Proposed Revision to Cape Sable Seaside Sparrow Critical Habitat

Peer Review of the U.S. Fish and Wildlife the Service Proposed Rule to Revise Critical Habitat, 50 CFR Part 17, Endangered and Threatened Wildlife and Plants; Critical Habitat Designation for the Cape Sable Seaside Sparrow[1]

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December 21, 2006 (updated September 16, 2007)

The Capes Sable Seaside Sparrow (the sparrow) has existed for centuries in the area of Everglades National Park. Sparrows have weathered extreme flooding and drought, numerous hurricanes, frequent fire, etc. well before people arrived and modified the natural hydrology of the ecosystem. While most look with disdain at the canals, levees, pumps, gates, and other water control structures that lace south Florida, and have embarked upon a multi-billion dollar program, i.e. the Comprehensive Everglades Restoration Plan (CERP) to eliminate as many structures as possible, the Fish and Wildlife Service (FWS) is now proposing a Critical Habitat designation that will require "special management considerations" (code for institutionalizing in perpetuity the current use of water control structures to artificially manage water flows into western Shark River Slough at lower levels than before human intervention). It would seem to even the most casual of observers that if we move toward restoring the natural flows and levels, under which the sparrows lived for 100s of years, the artificial management of flows that is being proposed at pp. 63989, 63990, and 63995 of the proposed rule would be unnecessary. Especially since for 9 years, this artificial management has shown no indications of helping the sparrow, and has caused much damage to other areas of the Everglades. But no, the Fish and Wildlife Service is attempting, via the Endangered Species Act (ESA) provisions for Critical Habitat, to create a perpetual requirement for a very

[1] The proposed rule was published in the Federal Register/Volume 71, No. 210/Tuesday, October 31, 2006/Proposed Rules.

[2] This peer review represents my best professional opinion of the hydrologic aspects of the proposed rule based on all the material provided and other related documents, as supplemented by 37 years of experience as a civil and environmental engineer, with a Ph.D. in water resources engineering, and 12 plus years of experience dedicated to the Everglades and its restoration. See resume at Attachment 7 for details of experience and credentials.

specific hydrologic goal, which is diametrically counter to restoration of the Everglades and, has not proven helpful, but detrimental to the sparrow.

Although all subpopulations (Units under the proposed rule) face conflicts between the Endangered Species Act and Everglades restoration, it is the Subpopulation A on the west side of Shark River Slough, which was not designated as Critical Habitat when this subspecies was listed, that is at the center of a controversy fundamental to the success of Everglades restoration. The conflict is between those that:

- Demand unnatural, specialized water management for certain areas versus those that seek to restore the entire ecosystem as a whole as authorized by Congress under the Comprehensive Everglades Restoration Plan
- Want to keep control structures to provide specialized management versus those that want to remove as many control structures as practicable in order to let the system function naturally as authorized by Congress under the Comprehensive Everglades Restoration Plan
- Pursue single-species management versus those that support the holistic approach of multi-species recovery as intended by Congress under the Comprehensive Everglades Restoration Plan

Even though all Subpopulations are affected, this peer review will focus on the proposal for Units 1 and 2, hereafter referred to as Subpopulation A. In general, it is the position of this peer reviewer that the goal for all subpopulations must be the return of natural flows, maximum decompartmentalization, and multi-species recovery, which the current proposal does not support.

A summary of the issue regarding Subpopulation A follows[3]: From 1964 through the 1992, i.e. 29 years of sparrow nesting seasons, the S-12 Structures were not closed beginning as early as November through mid-July for the "special management considerations" as they are now. Average annual flows ranged from almost 0 to 2437 cubic feet per second, and by all indications, the sparrow thrived at populations of near 3000 in Subpopulation A. The precipitous drop, in which the population plummeted to 432 after the 1992 nesting season, coincides with Hurricane Andrew's ravage. The "special management consideration," i.e. the

[3] Note: It will be helpful for the reader of this peer review to have Attachment 1, Graph depicting sparrow population over time, and Attachment 2, Graph depicting sparrow population versus average annual flows through the S-12 structures, readily available for reference, as they help in maintaining a visible perspective of recent history of the sparrow.

blockage of natural flows across Tamiami Trail by closing the S-12s, has not produced any rebound in this population. One must take a hard look at continuing to block S-12 flows, as this Critical Habitat proposal would sanction the artificial drying out of areas in the Park and flooding of other parts of the Everglades in perpetuity. This is especially compelling in light of the fact that the sparrow flourished during the 28 years (1964 to 1992) during which the S-12s were not blocked early, and, since they have been blocked (1997 to present), the sparrow has not only failed to show any signs of recovery, but it has further decreased in numbers by approximately 1000 individuals.

Sparrow Population Fluctuations Are Extremely Complex and Dependent on Factors Much More Important Than Flow Variations

The proposal states, "Sparrows occur in the heart of the expansive Everglades wetland system, in a harsh environment where flooding, fires, and high temperatures occur regularly." (p. 63983), and "A complex relationship between hydrologic conditions, fire history, and soil depth determines the specific vegetation conditions at a site, and variation in these characteristics may result in a complex mosaic of vegetation characteristics." (Taylor 1983, p. 152; Ross et al. 2006, pp. 1-46) (p. 63984) There is broad agreement that the sparrow population and its Critical Habitat are related to much more than just flows.

As a matter of fact, looking both at historic flows and current flows under IOP, one can discern no reliable trend or noticeable correlation between flows and the sparrow population. This lack of trend can be seen at Attachment 1 where the sparrow population is plotted against annual average flows through the S-12 structures. Some key observations follow:

- The precipitous drop in sparrows from 1992 to 1993 cannot logically be attributed to increased flows through the S-12s, as the preceding 7-year period was dry and the flows in 1992 were no more than average.
- Although record flows occurred in 1995 (3 years after the precipitous drop in sparrows), the sparrow population in Subpopulation A increased in both 1995 and 1996.
- Even though the S-12s have been utilized to artificially dry out Subpopulation A for the past 9 years, there has been no rebound in the sparrow population.

Basing the precipitous drop in the sparrow population in 1992-1993, and sparrow population levels in general, only on flows is simply not supportable.

Hurricanes have historically been a major threat of the sparrow. "When the last individual of a race of living things breathes no more, another heaven and Earth must pass before such a one can be again." These words by naturalist Charles Bebee are found in the 1967 book Moment in the Sun, which also reported that "the tattered remnants of the Cape Sable seaside sparrow of Southwestern Florida were snuffed out in the hurricane of 1935."[4] But as we know now, the sparrow moved to other locations in the Everglades and rebounded dramatically. And many references on birds agree that "Destruction of marshes by hurricanes threatens its [the sparrow's] existence."[5] As a matter of fact, in a paper published after Hurricane Andrew by Pimm, et al., it was stated that "The population west of Shark River Slough was in the storm's eye and declined dramatically from 1992 to 1993 ... Andrew may have reduced the sparrow's total numbers from approximately 6000 to 4000 [actual decline was from 6576 to 3312]"[6] As late a January 1995, the Fish and Wildlife, Division of Endangered Species, Species Accounts stated "Catastrophic storms, such as the hurricanes in 1935 and 1992 [Hurricane Andrew], can lead to natural vegetation changes that make the environment unsuitable for Cape Sable sparrows, thus causing local extirpations. Hurricanes may also kill birds directly, as was likely the case in 1992."[7] For reasons not clearly understood, this position that powerful Hurricane Andrew played a major role in the 1992-1993 precipitous decline of the sparrow was casually abandoned without convincing justification or fanfare by FWS in favor of flow through the S-12 structures being the culprit. As demonstrated below, flows through the S-12 structures neither caused the precipitous decline in the sparrow population, nor have the blockage of these flows for approximately 9 years caused the sparrow to rebound. We do know with certainty that hurricanes have always been a major threat to the sparrow, and a very powerful hurricane hit them head-on in 1992 and their numbers precipitously plummeted.

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[4] *Moment in the Sun*, Robert Rienow and Leona Train Rienow, Ballantine Books, New York, 1967, p. 99.
[5] *Birds of North America*, Chandler S. Robbins, Bertel Bruun, and Herbert S. Zim, Western Publishing Company, Inc., Racine, Wisconsin, 1966, p. 310.
[6] *Hurricane Andrew*, Stuart L. Pimm, Gary E. Davis, Lloyd Loope, Charles T. Roman, Thomas J. Smith III, and James T. Tilmant, Bio Science, Vol. 44 No. 4, 1994, article starts p. 224.
[7] Endangered and Threatened Species of the Southeastern United States (The Red Book), FWS Region 4, as of January 1995.

Analysis of the Reasonable and Prudent Alternative (RPA) 45-Day Rule[8] Established to Save the Cape Sable Seaside Sparrow

In response to the Corps request for reinitiation of consultation on the Modified Water Deliveries Project and the Experimental Program on November 4, 1997, the Fish and Wildlife Service (FWS) issued a Reasonable and Prudent Alternative (RPA) to prevent jeopardy to the Sparrow in 1999 in its Biological Opinion (BO). At the heart of the FWS RPA was the following requirement as stated in the FWS 1999 BO:

"The Corps must prevent water levels at National Park 205 (NP 205) from exceeding 6.0 feet National Geodetic Vertical Datum (NGVD) [which is ground level] for a minimum of 45 consecutive days between March 1 and July 15. [emphasis added] This would provide water levels sufficient to allow completion of one nesting cycle in approximately 40 percent of the sparrow habitat in subpopulation A. Although sparrows need at least 40 days to complete one nesting cycle and build new nests for each successive brood, more than 40 days may sometimes be necessary to complete the cycle when individuals do not find a mate and/or establish a pair bond in the first day. A management scheme that would provide for a nesting period of 45 days would take this possible variation into account, thereby increasing the chances that all breeding pairs would successfully complete one nesting cycle." (Biological Opinion, Experimental Program and Modified Deliveries Project, FWS, 1999.)

The FWS requirement was based on a vaguely defined hypothesis that sparrows place nests about 14 cm above the ground when the ground is dry, and if the water levels rise to about 10 cm during this 40 days required to produce one clutch, the breeding process would be irrevocably interrupted. A historical analysis of this mandate is graphically depicted at the Attachment 3 and explained here:

- During the 9 years from 1998 through 2006, the Corps met this mandate during 8 of those years. The only year that it was not met was in 2000, but it should be noted that during that year there were 2 periods with 40 and 43 consecutive days of levels below 6.0 feet NGVD at NP 205 between March 1 and July 15. Thus, for all practical purposes, the Corps met the FWS's requirement all 9 years. Yet after 9 years of the Corps meeting the mandate, the government's population estimates show that the sparrow had declined in numbers

[8] Whether the 45-day Rule or a 60-day Rule, there is no discernable coorelation between meeting it and sparrow population.

by 59 percent, i.e. 17 singing males were heard in 1997 but only 7 in 2006. Since 1992, the drop was 96 percent. Based on this information, closing the gates and artificially drying out the sub-population A area for nine years has not helped the sparrow but resulted in its further decline.

- Between 1978 and 1992, actual sparrow counts were made in only 2 years, 1983 and 1992. In 1982 when all the S-12 gates were open, there were 2,688 sparrows, and, in 1992, 2,608. All indications are that the sparrow flourished in sub-population A during those years. But:
    - From 1978 through 1988, the 45-day rule was achieves in less than 50 percent of years. If the 45-day rule was important to sparrow survival, one would expect that this time period would not have been good for the sparrow. But diametrically opposed to the 45-day rule's logic, the sparrow appears to have done very well during this time period.
    - From 1989 through 1992, the 45-day rule was achieved each year with room to spare, and in 1 year even the 80-day, 2-clutch goal was achieved. If the 45-day mandate actually was the key to increasing the sparrow population, then one would expect 1993 to be a banner year. It was not as the sparrow population declined from 2608 sparrows to 432, almost an 84 percent drop. This is the exact opposite of what one would predict if the 45-day nesting rule was valid. And the 45-day logic was postulated ignoring the fact that Hurricane Andrew directly hit sub-population A immediately before the precipitous decline in sparrows was recognized.

In summary, no correlation between the 45-day mandate for drying out sub-population A and sparrow population is discernable. During the 9 years the mandate had been in place, the 45-day mandate has been met, but the number of sparrows has continued to decline. During 11 years when the 45-day mandate was met less than half the time, the sparrow flourished. And during the 4 years preceding the sparrow's precipitous decline in 1993, the 45-day mandate was met with room to spare each year. Thus, intuitively, the 45-day mandate does not appear to have any basis.

The "seaside" sparrow traditionally made the saltwater marshes along our coasts as its home. Along with this estuarine habitat come both tidal and storm fluctuations that would make the assumed sensitivity to hydrologic

fluctuations embodied in the FWS 45-day mandate seem patently illogical. Adding to this illogic is the requirement in the RPA to add more much more water to the habitat of the eastern populations of sparrows, with no regard to a 45-day rule.

Therefore, based on my professional judgment, and a review of the hydrological data for the sub-population A area, I conclude that the FWS 45-day rule is not a valid requirement for removing jeopardy from the sparrow, and that the hydrological management objective, which is being institutionalized by the proposed rule, is based on a hypothesis that has not been shown to be true. If anything, the opposite may be true, i.e. more water, which is what more natural conditions will provide, may be good for the sparrow. Regardless of this, the 45-Day Rule continues to exists with no specific trigger established to end it, and it will now be further reinforced by the proposed Critical Habitat revision.

Flawed Basis for Special Hydrologic Management Considerations

The proposed rule provides a chronological chain of events/conclusions leading to the need for "special hydrologic management considerations." The logic is summarized and critiqued below. The bottom line is that the logic is wrong on the surface and cannot be scientifically justified, and the resulting proposed "special hydrologic management consideration" could force the U.S. Army Corps of Engineers to manage water levels in the vicinity of Subpopulation A at unnaturally low levels forever, to the detriment of other areas in the Everglades ecosystem:

- "Surveys in 1968, near the time of the sparrow's listing, indicated that extensive fires had reduced the number of sparrows in the area [of Subpopulation A] significantly ..." (Stimson 1968, p. 867) (p. 63990), and "Since that time [of 1968], the sparrow population in the area [of Subpopulation A] increased, and in the first comprehensive survey of potential sparrow habitat in 1981, the area was found to support a larger number of sparrows than any other Subpopulation" (Kushlan and Bass 1983, p. 144) (p. 63990) Thus, from 1968 to 1981, the sparrow population soared in Subpopulation A, under S-12 operations that were essentially the same as those preceding the sharp decline between 1992 and 1993 that FWS erroneously claims was caused by S-12 flows. Also, between the 1981 and 1992 censuses the population remained essentially the same at 2,688 and 2,608, respectively.

- The proposed rule states that, "From 1993 to 1995, the sparrow population in this area declined precipitously, from an estimated 2,608 individuals in 1992 to 240 individuals in 1995." (Pimm, et al. 2002, p.70) (p. 63990) This is contrary to the available evidence in that the precipitous drop did not occur over three years. Based on the sparrow counts each year, it is clear that the precipitous decline occurred between 1992 and 1993 when the population in Subpopulation A went from 2,608 to 432. Between 1993 and 1994, the population in this area did fall from 432 to 80, but, between 1994 and 1995, the population actually increased from 80 to 240. It must be noted that during this period, there were no abnormally high discharges through the S-12s, i.e. none that would reflect any significant difference than those experienced between 1964 when the S-12s were put into operation and 1992, a period in which the sparrow appears to have thrived. If anything, flows were less through the S-12s than historically for the same rainfall.
- The proposal goes on to say that, "This decline **apparently** resulted from hydrologic management within the area immediately upstream of the area of the area [of Subpopulation A], just north of ENP [,i.e. WCA 3A]." (p. 63990) First of all, "apparently resulted from hydrologic conditions" is not justification to make draconian water management changes that have caused severe and/or irreversible damage to other parts of the ecosystem. One would expect clear and convincing proof to justify the radical modification of a hydrologic regime that had enabled the sparrow to flourish for the better part of 28 years, to one that will prevent the restoration of natural levels under which it existed prior to the man-made water management system. Second, there is no scientific justification presented that the decline resulted from the flow regime, and, even if there was an abnormal increase in flows, which there was not, it is impossible to imagine an 84% drop in the population in one year because of increased flows alone. Such a catastrophic decline is much more likely attributable to a sudden, violent event such as a fire or hurricane, and Hurricane Andrew just happened to hit Subpopulation A between the 1992 and 1993 census when the sharp decline actually occurred.
- "Since then, measures have been implemented by the U.S. Army Corps of Engineers and South Florida Water Management District water managers to prevent further damage to the sparrow

> subpopulation [A] in the area resulting from excessive water levels and duration of inundation, but the subpopulation [A] has not recovered." (p. 63990) Thus, FWS admits that there has been no recovery despite almost 9 years of moving further away from natural flows and away from a flow regime under which the sparrow flourished for approximately 28 years in the area of Subpopulation A.

But even given no direct correlation between flows and the sparrow population; no scientific evidence that flows caused the decline of sparrows in Subpopulation A; no abnormal flows leading up to or during the precipitous drop of sparrows between 1992 and 1993; and, as discussed at the above analysis of the 45-day rule, no recovery for the sparrow after over 9 years of water management measures that have been instituted through deviations to the regulation schedule, the Interim Structural and Operational Plan (IOP), and the Interim Operational Plan (IOP), the proposal concludes that "Water management plans continue to have the potential to result in damage to sparrow habitat in these areas, and special management of hydrologic conditions is necessary." (p. 63990) This conclusion has no apparent factual or scientific basis, and is reached based on faulty and superficial logic, misrepresentation of the facts, and ignoring the blindingly obvious.

After this illogical, unsupportable conclusion, the proposal goes on to utilize it as the basis for more unnecessary and damaging determinations:

- "Section 7 of the Act requires Federal agencies, including the Service, to ensure that actions they fund, authorize, or carry out are not likely to destroy or adversely modify critical habitat." (p. 63993)
- "Section 7(a)(4) of the Act requires Federal agencies to confer with us on any action that is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat." (p. 63994)
- "Federal activities that may affect the Cape Sable seaside sparrow or its designated critical habitat will require section 7 consultation under the Act." (p. 63994)
- "Activities that, when carried out, funded, or authorized by a Federal agency, may affect critical habitat and therefore result in consultation for the sparrow include, but are not limited to: (1) Actions that would significantly and detrimentally alter the hydrology of marl prairie habitat found in all units. Such activities could include but are not limited to, changes to hydrological management plans that result in

increased depth of inundation or duration of flooding within sparrow habitat during the breeding season ..." (p. 63995)

- "We considered excluding NPS lands and State-managed lands from the proposed critical habitat designation because these properties currently operate under [other plans] ... While existing management plans include provisions and actions intended to maintain the habitat type, we determined that none of the existing plans provide sufficient assurances that hydrologic management in these areas will maintain sparrow habitat." And not one time is the Comprehensive Everglades Restoration Plan considered in the analysis, or even mentioned in the entire proposal, nor is it disclosed that the PCE requires unnatural conditions. (p. 63995)

And all of this inappropriately leads to Subpopulation A being designated as Critical Habitat for the sparrow solely because of the FWS desire to enforce unnatural "special hydrologic management considerations," a basis not supported by an accurate, logical, and compelling argument. Thus, if approved, the FWS will have unjustified, unwise *carte blanche* authority to direct the Corps of Engineers to manage water in an unnatural and destructive manner in perpetuity, and prevent the Corps from ever fully implementing CERP. Ironically, it may result in jeopardy being declared on CERP, because natural flows are not compatible with the unnatural "special hydrologic management considerations" for the sparrow.

Need for Special Hydrologic Management Conditions Results in an Unwise and Impossible Goal

Thus, based on the illogically justified need for a "special hydrologic management consideration" springs a Primary Constituent Element, which the Corps of Engineers must abide by under the threat of criminal penalties:

> *Based on the above discussions of the life history, biology, and ecology of the species and the requirements of the habitat to sustain the essential life history functions of the species, we have determined that the Cape Sable seaside sparrow's PCEs [Primary Constituent Elements] consist of: ... (4) Hydrologic regime such that the water depth, as measured from the water surface down to the soil surface, does not exceed 7.9 inches (20 cm) during the period from March 15 to June 30 at a frequency of more than 2 out of every 10 years. (p. 63988)*

This is more like a specification for a Disney World theme attraction than a realistic requirement for a restored, natural Everglades ecosystem. This PCE does not permit nature to function as it once did, and it requires managers, no matter how much damage it causes to other areas of the Everglades or other species, or resources it consumes, to, out of context of the ecosystem, create a very artificial condition that has not been justified by any of the material provided or logic presented. Even more troubling, it is impossible for any person or agency to achieve, short of totally isolating the area with a wall and constructing an engineered plumbing system. As is prophetically asked, "who'll stop the rain?"

The Bane of the Everglades Is Proposed by Fish and Wildlife Service as the Solution

Most condemn the ditching and diking of the Everglades as man-made activities that have destroyed and continue to damage the Everglades. Even the proposed rule reports that "A complex system of canals, levees, pumps, and other water management structures, operated by complex operational rules, can have profound impacts on the hydrologic conditions throughout much of the remaining marl prairies." (Johnson et al. 1988, p. 31; Van Lent and Johnson 1993, pp. 4-7; Pimm et al. 2002, p. 106) (p. 63984)

But Tamiami Trail and the S-12s blockages, along with other structure and canals to divert flows away from their natural destinations, are absolutely essential to meet the FWS's current Reasonable and Prudent Alternative (RPA) for Subpopulation A. And, if the proposed rule is approved, it will make such manmade structures and associated unnatural management of water essential in perpetuity. In fact, man-made controls will, in all probability, have to be increased given the proposed PCE discussed above.

Ironically, the human control of the water of South Florida via numerous water management structures that we are attempting to eliminate through CERP and a Congressional commitment of billions of dollars, will be institutionalized under the proposed rule in perpetuity if Subpopulation A is designated as Critical Habitat with the specified PCE. Incredibly, what most everyone has condemned as the most significant problem for the Everglades, i.e. human control of water flows, has become the FWS solution for the sparrow. In direct opposition to what most defenders of the environment have worked against for many years, the proposed rule is in

essence a mandate for the Corps of Engineers to continue business as usual, but only with more intensity and control.

Rule Will Sanction, In Perpetuity, Unnatural Hydrology and Prevents the Full Implementation of CERP

As discussed above, Proposed Units 1 and 2 (Subpopulation A) are being unnaturally dried out under the current FWS RPAs. In order to dry out Subpopulation A, water is being held to the north causing unnaturally high water in the Water Conservation Areas (WCA), in particular WCA 3A. This proposal to designate Units 1 and 2 as Critical Habitat will sanction the continued destruction of the largest expanse of sawgrass Everglades left in existence in direct contravention to the Congressionally authorized Comprehensive Everglades Restoration Plan.

The fundamental goal of CERP is to return the quantity, quality, distribution, and timing of water in the natural system to the conditions that existed prior to human intervention. Because of this, the CERP performance measure that was adopted for the remaining sawgrass Everglades was the Natural Systems Model (NSM) hydrology. The NSM represents our best estimate of hydrologic conditions that existed in the Everglades prior to human modifications. Even though its resolution is limited by 2-mile by 2-mile cells, which makes habitat details difficult to predict and analyze, the NSM provides a valuable perspective as a broad indicator of historical flow patterns and hydroperiods, i.e. it may not be possible to discern the exact flows and depths at a given location, but it does provide areas that have higher or lower levels/flows than they did historically. As refinements are made, the details will be better defined.

Species, to include some that are "threatened and endangered," have settled in the modified areas of the Everglades. In some cases, the Fish and Wildlife Service (FWS) has even required that areas be managed in a way that moves the hydrology even further away from that indicated by NSM, under the banner of the Endangered Species Act (ESA).

Special water management dictated by the FWS for the Cape Sable Seaside Sparrow is an excellent example of this conflict between CERP goals and the ESA. The western area of the Everglades occupied by sparrow Subpopulation A (south of the S-12 structures and Tamiami Trail in western Everglades National Park and the Big Cypress National Preserve) has been modified over the years, i.e. a look at the NSM shows that it has been unnaturally dried out. CERP is authorized to rehydrate this area to NSM

levels. But since 1998, the FWS Biological Opinion established that even dryer conditions are needed for the sparrow than existed under the 1995 water management plan. As a result, under ISOP and now IOP, not only is this area being dried out in a way that is diametrically the opposite of CERP restoration, it is forcing water levels to the north of Tamiami Trail (Water Conservation Area 3A) to even higher levels, again diametrically the opposite of CERP restoration. In addition, this is resulting in moving away from more natural freshwater flows into Florida Bay to the south, i.e. the bay is getting less and less flows when CERP restoration contemplates more. This has also contributed significantly to destructively higher water stages in Lake Okeechobee and increased damaging flows to the Caloosahatchee and St. Lucie estuaries. Most have been hopeful that CERP goals will at some point take precedence, but there is not yet a trigger for this to happen. With the current proposal to declare Subpopulation A area a Critical Habitat with very specific unnatural hydrologic management requirements, this could very well provide impetus to keep this area artificially dry forever, i.e. not even a chance to establish a trigger for the return of natural flows because the rule will demand much lower flows forever.

In addition, a major goal of CERP is to decompartmentalize the Water Conservation Areas. Clearly the Tamiami Trail and the S-12 structures contribute significantly to the compartmentalization of the Everglades which is extremely undesirable as flows are blocked and diverted in very unnatural, damaging ways. Removing the impediments to flow caused by Tamiami Trail and the S-12 structures is a high priority in the implementation of CERP. Currently due to the FWS Biological Opinion, Tamiami Trail and the S-12's are being utilized to block and divert natural flows from the north in order to keep Subpopulation A artificially dry. The proposed rule will institutionalize this blockage and prevent us from achieving CERP restoration goals.

In order to clearly demonstrate these conflicts, please refer to Attachment 4. This is a presentation (recently annotated in light of proposed rule) that was given in Key Largo at the Avian Ecology Workshop on March 18, 2003. This workshop was convened under the auspices of the South Florida Ecosystem Restoration Task Force in order to advance the science and restoration efforts of the Everglades specifically focusing on multi-species recovery. The results of modeling IOP at slides 5 through 9 clearly depict that IOP is moving the stage-duration curve lower and farther away from the NSM goals of CERP. Slides 10 through 13 vividly portray the

increased flooding of WCA 3A, and the movement of water levels higher and away from CERP goals.

In addition to moving away from CERP goals, Snail Kite Critical Habitat and tree islands in WCA 3A are being irreversibly destroyed. FWS has admitted that IOP would adversely impact 88,300 acres of Snail Kite Critical Habitat in WCA 3A.[9] In addition, there has been a 50% decline in the Snail Kite population since 1999, corresponding with the years of ISOP and IOP operations for the sparrow.[10] In 2005, no Snail Kites fledged out of WCA 3A, and scientists expressed concern about the high water.[11] Referring to slide 14, over 68% percent of the tree island acreage in the Everglades had been destroyed by 1995 due to primarily to high water, and this destruction is only exacerbated by IOP and sanctioned forever by designating Subpopulation A as Critical Habitat with the proposed PCE.

Finally, the fact that IOP, and now the hydrologic PCE, will prevent us from meeting CERP goals as authorized in 2000 by Congress is not a surprise to FWS. At Attachment 5 is an e-mail between the FWS Region 4 Director (and still Director) and the South Florida FWS Director back in 2000. In response to the Region 4 Director's surprise when informed of this fact, the South Florida Director says, "Relative to the surprise, it is not really one to us ... Both [CERP and the Modified Water Deliveries projects] have modeling that shows that the sparrow habitat will get more water than we think it currently needs." At that time FWS was looking for a population rebound so that jeopardy could be removed and restoration flows could be achieved. That has not occurred after 9 years of demanding unnatural flows and levels. With the Critical Habitat designation, and resulting "special hydrologic management consideration" and specific PCE, this unnatural hydrology will be institutionalized thus preventing the restoration of natural flows. The potential illogical result is that FWS will at some point declare jeopardy on CERP for the sparrow, thus preventing natural flows forever and sanctioning the irreversible harm that is being caused in other areas of the ecosystem.

Rule Ignores Multi-Species Recovery Principles

CERP contemplated habitat shifts resulting from restoration toward NSM hydrology. On page 7-13, 7.3.1.4, (3) this shift is discussed under the

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[9] *Biological Opinion for IOP*, Fish and Wildlife Service, March 28, 2002, pp. 48-49.
[10] *Snail Kite Demography*, Annual Report 2003, p. 10.
[11] *Snail Kite Demography*, Annual Report 2005, pp. 10 & 19.

plan's guidelines for setting priorities among competing performance measure targets: "Restoration should not cause additional, long-term ecological damage. However, the Restudy Team, recognizing that substantial changes in community structure and natural system boundaries have occurred over the past 100 years, is willing to see additional local community shifts (short-term "damage') occur if these would allow the realization of larger scale restoration targets. This view is consistent with the recognition by most Everglades ecologists that a successful Everglades restoration program will be one that recovers those ecological characteristics that defined the original system to a sufficient degree so that a 'new' Everglades-type ecosystem is created (Davis and Ogden, 1994)." Above and beyond not being scientifically justified, the designation of Subpopulation A as Critical Habitat, with precise, artificial water management mandates, is totally inconsistent with the principle of multi-species recovery and, in general, ecosystem restoration.

Summary of Facts[12]

- Sparrows flourished/survived for centuries under natural hydrologic conditions (prior to 1928)
- Sparrows flourished/survived for 36 years after Tamiami Trail was constructed (1928 - 1964)
- Sparrows flourished for 28 years after the S-12 structure were put into operation (1964 - 1992)
- Sparrow population plummeted in 1992-1993, after a direct hit by powerful Hurricane Andrew.
- Sparrow number began rebounding between 1994 and 1997.
- Sparrow population fell to a few singing males on the western side of Shark River Slough after the FWS demanded closing of the S-12s earlier than intended for 9 years (1997 - 2006)
- If "Critical Habitat" for Subpopulation A is approved, the "special management consideration" requiring the S-12s to close early to block flows will be institutionalized in perpetuity even though Subpopulation A sparrow survival has been the worst in sparrow recorded history under the gate closings, and has caused damage to other areas of the Everglades ecosystem and other endangered species.

[12] A summary of analysis and facts was provided by Dr. Rice to the Everglades Avian Ecology Forum, at FIU, Miami, Florida on August 13, 2007, and a copy of this briefing is at Attachment 6.

- Natural conditions authorized to be restored under CERP, and the removal of Tamiami Trail blockage and any S-12 structures that will help to accomplish this, will not be allowed even though the sparrow flourished under natural conditions for hundreds of years.

Conclusion

FWS should accept the blindingly obvious, i.e. that powerful Hurricane Andrew directly hit Subpopulation A on August 24, 1992, precipitously reducing the number of sparrows. The hypothesis that this precipitous drop was due to flows through the S-12s has not been proven, nor will it be, because neither historical flow data support S-12 flows being the problem nor have nine years of blocking the S-12 flows resulted in an increase in the numbers of sparrows.[13] To sanction, via the provisions of the Proposed Rule, precise hydrological management mandates that will institutionalize the continued artificial drying of the Subpopulation A areas, in diametric opposition to CERP goals, will not serve the sparrow or Everglades restoration.

Recommendation

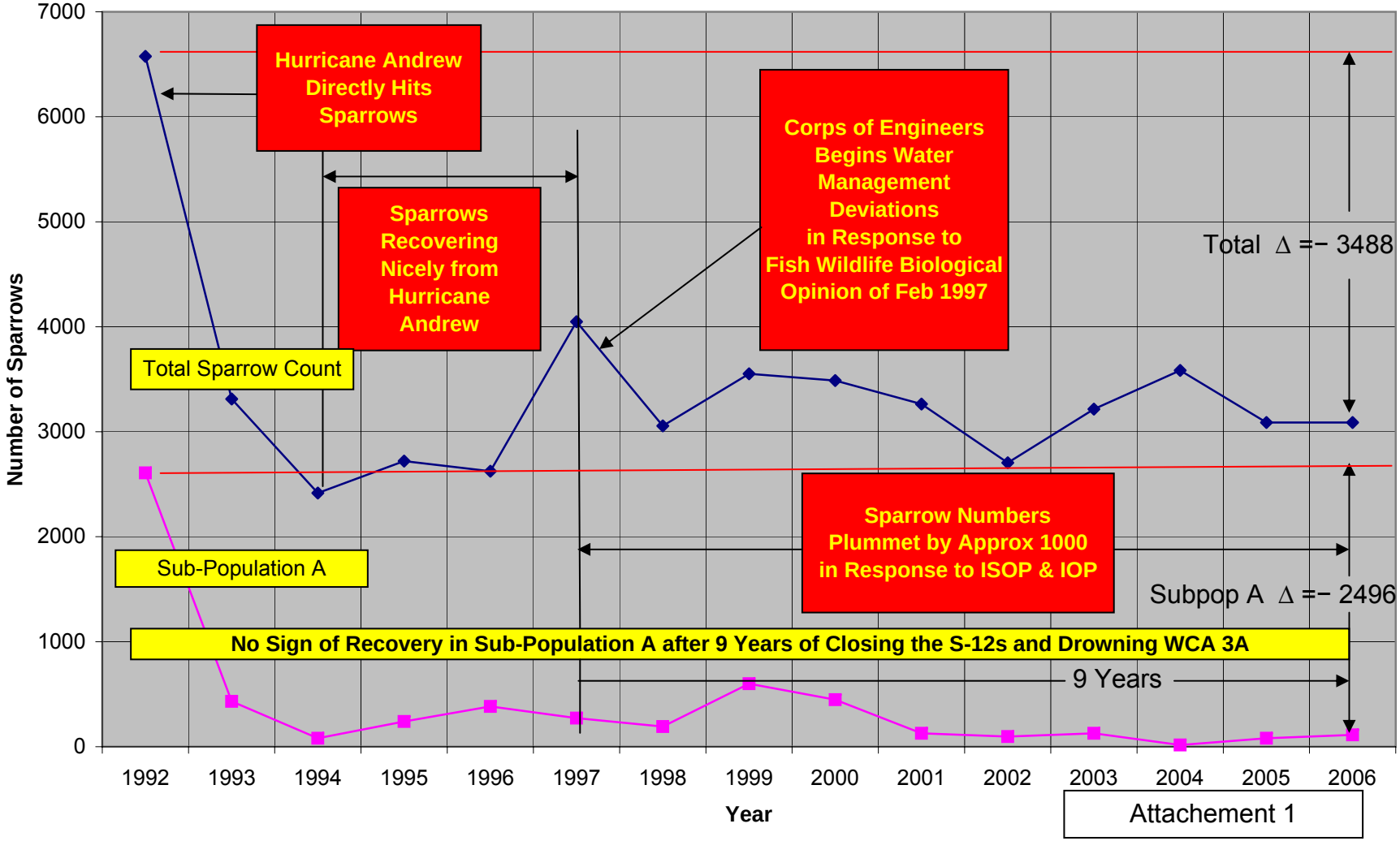
The Proposed Rule, as written with prescribed unnatural hydrological management mandates, will adversely impact the Everglades, sparrow, and other endangered species by preventing the restoration of natural flows and levels and the full implementation of CERP. If FWS continues to pursue the designation of Subpopulation A (Units 1 and 2) as Critical Habitat, the "special hydrologic management consideration" expressed by the hydrology Primary Constituent Element must be removed and replaced with <u>the return of natural flows and levels that existed prior to anthropogenic modifications, as currently best defined by the Natural Systems Model (NSM), through Decompartmentalization under CERP and other Congressional authorizations, to include the removal of the flow impediments caused by Tamiami Trail and the S-12 structures</u>.

[13] The sparrow population in Subpopulation A (Units 1 and 2) may rebound in time as they rebounded after the 1935 hurricane and in the early 1960s after the big fire, but there is not supportable scientific evidence that will occur because of blocking natural flows from this area.

References

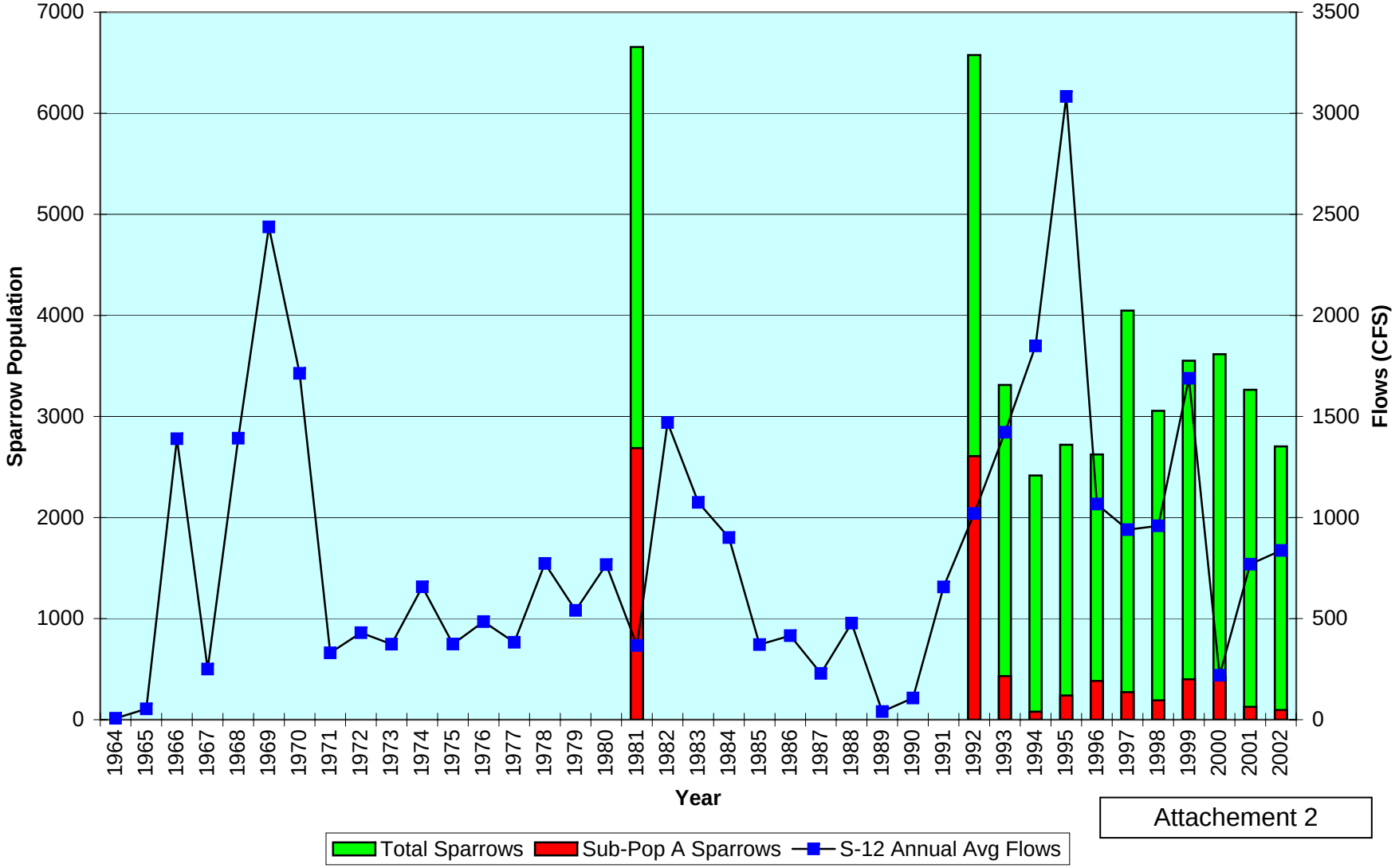
1. *Birds of North America*, Chandler S. Robbins, Bertel Bruun, and Herbert S. Zim, Western Publishing Company, Inc., Racine, Wisconsin, 1966.
2. *Biological Opinion for IOP*, Fish and Wildlife Service, March 28, 2002.
3. *Comprehensive Everglades Restoration Plan (CERP)*, U.S. Army Corps of Engineers and South Florida Water Management District, April 1999.
4. *Endangered and Threatened Species of the Southeastern United States* (The Red Book), FWS Region 4, as of January 1995.
5. *Everglades – The Ecosystem and Its Restoration*, Edited by Steven M. Davis & John C. Ogden, St. Lucie Press, 1994.
6. *Federal Register*, Revise Critical Habitat, 50 CFR Part 17, Endangered and Threatened Wildlife and Plants; Critical Habitat Designation for the Cape Sable Seaside Sparrow , Volume 71, No. 210, Tuesday, October 31, 2006.
7. *Hurricane Andrew*, Stuart L. Pimm, Gary E. Davis, Lloyd Loope, Charles T. Roman, Thomas J. Smith III, and James T. Tilmant, Bio Science, Vol. 44 No. 4, 1994.
8. *Moment in the Sun*, Robert Rienow and Leona Train Rienow, Ballantine Books, New York, 1967.
9. *South Florida Multi-Species Recovery Plan*, U.S. Fish and Wildlife Service, Southeast Region, May 1999.
10. *Snail Kite Demography*, Annual Report, 2003.
11. *Snail Kite Demography*, Annual Report, 2005.
12. *Sparrow in the Grass*, Pimm, et al, 2002.
13. *The Present and Future of the Cape Sable Seaside Sparrow*, William Post and Jon S. Greenlaw, Florida Field Naturalist Vol. 28, No. 3, pp. 93-110, August 2000.
14. *Tree Islands of the Everglades*, Edited by Fred H. Sklar and Arnold van der Valk, Kluwer Academic Publishers, The Netherlands, 2002.

Cape Sable Seaside Sparrow Population
(Source of Population Numbers: "Sparrow in the Grass," Pimm, et al, 2002
& Everglades National Park, Hallac & Bass, 2006)



Attachement 1

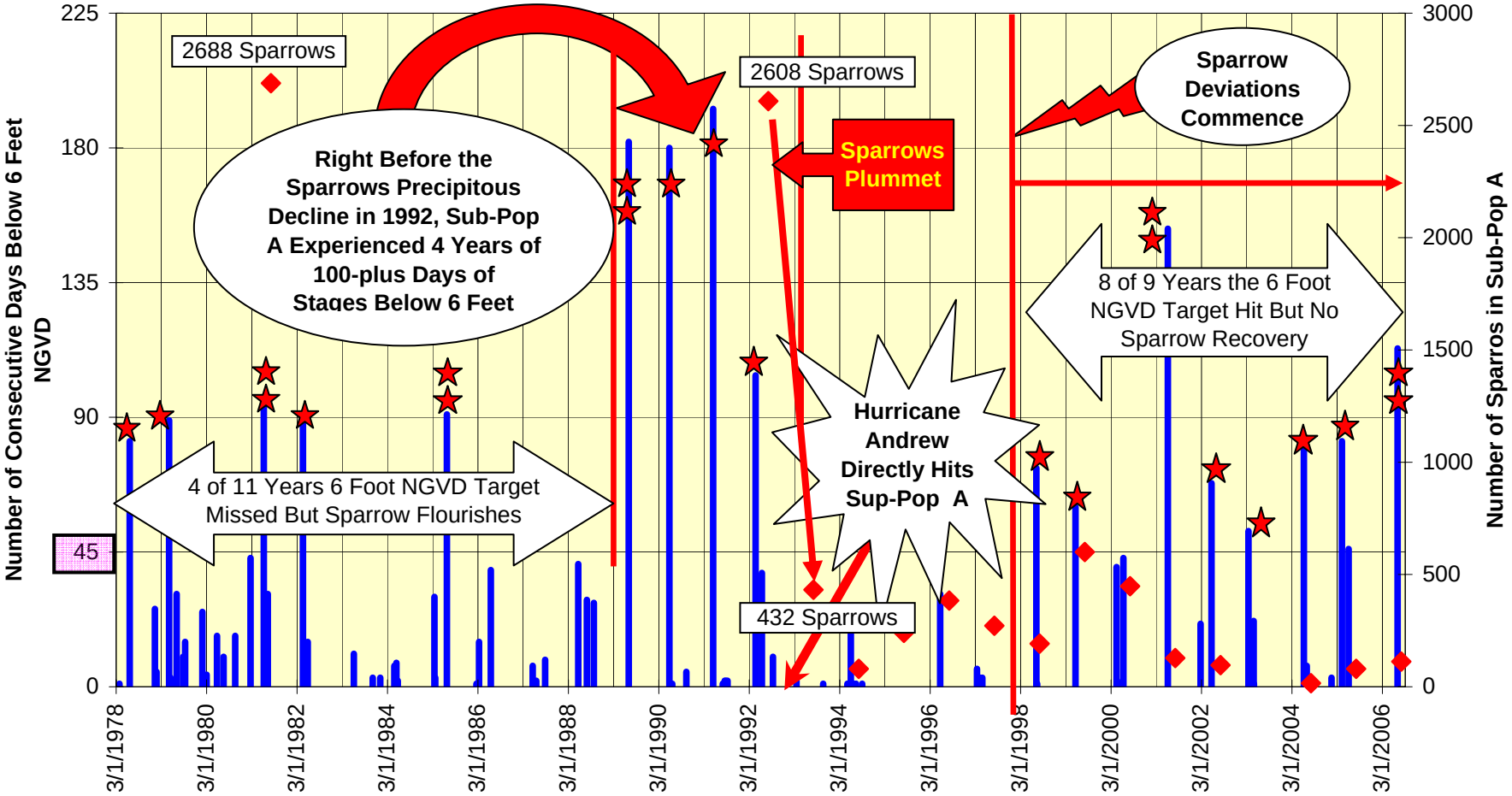
Water Flows Thru S-12's Versus Sparrow Population



Attachement 2

Year & Number of Days NP-205 Stage Below 6 Feet NGVD

(Fish & Wildlife Service Biological Opinion Requires 45 Consecutive Days Below 6 Feet, But There Is No Evidence, Pre- or Post-Deviations, That Successful Nesting or Population Is Related to This)



= 45 Day RPA Goal

= 80 Day RPA Goal Met

(Consecutive Days must be between Mar 1st & July 15th)

ATTACHEMENT 3

Avian Ecology Workshop
Key Largo, FL
March 18, 2003

A Multi-Species Recovery Plan That Complements Everglades Restoration Is a Must

Terry L. Rice
Colonel (Ret'd), Ph.D., P.E.

The Import of a Multi-Species Recovery Plan

- The Everglades is an ecosystem
- The engine that drives the Everglades ecosystem is water
- Thus, fundamental to restoring the Everglades is “getting the water right”
- Without a “multi-species recovery plan (MSRP)” that complements “getting the water right” in an ecosystem context, Everglades restoration, as we know it, is in serious jeopardy

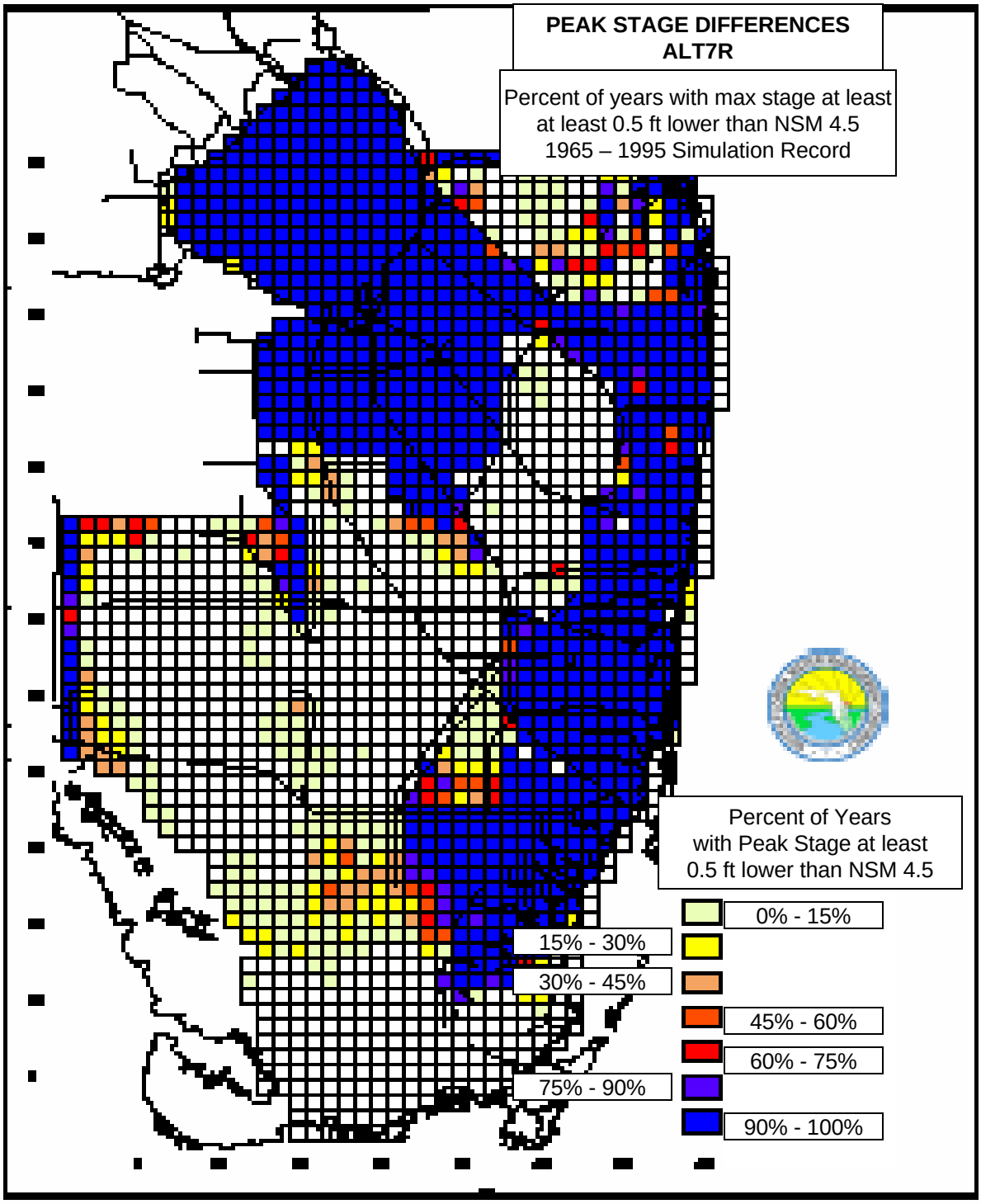
Example
"Saving the Sparrow"

- As projects are being formulated and implemented to restore the Everglades by reducing water levels in WCA 3A and raising them in ENP, government officials declare that the opposite must be done to save the Sparrow
- Voila the ...
  - Emergency Deviations – Dec 1997 – 2000
  - Interim Structural & Operational Plan (ISOP) – 2000 - 2002
  - Interim Operational Plan (IOP) – 2002 – Modified Water Deliveries project

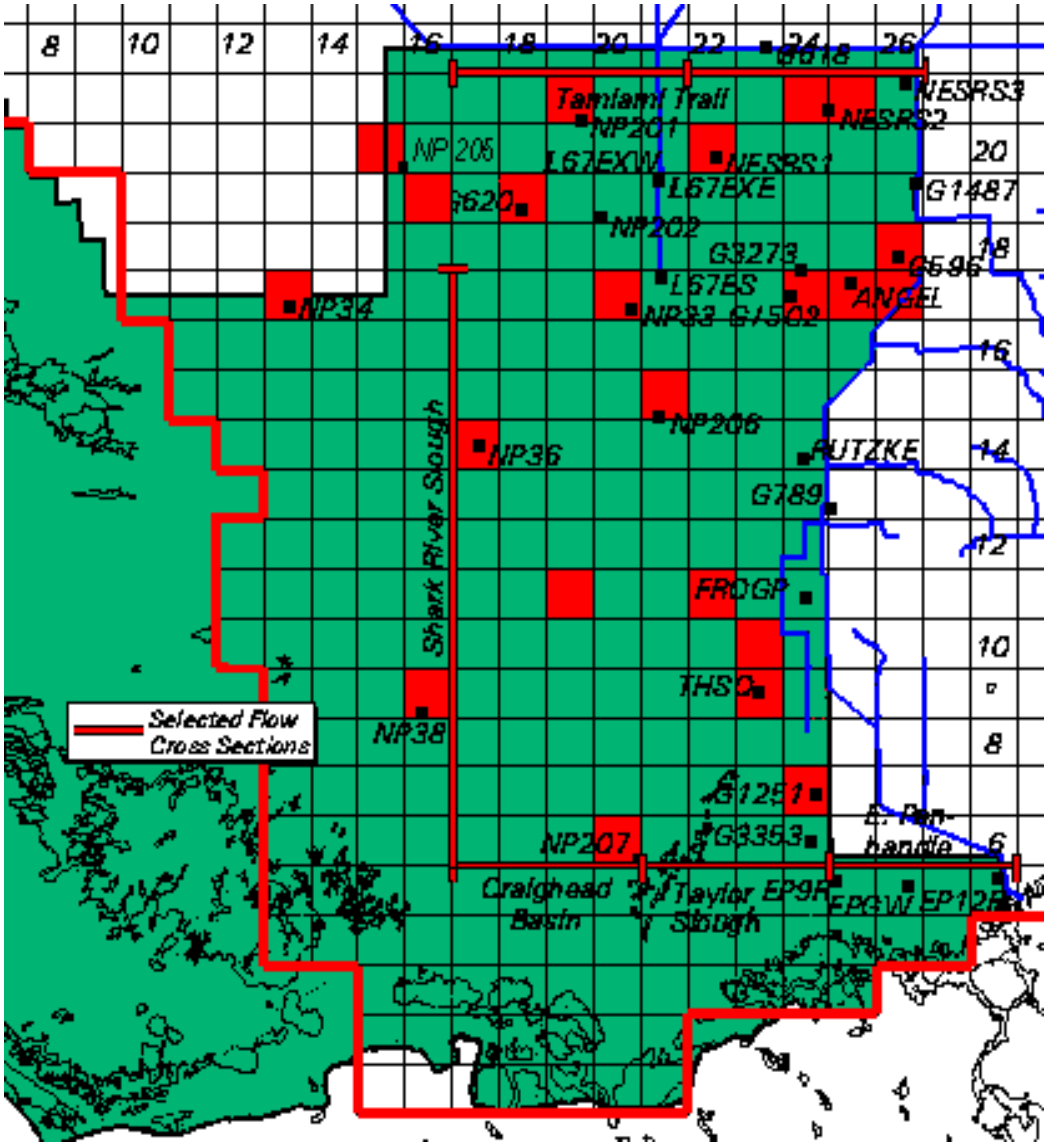
Explanation of Symbols & Abbreviations

- NSM or NSM 4.5 = Natural System Model = CERP goal
- Base 95 or 95BM4 = Test 7, Phase I or the regulation schedule when jeopardy was declared to the CSSS
- ALT1CUR = ISOP
- ALT7R = IOP

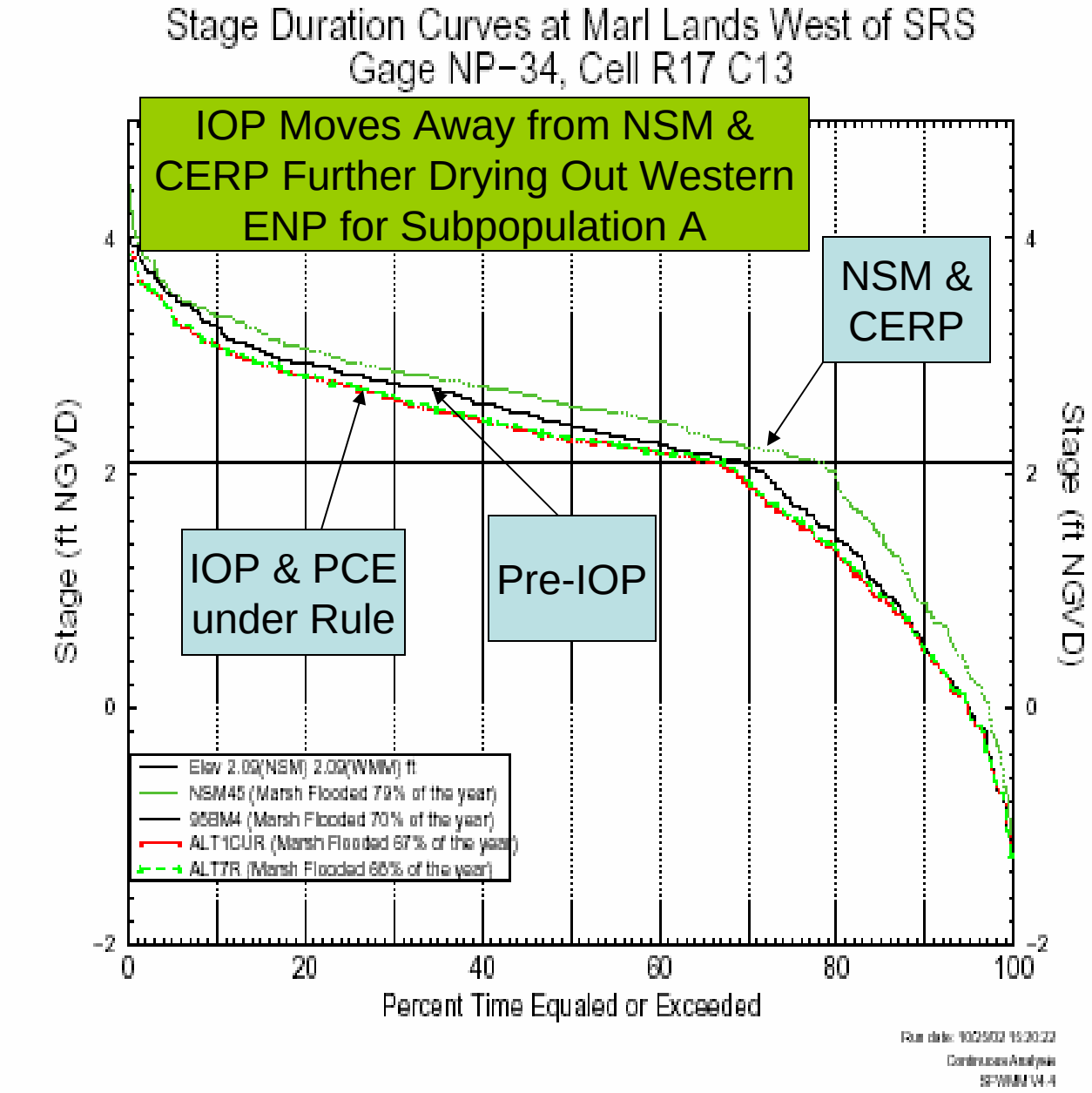
UNDER IOP, ENP IS MUCH LOWER THAN NSM AND HEADED IN THE WRONG DIRECTION



ENP Indicator Cells



ENP Cell R17 C13



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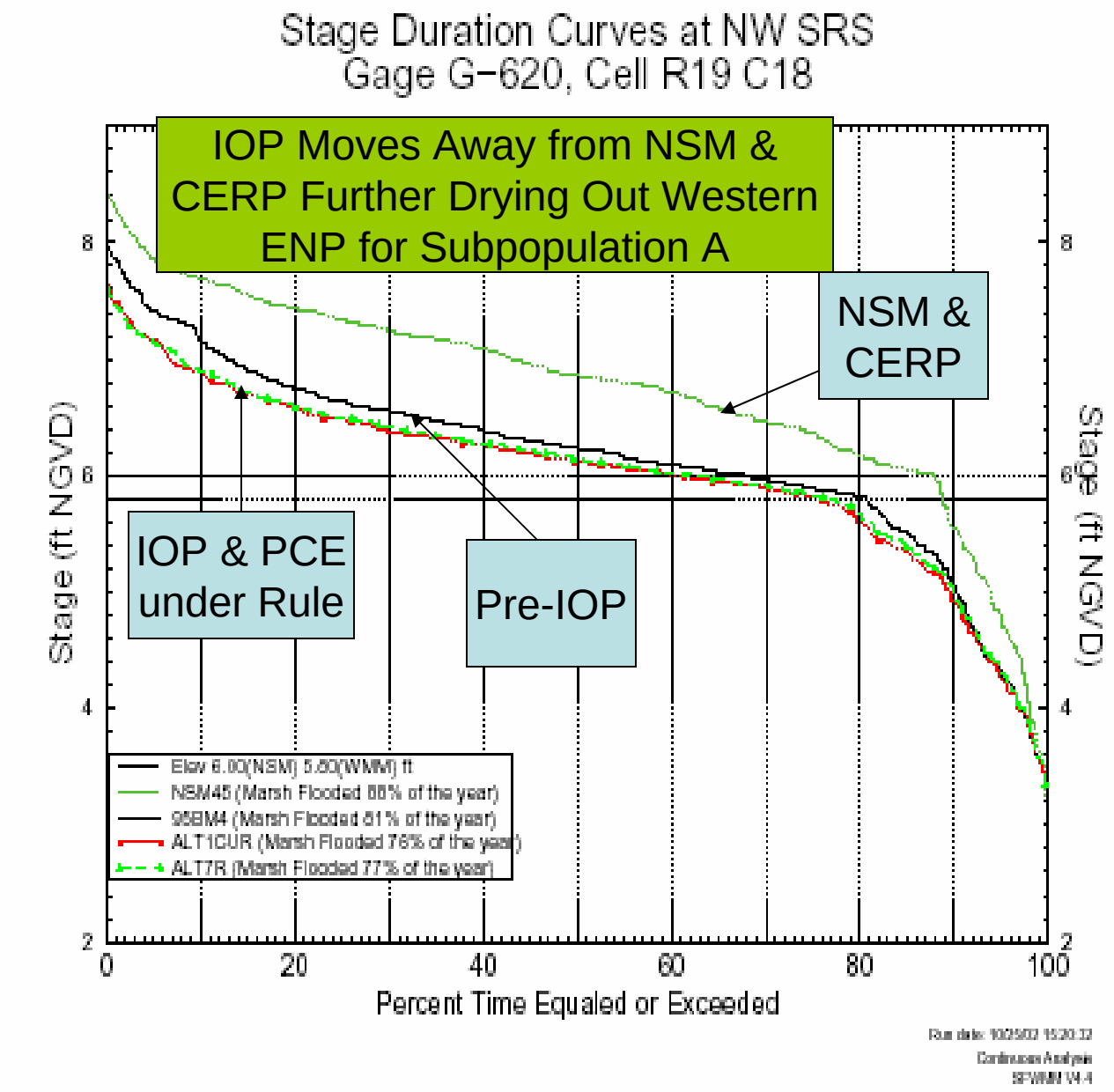
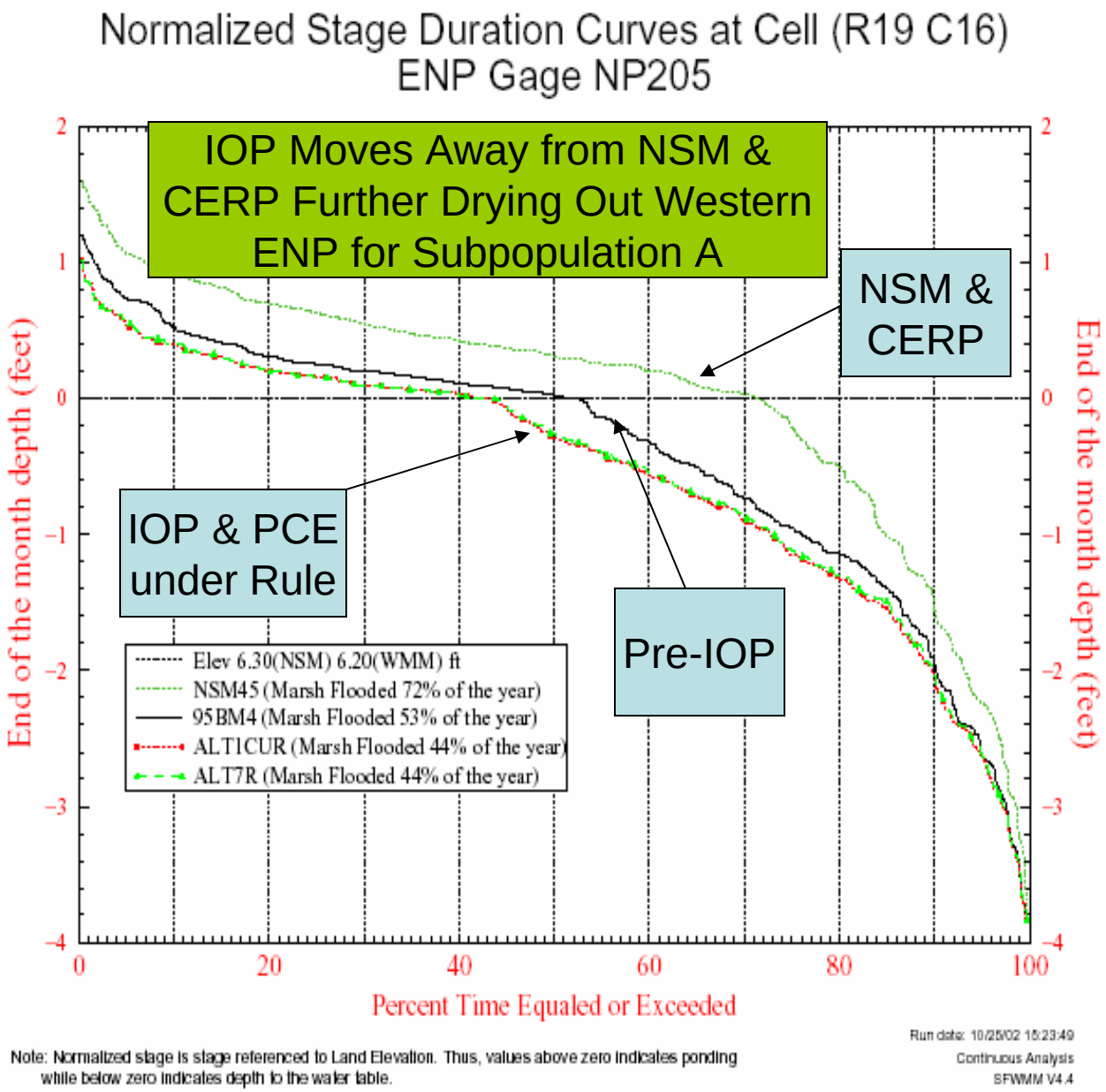
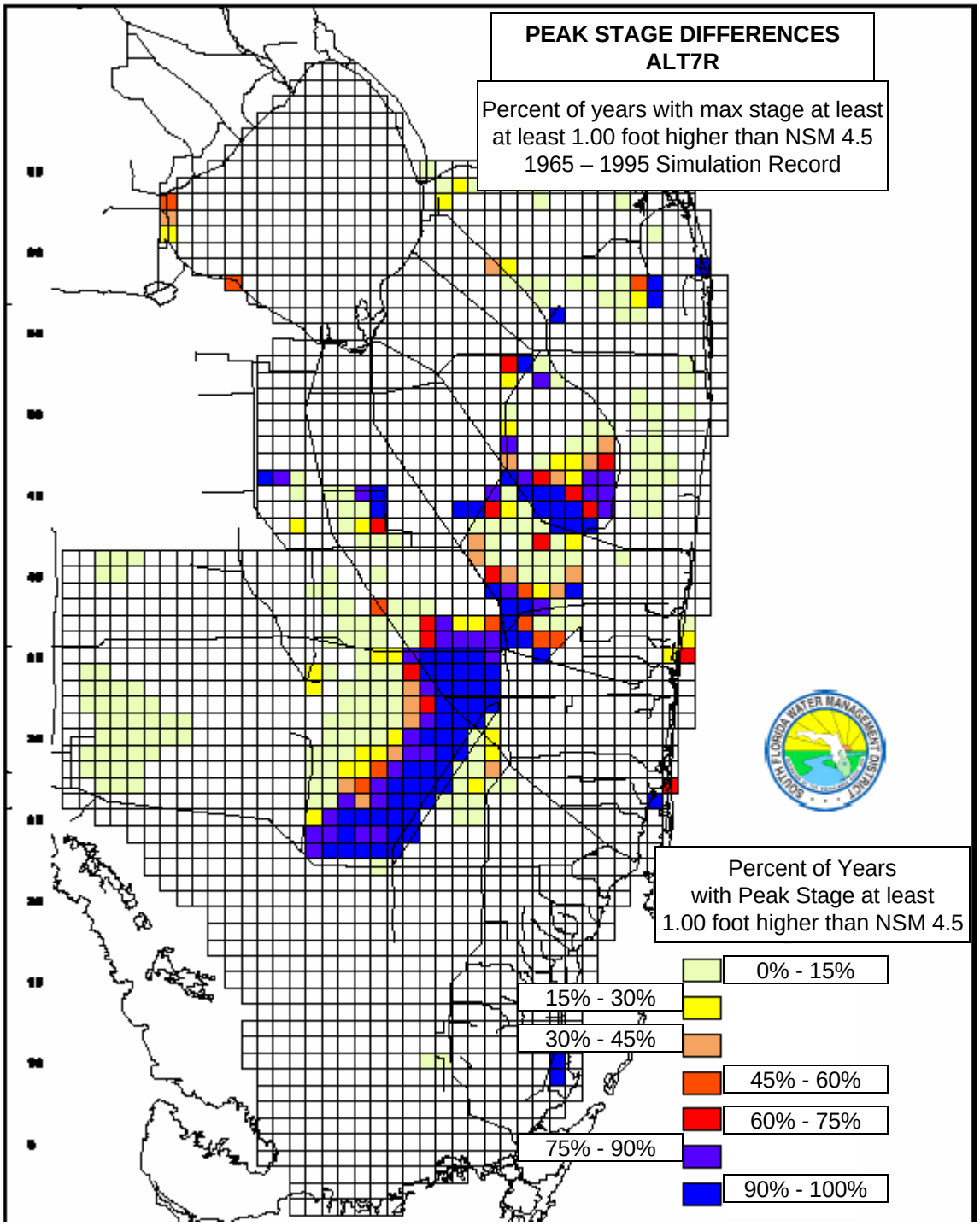


ENP Cell R19 C16

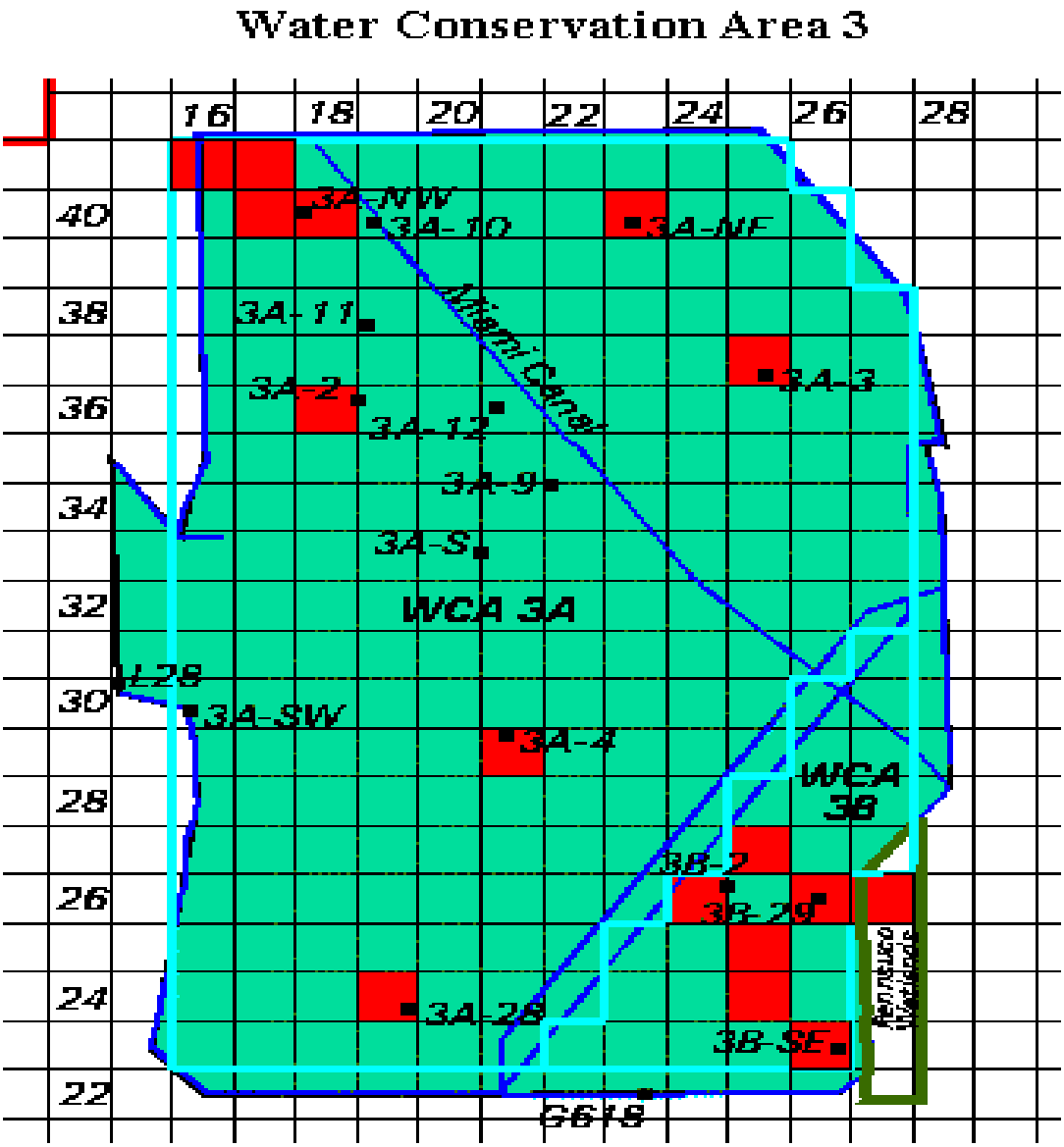


Note: Normalized stage is stage referenced to Land Elevation. Thus, values above zero indicates ponding while below zero indicates depth to the water table.

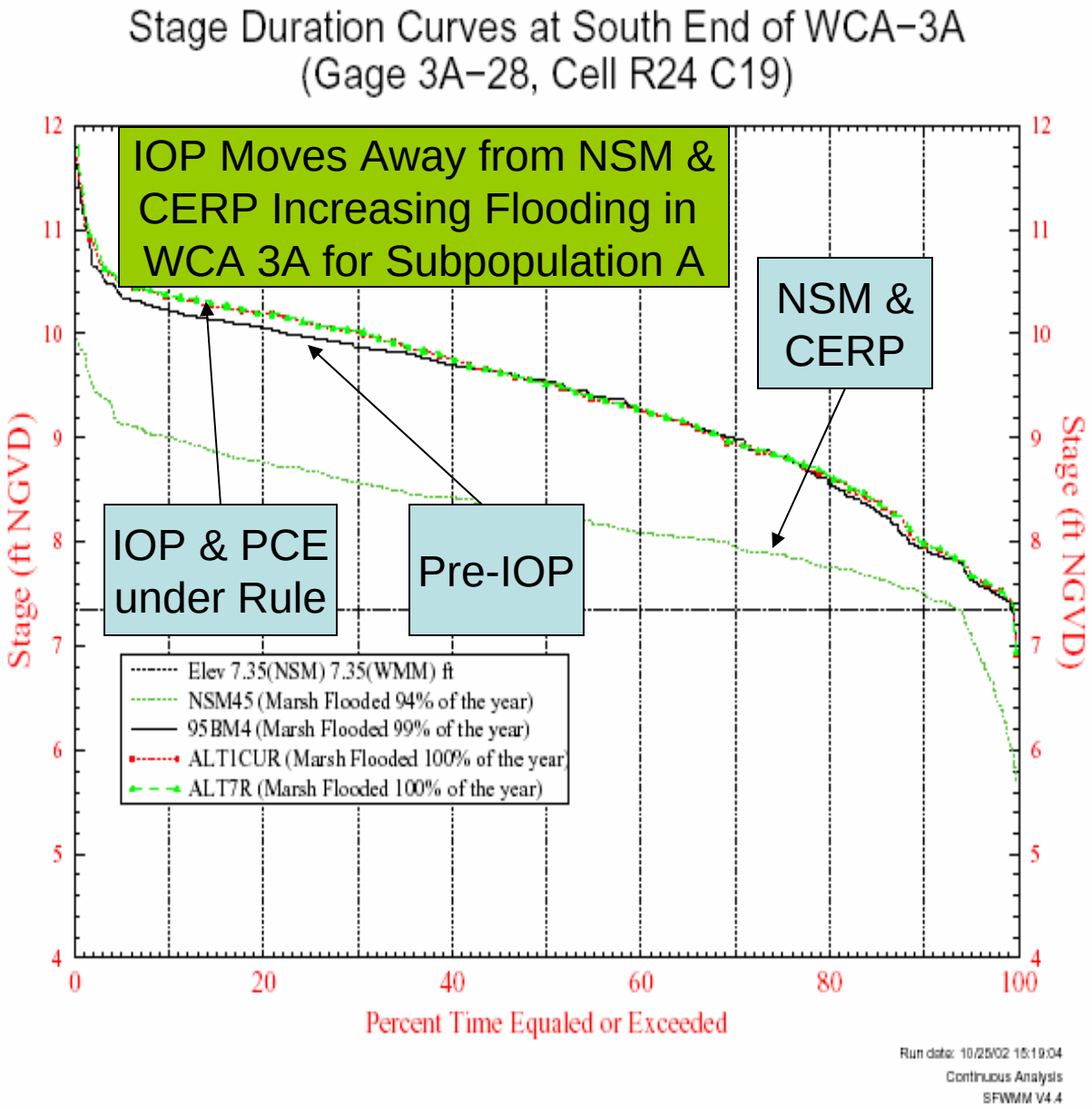
UNDER IOP, WCA 3A & SNAIL KITE CRTICAL HABITAT IS MUCH HIGHER THAN NSM AND HEADED IN THE WRONG DIRECTION



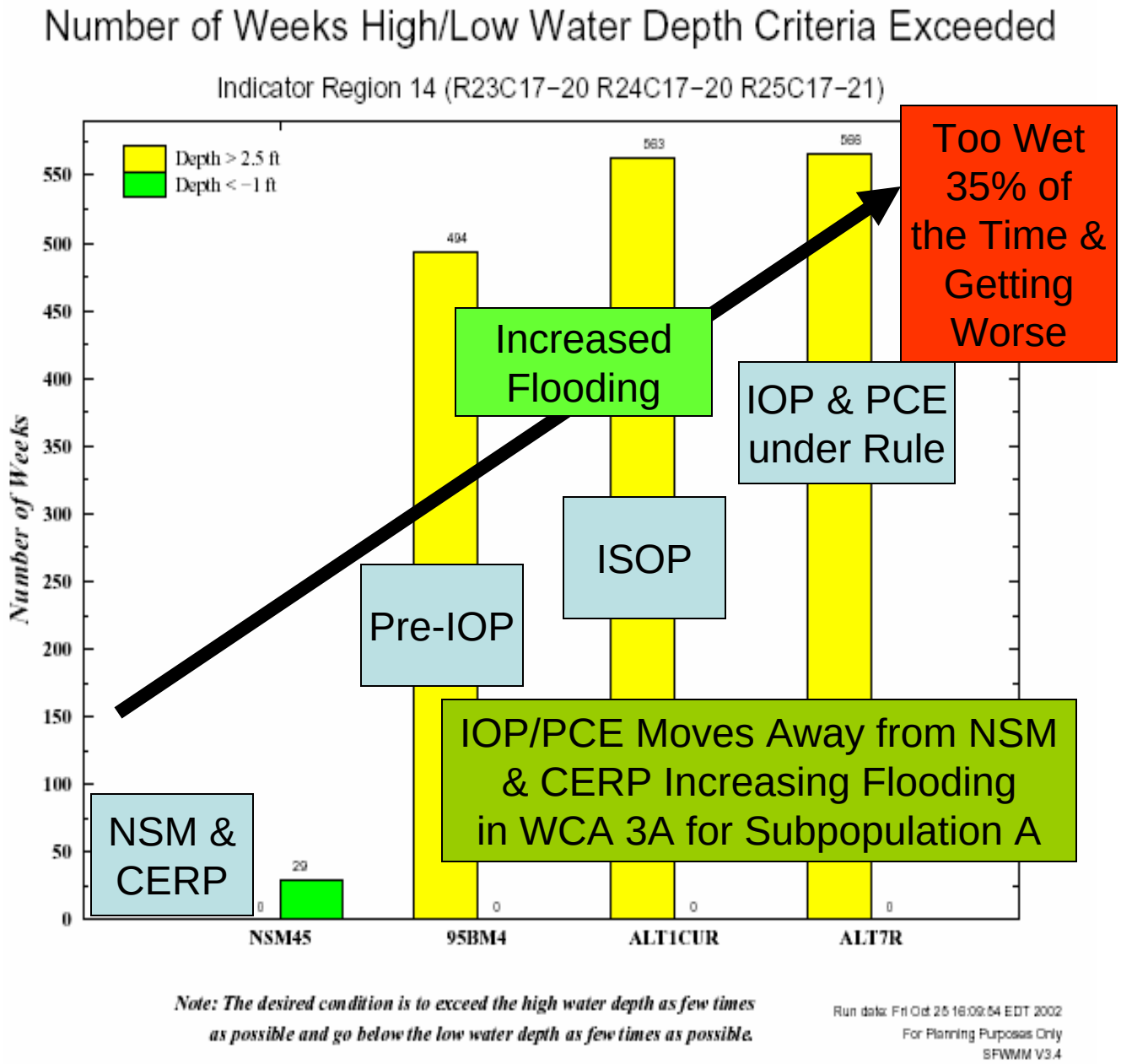
WCA 3A Indicator Cells



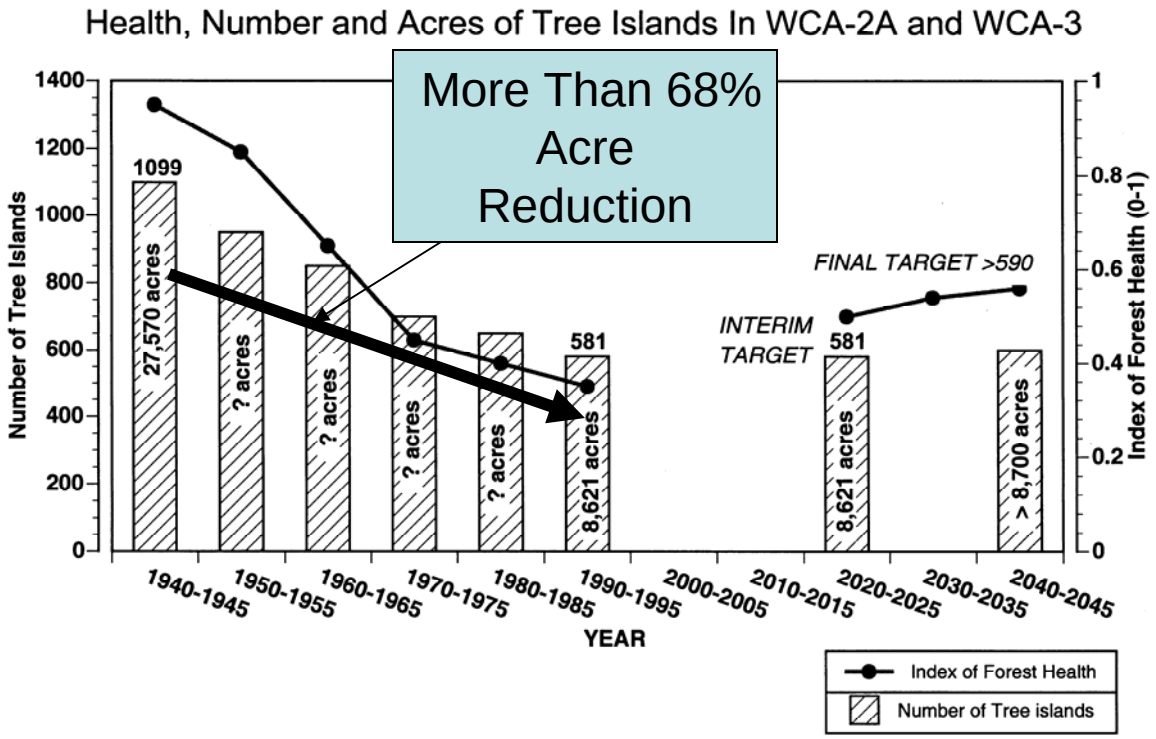
WCA 3A Cell R24 C19
SNAIL KITE CRITICAL HABITAT MUCH WETTER THAN NSM … AND GETTING WETTER BECAUSE OF THE SPARROW



WCA 3A Regional Indicator



Tree Island Destruction 1940 to 1995



US Army Corps of Engineers–8.5 SMA GRR/EIS July 2000–cost of delay in implementing Mod Waters project:

- **"loss of tree islands has an impact on the critical habitats and cultural resources"**
- **"it is estimated as loss of 8.4 islands and 246 acres per year"**
- **"estimated values for full restoration of tree islands my range from $50,000 to $500,000 per acre"**

In Summary

Officials say sparrow deviations are for the short-term (at least 10 years), but:

- Serious and irreversible destruction is being done, e.g. tree islands & 88,300 acres damaged in Snail Kite critical habitat in WCA 3A
- Nothing triggers an end to blocking flows to western ENP
- There is no methodology that will facilitate habitat transitions during CERP implementation
- And even worse, these unnatural alterations have apparently reduced the sparrow population

The Multi-Species Recovery Plan is a Top Priority

Without an MSRP that is implementable in the ecosystem context, we will continue to:

- Pit species against species
- Pit area against area
- Pit people against people

And the Everglades will be lost forever

Priorities

- Accept that the driver of Everglades restoration is “getting the water right”
- Accept that CERP and associated activities are going to change existing habitats by changing the hydrology
- Accept that species are going to have to adapt to the changes
- Develop a plan to help the species adapt, which includes:
  - Species triage
  - Project sequencing
  - Project timing
  - Design flexibility

The Challenge

Our immediate challenge ...

Quickly develop a methodology to overlay on the long-term restoration process that will ensure the effective transition of all species into a restored ecosystem, while, in the short-term, minimize large-scale, irreversible damage that is done in response to jeopardy opinions ... always seek and find the reasonable, balanced solution.

Stephen Forsythe
07/06/2000 08:46 AM

To: Sam Hamilton/R4/FWS/DOI@FWS

cc: Cynthia Dohner/R4/FWS/DOI@FWS, Heather McSharry/R4/FWS/DOI@FWS

Subject: Re: Sparrow meeting with Bill Leary, et al

Sam, Relative to the surprise, it is not really one to us. To an extent, it depends on which "restoration project" he is referring to--Modified Water Deliveries or CERP (Comprehensive Everglades Restoration Plan). Both have modeling that shows that the sparrow habitat will get more water than we think it currently needs. However, we also know that the species is on the brink and we developed the RPA to get the species out of jeopardy. Remember, we have not called jeopardy on either of the restoration projects. Also, Mod. Waters is a good five years from being implemented, and the CERP is even farther away than that. We continue to hope that the RPA will be met soon, removing jeopardy, and allowing the species numbers to build such that we, and the sparrow, have some future flexibility, both from manmade and natural water fluctuations. As a matter of fact the Sparrow science review by the AOU panel recognized and suggested this approach (building the numbers up to allow for more management flexibility).

Hope this helps. Relative to the meeting, the new COL takes command on 8/3 and the new superintendent (Maureen) on 8/27 (I believe). Either that last week of Aug. or the first week of Sept. Maureen and Jerry B. will be down at ENP with Dick Ring to do a transition briefing. I have been invited to participate in part of it. Are you interested in any of that? So, if we need to meet earlier, just let us know. I suggest maybe we should wait until Neil Mc. trys to mediate between us and the CE. I hold some hope.

Steve

Sam Hamilton

Sam Hamilton
07/02/00 10:07 PM

To: Stephen Forsythe/R4/FWS/DOI@FWS

cc:

Subject: Re: Sparrow meeting with Bill Leary, et al

fairly uneventful....the gen. wants to have a debrief on the success/lack of success regarding the ISOP.....he wants to see what went according to plan and what didn't....he did not dispute the fact that they may have missed the consec. breeding days....he also agreed that the fire issue is in DC for DOJ resolution....I made pts regarding the 333 structure(?), modeling, the fact that the corps appears unwilling to discharge more flow than 1350 cfs....suggested rip rap down stream if there is a concern regarding erosion....he took a number of notes....

he dropped a surprise on me....he says that their modeling shows that once the restoration project is fully up and running the likelihood that they can meet the sparrow habitat needs is less likely rather than more likely...in fact, his info. indicates they may not make the consec. days for sparrow breeding in almost twice as many occassions when compared to current conditions....

we need to talk....I think a meeting with you and the new col., capka, myself....and maybe NPS (open on that) needs to occur sooner than later....like your thoughts.....sdh

From: Stephen Forsythe on 06/30/2000 08:55 AM

Attachment 5

Everglades Avian Ecology Forum
Miami, FL
August 13-15, 2007

Everglades Hydrology and Avian Ecology

Terry L. Rice
Colonel (Ret'd), Ph.D., P.E.

Desired Outcome

The Formulation and Implementation of a True Multi-Species Recovery Plan which is Compatible with Everglades Restoration

The Import of a Multi-Species Recovery Plan

- The Everglades is an ecosystem
- The engine that drives the Everglades ecosystem is water
- Thus, fundamental to restoring the Everglades is “getting the water right”
- Without a “multi-species recovery plan (MSRP)” that complements “getting the water right” in an ecosystem context, Everglades restoration, as we know it, is in serious jeopardy

Example
"Saving the Sparrow"

- As projects are being formulated and implemented to restore the Everglades by reducing water levels in WCA 3A and raising them in ENP, government officials declare that the opposite must be done to save the Sparrow
- Voila the ...
  - Emergency Deviations – Dec 1997 – 2000
  - Interim Structural & Operational Plan (ISOP) – 2000 - 2002
  - Interim Operational Plan (IOP) – 2002 – ????
  - Proposed Revisions to CSSS Critical Habitat - 2006

Explanation of Symbols & Abbreviations

- NSM or NSM 4.5 = Natural System Model = CERP goal
- Base 95 or 95BM4 = Test 7, Phase I or the regulation schedule when jeopardy was declared to the CSSS
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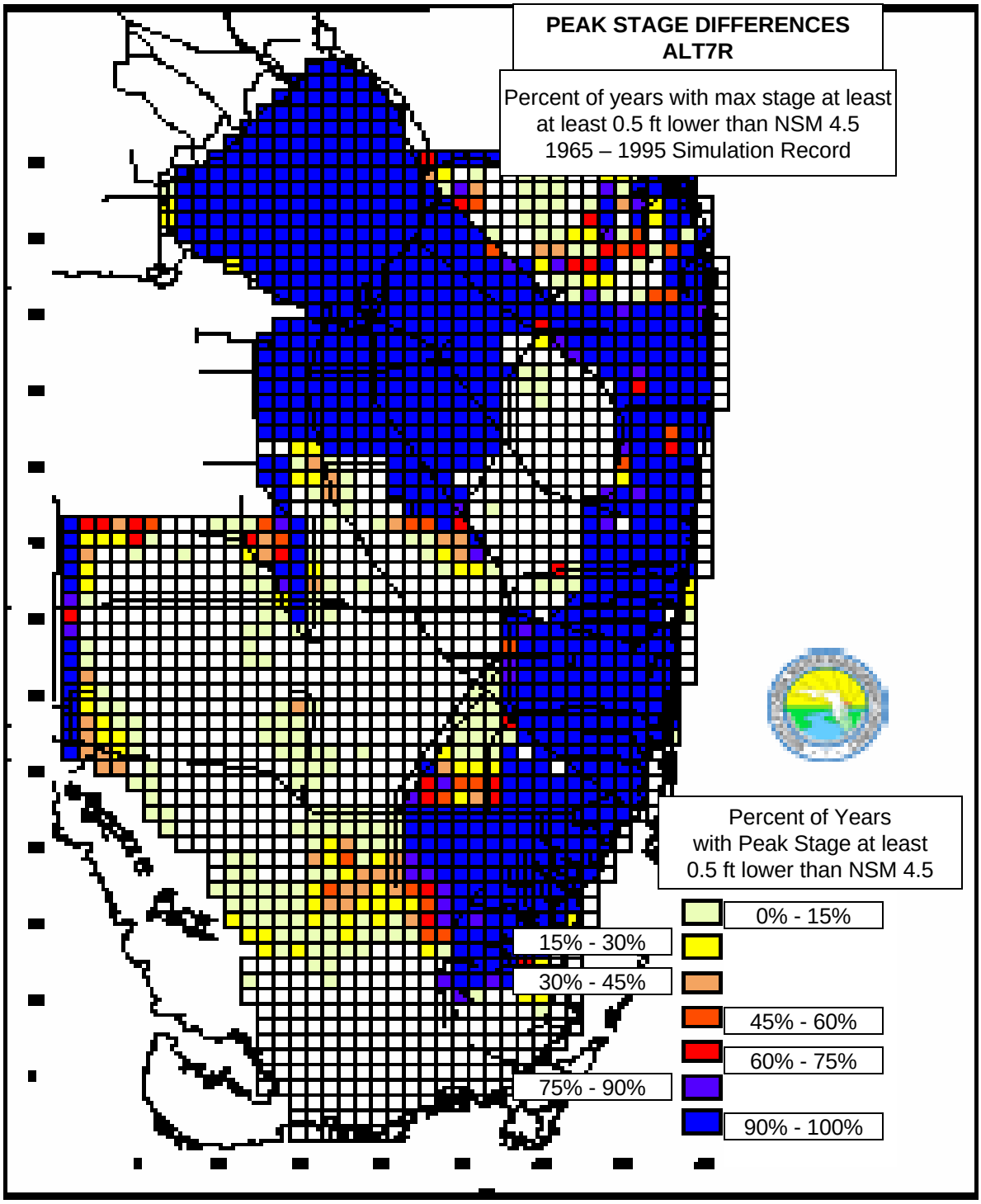
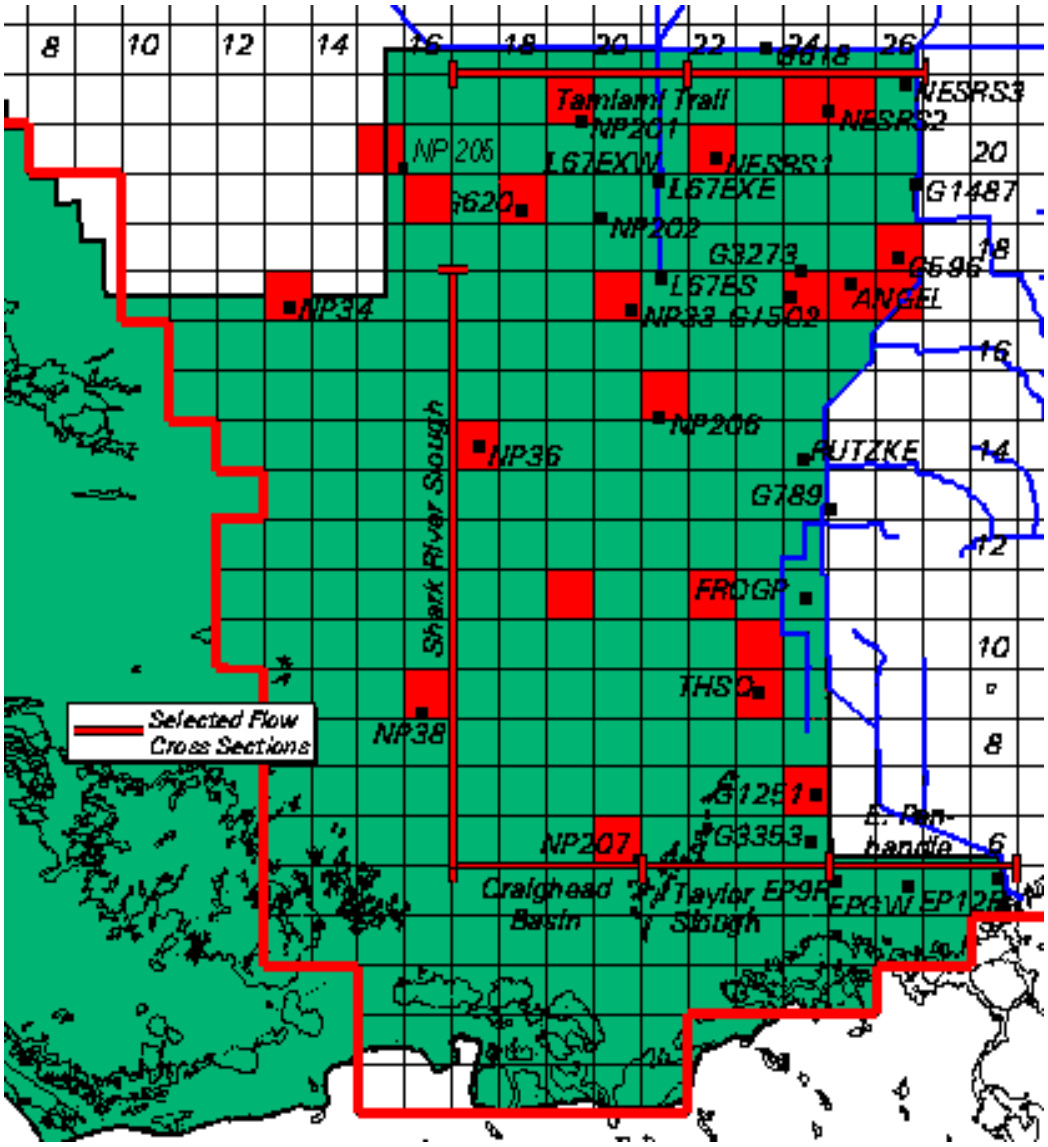
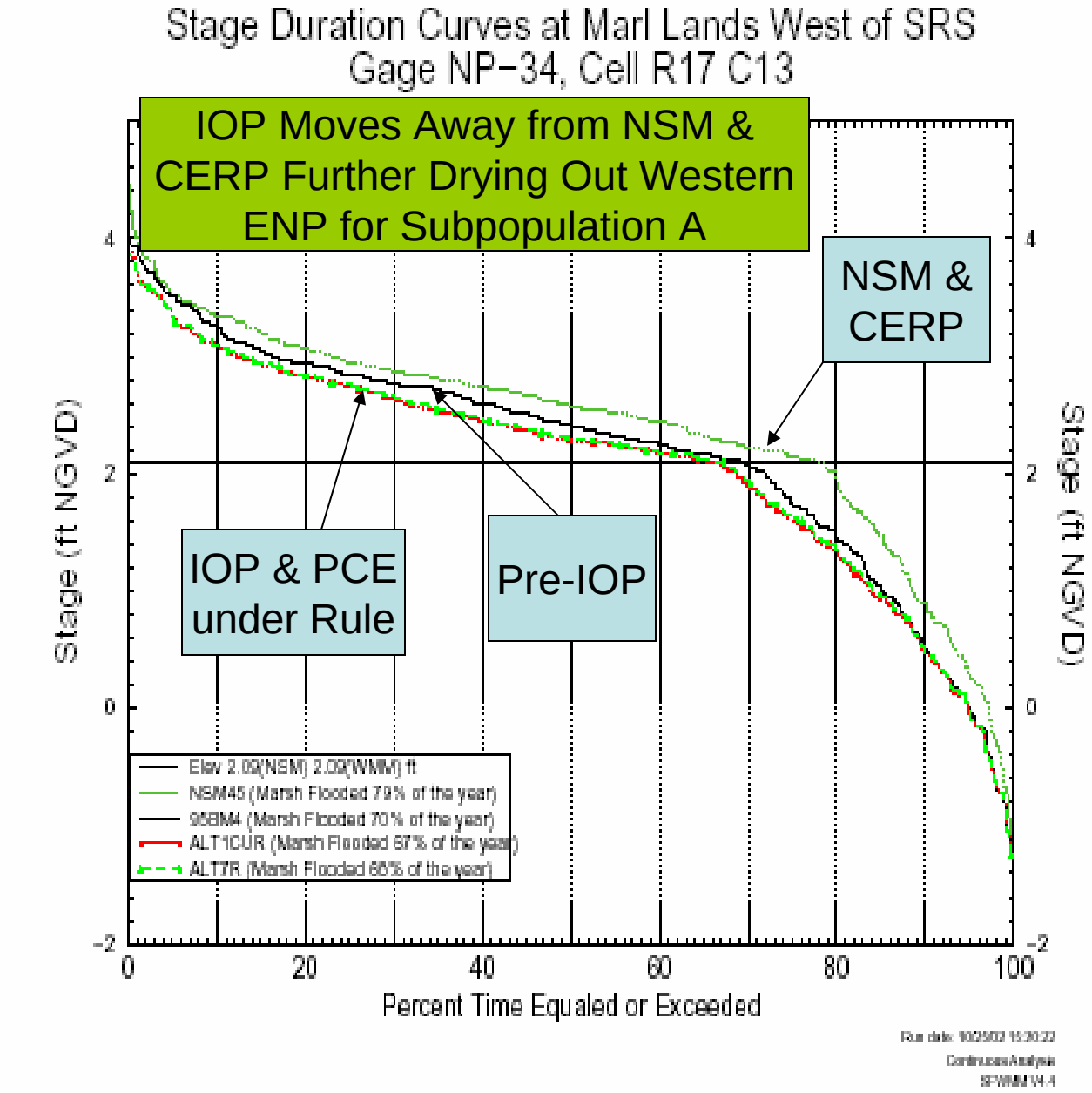


ENP Indicator Cells



ENP Cell R17 C13



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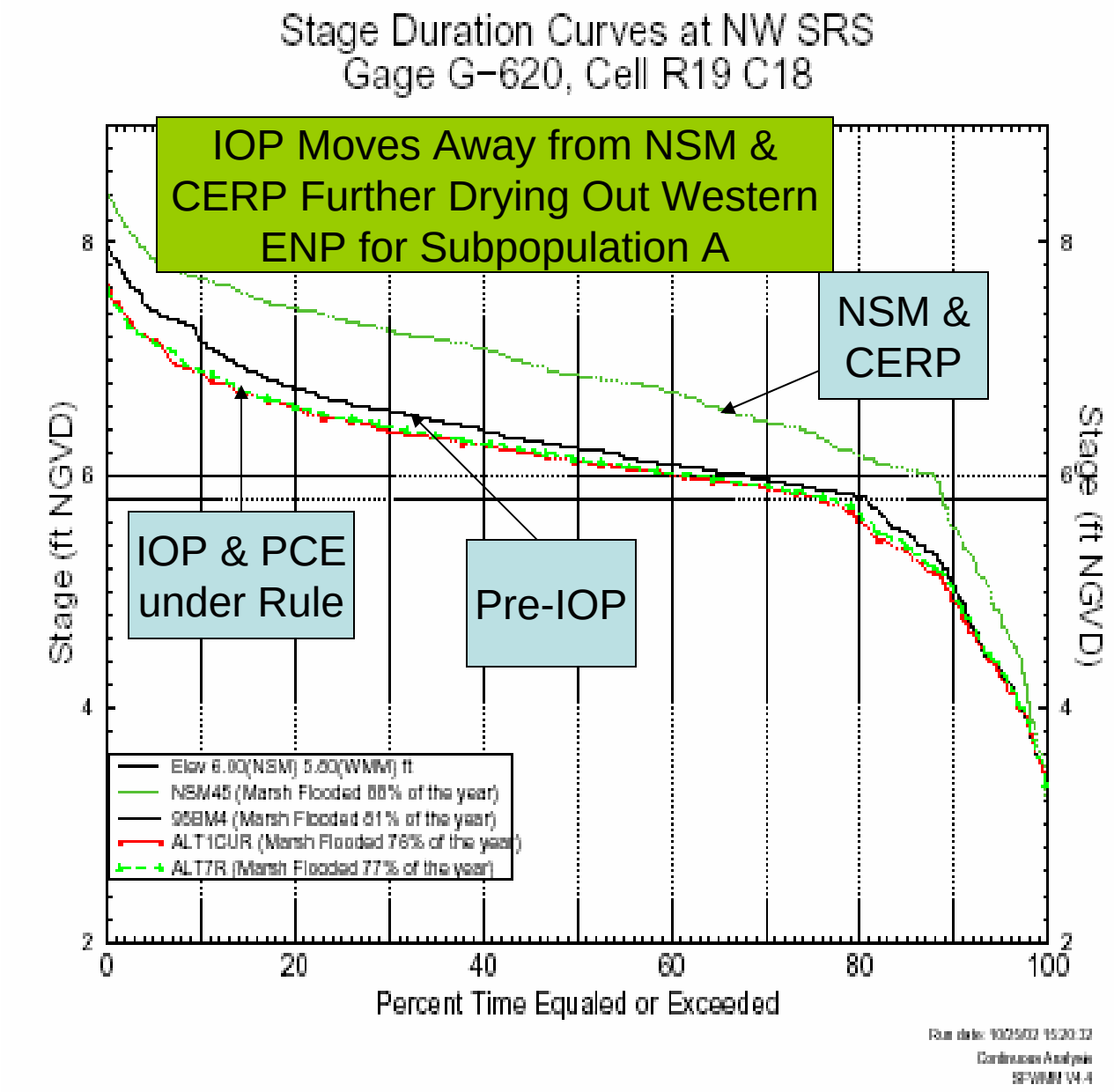
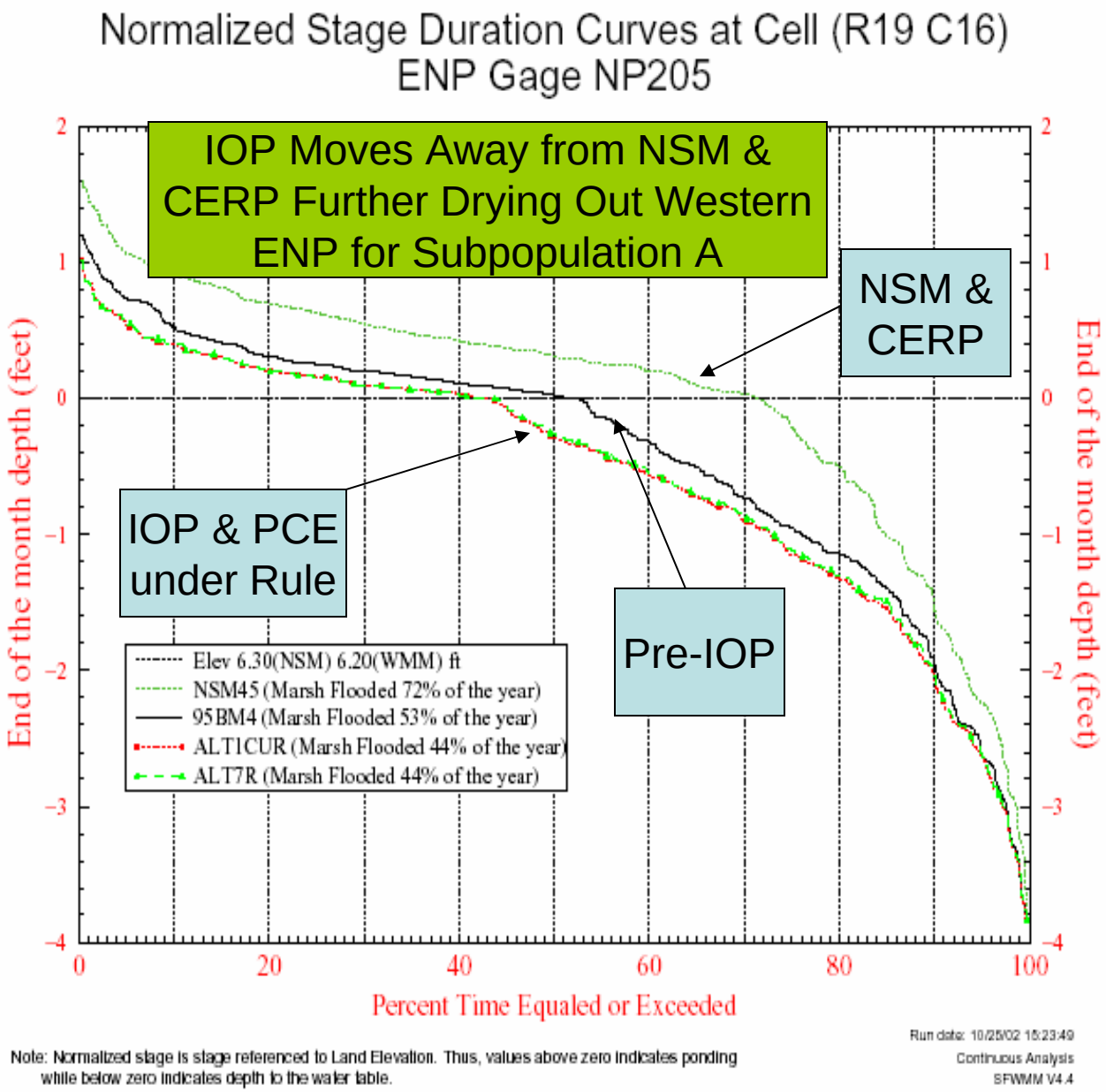


ENP Cell R19 C16



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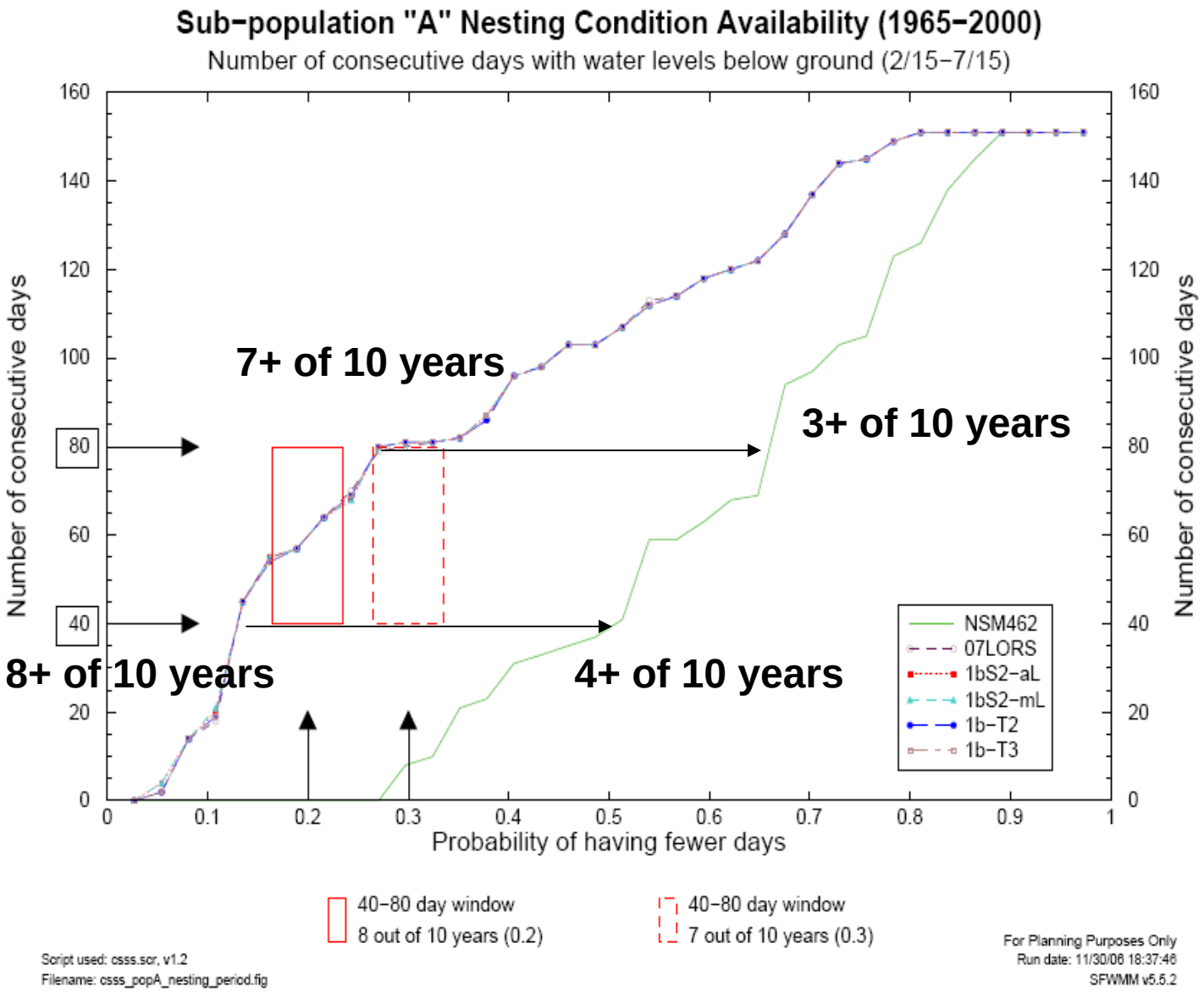
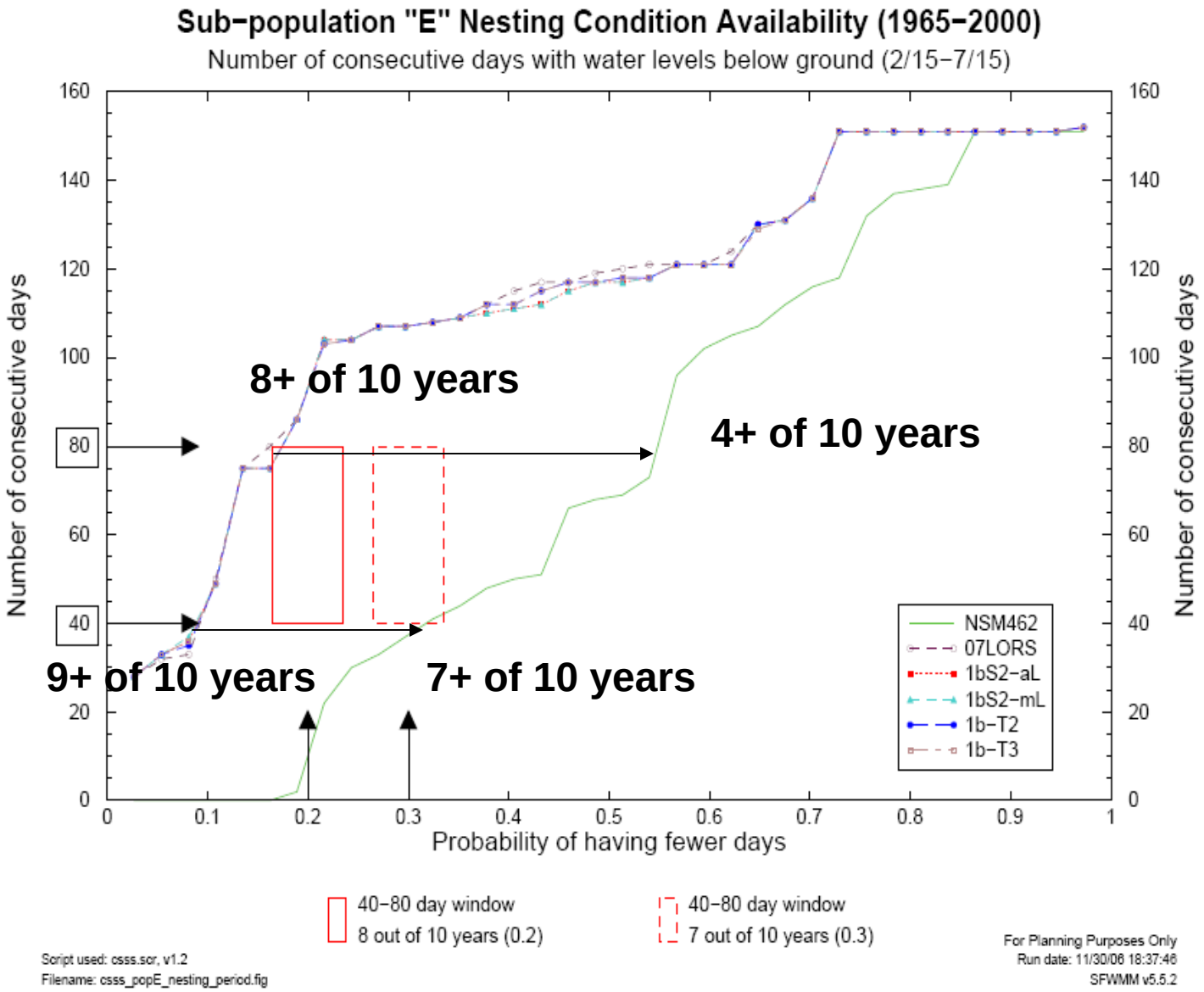
Sub-Population A Nesting Availability



Sub-Population E Nesting Availability



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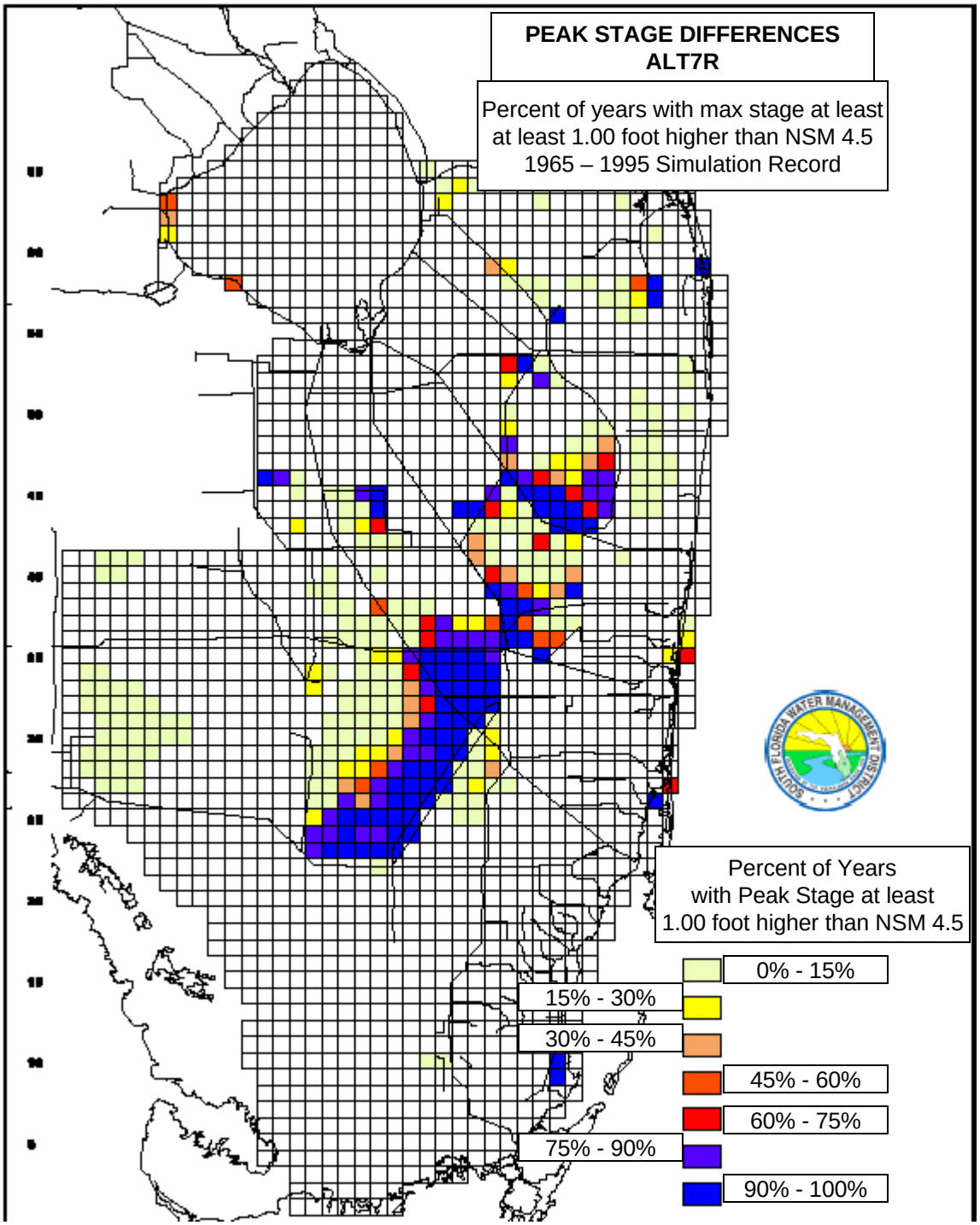
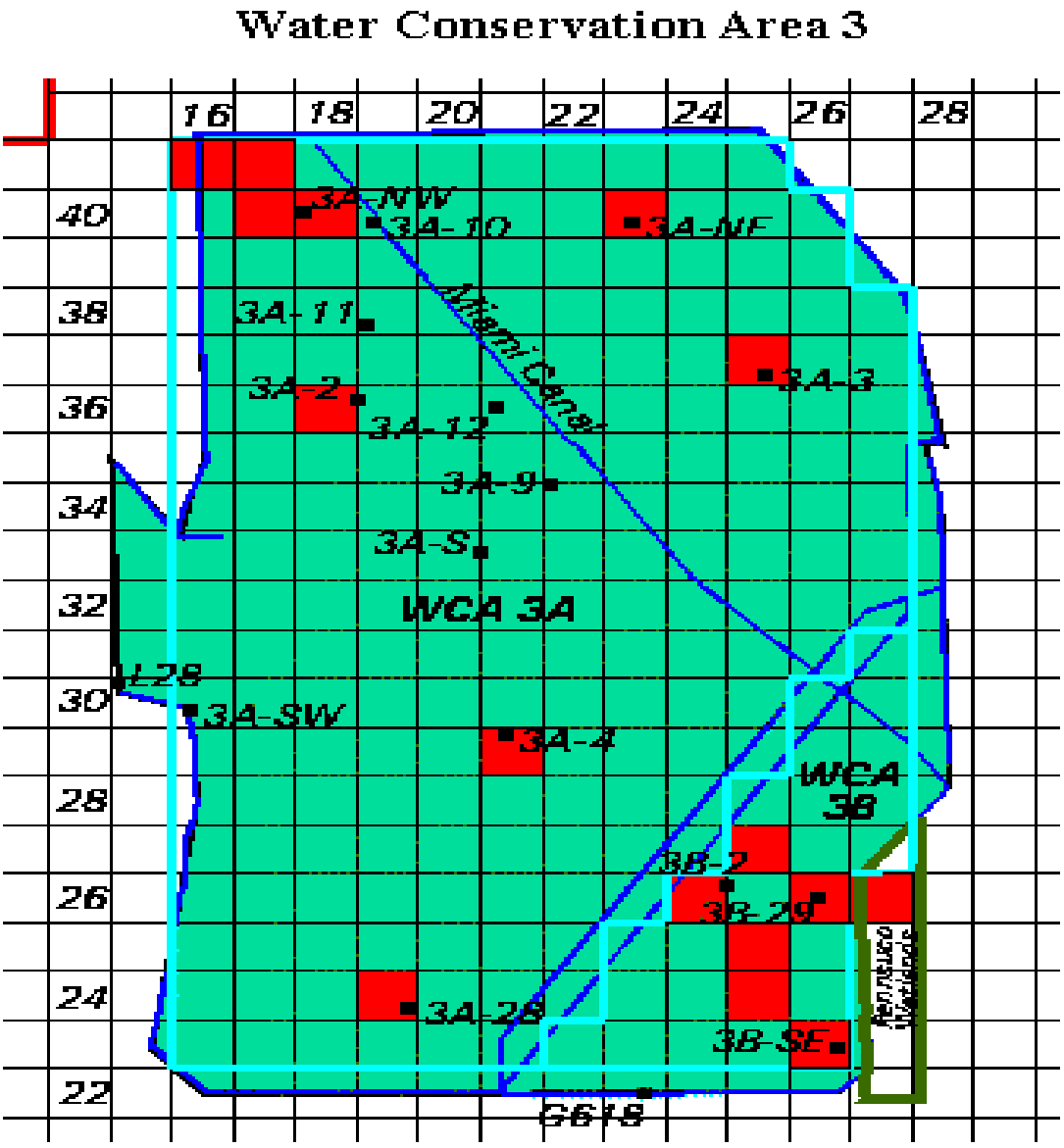


WCA 3A Indicator Cells



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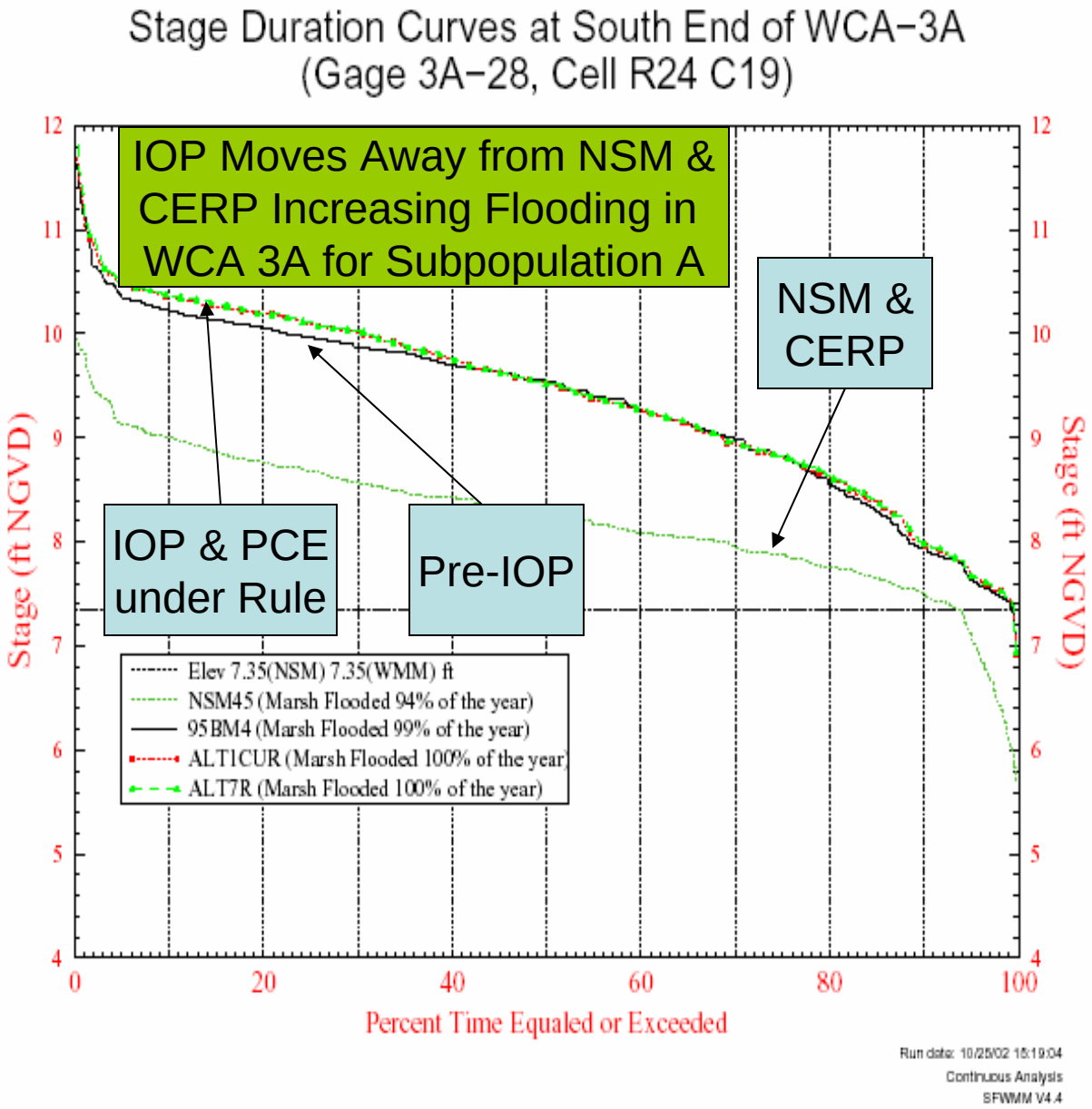

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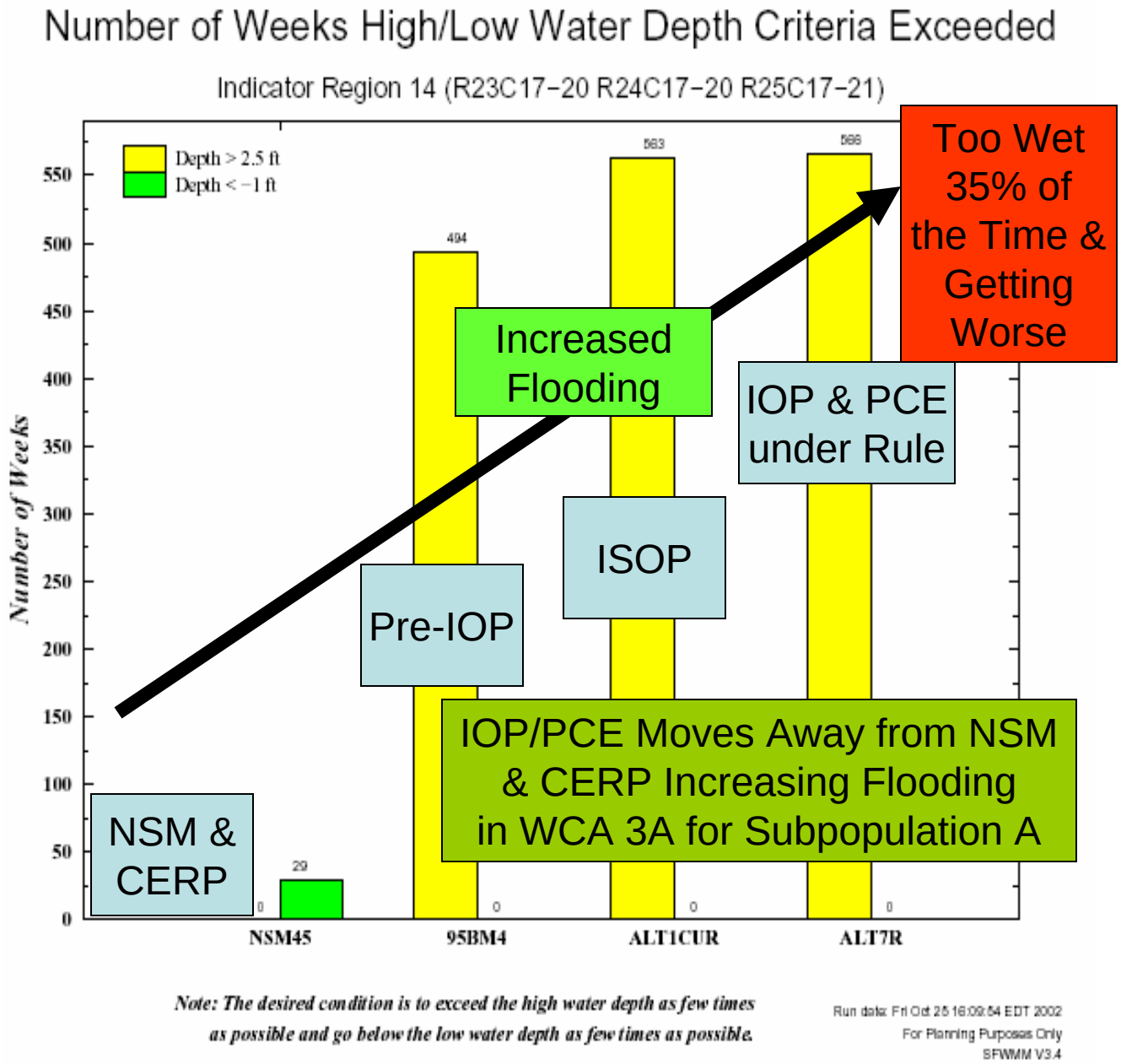
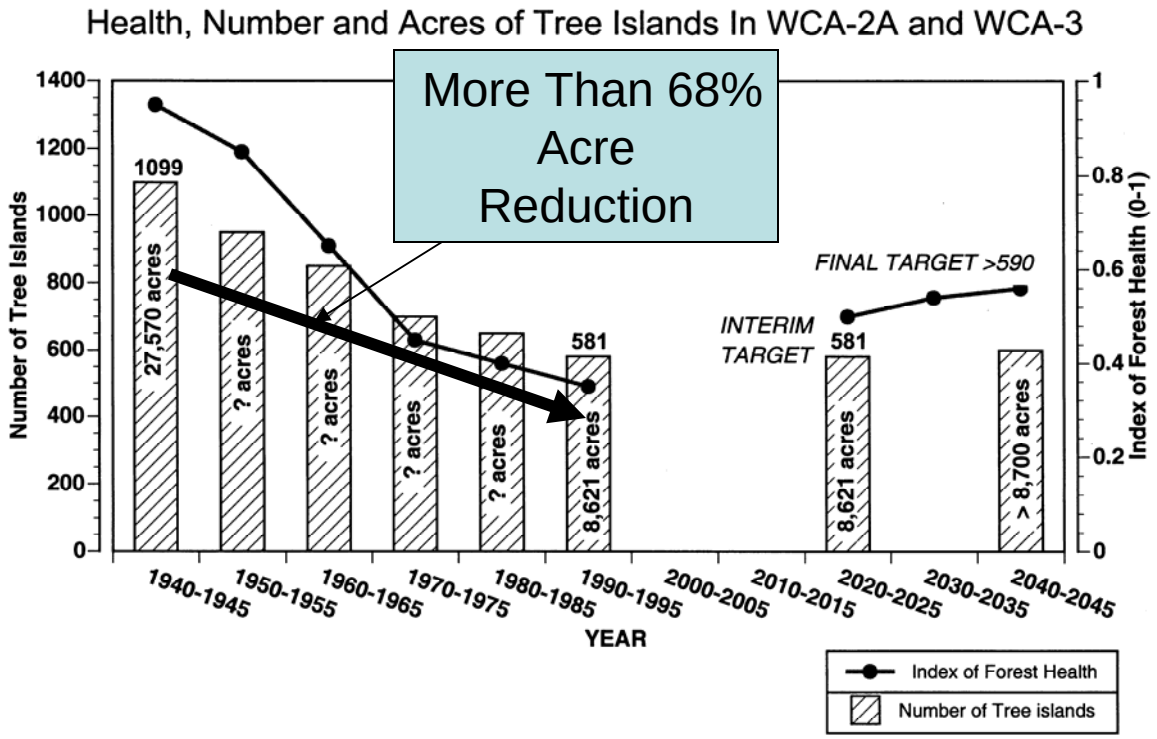


Tree Island Destruction 1940 to 1995



US Army Corps of Engineers–8.5 SMA GRR/EIS July 2000–cost of delay in implementing Mod Waters project:

- **"loss of tree islands has an impact on the critical habitats and cultural resources"**
- **"it is estimated as loss of 8.4 islands and 246 acres per year"**
- **"estimated values for full restoration of tree islands my range from $50,000 to $500,000 per acre"**

WCA 3A
Snail Kite Critical Habitat

"We expect that these stages will result in the degradation of 184,320 acres of snail kite [critical] habitat within WCA-3A in each of the next four years when stages exceed 10.5 feet."

Fish & Wildlife Service Biological Opinion on the Interim Operational Plan for the CSSS, November 17, 2006, page 77.

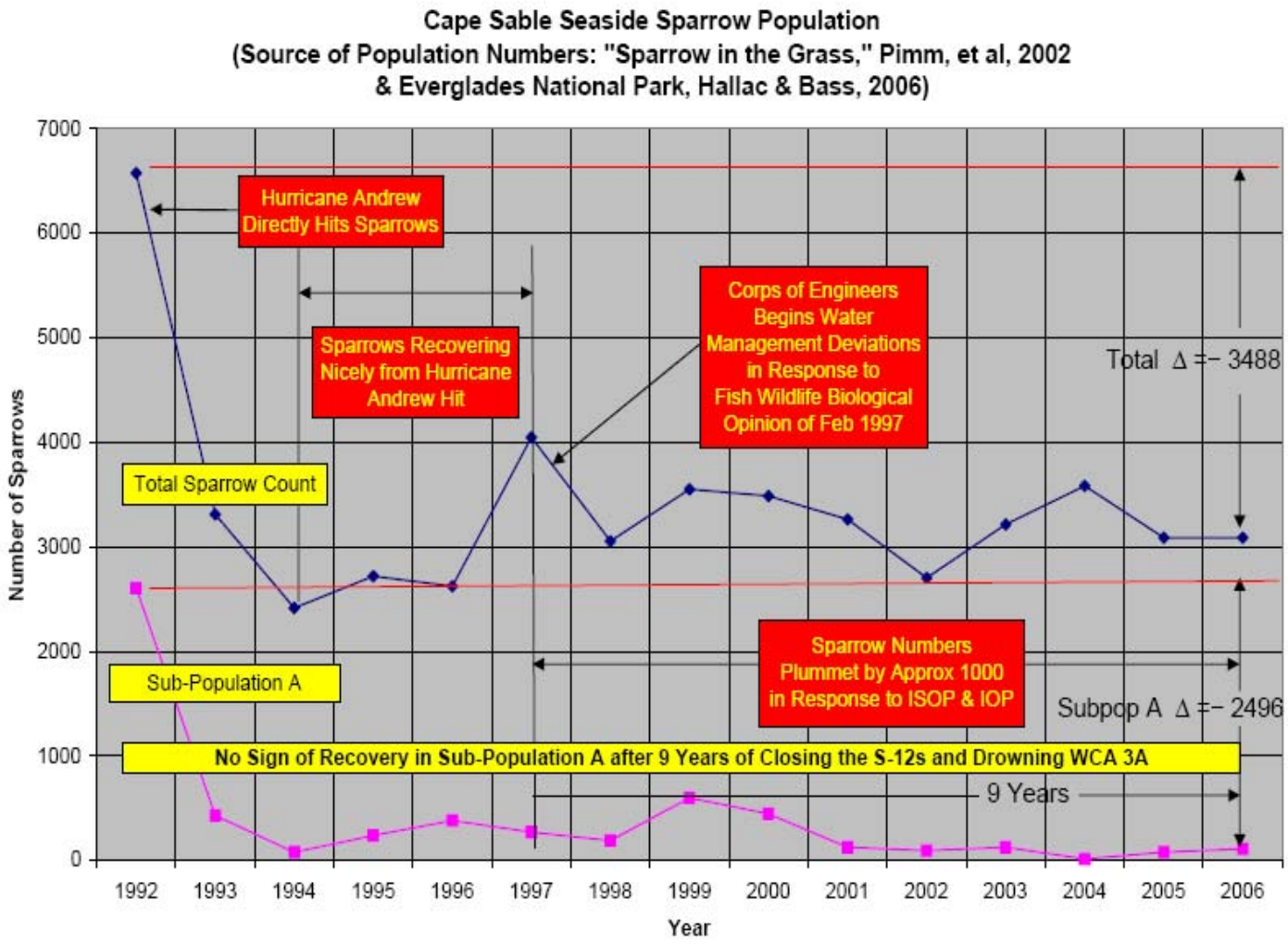
In Summary

- Officials initially said that sparrow deviations were for the short-term, but after 9+ years, there is no end in site
- Serious and irreversible destruction is being done, e.g. tree islands & 10s of thousands of acres of Snail Kite Critical Habitat in WCA 3A have been damaged and/or lost
- With the removal of Mod Waters from the RPA and the added Critical Habitat PCE, flows will have to be blocked in perpetuity
- Jeopardy will potentially be declared on both CSOP and CERP
- And even worse, these unnatural alterations have apparently reduced the sparrow population

A Look at the Hydrology that Has Driven Decisions

Some Key Points that Should Be Considered as We Move into the Future ... Modifications to the Reasonable & Prudent Alternative, Critical Habitat Proposal, & CERP Implementation Are Surely Warranted!!!

Overview of Sparrow Population Changes



S-12 Flow Analysis

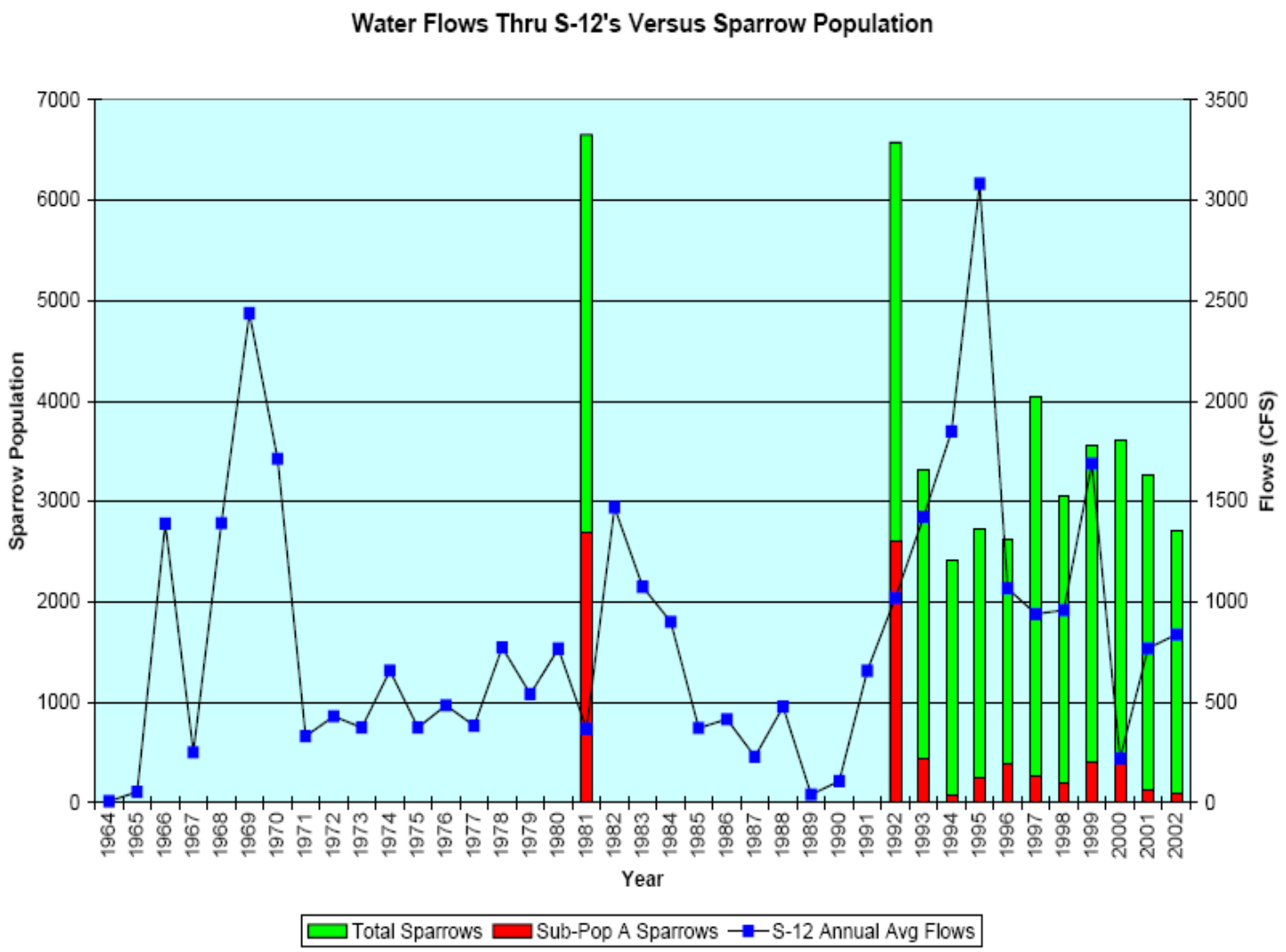
"If breeding season flows over the S12s are stopped, this population [Sub-population A] will flourish."

Pimm, S.L., An assessment of risk of extinction of the Cape Sable Seaside Sparrow, Chapter 10 of an unpublished annual report for 1997

S-12 Flow Analysis Summary

- In support of S-12 flows causing sparrow decline, we often see words such as: “From 1993 to 1995, the sparrow population [in Sub-pop A] declined precipitously, from an estimated 2,608 individuals in 1992 to 240 individuals in 1995.” ... in actuality the “population declined precipitously” between the 1992 and 1993 census when an 84% reduction occurred (2,608 individuals to 432) when the flows thru the S-12 structures were relatively average.

S-12 Flows versus Sparrow Population



S-12 Flow Analysis Summary

- Actually in between 1994 and 1995, when flows were extremely high, the population increased by 300%.
- And when flows were the highest on record in 1995, the population increased another 160%.
- The “precipitous decline” occurred when flows were about average ... the precipitous decline had already taken place when the extremely high rainfall and flows of 1995 occurred.

S-12 Flow Analysis Summary

Bottom Line:

- The precipitous drop in sparrows from 1992 to 1993 cannot logically be attributed to increased flows through the S-12s, as the preceding 7-year period was dry and the flows in 1992 were relatively average
- Although record flows occurred in 1995 (3 years after the precipitous drop), the sparrow population in Sub-pop A increased both in 1995 and 1996
- Even though the S-12s have been utilized to artificially stop flows and dry out Sub-pop A for the past 9 years, there has been no rebound in the sparrow population
- There is much more than flow at work here

Analysis of Water Management

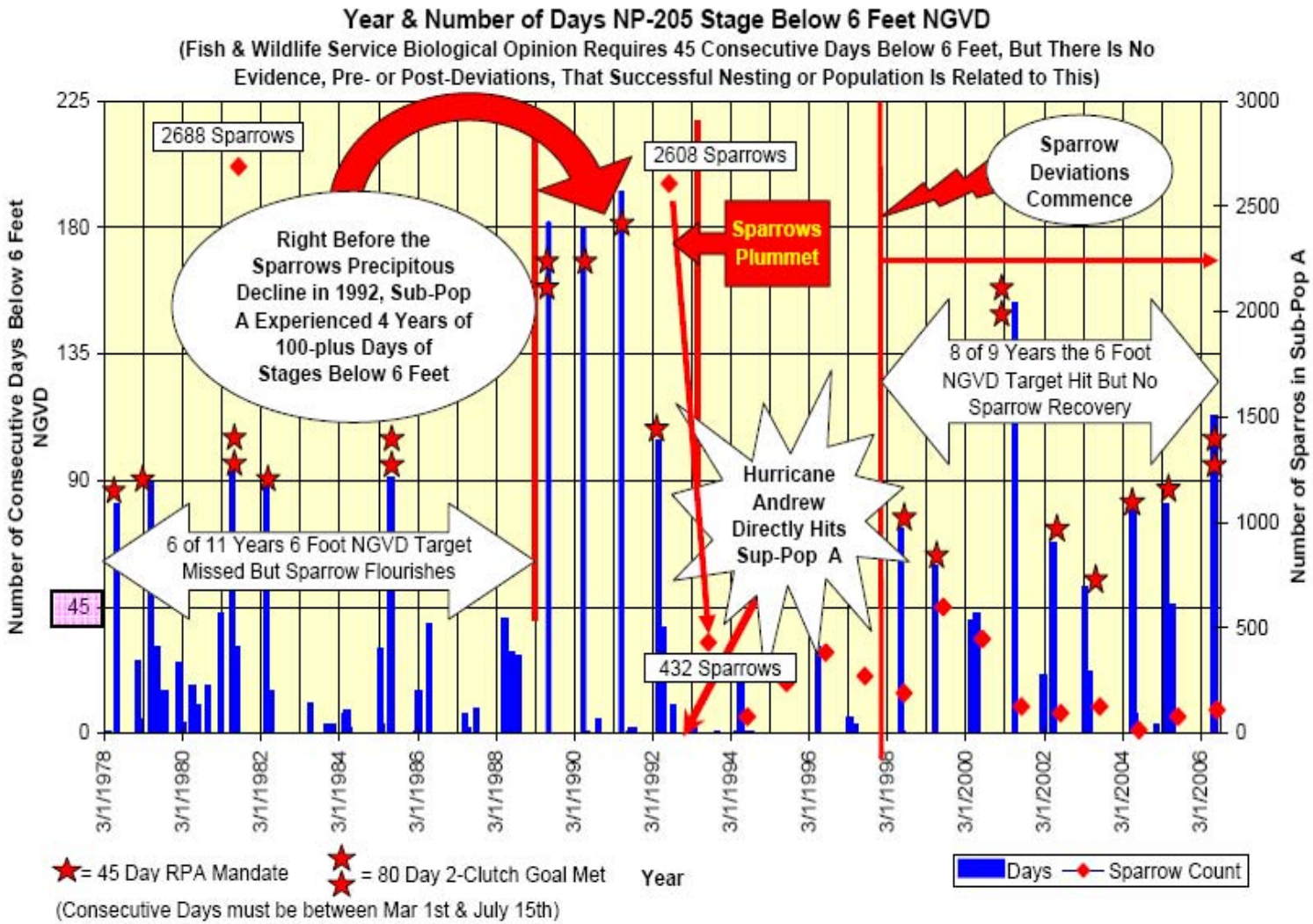
- In support of S-12 flows causing sparrow decline, we often see words such as: “Water management actions during 1993 to 1995 dramatically reduced estimated numbers in this group [Sub-pop A].”
- What water management actions? If anything, for a given rainfall, less water was flowing through the S-12 structures for a given rainfall than previous to this period.

Analysis of Sparrow RPA

At the heart of the FWS RPA is the following requirement as stated in the FWS 1999 BO:

"The Corps must prevent water levels at National Park 205 (NP 205) from exceeding 6.0 feet National Geodetic Vertical Datum (NGVD) [which is ground level] for a minimum of 45 consecutive days between March 1 and July 15. [emphasis added] This would provide water levels sufficient to allow completion of one nesting cycle in approximately 40 percent of the sparrow habitat in subpopulation A. Although sparrows need at least 40 days to complete one nesting cycle and build new nests for each successive brood, more than 40 days may sometimes be necessary to complete the cycle when individuals do not find a mate and/or establish a pair bond in the first day ..." (Biological Opinion, Experimental Program and Modified Deliveries Project, FWS, 1999.)

45-Day Rule Analysis



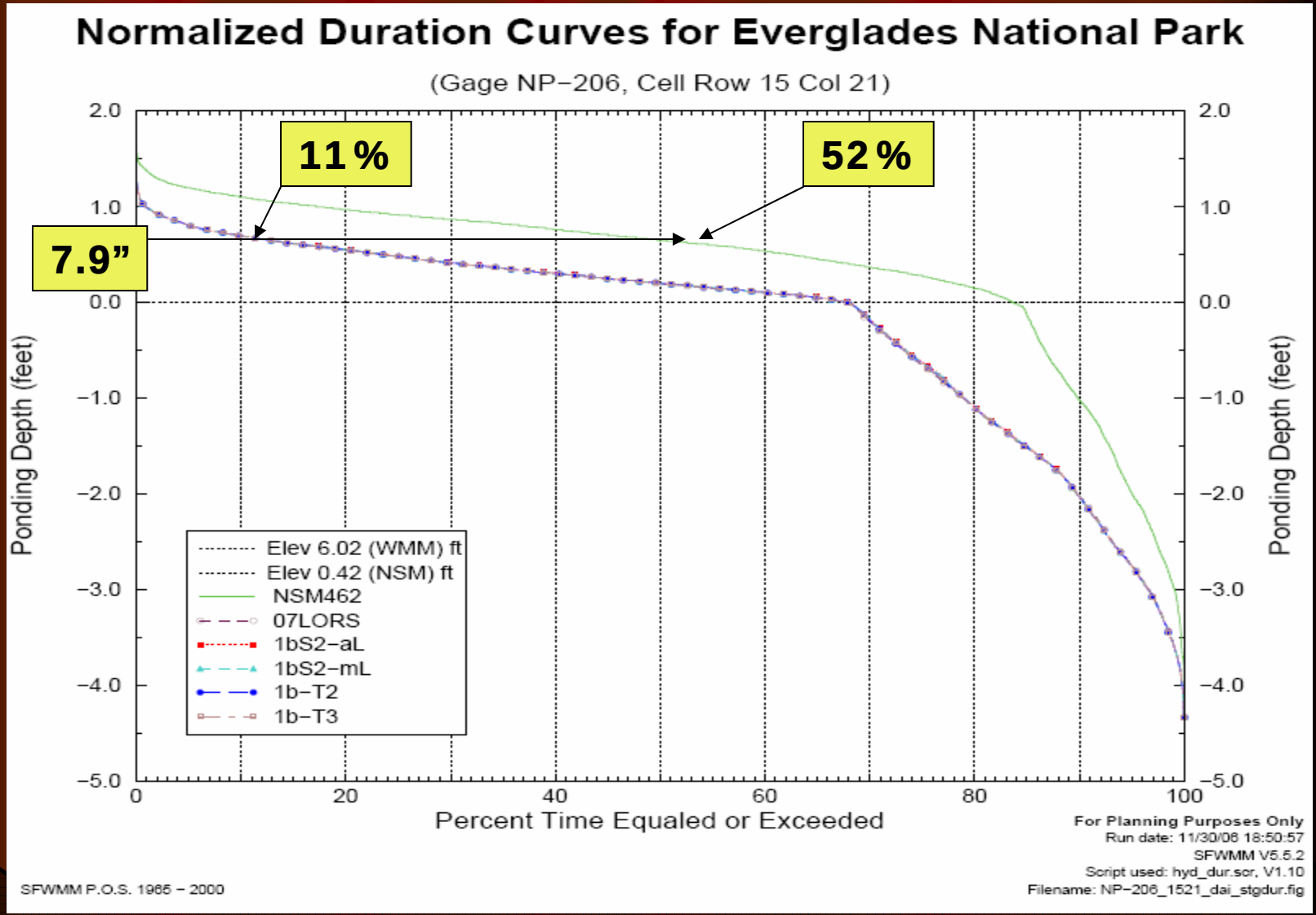
Summary of 45-Day Rule Analysis

- Essentially met 45-day rule each year since 1998 ... no evidence of sparrow recovery over this 9 year period
- Only met 5 of 11 years between 1978 & 1988 ... but sparrow thrived
- From 1989 thru 1992, met 45-day rule with much room to spare ... but sparrow declined by 84% between 1992 and 1993 census (2,608 to 432 sparrows)
- Can find no discernable correlation between 45-day rule and sparrow population

Analysis of PCE

- A proposed rule to revise sparrow Critical Habitat was published in the Federal Register/Volume 71, No. 210/Tuesday, October 31, 2006/Proposed Rules.
- *Based on the above discussions of the life history, biology, and ecology of the species and the requirements of the habitat to sustain the essential life history functions of the species, we have determined that the Cape Sable seaside sparrow's PCEs [Primary Constituent Elements] consist of: … (4) Hydrologic regime such that the water depth, as measured from the water surface down to the soil surface, does not exceed 7.9 inches (20 cm) during the period from March 15 to June 30 at a frequency of more than 2 out of every 10 years. (p. 63988)*

Sub-Population E – NP-206



Hurricane Andrew

- *"Destruction of marshes by hurricanes threatens its [seaside sparrows] existence"* Common Ornithological Description
- *"The tattered remnants of the Cape Sable seaside sparrow of Southwestern Florida were snuffed out in the hurricane of 1935."* Charles Bebee, 1967
- *"Catastrophic storms, such as the hurricanes in 1935 and 1992, can lead to natural vegetation changes that make the environment unsuitable for Cape Sable sparrows, thus causing local extirpations. Hurricances may also kill birds directly, as was likely the case in 1992."* FWS, The Red Book, as of January 1995

Hurricane Andrew

- *"The population west of Shark River Slough was in the storm's eye and declined dramatically from 1992 to 1993 … Andrew may have reduced the sparrow's total numbers from approximately 6000 to 4000 [actual decline was from 6576 to 3312]"* Stuart L. Pimm, et al, *Hurricane Andrew*, Bio Science, 1994.

Hurricane Andrew Summary

In all likelihood, Hurricane Andrew had a major role in the sparrow population precipitous decline, 84% in Sub-population A, between the 1992 census and the 1993 census ... it would only be prudent to reassess its role given the facts at hand

The FACTS

- Sparrows flourished/survived for centuries under natural hydrologic conditions (prior to 1928)
- Sparrows flourished/survived for 36 years after Tamiami Trail was constructed (1928 - 1964)
- Sparrows flourished for 28 years after the S-12 structure were put into operation (1964 - 1992)
- Sparrow population plummeted between 1992 & 1993
- Decline was attributed by FWS to abnormally high flows through the S-12 structures, but neither 1992 nor 1993 experienced particularly high flows
- Hurricane Andrew did hit Sub-pop A directly in August of 1992, but, although initially identified as the culprit, it was quickly disregarded

The FACTS

- Deviations to unnaturally dry out Sub-pop A began in 1997 and the 45-day dry out rule was put into effect in 1999
- Over the 9 years since, the sparrow has not recovered, but further declined by about 1000 individuals
- A historical review of the 45-day rule shows no correlation between sparrow population and artificially drying out Sub-pop A
- In addition to the 45-day rule, FWS is now proposing a 20-cm PCE which further sanctions the unnatural drying out of ENP
- Both the 45-day rule and the 20-cm PCE work in oppositions to Everglades Restoration & CERP
- In order to implement both the 45-day rule & the 20-cm PCE, levees, gates, etc. will be necessary in perpetuity to unnaturally manage the water

Conclusions

- Both RPA & Proposed Critical Habitat Revision for CSSS Work Against Everglades Restoration
- Precipitous Drop in Sparrow Population Was Between 1992 & 1993, & Was Not Due to Water Management Changes or High Flows
- 45-Day Rule Has Neither Worked Nor Is Their Historical Evidence that It Should
- Hurricane Andrew Played a Major Role in the Sparrow Decline, and Future Plans & RPA/Critical Habitat Modifications Should Take This into Account

The Bain of the Everglades
Levees, Gates, & Other Structures

The Multi-Species Recovery Plan is a Top Priority

Without an MSRP that is implementable in the ecosystem context, we will continue to:

- Pit species against species
- Pit area against area
- Pit people against people

And the Everglades will be lost forever

Priorities

- Accept that the driver of Everglades restoration is "getting the water right"
- Accept that CERP and associated activities are going to change existing habitats by changing the hydrology
- Accept that species are going to have to adapt to the changes
- Develop a plan to help the species adapt, which includes such things as:
  - Species triage
  - Project sequencing
  - Project timing
  - Design flexibility

The Challenge

Our immediate challenge ...

Quickly develop a methodology, which when overlaid on the long-term restoration process, will ensure the effective transition of all species into a restored ecosystem, while, in the short-term, minimize large-scale, irreversible damage that is done in response to jeopardy opinions ... always seek and find the reasonable, balanced solution.

Terry L. Rice, Colonel (Ret'd), Ph.D., P.E.

Civil Engineering, Water Resources, Environmental, & Government Relations Consultant

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Colonel (Ret'd) Rice has more than 37 years of experience meeting engineering and environmental challenges around the world. During his 29 years with the U.S. Army Corps of Engineers, Colonel Rice's work covered the entire gamut of engineering, from project design, project management, and field construction supervision to leadership (CEO equivalent) of engineering organizations with $250 million per year construction/engineering programs. His experience and insight were uniquely enhanced through more than 16 years of experience in Africa, Asia, Europe, and South/Central America. He exemplifies high standards of leadership and diplomacy and has also demonstrated a technical proficiency in all facets of civil engineering, including construction management, design, analysis, study, instruction, and research. Subsequent to his retirement from the USACE, he has worked for 9 years as an engineering/ environmental consultant for private and public clients; served as a Research Scientist at Florida International University (3 years); and worked for Science Applications International Corporation (5 years) & Blasland, Bouck, & Lee, Inc.(4 years). Colonel Rice brings a unique set of capabilities to any team: he not only contributes technically to specific engineering/ environmental challenges, but also brings a wealth of executive/program management experience in large engineering/ environmental organizations, along with proven negotiating and consensus-building skills. He has the uncanny ability to get to the heart of most any challenge without wasted effort and find a workable and acceptable solution.

Professional Experience
(see attached for chronological details)

Leadership and Management Experience

Throughout his 29-year career in the U.S. Army Corps of Engineers (USACE), Colonel Rice was a leader and manager of engineering organizations, culminating with his tenure as District Engineer for the USACE District, Jacksonville. As commander of more than 800 professionals of numerous, diverse disciplines, his primary responsibility was leading the federal effort to assist Florida, Puerto Rico, and the U.S. Virgin Islands with projects and planning to enhance flood control, navigation, shore protection, and environmental restoration. He was responsible for the planning of $7 billion of authorized work, with a $250+ million annual program.

Under Rice's leadership, the Jacksonville District took giant steps in making environmental restoration a mainstream mission of the USACE. As Commander, he led USACE planning that developed the congressionally authorized Comprehensive Everglades Restoration Plan (CERP). He was widely recognized as a leader in Everglades restoration, which is the centerpiece of the USACE restoration program.

During his tenure with the USACE, Colonel Rice:

- Directed the operation and maintenance of over 1,500 miles of waterways, including the Intercoastal, Gulf Coast, and Okeechobee waterways.
- Oversaw the operation of maintenance of 17 major and numerous smaller harbors, including the Ports of Canaveral, Jacksonville, Miami, and San Juan, and Port Everglades.
- Constructed, operated, and/or maintained numerous flood-control projects, including the Central and South Florida project, one of the largest civil works projects ever constructed, and

the Portugues/Bucana in Puerto Rico, two of the last dams that will ever be built by the USACE.

- Led the planning, design, and construction and/or renourishment of over 150 miles of Florida's beaches.
- Ensured that the District was always prepared to respond to emergencies. Under Rice's leadership, the District responded with millions of dollars of engineering and logistical assistance to the people of Florida, Puerto Rico, and the U.S. Virgin Islands after hurricanes such as Marylin, Bertha, and Hortense.
- Supported U.S. interests in the Caribbean by providing construction-related assistance to the nations of the region.
- Surveyed, planned, and implemented the cleanup of hundreds of Former Defense Sites in Florida, Puerto Rico, and the Virgin Islands.
- Regulated wetlands and navigable waters throughout Florida, Puerto Rico, and the U.S. Virgin Islands; this included the processing of approximately 8,000 permit requests per year.
- On a reimbursable basis, supported other federal and state agencies with USACE expertise throughout the region.

Engineering and Construction Project Experience

As an engineer, he has demonstrated time and again an ability to effectively plan and/or implement the most complex operations in widely varied societies and geographical locations. He has successfully led or managed large organizations and hundreds of construction projects worth more than $1.25 billion in more than 25 countries. His record is replete with quality construction accomplished on time and within budget. Some highlights include:

- Niger River Basin, Africa: Responsible for implementing an $11.7 million United States Agency for International Development (USAID) project. Provided planning support to the Niger Basin Authority (NBA), a nine-country, West African organization established to develop the seventh largest river basin in the world. Advised the U.S. Ambassadors, Chiefs of USAID Missions, the Heads of State, Ministers, and Technical Experts from the nine member nations, and the Executive Secretary and Staff of the NBA on technical and operational matters. Managed all USACE activities associated with the project, including supervising all contractor work, orchestrating politically sensitive and highly technical coordination among USAID, NBA countries, and all international donors to the NBA, and developing a technical planning base within the NBA.
- Wildflecken, Germany: No peacetime mission can come closer to a wartime environment than the battalion's (1000 personnel) 12-month, 7-day-per-week, 14-hour-per-day commitment to the construction of the $20 million, M1 Abrams Tank Range 23 at Wildflecken. The scope of work included four 350-meter moving target systems, 160 stationary vehicular and personnel targets, 15 kilometers of class 30 and 60 roads, and 95 kilometers of underground electrical cable. The total cut and fill requirements exceeded 365,000 cubic meters. Faced with great obstacles in addition to the sheer magnitude of the construction effort – severe topography, notoriously bad weather, material delays, incomplete plans, a 180-mile supply line, and a mandated completion date – Rice led the battalion to success. The battalion rose to the occasion and met the challenge presented by this Commander in Chief USAEUR top priority project.

- Dirkou Airfield, Africa: Played a major role in the 18-month effort to construct a C-130 airfield in a remote part of the Sahara Desert at Dirkou, Niger. This was the first Military-Civic Action project ever attempted in Africa. First, drawing on extensive experience in Sub-Saharan Africa, provided the key recommendations that unstalled the project when it was completely stopped by an untenable implementation plan after only 2 months of work. Second, managed the selection of personnel to assist the Nigerians and negotiated many of the important decisions for almost a year after the project was back on track. Finally, spent the final 3 months of the project in Africa orchestrating all project activities, including coordinating the work of the seven major agencies involved, developing and gaining approval for the final budget, acquiring and transporting the necessary material and equipment over 1000 miles of the most barren desert in the world, and providing the necessary engineering expertise. This was an exhaustive effort on the part of many people and a remarkable accomplishment.

- Karlsruhe, Germany: Responsible for engineer planning and design, construction quality assurance, training, operations, automation, and war planning for the largest engineer brigade in the U.S. Army – more than 4500 personnel. Oversaw over $100 million of construction per year.

- Panama City, Panama: Prior to Rice's arrival, the SOUTHCOM Engineer was only tangentially involved in planning for the implementation of the Panama Canal Treaty and, thus, engineer efforts were fragmented. Through his own initiative, he quickly established the Senior Engineer Treaty Implementation Plan (TIP) Working Group, which served to focus the efforts of the component engineers in developing engineering solutions to engineering challenges. Significant contributions were made to consolidate master planning, forecasting and meeting unresourced requirements, developing a comprehensive survey plan, establishing an environmental strategy, creating turnover procedures, and bringing an engineer's perspective to a multitude of proposals. He quickly recognized that engineers had a major role to play in treaty implementation and led them in making significant contributions. After the two previous generals had failed in their efforts to relocate SOUTHCOM Headquarters from Panama City, Panama, to Miami in conjunction with the implementation of the Panama Canal Treaty, Rice authored the strategy for General Barry McCaffrey that finally led to success.

- Bitburg, Germany: With rigid completion dates imposed due to national security requirements, directed the completion of two missile sites in accordance with the mandated schedules. This accomplishment was especially noteworthy given the extremely adverse conditions presented by notoriously bad weather and the remote locations.

- Pyontaek, South Korea: Responsible for all aspects of design, construction, and training, including planning, scheduling, and coordinating all activities for an engineer equipment and maintenance company, three construction companies, and a Korean Service Corps company – a total of more than 1200 personnel.

- Manheim, Germany: Personally responsible for the successful and timely relocation of U.S. soldiers from Turley Barracks, Mannheim; project was negotiated at embassy level. Directed the design of all facilities: buildings, asphalt and concrete hardstands, drainage, outdoor lighting, and a pollution control system. Project cost was in excess of $2 million. Design was accomplished in a quarter of the time allowed by contract. Negotiated material delivery and monitored all construction.

- Niamey, Niger: As President of the Board for the American School of Niamey and as Chairman of the Construction Committee, led the design of; acquired approval from the government of Niger, the American Embassy, and the Federal Building Office in Washington for; negotiated the financing for; and directed the construction of the American School of

Niamey. The school has turned out to be a true success story: an excellent facility accomplished at an amazingly low cost in only 8 months from ground-breaking to final product; school enrollment grew from 17 in 1983 to over 140 in 1987.

Environmental Engineering and Consultation Project Experience

Served as environmental/hydrologic consultant and technical negotiator for the Potentially Responsible Party (PRP) of five Federal or State Superfund projects located in riverine environments. Pollutants included radioactive sediment and CPAHs.

Via written correspondence and firsthand negotiations, worked with federal, state, and local agencies to resolve numerous client environmental issues.

Reviewed, analyzed, and officially commented on numerous National Environmental Policy Act (NEPA) Environmental Impact Statements and government reports.

Evaluated a stormwater modernization design for a city. The findings resulted in the city's adapting a more technically functional and environmentally compatible plan.

Testified before Congress and Florida State Legislature regarding Everglades restoration issues, and, for several clients, before local governments on various environmental issues.

Provided "independent technical review" for the USACE for a project being designed to use periphyton to clean up water for Everglades restoration.

Member of team that designed and implemented a remote sensing pilot project for the Kissimmee River basin.

Arranged and participated in numerous environmental educational visits by dignitaries to the Everglades.

Worked with the press and wrote several OPEDs in support of client goals.

Testified 14 times as an expert witness in federal and state courts and wrote many affidavits supporting environmental litigation. Accepted as an expert witness in water resources engineering, hydrology, regulatory matters, permitting, statistics, aerial photo interpretations, Everglades restoration, and the Central and South Florida Project.

Worked with several firms in writing proposals for USACE and South Florida Water Management District environmental restoration projects.

Served as member of team that developed water quality standards for a significant portion of the Everglades that gained USEPA official approval.

Worked for the USACE and USEPA on developing the Water Quality Annex for an unprecedented EIS on Section 404 permitting in Collier and Lee counties of Florida.

Drafted and negotiated legislative language for a client that became federal law.

Led &/or participated in efforts to acquire USACE "dredge & fill" permits (Section 404) for several clients on very controversial projects.

Served as member of the Governor's Commission for a Sustainable South Florida.

Serve as member (alternant) of the South Florida Ecosystem Restoration Working Group.

Served as member of the Miami-Dade County Flood Management Task Force (1999 - 2006).

Serve as member of the RECOVER Leadership Group, the scientific group charged by the USACE and South Florida Water Management District to ensure Everglades restoration is based on sound science and follows an ecosystem approach.

Serve as member of the South Florida Ecosystem Restoration Task Force's Science Coordination Team.

Professorial Experience

Instructor and Assistant Professor of Engineering of Environmental Systems & Research Scientist, 1977 – 1981, U.S. Military Academy, West Point, New York

Professor/Student of Development Assistance, 1991 to 1992, Georgetown University, Washington, D.C.

Research Scientist and Professor of Everglades Restoration Policy, 1998 to 2001, Florida International University, Miami, Florida.

Education

- Doctor of Philosophy — Colorado State University, 1979-81: Water Resources Engineering — Hydraulics and Hydrology; dissertation entitled *Reservoir Sedimentation Modeling*. Advisors: Dr. D.B. Simons and Dr. R.M. Li.
- Master of Science — University of Illinois, 1975-77: Civil Engineering; Soils, Structures, Environment, Operations Research, and Geology with focus in Hydrology and Hydraulics. Advisor: Dr. Ven Te Chow.
- Bachelor of Science — United States Military Academy at West Point, 1965-69: General Engineering, the Humanities, and Military Leadership.
- Senior Service College Fellow — Georgetown University, Walsh School of Foreign Service, 1991-92: Political Science and International Relations. Served as Professor of Development Assistance.
- Honor Graduate — Command and General Staff College, Fort Leavenworth, 1981-82: Military Science; augmented with Political Science, International Relations, Computer Science, Management, and Psychology.
- Graduate — Foreign Service Institute, US Department of State, 1982: Sub-Saharan Africa and French.

Registration

- Professional Engineer, Illinois, 1977 (#62-35814)
- Professional Engineer, New York, 1978 (#55861-inactive)
- Professional Engineer, Florida, 1999 (#55210)

Professional Affiliations

- Life Member, Society of American Military Engineers (SAME)
- Member, American Society of Civil Engineers (ASCE)
- Life Member, Army Engineer Association (AEA)

- Life Member, Society for International Development (SID)

Special Qualifications

- Languages — French professional level (3/3) and German, Spanish, & Russian limited
- Foreign Area Specialist (US Army) — Sub-Saharan Africa & Middle East/North Africa
- Airborne and Ranger (US Army)

Awards & Special Recognition

- U.S. House of Representatives, Recognition in the Congressional Record, September 30, 1997, for commitment to the Florida Everglades and the partnerships developed toward restoration.
- Vice President of the United States Al Gore, Special Recognition, September 22, 1997, for outstanding work on behalf of one of the nation's greatest treasures, the Florida Everglades.
- The Everglades Coalition, James D. Webb Public Service Award, January 17, 1997, for leadership in Everglades restoration.
- Miccosukee Tribe of Indians of Florida, Special Recognition, September 26, 1997 (Native American Day celebration), for dedicated and persistent efforts to protect and preserve the Miccosukee heritage and homeland.
- 1000 Friends of Florida, Bill Sadowski Award, March 26, 1998, for visionary and dedicated leadership in promoting environmentally responsible growth.
- The South Florida Ecosystem Restoration Task Force, Special Commendation, August 4, 1997, for leadership in and generous contribution to preserving the South Florida ecosystem.
- The Governor's Commission for a Sustainable South Florida, Certificate of Appreciation, September 3, 1997, for outstanding leadership and dedication in creating a sustainable South Florida.
- The Florida Department of Environmental Protection, Special Commendation, June 12, 1997, for support and cooperation in restoring and protecting the natural resources of Florida.
- Young Friends of the Everglades, special recognition, January 18, 1998, for inspiration to Everglades restoration.
- The Florida Shore and Beach Preservation Association, President's Award, September 4, 1997, for outstanding leadership in beach preservation.
- Florida's Broward County Board of County Commissioners, Proclamation designating October 3, 1997 as Colonel Terry L. Rice Day, September 22, 1997, for years of dedicated service.
- Florida's Dade County Board of County Commissioners, Proclamation of September 30, 1997 as Terry L. Rice Day, September 30 1997, for great service rendered to the community.
- Young Citizens' Conservation Corps and Environmental Education Council of Broward County, symphony dedication at *Turning the Tide for the New Millennium*, October 30, 1997, for leadership in Everglades restoration.
- Bird Emergency Aid & Kare Sanctuary (BEAKS) of Big Talbot Island, Florida, special recognition, October 24, 1997, for contributions to Everglades restoration.
- Legion of Merit, September 16, 1997, for exceptionally meritorious service as District Engineer from August 5, 1994 thru October 3, 1997.
- Meritorious Service Medal, April 4, 1974, for exceptionally meritorious service as Platoon Leader, Company Commander, and Engineer Command Staff Officer, Federal Republic of Germany, from May 12, 1970 to April, 4, 1974.
- Commendation Medal, May 30, 1975, for exceptionally meritorious service as Battalion Operations Officer, Republic of Korea, from November 1974 to March 1975.

- American Railway Engineering Association, Special Award, March 1980, for excellent contribution to the advancement of Railway Environmental Engineering as Assistant Professor, U.S. Military Academy, West Point, New York.
- Meritorious Service Medal, July 27, 1981, for outstanding meritorious service in connection with the overall mission of the U.S. Military Academy as Assistant Professor and Research Officer, U.S. Military Academy, West Point, New York, from July 1977 to July 1981.
- American School of Niamey, Special Award, March 15, 1985, for leading the planning and construction of the first American School of Niamey (ASN) as Member and President of the ASN School Board, Republic of Niger, from October 1983 to March 1985.
- Meritorious Service Medal, March 14, 1985, for meritorious service in leading the USACE and U.S. Agency for International Development water and environmental planning assistance to the Niger Basin Authority as USACE Project Officer, Republic of Niger from January 1983 to April 1985.
- Meritorious Service Medal, May 9, 1988, for meritorious service in planning and conducting the operations for the largest Engineer Brigade in the Army, as Brigade Operations Officer, Republic of Germany, from May 1985 to June 1988.
- Meritorious Service Medal, May 17, 1990, for meritorious service in successfully leading a Combat Heavy Engineer Battalion through numerous challenges as Battalion Commander, Republic of Germany, from June 1988 to June 1990.
- U.S. Army Corps of Engineers, Engineer Regiment Bronze Order of the DeFleury Medal, June 20, 1990, for inspirational leadership to U.S. Army Corps of Engineers as Corps of Engineer Officer, from 1969 to 1990.
- Joint Service Commendation Medal, June 7, 1991, for exceptionally meritorious service in assisting the Armed Forces of Morocco especially during Desert Shield/Storm as Chief of Ground Section, U.S. Embassy Rabat, Morocco, from June 23, 1991 to June 26, 1992.
- Defense Superior Service Medal, April 28, 1994, for exceptionally superior service as Command Engineer, U.S. Southern Command, Panama, from June 23, 1992 to June 22, 1994.
- U.S. Army Corps of Engineers, Engineer Regiment Bronze Order of the DeFleury Medal, June 20, 1990, for inspirational leadership to U.S. Army Corps of Engineers as Corps of Engineer Officer, from 1969 to 1990.
- Department of Defense, Joint Service Commendation Medal, June 7, 1991, for exceptionally meritorious service in assisting the Armed Forces of Morocco especially during Desert Shield/Storm as Chief of Ground Section, U.S. Embassy Rabat, Morocco, from June 23, 1991 to June 26, 1992.
- Department of Defense, Defense Superior Service Medal, April 28, 1994, for exceptionally superior service as Command Engineer, U.S. Southern Command, Panama, from June 23, 1992 to June 22, 1994.
- U.S. Army Corps of Engineers, Engineer Regiment Silver Order of the DeFleury Medal, January 31, 1998, for inspirational leadership to U.S. Army Corps of Engineers as Corps of Engineer Officer, from 1969 to 1998.

Publications

Critical review of methodologies for predicting reservoir sedimentation incorporated into: *Training Manual for Watershed and Stream Mechanics for U.S.DA, SCS, Washington, D.C.*, Research Institute of Colorado, Ft. Collins, Colorado, as Chapter 15, "Reservoir Sedimentation," 1980.

"Sediment Deposition Model for Reservoirs Based on the Dominant Physical Processes." Paper presented at the International Symposium on Reservoir Ecology and Management (sponsored by UNESCO), 3 June 1981, Quebec City, Canada.

"Reservoir Sedimentation Modeling." Ph.D. Dissertation, Department of Civil Engineering, Colorado State University, Ft Collins, Colorado, 1981.

Engineering Analysis of Fluvial Systems, Chapter XIII, "Reservoir Sedimentation." Fort Collins, Colorado: Simons, Li & Associates, 1982.

Sediment deposition model for reservoirs based on the dominant physical processes." *Canadian Water Resources Journal* 7 (1982).

Forging security through peace." *Military Review* LXXII (April 1992).

"The Ambassador's Country Plan — the First Step to Effective Development Assistance." Presentation at Georgetown University, May 1992.

The role of engineers in the Southern Command. *The Corps Heritage* 2 (September - October 1993).

Focusing engineers on the CINC's objectives — the U.S. Southern Command Peacetime Engagement OPLAN. *LATAM Engineer* 1 (December 1993).

Fuertes Caminos — A joint exercise plus much more. *LATAM Engineer* 1 (March 1994).