Today’s presentation to the Commission is an update on Everglades Restoration, including current and future decisions that will guide implementation of these restoration activities. These decisions will have long-lasting affects on the fish, wildlife and habitat resources associated with this ecosystem.

Given the unusual high amount of rainfall south Florida has received this year and the efforts Commissioner Bergeron has been engaged in this presentation is timely.

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A stated goal of the Comprehensive Everglades Restoration Plan (CERP) is “to capture fresh water that now flows unused to the ocean and the Gulf and redirect it to areas that need it most. Most of the water will be devoted to environmental restoration, reviving a dying ecosystem.” The Florida Fish and Wildlife Conservation Commission (FWC) is concerned that guidelines currently being considered for management of water in and through this ecosystem would result in high and low water conditions that negatively impact fish and wildlife populations, habitat, and diversity, particularly certain state and federally listed imperiled species. Such outcomes would be inconsistent with the goal of reviving a dying ecosystem; however, modifications are feasible to insure water management guidelines are consistent with CERP goals.

The purpose of this presentation is to provide you with an update on the CERP and to recommend a Florida Fish and Wildlife Conservation Commission position that provides biologically based guidance for managing water levels in the Everglades to insure restoration of fish and wildlife populations, habitats, and diversity such that CERP goals can be fully realized.
The South Florida Ecosystem, also called the greater everglades ecosystem, stretches from Orlando, through the Kissimmee Valley, Lake Okeechobee, the Everglades, through Florida Bay and through the Florida Keys coral reef tract. This system includes the largest continuous sawgrass prairie in North America, the largest mangrove ecosystem in the western hemisphere, most significant breeding grounds for tropical wading birds in North America, and the largest wilderness area east of the Mississippi River – Everglades National Park.

The area has been greatly altered by engineered flood control and water storage and distribution for agriculture and urban development.

These alterations to the ecosystem have had negative impacts to the area’s habitat and its fish and wildlife.

• The area now has 69 threatened and endangered species
• Degraded water quality in the Caloosahatchee and St. Lucie estuaries including the Indian River Lagoon and Florida Bay
• Declines in commercial fisheries in Biscayne Bay and the Florida Keys
• 19% decline in living corals in the last decade
• 90% reduction in wading bird populations
• Decline in Lake Okeechobee water quality
• 70% decline of water flowing through the ecosystem
The Problem

Because roughly half of the original extent of the Everglades has been lost to development and agriculture, today’s water managers face a difficult task of routing the same amount of rain that historically fell through today’s much reduced system consisting of canals, levees, and impoundments while providing water supply, flood control, and conserving the remaining Everglades landscape for fish and wildlife. One of the greatest challenges for the Comprehensive Everglades Restoration Plan is to accomplish this three-pronged mission. The WCAs in this area are now subject to extreme high water levels for extended periods of time, particularly in the southern end of WCA 3A, when the capacity of the Central and South Florida Project is exceeded by periods of high rainfall. They are also subject to artificially low water levels, particularly in the northern part of WCA 3A, during drought periods.

This slide shows how the historic flow, how the historic water flow has been altered, and what the Comprehensive Everglades Restoration Plan is hoping to achieve. (Water quality, quantity, timing and distribution) The fish and wildlife species and their requisite habitats that are found in the area evolved based on the historic water flows. The economic impact of fish and wildlife resources is crucial to South Florida in terms of tourism, the boating industry, fresh water fishing, salt water fishing and several commercial fisheries.
South Florida Ecosystem Restoration consist of three main activities.

The Comprehensive Everglades Restoration Plan (CERP) Provides a framework and guide to restore, protect and preserve the water resources of central and southern Florida, including the Everglades. The stated goal of CERP is “to capture fresh water that now flows unused to the ocean and the Gulf and redirect it to areas that need it most. Most of the water will be devoted to environmental restoration, reviving a dying ecosystem.” The remaining water will benefit cities and farmers by enhancing water supplies for the south Florida economy.

The Central Everglades Planning Project (CEPP) The purpose of CEPP is to evaluate alternatives for restoring ecosystem conditions in the central Everglades while providing opportunities for other water-related regional needs, as required by the Water Resources Development Act of 2000. The recommended plan would achieve benefits by reducing the large pulses of regulatory flood control releases sent from Lake Okeechobee by redirecting approximately 210,000 acre-feet of additional water on an annual basis to the historical southerly flow path. One of the explicit ecosystem goals of CEPP is to rehydrate the northern part of Water Conservation Area (WCA) 3A to reintroduce peat-accretion processes in an area that has seen substantial peat loss through fires and other forms of oxidation. It also represents a substantial step in reintroducing the historic northwest to southeast water-flow pattern that characterized the Everglades before the construction of the WCAs.

Modified Water Deliveries to ENP also known as MOD Waters is designed to re-establish the historic sheetflow of freshwater from the water conservation areas (WCAs) into Everglades National Park and Florida Bay.
Ernie Barnett, South Florida Water Management District, will be presenting information on this slide.
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**Modified Water Deliveries to ENP** also known as **MOD Waters** was authorized nearly 20 years ago and is designed to re-establish the historic sheetflow of freshwater from the water conservation areas (WCAs) across the Tamiami Trail and into Everglades National Park and Florida Bay. The MOD Waters project is a precursor to CERP and CEPP projects providing significant benefits to ENP and NE Shark River Slough.
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**CERP Components** - Getting the water right is extremely complicated. Due to development and agriculture, the size of the Everglades has shrunk by half. Since we get the same volume of rain, an elaborate system of canals, levees, and pumping structures were constructed to move water for flood control, water supply, and agriculture. It works well for these purposes, but has created a dysfunctional natural system. In order to craft a system where we can mimic the natural cycles, 68 projects were conceived as part of the Comprehensive Everglades Restoration Plan.
The Central Everglades Planning Project represents a significant opportunity to restore the defining hydrologic regime of the Everglades and, as such, lies at the heart of the Comprehensive Everglades Restoration Plan (CERP). This project focuses on FWC’s 672,000 acre Everglades and Francis S. Taylor Wildlife Management Area (EWMA). This project when complete will redirect water currently discharged from Lake Okeechobee to the east and west coast estuaries to the south, allowing for restoration of natural habitat conditions, with water sheet flowing through the central Everglades reconnecting the ecosystem from Lake Okeechobee to Everglades National Park and Florida Bay. The project will include features that provide for storage, treatment and conveyance south of Lake Okeechobee, the removal of some canals and levees within the EWMA and seepage management features to retain water within the natural system.

FWC, and its predecessor agency GFC, have been managing this area for six decades. We have committed to supporting CEPP and working collaboratively with our partners in that regard. In an effort to enhance our effectiveness in this effort, we have drafted a position paper pertaining to hydrologic requirements for EWMA. We are concerned that guidelines currently being considered for the management of water in and through this ecosystem are contrary to the stated goal. We want to make sure that the CEPP water management parameters provide for water depths and durations for this area that are compatible with the habitats critical to resident wildlife, including imperiled species.
The FWC’s position paper references the experiences and reports that the FWC and its predecessor agency, the GFC, have provided since the authorization of the Central and South Florida Project in 1948 and continuing into current CERP planning efforts.

Our position paper provides hydrologic requirements for Everglades restoration from a fish and wildlife diversity perspective and recommends a maximum of two foot water depths for the peak of the wet season (October into November) and near ground level depths during the driest part of the dry season (May into June). Additionally, this paper describes how water levels managed outside of the desired range of conditions have impacted vegetation communities, wildlife diversity, and species richness, particularly for state- and federally listed species.

Peak water levels not exceeding two feet should occur in the late October – early November timeframe, receding steadily to a low at or near ground level in late May and early June, and then rising steadily to a peak again by late October and early November. It is also important that water ascension and recession rates not exceed 0.25 feet per week.

During extreme storms or unusually wet seasons, water levels may rise above the desired high levels, but even then depths should not exceed an average of 2 feet for longer than 60 days.
Wildlife in the Everglades starts to die off when the water level rises. The deer herd has been reduced from thousands to only a few hundred - due to managed high water levels.
Photo very clearly shows loss of woody vegetation. The dead stems are willow in the foreground and cocoplum in the background, which are both very water tolerant species, illustrating that high water effects tree & shrub species of all tolerance limits in the Everglades.
The sawgrass ridge and slough habitat is also impacted by high water levels. This is a photo taken of extensive mortality of the sawgrass skirt of a large tree island in SE WCA-3B following unseasonably high water during the spring. These die-offs occurred in topographic high areas associated with tree islands and high sawgrass/shrub ridges in southern WCA-3A as well. Such effects have been long-lasting.
Tree islands are a unique structural component of the Everglades, providing habitat for wildlife species that require some component of upland habitat with trees or brush in an overall matrix of marsh. Wading birds utilize tree islands for nesting. Migrating neotropical birds utilize the tree islands for resting and foraging. Alligators, turtles, and snakes lay their eggs on the dry parts of tree islands. Panthers use shallow wetlands although they rely on forested areas to stalk their prey and to rest. The tree islands and their associated thicker vegetation once provided this type of habitat in western WCA 3A. Much attention has also been given to the higher tree islands as refugia for Everglades wildlife species, such as deer, bobcats, marsh rabbits, raccoons, and other small mammals. During high-water events, these terrestrial or semi-terrestrial species crowd onto what remains at or above water on tree islands and onto levees, where overcrowding and competition for food create physical stress (in extreme cases, resulting in death) and susceptibility to disease and parasites.

Wet prairies are a form of marsh dominated by emergent grass-like species. Periphyton is also an important component of the submerged part of this community. Wet prairies in the EWMA, particularly in southwestern WCA 3A, have historically been important habitat for the federally endangered Everglade snail kite and its prey, the apple snail. Snail kites search for prey by sight, so they typically forage over relatively open wet prairie and sloughs. They capture apple snails within about four inches of the surface as the snails come to the surface to respire. Apple snails feed on the periphyton component of both wet prairies and sloughs. Wet prairies also provide high-quality browse for deer as long as the water depths remain below about 20 inches, a depth above which begins to hamper deer movement. Maximum depths at which wading bird species can forage range from about 6.3 inches to about 15.3 inches. Studies have documented the conversion of wet prairie to slough resulting from recurring prolonged high water levels.

The ridge and slough system is typified by a generally north to south orientation of alternating ridges that support sawgrass and slough communities. During periods of relatively high water, the fish populations expand into the higher sawgrass areas. When water levels recede, fishes are concentrated into the sloughs, where they provide prey for up to 11 species of wading birds, including the federally listed wood stork and the state-listed white ibis, little blue heron, tricolored heron, snowy egret, and roseate spoonbill.
1981-1989 – Radio telemetry data illustrates panther use of WCA 3A.

1990-1999 – Radio tagged panthers continue to utilize WCA 3A; however, many of the telemetry points are along levees.

2000-2010 – Radio Telemetry data clearly illustrates that panthers have discontinued use of WCA 3A. It is interesting to note that during this same time period panther numbers, including radio-tagged individuals increased significantly.
• High water closing criteria for the WCA 3A is when depths reach an average of 2’ north of I75, which is 11.6 NGVD average water level at the 62 and 63 guages. Since 2005 there have been five events that have triggered the closure of WCA 3A. These events are causing adverse impacts to habitat and to fish and wildlife including our threatened and endangered species.

• To minimize impacts until restoration can more fully relieve the high water conditions, Commissioner Bergeron has initiated discussions that have brought together the USACE, SFWMD, DEP, DOI, NPS, and USFWS. The actions that have resulted from these discussions have been incorporated into a suite of recommendations the agencies enact each time we experience high water conditions.

• The Tamiami one mile bridge and the Tamiami Trail road bed raising have recently been completed and are new tools we have in our tool box. In addition the approval of $90 million for the 2 ½ mile bridge by Governor Scott will further enhance water delivery under TT and into ENP.

• Commissioner Bergeron is continuing to find ways to move water by working with our state and federal partners.
Appropriate guidance for water level management within the EWMA generally remains as recommended by Schortemeyer (1980), with a high-water depth no more than two feet by late October to early November and then a gradual and a steady recession to a low of near ground level by late May to early June. At that time, water levels would increase back to no deeper than two feet by the end of October to early November.

Water recession rates are an important factor to consider when managing for wading birds and apple snail and snail kites. The FWC recommends recession rates averaging between 0.05 and 0.25 feet per week, with no water-level reversals, beginning in January and ending at the end of May. We recommends ascension rates no greater than 0.05 to 0.25 feet per week from the beginning of June to the beginning of October.

During extreme storms or unusually wet seasons, water levels may rise above the desired high levels, but even then depths should not persist for longer than longer than 60 days above desired levels. At an average water depth of two feet north of Alligator Alley, the FWC has to close the EWMA to avoid exacerbating stress on the terrestrial and semi-terrestrial species that crowd on the highest points of tree islands and the levees.

CERP components, including CEPP, should strive not just to conserve, but to restore, conditions for listed species, including the Federally Endangered Florida panther.
The full position paper has been provided as a part of the package sent to the Commissioner's.