Memorandum

MIAMI-DADE COUNTY

Date: April 24, 2007

Agenda Item No. 8(R)(1)(D)

To: Honorable Chairman Bruno A. Barreiro and Members, Board of County Commissioners

From: George M. Burgess County Manager

Subject: Supplemental Joint Funding Agreement with the United States Geological Service to Conduct a Groundwater Study at the South District Wastewater Treatment Plant

RECOMMENDATION

It is recommended that the Board of County Commissioners (Board) adopt the attached resolution approving a Supplemental Joint Funding Agreement between the Miami-Dade County and the U.S. Geological Survey (USGS) to conduct groundwater studies (GWS) of the Floridan Aquifer in the vicinity of the South District Wastewater Treatment Plant (SDWWTP).

SCOPE OF AGENDA ITEM

The impact of this agenda item is county-wide, as it will benefit the Underground Injection Program at both the South and North Wastewater Treatment Plants in Miami-Dade County.

FISCAL IMPACT/FUNDING SOURCE

The fiscal impact of this agenda item is $580,362 which is the portion of this Supplemental Joint Funding Agreement that will be funded by the Miami-Dade Water and Sewer Department (MDWASD). The funding source is existing water and sewer bonds sold.

TRACK RECORD/MONITOR

The USGS is a federal agency that is regarded as the national expert in the field of GWS.

BACKGROUND

MDWASD operates the SDWWTP located at 8950 SW 132 Street in southeast Miami-Dade County, where treated effluent is disposed via underground injection wells into the lower Floridan Aquifer at a depth below 2,400 feet. Seventeen wells have been constructed. Under the current Florida Department of Environmental Protection (FDEP) Operational Permit, thirteen (13) wells are permitted to operate and four (4) wells are permitted for operational testing. These wells are in full compliance with FDEP's and the United States Environmental Protection Agency (USEPA) rules and regulations and the permit conditions required for operation.

On April 27, 2004, the Board approved Resolution R-509-04 authorizing a Joint Funding Agreement with the USGS to conduct a GWS of the Floridan Aquifer. The objective of the GWS is to evaluate the past, present and future operations of the injection well system at the SDWWTP as mandated by FDEP Consent Order No. 03-1376. This joint funding agreement was written based on the premise that FDEP would approve the completed tasks required in the GWS within thirty (30) days of submittal to FDEP, and, if delays resulted from the FDEP approval process, the USGS would require additional funding to support project personnel. The goal was to complete the study in twenty-six (26) months, by June 2006.

To date, the USGS and MDWASD have completed Task Items 1- 7 of the GWS on time. Three of these task items require formal FDEP approval prior to completing subsequent tasks. Due to the complexity of these tasks, FDEP formal approval has been delayed. The GWS which was scheduled to be completed in twenty-six (26) months is now scheduled to be completed within forty-seven (47) months pending timely receipt of FDEP approval for tasks submitted in the future.

This supplemental joint funding agreement includes additional funding to support project personnel as a result of delays from the FDEP approval process, as well as enhanced technical services being provided by USGS. These additional services include more extensive field hydro-geological testing and calibration software with a higher degree of sophistication which will improve the model calibration process, and therefore, enable the USGS and MDWASD to better evaluate the injection well system. In addition, this supplemental joint agreement contains a task for water quality analyses that will include geochemical testing at the SDWWTP that will be utilized to support MDWASD's hypothesis that upward fluid migration is not taking place in the injection system at the North District Wastewater Treatment Plant.

Assistant County Manager

MEMORANDUM

(Revised)

TO: Honorable Chairman Bruno A. Barreiro and Members, Board of County Commissioners

DATE: April 24, 2007

FROM: Murray A. Greenberg County Attorney

SUBJECT: Agenda Item No. 8(R)(1)(D)

Please note any items checked.

_____ **"4-Day Rule" ("3-Day Rule" for committees) applicable if raised**

_____ **6 weeks required between first reading and public hearing**

_____ **4 weeks notification to municipal officials required prior to public hearing**

_____ **Decreases revenues or increases expenditures without balancing budget**

_____ **Budget required**

_____ **Statement of fiscal impact required**

_____ **Bid waiver requiring County Manager's written recommendation**

_____ **Ordinance creating a new board requires detailed County Manager's report for public hearing**

_____ **Housekeeping item (no policy decision required)**

_____ **No committee review**

Approved _____ Mayor
Veto _____
Override _____

Agenda Item No. 8(R)(1)(D)

04-24-07

RESOLUTION NO. _____

RESOLUTION APPROVING A SUPPLEMENTAL JOINT FUNDING AGREEMENT BETWEEN MIAMI-DADE COUNTY AND U.S. GEOLOGICAL SURVEY ("USGS") TO CONDUCT A GROUNDWATER STUDY OF THE FLORIDAN AQUIFER AT THE SOUTH DISTRICT WASTEWATER TREATMENT PLANT

WHEREAS, this Board desires to accomplish the purposes outlined in the accompanying memorandum, a copy of which is incorporated herein by reference,

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA, that the County Manager is hereby authorized, for and on behalf of Miami-Dade County, to execute the Supplemental Joint Funding Agreement between Miami-Dade County and the USGS, in substantially the form attached hereto, and to exercise the provisions thereof.

The foregoing resolution was offered by Commissioner , who moved its adoption. The motion was seconded by Commissioner and upon being put to a vote, the vote was as follows:

Bruno A. Barreiro, Chairperson
Barbara J. Jordan, Vice-Chairperson

Jose " Pepe" Diaz	Audrey M. Edmonson
Carlos A. Gimenez	Sally A. Heyman
Joe A. Martinez	Dennis C. Moss
Dorrin D. Rolle	Natacha Seijas
Katy Sorenson	Rebeca Sosa
Sen. Javier D. Souto	

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The Chairperson thereupon declared the resolution duly passed and adopted this 24th day of April, 2007. This resolution shall become effective ten (10) days after the date of its adoption unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

MIAMI-DADE COUNTY, FLORIDA
BY ITS BOARD OF
COUNTY COMMISSIONERS

HARVEY RUVIN, CLERK

By:_____
Deputy Clerk

Approved by County Attorney as
to form and legal sufficiency.

David M. Murray

January 31, 2007
FL016
04E0FL208014
7-2080-B8W00

MIAMI-DADE COUNTY WATER AND SEWER DEPARTMENT (WASA)

SUPPLEMENTAL JOINT FUNDING AGREEMENT NO. 1
FOR A GROUND WATER STUDY OF THE FLORIDAN AQUIFER IN THE VICINITY OF THE SOUTH DISTRICT WASTEWATER TREATMENT PLANT

THIS AGREEMENT supplements the Joint Funding Agreement for water resources investigations to provide for an increase in funding and an extension to the period of performance.

Paragraph 2a of the agreement is hereby changed to read as follows:

(a) $ 455,000 (original $300,000 plus the additional $155,000) by the party of the first part during the period July 01, 2004 to September 30, 2009

Paragraph 2b of the agreement is hereby changed to read as follows:

(b) $ 1,235,598 (original $655,236 plus $580,362) by the party of the second part during the period July 01, 2004 to September 30, 2009

U.S. GEOLOGICAL SURVEY **DUNS #: 137784026**	**MIAMI-DADE COUNTY WATER AND SEWER DEPARTMENT (WASA)**
BY: _____	BY: _____
TITLE: DIRECTOR, FISC	TITLE: _____
DATE: _____	DATE: _____

Extension of the cooperative project between the US Geological Survey and Miami-Dade Water and Sewer Department at the South District Waste Water Treatment Plant (SDWWTP)

The USGS is requesting an extension, with an associated budget increase, for the Ground Water Study (GWS) of deep-well injection at the SDWWTP. An extension is required for this project due to the following circumstances:

1. **Scheduling delays associated with the FDEP approval process of individual tasks**—Each task of the GWS requires approval by the FDEP. In nearly every case, the approval process has taken longer than originally planned. Presently, the GWS is over 1.5 years behind the original schedule, primarily due to delays in the FDEP approval process.

2. **Delay in obtaining SDWWTP historical data**—In the original proposal, the County had 4 months to provide historical site records for the USGS to analyze and include in the model. In December, 2005, approximately one year past the deadline, the USGS and the County located 10 years of monitoring well pressure data that was thought to have been misplaced. Accordingly, the modeling efforts were revised to incorporate this pressure data.

The original Joint Funding Agreement between Miami-Dade County and the USGS states, "Many of the tasks listed in this proposal are subject to approval by FDEP. This proposal was written under the assumption that FDEP would approve all tasks without delay. If significant delays result from the FDEP approval process, the USGS will require additional funding to support project personnel."

The USGS has completed or is performing several new technical activities not included in the original proposal. New tasks have been performed to capitalize on time made available during the FDEP review process that will help improve overall model calibration and ultimately, the success of the GWS. The revised budget for the extension is attached.

Technical activities (tasks) not included in original proposal:

1) **Aquifer performance test (APT)**—USGS personnel helped design the APT that is currently being conducted at the SDWWTP. The test

began in February, 2006, and has continued to the present. USGS personnel also obtained and installed pressure transducers at 24 wells, and routinely verified that data collection was proceeding as scheduled. Specific costs include:

a. Salaries for Christian Langevin and Alyssa Dausman
b. Rental of pressure transducers from Insitu for 6+ weeks
c. Purchase of 3 pressure transducers (currently installed in the IW-2 pump house at the SDWWTP)

2) **Use of sophisticated parameter estimation software to improve model calibration and reliability**—USGS personnel are using PEST and UCODE to calibrate model and support proposed location of additional monitoring well. Use of these sophisticated packages require more time than was originally planned.

3) **Evaluation of multiple conceptual models**—Preliminary model results suggest that upward fluid migration at the SDWWTP can be explained using several alternative conceptual models. A formal evaluation of each of these conceptual models is being conducted as part of this study.

4) **Development of a suite of calibrated models (in lieu of one model)**—To ensure the accurate prediction of the fate and transport of deep-well injectate at the SDWWTP, the USGS has developed a steady state, pre-injection model that generates initial conditions for the injection model.

   a. Pre-injection model
   b. Injection/Prediction model
      i. Diffuse vertical flow
      ii. Delray dolomite layer included without vertical dissolution features or fracture conduits
      iii. Delray dolomite layer included with vertical dissolution features and fracture conduits

5) **Development and incorporation of heat transport into the SEAWAT computer program**—The USGS is developing the methods to include heat transport as part of the SDWWTP modeling effort. This additional work will improve the model by including the effects of temperature on fluid density and may also improve the

model calibration by using water temperature as a tracer of injected effluent.

6) **Addition of unforeseen hydraulic stresses in the predictive simulations**—The USGS has been asked to include the effects of two Floridan Aquifer hydraulic stresses on the fate and transport of deep-well injectate. These stresses include among others:
   a. New production wells used for cooling at FPL's Turkey Point facility
   b. Planned production wells for RO at Hialeah

7) **Design and implementation of a water quality analysis at the SDWWTP**—Additional water quality sampling is going to be included as requested by the County. This work was not included in the original agreement. The water quality task will include the collection of 60 samples, which will be analyzed for helium and tritium.

Deep Well Injection Study-Revised Budget

	2004	2005	2006	2007	2008	2009	
	Year 1	Year 2	Year 3	Year 4	Year5	Year6	Total
USGS	$50,000	$100,000	$100,000	$50,000			$300,000
MDWSD	$148,088	$267,184	$153,601	$86,363			$655,236
USGS (extension)				$50,000	$75,000	$30,000	$155,000
MDWSD (extension)				$303,696	$200,895	$75,771	$580,362
Total	$198,088	$367,184	$253,601	$490,059	$275,895	$105,771	$1,690,598