Agenda Item 6-d
Meeting of 10/1/08

RESOLUTION 08-12204

A RESOLUTION TO ADOPT AN INTEGRATED WATER RESOURCES PLAN TO PROVIDE A SUSTAINABLE WATER SUPPLY SOURCE FOR A 20-YEAR PLANNING PERIOD; AUTHORIZING THE CITY MANAGER TO MEET THE OBJECTIVES OF THE PLAN AND TO DEVELOP STRATEGIES TO IMPLEMENT THE ALTERNATIVE SELECTED BY CITY COUNCIL; PROVIDING AN EFFECTIVE DATE.

WHEREAS, the City of Naples owns and operates a water utility serving approximately 68,550 people within its utility service area; and

WHEREAS, projected population growth within the utility service area is expected to increase from 68,550 to 90,193 over a 20-year planning period; and

WHEREAS, the average per capita water use within the service area is 270 gallons per day (gpd) and, in order to continue use of this water supply from the surficial aquifer, the average per capita water use must be below 200 gpd; and

WHEREAS, the City's current potable and irrigation (reclaimed) water facilities will provide 33.0 million gallons per day (mgd) and future demand will require 48.0 mgd over the 20-year planning period, of which approximately 70% will be used for irrigation water; and

WHEREAS, the Naples water utility must develop a plan to meet anticipated water demand of its service population over a 20-year planning period; and

WHEREAS, in February, 2008 the Naples City Council commissioned the development of an Integrated Water Resources Plan to meet projected water demand within its utility service area over a 20-year planning period; and

WHEREAS, the Integrated Water Resources Plan identified ten alternative sources of water that could potentially meet current and future water demand; and

WHEREAS, the Naples City Council met in a Workshop Session on June 2, 2008, to review the recommendations found in the Integrated Water Resources Plan and provided a strategic direction for the development of the future water supply and storage resources;

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF NAPLES, FLORIDA:

Section 1. The Integrated Water Resources Plan dated July 2008 is hereby accepted and acknowledged as a "living document" for the purposes of developing a strategy to provide future potable and irrigation water demand within the City's utility service area.

Section 2. Alternative 2 provided in the Integrated Water Resources Plan is the selected alternative, which includes the development of:

- Aquifer storage and recovery
- Use of water from the Golden Gate Canal supplemented by available stormwater
- Development of brackish groundwater wells with treatment by a new reverse osmosis plant

Alternative 2 is amended to minimize the use of brackish groundwater if ASR and the Golden Gate Canal water source are successful.

Section 3. This strategic direction allows for implementation of the recommended capital improvements for Alternative 2 by giving development of ASR storage wells and the Golden Gate Canal as a water supply a higher priority than brackish groundwater. City Council seeks to leave open the possibility of expanding these resources further and defer brackish groundwater acquired in the future and summarized in the attached Exhibit "A".

Section 4. The City Council shall meet at least annually to thoroughly review the status and progress of the Integrated Water Resources Plan, to revise the long-term capital improvement program, to develop the annual budget, and to alter strategic objectives in order to accomplish the goals of the Plan.

Section 5. This resolution shall take effect immediately upon adoption.

PASSED IN OPEN AND REGULAR SESSION OF THE CITY COUNCIL OF THE CITY OF NAPLES, FLORIDA, THIS 1ST DAY OF OCTOBER, 2008.

Bill Barnett, Mayor

Attest:

Tara A. Norman, City Clerk

Approved as to form and legality:

Robert D. Pritt, City Attorney

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Date filed with City Clerk: 10-14-08

October 1, 2008

Exhibit "A"
Integrated Water Resources Plan
Summary

In February, 2008 City Council commissioned the development of an Integrated Water Resources Plan to identify water supply needs and sustainable water supply sources for a 20-year planning period.

The City of Naples currently provides water to a service population of about 68,550, half of which are in the corporate limits of the City (peak season). Water is provided from wells drawing water from the surficial aquifer in the East Golden Gate and Coastal Ridge well fields withdrawing from the lower Tamiami aquifer. The water system is supplemented through the use of effluent water for irrigation.

The current water supply cannot meet projected demand over the 20-year planning period. In order to sustain existing water supplies, it is necessary to expand supply from alternate sources to meet projected demands. A goal of the Integrated Water Resources Plan is to identify sufficient sources of water and the funding that will be required to meet potable and irrigation water demands through 2028, while sustaining natural resources and enhancing Naples Bay. The objectives include the following:

1. Public Health and Safety - to provide the highest priority for water supply to ensure health and safety are maintained. This includes compliance with current and future drinking water regulations and availability of fire flow.
2. Enhancement of Naples Bay - to reduce freshwater discharges to Naples Bay through the utilization of the Golden Gate Canal or stormwater as a supplemental water supply source and eliminate effluent discharge on the Wastewater Treatment Plant.
3. Protection of Other Natural Resources - to protect wetlands, groundwater and other natural resources, the Plan focuses on sustainable water supply projects that protect natural resources to the extent possible.
4. Compliance with Regulatory Agency Goals - to comply with regulatory agency goals is essential to a successful water supply plan. The Integrated Water Resources Plan must be compatible with the goals and priorities outlined in the Lower West Coast Water Supply Plan and other regulatory guidance publications.
5. Compliance with Customer Expectations - water supply projects should meet customer expectations for aesthetic issues such as color and hardness in drinking water and chlorides in irrigation water.
6. Compliance with Funding Limitations - projects identified in the Integrated Water Resources Plan should be consistent with availability of funding for the first five years of the 20-year Capital Improvement Program.

The estimated populations of the water service area as of 2007 are 35,000 within the corporate limits during peak season and 33,000 in the unincorporated areas of Collier County. During the 20-year planning period, the permanent and seasonal population for the City of Naples is expected to increase from 35,173 to 40,595.

Population projections outside of the City limits will increase by 16,220, from 33,378 to 49,598. Population projections estimated for the total

utility service area population for the 20-year planning period will grow from 68,550 to 90,193.

The average per capita water use within the service area is around 270 gallons per day (gpd). Currently, about 65% of the per capita water is used for landscape irrigation. Therefore, the average per capita landscape irrigation demand is 175 gpd and the average per capita potable demand is 95 gpd.

As the City proceeds with the renewal of the consumptive use permit to allow a continuation of its water supply from the surficial aquifer, the South Florida Water Management District has advised that the use of water from the existing well fields must be below 200 gpd. To meet this expectation and to meet future water demand, expansion of alternate water supply sources is necessary.

It is projected that 70% of the water will be used for landscape irrigation while 30% will be used as potable. Therefore, it is prudent to seek alternative lower quality water sources to meet projected irrigation needs and preserve high quality groundwater supplies for potable uses.

Use of the existing well fields (Coastal Ridge and Golden Gate) will be limited to 24.0 mgd. Total future potable and irrigation demand is 40.0 mgd. The difference will have to be met through alternate water supplies. Adding a 20% reserve factor, the facility capacity should increase from the current capacity of 33.0 mgd to 48.0 mgd, which will be met with the following water supply sources.

Existing well fields	24 mgd
Reclaimed water	9 mgd
New alternate water supply sources	15 mgd
Total facility capacity	48 mgd

The Integrated Water Resources Plan evaluated ten alternatives to meet the 20-year water supply needs. Capital costs were developed for alternatives which were considered feasible based on the water quality and quantity available. For potable supply, these potential sources included brackish groundwater from the Lower Hawthorne Aquifer and seawater from the Gulf of Mexico. For irrigation water supply, potential new sources included the Golden Gate Canal supplemented with stormwater. Water from the Gordon River or Naples Bay was considered in the Plan, but due to the variability in quantity and quality, these sources were not considered feasible alternatives.

Alternative 1 of the Plan had the lowest anticipated capital cost. The alternative provides a 15.0 mgd expansion to the potable water system with the construction of a reverse osmosis water treatment plant at the same site as the existing water treatment facility to treat brackish groundwater from the Lower Hawthorne Aquifer.

Alternative 2 involves expansion of the potable water system, but with the construction of a smaller reverse osmosis water treatment plant, use of water from the Golden Gate Canal to supplement the irrigation water system, and the use of Aquifer Storage Recovery (ASR) for underground storage of water.

Alternative 3 does not expand the potable water system at all, and it relies solely on the expansion of the irrigation water supply system with canal and stormwater to meet future water supply needs.

Alternative 2 scored the highest when considering non-cost advantages such as environmental issues. Alternative 2 is the recommended alternative. The five-year CIP cost is $67.5 million, which includes:

- Regulatory upgrades to the existing water treatment facility
- Exploratory well program for brackish water supply
- Exploratory well program for concentrate disposal
- Exploratory well program for ASR
- Pilot testing and preliminary design for reverse osmosis water treatment plant
- Golden Gate Canal intake structure and piping
- Potable water main interconnect to reuse storage tanks for backup water supply
- Reclaimed water system expansion

Of the $67.5 million plan for the first five years, it is anticipated $55 million will be funded with a bond. Current and approved utility rate increase will fund the capital program over the next five years.

During the City Council Workshop meeting of June 2, 2008, the alternatives provided in the Integrated Water Resources Plan were presented to City Council. City Council gave staff a strategic direction and stressed that the Integrated Water Resources Plan should be a living document that is updated regularly. The strategic direction included developing the water supply and storage resources listed below in order of importance to City Council.

1. Aquifer storage and recovery
2. Golden Gate Canal water supplemented by stormwater
3. Brackish water wells with treatment by a new reverse osmosis plant

The strategic direction fits within the recommended capital improvements for Alternative 2. However, by giving ASR and the Golden Gate Canal a higher priority than brackish groundwater, City Council sought to leave open the possibility of expanding these resources further and deferring brackish groundwater required in the future. This strategy is somewhat of a hybrid between Alternatives 2 and 3 in that it seeks to minimize use of brackish groundwater if ASR is successful, but recognizes the need to develop a brackish groundwater supply for the future if required. Should population growth be lower than projected, construction of brackish wells and a reverse osmosis treatment plant can be deferred to future years. City Council requested that City staff provide Council with an annual update on the program.

Water supply Alternative 2 maximizes the use of the existing lime treatment plant and well fields supplemented by alternate sources as follows:

- Potable water supply
  - 24 mgd lime softening - existing wells
  - 10 mgd (R/O) - new Lower Hawthorne well field

- Irrigation water system supply

- 9 mgd reclaimed water
- 5 mgd Golden Gate Canal water or stormwater
- Canal or stormwater ASR

Again, water supply Alternative 2 is modified to emphasize expansion of the irrigation water system supply as the first priority, followed by the development of a 10.0 mgd reverse osmosis plant in future years should such additional capacity be required.

Irrigation water supply for Alternative 2 includes maximizing the use of projected 9.0 mgd of reclaimed water that will be available over the planning period. It will be supplemented with 5.0 mgd utilizing water from the Golden Gate Canal or stormwater. The supplemental irrigation water would allow for the expansion of the irrigation water system, thereby increasing the amount of irrigation water and decreasing the amount of potable water used for irrigation. This alternative includes the following capital improvements:

- Intake structure and raw water pump station on the Golden Gate Canal,
- Piping from the raw water pump station to the canal water treatment site,
- Actiflo treatment process, disinfection system, clear well, and transfer pump station at the canal water treatment site,
- Transfer pumping from the canal water treatment site to the wastewater plant site for blending with reclaimed water,
- A new 5 mg ground storage tank for reclaimed water storage at the wastewater treatment plant site, and
- Expansion of the reclaimed water system to shift the irrigation demand from potable water to reclaimed water. This alternative includes an ASR system and the associated transfer piping capable of providing water to the canal water treatment system during dry periods when the water from the canal is limited. A 50-year analysis of the Golden Gate Canal suggests that sufficient water will be available for at least ten months out of the year.

Because of the strategic decision to change priorities within Alternative 2, a revised 5-year CIP will be developed as an amendment to the CIP shown in the Plan.