Florida Department of Environmental Protection

Submerged Lands & Environmental Resources Coordination

UMAM Basics

Chapter 62-345, F.A.C.

May 24, 2016





UMAM Basics

Agenda

1. UMAM Overview
2. UMAM Process
   A. Data/information prerequisites
   B. Part 1 – Establish reference criteria
   C. Part 2 - Score assessment areas
   D. Determine Time Lag
   E. Determine Risk
   F. Preservation
   G. Uplands
   H. Run the math
   I. Debate the results
3. Questions/Answers
4. Adjourn

UMAM Overview

UMAM = Chapter 62-345, F.A.C.

- Adopted and became effective 2/2/2004
- Amended 9/12/2011
- Currently being further developed

UMAM stands for:

- **U**NIFORM – consistent, reliable
- **M**ITIGATION – used only when mitigation is needed
- **A**SSESSMENT - reasonable scientific judgment
- **M**ETHOD – a process

UMAM's statutory basis

373.414(18), F. S. directed that the method

- Provide an exclusive and consistent process
- Determine the amount of mitigation needed
- Binding on DEP, WMDs, local governments
- Requires the application of reasonable scientific judgment
- Determine the value of functions provided by wetlands and other surface waters
- Account for different ecological communities in different areas of the state
- Be practicable for use within permitting timeframes

When is UMAM used?

- Mitigation is needed for permit issuance, *and*
- Mitigation has been proposed, *and*
- Proposed mitigation is appropriate to offset impacts

When is UMAM not used?

- When there is *no* mitigation needed or proposed, or
- Proposed mitigation is *not* appropriate to offset impacts, or
- Mitigation is for secondary impacts to fish, wildlife, historic resources per 62-345.100(5), or
- Any other provision of 62-345.100(3) applies.

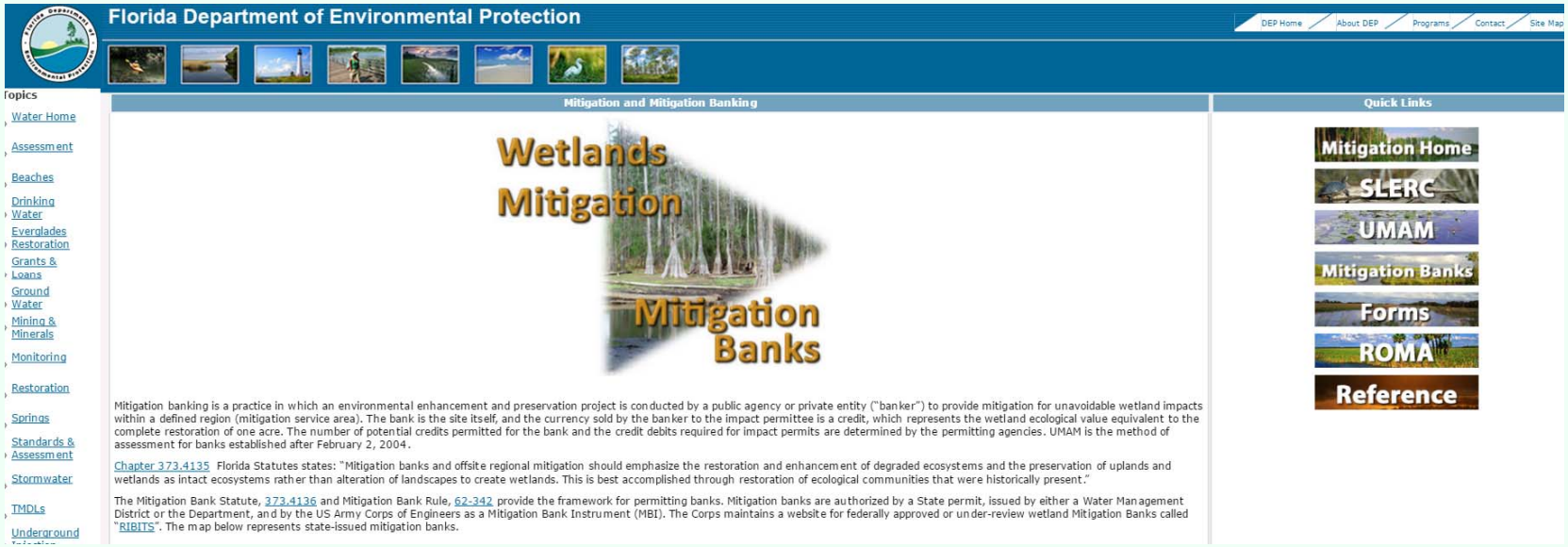
Doesn't UMAM determine appropriateness?

- No! See 62-345.100(4)
- But the ERP Applicants Handbook does! Mitigation is required only to offset the adverse impacts to the wetland functions caused by the regulated activities
- Mitigation proposal *may not always* offset impacts sufficiently to issue a permit
  - OFW significant degradation
  - Listed species
  - Communities not likely to be successfully restored

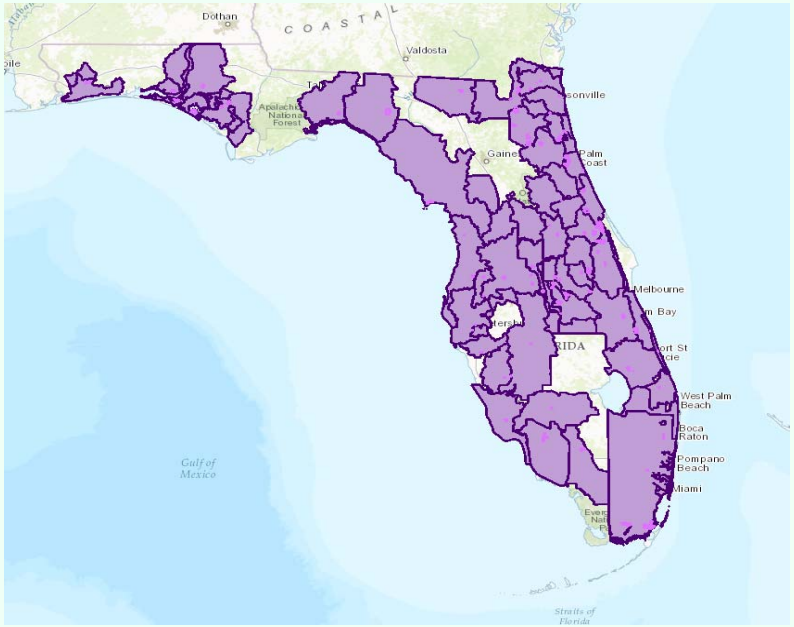
More on appropriateness…

If an applicant can't come up with an appropriate on-site mitigation, then what?

- ***Continue*** to reduce or eliminate impacts to the point where mitigation is not needed
- Mitigation banks / ROMAs



http://www.dep.state.fl.us/water/wetlands/mitigation/mitigation_banking.htm



Impact needs to be within MSA

OR

- One acre or less
- Linear (roadways, pipelines)
- Partially within the MSA

373.4136(6)(d), FS

AND

- The credit types must be appropriate
- The credits must be available

What is a “rapid functional assessment methodology”?

ALL rapid functional assessment methods evaluate the **condition** of a habitat through comparison to **conditions** associated with either a physically established reference habitat, or a conceptualized habitat assumed to have no, or minimal, human disturbance.

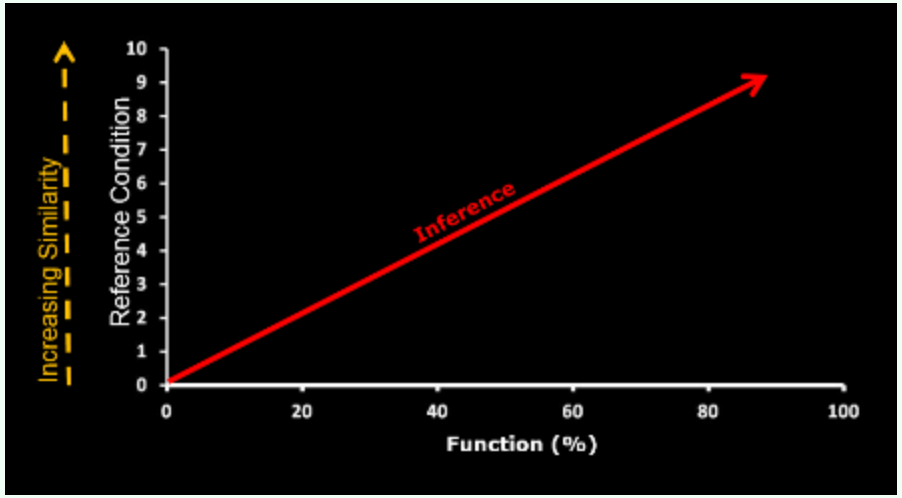
UMAM utilizes the “conceptualized” approach

-The greater the SIMILARITY to the conceptual undisturbed habitat, the HIGHER the score.
-The greater the DISPARITY to the conceptual undisturbed habitat, the LOWER the score.

Where’s the “*Function*”?

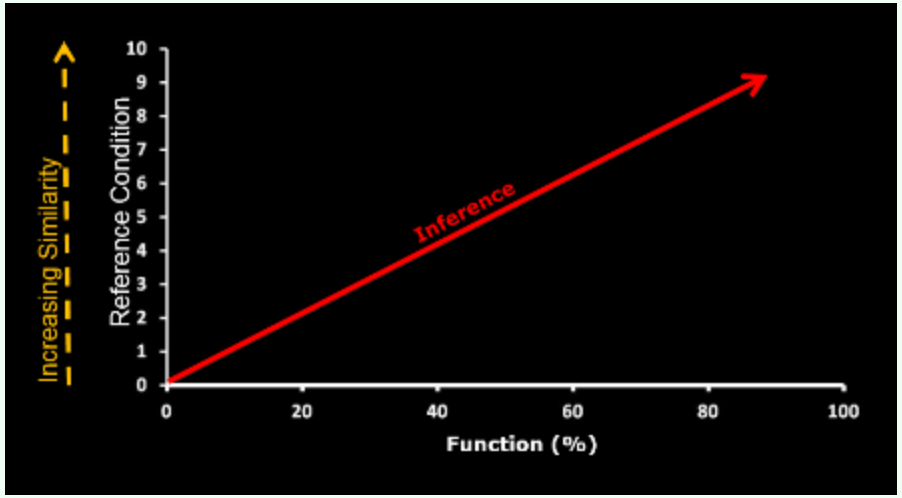
The HIGHER the score,
-the HIGHER the inferred function.

The LOWER the score,
-the LOWER the inferred function.



UMAM Scoring Range (0 – 10 in whole point interval)

Score	Similarity to Reference	Functional Inference
10	100%	Optimal Function
9	90%	
8	80%	
7	70%	Moderate Function
6	60%	
5	50%	
4	40%	Minimal Function
3	30%	
2	20%	
1	10%	
0	0%	Function Not Present



What is "value"?

"Ecological value" means the *value of functions* performed by uplands, wetlands, and other surface waters to the abundance, diversity, and habitats of fish, wildlife, and listed species. Included are functions such as providing cover and refuge; breeding, nesting, denning, and nursery areas; corridors for wildlife movement; food chain support; natural water storage, natural flow attenuation, and water quality improvement which enhances fish, wildlife, and listed species utilization.

UMAM's Ecological value is a subset of "ecological services"

- Human health, social, cultural, aesthetic, or economic needs are not *directly* assessed.

What factors are used as the basis for comparison?

Ecological Indicators

Observable physical, chemical, or biological evidence of wetland or other surface water function.

Things that can be observed:

Species presence/absence
Species richness
Percent cover of species
Relative abundance of species
Relative distribution of species
Composition of substrate
Presence of artificial materials
Presence of excavated channels
Physiological condition of individuals
Surrounding landuses
Etc…

Indicators may be symptoms and/or causes

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Physiological condition of individuals
Surrounding landuses
Etc…

Vs.

Temporally dynamic Functions:

Pollution filtration
Oxygen production
Food chain support
Structural support for epiphytes
Carbon sequestration rates
Primary productivity
Nutrient Cycling
Rates of sediment capture
Improved system resiliency
Etc…

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Ecological Indicators

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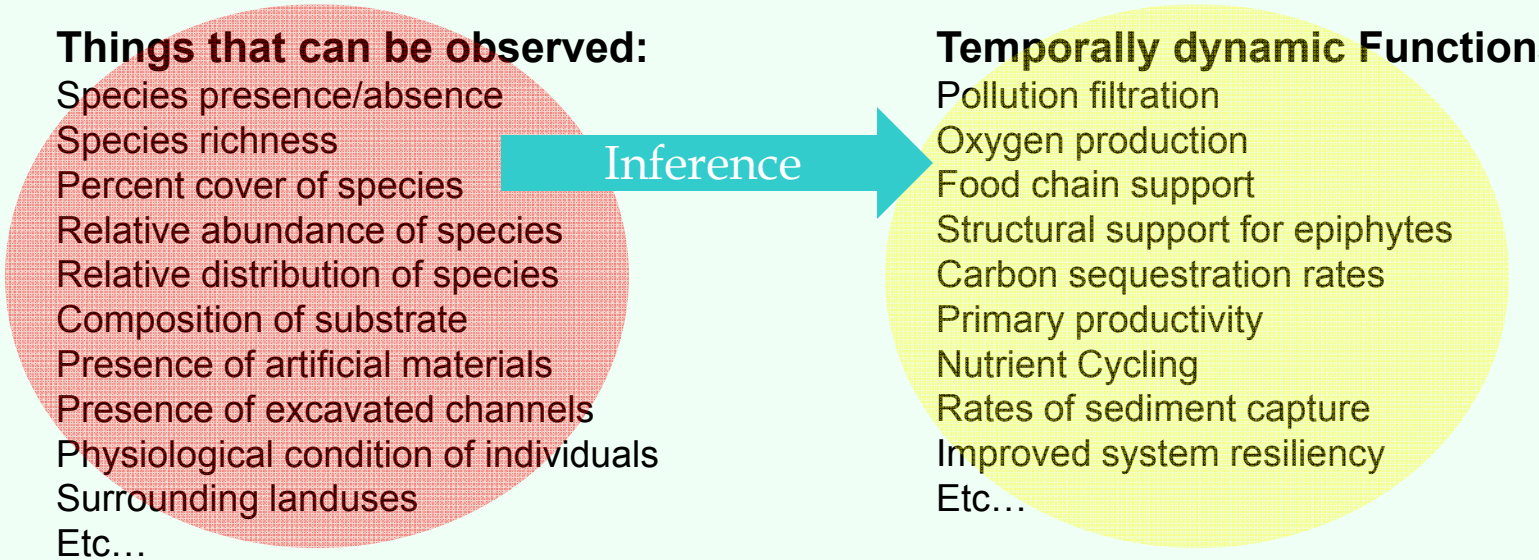


The UMAM Process

UMAM Process

Data/information prerequisites?

1. The applicant is responsible for submitting necessary supporting information
   A. Site specific surveys, maps, and documentation (geographic and biological)
   B. Proposed construction plans
   C. Proposed mitigation, monitoring, and maintenance plans

2. The reviewing agency is responsible for verifying information and applying UMAM
   A. Verify accuracy of provided information (desktop & site inspection)
   B. Assume all aspects of the project are approved and goes as planned
   C. Apply UMAM

The applicant does not have to provide either Part I or Part II ; But if they do so, review and notify applicant of any inadequacy or inaccuracy in application.

The Core of UMAM

Part I – Qualitative Characterization

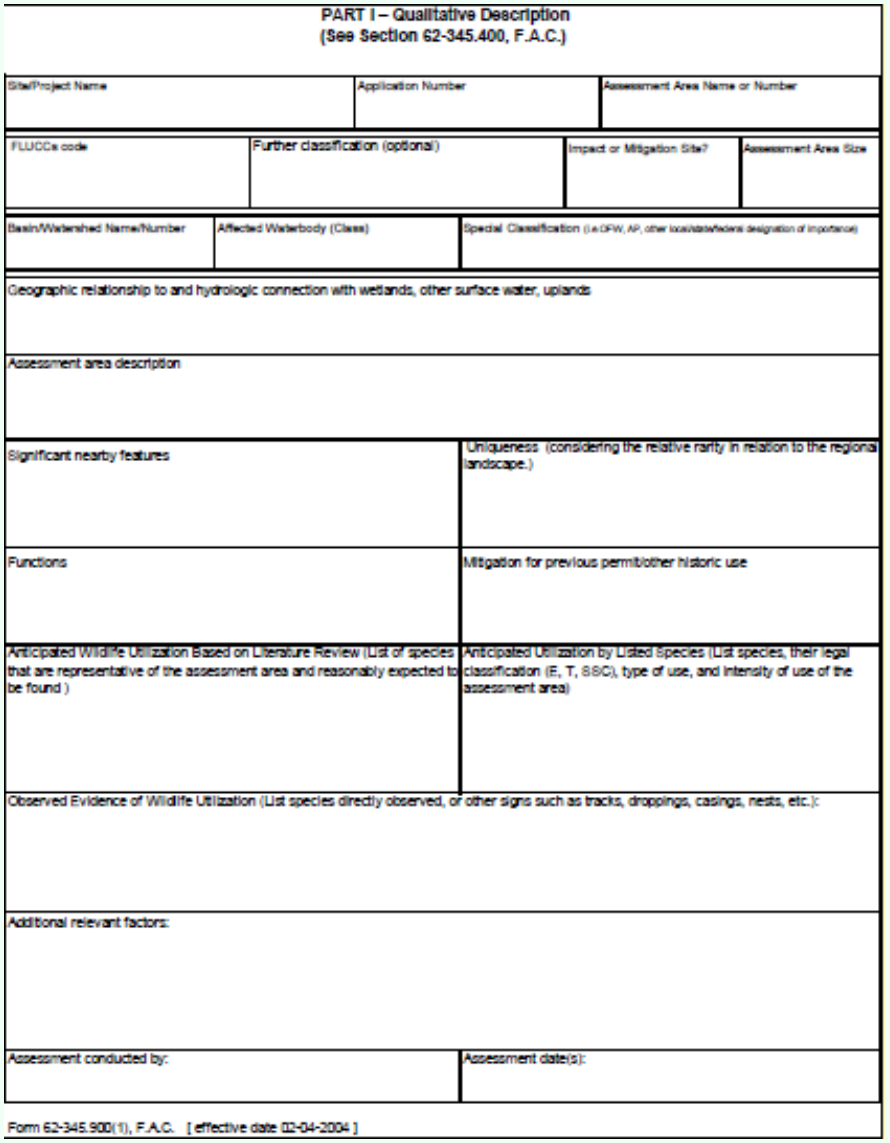
- What are you looking at?
- Impact or mitigation site?
- What are the surroundings?
- What type of community is it?
- What would you expect to see in this type of community?

Part II – Quantification of Assessment Area

- How well does the assessment area compare to the optimal community of this type, considering
  - its location and landscape support,
  - its water environment ,
  - and its community structure?

Part I

- Provides a frame of reference for the type of community being assessed
- Identifies the functions that will be evaluated



PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number	
FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands			
Assessment area description			
Significant nearby features		Uniqueness (considering the relative rarity in relation to the regional landscape.)	
Functions		Mitigation for previous permit/other historic use	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found.)		Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):			
Additional relevant factors:			
Assessment conducted by:		Assessment date(s):	

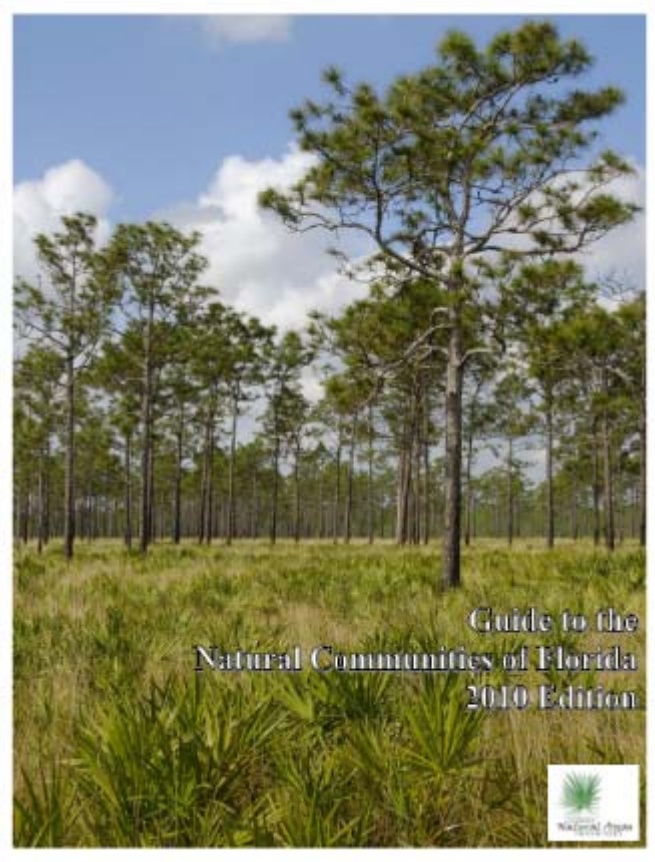
Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

Reference Community

- What type of native natural community is the assessment area?
- FLUCCs – on Part I and already provided in ERP, but doesn't provide much *ecological* information

FNAI Natural Community Guide, 2010

- Provides *ecological information* for each major community type.
- Landscape, regional basis.
- http://fnai.org/pdf/nc/FNAI_NatComGuide_2010.pdf



What if the site is not a native community?

What about artificial wetlands or water bodies, such as borrow pits or canals?

Use the community most analogous in functions as a reference

Areas that are not a native communities?

Wetlands altered by:

- hydrologic action
  (draining, lower ground water table, impounding, increased runoff, etc…)
- Agriculture or silviculture
- Fire suppression

Use the historic community type as reference

Historic Community – key tools

- On-site evidence of soils, remnant plant community
- Aerial photos (historical)
- Local knowledge

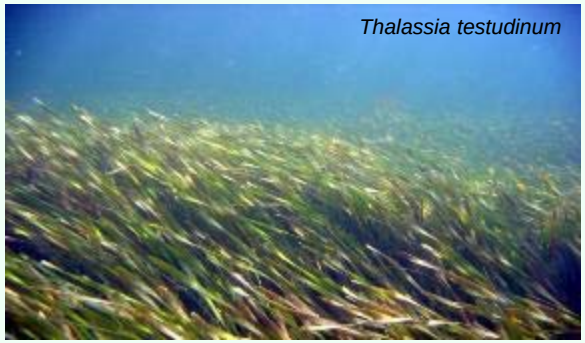
Most systems have been altered….

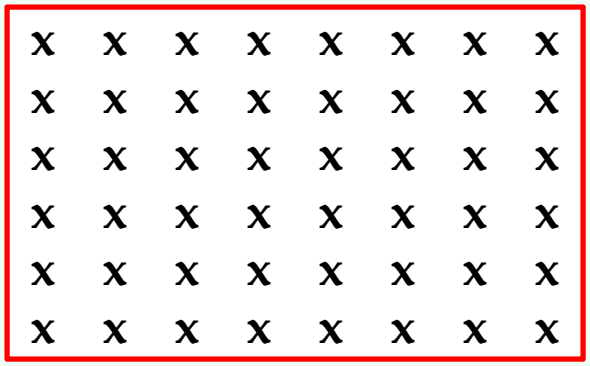
If the area is currently a ***self-sustaining***, ***native community*** - call it as you see it.

Self-sustaining:
The community type's ability to persist indefinitely under existing environmental conditions.

Check your understanding:

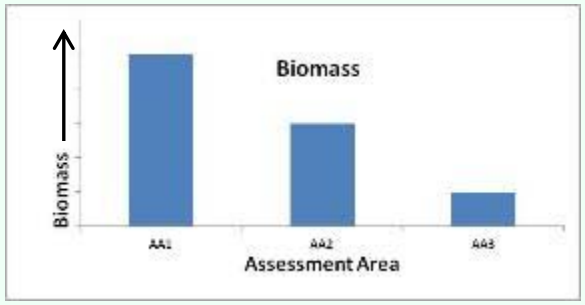
Which Assessment Area (AA) gets the highest UMAM score?

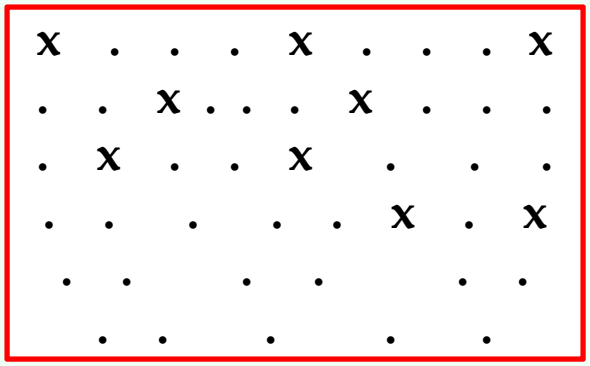




AA 1

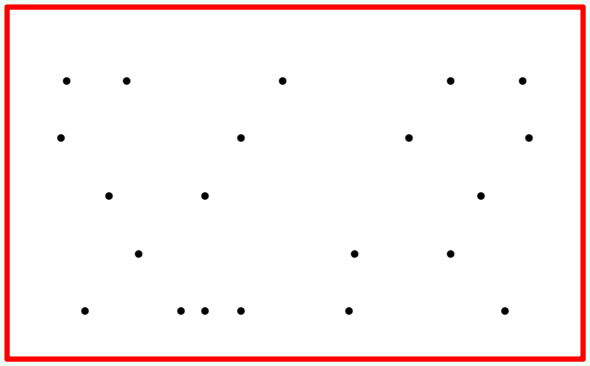
100% *Thalassia testudinum,*
0% *Halodule wrightii*
0% Unvegetated





AA 2

20% *Thalassia testudinum,*
60% *Halodule wrightii*
20% Unvegetated



AA 3

0% *Thalassia testudinum,*
45% *Halodule wrightii*
55% Unvegetated

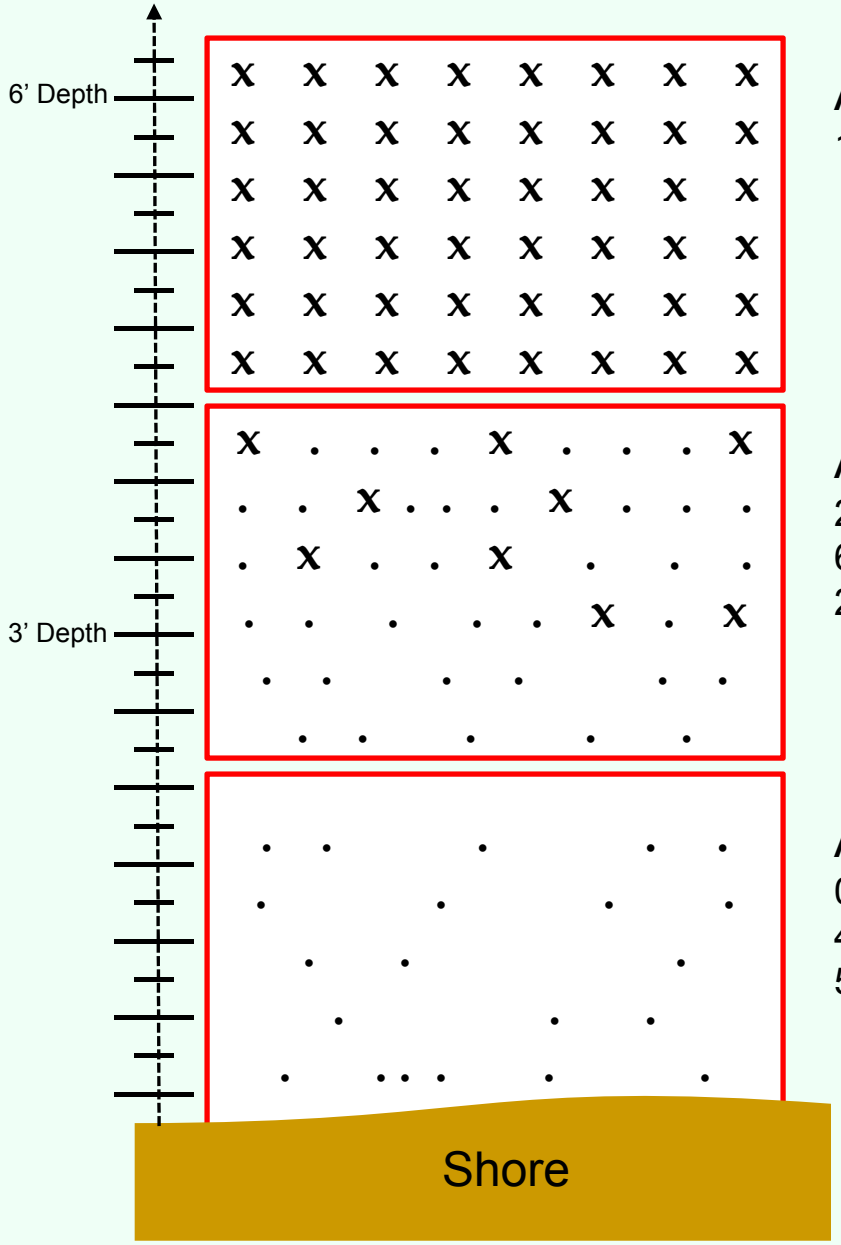
Check your understanding:

Which Assessment Area (AA) gets the highest UMAM score?

No way of determining without knowing the "reference" condition.

They may all be of equal value - they may all be UMAM "10s".

They each may represent exactly what's expected for their location.



AA 1

100% *Thalassia testudinum,*
0% *Halodule wrightii*
0% Unvegetated

AA 2

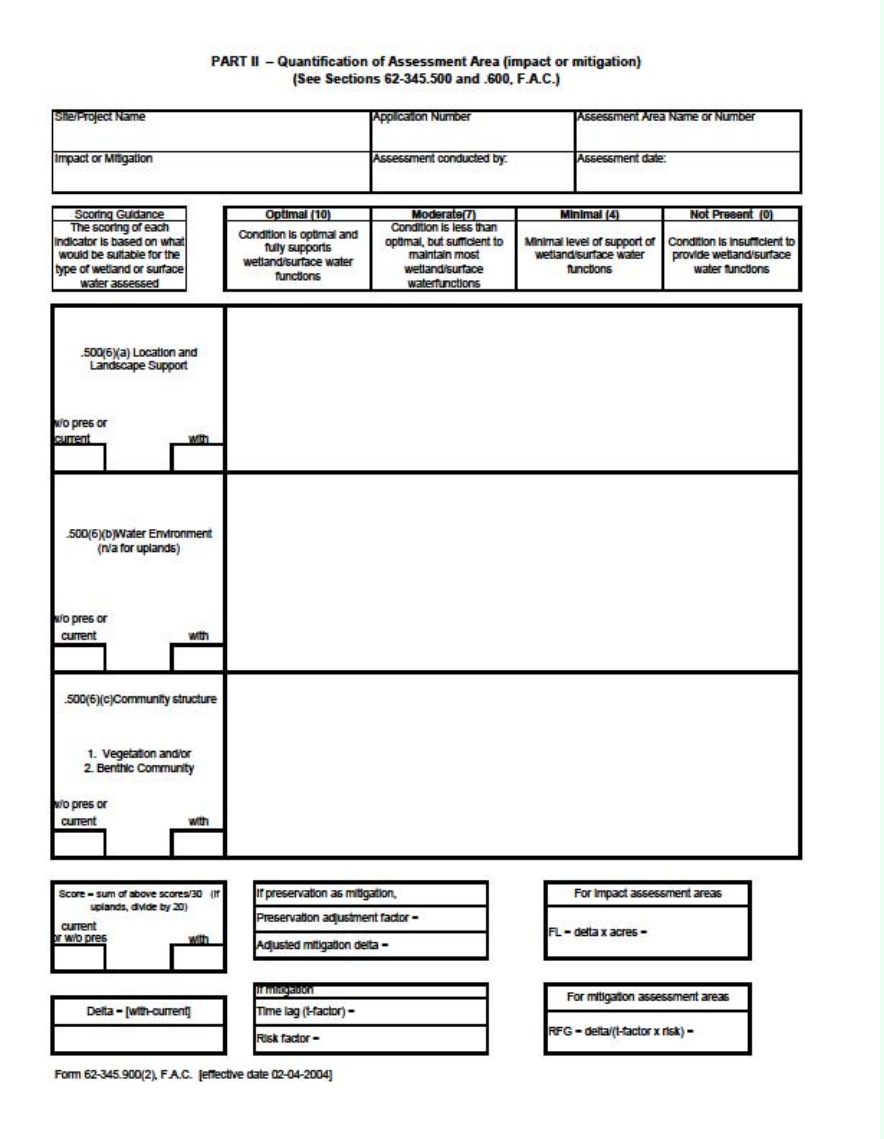
20% *Thalassia testudinum,*
60% *Halodule wrightii*
20% Unvegetated

AA 3

0% *Thalassia testudinum,*
45% *Halodule wrightii*
55% Unvegetated

Part II

- Three categories of function
- Numeric Scoring, whole numbers
- Narrative to support the scores, indicators of function



PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Impact or Mitigation	Assessment conducted by:	Assessment date:

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

	w/o pres or current	with
.500(6)(a) Location and Landscape Support		
.500(6)(b)Water Environment (n/a for uplands)		
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community		

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres =

Delta = [with-current]

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. [effective date 02-04-2004]

UMAM Process

Score Assessment Areas

Part 2 – Score Assessment Areas

Current Condition

o The prevailing health and integrity of an assessment area as evidenced by indicators.

o Indicators displaying signs of seasonal, regional, or other natural variation should not be construed as evidence for diminished health or integrity.

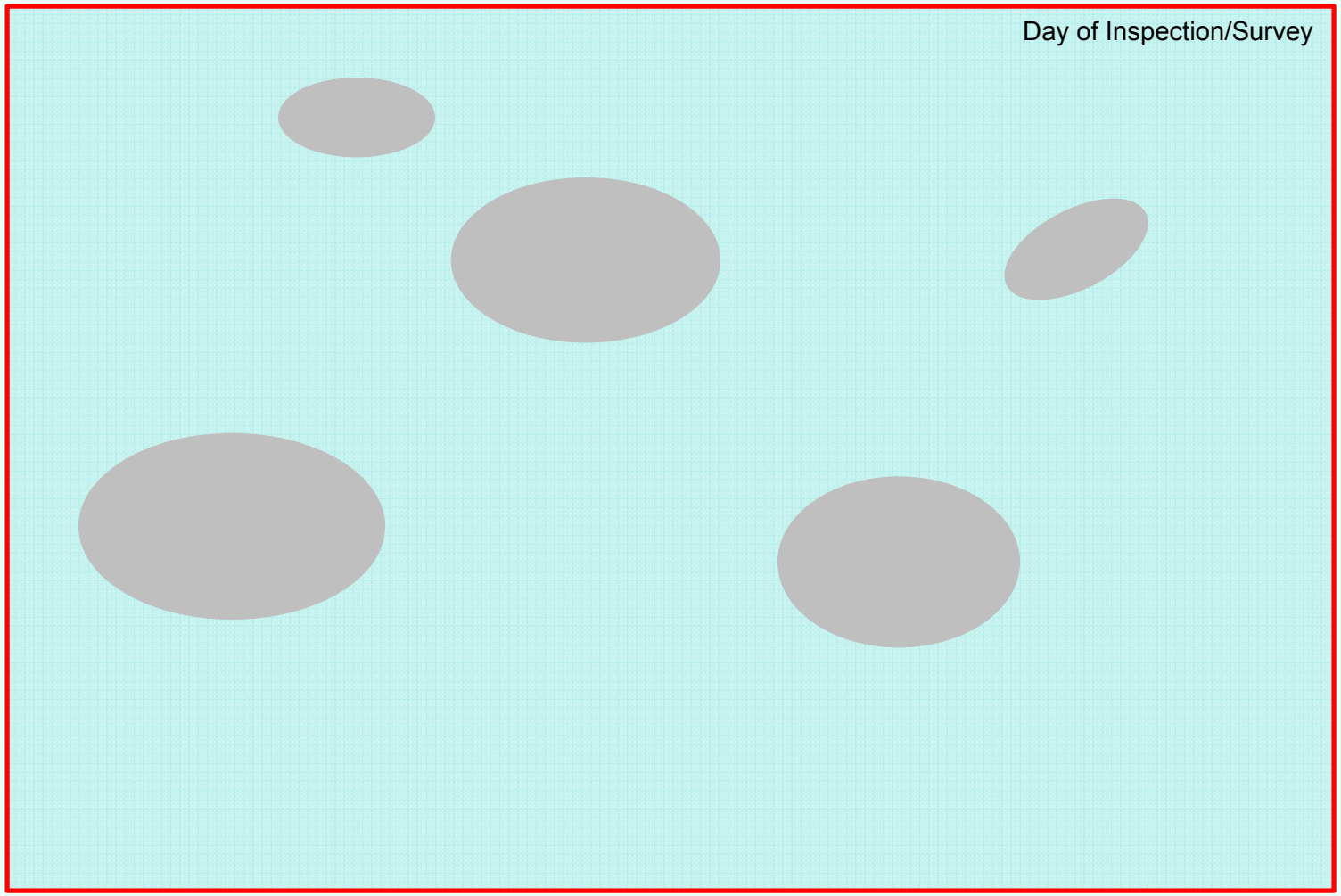
o Current condition for assessment areas displaying indicators of temporary impacts should be determined with respect to those indicators expected to be present following regeneration and recovery of the area should disturbance and land use remain unchanged from that contemporarily observed.

w/ Mitigation

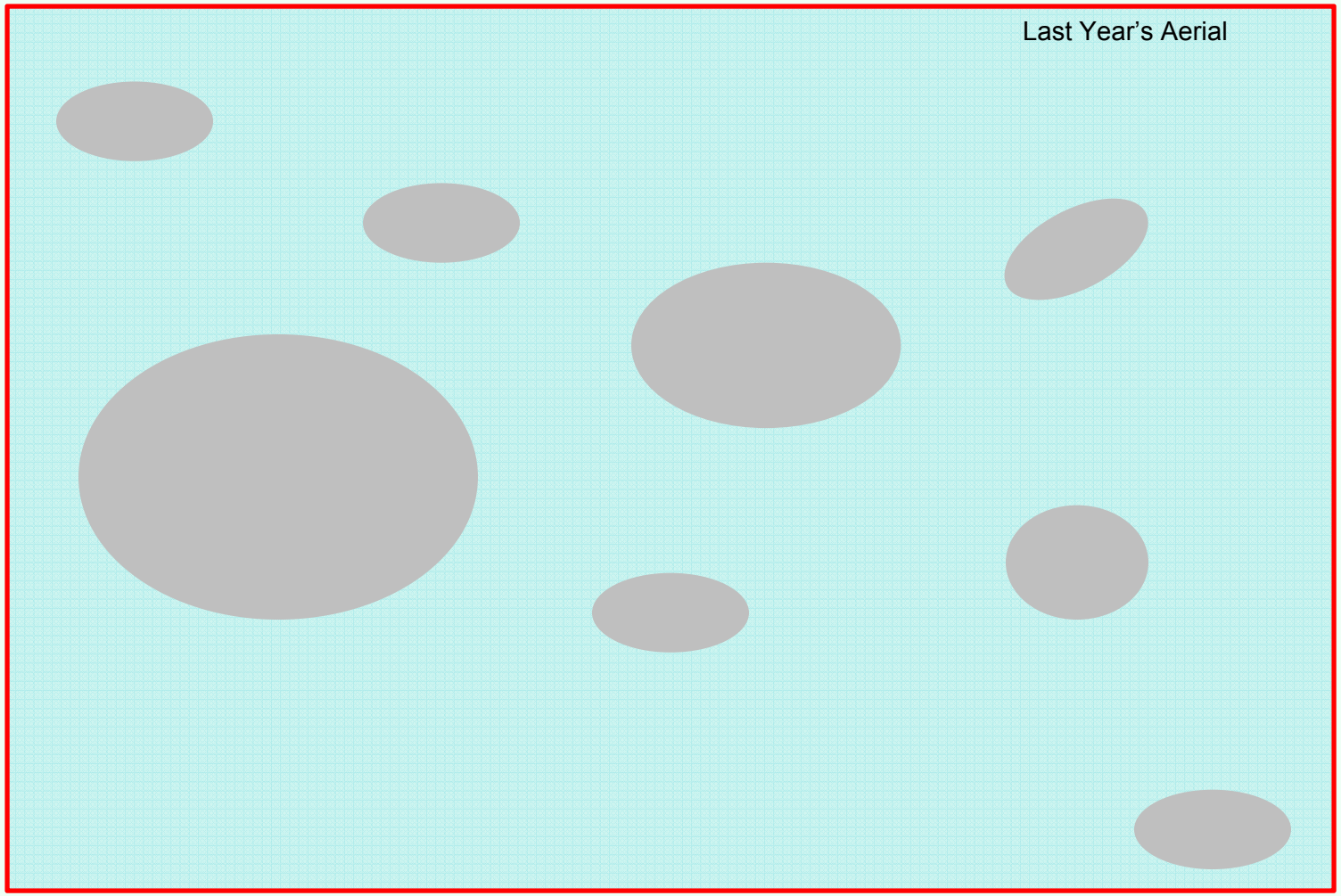
o The health and integrity of an assessment area as determined with respect to those indicators reasonably anticipated to be present assuming the proposed mitigation is successfully conducted as planned.

Some community types naturally vary over short time periods…

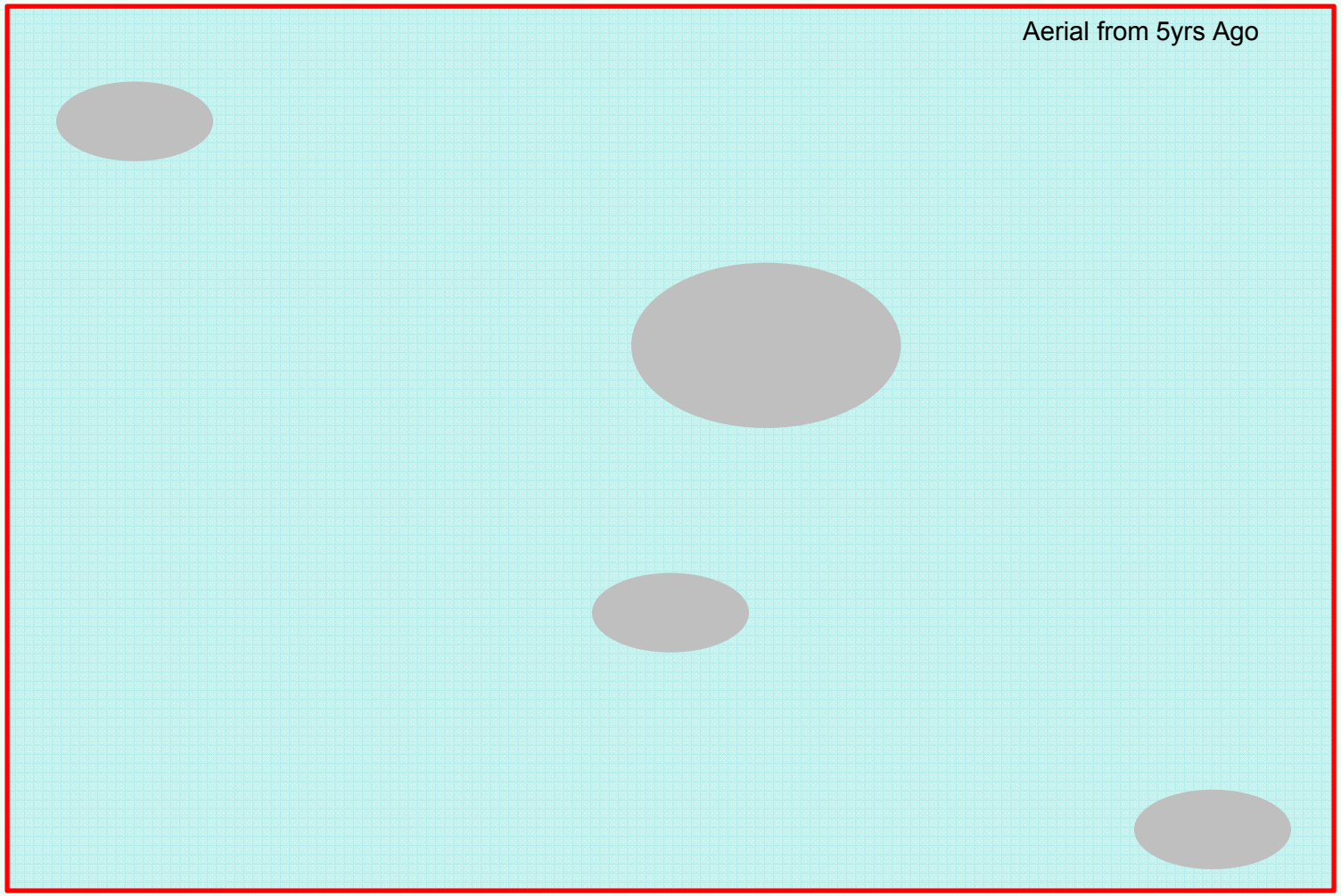
Current Condition?



Current Condition?



Current Condition?

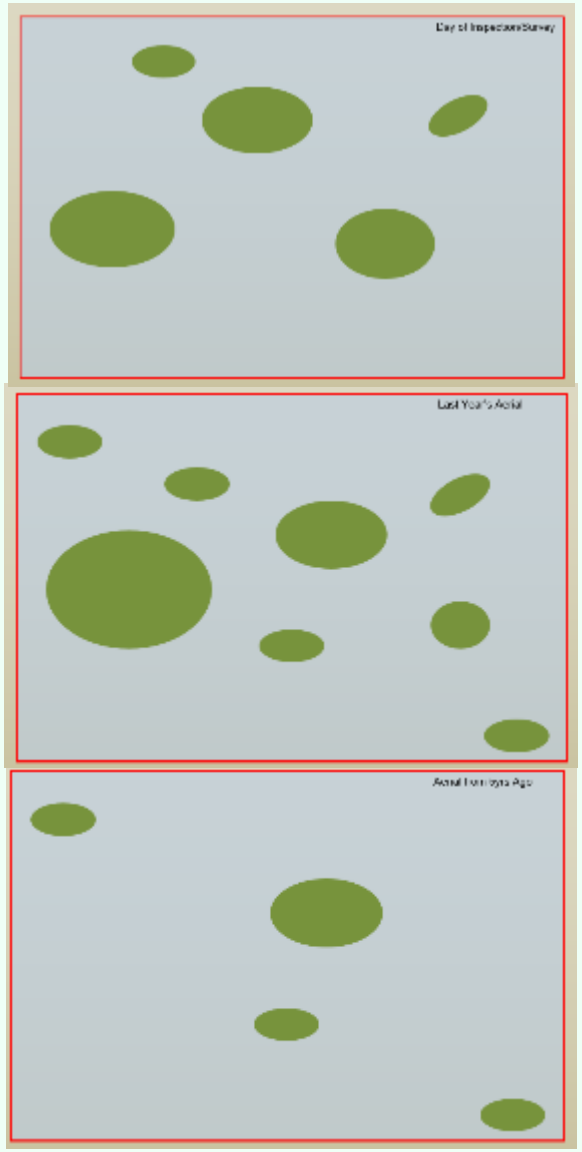


Current Condition?

What's the prevailing condition?

What level of natural variation is expected?

Does UMAM assess habitat or a single species?



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.500(6)(a) Location and Landscape Support w/o pres or current	with	
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current	with	
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current	with	

Score = sum of above scores/30 (if uplands, divide by 20) current or w/o pres	with

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres =

Delta = [with-current]

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Location and Landscape Support

- Support to wildlife by outside habitats
- Invasive exotics or other invasive plant species in proximity of the assessment area
- Wildlife access to and from outside – distance and barriers
- Functions that benefit fish and wildlife downstream – distance or barriers
- Impacts of land uses outside assessment area to fish and wildlife
- Benefits to downstream or other hydrologically connected areas
- Benefits to downstream habitats from discharges
- Protection of wetland functions by upland mitigation assessment areas

UMAM Scoring Worksheet ~ Location and Landscape Support

Guidance: *This worksheet is only a summary and is not intended to replace the rule. The rule should be used to resolve any question or dispute.*

	Optimal (10)	Moderate (7)	Minimal (4)	Not Present (0)
Location and Landscape Support	full opportunity to perform beneficial functions at optimal level	opportunity to perform beneficial functions is limited to 70% of optimal ecological value	opportunity to perform beneficial functions is limited to 40% of optimal ecological value	provides no habitat support or opportunity to provide benefits to fish and wildlife
a. Support to wildlife by outside habitats	full range of habitats needed to support all wildlife species	optimal support for most, but not all wildlife species	fail to provide support for some, or minimal support for many wildlife species	no habitat support for wildlife
b. Invasive exotics or other invasive plant species in proximity of the assessment area	not present	present but cover is minimal and has minimal adverse effects	majority of plant cover consists of invasive exotics that adversely affect functions	predominance of plant cover consists of invasive exotics so that little or no function is provided
c. Wildlife access to and from outside – distance and barriers	not limited by distance or barriers	partially limited by distance or barriers	substantially limited by distance or barriers	precluded by distance or barriers
d. Functions that benefit fish & wildlife downstream – distance or barriers	not limited by distance or barriers	somewhat limited by distance or barriers that reduce opportunity to provide benefits	limited by distance or barriers that substantially reduce opportunity to provide benefits	functions not present
e. Impacts of land uses outside assessment area to fish and wildlife	no adverse impacts on wildlife	minimal adverse impacts on wildlife	significant adverse impacts on wildlife	severe adverse impacts on wildlife
f. Benefits to downstream or other hydrologically connected areas	opportunity is not limited by hydrologic impediments or flow restrictions	limited by hydrologic impediments or flow restrictions so that benefits are provided with lesser freq. or magnitude	limited by hydrologic impediments so that benefits are rarely provided or are provided at greatly reduced levels	no opportunity to provide benefits due to hydrologic impediments or flow restrictions
g. Benefits to downstream habitats from discharges	downstream habitats are critically or solely dependent on discharges	downstream habitats derive significant benefits from discharges	downstream habitats derive minimal benefits from discharges	downstream habitats derive negligible or no benefits from discharges
h. Protection of wetland functions by upland mitigation assessment areas	optimal protection of wetland functions	significant, but suboptimal, protection of wetland functions	minimal protection to wetland functions	no protection of wetland function

Submerged Aquatic Landscapes?

What's in the surrounding landscape?

- Degree of shoreline hardening (natural, riprap, seawalls, etc…)
- Degree of near-shore coastal development (non-point source runoff)
- Proximity to outfalls (Sedimentation rates, disturbance, etc)
- Proximity to artificial structures (shading effects, disturbance, etc…)
- Proximity to maintained channels/other dredging activity
- Proximity to aquatic parks or preserves
- Etc…

PART II – Quantification of Assessment Area (impact or mitigation)
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Water Environment

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Water Environment

- Water levels and flows
- Water level indicators
- Soil moisture
- Soil erosion or deposition
- Evidence of fire history
- Vegetation - community zonation
- Vegetation – hydrologic stress
- Use by animal species with specific hydrological Requirements
- Plant community composition – species tolerant of and associated with water quality degradation or flow alteration
- Direct observation of standing water
- Existing water quality data
- Water depth, wave energy, currents and light penetration

UMAM Scoring Worksheet ~ Water Environment

	Optimal (10)	Moderate (7)	Minimal (4)	Not Present (0)
Water Environment	hydrology and water quality fully supports functions and provides benefits to fish and wildlife at optimal capacity	hydrology and water quality supports functions and provides benefits at 70% of optimal capacity	hydrology and water quality supports functions and provides benefits at 40% of optimal capacity	hydrology and water quality does not support functions and provides no benefits to fish and wildlife
a. Water levels and flows	appropriate	slightly higher or lower than appropriate	moderately higher or lower than appropriate	extreme degree of deviation
b. Water level indicators	distinct and consistent with expected	not as distinct or as consistent as expected	not distinct and not consistent with expected	not present or greatly inconsistent with expected hydrologic conditions
c. Soil moisture	appropriate with no evidence of soil desiccation, oxidation or subsidence	minimal soil oxidation or subsidence; soils are drier than expected	strong evidence of soil desiccation, oxidation or subsidence	strong evidence of substantial soil desiccation, oxidation or subsidence
d. Soil erosion or deposition	not atypical or indicative of altered flow rates	minor alteration in flow rates or points of discharge	atypical and indicative of alterations in flow rates or points of discharge	greatly atypical and indicative of greatly altered flow rates or points of discharge
e. Evidence of fire history	not atypical frequency or severity due to excessive dryness	fire frequency or severity may be more than expected	frequency or severity much more than expected, possibly due to dryness	great deviation from typical, due to extreme dryness
f. Vegetation - community zonation	appropriate in all strata	inappropriate in some strata	inappropriate in most strata	inappropriate in all strata
g. Vegetation – hydrologic stress	no signs of hydrologic stress such as excessive mortality, leaning or fallen tress, thinning canopy, insect damage or disease associated with hydrologic stress	slightly greater than normal mortality, leaning or fallen tress, thinning canopy, or signs of insect damage or disease associated with hydrologic stress	strong evidence of greater than normal mortality, leaning or fallen tress, thinning canopy, or signs of insect damage or disease associated with hydrologic stress	strong evidence of much greater than normal mortality, leaning or fallen tress, thinning of canopy, or signs of insect damage or disease associated with hydrologic stress
h. Use by animal species with specific hydrological requirements	consistent with expected hydrological conditions	less than expected	greatly reduced	lacking
i. Plant community composition – species tolerant of and associated with water quality degradation or flow alteration	Plant community composition is not characterized by species tolerant of and associated with water quality degradation or flow alteration	some species tolerant of and associated with water quality degradation or flow alteration	much of the community consists of species tolerant of and associated with water quality degradation or flow alteration	community consists predominantly of species tolerant of and associated with water quality degradation or flow alteration
j. Direct observation of standing water	no water quality degradation such as discoloration, turbidity, or oil sheen	slight water quality degradation such as discoloration, turbidity, or oil sheen	moderate water quality degradation such as discoloration, turbidity, or oil sheen	significant water quality degradation such as obvious discoloration, turbidity, or oil sheen
k. Existing water quality data	conditions are optimal for community type	slight deviation from normal, with minimal ecological effects	moderate deviation from normal, with expected ecological effects	large deviation from normal, with expected adverse ecological effects
l. Water depth, wave energy, currents and light penetration	optimal for community type	generally sufficient but expected to cause some changes in species, age classes and densities	not well suited for and expected to cause significant changes in species, age classes and densities	inappropriate for community type

*under*Water Environment

What's in the water environment?

- Prevailing wave energy
- Prevailing water quality (nutrient enrichment)
- Prevailing water clarity/turbidity
- Prevailing light penetration
- Water depth
- Etc…

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Impact or Mitigation	Assessment conducted by:	Assessment date:

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

	w/o pres or current	with
.500(6)(a) Location and Landscape Support		
.500(6)(b)Water Environment (n/a for uplands)		
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community		

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres =

Delta = [with-current]

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Community Structure

- Plant species in the canopy, shrub, or ground stratum
- Invasive exotics or other invasive plant species
- Regeneration & recruitment
- Age & size distribution
- Density and quality of coarse woody debris, snag, den, and cavity
- Plant condition
- Land management practices
- Topographic features such as refugia ponds, creek channels, flats or hummocks
- Siltation or algal growth in submerged aquatic plant communities
- Upland mitigation area - level of habitat and support for fish and wildlife in the associated wetlands or surface waters

UMAM Scoring Worksheet ~ Community Structure: *Terrestrial*

Community Structure	Optimal (10)	Moderate (7)	Minimal (4)	Not Present (0)
1. Vegetation and Structural Habitat	vegetation community and physical structure provide conditions which support an optimal level of function to benefit fish and wildlife	vegetation community and physical structure limited to 70% of optimal level of function to benefit fish and wildlife in Part I	vegetation community and physical structure limited to 40% of optimal level of function to benefit fish and wildlife in Part I	vegetation community and physical structure do not provide function to benefit fish and wildlife in Part I
I. Plant species in the canopy, shrub, or ground stratum	all or nearly all appropriate and desirable	majority appropriate and desirable	majority inappropriate or undesirable	no appropriate or desirable species
II. Invasive exotics or other invasive plant species	not present	present, but cover is minimal	majority of plant cover	high presence and cover
III. Regeneration & recruitment	normal and natural	near-normal	minimal evidence	no evidence
IV. Age & size distribution	typical of type of system with no deviation from normal patterns of succession or mortality	no indication of permanent deviation, but may have had temporary deviations or impacts to age and size distribution	atypical and indicative of permanent deviation from normal successional pattern, with greater than expected mortality	high percentage of dead and dying vegetation, with no typical age and size distribution
V. Density and quality of coarse woody debris, snag, den, and cavity	optimal structural habitat	slightly lower or slightly greater than normal quantity	not present or greater than normal because vegetation is dead or dying	not present or exist only because native vegetation is dead or dying
VI. Plant condition	good condition, with very little to no evidence of chlorotic or spindly growth or insect damage	generally good, with little evidence of chlorotic or spindly growth or insect damage	generally poor, with evidence of chlorotic or spindly growth or insect damage	overall very poor, with strong evidence of chlorotic or spindly growth or insect damage
VII. Land management practices	optimal for long term viability of plant community	generally appropriate some possible fire suppression or water control features that have caused a shift in plant community	partial removal or alteration of natural structure, or introduction or artificial features, such as furrow or ditches	removal or alteration of natural structure, or introduction or artificial features, such as furrow or ditches
VIII. Topographic features such as refugia ponds, creek channels, flats or hummocks	present and normal	slightly less than optimal	reduction in extent of topographic features from what is normal	lack of topographic features that are normal for the area being assessed
IX. Siltation or algal growth in submerged aquatic plant communities	no evidence	minor degree of siltation or algal growth	moderate degree of siltation or algal growth	high degree of siltation or algal growth
X. Upland mitigation area - level of habitat and support for fish and wildlife in the associated wetlands or surface waters	optimal level of habitat and life history support	high, but less than optimal level of habitat and life history support	moderate level of habitat and life history support	little or no habitat and life history support

UMAM Scoring Worksheet ~ Community Structure: *Benthic*

Community Structure	Optimal (10)	Moderate (7)	Minimal (4)	Not Present (0)
2. Benthic and Sessile Communities	benthic and sessile communities provide optimal support for all functions typical of the assessment area and provide optimal benefit to fish and wildlife	benthic and sessile communities provide functions at 70% of optimal level	benthic and sessile communities provide functions at 40% of optimal level	benthic and sessile communities do not support functions or provide benefits
I. Species number and diversity of benthic organisms	appropriate species number and diversity optimal for type of system	majority of species are appropriate with number and diversity slightly less than normal	appropriate species greatly decreased	lack of appropriate species, any appropriate species in poor condition
II. Non-native or inappropriate species	not present	represent a minority	majority	dominant
III. Regeneration, recruitment and age distribution	optimal	slightly less than expected	minimal	no indication
IV. Condition of appropriate species	good, with typical biomass	generally good	substantial number dying or in poor condition	not present
V. Structural features	typical with no evidence of past physical damage	typical, or with little evidence of past physical damage	atypical	structural integrity very low or non-existent, evidence or serious physical damage
VI. Topographic features such as relief, stability, and interstitial spaces (hardbottom and reef communities) or snags and coarse woody debris (riverine systems)	typical and optimal	slight deviation from expected	greatly reduced	lacking
VII. Spawning or nesting habitats	optimal	less than expected	few are available	none

Community Structure

What does the community structure look like?

- Species presence/absence
- Species richness and distribution
- Sediment composition
- Density and total coverage
- Epiphytic cover
- Etc…

What is risk?

The degree of uncertainty that proposed conditions will be achieved.

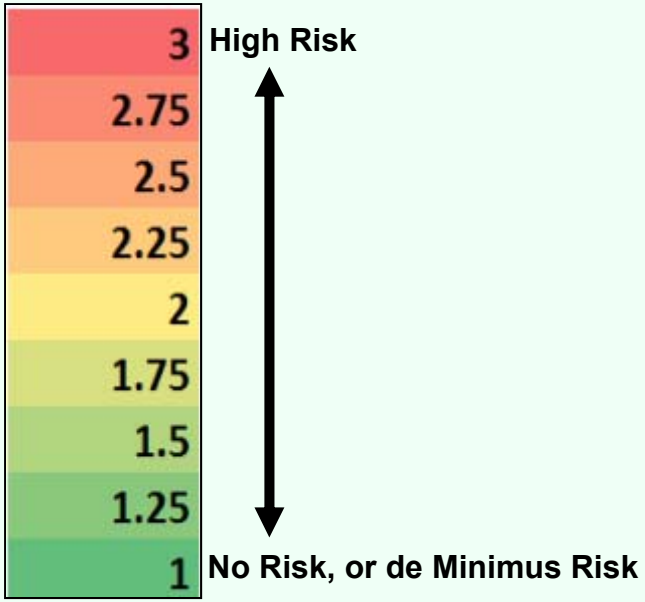
Mitigation projects that require longer periods of time to replace lost functions or to recover from potential perturbations are considered to have higher risk that those that require shorter periods of time.

UMAM Process

Risk Factor

Risk Factor

- What's the reliability of the mechanical or artificial means to achieve proposed hydrologic conditions?
- What's the compatibility of sediments at the proposed planting location?
- What's the compatibility of hydrology at the proposed planting location?
- What's the reliability of the proposed planting-scheme and technique?
- What's the risk of colonization by invasives, exotics, or nuisance species?
- Is the mitigation proposed adjacent to areas likely subject to future development?
- Will secondary or indirect effects from surrounding landuses derail or delay success?



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.500(6)(b)Water Environment (n/a for uplands) w/o pres or current	with	
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current	with	

Score = sum of above scores/30 (if uplands, divide by 20) current or w/o pres	with

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Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres =

Delta = [with-current]

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Risk Factor

Risk Factor

UMAM Process

Time Lag

The time lag associated with mitigation means the period of time between when the functions are lost at an impact site and when the mitigation site has achieved the outcome that was scored in the w/Project condition.

There is no time lag if the mitigation fully offsets the anticipated impacts prior to or at the time of impact.

Greater time lag = greater T factor

T-Factor ranges from 1 – 3.91

Higher T-factor = greater amount of mitigation

TABLE 1.

Year	T-factor
< or = 1	1
2	1.03
3	1.07
4	1.10
5	1.14
6-10	1.25
11-15	1.46
16-20	1.68
21-25	1.92
26-30	2.18
31-35	2.45
36-40	2.73
41-45	3.03
46-50	3.34
51-55	3.65
>55	3.91

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current or w/o pres	Preservation adjustment factor =	FL = delta x acres =
with	Adjusted mitigation delta =	

Delta = [with-current]	If mitigation	For mitigation assessment areas
	Time lag (t-factor) =	RFG = delta/(t-factor x risk) =
	Risk factor =	

Time Lag

Assessing Preservation

- Use the 3 indicators of function
- Compare “without preservation” to “with preservation”
- Delta is multiplied by Preservation Adjustment Factor (PAF) which considers
  - Management activities
  - Ecological and hydrological relationship
  - Scarcity of habitat
  - Proximity to national & state parks, preserves
  - Extent and likelihood of impacts

Assessing Preservation

- When preservation is not mitigation
- When mitigation consists of preservation in addition to creation, restoration or enhancement
- When mitigation is Preservation only
- How to develop and assess the “without preservation” vision

Conservation Easement ≠ Mitigation

- A conservation easement may be required by a local government to meet *zoning* rules
- A conservation easement may be required to *prevent* secondary or cumulative impacts
- If a proposed conservation easement is not needed or not appropriate to *offset* impacts, it is not mitigation.

Preservation as Mitigation (AH 10.3.1)

Preservation of important ecosystems can provide an improved level of protection over current regulatory programs when it ensures that the values of the preserved area are protected and maintained in the long term. Areas proposed to be preserved to prevent secondary or cumulative impacts may also be considered part of a mitigation plan if those areas also serve to offset adverse impacts.

When the mitigation assessment area is preservation in addition to creation, restoration, or enhancement

- Assess the area under **current condition** and the “with mitigation” scenario to determine the ecological lift.

- The benefits provided by the preservation are considered in the “with mitigation” scenario and in risk.

When the only action for a mitigation assessment area is preservation

- Assess the area under the “without preservation” vision and then “with preservation” to determine the delta, *and*
- Apply the Preservation Adjustment Factor
- Include risk and time lag in the final delta determination

Preservation Adjustment Factor

PAF shall be scored on a scale from **0 (no preservation value)** to **1 (optimal preservation value)**, on one-tenth increments, based on 5 considerations.

Each of the 5 considerations shall be evaluated with value assigned based on relative significance and applicability.

PAF considerations

1. The extent to which **proposed management** activities within the preserve area promote natural ecological conditions such as fire patterns or the exclusion of invasive exotic species.
2. The **ecological and hydrological relationship** between wetlands, other surface waters, and uplands to be preserved.
3. The **scarcity of the habitat** provided by the proposed preservation area and the degree to which listed species use the area.

PAF considerations (continued)

4. The **proximity** of the area to be preserved **to areas of national, state, or regional ecological significance:** national or state parks, Outstanding Florida Waters, and other regionally significant ecological resources or habitats, such as lands acquired or to be acquired through land acquisition programs for environmental conservation, and whether the areas to be preserved include corridors between these habitats.

5. The **extent and likelihood of potential adverse impacts** if the assessment area were not preserved.

Uplands as part of a mitigation plan

- Upland **preservation** may be appropriate as mitigation
- Upland **restoration and enhancement** may also be appropriate mitigation
- In these cases, start with identifying the native community type of the uplands

Uplands as mitigation

Identify the functions that the uplands provide to the fish and wildlife of the associated wetlands.

If there *are no* associated wetlands or other surface waters…

…is this appropriate as mitigation?

Upland mitigation assessment

The functions previously identified are considered and accounted for when **scoring the upland** in Part II

Ex: Mesic Flatwoods next to basin marsh provide habitat for gopher frogs, in the gopher tortoise burrows. The current condition is fire suppressed with few gopher tortoises. Prescribed fire will improve this habitat for both the tortoise and the frog.

UMAM Process

Run the Math

Step-1

$$\frac{\left(\begin{array}{c}\text{w/Project}\\ \text{Location \& Landscape}\\ +\\ \text{Water Environment}\\ +\\ \text{Community Structure}\end{array}\right)}{30^{*}} - \frac{\left(\begin{array}{c}\text{Current}\\ \text{Location \& Landscape}\\ +\\ \text{Water Environment}\\ +\\ \text{Community Structure}\end{array}\right)}{30^{*}} = \text{“Delta”}$$

This averages the 3-aspects and scales from 0.000 -1.000

The “Delta” represents the ecological gain or loss

***If an upland assessment area, divide by 20**

UMAM Process

Run the Math

- Functional loss (FL) – measure of functions that would be lost or decreased at an impact area.

- Functional gain (FG) - measure of functions that would be gained or increased at a mitigation area, including adjustments for preservation, time lag, and risk.

- In order to ensure no-net-loss of wetland function, FG $\geq$ FL

UMAM Process

Run the Math

Step-2 (for Impacts)

"Delta" x Acres of Impact = "Functional Loss"

"Functional Loss" is the amount of mitigation needed to mitigate the impact.

UMAM Process

Run the Math

Step-2 (for Mitigation)

$$\frac{\text{“Delta”}}{\left(\text{Risk} \times \text{Time Lag}\right)} = \text{“RFG”}$$

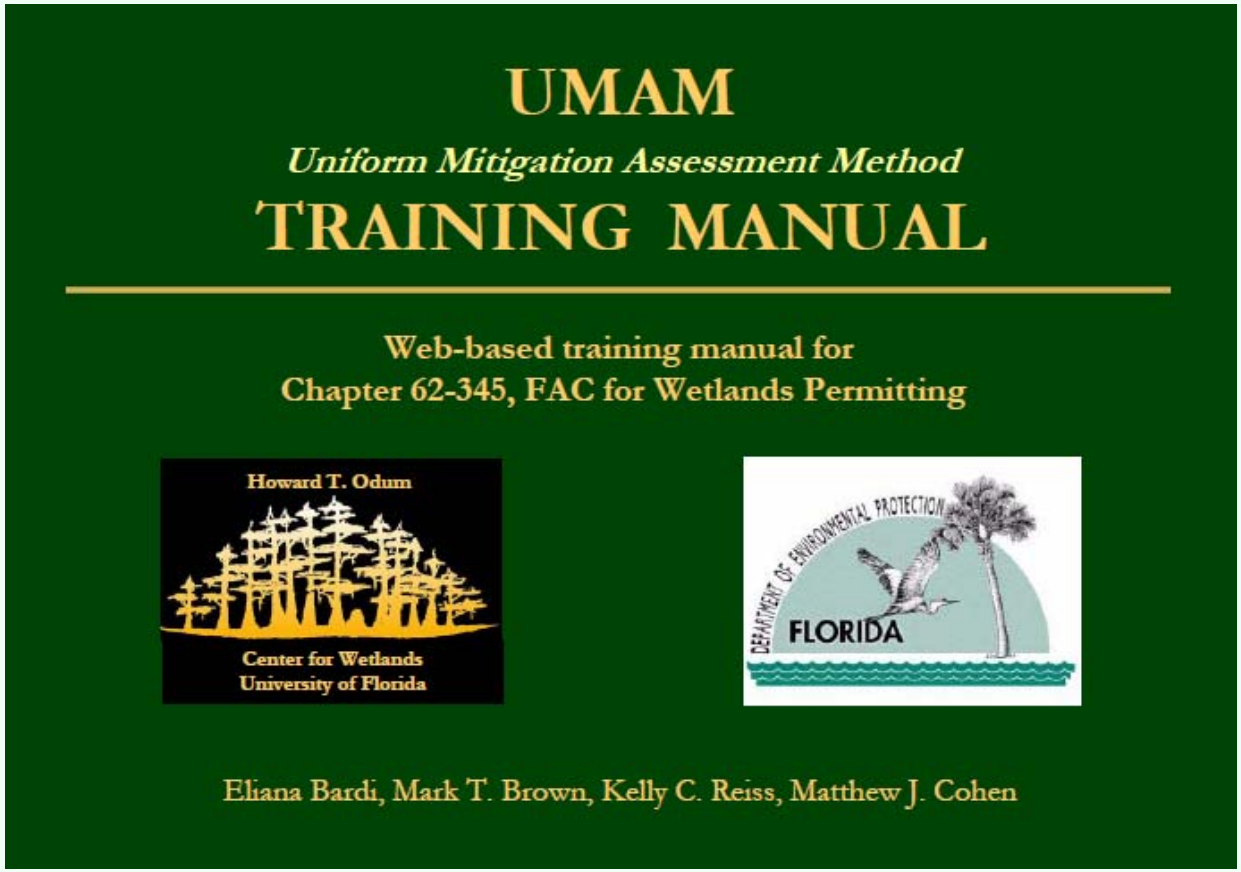
RFG = <u>Relative</u> Functional Gain

Functional Gain = RFG * Acres of Mitigation

Functional Gain is the amount of benefit produced by the mitigation.

Online resource

http://sfrc.ufl.edu/ecohydrology/UMAM_Training_Manual_ppt.pdf



Thanks!

Contact

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