mean sea level) of the bottom of the lowest horizontal structural member of the lowest floor

(excluding pilings and columns) of all new and substantially improved structures in Zones V and VE. The Floodplain Management Administrator shall maintain a record of all such information.

- d. All new construction shall be located landward of the reach of mean high tide.
- e. All new construction and substantial improvements shall have the space below the lowest floor either free of obstruction or constructed with nonsupporting breakaway walls, open wood-lattice work, or insect screening intended to collapse under wind and water loads without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system. For the purpose of this section, a breakaway wall shall have a design safe loading resistance of not less than 10 and no more than 20 pounds per square foot. Use of breakaway walls which exceed a design safe loading resistance of 20 pounds per square foot (either by design or when so required by local codes) may be permitted only if a registered professional engineer or architect certifies that the designs proposed meet the following conditions:
 - 1) Breakaway wall collapse shall result from water load less than that which would occur during the base flood; and
 - 2) The elevated portion of the building and supporting foundation system shall not be subject to collapse, displacement, or other structural damage due to the effects of wind and water loads acting simultaneously on all building components (structural and nonstructural). Maximum wind and water loading values to be used in this determination shall each have a one percent chance of being equalled or exceeded in any given year.
- f. The enclosed space below the lowest floor shall be used solely for parking of vehicles, building access, or storage. Such space shall not be partitioned into multiple rooms, temperature-controlled, or used for human habitation.
- g. The use of fill for structural support of buildings is prohibited. When non-structural fill is proposed in a coastal high hazard area, appropriate engineering analyses shall be conducted to evaluate the impacts of the fill prior to issuance of a development permit.
- h. The man-made alteration of sand dunes, which would increase potential flood damage, is prohibited.

Section 3.2 - Overlay Concept

The Floodplain Districts described above shall be overlays to the existing underlying districts as shown on the Official Zoning Ordinance Map, and as such, the provisions for the floodplain districts shall serve as a supplement to the underlying district provisions.

If there is any conflict between the provisions or requirements of the Floodplain Districts and those of any underlying district, the more restrictive provisions and/or those pertaining to the floodplain districts shall apply.

In the event any provision concerning a Floodplain District is declared inapplicable as a result of any legislative or administrative actions or judicial decision, the basic underlying provisions shall remain applicable.

ARTICLE IV - DISTRICT PROVISIONS [44 CFR 59.22, 60.2, 60.3]

Section 4.1 – Permit and Application Requirements

A. Permit Requirement

All uses, activities, and development occurring within any floodplain district, including placement of manufactured homes, shall be undertaken only upon the issuance of a zoning permit. Such development shall be undertaken only in strict compliance with the provisions of this Ordinance and with all other applicable codes and ordinances, as amended, such as the Virginia Uniform Statewide Building Code (VA USBC) and the **Town of Cape Charles** Subdivision Regulations. Prior to the issuance of any such permit, the Floodplain Administrator shall require all applications to include compliance with all applicable state and federal laws and shall review all sites to assure they are reasonably safe from flooding. Under no circumstances shall any use, activity, and/or development adversely affect the capacity of the channels or floodways of any watercourse, drainage ditch, or any other drainage facility or system.

B. Site Plans and Permit Applications

All applications for development within any floodplain district and all building permits issued for the floodplain shall incorporate the following information:

1. The elevation of the Base Flood at the site.
2. The elevation of the lowest floor (including basement) or, in V zones, the lowest horizontal structural member.
3. For structures to be flood-proofed (non-residential only), the elevation to which the structure will be flood-proofed.
4. Topographic information showing existing and proposed ground elevations.

Section 4.2 - General Standards

The following provisions shall apply to all permits:

- A. New construction and substantial improvements shall be according to the VA USBC, and anchored to prevent flotation, collapse or lateral movement of the structure.

- B. Manufactured homes shall be anchored to prevent flotation, collapse, or lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This standard shall be in addition to and consistent with applicable state anchoring requirements for resisting wind forces.
- C. New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.
- D. New construction or substantial improvements shall be constructed by methods and practices that minimize flood damage.
- E. Electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities, including duct work, shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.
- F. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system.
- G. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters.
- H. On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.

In addition to provisions A – H above, in all special flood hazard areas, the additional provisions shall apply:

- I. Prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within this jurisdiction a permit shall be obtained from the U. S. Corps of Engineers, the Virginia Department of Environmental Quality, and the Virginia Marine Resources Commission (a joint permit application is available from any of these organizations). Furthermore, in riverine areas, notification of the proposal shall be given by the applicant to all affected adjacent jurisdictions, the Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management), other required agencies, and the Federal Emergency Management Agency.
- J. The flood carrying capacity within an altered or relocated portion of any watercourse shall be maintained.

Section 4.3 - Elevation and Construction Standards [44 CFR 60.3]

In all identified flood hazard areas where base flood elevations have been provided in the FIS or generated by a certified professional in accordance with Section 3.1 A 3, the following provisions shall apply:

A. Residential Construction

New construction or substantial improvement of any residential structure (including manufactured homes) in Zones A1-30, AE, AH and A with detailed base flood elevations shall have the lowest floor, including basement, elevated to **one foot or greater** above the base flood level. **Mechanical units (AC/HVAC) must be located x feet above ground elevation (specific language to be determined).**

B. Non-Residential Construction

New construction or substantial improvement of any commercial, industrial, or non-residential building (or manufactured home) shall have the lowest floor, including basement, elevated to **one foot or greater** above the base flood level. Buildings located in all A1-30, AE, and AH zones may be flood-proofed in lieu of being elevated provided that all areas of the building components below the elevation corresponding to the BFE plus one foot are water tight with walls substantially impermeable to the passage of water, and use structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effect of buoyancy. A registered professional engineer or architect shall certify that the standards of this subsection are satisfied. Such certification, including the specific elevation (in relation to mean sea level) to which such structures are floodproofed, shall be maintained by (title of community administrator).

C. Space Below the Lowest Floor

In zones A, AE, AH, AO, and A1-A30, fully enclosed areas, of new construction or substantially improved structures, which are below the regulatory flood protection elevation shall:

1. not be designed or used for human habitation, but shall only be used for parking of vehicles, building access, or limited storage of maintenance equipment used in connection with the premises. Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door) or limited storage of maintenance equipment (standard exterior door), or entry to the living area (stairway or elevator).
2. be constructed entirely of flood resistant materials below the regulatory flood protection elevation;
3. include measures to automatically equalize hydrostatic flood forces on walls by allowing for the entry and exit of floodwaters. To meet this requirement, the openings must either be certified by a professional engineer or architect or meet the following minimum design criteria:
 - a. Provide a minimum of two openings on different sides of each enclosed area subject to flooding.

- b. The total net area of all openings must be at least one (1) square inch for each square foot of enclosed area subject to flooding.
- c. If a building has more than one enclosed area, each area must have openings to allow floodwaters to automatically enter and exit.
- d. The bottom of all required openings shall be no higher than one (1) foot above the adjacent grade.
- e. Openings may be equipped with screens, louvers, or other opening coverings or devices, provided they permit the automatic flow of floodwaters in both directions.
- f. Foundation enclosures made of flexible skirting are not considered enclosures for regulatory purposes, and, therefore, do not require openings. Masonry or wood underpinning, regardless of structural status, is considered an enclosure and requires openings as outlined above.

g. Electrical panels are not permitted in space below the lowest floor.

D. Standards for Manufactured Homes and Recreational Vehicles

- 1. All manufactured homes placed, or substantially improved, on individual lots or parcels, must meet all the requirements for new construction, including the elevation and anchoring requirements in Article 4, section 4.2 and section 4.3.
- 2. All recreational vehicles placed on sites must either
 - a. be on the site for fewer than 180 consecutive days, be fully licensed and ready for highway use (a recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices and has no permanently attached additions); or
 - b. meet all the requirements for manufactured homes in Article 4.3(D)(1).

Section 4.4 - Standards for Subdivision Proposals

- A. All subdivision proposals shall be consistent with the need to minimize flood damage;
- B. All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage;
- C. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood hazards, and

- D. Base flood elevation data shall be obtained from other sources or developed using detailed methodologies, hydraulic and hydrologic analysis, comparable to those contained in a Flood Insurance Study for subdivision proposals and other proposed development proposals (including manufactured home parks and subdivisions) that exceed fifty lots or five acres, whichever is the lesser.

ARTICLE V – EXISTING STRUCTURES IN FLOODPLAIN AREAS

A structure or use of a structure or premises which lawfully existed before the enactment of these provisions, but which is not in conformity with these provisions, may be continued subject to the following conditions:

- A. Existing structures in the Floodway Area shall not be expanded or enlarged unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practices that the proposed expansion would not result in any increase in the base flood elevation.
- B. Any modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use located in any floodplain areas to an extent or amount of less than fifty (50) percent of its market value shall conform to the VA USBC.
- C. The modification, alteration, repair, reconstruction, or improvement of any kind to a structure and/or use, regardless of its location in a floodplain area to an extent or amount of fifty (50) percent or more of its market value shall be undertaken only in full compliance with this ordinance and shall require the entire structure to conform to the VA USBC.

ARTICLE VI - VARIANCES: FACTORS TO BE CONSIDERED [44 CFR 60.6]

Variations shall be issued only upon (i) a showing of good and sufficient cause, (ii) after the Board of Zoning Appeals has determined that failure to grant the variance would result in exceptional hardship to the applicant, and (iii) after the Board of Zoning Appeals has determined that the granting of such variance will not result in (a) unacceptable or prohibited increases in flood heights, (b) additional threats to public safety, (c) extraordinary public expense; and will not (d) create nuisances, (e) cause fraud or victimization of the public, or (f) conflict with local laws or ordinances.

While the granting of variances generally is limited to a lot size less than one-half acre, deviations from that limitation may occur. However, as the lot size increases beyond one-half acre, the technical justification required for issuing a variance increases. Variations may be issued by the Board of Zoning Appeals for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, in conformance with the provisions of this section.

Variations may be issued for new construction and substantial improvements and for other development necessary for the conduct of a functionally dependent use provided that the criteria

of this section are met, and the structure or other development is protected by methods that minimize flood damages during the base flood and create no additional threats to public safety.

In passing upon applications for variances, the Board of Zoning Appeals shall satisfy all relevant factors and procedures specified in other sections of the zoning ordinance and consider the following additional factors:

- A. The danger to life and property due to increased flood heights or velocities caused by encroachments. No variance shall be granted for any proposed use, development, or activity within any Floodway District that will cause any increase in the one hundred (100)-year flood elevation.
- B. The danger that materials may be swept on to other lands or downstream to the injury of others.
- C. The proposed water supply and sanitation systems and the ability of these systems to prevent disease, contamination, and unsanitary conditions.
- D. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners.
- E. The importance of the services provided by the proposed facility to the community.
- F. The requirements of the facility for a waterfront location.
- G. The availability of alternative locations not subject to flooding for the proposed use.
- H. The compatibility of the proposed use with existing development and development anticipated in the foreseeable future.
- I. The relationship of the proposed use to the comprehensive plan and floodplain management program for the area.
- J. The safety of access by ordinary and emergency vehicles to the property in time of flood.
- K. The expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters expected at the site.
- L. The historic nature of a structure. Variances for repair or rehabilitation of historic structures may be granted upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.
- M. Such other factors which are relevant to the purposes of this ordinance.

The Board of Zoning Appeals may refer any application and accompanying documentation pertaining to any request for a variance to any engineer or other qualified person or agency for technical assistance in evaluating the proposed project in relation to flood heights and velocities, and the adequacy of the plans for flood protection and other related matters.

Variations shall be issued only after the Board of Zoning Appeals has determined that the granting of such will not result in (a) unacceptable or prohibited increases in flood heights, (b) additional threats to public safety, (c) extraordinary public expense; and will not (d) create nuisances, (e) cause fraud or victimization of the public, or (f) conflict with local laws or ordinances.

Variations shall be issued only after the Board of Zoning Appeals has determined that the variance will be the minimum required to provide relief.

The Board of Zoning Appeals shall notify the applicant for a variance, in writing that the issuance of a variance to construct a structure below the one hundred (100)-year flood elevation (a) increases the risks to life and property and (b) will result in increased premium rates for flood insurance.

A record shall be maintained of the above notification as well as all variance actions, including justification for the issuance of the variations. Any variations that are issued shall be noted in the annual or biennial report submitted to the Federal Insurance Administrator.

GLOSSARY [44 CFR 59.1]

- A. Appurtenant or accessory structure - Accessory structures not to exceed 200 sq. ft.
- B. Base flood - The flood having a one percent chance of being equaled or exceeded in any given year.
- C. Base flood elevation - The Federal Emergency Management Agency designated one percent annual chance water surface elevation and the elevation determined per Section 4.6. The water surface elevation of the base flood in relation to the datum specified on the community's Flood Insurance Rate Map. For the purposes of this ordinance, the base flood is one hundred (100) year flood or 1% annual chance flood.
- D. Basement - Any area of the building having its floor sub-grade (below ground level) on all sides.
- E. Board of Zoning Appeals - The board appointed to review appeals made by individuals with regard to decisions of the Zoning Administrator in the interpretation of this ordinance.
- F. Coastal A Zone - Flood hazard areas that have been delineated as subject to wave heights between 1.5 feet and 3 feet.
- G. Development - Any man-made change to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.
- H. Elevated building - A non-basement building built to have the lowest floor elevated above the ground level by means of solid foundation perimeter walls, pilings, or columns (posts and piers).
- I. Encroachment - The advance or infringement of uses, plant growth, fill, excavation, buildings, permanent structures or development into a floodplain, which may impede or alter the flow capacity of a floodplain.
- J. Existing construction - structures for which the "start of construction" commenced before the effective date of the FIRM or before January 1, 1975 for FIRMs effective before that date. "Existing construction" may also be referred to as "existing structures."
- K. Flood or flooding -
 - 1. A general or temporary condition of partial or complete inundation of normally dry land areas from
 - a. the overflow of inland or tidal waters; or,
 - b. the unusual and rapid accumulation or runoff of surface waters from any source.
 - c. mudflows which are proximately caused by flooding as defined in paragraph (1)(b) of this definition and are akin to a river of liquid and flowing mud on the

surfaces of normally dry land areas, as when earth is carried by a current of water and deposited along the path of the current.

2. The collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding as defined in paragraph 1 (a) of this definition.
- L. Flood Insurance Rate Map (FIRM) - an official map of a community, on which the Federal Emergency Management Agency has delineated both the special hazard areas and the risk premium zones applicable to the community. A FIRM that has been made available digitally is called a Digital Flood Insurance Rate Map (DFIRM).
- M. Flood Insurance Study (FIS) – a report by FEMA that examines, evaluates and determines flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of mudflow and/or flood-related erosion hazards.
- N. Floodplain or flood-prone area - Any land area susceptible to being inundated by water from any source.
- O. Flood proofing - any combination of structural and non-structural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.
- P. Floodway - The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.
- Q. Freeboard - A factor of safety usually expressed in feet above a flood level for purposes of floodplain management. “Freeboard” tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization in the watershed. When a freeboard is included in the height of a structure, the flood insurance premiums may be less expensive.
- R. Highest adjacent grade - the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.
- S. Historic structure - Any structure that is
1. listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the

- Interior as meeting the requirements for individual listing on the National Register;
2. certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;
 3. individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or,
 4. individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either
 - a. by an approved state program as determined by the Secretary of the Interior; or,
 - b. directly by the Secretary of the Interior in states without approved programs.
- T. Hydrologic and Hydraulic Engineering Analysis – Analyses performed by a *licensed* professional engineer, in accordance with standard engineering practices that are accepted by the Virginia Department of Conservation and Recreation and FEMA, used to determine the *base flood*, other frequency floods, *flood* elevations, *floodway* information and boundaries, and *flood* profiles.
- U. Letters of Map Change (LOMC) - A Letter of Map Change is an official FEMA determination, by letter, that amends or revises an effective *Flood Insurance Rate Map* or *Flood Insurance Study*. Letters of Map Change include:

Letter of Map Amendment (LOMA): An amendment based on technical data showing that a property was incorrectly included in a designated *special flood hazard area*. A LOMA amends the current effective *Flood Insurance Rate Map* and establishes that a Land as defined by meets and bounds or *structure* is not located in a *special flood hazard area*.

Letter of Map Revision (LOMR): A revision based on technical data that may show changes to *flood zones*, *flood* elevations, *floodplain* and *floodway* delineations, and planimetric features. A Letter of Map Revision Based on Fill (LOMR-F), is a determination that a *structure* or parcel of land has been elevated by fill above the *base flood elevation* and is, therefore, no longer exposed to *flooding* associated with the *base flood*. In order to qualify for this determination, the fill must have been permitted and placed in accordance with the *community's* floodplain management regulations.

Conditional Letter of Map Revision (CLOMR): A formal review and comment as to whether a proposed *flood* protection project or other project complies with the minimum NFIP requirements for such projects with respect to delineation of *special flood hazard areas*. A CLOMR does not revise the effective *Flood Insurance Rate Map* or *Flood Insurance Study*.

- V. Lowest floor - The lowest floor of the lowest enclosed area (including basement). An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor; provided, that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of Federal Code 44CFR §60.3.
- W. Manufactured home - A structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. For floodplain management purposes the term "manufactured home" also includes park trailers, travel trailers, and other similar vehicles placed on a site for greater than 180 consecutive days, but does not include a recreational vehicle.
- X. Manufactured home park or subdivision - a parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.
- Y. New construction - For the purposes of determining insurance rates, structures for which the "start of construction" commenced on or after _____ [insert the effective date of the community's initial Flood Insurance Rate Map] or after December 31, 1974, whichever is later], and includes any subsequent improvements to such structures. For floodplain management purposes, *new construction* means structures for which the *start of construction* commenced on or after the effective date of a floodplain management regulation adopted by a community and includes any subsequent improvements to such structures.
- Z. Post-FIRM structures - A structure for which construction or substantial improvement occurred after December 31, 1974 or on or after _____ {insert the effective date of the community's initial Flood Insurance Rate Map} whichever is later.
- AA. Pre-FIRM structures - A structure for which construction or substantial improvement occurred on or before December 31, 1974 or before _____ {insert the effective date of the community's initial Flood Insurance Rate Map}.
- BB. Recreational vehicle - A vehicle which is
1. built on a single chassis;
 2. 400 square feet or less when measured at the largest horizontal projection;
 3. designed to be self-propelled or permanently towable by a light duty truck; and,
 4. designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational camping, travel, or seasonal use.
- CC. Repetitive Loss Structure - A building covered by a contract for flood insurance that has

incurred flood-related damages on two occasions during a 10-year period ending on the date of the event for which a second claim is made, in which the cost of repairing the flood damage, on the average, equaled or exceeded 25 percent of the market value of the building at the time of each flood event.

- DD. Shallow flooding area – A special flood hazard area with base flood depths from one to three feet where a clearly defined channel does not exist, where the path of flooding is unpredictable and indeterminate, and where velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.
- EE. Special flood hazard area - The land in the floodplain subject to a one (1%) percent or greater chance of being flooded in any given year as determined in Article 3, Section 3.2 of this ordinance.
- FF. Start of construction - For other than new construction and substantial improvement, under the Coastal Barriers Resource Act (P.L. – 97-348), means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, substantial improvement or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of the construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.
- GG. Structure - for floodplain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home.
- HH. Substantial damage - Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.
- II. Substantial improvement - Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the *start of construction* of the improvement. This term includes structures which have incurred *substantial damage* regardless of the actual repair work performed. The term does not, however, include either:
1. any project for improvement of a structure to correct existing violations of state or

local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions, or

2. any alteration of a *historic structure*, provided that the alteration will not preclude the structure's continued designation as a *historic structure*.
3. Historic structures undergoing repair or rehabilitation that would constitute a substantial improvement as defined above, must comply with all ordinance requirements that do not preclude the structure's continued designation as a historic structure. Documentation that a specific ordinance requirement will cause removal of the structure from the National Register of Historic Places or the State Inventory of Historic places must be obtained from the Secretary of the Interior or the State Historic Preservation Officer. Any exemption from ordinance requirements will be the minimum necessary to preserve the historic character and design of the structure.

JJ. Violation - the failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in Section 3.7 B11, Section 4.3 B, Section 4.4 A, Section 4.5, and section 4.8 is presumed to be in violation until such time as that documentation is provided.

KK. Watercourse - A lake, river, creek, stream, wash, channel or other topographic feature on or over which waters flow at least periodically. Watercourse includes specifically designated areas in which substantial flood damage may occur.

ARTICLE VII - ENACTMENT

ENACTED AND ORDAINED THIS ____ DAY OF _____, 20___. This ordinance shall become effective upon passage.

Signature

Title

Attested

XII. Higher Standards

The NFIP encourages states and communities to implement floodplain management programs that go beyond NFIP minimum requirements.

44 CFR 60.1(d) The criteria set forth in this subpart are minimum standards for the adoption of flood plain management regulations by flood-prone... communities. Any community may exceed the minimum criteria under this Part by adopting more comprehensive flood plain management regulations utilizing the standards such as contained in Subpart C of this part. In some instances, community officials may have access to information or knowledge of conditions that require, particularly for human safety, higher standards than the minimum criteria set forth in Subpart A of this part. Therefore, any floodplain management regulation adopted by a State or a community which is more restrictive than the criteria set forth in this part is encouraged and shall take precedence.

The NFIP regulatory standards are minimums. They may not be all of the necessary measures to protect health, safety and welfare in your community. Therefore, states and communities are encouraged to enact more restrictive requirements where needed to better protect people and properties from the local flood hazard. Many of these more restrictive requirements are eligible for credit under the Community Rating System (CRS), a program which provides insurance premium discounts to policyholders in communities with more restrictive floodplain management programs.

The NFIP requires communities to at least consider additional measures which are found in 44 CFR 60.22, Planning Considerations for Floodprone Areas:

- (a) The floodplain management regulations adopted by a community for floodprone areas should:
 - (1) Permit only that development of floodprone areas which
 - (i) is appropriate in light of the probability of flood damage
 - (ii) is an acceptable social and economic use of the land in relation to the hazards involved
 - (iii) does not increase the danger to human life
 - (2) Prohibit nonessential or improper installation of public utilities and public facilities.

- (b) In formulating community development goals after a flood, each community shall consider:
 - (1) Preservation of the floodprone areas for open space purposes
 - (2) Relocation of occupants away from floodprone areas
 - (3) Acquisition of land or land development rights for public purposes
 - (4) Acquisition of frequently flood-damaged structures

- (c) In formulating community development goals and in adopting floodplain management regulations, each community shall consider at least the following factors:
 - (1) Human safety
 - (2) Diversion of development to areas safe from flooding
 - (3) Full disclosure to all prospective and interested parties
 - (4) Adverse effects of floodplain development on existing development
 - (5) Encouragement of floodproofing to reduce flood damage
 - (6) Flood warning and emergency preparedness plans

- (7) Provision for alternative vehicular access and escape routes
- (8) Minimum retrofitting requirements for critical facilities
- (9) Improvement of local drainage to control increased runoff
- (10) Coordination of plans with neighboring community's floodplain management programs
- (11) Requirements for new construction in areas subject to subsidence
- (12) Requiring subdividers to furnish delineations for floodways
- (13) Prohibition of any alteration or relocation of a watercourse
- (14) Requirement of setbacks for new construction within V Zones
- (15) Freeboard requirements
- (16) Requirement of consistency between state, regional and local comprehensive plans
- (17) Requirement of pilings or columns rather than fill to maintain storage capacity
- (18) Prohibition of manufacturing plants or facilities with hazardous substances
- (19) Requirements for evacuation plans

Higher Standards for High Hazard Areas

Prohibiting development makes sense in high hazard areas, where people are exposed to a life-threatening situation even though buildings could be protected from flood damage. For example, it would be appropriate to prohibit development at the apex of an alluvial fan or along a narrow floodplain in a stream valley that is susceptible to flash flooding.

Specific prohibition language can be inserted into the appropriate Section Article IV in the model ordinance or into an additional Section in Article III or IV.

Sample Language:

“In zones A, AE, AH, and AO, the development and/or use of the land shall be permitted in accordance with the regulations of the underlying zoning district provided that no placement of fill is proposed for any use except utilities, public facilities, and improvements, such as railroads, streets, bridges, transmission lines, pipelines, water and sewage treatment plants, stormwater management structures, shoreline protection measures and water dependent uses located within or adjacent to tidal water bodies where there would be no increase in the one hundred-year flood elevations, and other similar or related uses.

Activities and/or development shall be undertaken in strict compliance with the flood-proofing, related provisions contained in the Virginia Uniform Statewide Building Code and all other applicable codes and ordinances.”

BFE Determinations for A Zones

Approximate zones are zones that have not been studied in detail; there are no BFEs. In many cases, the floodplain was determined decades ago using topographic lines that are now considered inaccurate and out-of-date.

According to 44 CFR 60.3(b), a BFE has to be determined for a site before development can proceed. Simplified methods of doing this are presented in the model ordinance under Article III. One of the easiest and most reliable methods is to find the nearest VDOT bridge and make use of the hydraulic and hydrologic study that was conducted prior to construction. Once the

developer or community obtains the BFE at the bridge, they can work backwards using the most recent topographic layer to determine the BFE at the building location.

Another solution is to conduct a hydraulic and hydrologic study at the building location. Currently, the NFIP regulations only require a study of this kind for all developments of 50 lots or 5 acres or greater. Requiring this study for all new development makes sense for communities that are trying to eliminate or reduce new development in the floodplain or provide a higher level of protection for its citizens.

Specific language can be added to Article III, Section 3.1 A 3 of the model ordinance.

Sample Language:

“All applications for new and substantially improved structures in the approximate A zone shall include a detailed hydrologic and hydraulic study comparable to those contained in the Flood Insurance Study.”

Floodway Determinations for A Zones

According to 44 CFR 60.3(b)(4), development in any SFHA must not cause an increase of the water surface elevation of the base flood of more than one foot at any point. The amount of rise in flood waters due to development is extremely difficult to determine when the floodplain hasn't been studied in detail, when there is no BFE or floodway. One of the best ways to properly manage development in an A Zone and to avoid more than a one foot rise is to have a detailed hydrologic and hydraulic study of the stream or river conducted prior to any new development.

Specific language can be added to Article III, Section 3.1 A 3 of the model ordinance.

Sample Language:

“Prior to any new development in an approximate A zone, the floodway must be determined through a hydrologic and hydraulic study by a certified engineer using currently accepted methods. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the Floodplain Administrator”

Repetitive Loss

Occasionally a property is damaged during flooding events but is not damaged enough each time to reach the Substantial Damage threshold, which means that the property does not qualify for Increased Cost of Compliance (ICC) funds to help pay for an elevation project.

One solution is to add Repetitive Loss to the community's floodplain ordinance. When a property is declared by the community as a repetitive loss property, it is eligible for the ICC funds. The following definition can be added to the floodplain ordinance definition section of the ordinance to create the higher standard:

A repetitive loss means any flood-related damages sustained by a structure on at least two separate occasions during a 10-year period for which the total cost of repairs at the time of each such flood event, on the average, equals or exceeds 25 percent of the market value of the structure before the damage occurred.

Higher Standards and Subdivision Design

Undeveloped land, still in large tracts, offers the best opportunity to limit where certain types of development will be located. When a developer wants to subdivide the land, communities have many tools to arrange the development so that buildings are kept out of the floodplain or at least the building sites are located in the least hazardous areas of the floodplain. This has two advantages over simply requiring the buildings to be protected from flooding:

- ◆ Buildings aren't isolated by floodwaters during flood events, putting a strain on local emergency services to guard them or evacuate or rescue their occupants, and
- ◆ The neighborhood will have waterfront open space and recreation areas – a valuable amenity in most communities.

A housing development can be clustered so the developer can sell the same number of home sites as a conventional subdivision.

Specific language addressing subdivisions in a mapped floodplain can be inserted into Article IV Section 4.4 in the model ordinance.

Subdivision and planning regulations also can mandate that a certain portion of a development be set aside as open space for recreation or stormwater management purposes. Developers find that it is cheaper to put the open space in the floodplain than to put buildings there that have to incorporate the more expensive floodplain requirements. Linear parks and greenways that connect the open space areas through a community are becoming more and more popular and help sell new developments.

The Community Rating System credits land development criteria that discourage development in floodplains under Activity 430LD in the *CRS Coordinator's Manual* and the *CRS Application*.

Sample Language:

“When a developer holds property both within and outside the Special Flood Hazard Area, all subdivisions of 5 lots or greater shall be condensed exclusively to land outside the Special Flood Hazard Area when possible and the area within the Special Flood Hazard Area shall be held as open space by a conservation easement.”

Higher Standards and Low-density Zoning

When a community prepares its land use plan and zoning ordinance, it should consider what uses and densities are appropriate for floodplains. If buildings are not prohibited entirely, the community should zone its floodplains for agricultural or other low-density use to reduce the number of new structures.

The Community Rating System provides substantial credit for zoning floodplains with low-density uses under Activity 430LZ Low Density Zoning in the *CRS Coordinator's Manual* and the *CRS Application*.

Higher Standards and Setbacks

Setbacks may be used to keep development out of harm's way. Setback standards establish minimum distances that structures must be positioned - set back - from waterways. Setbacks can be defined by vertical heights or horizontal distances.

While floodplain boundaries are defined by vertical measures, horizontal setbacks also provide protection from flood damage, especially in coastal areas where the effects of waves decrease further inland.

For coastal shorelines, setback distances act as buffer zones against beach erosion. In riverine situations, setbacks prevent disruption to the channel banks and protect riparian habitat. Such setbacks are frequently created to protect water quality, and stream and wetland resources.

Setbacks from watercourses have been used to minimize the effect of non-point sources of pollution caused by land development activities, timber harvesting and agricultural activities. Solid waste landfills and on-site sewage disposal systems often are restricted within certain distances of a body of water.

The Community Rating System credits setbacks that prevent disruption to shorelines, stream channels and their banks under Activity 430, Section 431.g.2 in the *CRS Coordinator's Manual* and the *CRS Application*. See also *CRS Credit for Higher Regulatory Standards* for example regulatory language.

Sample Language:

For Tidally-Influenced Flood Zones:

“No new/substantially improved development shall be constructed within ____ feet from Mean High Tide.”

For Non-Tidal, Riverine Flood Zones:

“No new/substantially improved development shall be constructed within ____ feet from a floodway.”

Higher Standards and Manufactured Homes

Some communities have adopted provisions that prohibit the placement of manufactured (mobile) homes in the floodway or in the entire SFHA. Specific language addressing manufactured homes in a mapped floodplain can be inserted into the ordinance in Article III in the section for the appropriate zone and Article IV.

Sample Language:

“No new or substantially improved manufactured homes shall be built in the Special Flood Hazard Area.”

Higher Standards and Natural Areas

The natural functions and values of floodplains coupled with their hazardous nature have led communities to promote and guide the less intensive use and development of floodplains. More and more municipalities are requiring that important natural attributes such as wetlands, drainage ways and floodplain areas be set aside as open space as a condition to approving subdivision proposals.

The Community Rating System provides substantial credit for preserving floodplain areas as open space. If buildings and the placement of fill are prohibited, credit is found under Activity 420 Open Space Preservation, Section 421.a in the *CRS Coordinator’s Manual* and the *CRS Application*. If the area has been kept in or restored to its natural state, more credit is provided under Section 421.c.

Higher Standards and Freeboard

Freeboard is an additional height requirement above the base flood elevation (BFE) that provides a margin of safety against extraordinary or unknown risks. This reduces the damage from flooding and makes the structure eligible for a lower flood insurance rate.

While not required by the NFIP, your community is encouraged to adopt at least a one-foot freeboard to account for the one-foot rise built into the concept of designating a regulatory floodway and the encroachment requirements where floodways are not identified.

Other reasons for considering a freeboard include:

- ◆ Accounts for future increases in flood stages if additional development occurs in the floodplain.
- ◆ Accounts for future flood increases due to upstream watershed development.
- ◆ Acts as a hedge against backwater conditions caused by ice jams and debris dams.
- ◆ Reflects uncertainties inherent in flood hazard modelling, topography, mapping limitations and floodplain encroachments.
- ◆ Provides an added measure of safety against flooding.
- ◆ Results in significantly lower flood insurance rates due to lower flood risk.
- ◆ Accounts for future flood increases due to land subsidence in tidally influenced floodplains.
- ◆ Accounts for increases in water level and variability in storm magnitude due to climate change.

Freeboard safety factors are common in the design of flood control projects and floodplain development. Many communities have incorporated freeboard requirements into the elevation and floodproofing requirements stipulated by the NFIP. Freeboard requirements adopted by communities range from six inches to four feet.

Specific language addressing freeboard can be inserted into Article III Section 3.1 A or Article IV Section 4.3 in the model ordinance.

When constructing a new elevated building, the additional cost of raising the lowest floor another foot or two is usually negligible. Additionally, any extra costs are made back in the insurance savings, as elevated buildings above the base flood elevation have reduced flood insurance costs for current and future owners.

The Community Rating System credits freeboard under Activity 430, Section 431.a in the *CRS Coordinator's Manual* and the *CRS Application*. See also *CRS Credit for Higher Regulatory Standards* for example regulatory language.

Higher Standards and Building Foundations

Without a safe and sound foundation, an elevated building can suffer damage from a flood due to erosion, scour or settling. The NFIP regulations provide both performance standards for anchoring new buildings and foundations and placement standards for fill for floodproofed buildings and V Zones.

However, the NFIP performance standards do not specify how a building foundation is to be constructed. Specific foundation construction standards would help protect buildings from flood damage, especially in areas where an engineer's certificate is not required by the NFIP regulations. An alternative is to require a specific construction standard, such as requiring the V Zone standard for new structures in coastal AE and AH Zones. Coastal AE Zones are of particular concern, since they are subject to wave action of up to three feet in height and the NFIP A Zone construction standards do not address this hazard.

Specific language addressing building foundations can be inserted into the appropriate section in Article III and Article IV of the model ordinance.

The Community Rating System credits foundation protection under Activity 430, Section 431.b in the *CRS Coordinator's Manual* and the *CRS Application*. See also *CRS Credit for Higher Regulatory Standards* for example regulatory language.

Higher Standards and Critical Facilities

According to Executive Order 11988, federal agencies must meet rigorous alternative site evaluations and design standards before funding, leasing or building critical facilities in the 500-year floodplain. For some activities and facilities, even a slight chance of flooding poses too great a threat. These should be given special consideration when formulating regulatory alternatives and floodplain management plans.

The following are examples of the types of critical facilities that should be given special attention:

- ◆ Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic and/or water-reactive materials.
- ◆ Hospitals, nursing homes and housing likely to have occupants who may not be sufficiently mobile to avoid injury or death during a flood.
- ◆ Police stations, fire stations, vehicle and equipment storage facilities, and emergency operations centers that are needed for flood response activities before, during and after a flood.

- ◆ Public and private utility facilities that are vital to maintaining or restoring normal services to flooded areas before, during and after a flood.

A critical facility should not be located in a floodplain. Communities can prohibit critical or hazardous facilities or uses from the floodway, the V Zone, or the entire floodplain. While a building may be considered protected from the base flood, a higher flood or an error on the builder's or operator's part could result in a greater risk than the community is willing to accept.

If a critical facility must be located in a floodplain, then it should be designed to higher protection standards and have flood evacuation plans. The more common higher standards - freeboard, elevation above the 500-year floodplain and elevated access ramps - should be required.

Specific prohibition language can be inserted into Article III in the appropriate zone or in Article IV of the model ordinance.

The Community Rating System provides credits for prohibiting critical facilities from the 500-year floodplain or requiring them to be protected from damage by the 500-year flood in Activity 430. See the *CRS Coordinator's Manual* and the *CRS Application*. See *CRS Credit for Higher Regulatory Standards* for example regulatory language.

Sample Language:

“The following structures shall not be located within the (SFHA or 500-year) floodplain:

- ◆ Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic and/or water-reactive materials.
- ◆ Hospitals, nursing homes and housing likely to have occupants who may not be sufficiently mobile to avoid injury or death during a flood.
- ◆ Police stations, fire stations, vehicle and equipment storage facilities, and emergency operations centers that are needed for flood response activities before, during and after a flood.
- ◆ Public and private utility facilities that are vital to maintaining or restoring normal services to flooded areas before, during and after a flood.”

Higher Standards and Hazardous Materials

While prohibiting or protecting hazardous materials from the floodplain makes sense, it would be wise to have specific standards in your ordinance. The following lists were taken from the Army Corps of Engineers' Flood Proofing Regulations. The first is of items that are extremely hazardous or vulnerable to flood conditions so they should be prohibited from the SFHA or even the 500-year floodplain:

Acetone, Ammonia, Benzene, Calcium carbide, Carbon disulfide, Celluloid, Chlorine, Hydrochloric acid, Magnesium, Nitric acid, Oxides of nitrogen, Phosphorus, Potassium, Prussic acid, Sodium, Sulfur

The following items are sufficiently hazardous that larger quantities they should be prohibited in any space below the base flood elevation:

Acetylene gas containers, Storage tanks, Lumber/buoyant items, Gasoline, Charcoal/coal dust, Petroleum products

Specific prohibition language can be inserted into Article III and/or IV in the model ordinance.

Sample Language:

“The storage of Acetone, Ammonia, Benzene, Calcium carbide, Carbon disulfide, Celluloid, Chlorine, Hydrochloric acid, Magnesium, Nitric acid, Oxides of nitrogen, Phosphorus, Potassium, Prussic acid, Sodium, and Sulfur for any time period longer than 30 days shall be prohibited in the 500-year floodplain.

The storage of Acetylene gas containers, Storage tanks, Lumber/buoyant items, Gasoline, Charcoal/coal dust, and Petroleum products for any time period longer than 30 days shall be prohibited in the 100-year floodplain.”

Encroachment Standards

Some states and communities are not comfortable with allowing development in the SFHA to increase flood heights by up to a foot. A one-foot increase in flood heights will increase the potential for flood damage to floodprone buildings and affect properties that were otherwise not threatened by the base flood. This is especially true in flat areas where a one-foot increase can extend the floodplain boundary by blocks.

The Community Rating System credits more restrictive floodway mapping standards under Activity 410 Additional Flood Data, Section 411.c in the *CRS Coordinator’s Manual* and the *CRS Application*.

Specific language can be inserted into Article III and/or IV in the model ordinance.

Sample Language:

“In zones A, AE, AH, and AO, the development and/or use of the land shall be permitted in accordance with the regulations of the underlying zoning district provided that no placement of fill is permitted for any use that will increase the base flood elevation more than 6 inches at any point.”

Fences in the Floodway and SFHA

Some communities see problems arise that are associated with fences that have been installed between properties when the fences cross through a SFHA and particularly when the fence crosses through a floodway. A sturdy fence will catch debris and act as a small dam until the pressure of the water on the debris-covered fence causes the fence material and/or the posts to give way. Since a fence falls under the definition of development in the floodway/SFHA, a community would be justified to require a detailed hydrologic and hydraulic study of the stream or river prior to allowing a fence to be installed across the floodway/SFHA.

Sample Language:

“All applications for fences that cross the floodway/SFHA shall include a detailed hydrologic and hydraulic study comparable to those contained in the Flood Insurance Study.”

Alternatively, a community can specify that the fences that cross the floodway/SFHA be designed to be “breakaway” fences that will give way on one end under a specified amount of pressure in order to swing parallel to the flow and minimize the resistance to the flowing floodwaters.

Flood Storage Capacity

The NFIP floodway standard in 44 CFR 60.3(d) restricts new development from obstructing the flow of water and increasing flood heights. However, this provision does not address the need to maintain flood storage. Especially in flat areas, the floodplain provides a valuable function by storing floodwaters. When fill or buildings are placed in the flood fringe, the flood storage areas are lost and flood heights will go up because there is less room for the floodwaters. This is particularly important in smaller watersheds that respond sooner to changes in the topography.

For this reason, some communities adopt more restrictive standards that regulate the amount of fill or buildings that can displace floodwater in the flood fringe. One simple approach is to prohibit filling and building on fill - all new buildings must be elevated on columns or enclosures.

Another approach is to require compensatory storage to offset any loss of flood storage capacity. The developer is required to offset new fill put in the floodplain by excavating an additional floodable area to replace the lost flood storage area. This should be done at “hydraulically equivalent” sites - fill put in below the 10-year flood elevation should be compensated by removal of soil elsewhere in the floodplain.

The Community Rating System credits prohibition of fill and compensatory storage under Activity 430, Section 431.f in the *CRS Coordinator’s Manual* and the *CRS Application*. See *CRS Credit for Higher Regulatory Standards* for example regulatory language.

Specific language can be inserted into Article III and/or IV in the model ordinance.

Sample Language:

“In all A, AE, AO, and AH zones, there shall be no new or substantially improved structured built on a fill foundation. Columns or vented enclosure may be used to meet the elevation requirements.”

Stormwater Mangement

A floodplain management program in an urbanizing or suburbanizing area must confront the increase in flood flows caused by development within the watershed. As forests, fields and farms are covered by impermeable surfaces like streets, rooftops and parking lots, more rain runs off at a faster rate. In an urbanized area, the rate of runoff can increase fivefold or more.

Changes in the surface drainage system compound this problem. Stormwater runoff travels faster on streets and in storm drains than it did under pre-development conditions. As a result, flooding is more frequent and more severe. Efforts to reduce the impact of increased runoff that results from new development in a watershed are known as stormwater management.

The Community Rating System credits both water quantity and water quality stormwater management regulations and plans under Activity 450 in the *CRS Coordinator’s Manual* and the *CRS Application*. See also *CRS Credit for Stormwater Management* for example regulatory language.

NFIP Minimum Requirements v. “Higher Standards” of the 2009 I-Codes and ASCE 24

NFIP	2009 I-Codes/ASCE 24-05 “Higher Standards/More Specific”
<p>60.3: If special flood hazard areas and water surface elevations have been furnished by the Administrator, they shall be used, unless otherwise approved.</p>	<p>Design Flood Elevation. IBC, IRC and ASCE 24 define Design Flood/Design Flood Elevation. Definitions allows community that has more current or more extensive flood hazard mapping to adopt it, provided it shows areas that include at least the SFHAs shown on FIRMs</p>
<p>60.3: Requires buildings to be elevated to or above the BFE, as function of flood zone; reference level is lowest floor [A Zones, 60.3(c)(2)], height of floodproofing [A Zones, 60.3(c)(3)], or bottom of lowest horizontal structural member of the lowest floor [V Zones, 60,3(e)2].</p>	<p>Elevation requirements. For elevation of buildings and structures, ASCE 24 requires the elevation of appropriate lowest element, as a function of flood hazard area and structure category, to be elevated is specified in tables. Minimum elevation is DFE; freeboard of +1 ft, +2 ft, or +3 ft in selected instances (see table below for summary of ASCE 24 elevation requirements).</p> <p>Elevation requirement (V Zone). IRC requires homes in coastal high hazard areas to be elevated as a function of the orientation of the lowest horizontal structural member relative to the direction of wave approach: at or above the DFE if parallel or at or above the BFE plus 1 ft or DFE whichever is higher, if perpendicular [IRC 322.3.2].</p> <p>Elevation requirement (CAZ). IRC requires homes in CAZ to be at or above the BFE + 1’ or the DFE, whichever is higher [IRC 322.2.1].</p>
<p>60.3(a)(3)(i): Requires review to determine that all new construction and substantial improvements are “designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.”</p>	<p>ASCE 24 as referenced standard. IBC refers to ASCE 24 for details [IBC 1612.4]. IRC requires homes in floodways to be designed per IBC/ASCE 24 [IRC 301.2.4, IRC 322.1]. IRC allows use of ASCE 24 as alternative in coastal high hazard areas (V Zones) [IRC 301.2.4.1, IRC 322.1.1].</p> <p>Foundation Requirements. ASCE 24 requires design to prevent flotation, collapse, or permanent movement under load combinations, which are specified in ASCE 7 [Sec. 1.5.3].</p> <p>Geotechnical characteristics. ASCE 24 requires foundation designs to be based on geotechnical characteristics of the soils and strata below the structure [Sec. 1.5.3.1].</p>

	<p>Flood loads. ASCE 24 refers to ASCE 7 for flood loads (including hydrostatic loads, hydrodynamic loads, debris impact loads, wave loads) and load combinations [Sec. 1.6].</p> <p>Stability of fill. Requires fill to be designed to be stable under conditions of flooding [Sec. 1.5.4]. Requires side slopes of structural fill to be no steeper than 1:1.5 and protected from scour and erosion; specifies lift thickness and compaction requirements for structural fill [Sec. 2.4].</p> <p>Anchorage and Connections. ASCE 24 provides some specific requirements for anchorage and connections [Sec. 1.5.5].</p>
<p>60.3(a)(3)(i): Requires review to determine that all new construction and substantial improvements are “designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.”</p>	<p>Residential foundation wall height limitations. Unless designed according to IRC Chapter 4, foundation wall heights are limited as a function of type (plain or reinforced masonry) and wall thickness (6” and 8”)</p> <p>Tanks. ASCE 24 requires tanks to be elevated or installed to resist flood loads, and have fill openings and vents elevated. Designs shall assume 1.5 times the potential buoyant and other flood forces acting on an empty tank [Sec. 7.4.1].</p> <p>Pools. ASCE 24 requires pools in coastal high hazard areas and Coastal A Zones to be elevated, designed to breakaway, or to remain in the ground without obstructing flow [Sec. 9.5].</p>
<p>60.3(a)(3)(iii): Broad statement that all new construction and substantial improvements shall be constructed with materials resistant to flood damage.</p>	<p>Flood damage-resistant materials. ASCE 24 clearly specifies the elevations below which flood damage resistant materials shall be used [ASCE 24-05 Table 5-1, see below]. IRC specifies pressure-preservative treated wood, lists specific allowable wood species, and cites a third-party standard for wood preservatives [IRC 322.1.8].</p> <p>Materials and third-party standards. ASCE 24 references third-party standards for certain materials, including metal connectors and fasteners, structural steel, concrete, masonry, wood and timber, and finishes</p>
<p>60.3(a)(3)(iii) and (4): Require construction with methods and practices that minimize flood damages and determination that proposed development will be reasonably safe from flooding.</p>	<p>Underground plumbing system elements. ASCE 24 specifies that if installed under-ground, piping and plumbing systems shall be buried to a depth sufficient to prevent movement, separation or loss due to flooding and erosion [Sec. 7.3.1].</p>
<p>60.3(a)(3)(iv): The only provision specific to utilities requires new construction and substantial improvements to “be constructed with electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.”</p>	<p>Platforms for utility equipment. ASCE 24 requires that exterior elevated platforms be supported on piles or columns, or cantilevered from or knee braced to the structure; if piles or columns are used, they shall be adequately embedded to account for erosion and local scour [Sec. 7.1].</p> <p>Utilities and breakaway walls. ASCE 24, IMC, IPC, and IRC specify that utilities and attendant equipment shall not be mounted on or pass through breakaway walls [Sec. 7.1; M301.13.1, P309.3; IRC 322.3.4].</p> <p>Electric components required to meet life safety requirements. ASCE 24 has specifications for exposed conduits and cables, electric meters, disconnect switches and circuit breakers, and other electric elements below the minimum elevations, including a statement that electric elements required to meet life safety provisions may be permitted within certain</p>

	<p>limitations [Sec. 7.2].</p> <p>Duct systems. ASCE 24, IMC, and IRC specifically require ductwork/duct systems to be above the required elevations [Sec. 7.4; M602.4, M603.13; IRC 322.1.6; IRC1601.4.9].</p> <p>Elevators. ASCE 24 has specifications for elevators that require use of flood damage resistant materials. For hydraulic elevators, electric control panels and hydraulic pumps and tanks shall be elevated. For traction elevators, machine rooms shall be elevated. In certain circumstances, controls shall prevent elevator cabs from descending into floodwaters [Sec. 7.5].</p>
<p>60.3(a)(3)(iv): The provision specific to utilities requires new construction and substantial improvements to “be constructed with electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.”</p>	<p>Fuel supply lines. ASCE 24, IMC, and IRC specify that fuel supply lines below the required elevation shall be equipped with a float-operated automatic control valve [Sec. 7.4; M1305.2.1; G2404.7].</p>
<p>60.3(a)(6): Requires new and replacement sanitary sewage systems to be designed to minimize or eliminate infiltration of flood waters in the systems and discharges from the systems, and onsite waste disposal systems are required to be located to avoid impairment.</p>	<p>Underground plumbing system elements. ASCE 24 specifies that if installed under-ground, piping and plumbing systems shall be buried to a depth sufficient to prevent movement, separation or loss due to flooding and erosion [Sec. 7.3.1].</p>
<p>60.3(b): Communities are required to regulate only flood hazard areas delineated by FEMA, unless other maps are approved for use. The NFIP currently delineates and maps flood hazard areas along riverine and coastal areas. The only “high risk” areas mapped are the floodway, coastal high hazard areas (V zones), and alluvial fan flood hazard areas.</p>	<p>High Risk Flood Hazard Areas. ASCE 24 defines High Risk Flood Hazard Area to include flood hazard areas where one or more of the following occur: alluvial fan flooding, flash flooding, mudslides, ice jams, high velocity flows (greater than 10 ft/sec), high velocity wave action (V zones), Coastal A Zones, or erosion.</p>
<p>60.3(b)(3); Requires all new subdivision proposals and other proposed developments (including proposals for manufactured home parks and subdivisions) greater than 50 lots or 5 acres, whichever is the lesser, to include within such proposals base flood elevation data.</p>	<p>Subdivisions. IBC Appendix G requires residential building lots to be provided with buildable area outside of the floodway [IBC G301.2(3)].</p>
<p>60.3(b)(5): Requires communities to obtain the elevation to which the lowest floor (or bottom of the lowest horizontal structural member of the lowest floor) is elevated, without</p>	<p>Inspections. IBC and IRC call for inspections “upon placement of the lowest floor, including basement, and prior to further vertical construction,” at which time elevation documentation shall be submitted.</p>

specifying when such information is to be obtained.	
60.3(b)(8): Specify elevation and anchoring to adequately anchored foundation systems to resist flood loads.	Manufactured homes. IRC requires all manufactured homes to meet the elevation requirements, regardless of location or loss history [IRC 322.1.9]
60.3(c)(3)(ii) and 60.3(c)(4): Has a single statement regarding acceptable performance of floodproofing measures, without listing factors to be considered in the design of such measures. Requires designed to be developed or reviewed by a registered professional, and the design, specifications and plans are to be certified as being in accordance with accepted standards of practice. Requires floodproofing to or above the BFE.	Dry floodproofing. ASCE 24 lists several elements that are to be accounted for in the design of dry floodproofing measures. Some of these elements bear on the practicality of certain types of floodproofing measures, notably those that require action by the occupants [Sec. 6.2]. ASCE 24 specifies the minimum height of dry floodproofing, which is at least BFE + 1 ft or the DFE, whichever is higher
Does not use the term “wet floodproofing,” such measures are allowed for enclosures below elevated buildings (and, by policy, certain accessory structures that meet the use limitations).	Wet floodproofing. ASCE 24 includes specifications for wet floodproofing and limits its use to certain structures
60.3(c)(5): Requires flood openings that do not meet certain minimum criteria be certified by a registered professional.	Engineered openings. ASCE 24 provides specific design guidance for engineered openings in enclosures, to allow inflow/outflow of floodwaters [Sec. 2.6.2.2].
60.3(c)(6): Specify elevation and anchoring to adequately anchored foundation systems to resist flood loads. 60.3(c)(12): Allows replacement units or substantially improved units in existing manufactured home parks and subdivisions to be no less than 36 inches above grade and anchored to adequately anchored foundation systems.	Manufactured homes. IRC requires all manufactured homes to meet the elevation requirements, regardless of location or loss history [IRC 322.1.9].
60.3(c)(14): Has no limitations on location.	Recreational vehicles. IBC Appendix G prohibits placement of recreational vehicles in flood hazard areas subject to high velocity wave action (V zones) and in floodways [G601.1].
60.3(e): No specific requirement to evaluate or include the potential for erosion in foundation design, although certification is required that “the foundation is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components.”	Erosion and scour in V Zones and CAZs. ASCE 24 requires consideration of erosion and scour in coastal high hazard areas and Coastal A Zones
60.3(e)(4) and (5): In coastal high	Foundations in V Zones and CAZs. ASCE 24 allows buildings

<p>hazard areas, the regulations specify that new construction and substantial improvements be elevated on pilings and columns, and there is a requirement that the space below elevated buildings be “free of obstruction” or be enclosed by breakaway walls.</p>	<p>in coastal high hazard areas and Coastal A Zones to be supported on piles, columns, or walls serving as shear walls [Sec. 4.5.1].</p> <p>ASCE 24 foundation requirements include:</p> <ul style="list-style-type: none"> . Geotechnical considerations – account for instability and decreased structural capacity associated with erosion, scour, shoreline movement [Sec. 4.5.2]; . Foundation depth – sufficient to account for erosion, scour, and predicated shoreline movement [Sec. 4.5.3]; . Use of fill – minor amounts for minimal site grading, landscaping, and drainage; dune construction/reconstruction [Sec. 4.5.4]; . Pile foundations – penetration depth, attachments, pile caps, wood piles, steel piles, concrete piles [Sec. 4.5.5]; . Pile design – lateral resistance, capacity of supporting soils, minimum penetration, spacing, caps, connections, splicing [Sec. 4.5.6]; . Posts, piers and columns – minimum spacing, minimum penetration [Sec. 4.5.7]; . Footings, mats, rafts, and slabs-on-grade – at or below grade, reinforced [Sec. 4.5.8]; . Grade beams – at or below grade; independent of decks, patios, concrete pads [Sec. 4.5.9]; . Bracing – limitations based on orientation to primary direction of waves [Sec. 4.5.10]; and . Shear walls – orientation to direction of wave approach
<p>65.10: If engineering documentation is approved, areas protected levee systems may have the flood hazard area designation removed, thus such protected areas are no longer subject to regulation as flood hazard area.</p>	<p>High Risk Flood Hazard Areas. ASCE 24 prohibits construction of structures in certain high risk areas unless “protective works” have been determined to provide protection during the design flood; high risk areas include (alluvial fans, flash flood areas, mudslide areas, erosion-prone areas, high velocity flow areas, ice jam and debris areas</p>
<p>NFIP regulations do not have provisions for Coastal A Zones.</p> <p>FEMA Region 3 has begun (2011) revising coastal community FIRMs to show the Limit of Moderate Wave Action (LiMWA), which delineates the landward limit of the CAZ.</p>	<p>Coastal A Zones. ASCE 24 defines the Coastal A Zone and specifies that such areas are treated as coastal high hazard areas (V Zones) IRC R322.2 defines the Coastal A Zone for an elevation requirement of the finished floor.</p> <p>Decks, concrete pads, and patios (V Zone). ASCE 24 includes specifications for decks, concrete pads, and patios that are beneath or adjacent to structures in coastal high hazard areas and Coastal A Zones, including specific requirements for concrete pads that reinforcing shall not be used and limiting pad thickness [Sec. 4.8].</p> <p>IRC requires slabs, pools, pool decks and walkways to be structurally independent of buildings, unless building foundation are designed to resist the additional flood load</p>
<p>No specific provisions for fences; however, fences are development and subject to the general performance requirements.</p>	<p>Fences. IBC Appendix G requires fences in floodways that may block the passage of floodwaters, such as stockade fences and wire mesh fences, to meet the requirements for floodway encroachments in G103.5 [IBC G801.2].</p>