Caloosahatchee Background Information

August, 2010: Photo of healthy stand of tapegrass on the south shore of the Caloosahatchee upstream of the WP Franklin Lock.
Shorter grass in the foreground has been grazed by manatees

December, 2010: Photo of Caloosahatchee tapegrass at Beautiful Island. Tapegrass (dark blades) is dying due to high salinities and epiphytic algae (bright green) are colonizing what is left, further impacting the dying

Caloosahatchee Base Flow Needs

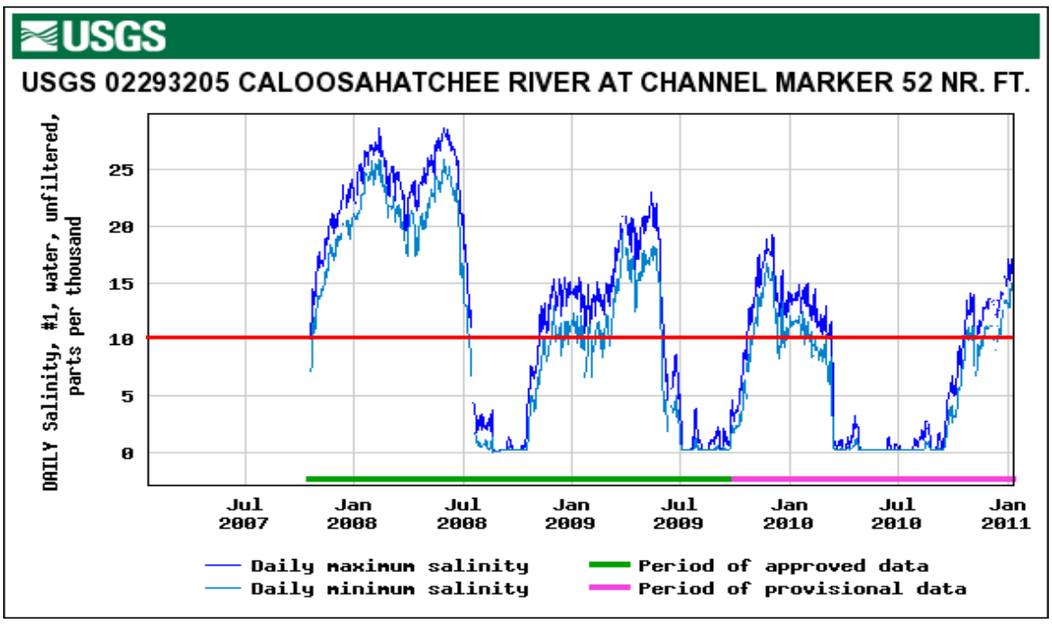
The Caloosahatchee minimum flow and level (MFL) rule established a minimum flow of freshwater at the S79 WP Franklin Lock and Dam structure to provide a reliable salinity envelope for the upper estuary to protect tapegrass habitat and prevent significant harm. The threshold for significant harm is two consecutive 365 day periods where an exceedence occurs. An MFL exceedence occurs when the 30 day average salinity is above 10ppt/psu or above 20 ppt/psu for a single day as measured at a designated point in the river off downtown Fort Myers.

The need for an MFL is the direct result of the channelization of the river and placement of the WP Franklin lock which truncated the estuary by 12 miles. As a result, the Caloosahatchee needs a minimum flow of water through S79 of approximately 450 -650 cfs during the dry season. Without this flow we risk very serious harm not only to the estuary but also to the water quality of the west basin of the freshwater river where the Olga Water Treatment plant is located.

Base flow releases to the Caloosahatchee represent a small amount of lake water, on the order of inches per month, during the dry season, but the impact of that small amount of flow is critical. From a public health safety and welfare standpoint the Olga Water Plant has had to shut down when flows are stopped due to high chlorides and total dissolved solids -violations of the Safe Drinking Water Act- and because the basin becomes stagnant and blue green algae blooms result. Some forms of these algae produce liver toxins that are not removed by the water treatment process so the water is undrinkable. The river also becomes toxic for swimming, recreation and fishing as well as for wildlife.

The Caloosahatchee is currently in violation of the MFL with exceedences occurring in 2002, 2004, 2007, 2008, 2009 & 2010. MFL violations are supposed to trigger water use restrictions and trigger Shared Adversity. However water shortages have consistently resulted in unilaterally cutting off all flow to the Caloosahatchee while permitted users get 100% of their demand with no conservation measures or cutbacks required.

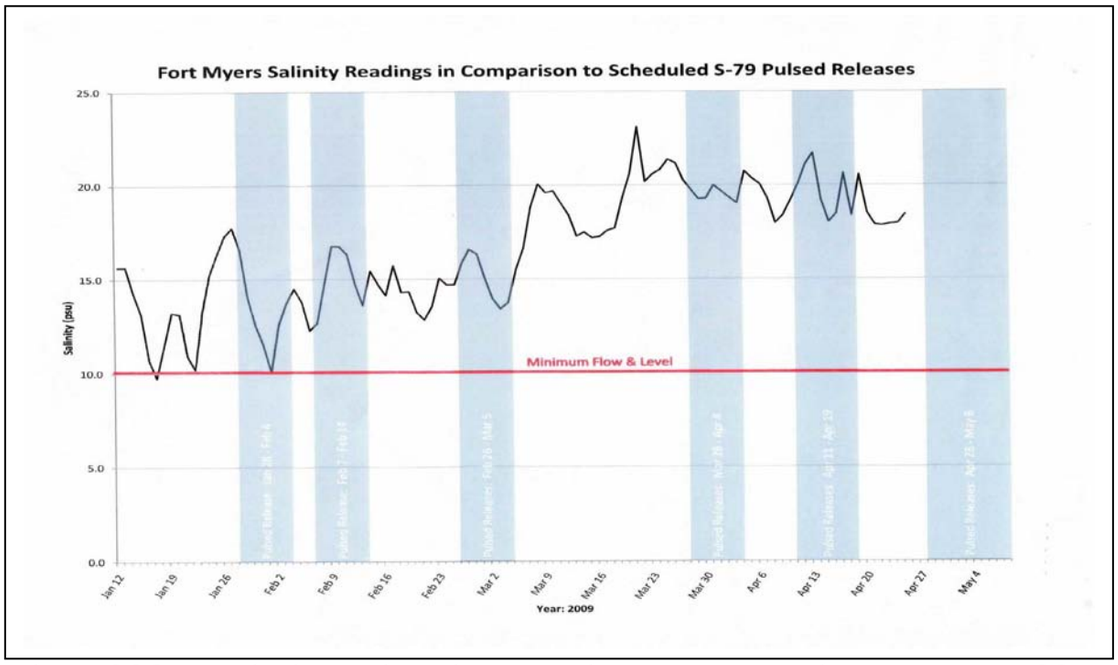
The lack of flow and high salinities have had a direct impact on the biota of the river and estuary including limpkins, swallowtail kites and endangered species that directly (manatees) or indirectly (smalltooth sawfish) depend on the presence of SAV. The photos above reflect the impact of high salinities on tapegrass habitat. The epiphytic algae in the December photo are more salinity tolerant and compound the damage to the tapegrass, although it is the continued high salinity that is killing the grass.



Impacts of Flow Cutoffs

The USGS graph above reflects the pattern of water management where the Caloosahatchee is starved of water for the entire dry season. In 2007-2008, 9 of the 12 months salinities remained at lethal levels. This scenario was repeated in 2008- 2009 for 8 months. Lack of freshwater flow created such dry conditions that salinities exceeded 20 ppt at the Franklin Locks. This resulted in a complete die back of tapegrass for the majority of these years. In addition, the root systems which collect the energy when the blades die back were negatively impacted.

In aquatic grasses the root systems act as battery packs for regenerating grass when conditions improve. However extended periods of high salinities drain the stored energy from the roots limiting their ability to respond when favorable conditions return.



The above SCCF graph shows the salinity condition in 2009 at the Ft Myers RECON site (black line) relative to the MFL (red line). COE pulse releases of 650 cfs from Lake Okeechobee are represented by the blue vertical bars. Because salinities were allowed to increase to an extremely high level, the pulses of 650 cfs did not supply enough water to lower salinities to the MFL limit. Releases kept the salinity in the vicinity of 15 psu until March when no releases were made over a three week period. The lack of flow resulted in a

salinity jump to significant harm levels that could not be recovered from with later releases of water.

Lack of dry season flows raises salinities beyond the tolerance of many critical species whose life cycle depends upon the river and estuary. Lack of flow results in the further truncation of the estuary when salinities at the Franklin Lock reach levels above 20 ppt/psu, a range more normal at the Cape Coral bridge over 20 miles downstream. The year after year repetition threatens the ability of species to recover during favorable conditions.

In January, 2010 massive snook kills from cold stress in Caloosahatchee estuary & coastal waters affected all year classes. This fish species, along with other fishes, blue crabs, stone crabs and shrimp require freshwater and tapegrass habitat for a portion of their life cycle. Without this critical nursery habitat the next year's crop of fish, crabs, shrimp will be significantly impacted in the river and estuary.

On December 10, 2010, the Fort Myers Police Marine Unit reported the results of a manatee count that registered the highest congregation of manatees in the state at the Florida Power & Light (FPL) power plant outfall in the Orange River, a tributary of the Caloosahatchee. 706 adults and 46 calves were counted in Lee County for a total of 752 individuals. The lack of tapegrass in the upper estuary causes manatees to travel up to 20 miles downstream to find food. Cold stress on the manatees coupled with energy expenditures to forage long distances, could negatively affect survival, especially on younger age class animals.

The following table from research by SFWMD scientists Chamberlin & Doering identifies key species that use the Caloosahatchee with upper and lower water flow preference requirements.

SPECIES	LOWER INFLOW LIMIT (LIL)	PREFERRED INFLOW RANGE (PIR)	UPPER INFLOW LIMIT (UIL)	IMPORTANT MONTHS
Vallisneria	300	>400		dry season (Nov–May) LIL, PIR
Halodule, *Thalassia*		<800	3,000 *Halodule* 4,500 *Thalassia*	all year — UIL
Fish (general)	300	300–1,300	3,000	dry season — PIR; all year — UIL
Bay anchovy	300	300–800	3,000	dry season — PIR; all year (esp. spring) — UIL
Silver perch	300	300–800	3,000	dry season — PIR; all year (esp. Jan–early summer) — UIL
Redfish	300	300–800	3,000	dry season (esp. Nov–Mar) — PIR; all year (esp. Jul–Dec) — UIL
Snook	300	300–1,500	3,000	late dry season — PIR; all year (esp. late dry season) — UIL
Larval fish		300–600	2,500	dry season (esp. spring–early summer)
Fish eggs		150–600	2,500	all year
Pink shrimp	300	300–800	3,000	all year
Blue crabs	300	300–800	3,000	all year (esp. Feb–Jul)
Zooplankton		300–600:<1,500	2,500	all year
Shrimp and crab larvae		<1,300	2,500	all year (esp. spring–Jul)
Benthic macro-invertebrates		300–800	3,000	all year
Oysters		300–800	3,000	all year

Economic Importance

The health of the river and estuary mirrors the health of our economy. Multi-year loss of tapegrass habitat means fewer fish, blue and stone crabs, shrimp and shellfish. In a study of the value of ecosystem services, Costanza 1998, values estuaries at $22k/ha annually. This means the 640 acres of tapegrass lost in 2001 is equivalent to $5 million annually in ecosystem services.

The historically rich fisheries of the Caloosahatchee and estuary are the reason saltwater fishing license revenue in Lee County is the second highest in Florida. In Lee County, tourism employs 1 out of every 5 people, with over 5 million visitors a year generating over $3 billion in economic revenues. http://www.leevcb.com/content/value-tourism

Without healthy flows the productivity of the "public crop" of fish, blue and stone crabs, shrimp and shellfish and all of the services provided by tapegrass habitat to water quality, fishery production and ecosystem stability is greatly diminished and its recovery threatened.

This economic and ecological reality notwithstanding, year after year the Caloosahatchee is completely cut off from public water, while other water users receive 100% of their demand un fairly causing the natural system and public crop to suffer losses for the advantage and benefit of a private crop profits.

The numbers speak for themselves. Data from the National Agricultural Statistics Service reflect the healthy productivity and yields of sugarcane during our worst drought years when the Caloosahatchee has been completely cut off and suffered losses of tapegrass and fisheries. At the same time agricultural demands had no restrictions or conservation limits.

Florida Data - Crops
Planted, Harvested, Yield, Production, Price (MYA), Value of Production

Commodity	Year	State	Harvested	Yield	Production	Price per Unit	Value of production
Sugarcane For Sugar	2000	Florida	436 thousand acres	37.5 tons	16,350 thousand tons	28.60 dols / ton	467,610 thousand dollars
Sugarcane For Sugar	2001	Florida	445 thousand acres	35.1 tons	15,620 thousand tons	31.70 dols / ton	495,154 thousand dollars
Sugarcane For Sugar	2002	Florida	442 thousand acres	38.3 tons	16,929 thousand tons	31.70 dols / ton	536,649 thousand dollars
Sugarcane For Sugar	2003	Florida	419 thousand acres	39.3 tons	16,467 thousand tons	31.90 dols / ton	525,297 thousand dollars
Sugarcane For Sugar	2004	Florida	385 thousand acres	34.9 tons	13,437 thousand tons	30.30 dols / ton	407,141 thousand dollars
Sugarcane For Sugar	2005	Florida	376 thousand acres	31.4 tons	11,806 thousand tons	28.00 dols / ton	330,568 thousand dollars
Sugarcane For Sugar	2006	Florida	382 thousand acres	35.8 tons	13,676 thousand tons	31.10 dols / ton	425,324 thousand dollars
Sugarcane For Sugar	2007	Florida	375 thousand acres	36 tons	13,500 thousand tons	31.60 dols / ton	426,600 thousand dollars
Sugarcane For Sugar	2008	Florida	384 thousand acres	33.7 tons	12,941 thousand tons		

Respectfully submitted,

Periodic Scientists Conference Call Participants

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