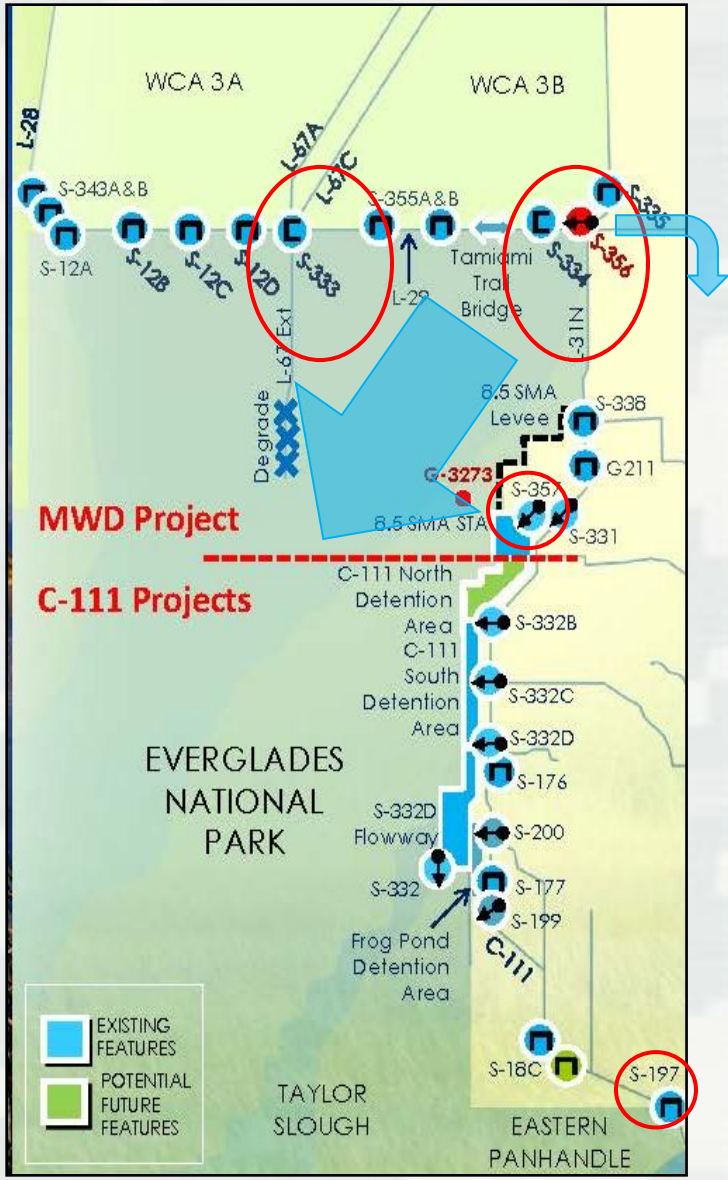
Alternatives Evaluation

Alternatives for NEPA Assessment

- Overarching project need is to increase the availability of S-333 to increase water deliveries from WCA 3A to ENP through NESRS.
- Reduce the number of times S-333 discharges are limited by the existing G-3273 stage constraint of 6.8 feet NGVD.
- Reliance on S-334 to lower stages in WCA 3A is expected to decrease due to the increased availability of discharge to NESRS (ERTP Column 2).
- Alternatives differ based on:
  - Degree of relaxation of G-3273 stage constraint
  - Use of Column 2 Operations
  - Inclusion of operational changes to C-111 Canal structures S-197 (S-18C HW or S-178 TW)



Objectives of Increment 1 Field Test

A. Improve hydrological conditions in NESRS through the relaxation of the G-3273 stage criteria to increase water deliveries from WCA 3A to NESRS, while maintaining other C&SF Project authorized purposes.

B. Use the S-356 pump station to return seepage to NESRS and manage seepage from NESRS to the L-31N Canal resulting from the relaxation of the G-3273 stage constraint on S-333, in conjunction with increased flows through the S-333 spillway to NESRS via the L-29 Canal.

C. Improve hydrological conditions in NESRS by maximizing the flexibility and efficiency of the existing infrastructure, including use of seepage management (e.g., S-356) to complement inflows to NESRS from WCA 3A.

D. Gather and analyze infrastructure performance, ecologic, hydrologic and water quality data sufficient to support Increment 2, resulting in the following:
   i. Data gathering sufficient to support water quality certification
   ii. Refined operational criteria for the MWD and C-111 South Dade Projects
   iii. Updates to the 2012 Water Control Plan

Constraints of Increment 1 Field Test

A. L-29 Canal maximum operating limit of 7.5 ft NGVD, pending future acquisition of real estate interests along Tamiami Trail and additional NEPA evaluation

B. Maintain the authorized purposes of the C&SF Project and subsequent modifications to include:
   I. MWD Project
   II. C-111 South Dade Project
   III. CERP

C. No reduction in current flood protection

D. Maintain the current multi-species objectives of the 2012 Water Control Plan and comply with the requirements of the current biological opinions from the USFWS to include ERTP and CERP C-111 Spreader Canal Western Project

Alternatives for NEPA Assessment

A) No Action

B) Incremental Relaxation of G-3273 Constraint

C) Relaxation of G-3273 Constraint up to 7.5 feet NGVD

D) Relaxation of G-3273 Constraint and Removal of Column 2 Operations at S-334

E) Relaxation of G-3273 Constraint and Operational Criteria Changes at S-197 (Trigger S-18C HW)

F) Relaxation of G-3273 Constraint Without Operational Criteria Changes at S-197

G) Relaxation of G-3273 Constraint and Operational Changes at S-197 (Trigger S-178 TW)

Common Components: Action Alternatives

- The field test will maintain the ERTP operating limit constraint of 7.5 feet NGVD in L-29 Canal, while relaxing the G-3273 constraint for S-333, and utilizing S-356 for management of seepage to the L-31N Canal.

- During the field test, the combined flows to NESRS through S-333 and S-356 will be more than what would have otherwise been discharged through S-333 under current operations.

- It is expected that under typical conditions, the combined flows through S-173 and S-331 to the C-111 Basin will be less than what would have been discharged through these features currently.

- Field test operations may result in increased seepage to the L-31N Canal south of the S-331 pump station, prior to construction and operation of the C-111 south Dade Project North Detention Area.

- No changes to water supply operations are proposed.

Common Components: Action Alternatives

- S-355A and S-355B may be utilized to discharge to the L-29 as indicated under current operations and other future associated permit requirements, if available for use.

- The 2012 Water Conservation Areas, Everglades National Park, ENP-South Dade Conveyance System (WCAs, ENP, ENP-SDCS) Water Control Plan does not contain water management operating criteria for the planned spillway S-357N. All Action Alternatives include a testing protocol for S-357N.

- Field test duration will be a minimum of one year. If weather conditions do not provide sufficient data for a conclusive field test or other conditions warrant, the field test may be extended up to one year for a maximum of two years.

- The Corps does not plan to impose operational constraints for water quality that could restrict or otherwise limit inflows to NESRS.

- Approval of operational strategy and completion of NEPA documentation anticipated April 2015. Initiation dependent on weather conditions.

Alternatives for NEPA Assessment

ALTERNATIVE	G-3273 STAGE CONSTRAINT	C&SF OPS CHANGES	COLUMN 2 OPERATIONS
A	NO	NO	Column 2 Operations to manage WCA 3A during S-12 seasonal closures and high water as conducted under IOP/ERTP
B	Calendar Based Restrictions	S-333, S-334, S-356, S-357N	Same as A
C	Relaxed up to 7.5 Feet NGVD No Calendar Based Restrictions	Same as B	Column 2 Operations to manage WCA 3A during S-12 Seasonal Closure Period
D	Same as C	Same as B	No Column 2 Operations at S-334
E	Same as C	S-333, S-334, S-356, S-357N, S-197	Limited Column 2 Operations during S-12 Seasonal Closure Period and conditional extension to August 15th
F	Same as C	Same as B	Same as E
G	Same as C	Same as E*	Same as E

Magnitude of Change Column 2 Operations

CONCEPTUAL ALTERNATIVES

* Alternative G differs from Alternative E based on the trigger location used to define opening criteria for S-197 discharges and reduces IOP/ERTP Level 1 S-197 opening from 800 to 500 cfs.

Issues and Basis for Choice: Alternatives B, C, D

- Alternatives were evaluated based on achievement of field test objectives and constraints and potential environmental effects.
- Currently, the delivery of water to NESRS by S-333 must be reduced or discontinued when the stage at G-3273 exceeds 6.8 feet NGVD, except under Column 2 Operations (S-334 must match S-333).
- Relaxation of G-3273 to the L-29 stage limit of 7.5 feet NGVD and operation of S-356 will increase water deliveries to NESRS.
- Reliance on S-334 to lower stages in WCA 3A is expected to decrease due to the increased availability of discharge to NESRS.
- Alternatives which did not maximize hydrologic improvements to NESRS while modifying Column 2 Operations to maintain regulatory releases from WCA 3A were eliminated from detailed evaluation (Alternatives B and D).

Issues and Basis for Choice: Alternatives B, C, D

- Alternative C was identified as a potentially viable alternative pending further refinement to the operational criteria.
- Continued coordination and modifications to the operational criteria with members of the hydrology and hydraulics sub team and project delivery team led to the revision of Alternative C into Alternative E and Alternative F with and without S-197.
- October 15, 2014 PDT – USACE recommended development of hybrid from Alternatives E and F to better balance C&SF Project purposes
- The No Action Alternative, Alternative E, Alternative F, and Alternative G will be carried through the environmental effects analysis.

ALTERNATIVE	MEETS FIELD TEST OBJECTIVES	MEETS FIELD TEST CONSTRAINTS				ENVIRONMENTAL EFFECTS				REDUCTION IN FLOWS TO SDCS FROM WCA 3A
		L-29 Canal maximum operating limit of 7.5 feet, NGVD…	Maintain the authorized purposes of the C&SF Project and subsequent modifications (MWD/C-111SD/CERP*)	Meets current flood protection	Maintain the current multi-species objectives of the 2012 Water Control Plan and comply with the requirements of current biological opinions…	WCA 3A	ENP	EASTERN FLORIDA BAY	MANATEE BAY AND BARNES SOUND	
A	NO	YES	YES	YES	YES	0	0	0	0	0
B	YES	YES	YES	UNCERTAIN	YES	0	+	0	0	+
C	YES	YES	YES	UNCERTAIN	YES	0	++	0	0	++
D	YES	YES	YES	UNCERTAIN	YES	-	++	0	0	+++
E	YES	YES	UNCERTAIN	YES	YES	0	++	- -	- -	++
F	YES	YES	YES	UNCERTAIN	YES	0	++	0	0	++
G	YES	YES	UNCERTAIN	YES	YES	0	++	-	-	++

- NEGATIVE + POSITIVE 0 NEUTRAL (NO CHANGE FROM EXISTING CONDITIONS)

NOTE: CHART REQUIRES INTERPRETATION. ADDITIONAL JUSTIFICATION TO BE PROVIDED WITHIN THE EA. POTENTIAL ENVIRONMENTAL EFFECTS EXPECTED TO BE TEMPORARY.

CONCEPTUAL ALTERNATIVES

*CERP, C-111 SC Construction/Monitoring and Assessment Ongoing

Evaluation of Alternatives E, F, and G

- Compared to No Action Alternative, given the hydrological conditions experienced during IOP/ERTP, Alternatives E/F/G are anticipated to:
  - Increase number of days with WCA-3A unconstrained discharges to NESRS by up to 1176 days (up to 64% increase)
  - Increase the frequency and duration of L-29 Canal stages approaching the maximum operating limit of 7.5 feet NGVD (IOP/ERTP stage > 7.3 ~29%)
  - Reduce the total duration of WCA-3A regulatory releases to the SDCS by an estimated 832 days (81% reduction; frequency reduced from 23.5% to 4.5% of period of analysis), while also reducing seepage losses caused by lowered Column 2 canal operating levels (used if S-356 is closed)
  - Reduce the volume of WCA-3A regulatory releases to the SDCS by an estimated 85% (735 kAF under IOP/ERTP to 112 kAF)
  - Increase flood control releases from S-331 for 8.5 SMA mitigation and increase seepage to L-31N south of S-331, prior to completion of C-111 South Dade North Detention Area
    - Additional volume to L-31N Canal is expected to be primarily managed with the C-111 South Detention Area using S-332 B,S-332C, and S-332D, given the significant reduction in WCA-3A regulatory releases to the SDCS

Evaluation of Alternatives E, F, and G

- Compared to No Action Alternative, given the hydrological conditions experienced during IOP/ERTP, Alternative E is anticipated to:
  - Increase the frequency and duration of S-197 discharges to Manatee Bay/Barnes Sound from 14 days to a range of 29-64 days (timing unchanged)
  - Increase the total volume of S-197 discharges by between 33-111% (18kAF to a range between 24-38 kAF)
  - Increase flood control releases from S-18C and S-197 to mitigate for potential increased risk to flood protection for South Dade areas, which may be conditionally affected by operation of S-332D and/or the C-111 South Dade South Detention Area during the increment 1 field test

- Compared to No Action Alternative, Alternative F is not anticipated to change the frequency and duration of S-197 discharges or increase flood control releases from S-18C.

Evaluation of Alternatives E, F, and G

- Compared to No Action Alternative, given the hydrological conditions experienced during IOP/ERTP, Alternative G is anticipated to:
  - Increase the frequency and duration of S-197 discharges to Manatee Bay/Barnes Sound from 14 days to a range of 39-82 days (timing unchanged; durations are slightly higher than Alternative E since releases start at a lower discharge rate of 100 cfs)
  - Increase the total volume of S-197 discharges by between 11-67% (18kAF to a range between 20-30 kAF)
  - Reduce the frequency and duration of S-197 discharges from 200-800 cfs (initial S-197 gate opening range)
  - Increase flood control releases from S-18C and S-197 to mitigate for potential increased risk to flood protection for South Dade areas, which may be conditionally affected by operation of S-332D and/or the C-111 South Dade South Detention Area during the increment 1 field test

Next Steps

- Consider PDT comments and concerns
- Complete Environmental Assessment