

**LAKE COUNTY PLANNING AND COMMUNITY DESIGN ANALYSIS
COMPREHENSIVE PLAN AMENDMENT**

PLANNING AND ZONING BOARD	 LAKE COUNTY FLORIDA	BOARD OF COUNTY COMMISSIONERS
July 3, 2013		Transmittal: July 30, 2013 Adoption:

<p style="text-align: center;">LPA#13/5-1T</p> <p>Amend <i>Policy III-2.2.7 Protection of Shorelines</i> and <i>Policy III-2.5.13 Establish Minimum Buffer Requirements</i> to recognize existing development orders approved prior to the effective date of the 2030 Comprehensive Plan that establish less restrictive wetland setbacks and upland buffers.</p>	<p style="text-align: center;">Case Manager:</p> <p>Rick Hartenstein, AICP, CPM, Senior Planner</p>	<p style="text-align: center;">Agenda Item # 3</p>
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- Item -

Type: County-initiated Comprehensive Plan Text Amendment

Creation or Revision: Revision

Description: Amends the *Conservation Element, Policy III-2.2.7 Protection of Shorelines*, to allow developments that were approved prior to September 22, 2011, with a wetland setback of less than 50 feet, to maintain the setback as prescribed by ordinance or development order. Amends the *Conservation Element, Policy III-2.5.13 Establish Minimum Buffer Requirements*, to allow developments approved prior to September 22, 2011, to maintain the buffer width as prescribed by ordinance or development order.

- Summary of Staff Recommendation -

Analysis: On September 22, 2011, the 2030 Comprehensive Plan became effective. As the policies were implemented, it became apparent that the wetland setback and buffer requirements caused unintentional circumstances on lots that were approved prior to September 22, 2011 for development with a reduced setback through an average setback determination, variance, waiver, or planned district designation.

The implementation of the Shoreline Protection Policy (Policy III-2.2.7) and the Establish Minimum Buffer Requirements Policy (Policy III-2.5.13) significantly restricted the developable area of some lots, and may have caused some lots to become unbuildable, due to the inability to meet the required setbacks or buffers. The proposed amendments to the referenced policies allows the use of setbacks and/or buffers that were established by a development order prior to September 22, 2011, and recognizes development pursuant to such a development order as conforming.

The Shoreline Protection Policy currently recognizes developments approved prior to September 22, 2011 with a wetland setback of between 25 and 50 feet; the term “development” expressly includes any type of variance or average setback determination. Property owners who had wetland setbacks of less than 25 feet established through a variance, average setback determination, waiver or planned district zoning approved prior to the effective date of the 2030 Comprehensive Plan, are unable to utilize the approved setback, unless otherwise vested.

The proposed amendments to the policies are shown below (~~strike through~~ for deletions and underline for additions; the notation “* * *” means that all preceding or subsequent text remains unchanged).

Policy III-2.2.7 Protection of Shorelines

To protect natural water bodies and wetland areas from the encroachment of development, the County shall implement the following shoreline protection standards, incorporated within the Land Development Regulations:

The County shall establish a minimum setback of 50 feet from the mean high water line (MHWL) or jurisdictional wetland line (JWL), whichever is further landward. Exceptions to this requirement are listed below:

1. *Additions which match existing rear and side setbacks may be allowed to “square off” a residence.*
2. *Water dependent activities including uses and structures such as docks, platforms, and pile-supported walkways or similar structures.*
3. *Development approved prior to September 22, 2011 with a wetland setback of **less than 50 feet between 25 and 50 feet** shall be allowed to maintain the approved setback **as prescribed in the approved ordinance or development order** and shall not be considered nonconforming. The term “Development” as used in this subsection shall expressly include any type of variance, **ordinance, or average setback determination, or waiver.***

Policy III-2.5.13 Establish Minimum Buffer Requirements

Upland buffers adjacent to wetlands provide habitat for wetland dependent species, and assist in minimizing the deleterious effects of development adjacent to the wetland. The County shall require that all developments provide natural upland buffers adjacent to those wetlands which are to be preserved following development. These buffers shall be of such size to ensure that the quality and quantity of surface waters and the habitat for aquatic and wetland-dependent species of wildlife are not adversely affected by the development and shall be in the location and dimensions approved by the County, unless a greater buffer is required by another agency having jurisdiction, in which case the greater buffer shall be required.

Buffers shall be determined to start landward from the mean high water line or wetland jurisdictional line, whichever is further landward; the wetland jurisdictional line shall be determined by a qualified person acceptable to the County, according to the State-approved methodology adopted by Rule, and which shall be subject to field verification and approval by the agency exercising jurisdiction or the County, if necessary. A minimum 50-foot buffer requirement shall apply to isolated wetlands, non-isolated wetlands and rivers and streams except where the required buffer makes a lot unbuildable, in which case a variable buffer may be allowed as described below:

- Outside the Green Swamp Area of Critical State Concern variable buffers shall have a minimum width of 15 feet and average width of 50 feet.
- Inside the Green Swamp Area of Critical State Concern variable buffers shall have a minimum width of 25 feet and average width of 50 feet.

Developments approved prior to September 22, 2011 with a wetland buffer of less than 50 feet shall be allowed to maintain the buffer width as prescribed in the approved ordinance or development order and shall not be considered nonconforming. The term “Development” as used in this subsection shall expressly include any type of variance, ordinance or waiver.

Uses allowed in buffers are limited to: passive recreation activities, limited stormwater facilities, and water dependent structures such as, but not limited to, fishing piers, docks, and walkways. Buffers without native vegetation shall be re-vegetated with indigenous habitat to protect the quality of the adjacent isolated wetland, wetland system, river or stream. A buffer of native upland edge vegetation shall be provided or preserved on new development sites. Native vegetation within buffers shall be preserved.

To the extent that federal, state or regional requirements exceed the minimum buffers adjacent to wetlands established here, the County shall require compliance with the stricter standard. The County shall require compliance with all buffer requirements for the Wekiva River System and other Outstanding Florida Waters.

For clarity, it should be noted that where the wetland setback and the upland buffer conflict; the most stringent shall apply.

- Standards for Review -

A. Whether the proposed amendment is consistent with all elements of the Comprehensive Plan:

Conservation Element, Goal III-2 Water - states “The County shall conserve, protect, and enhance the County’s surface water, groundwater, springsheds, floodplains, and wetlands to ensure that these resources are preserved for the benefit of present and future generations.” The amendments to Policy III-2.2.7 Protection of Shorelines and Policy III-2.5.13 Establish Minimum Buffer Requirements are

consistent with the intent of this goal by requiring wetland setbacks and buffers to assist in protecting the County's valuable water resources, while providing flexibility for development orders approved prior to the effective date of the 2030 Comprehensive Plan.

B. Whether the proposed amendment is in conflict with any applicable provisions of these regulations:

Objective III-2.2 Surface Water – *The County shall identify and evaluate sources of surface water pollution within the County and coordinate the development and implementation of pollution abatement methods and programs with local governments, state, and federal agencies.*

Policy III-2.2.6 Surface Water Quality and Land Use Guidelines

The County shall continue to promote land use decisions which limit the density of lakefront and stream shoreline development. Maximum densities and shoreline buffers shall be established in the Future Land Use Element and Land Development Regulations based on the provision of centralized water and wastewater facilities. Where the provisions of centralized services are required, densities shall conform to that which is compatible with the protection of shoreline values and the surrounding area.

The proposed amendments to “*Policy III-2.2.7 Protection of Shorelines* and *Policy III-2.5.13 Establish Minimum Buffer Requirements*” are inconsistent with Objective III-2.2 and Policy III-2.2.6 by reducing setbacks and shoreline buffers that protect surface water quality. The County has encountered situations with planned zoning district development orders that were approved prior to the effective date of the 2030 Comprehensive Plan with wetland setbacks of less than 25 feet. County staff are unable to determine how many properties will be affected by these amendments, but believe the numbers are high enough to justify the reduced setbacks. While the proposed amendments do permit development at a setback of less than 25 feet, the Comprehensive Plan still limits current/new development and thus continues to limit density of lakefront development. The proposed amendment has the potential, in some cases, for possible inconsistencies with the letter of the law and the supporting scientific studies related to wetland setbacks and buffers.

A study performed by Washington State Department of Ecology titled *Wetland Buffers: Use and Effectiveness* – February 1992, Executive Summary (copy in back up material) states, “Buffer characteristics influence their ability to reduce adverse effects of development, most importantly in relationship to slope and vegetative cover. Buffers with dense vegetative cover on slopes less than 15% are most effective for water quality functions. Dense shrub or forested vegetation with steep slopes provide the greatest protection from direct human disturbance. Appropriate vegetation for wildlife habitat depends on wildlife species present in the wetland and buffer. Effectiveness is also influenced by ownership of the buffer.” The study continues by acknowledging that appropriate buffer widths may vary according to the buffer's desired function, but as buffer width increases, the effectiveness of removing sediments, nutrients, bacteria, and other pollutants from surface water runoff increases.

A document produced by the U.S. Fish and Wildlife Service (copy in back up material) suggested that a 30 foot wide buffer from wetlands, lakes, and other water bodies provides minimal service, a 50 foot wide buffer meets minimum water quality protection recommendations and gives some aquatic habitat benefits, but for effective water quality and aquatic habitat protection, a buffer width of 100 feet is needed. Buffers used to enhance riparian wildlife should be 300 feet or greater. In general, there is

evidence and support for the proposition that the greater the distance separating development and wetlands, the less impact the development will have on the wetlands. The buffers recommended by the USFWS above do not take into consideration other mitigation measures, such as swales, trenches, and other conveyances utilized to divert stormwater runoff and mitigate its impact on water quality. Variances and other development orders that grant waivers or special exceptions to wetland buffer requirements have generally required mitigation such as swales, trenches, and other retention efforts in order to be allowed the reduced setbacks/buffers, thus minimizing the inconsistencies while fulfilling the intent of *Policy III-2.2.7 Protection of Shorelines* and *Policy III-2.5.13 Establish Minimum Buffer Requirements*, by protecting surface waters and wetlands from pollutants contained in surface runoff.

OBJECTIVE I-1.2 FUTURE LAND USE

Lake County hereby establishes Future Land Use Categories that reflect the grouping of compatible land uses, provide sufficient acreage to meet projected population growth, designate suitable land for development and redevelopment, recognize existing land uses, and provide guidance in the preparation and updating of the Land Development Regulations.

To implement this objective, the County shall seek to:

- *Achieve an appropriate balance between public and private interests;*
- *Discourage the proliferation of urban sprawl;*
- *Provide for compatibility of adjacent land uses;*
- *Protect natural and historic resources;*
- *Coordinate future land uses with the appropriate topography and soil conditions;*
- *Encourage the redevelopment and renewal of blighted areas;*
- *Eliminate or reduce uses inconsistent with the community's character and proposed future land uses;*
- *Create favorable economic conditions;*
- *Provide adequate housing;*
- *Provide adequate services and facilities and ensure the availability of suitable land for such facilities;*
- *Maintain established residential neighborhoods;*
- *Promote compact growth through the use of innovative Land Development Regulations including, but not limited to, planned unit development, clustering, Traditional Neighborhood Development, and mixed land use development techniques;*
- *Preserve rural and agricultural areas;*
- *Protect private property rights;*
- *Encourage the elimination or reduction of uses that are inconsistent with any interagency hazard mitigation report recommendations that the County determines to be appropriate; and*
- *Adopt all requirements of F.A.C. Rule 9J-5.006, as required.*

Some factors to consider when establishing policy and regulations are how those policies and regulations will affect the reasonable expectations of the property owner, the reasonable expectations of the neighboring landowners, and the diminution in investment-backed expectations of the landowner, if any, after passage of the policy and/or regulations. The proposed amendments are consistent with

this policy by stipulating protection to the water bodies and wetlands of Lake County while offering a solution for previously approved development orders that are currently inconsistent with the current objectives and policies, thus protecting the private property rights of the property owners of Lake County.

Policy I-7.1.1 Nonconforming Uses and Antiquated Plats

Within 12 months of the effective date of the Comprehensive Plan, the County shall adopt Land Development Regulations to reduce the number of uses that are inconsistent with community character, reduce non-conforming uses, eliminate nonconforming zonings, and resolve issues related to antiquated plats.

Within certain parts of the County, especially inside of Rural Protection Areas, Wekiva River Protection Area (WRPA), Wekiva Study Area, and Green Swamp Area of Critical State Concern, it is recognized that pre-existing recognized subdivisions or lots of record occur at a higher density or intensity than allowed for new subdivisions or lots within the Future Land Use Category. FLUM assignments in these areas reflect the vision of the County and overall pattern of land use planned. In these areas, the policies of this objective are intended to ensure that recognized subdivisions and lots of record are treated as conforming as specified herein.

Specific regulations shall be adopted that allow for the continuation or reestablishment of nonconforming uses previously existing on a site, including the type, size and intensity of such uses, unless:

- The use is abandoned or discontinued for a period of 18 months; or*
- Is determined to be inconsistent with the character of the surrounding community to such an extent as to cause an adverse impact to the public interest.*

Minor expansions may be allowed to accommodate compliance with regulatory requirements up to 10% of the nonconforming use existing as of the effective date of this Comprehensive Plan.

The proposed amendments are consistent with this policy by providing flexibility for developments approved prior to the effective date (September 22, 2011) of the 2030 Comprehensive Plan, thus reducing the number of uses that are inconsistent with community character and reducing the number of nonconforming uses while continuing to provide protection to the surface waters and wetlands of Lake County.

Historically, Lake County has utilized the average setback determination process, granted variances through the public hearing process before the Board of Adjustment and granted the rezoning of a property to a planned district zoning to provide for waivers to setback and buffer requirements (listed above). Development orders in effect prior to September 22, 2011 (the effective date of the 2030 Comprehensive Plan) have been acted on and/or relied upon in good faith to develop property with varied setbacks and buffers. The proposed amendments meet the intent of *Policy I-7.1.1 Nonconforming Uses and Antiquated Plats*, by recognizing these previously approved developments utilizing average setbacks, variances, and waivers to required wetland setbacks and buffers, thus reducing nonconforming uses while permitting developments utilizing the previously approved setbacks and/or buffers in keeping with the community character for that development.

C. Whether, and the extent to which, the proposed amendment is inconsistent with existing and proposed land uses:

The proposed amendments are consistent with existing land uses by recognizing previously approved wetland setbacks and upland buffers approved by development orders prior to the effective date of the 2030 Comprehensive Plan, while providing guidelines for new development to ensure protection of shorelines and wetlands.

D. Whether there have been changed conditions that justify an amendment:

There were unintended results to the strict adherence of the 25 to 50 foot wide wetland setback and the 25 to 50 foot wide upland buffer on developments approved prior to the effective date of the 2030 Comprehensive Plan and 1991 Comprehensive Plans. Previously approved variances, average setback determinations, waivers, and wetland setbacks/upland buffers established by a planned district ordinance prior to the effective date of the 2030 Comprehensive Plan are not recognized in the Comprehensive Plan and cannot be utilized, causing decreased buildable area and having the potential of creating unbuildable lots.

E. Whether, and the extent to which, the proposed amendment would result in demands on public facilities, and whether, or to the extent to which, the proposed amendment would exceed the capacity of such public facilities, infrastructure and services, including, but not limited to police, roads, sewage facilities, water supply, drainage, solid waste, parks and recreation, schools, and fire and emergency medical facilities:

The amendments will not result in any additional demand on public facilities.

F. Whether, and the extent to which, the proposed amendment would result in significant impacts on the natural environment:

In the past, when wetland buffers were reduced, the instrument granting the reduced buffer generally required mitigation techniques such as swales, trenches and other conveyances to ensure the stormwater runoff was detoured from the wetlands to address potential stormwater impacts and preserve water quality. Although impacts to the natural habitats would remain, the resulting impacts that were approved by the originally approved developments – such as plats – would not be increased by recognizing the originally approved setbacks. New development approved under the 2030 Comprehensive Plan would be required to adhere to the setbacks established by the Plan and thereby would likely have less impacts on the natural habitats and water quality. Average setback determinations allow the owners to develop their parcel “in line” with the neighboring lots, in this case mitigation is not required.

G. Whether, and the extent to which, the proposed amendment would affect the property values in the area:

The proposed amendment would likely have a positive effect on property values in Lake County, as there is a high probability of reduced property values for lots that are nonconforming to the current wetland setbacks and buffers established by the 2030 Comprehensive Plan.

H. **Whether, and the extent to which, the proposed amendment would result in an orderly and logical development pattern, specifically identifying any negative effects on such pattern:**

The amendments will allow existing lots approved by a final development order prior to the effective date of the 2030 Plan to be developed in the same manner as the neighboring lots within the same development, creating an orderly and logical development pattern.

I. **Whether the proposed amendment would be consistent with or advance the public interest, and in harmony with the purpose and interest of these regulations:**

The amendment is consistent with the interest of the public and these regulations.

– Conclusions –

The amendments recommended above will address the setback requirements set forth in *Policy III-2.2.7, Protection of Shorelines* and the buffer requirements established in *Policy III-2.5.13 Establish Minimum Buffer Requirements*, which are causing decreased buildable area and having the potential of creating unbuildable lots. The amendments will allow variances, average setbacks, and waivers established by planned district ordinances approved prior to the effective date of the 2030 Comprehensive Plan (September 22, 2011) to be recognized as conforming.

For clarity, it should be noted that where the wetland setback and the upland buffer conflict; the most stringent shall apply.

– Staff Recommendation –

APPROVAL of the proposed amendments.

– Planning & Zoning Board Recommendation –

The Board recommended **APPROVAL** with a 5-0 vote on the consent agenda for transmittal of the wetland buffer – shoreline protection Comprehensive Plan text amendment as presented by staff.

TRANSMITTAL ONLY
Ordinance Summary
Protection of Shorelines and Minimum Buffer Requirements;

The ordinance proposes to amend Policy III-2.2.7 of the 2030 Comprehensive Plan, entitled "Protection of Shorelines" to allow developments that were approved prior to September 22, 2011, with a wetland setback of less than 50 feet, to maintain the setback as prescribed by ordinance or development order, and provides that the development shall not be considered non-conforming. Currently, the Policy allows an approved development (prior to September 22, 2011) with a wetland setback of between 25 feet and 50 feet to maintain the setback and the development is not considered nonconforming.

The ordinance further proposes to make the same amendment to Policy III-2.5.13 of the 2030 Comprehensive Plan, entitled "Establish Minimum Buffer Requirements", to allow developments approved prior to September 22, 2011, to maintain the buffer width as prescribed by ordinance or development order, and to provide that the development shall not be considered non-conforming.

Changes are shown as follows: ~~Strikethrough~~ for deletions and Underline for additions to existing Code sections, and *** denotes no change between sections.

ORDINANCE 2013-

AN ORDINANCE OF THE BOARD OF COUNTY COMMISSIONERS OF LAKE COUNTY, FLORIDA, AMENDING THE LAKE COUNTY 2030 COMPREHENSIVE PLAN; AMENDING THE TEXT OF THE CONSERVATION ELEMENT BY AMENDING POLICY III-2.2.7, ENTITLED "PROTECTION OF SHORELINES" AND POLICY III-2.5.13, ENTITLED "ESTABLISH MINIMUM BUFFER REQUIREMENTS", TO PERMIT DEVELOPMENT APPROVED BY ORDINANCE OR DEVELOPMENT ORDER PRIOR TO SEPTEMBER 22, 2011, WITH A WETLAND SETBACK OF LESS THAN 50 FEET, TO MAINTAIN THAT SETBACK, AND TO PROVIDE THAT SUCH DEVELOPMENT SHALL NOT BE CONSIDERED NONCONFORMING; PROVIDING FOR PROOF OF PUBLICATION AS REQUIRED BY SECTION 163.3184(11), FLORIDA STATUTES; PROVIDING FOR SEVERABILITY; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the Community Planning Act is set forth in Chapter 163, Florida Statutes, Part II, Section 163.3161 through 163.3248; and

WHEREAS, Chapter 125, Florida Statutes, Section 125.01(g), authorizes the Board of County Commissioners of Lake County to "Prepare and enforce comprehensive plans for the development of the county"; and

WHEREAS, pursuant to Chapters 163 and 125, Florida Statutes, on the 25th day of May, 2010, the Board of County Commissioners enacted Ordinance No. 2010-25, adopting the Lake County 2030 Comprehensive Plan; and

WHEREAS, on the 23rd day of July, 2010, the State of Florida Department of Community Affairs, now known as the Department of Economic Opportunity, published a Notice of Intent finding the Lake County 2030 Comprehensive Plan Amendment "In Compliance" with Chapter 163, Florida Statutes; and

WHEREAS, Section 163.3184, Florida Statutes, sets forth the process for adoption of comprehensive plan amendments; and

WHEREAS, on the 22nd day of September, 2011, the Lake County 2030 Comprehensive Plan Amendment became effective; and

WHEREAS, the Planning & Zoning Board, in its capacity as the Local Planning Agency, considered this ordinance and recommended **Approval** at a properly advertised public hearing on the 3rd day of July, 2013; and

WHEREAS, on the 30th day of July, 2013, this Ordinance was heard at a public hearing before the Lake County Board of County Commissioners for transmittal; and

WHEREAS, on the ____ day of ____, 2013, this Ordinance was heard at a public hearing before the Lake County Board of County Commissioners for adoption; and

WHEREAS, it serves the health, safety and general welfare of the residents of Lake County to adopt these amendments to the Lake County Comprehensive Plan;

NOW THEREFORE, BE IT ORDAINED by the Board of County Commissioners of Lake County, Florida, that:

Section 1. Comprehensive Plan Text Amendment. The following Policies shall be amended as shown (new text is shown as underlined, deleted text is struck through, and * denotes no change between):**

Policy III-2.2.7 Protection of Shorelines

To protect natural water bodies and wetland areas from the encroachment of development, the County shall implement the following shoreline protection standards, incorporated within the Land Development Regulations:

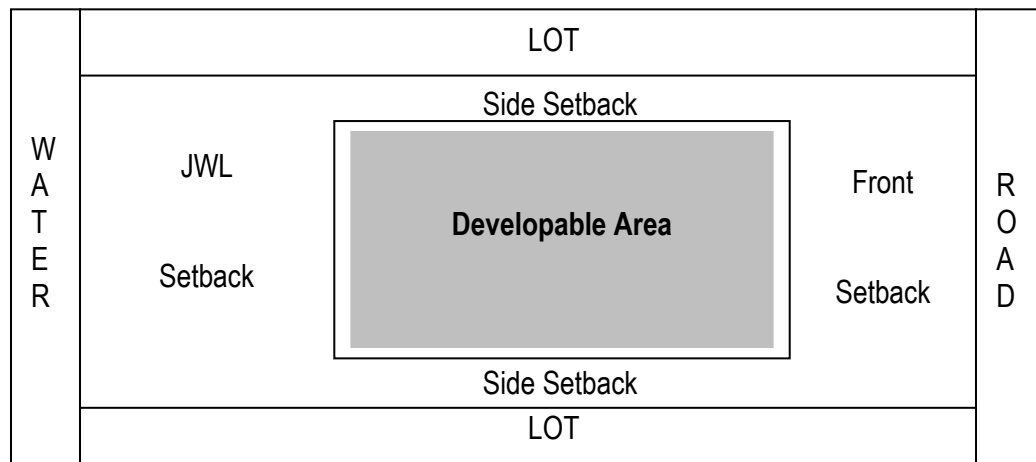
The County shall establish a minimum setback of 50 feet from the mean high water line (MHWL) or jurisdictional wetland line (JWL), whichever is further landward. Exceptions to this requirement are listed below:

1. Additions which match existing rear and side setbacks may be allowed to “square off” a residence.
2. Water dependent activities including uses and structures such as docks, platforms, and pile-supported walkways or similar structures.
3. Development approved prior to September 22, 2011 with a wetland setback of less than 50 feet ~~between 25 and 50 feet~~ shall be allowed to maintain the approved setback as prescribed in the approved ordinance or development order and shall not be considered nonconforming. The term “Development” as used in this subsection shall expressly include any type of variance, ~~or ordinance~~, average setback determination, or waiver.

4. Upland lots with a developable area less than 30 feet in width or depth, as measured landward from the JWL (as illustrated below) provided:
 - The lot is a developable Lot of Record, or the lot was legally created through a development order prior to March 2, 1993; and
 - The maximum developable area shall be limited to 30 feet in width or depth; and
 - In no case shall the JWL setback be less than 20 feet; and
 - The first one inch (1”) of stormwater runoff shall be captured on site; and
 - Development must be constructed as far landward on the lot as possible.

5. A variance to the setback requirements listed above may be granted if:
 - The lot is a developable Lot of Record, or the lot was legally created through a development order prior to March 2, 1993; and
 - All other remedies have been exhausted, such as a variance to all other setback requirements; and
 - The maximum developable area shall be limited to 30 feet in width or depth; and
 - The first one inch (1”) of stormwater runoff shall be captured on site; and,
 - Development is constructed as far landward on the lot as possible.

For this policy only, the "**developable area**" of a lot is where a building or impervious surface can be located in compliance with all setbacks.



The County shall require a 100-foot setback, from the mean high water line of lakes and wetlands, or the jurisdictional wetland line, whichever is further landward for the installation of septic tanks drain fields.

Development on lots legally created on or before March 2, 1993, and all Lots of Record, which cannot meet the 100-foot setback from the mean high water line of lakes and wetlands, or the jurisdictional wetland line for placement of the drain field, may be granted an administrative adjustment by the County Manager or designee, if the lot would otherwise be deemed unbuildable. Such adjustment may be granted to allow the placement of the septic tank drain field as far landward as possible, to have the least impact on surface waters and wetlands. All setbacks shall

be consistent with state law. Any on-site wastewater system approved with an administrative adjustment shall be an advanced treatment system or alternative system designed to remove nutrients from the effluent.

Policy III-2.5.13 Establish Minimum Buffer Requirements

Upland buffers adjacent to wetlands provide habitat for wetland dependent species, and assist in minimizing the deleterious effects of development adjacent to the wetland. The County shall require that all developments provide natural upland buffers adjacent to those wetlands which are to be preserved following development. These buffers shall be of such size to ensure that the quality and quantity of surface waters and the habitat for aquatic and wetland-dependent species of wildlife are not adversely affected by the development and shall be in the location and dimensions approved by the County, unless a greater buffer is required by another agency having jurisdiction, in which case the greater buffer shall be required.

Buffers shall be determined to start landward from the mean high water line or wetland jurisdictional line, whichever is further landward; the wetland jurisdictional line shall be determined by a qualified person acceptable to the County, according to the State-approved methodology adopted by Rule, and which shall be subject to field verification and approval by the agency exercising jurisdiction or the County, if necessary. A minimum 50-foot buffer requirement shall apply to isolated wetlands, non-isolated wetlands and rivers and streams, except where the required buffer makes a lot unbuildable, in which case a variable buffer may be allowed as described below:

- Outside the Green Swamp Area of Critical State Concern variable buffers shall have a minimum width of 15 feet and average width of 50 feet.
- Inside the Green Swamp Area of Critical State Concern variable buffers shall have a minimum width of 25 feet and average width of 50 feet.

Developments approved prior to September 22, 2011 with a wetland buffer of less than 50 feet shall be allowed to maintain the buffer width as prescribed in the approved ordinance or development order and shall not be considered nonconforming. The term "Development" as used in this subsection shall expressly include any type of variance, ordinance, average setback determination, or waiver.

Uses allowed in buffers are limited to: passive recreation activities, limited stormwater facilities, and water dependent structures such as, but not limited to, fishing piers, docks, and walkways. Buffers without native vegetation shall be re-vegetated with indigenous habitat to protect the quality of the adjacent isolated wetland, wetland system, river or stream. A buffer of native upland edge vegetation shall be provided or preserved on new development sites. Native vegetation within buffers shall be preserved.

To the extent that federal, state or regional requirements exceed the minimum buffers adjacent to wetlands established here, the County shall require compliance with the stricter standard. The

County shall require compliance with all buffer requirements for the Wekiva River System and other Outstanding Florida Waters.

Section 2. Advertisement. This Ordinance was advertised pursuant to Chapter 163, Florida Statutes, Section 163.3184(11).

Section 3. Severability. If any section, sentence, clause, or phrase of this Ordinance is held to be invalid or unconstitutional by any court of competent jurisdiction, then said holding shall in no way affect the validity of the remaining portions of this Ordinance.

Section 4. Filing with the Department of State. The clerk shall be and is hereby directed forthwith to send a certified copy of this Ordinance to the Secretary of State for the State of Florida.

Section 5. Effective Date. This Ordinance shall become effective as provided by Section 163.3184, Florida Statutes.

ENACTED this ____ day of _____, 2013.

FILED with the Secretary of State _____, 2013.

ATTEST:

BOARD OF COUNTY COMMISSIONERS
LAKE COUNTY, FLORIDA

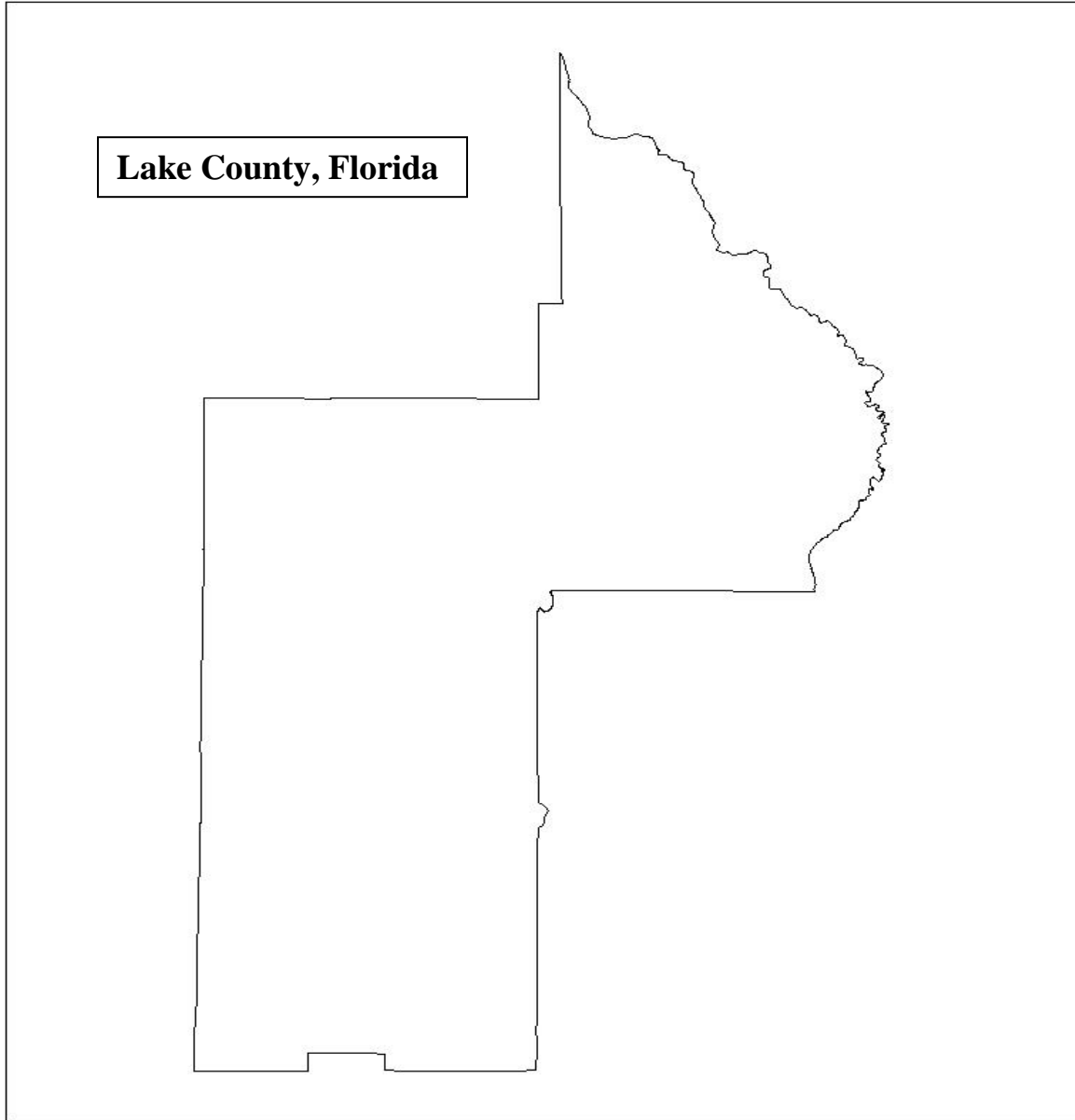
Neil Kelly, Clerk of the
Board of County Commissioners,
Lake County, Florida

Leslie Campione, Chairman

Approved as to form and legality:

Sanford A. Minkoff
County Attorney

Exhibit A



AGENDA UPDATES

Mr. Rick Gonzalez, Board Member, moved that Tabs 2, 4, 5, and 6 be moved from the Regular Agenda to the Consent Agenda.

Mr. Brian Sheahan, Planning and Community Design Manager, Department of Growth Management, stated that Tab 1 had been postponed indefinitely and Tab 3 had been withdrawn.

The Chairman noted that no speaker cards had been submitted for any agenda items. He then asked if anyone present wished to speak on any of the agenda items.

No one present wished to address the Board.

MOTION by Rick Gonzalez, SECONDED by Tim Morris to APPROVE moving Tabs 2, 4, 5 and 6 from the Regular Agenda to the Consent Agenda.

FOR: Gonzalez, Morris, McKeeby, Bryan, Brandeburg

AGAINST: None

MOTION CARRIED: 5-0

MINUTES

MOTION by Tim Morris, SECONDED by Rick Gonzalez to APPROVE the May 29, 2013 Lake County Planning and Zoning Board Public Hearing minutes, as submitted.

FOR: Morris, Gonzalez, McKeeby, Bryan, Brandeburg

AGAINST: None

MOTION CARRIED: 5-0

CONSENT AGENDA

Tab 2	LPA #13/3/2-4	Comprehensive Plan Amendment (Transmittal) FLUM change – Urban Low to Regional Commercial
Tab 4	SLPA #13/7/1-1	Comprehensive Plan Amendment FLUM change – Rural Transition to Urban Low Density
Tab 5	LPA #13/5-1T	Comprehensive Plan Amendment (Transmittal) FLUM change – Protection of Shorelines and Establish Minimum Buffer Requirements

BOARD ACTION

July 30, 2013

	Presentation and update by Public Safety staff regarding the explosion at the Blue Rhino Propane business that occurred the night before.	
APPROVED	Tab 1. Approval of the Minutes of June 11, 2013 (Special Meeting) and June 18, 2013 (Regular Meeting) as presented.	KELLY
	<p style="text-align: center;"><u>CITIZEN QUESTION AND COMMENT PERIOD</u></p> <p>Mr. Clark Morris, a resident of Mt. Plymouth, commented that he was pleased with the progress of the Sorrento CRA meeting, and he also gave kudos to the County's Public Works staff for taking care of road infrastructure problems immediately after being reported on the website.</p> <p>Mr. Jon Cherry, President and CEO of LifeStream Behavioral Center, spoke about the integral part LifeStream plays in public safety and requested that the Board not decrease the allocation to LifeStream any more than it has already been reduced.</p>	
APPROVED	<p>Tab 2. Clerk of Court's Consent Agenda:</p> <ol style="list-style-type: none">1. Request to acknowledge receipt of the list of warrants paid prior to this meeting, pursuant to Chapter 136.06 (1) of the Florida Statutes, which shall be incorporated into the Minutes as attached Exhibit A and filed in the Board Support Division of the Clerk's Office.2. Request to acknowledge receipt of the Annual Financial Audit Report of Estates at Cherry Lake Community Development District for Fiscal Year Ended September 30, 2012.3. Request to acknowledge receipt of the Notice of the Application of Sunlake Estates Utilities, L.L.C. to operate a water and wastewater utility to provide service to the Sunlake Estates mobile home community in Lake County, Florida, pursuant to Section 367.045, Florida Statutes.4. Request to acknowledge receipt of a copy of the Annual Financial Audit Report for the Fiscal Year Ended September 30, 2012 for the Greater Lakes/Sawgrass Bay Community Development District, along with a cover letter dated June 21, 2013.5. Request to acknowledge receipt of approval of Annexation Ordinance 2013-08 by the Tavares City Council on June 19, 2013, annexing 5.5 acres of land located on the Northeast corner of County Roads 561 & 448.	KELLY

	6. Request to acknowledge receipt of a copy of the Audit Report for the Town of Montverde for Fiscal Year 2012, along with a cover letter dated July 1, 2013.	
APPROVED	Tab 3. Request from Community Services for approval of the agreement between the Lake County Sheriff, Armor Correctional Health Services, Inc., and Lake County Board of County Commissioners for the management and administration of inmate medical care and authorization for the Board Chairman to sign the Agreement and any subsequent documents relating to this Agreement. The fiscal impact is \$1,731,480.00 (Expense).	KEEDY
APPROVED	Tab 4. Request from Community Services for approval to award contract 13-0215 for provision of transitional housing in the South Lake area to New Beginnings of Lake County, Inc. The fiscal impact is \$106,222, which is fully grant-funded.	KEEDY
APPROVED	Tab 5. Request from Community Services for approval to give the County Manager authority to sign the Direct Pay to Leesburg Regional Medical Center for an inmate inpatient medical stay. The Direct Pay requires the County Manager's signature as the invoice total exceeds \$25,000.00. The fiscal impact is \$30,440.54.	KEEDY
APPROVED	Tab 6. Request from Community Services for approval to give the County Manager authority to sign the Direct Pay to Leesburg Regional Medical Center for an inmate inpatient medical stay. The Direct Pay requires the County Manager's signature as the invoice total exceeds \$25,000.00. The fiscal impact is \$25,657.79.	KEEDY
APPROVED	Tab 7. Request from Facilities Development and Management for approval to award contract 13-0605 for Fire Protection Systems Inspection, Testing, and Maintenance, and authorize the Procurement Office to execute all supporting documentation. The fiscal impact is undetermined as expenditures will be based on needs as they arise. The last annual total expenditure for similar services was approximately \$87,976.	SWENSON
APPROVED	Tab 8. Request from Fiscal and Administrative Services for approval of Contract 13-0418, Establish Vendor Pool for Signs, Displays, Decals, Lettering, and Striping to two (2) vendors and authorize the Procurement Office to execute all supporting documentation. As future needs cannot be quantified at this time, the fiscal impact will depend on actual requirements. Annual expenditures for similar services during the last fiscal year amounted to \$62,778.54.	KOONTZ

APPROVED	Tab 9. Request from Fiscal and Administrative Services for the Board to (1) declare the items on the attached list surplus to County needs, and (2) authorize the removal of all of the items on the attached list from the County's official fixed asset inventory system records, and (3) authorize the Procurement Manager to execute any required title documents.	KOONTZ
APPROVED	Tab 10. Request from Public Safety for approval and execution by the Lake County Board of County Commissioners of: (1) Emergency Management Preparedness and Assistance (EMPA) Trust Fund Base Grant Agreement with the State of Florida, Division of Emergency Management, in the amount of \$105,806; and (2) Emergency Management Performance Grant (EMPG) Agreement with the State of Florida, Division of Emergency Management, in the amount of \$83,232; and (3) approval of Unanticipated Revenue Resolution 2013-75 ; and (4) authorization for the County Manager to sign future amendments/modifications that do not involve financial impact.	JOLLIFF
APPROVED	Tab 11. Request from Public Resources for approval of the Baker & Taylor Early Shipment Agreement for purchasing and receiving certain products in advance of the on-sale date, and approval for the County Manager to sign said agreement. There is no fiscal impact.	BREEDEN
APPROVED	Tab 12. Request from Public Works for approval and signature of Resolution 2013-76 to advertise Public Hearing to vacate a portion of right of way of Glenn Drive. There is no fiscal impact. Commission District 3.	STIVENDER
APPROVED	Tab 13. Request from Public Works for approval of Amendment for the Florida Department of Transportation (FDOT) Local Agency Program (LAP) Project, Construction Engineering Inspection (CEI) services for the South Lake Trail, Phase II, to Tierra, Inc. There is no fiscal impact.	STIVENDER
APPROVED	Tab 14. Request from Public Works for approval and authorization for Chairman to execute a satisfaction and release of lien for six (6) special assessments. There is no fiscal impact. Commission Districts 4 and 5.	STIVENDER
APPROVED	Tab 15. Request from Public Works for approval and signature of Resolution No. 2013-77 to advertise Public Hearing to vacate and cease maintenance on S. Libby Road, lying Westerly of Wilson Lake Parkway and Southerly of West Libby Road. There is no fiscal impact. Commission District 1.	STIVENDER
APPROVED	Tab 16. Request from Public Works for approval to re-award contract 13-0417 Roadside Mowing and Litter Removal (Area C) to Native Land and Tree, Inc. (Leesburg FL), and approve termination of the existing contract for those services. The fiscal impact is estimated at \$80,355.90 (Annual	STIVENDER

	Expenditure).	
	Tab 17. PUBLIC HEARINGS: REZONING	
	REZONING CONSENT AGENDA	
APPROVED	<p>Tab 1. LPA #13/3/2-4 Renningers Twin Markets Comprehensive Plan Amendment (Transmittal) FLUM change – Urban Low to Regional Commercial Request to change the Future Land Use Map on five parcels, consisting of approximately 62 acres, known as Renninger’s Florida Twin Markets from Urban Low Density to Regional Commercial.</p>	KING
APPROVED	<p>Tab 2. Ordinance No. 2013-34 SLPA #13/7/1-1 Barrington Estates, Phase II (Adoption) Comprehensive Plan Amendment FLUM change – Rural Transition to Urban Low Request to change 9.92+/- acres south of Clermont from Rural Transition to Urban Low.</p>	KING
APPROVED	<p>Tab 3. LPA #13/5-1T Protection of Shorelines and Establish Minimum Buffer Requirements Comprehensive Plan Amendment (Transmittal) FLUM change Request to amend Policy III-2.2.7 Protection of Shorelines and Policy III-2.5.13 Establish Minimum Buffer Requirements to recognize existing development orders approved prior to the effective date of the 2030 Comprehensive Plan that establish less restrictive wetland setbacks and upland buffers.</p>	KING
APPROVED	<p>Tab 4. Ordinance No. 2013-35 LPA #13/2/1-5 Custer Trucking/Island Food Store Comprehensive Plan Amendment (Adoption) FLUM change – Rural Transition to Industrial Request to change the Future Land Use Map on parcels located at the northeast corner of CR 44 and Emerald Avenue from Rural Transition to Industrial.</p>	KING
APPROVED	<p>Tab 6. Ordinance No. 2013-37 LPA #13/2/3-1 Villa City East, LLC</p>	KING

	<p>Comprehensive Plan Amendment (Adoption) FLUM change – Rural Transition & Urban Low to Regional Office BLR Request to change the Future Land Use Map on one vacant parcel located on CR 565 and adjacent to the industrial park from Rural Transition and three vacant parcels located east of CR 565 and south of US Hwy 441 from Urban Low Density to Regional Office.</p>	
APPROVED	<p>Tab 7. Ordinance No. 2013-38 PH #11-13-1 Cirelli/Vosilla Property Rezoning Request to rezone property from Agriculture (A) to Medium Suburban Residential District (R-4).</p>	KING
	REZONING REGULAR AGENDA	
APPROVED	<p>Tab 5. Ordinance No. 2013-36 LPA #13/1/8-2 Honda Comprehensive Plan Amendment (Adoption) FLUM change – Regional Office to Regional Commercial Request to change the Future Land Use Map for six parcels located on the south side of east SR 50 and west of the county line from Regional Office to Regional Commercial.</p>	KING
APPROVED	<p>Tab 18. Request from Community Services for approval to award contract 13-0209 for Transportation Operator Services under the County's fixed route and para-transit public transportation programs to Ride-Right, Inc. (St. Louis, MO). The estimated annual fiscal impact is \$3,565,032.46. The contract effort is funded primarily by federal grants.</p>	KEEDY
FOR YOUR INFORMATION	<p>Tab 25. Discussion regarding Route 55. Commr. Campione, as Chairman, will write a letter to Osceola County letting them know that if they do not assist with funding of this route, Lake County will discontinue their funding support as well.</p>	PARKS
APPROVED	<p>Tab 19. Request from Fiscal and Administrative Services for approval and execution of the attached Resolution No. 2013-78 which initiates the annual process for preparation of the Solid Waste Assessment Roll, authorizes the publication of the advertisement for a September 10, 2013 Public Hearing, provides direction to notice all affected parties of the proposed rates, and directs the imposition of the Solid Waste Assessment fees for the Fiscal Year beginning October 1, 2013. The maximum proposed residential rate is \$184. The fiscal impact is \$12,392,400.00</p>	KOONTZ
APPROVED	<p>Tab 20. Request from Fiscal and Administrative Services for approval and execution of the attached Resolution No. 2013-79 which initiates the annual</p>	KOONTZ

	process for preparation of the Fire Assessment Roll, authorizes the publication of the advertisement for a September 10, 2013 Public Hearing, provides direction to notice all affected parties of the proposed rates, and directs the imposition of the Fire Assessment fees for the Fiscal Year beginning October 1, 2013. The maximum proposed residential rate is \$181. The fiscal impact is \$16,325,000.00.	
APPROVED	Tab 21. Discuss and set millage rates to be included on TRIM notifications as follows: Ambulance MSTU millage of .3853; Public Lands Voted Debts at .1900; Fire Emergency Medical Services MSTU at .3222; General Fund at 4.7309; Parks and Stormwater MSTU at .4984; and Approve public hearing dates and times for September 10, 2013 @ 5:05 p.m. and September 24, 2013 @ 5:05 p.m., and approval to advertise these public hearings. There is no fiscal impact.	KOONTZ
APPROVED	Tab 22. Request from Growth Management for approval to advertise a Public Hearing for Lady Lake Interlocal Service Boundary Agreement (ISBA) ordinance.	KING
APPOINTMENT	Tab 23. Appointment of Robert P. Peraza to complete an expired term ending February 28, 2015 as a member to the Library Board representing District 2.	CAMPIONE
APPOINTMENT	Tab 24. Reappointment of the following members to the Lake County Arts and Cultural Alliance to serve a two-year term ending July 31, 2015: Richard Hoon, City of Eustis; Nancy Zinkofsky, City of Mount Dora; Debbie Stivender, City of Tavares; as well as the appointment of Joe Wynkoop, City of Montverde, to serve a one-year term ending July 31, 2014.	CAMPIONE
APPROVED	Mr. Sandy Minkoff, County Attorney, related that Wells Fargo Bank foreclosed on a home in the Umatilla area and asked the County if they would accept it as a donation along with a cash donation of between \$5,000 and \$10,000 to take it. The Board approved staff's recommendation to accept the donation, authorize the Chairman to sign the necessary documents, and then donate it to Habitat, with the cash donation to remain in the general fund.	MINKOFF
FOR YOUR INFORMATION	Mr. David Heath, County Manager, reported that their Public Resources staff has been contacted by the Department of Environmental Protection stating that the County will be receiving a Land & Water Conservation Fund grant in the amount of \$200,000 to go towards the Miracle League field at Lake Idamere. He mentioned that they would need an additional \$200,000 for the first phase, which they could discuss at the end of October.	HEATH
FOR YOUR INFORMATION	Mr. Heath related that they have been contacted by the City of Mount Dora to do an ISBA for their employment center area in the east section of town,	HEATH

	which will come back to the Board next month.	
FOR YOUR INFORMATION	Mr. Heath stated that he has been contacted by the City Manager of Minneola asking about resetting their base year for their CRA, and staff was currently evaluating that.	HEATH
FOR YOUR INFORMATION	Mr. Heath indicated that Governor Scott was coming to the Institute of Public Safety and was going to take a tour of the Blue Rhino site at 3:00 p.m. that afternoon.	HEATH
FOR YOUR INFORMATION	Commr. Parks mentioned that he wanted at some point an update on their drowning and water safety task force.	CONNER
FOR YOUR INFORMATION	Commr. Conner commented that the EDC event at the Mission Inn went well last night and that the presentation was excellent and one of the best ones he has ever seen.	CONNER
FOR YOUR INFORMATION	Commr. Cadwell asked if the County Manager could speak with Mr. Curry, the Principal of Spring Creek Charter School in Paisley, regarding hiring a resource officer for that school since it was now considered a K-8 middle school.	CADWELL
APPROVED	Tab 26. Discussion of County Manager and County Attorney evaluation forms. The Board approved to use the City of Stewart's evaluation form, but to change the categories to: exceeds expectations, meets expectations and needs improvement.	CAMPIONE
CONSENSUS	Tab 27. Commissioner Campione would like to discuss allowance of a County initiated change to the comprehensive plan for vacant property located at the intersection of Felkins Road and CR 452; this property is currently owned by the Whitaker family. The Board reached a consensus for staff to look into the issue and find a way to make it work.	CAMPIONE
FOR YOUR INFORMATION	Commr. Campione commented that the Economic Development and Tourism staff put together incredible books for the Metro EDC staff to use as a prototype for their regional branding efforts.	CAMPIONE
FOR YOUR INFORMATION	Commr. Campione mentioned that the School Board met last night and voted 3-2 to make a recommendation to the Board to pursue the assessment concept for the full amount that is currently set forth in the impact fee study and a request to meet within 30 days. The Board is going to ask the School Board for a letter clarifying the motions made at the meeting since the motions were confusing, and once they received clarification they would then set a date to meet with the School Board.	CAMPIONE

PUBLIC HEARING NOTICE COMPREHENSIVE PLAN TEXT AMENDMENT TRANSMITTAL

The Board of County Commissioners of Lake County, Florida, proposes to adopt the following ordinance:

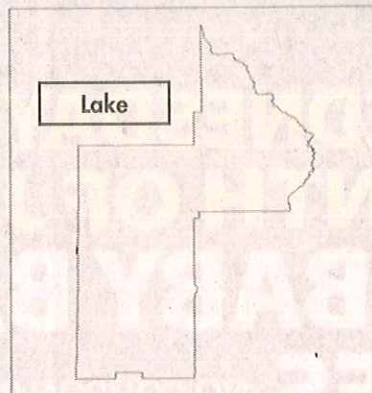
ORDINANCE 2012-

LPA#13/5-1T

Amendment to Policy III-2.2.7 Protection of Shorelines and
Policy III-2.5.13 Establish Minimum Buffer Requirements

Text Amendments to the 2030 Comprehensive Plan:

AN ORDINANCE OF THE BOARD OF COUNTY COMMISSIONERS OF LAKE COUNTY, FLORIDA, AMENDING THE LAKE COUNTY 2030 COMPREHENSIVE PLAN; AMENDING THE TEXT OF THE CONSERVATION ELEMENT BY AMENDING POLICY III-2.2.7, PROTECTION OF SHORELINES AND AMENDING POLICY III-2.5.13, ESTABLISH MINIMUM BUFFER REQUIREMENTS; BY AMENDING SETBACK REQUIREMENTS FOR STRUCTURES TO THE MEAN HIGH WATER LINE OR JURISDICTIONAL WETLAND LINE FOR DEVELOPMENTS APPROVED PRIOR TO SEPTEMBER 22, 2011, (EFFECTIVE DATE) BY ESTABLISHING VARIABLE BUFFER WIDTHS FOR DEVELOPMENTS APPROVED PRIOR TO THE SEPTEMBER 22, 2011, (EFFECTIVE DATE); PROVIDING FOR PUBLICATION AS REQUIRED BY SECTION 163.3184(11), FLORIDA STATUTES; PROVIDING FOR SEVERABILITY; AND PROVIDING FOR AN EFFECTIVE DATE.



Public hearings on the ordinance will be held on July 3, 2013 before the Planning & Zoning Board and for transmittal on July 30, 2013 before the Board of County Commissioners at 9:00 a.m. or as soon thereafter as possible, in the County Commission Chambers, 2nd Floor, Round Administration Building, 315 West Main Street, Tavares, Florida.

The proposed amendment to the 2030 Comprehensive Plan and the proposed ordinance adopting the amendment shall be available for review at the Department of Growth Management, Planning and Community Design Division, 315 West Main Street, Tavares, Florida, between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays.

Pursuant to the provisions of Chapter 286, Florida Statutes, Section 286.0105, if any person decides to appeal any decision made by the Board of County Commissioners with respect to any matter considered at this public hearing, he or she will need a record of the proceedings, and that, for such purposes, he or she may need to ensure that a verbatim record of the proceedings is made, which record may include the testimony and evidence upon which the appeal is to be based.

Persons with disabilities needing assistance to participate in any of these proceedings should contact the Department of Facilities Development and Management at (352) 343-9760 at least 48 hours in advance of the public hearing.

Lake County Board of County Commissioners
Department of Growth Management
Planning & Community Design Div.
352-343-9672 (Brian T. Sheahan, AICP, Manager)

**SLPA#13/7/1-1 Barrington Estates Small Scale
Future Land Use Map Amendment**

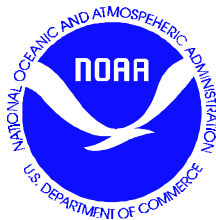
EXHIBITS



Wetland Buffers:

Use and Effectiveness

February 1992
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Wetland Buffers: Use and Effectiveness

Andrew J. Castelle¹, Catherine Conolly¹, Michael Emers¹, Eric D. Metz², Susan Meyer², Michael Witter², Susan Mauermann³, Terrell Erickson³, Sarah S. Cooke⁴

¹Adolfson Associates, Inc., Edmonds, WA

²W&H Pacific, Inc., Bellevue, WA

³Washington State Department of Ecology, WA

⁴Pentec Environmental, Edmonds, WA

for

Washington State Department of Ecology
Shorelands and Coastal Zone Management Program
Olympia, Washington

February 1992

ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

This report was developed to assist efforts by Washington State agencies and local governments developing policies and standards for wetlands protection. The report summarizes and evaluates scientific literature, an agency survey, and a recent field study on wetland buffer use and effectiveness. Published literature was obtained from several sources and contains information from throughout the country on the concept of wetland buffers, their important functions, effective buffer widths, and buffer determination models. The agency survey reviewed buffer requirements of several states throughout the U.S. and for counties and cities in Washington. The field study reviewed the current state of buffers at several sites in King and Snohomish counties.

Scientific Literature Review

Wetland buffers are areas that surround a wetland and reduce adverse impacts to wetland functions and values from adjacent development. The literature indicates that buffers reduce wetland impacts by moderating the effects of stormwater runoff including stabilizing soil to prevent erosion; filtering suspended solids, nutrients, and harmful or toxic substances; and moderating water level fluctuations. Buffers also provide essential habitat for wetland-associated species for use in feeding, roosting, breeding and rearing of young, and cover for safety, mobility, and thermal protection. Finally, buffers reduce the adverse impacts of human disturbance on wetland habitats including blocking noise and glare; reducing sedimentation and nutrient input; reducing direct human disturbance from dumped debris, cut vegetation, and trampling; and providing visual separation. Wetland buffers are essential for wetlands protection.

Scientists generally agree that appropriate buffer widths are based on several variables, including:

- existing wetland functions, values, and sensitivity to disturbance;
- buffer characteristics;
- land use impacts; and
- desired buffer functions.

Wetland functions, values, and sensitivity are attributes that will influence the necessary level of protection for a wetland. Those systems which are extremely sensitive or have important functions will require larger buffers to protect them from disturbances that may be of lesser threat to a different site. Where wetland systems are rare, or irreplaceable (e.g., high quality estuarine wetlands, mature swamps, bogs), greater buffer widths will ensure a lower risk of disturbance.

Buffer characteristics influence their ability to reduce adverse effects of development, most importantly in relationship to slope and vegetative cover. Buffers with dense vegetative cover on slopes less than 15% are most effective for water quality functions. Dense shrub or forested vegetation with steep slopes provide the greatest protection from direct human disturbance. Appropriate vegetation for wildlife habitat depends on wildlife species present in the wetland and buffer. Effectiveness is also influenced by ownership of the buffer.

Land uses with significant construction and post-construction impacts need larger buffers. Construction impacts include erosion and sedimentation, debris disposal, vegetation removal, and noise. Post-construction impacts are variable depending on the land use, but residential land use, in particular, can have significant impacts. Residential land use is associated with yard maintenance debris, domestic animal predation, removal of vegetation, and trampling. Wetland areas and their buffers should not be included in residential lots.

Appropriate buffer widths vary according to the desired buffer function(s). Temperature moderation, for example, will require smaller buffer widths than some wildlife habitat or water quality functions. Buffer widths for wildlife may be generalized, but specific habitat needs of wildlife species depend on individual habitat requirements.

Buffer effectiveness increases with buffer width. As buffer width increases, the effectiveness of removing sediments, nutrients, bacteria, and other pollutants from surface water runoff increases. One study found that for incrementally greater sediment removal efficiency (e.g., from 90 to 95%), disproportionately larger buffer width increases are required (e.g., from 100 to 200 feet). As buffer width increases, direct human impacts, such as dumped debris, cut or burned vegetation, fill areas, and trampled vegetation will decrease. As buffer width increases, the numbers and types of wetland-dependent and wetland-related wildlife, that can depend on the wetland and buffer for essential life needs, increases.

In western Washington, wetlands with important wildlife functions should have 200 to 300-foot buffers depending on adjacent land use. In eastern Washington, wetlands with important wildlife functions should have 100 to 200-foot buffers depending on adjacent land use. To retain wetland-dependent wildlife in important wildlife areas, buffers need to retain plant structure for a minimum of 200 to 300 feet beyond the wetland. This is especially important where open water is a component of the wetland or where the wetland has heavy use by migratory birds or provides feeding for heron. The size needed would depend upon disturbance from adjacent land use and wetland resources involved. Priority species may need even larger buffers to prevent their loss due to disturbance or isolation of subpopulations.

Buffer widths effective in preventing significant water quality impacts to wetlands are generally 100 feet or greater. Sensitive wetland systems will require greater distances and degraded systems with low habitat value will require less. The literature indicates effective buffers for water quality range from 12 to 860 feet depending on the type of disturbance (e.g., feedlot, silviculture) and the measure of effectiveness utilized by the author. For those studies that measured effectiveness according to removal efficiency, findings ranged from 50 to 92% removal in ranges of 62 to 288 feet. Studies that measured effectiveness according to environmental indicators such as levels of benthic invertebrates and salmonid egg development in the receiving water generally found that 98-foot buffers adjacent to streams were effective. These latter buffer distances may be conservative for wetlands, where lower water velocities and presence of vegetation result in increased sediment deposition and accumulation.

Studies indicate that buffers from 50 to 150 feet are necessary to protect a wetland from direct human disturbance in the form of human encroachment (e.g., trampling, debris). The appropriate width to

prevent direct human disturbance depends on the type of vegetation, the slope, and the adjacent land use. Some wetlands are more sensitive to direct disturbance than others.

Various methods are used for determining buffer widths in a regulatory context. Regulatory agencies often establish a rating system, commonly of three or four categories, assessing a given wetland's functional value, sensitivity, rarity, or other attributes. Accordingly, the amount of protection afforded to each type differs.

Agency Survey

A survey conducted of regulatory requirements for wetland buffers indicated that of 16 states surveyed, ten require wetland buffers and eight incorporate wetlands rating, either adopted or proposed. Of five Washington counties with adopted wetlands protection ordinances, all five require buffers and four utilize wetlands rating systems (the fifth is currently proposing an amendment that incorporates rating). Of 28 identified cities with wetlands protection ordinances, 27 contain specific buffer standards and 20 utilize wetlands rating systems. The one city without specific standards has adopted an interim policy statement for wetlands protection.

Specific buffer requirements vary widely at the state and local level. State buffer requirements range from 0 to 300 feet; Washington county buffer requirements range from 0 to 200 feet; and Washington city buffer requirements range from 0 to 300 feet.

Field Study

A field analysis of the current state of buffers in King and Snohomish counties found that effectiveness of the buffer was determined by the type of buffer in place, the type of alteration to the buffer and surrounding area, the width of the buffer, the time elapsed from development, and the ownership of the buffer and adjacent wetland.

Buffer function was found to be directly related to the width of the buffer. Ninety-five percent of buffers smaller than 50 feet suffered a direct human impact within the buffer, while only 35% of buffers wider than 50 feet suffered direct human impact. Human impacts to the buffer zone resulted in increased impact on the wetland by noise, physical disturbance of foraging and nesting areas, and dumping refuse and yard waste. Overall, large buffers reduced the degree of changes in water quality, sediment load, and the quantity of water entering the adjacent wetland. As a rule, buffers were subjected to a reduction in size over time. Of 21 sites examined, 18 were found to have reduced buffer zones within one to eight years following establishment.



RESEARCH SERVICES

OFFICE OF POLICY ANALYSIS,
RESEARCH & INNOVATION

TECHNICAL SUMMARY

Technical Liaison:

Kenneth Graeve, Mn/DOT
Kenneth.Graeve@state.mn.us

Administrative Liaison:

Shirlee Sherkow, Mn/DOT
Shirlee.Sherkow@state.mn.us

Principal Investigator:

John Nieber, University of Minnesota

PROJECT COST:

\$158,872



Researchers used geographic information systems software to map Twin Cities metro area wetlands and buffers.

Protecting Urban Wetlands with Buffer Zones

What Was the Need?

Mn/DOT has long recognized the importance of preserving and protecting the state's many wetlands. These marshes, swamps and bogs provide habitat to a wide diversity of plants and animals that could not otherwise thrive. Sustaining this ecosystem requires a minimum water quality, which is influenced by the runoff from upland areas. Runoff that contains sediments and chemicals from human activities such as farming, forestry and land development can negatively affect wetland ecosystems and reduce biodiversity.

Minnesota's [Wetland Conservation Act](#) requires that replacement wetlands of less than two acres be surrounded by a buffer zone at least 25 feet wide with no road, structures or other human activity. For all other replacement wetlands, the buffer has an average width of 50 feet with a minimum of 25 feet. These buffers help protect wetlands by filtering sediments and toxins out of the water running toward them, promoting the retention of nutrients in the soil, sheltering plants and animals from direct contact with adjacent human activities, and providing connectivity between the wetland and migratory destinations such as breeding grounds.

Research was needed to validate this minimum buffer width and to confirm whether width was an appropriate criterion for assessing how well buffers protect wetlands. Other potentially important criteria include vegetation, soil composition, land slope and surrounding land use.

What Was Our Goal?

The goal of this project was to evaluate the effect of buffer size and other characteristics on the ecological diversity and water quality of wetlands.

What Did We Do?

Researchers began by compiling a database with information about 64 wetlands in the Twin Cities metro area. Data included information on each wetland's size and type, levels of human disturbance and adjacent land use, water quality and chemistry, and Index of Biological Integrity scores for both plants and animals. These IBI scores represent the health of biological communities and the degree to which they have been impaired by human activities; IBI measures the abundance and variety of those plants and animals most sensitive to pollution.

Researchers then updated this database with topographical information to determine the characteristics of buffer zones adjacent to the wetlands, including the area of the contributing watershed, soil composition and hydrology, land slope, land use and buffer width in each direction from the wetland. This information was acquired using both aerial photographs and geographic information systems.

Researchers conducted a statistical analysis of the compiled data to ascertain any relationships between buffer characteristics, IBI scores and water quality. Statistical methods included linear regression, multidimensional scaling, recursive partitioning and clustering.

Using the assessment tool developed in this project, researchers can design buffers to meet the needs of a specific wetland, helping to save costs by avoiding efforts and land use that would not be effective in the given circumstances.

“This project gave us a good sense of what data we’ll need to collect going forward to conduct a more comprehensive analysis of wetland buffers.”

—Kenneth Graeve,
Botanist/Plant Ecologist,
Mn/DOT Office of
Environmental Services

“We developed a tool that should be very useful to agencies wishing to assess the impact of an existing or planned buffer on water quality and wildlife.”

—John Nieber,
Professor, University of
Minnesota Bioproducts
and Biosystems
Engineering

Produced by CTC & Associates for:

Minnesota Department
of Transportation
Research Services Section
MS 330, First Floor
395 John Ireland Blvd.
St. Paul, MN 55155-1899
(651) 366-3780

www.research.dot.state.mn.us



Buffers are limited in their ability to provide undisturbed connectivity to adjacent habitats in urban areas because of roads, houses and other developments, and do little to address the mortality of certain wildlife species at road crossings.

Finally, the Minnesota wetland buffer assessment tool was developed for evaluating the potential benefits of wetland buffers to water quality and wildlife when planning future Mn/DOT projects. This tool was applied to a subset of the wetlands studied through this project to show how it might work.

What Did We Learn?

Researchers did not find a statistically significant relationship between buffer characteristics and wetland water quality or ecological health. They concluded that establishing this relationship will require a larger data set with more detailed information on water level, water quality and ecological factors.

Researchers developed the Minnesota wetland buffer assessment tool, which uses a number of criteria (developed through a literature search) for rating how well buffers protect wetlands, including:

- Buffer width and area.
- The ability of the buffer to reduce stormwater volume and remove sediments, nitrogen and phosphorus from water flowing through it.
- Connectivity to adjacent habitats, measured by the amount of human disturbance within 500 meters of the wetland and the percentage of the wetland connected to upland areas.
- Vegetative characteristics, including diversity and the ability to provide cover to wildlife with benefits for such life functions as reproduction, feeding and migration.

This tool may be useful in designing buffers to meet a particular wetland’s specific wildlife and water needs. Its analyses in this study showed that while many metropolitan area wetland buffers are effective for increasing water quality, they probably have few benefits to wildlife. For the protection of wildlife, connectivity to adjacent habitats is a far more important factor than buffer width.

What’s Next?

The assessment tool still needs to be field-tested to evaluate its ability to predict the effects of any given buffer on habitat and water quality. Researchers recommend that Mn/DOT and other state and local agencies develop programs to more consistently and intensively monitor wetlands for water levels, water quality and biological diversity. Doing so will allow future studies to more definitively establish the effect of buffer width and other characteristics on wetlands.

This Technical Summary pertains to Report 2011-06, “Evaluation of Buffer Width on Hydrologic Function, Water Quality, and Ecological Integrity of Wetlands,” published February 2011. The full report can be accessed at <http://www.lrrb.org/PDF/201106.pdf>.

Wetland Buffers

Designing and Maintaining a Vegetated Wetland Buffer

Habitats for Healthy Waters—Fact Sheet #3

Wetland Buffers—What are they and why are they important?

Wetlands provide many functions including flood moderation, groundwater recharge, water quality improvement, wildlife habitat, research and aesthetic values. An effective way to protect and enhance existing wetlands is to ensure there is an adequate vegetated buffer surrounding the wetland. Wetland buffers are areas of adjacent, undisturbed vegetation that reduce adverse effects to wetland function and value from adjacent development and activities. Adequate buffers are essential for “healthy” wetlands.

Buffer Functions:

- Reduce rapid water level fluctuations in wetlands.
- Maintain and improve water quality by trapping and absorbing sediments, nutrients and pollutants before they reach the wetland.
- Reduce field erosion into wetlands and stabilize riparian areas.
- Decrease wetland disturbance from activities in adjacent areas.
- Provide food, cover, travel corridors and breeding areas for wildlife.
- Properly designed buffers can minimize goose damage to adjacent crops in the spring by providing a physical barrier to young goose broods.



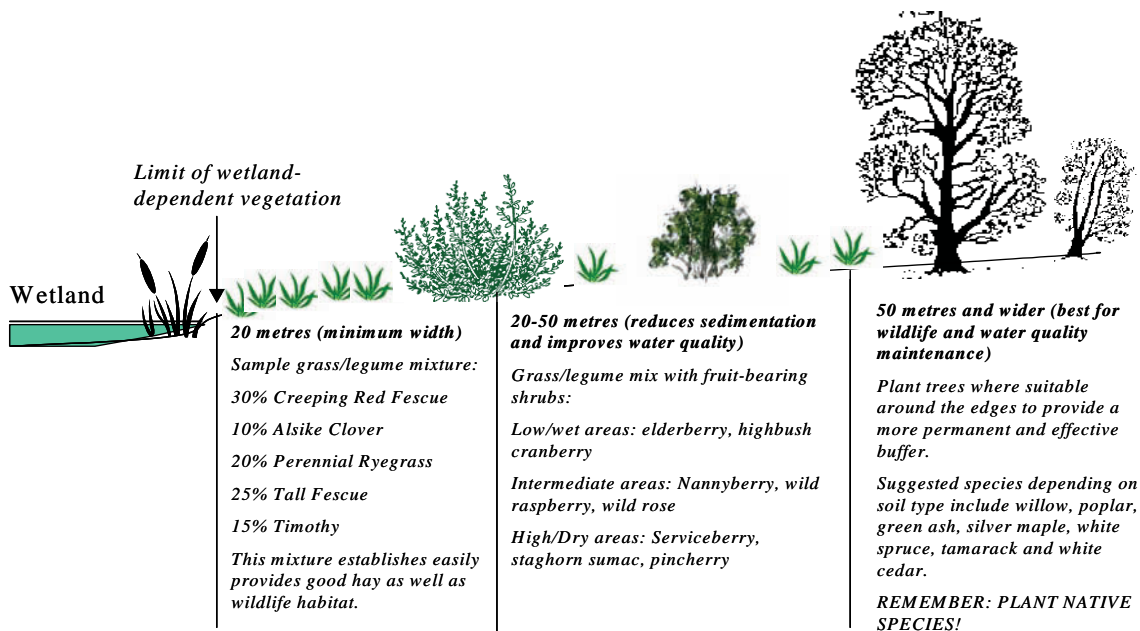
Source: Andy Graham (OSCIA)

This livestock exclusion fence protects the vegetated buffer so that it can filter out nutrients coming from the adjacent pasture. Water for the livestock is pumped into a trough through a solar-powered system. Livestock can show better weight gain if provided with a clean water source compared to drinking directly from a wetland.

What makes a good buffer?

The most effective for both wildlife and water quality protection is a diverse, multilayered, undisturbed vegetation community. Trees and shrubs increase the effectiveness of the buffer and enhance attractiveness to wildlife. The buffer needs to be wide enough to slow and reduce surface runoff and provide wildlife habitat.

An Example of an Effective Buffer with High Wildlife Value



How Wide Should a Buffer Be?

In general, the wider the better! Most research shows effective buffers are between 20-200 metres (60- 600 feet) wide. Minimum buffer width depends on various factors including:

Slope: More slope = more buffer. If the slope is greater than 5% then width should exceed 20 metres (60 feet).

Soil type: Low permeability (heavy clay) requires greater buffer width.

Adjacent land use: Row crops need a wider buffer than hay or pasture.

Purpose of Buffer: Water quality maintenance, wildlife habitat, disturbance reduction etc...

Wetland size and function: Large wetlands (>10 hectares/25 acres) with high wildlife values require wide buffers (>200 metres/600 feet). Small, deep, excavated (dug) ponds with little wildlife or hydrological value may only require a 3 metre (10 foot) buffer.

A conservative rule of thumb is to have a 4:1 ratio of buffer area to wetland area (one acre of wetland=4 acres of buffer), however, **ANY BUFFER IS BETTER THAN NO BUFFER!**



Source: Andy Graham (OSCIA)

Slope is an important factor when determining proper buffer width. This wetland buffer is over 50 metres wide because of the steep slope between the wetland and cultivated field. A buffer this wide improves water quality and reduces the impacts of predation on ground-nesting birds.

Buffer Management



Use a "flushing bar" to reduce wildlife mortality when mowing your buffer. Contact Ducks Unlimited Canada for flushing bar plans. (1-705-721-4444)

Established grassed buffers should be monitored and maintained to ensure they sustain their maximum benefit for wildlife and water quality. After the first five years the buffer should be hayed on an annual or biannual basis. Periodic removal of the grass will rejuvenate the buffer and produce denser plant and root growth. Remember to mow the buffer between July 15th and August 15th to reduce damage to nests of waterfowl and other ground-nesting birds. Trees or shrubs require little management, however, if thinning is required then cuttings can be placed in piles throughout the buffer to provide wildlife habitat. Limit use of fertilizers or pesticides in your buffer and exercise caution when applying these chemicals to prevent contamination of the wetland

The "Habitats for Healthy Waters" program is a three-year (2005-2007) initiative to raise the awareness of wetland values among residents of Elgin, Oxford and Middlesex Counties. This project will also help landowners implement wetland stewardship practices that provide benefits to agriculture and the rural community through a series of demonstration sites, workshops and educational material.

Other sources of buffer information:

- OMNR Extension Note: "Buffers Protect the Environment"
- OMAF Info sheet #22: "Wetlands and Wildlife Ponds"
- Environment Canada: "Considerations When Working Around Wetlands"
- Ag Canada and OMAF Best Management Practices Series: "Fish and Wildlife Habitat Management" "Farm Forestry and Habitat Management", "Water Management" and "Buffer Strips"

For more information on wetlands or "Habitats for Healthy Waters", please contact:

David McLachlin
C/o Ducks Unlimited Canada
(705)721-4444 x 237
Email: d_mclachlin@ducks.ca

Ontario Stewardship

Elgin Co. Mark Emery:	mark.emery@mnr.gov.on.ca	519-773-4739
Oxford Co. Dave Depuydt:	dave.depuydt@mnr.gov.on.ca	519-773-4704
Middlesex Co. Nathan Kirby:	nathan.kirby@mnr.gov.on.ca	519-773-4751
Chatham/Kent Don Hector:	don.hector@mnr.gov.on.ca	519-354-6274
Essex Co. Brett Groves:	brett.groves@mnr.gov.on.ca	519-354-4437

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