ORIGINATION FORM

THE INFORMATION BELOW IS TO BE PROVIDED BY THE ORIGINATOR

(The person who receives or originates the issue and needs to forward the issue for action.)

Specification: 923

Subject: Water for Concrete

Origination date: February 23, 2010

Originator: Tom Malerk
Office/Phone: State Materials Office/352-955-6620

Problem statement: The current version of Section 923 contains FDOT terms and definitions that do not align with Department of Environmental Protection terms for different types of water. This has led to much confusion with District Materials personnel in the QC Program process and sampling and testing frequency.

Proposed solution: The proposed revision to 923 aligns FDOT terms and definitions with Department of Environmental Protection terms for different types of water.

Information source: The State Materials Office worked with the FDOT Environmental Management Office worked and the Department of Environmental Protection to draft this revision. For more information, contact Mike Bergin at 352-955-6666.

Recommended Usage Note: All Contracts

Estimated fiscal impact, if implemented: This revision includes language that requires the laboratory performing the Producer testing be qualified. This is a new requirement that will cost approximately $1400 per lab every 18 months for CCRL or CMEC accreditation and approximately $800 per year NELAC accreditation.

Implementation of these changes, if and when approved, will begin with the January 2011 letting.

For Specifications Office Use Only

Begin date: **File Number:**

Scheduled completion date: Projected process completion date.

Implementation team member: Specialist assigned to shepherd issue through the process.

Florida Department of Transportation

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M E M O R A N D U M

DATE: April19, 2010

TO: Specification Review Distribution List

FROM: Rudy Powell, Jr., P.E., State Specifications Engineer

SUBJECT: Proposed Specification: 9230000 Water for Concrete.

In accordance with Specification Development Procedures, we are sending you a copy of a proposed specification change.

This change was proposed by Susan Blazo of the State Materials Office to clarify requirements by aligning FDOT and DEP terms and definitions for different types of water and to add the requirement to use an accredited lab for water testing.

Please share this proposal with others within your responsibility. Review comments are due within four weeks and should be sent to Mail Station 75 or to my attention via e-mail at ST986RP or rudy.powell@dot.state.fl.us. Comments received after **May 17, 2010** may not be considered. Your input is encouraged.

RP/
Attachment

WATER FOR CONCRETE.
(REV 3-24-10)

SECTION 923 (Pages 848 - 849) is deleted and the following substituted:

SECTION 923
WATER FOR CONCRETE

923-1 General Requirements.

Water for use with cement shall be clear and free from ~~injurious amounts of~~ oil, *and injurious amounts of* acid, alkali, chlorides, organic matter, and other deleterious substances. It shall not be salty or brackish. If it contains quantities of substances which discolor it or make it smell or taste unusual or objectionable or cause suspicion, it shall not be used unless ~~service records of concrete made with it indicates that it is not injurious to the quality of the concrete or~~ approved by the ~~Engineer~~*Department*. *Water sources permitted includ~~in~~e potable water supplies that are approved by a public health department, open bodies of water, well water, reclaimed water, and recycled water. Reclaimed water shall be as defined in Chapter 62-610, F.A.C. Recycled water includes* ~~Wash~~*wash* water from mixer washout operations~~,~~ (stored in a lined settling pond). ~~,~~*All other sources of* ~~and recycled wash~~ water *not listed above shall be considered recycled and reclaimed water. Recycled and reclaimed* may be used only to sprinkle the coarse aggregate stockpiles and for ~~use in the~~ batching ~~of~~ concrete meeting the requirements of Section 347. ~~Samples arriving at the laboratory shall be allowed 14 days for completion of tests. The frequency of testing, by the Department, of approved sources will be as outlined in the Sampling, Testing and Reporting Guide. At the discretion of the Engineer, the Department may require additional compliance testing at any time, of any water source.~~

923-2 Evaluation of Water for Concrete.

923-2.1 General: Water from ~~city~~*potable* water supplies ~~that are~~ approved by a public health department *may*~~-~~ *be* ~~may be accepted~~*used* without *additional* testing. ~~Wash water from mixer washout and recycled wash water shall meet the requirements of 923-3.2. and 923-4. All other sources of water shall meet the requirements 923-3.3 and 923-4.~~ The concrete producer shall provide test data of water samples *from other sources*. *To determine chemical properties, use a laboratory accredited by the National Environmental Laboratory or Construction Materials Engineering Council Accreditation Program. To determine physical properties, use a laboratory accredited by the Construction Materials Engineering Council Accreditation Program or Cement and Concrete Reference Laboratory.*

Ensure the water test results from the testing lab are submitted to the concrete production facility within fourteen calendar days.

923-2.2 ~~Source~~*Initial Sampling and Testing Frequency:* ~~**Approval:**~~ *Open bodies of water and well water shall be initially sampled prior to use.* ~~Wash~~*Recycled and reclaimed* water ~~from mixer washout operations and recycled wash water~~ shall be tested once per week for four weeks initially, and thereafter once per month for four months prior to its use, provided that the results of the test samples comply with all the applicable limits. ~~All other sources shall test one sample initially.~~*Failing test results will result in restarting initial sampling and testing.*

923-2.3 ~~Source Sampling~~*Production Sampling and Testing Frequency*: Open bodies of water and recycled water shall be tested monthly. Well *water and reclaimed water shall* ~~and~~

~~other sources of water will~~ be tested once every three months. If the last eight consecutive well water *and reclaimed water* samples meet the requirements, then the sample frequency may be reduced to one sample every six months, as approved by the ~~Engineer~~*Department*. If a well water ~~sample~~ *or reclaimed water sample* fails once the frequency has been ~~changed~~*reduced*, then the sampling frequency shall revert back to once every three months.

923-3 Chemical Requirements.

923-3.1 Testing: All chemical analysis or test*s* shall be performed in accordance with *the* ~~AASHTO T 26 *T*~~*test* ~~*M*~~*methods listed in Tables 1 and 2* or Standard Methods for the Examination of Water and Wastewater.

923-3.2 ~~Reclaimed~~*Recycled and Reclaimed* Water: *Recycled and reclaimed* ~~Water~~*water* ~~from mixer washout and recycled wash water~~ shall be tested ~~and approved~~ before use and shall not exceed the ~~following allowable~~ limits *in Table 1*:

Table 1		
Chemical Test	*Test Method*	Maximum (%)
Equivalent Alkalis as (Na_2O + 0.658 K_2O)	*ASTM D 6919*	0.06
Total Solids	*AASHTO T 26*	5.00
Total Chlorides as ~~Sodium Chloride~~*Cl^-*	*ASTM D 512*	~~0.05~~*0.031*
Total Sulfate*s* as SO_4^{2}	*ASTM D 516*	0.30

923-3.3 ~~All~~ *Open Bodies of Water and Well Water* ~~Other Sources~~: *Open bodies of w*~~W~~ater *and well water* ~~from all sources, other than public health approved sources,~~ shall be tested ~~and approved~~ before use and shall not exceed the ~~following allowable~~ limits *of Table 2*:

Table 2		
Chemical Test	*Test Method*	Maximum (%)
Acidity or *A*~~a~~lkalinity *C*~~c~~alculated in terms of *C*~~c~~alcium *C*~~c~~arbonate	*AASHTO T 26*	0.05
Total *O*~~o~~rganic *S*~~s~~olids	*AASHTO T 26*	0.05
Total *I*~~i~~norganic *S*~~s~~olids	*AASHTO T 26*	0.08
Total *C*~~c~~hlorides as *Cl^-* ~~sodium chloride~~	*ASTM D 512*	~~0.05~~*0.031*
Total Sulfates as SO_4^{2-}	*ASTM D 516*	*0.30*

923-4 Physical Requirements for Mortar.

Mortar shall be tested in accordance with ~~AASHTO T 106~~*ASTM C 109* with the following exception: the mortar shall not be tested for flow. The mortar, composed of the sampled water, shall have a compressive strength of not less than 90% when compared to a mortar prepared using distilled water and tested at seven days.

Water of a questionable quality, as determined by the ~~Engineer~~*Department*, shall be subject to the acceptance criteria for time of set as required by ~~AASHTO M 157~~*ASTM C 1602*, Table 1.