

PASCO WATER TEAM 2009 SUMMARY REPORT

INTRODUCTION

This is the eighth annual report of the Pasco County Water Team. This report focuses on the state of the Pasco County's water resources, the current efforts being undertaken and future efforts being considered by Tampa Bay Water to affect environmental recovery of the areas stressed by the over-pumping of groundwater in the major wellfields in Pasco County.

SUMMARY REPORT FOR 2009

Historically, Tampa Bay Water (TBW) relied entirely upon groundwater for all of its water supply. Over-pumping of wellfields in the county caused significant environmental damage. The interlocal agreement creating TBW between the six member governments required that TBW find alternative sources of water and minimize groundwater pumping. Those alternative sources of water now include the use of surface water from the Hillsborough and Alafia Rivers as well as the Tampa Bypass Canal, and the use of water produced at the Tampa Bay Desalination Plant. (TBW's system map is attached as Exhibit 1.)

Tampa Bay Water endeavors to continue to diversify the sources of water supplying the region. Groundwater is still the primary source of drinking water for the region with approximately 58% of the total supply (87 million gallons a day (mgd)) coming from the ground: and a majority of that comes from Pasco County. The Surface Water Treatment System is now responsible for more than 40 mgd annual average, and the desal plant, the largest of it's kind in the country, is now capable of producing its rated capacity of 25 mgd.

The expansion of Tampa Bay Water's Surface Water Treatment infrastructure and the desal plant have enabled Tampa Bay Water to reduce groundwater extraction from the eleven consolidated wellfields, six of which are in Pasco County, from 158 MGD to 121 MGD by 2002 and then down to the mandated 12 month running average 90 MGD target. The purpose of the mandated reduction was to facilitate environmental recovery in stressed wellfields. TBW did reach the 90 MGD target by the initial deadline of December 2008; but later exceeded that limit in March 2009. Because of the continuing rainfall deficit and problems with the reservoir and the desal plant, TBW did not again gain compliance with the 90 mgd pumping limit until December 2009. (Exhibit 2 shows the 12-month running and the 90 mgd regulatory limit, the exceedances and later compliance.) The robust effort that was undertaken by the six member governments to conserve water during that time of unprecedented drought and supply shortage led to reduced demands across the tri-county region. The Southwest Florida Water Management District realized the effort and effectiveness of the conservation campaign and levied a penalty for that violation (\$50,000) that was somewhat less than anticipated.

Environmental recovery and the pumping reductions are facilitated through the implementation of TBW's Optimized Regional Operations Plan (OROP). The OROP forecasts water availability from the three sources that supply the regional water in an effort to shift production between the eleven groundwater sources, desalinated water and surface water sources. The OROP is a tool to ultimately shift water delivery from groundwater sources to delivery from surface water and the desalination process to the greatest extent practicable by assessing water level conditions at designated control points. (Exhibit 3 shows TBW's wellfields and OROP control points.)

The surface water component of TBW's supply is water harvested from the Hillsborough River, Alafia River and the Tampa Bypass Canal. The program involves the siphoning of

water from those water bodies and delivering it to the regional surface water treatment plant and/or the 15 billion gallon C.W. "Bill" Young Reservoir for use during the dry season. The Reservoir, which went on-line in March 2005, is expected to increase surface water supply by about 20 mgd annual average. TBW's typical operating protocol for the reservoir is to fill it during the wet season when excess flows are available, and then use that stored water during the dry season. TBW's surface water protocol also calls for use of high river flows to supply demand during typically wet summer months thereby relieving groundwater sources.

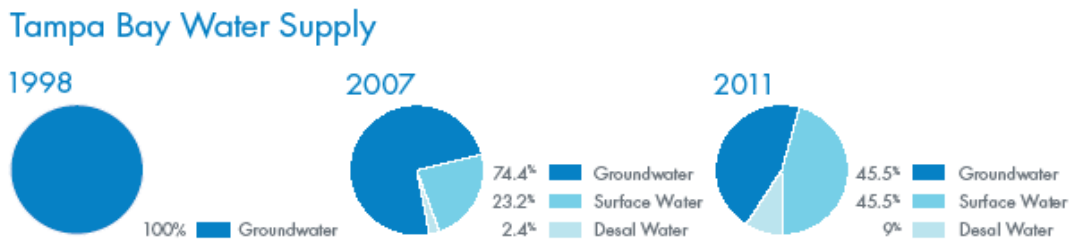
TBW, however, modified its protocol in the summer of 2006 due to the lower than normal rainfall that resulted in less water available to be stored in the reservoir. At that time, available surface waters were available at about one-third of normal rates. In response, at its August 2006 Board meeting, TBW modified the protocol to use more groundwater during the late summer and early fall so that surface water could be diverted to the reservoir for storage for the 2007 dry season. That same protocol was used for 2007 and 2008. In 2008, however, TBW was prevented from filling the reservoir to capacity due to cracking and the infiltration of water into the underlying soil cement lining. Therefore, Florida's Department of Environmental Protection only allowed filling the reservoir to about half of its capacity.

Rainfall deficits and associated reductions in surface water flows in the Hillsborough River and Alafia River Basins in the summer of 2008 forced Tampa Bay Water to start using the reservoir's supplies six months earlier than anticipated. The continuing lack of normal rainfall during 2008, historically low levels and the reduced supply prevented TBW from diverting any more water from the three contributing water bodies to replenish the reservoir. The reservoir's supply was exhausted on March 12, 2009. At that time the TBW Surface Water System went off-line and the region became solely dependent on water produced at the desal plant and the region's groundwater supplies.

During 2009, however, TBW was able to perform interim repairs to the cracked soil cement liner, which allowed TBW to use the reservoir's full storage capacity. The return of closer-to-normal rainfall in May resulted in improving ground and surficial water tables across the region. The rebound of surficial flows and temporary repairs to the reservoir liner enabled Tampa Bay Water to harvest higher flows from the respective systems for storage in the C.W. Bill Young Reservoir. Continued rainfall through the summer allowed TBW to completely fill the reservoir. El Niño brought consistent rainfall through the winter which further improved water levels throughout the region and TBW had a full reservoir in early 2010.

In 2009, TBW began the process of developing a permanent fix for the reservoir liner cracking problem. The process is expected to take five years to complete with construction on the fix starting in 2012. The reservoir will have to be off-line for perhaps two years to effectuate the necessary repairs and/or improvements. The expansion of the Surface Water Treatment Plant to 120 mgd capacity will help mitigate the loss of the reservoir. The expansion is to be complete by the end of 2010. TBW has hired a strategic procurement advisor, KPMG, and also hired a design advisory engineer in CH2M Hill, Black & Veatch as Owner's engineer, Special Counsel as well as a peer review panel of experts to review the designs options that will presented by the potential bidders for the work. TBW has decided to pursue a Design/Build procurement and TBW staff will do the contractor selection. During the time the repairs are being made, the reservoir will remain empty and the region will have to rely on groundwater supplies, water produced at the desal plant and water recovered directly from the surface water sources.

The Tampa Bay Desalination Plant, the largest desal plant in the country, has been operational since December 2007. The benefit of a drought resistant supply from the desal plant is certainly welcome, but it alone will not sustain the region's water demand in times of surface water shortage. The 25 MGD maximum production of the desalination plant only supplies approximately 10% of the regional demand. TBW is, however, sensitive to the high cost of desalinated water due to the intensive energy use and chemicals required. Approximately 50% of TBW's electricity budget is used to produce that 10% of water for the region. Due to this cost sensitivity, TBW has for the past two years, planned to use the desal plant at only 15 – 18 mgd annual average. Also, in early 2009, the desal plant experienced problems with electrical components that prevented operating at full capacity. TBW also experienced water temperature problems. The optimal temperature range is 95° - 103°. Water temperatures over 104° require plant shut-down because the membranes could be damaged. Conditions improved and the process problems were addressed in the spring of 2009 and TBW was able to meet the final two performance milestones – operating at 25 mgd for 4 months and 20 mgd for 12 months – by the end of January 2010. TBW thereby qualified for the final payments from SWFWMD.



Water Supply Planning

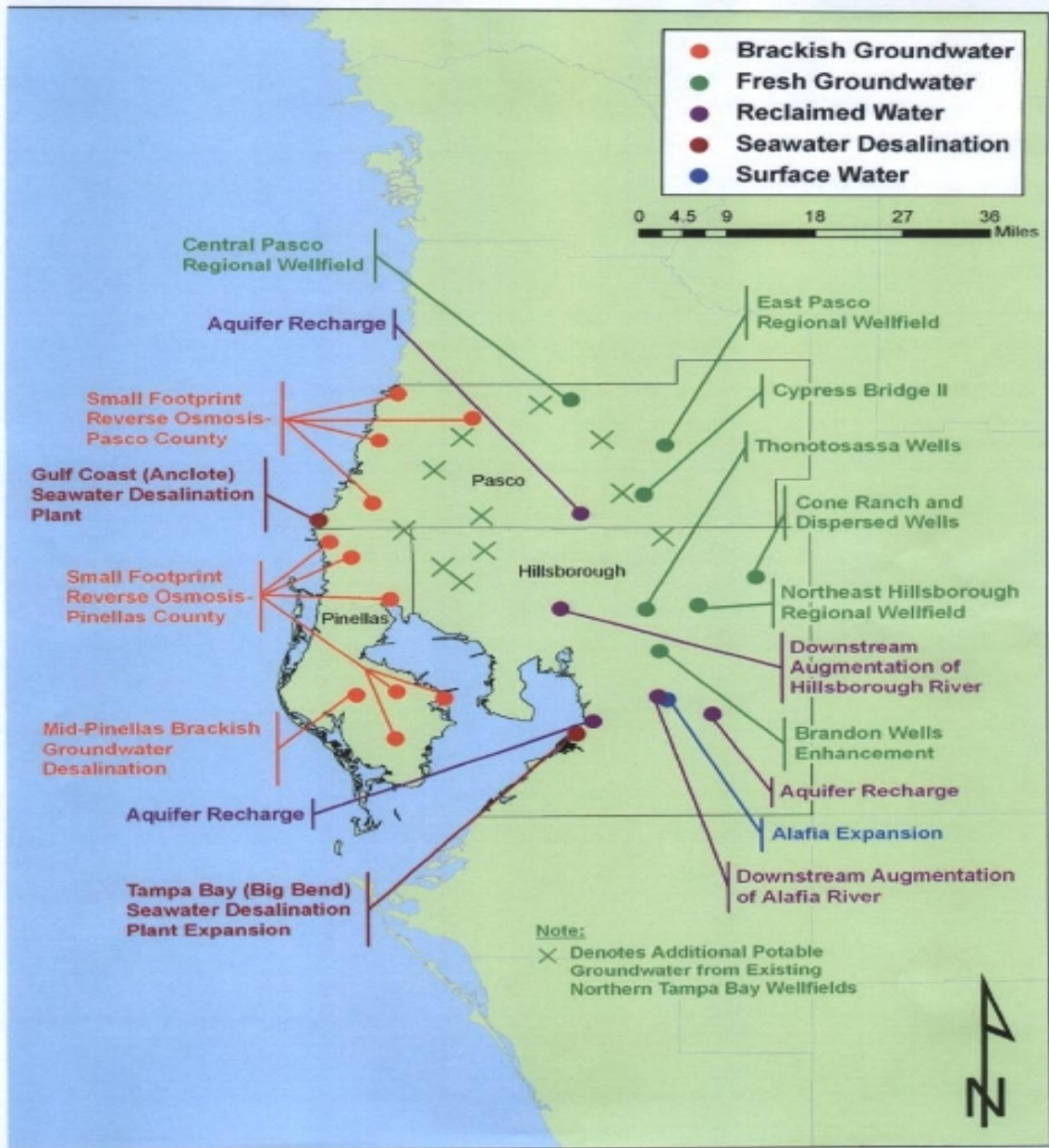
In December 2008, TBW completed the update to its Long-Term Water Supply Plan and Master Water Plan, a process that began in October 2006. The planning process included recommendations on source water protection, demand management, reclaimed water in addition to the Master Water Plan update. TBW started from a large project list shown here, from which the TBW Board selected six projects to move forward for further evaluation.

The six projects include: small footprint reverse osmosis in Pinellas County, Gulf Coast Desalination (at Anclote Power Station), Tampa Bay Desalination Plant expansion, further surface water expansion, from the Alafia River, development of Thonotosassa Wells and additional water from existing Northern Tampa Bay Wellfields. (Further information on these projects can be found in last year's water team report.) The additional water from existing wellfields would not be pursued until after the Consolidated Wellfields permit renewal expires in 2020 as TBW cannot yet determine the sustainable level of pumping from those wells. (This issue is discussed further in the "WUP Renewal" section below.)

The cities of Tarpon Springs and Oldsmar are each developing reverse osmosis (RO) water treatment production systems. The resulting brine bi-product from the Tarpon Springs RO process is going to be transferred from their facility in Pinellas County to Anclote Power Generation Facility in southwest Pasco County for discharge into the power plant's cooling canal. With the development of their own water systems, those cities will become independent from the Pinellas County Utilities system and, consequently, from the Tampa Bay Water regional system. Therefore, Tampa Bay Water will devalue their own reverse osmosis option at this time. They will however monitor the developments of those

systems and if either of those municipalities decides not to move forward, TBW will reevaluate the project for consideration in helping meet long term demand.

TBW moved forward with Phases A and B of the Surface Water Expansion Project. This phased project involved modifying the existing permits in order to capture additional flows from the Hillsborough and the Tampa Bypass Canal without breaching any of the established MFL parameters. Phases A and B of this project involved expansion and improvement of existing infrastructure to accommodate 120 MGD from the current yield of 72 MGD at the Regional Surface Water Treatment Plant. The successive Phases C and D of the project, now called *Surface Water Enhancements and Recharge Project* involves the building of a second reservoir and are designed to capture even more flows from the Alafia River or capturing more water from the Hillsborough River and then augmenting downstream flow with reclaimed water. These projects are now on hold due to the reduction in demand.



TBW had anticipated having to decide in 2010 which of these projects to build because new supply was forecasted to be needed in 2017. TBW anticipates that it takes seven years to bring a new supply online. This changed, however, in 2009 due to the drop in demand as a result of drought and the slow economy. The need to decide on new projects has been pushed back three to four years. Planning efforts were cutback 60% for WY 2010. Many activities have been eliminated or deferred. Planning efforts are forecasted to be cutback 70% for WY 2011. Based on new demand forecasting new supplies will not be needed for 10-15 years. Demand is down approximately 12%. TBW's economic projections show slow growth and gradual recovery over the coming years.

Pasco County Utilities will continue to follow these developments very closely. If any additional groundwater is to be taken from Pasco County; there should be extensive research and scientific proof (from both SWFWMD and TBW) that the withdrawals will not cause environmental impacts that would further degrade the environment of the county. We will also follow the evaluation of the Gulf Coast Desal project in addition to TBW's other efforts.

Production Levels, Demand and Rainfall Conditions

Due to two relatively wet years, 2003 and 2004, and the corresponding success of Tampa Bay Water's Enhanced Surface Water System; the pumping at the eleven wellfields averaged 79 mgd and 86.2 mgd, respectively. 2005, 2006, 2007 and 2008 were below normal rainfall years that revealed the limitations of Surface Water System and the need for an operable desal plant. The pumping at the eleven wellfields averaged 99.5 mgd for 2005, 113.45 mgd for 2006, 115 mgd for 2007 and 86 mgd for 2008. The pumping average climbed to about the 90 mgd compliance limit over the course of 2009, reaching a peak of 104 mgd in May. With the return of near normal rains, TBW was able to regain compliance in December 2009. With continuation of El Nino conditions in the Fall of 2009 and Winter of 2010, TBW was able bring the 12 month running average down to 68 mgd in May 2010.

As reported in last year's report, the drought and the water supply shortage, which began in 2006, progressively worsened since the issuance of the Water Shortage Order in January of 2007 and reached its peak in 2009. Exacerbated by the continued lack of rainfall, approximately 70% below normal for the already dry month of March 2009, the District issued a Phase IV (Critical) Water Shortage on March 31, 2009. The restrictions associated with the Phase IV Water Shortage were the toughest ever imposed in the region. Abnormally high rainfall in May 2009 helped to ease drought conditions and enabled TBW to re-start the Surface Water Treatment Plant and add approximately one billion gallons to the reservoir, but the long-term rainfall deficit continued. The region received a substantial amount of rainfall and surface water flows increased during the summer and continued with El Nino conditions in the fall of 2009 and winter of 2010. With the improving conditions SWFWMD gradually reduced its water shortage orders beginning a reduction from Critical (Phase IV) to Extreme (Phase III) in August 2009 and down to Phase II in early 2010. TBW was able to reach full capacity in its reservoir in March 2010.

The plentiful rainfall, continuing conservation and short term demand management strategies due to the drought and the effects of the economy, all worked to keep demand down. Demand is down approximately 12%, as shown on the attached Exhibit 4, comparing WY 2010 with 2009.

During the year, PCU continued its several potable water conservation initiatives. Foremost of which is the Pasco County Master Reuse System which is comprised of a 100 million gallon reclaimed water reservoir, 12 storage tanks, 12 pump stations and 600 miles of transmission lines to deliver 19.8 million gallons of reclaimed water daily to customers throughout the county. A 500 million gallon reservoir is in the final permitting phase and construction is scheduled to begin this year. The storage capacity, infrastructure and customer base of the reclaimed water system makes the PCU Master Reuse System one of the most dynamic in the country. The system is responsible for approximately 2.1 billion gallons of potable water saved annually.

The Low Flow Toilet Rebate program was commenced in July of 2008. Eligible Pasco County Utility customers can receive up to a \$100 dollar rebate if they replace their 3.5 gallon or higher per flush toilet with a low-flow (1.6 gpf) or high efficiency toilet (1.2 gpf). Up to a \$180 rebate will be rewarded if the customer replaces two toilets. As of June 2010, 891 toilets have been replaced. Upon completion of the program, approximately 10,000 gallons of potable water will be saved daily and 11 million gallons saved annually.

Automated Meter Reading technology will enable PCU to better account for the water resources of the county. AMR meters enable field representatives to quickly and accurately obtain usage data. That data will enable PCU to identify leaks, identify watering restriction violators, and enable PCU to compare data and perform trend analysis on any given account. To date, 7,130 reclaimed meters have been installed. All of the 11,000+ reclaimed customers have had Automatic Meters installed and more than 24,000 potable water meters have been replaced. The remaining 90,000+ potable water meters are scheduled to be replaced in the next five years. The AMR replacement program will allow PCU to better manage water resources and minimize losses throughout the system.

WUP Renewal

At the end of 2010 the Consolidated Water Use Permit (WUP) for the eleven wellfields, expires. In April 2008, TBW began the process of preparing the renewal application. The process consisted of monthly meetings with SWFWMD and the Member Governments through October 2009. We actively participated in the process as it is critically important to Pasco County to ensure that pumping level for the Consolidated Wellfields is set at a quantity that will protect the ecological resources of the County. We were assisted by Metcalf & Eddy in the renewal process.

TBW has submitted its renewal application and it is currently under review at SWFWMD. TBW is asking to keep the permit at the current 90 mgd limit. Early in the pre-application meeting process, the staff members came to a general consensus that TBW should only pursue a straight renewal at 90 mgd and continued monitoring. The District staff emphasized that there is not enough data showing the effects of pumping at the 90 mgd or lower pumping levels therefore requiring a recovery strategy and mitigation will allow the District to renew the permit at the current 90 mgd level in compliance with its rules.

Had TBW maintained pumping at or near 90 mgd until 2010 there would have been a substantial period of record from which to assess the environmental impacts of this level of groundwater withdrawal. Due to the drought, the delays with the desal plant and TBW water production decisions, the 90 mgd was not consistently met over the past few years, albeit TBW was not legally required to do so. (TBW did meet the 90 mgd requirement at its reporting deadline of December 31, 2008, but later exceeded the 90 mgd in March 2009 as discussed in the previous section of this report. TBW gained compliance in December 2009.)

District staff believes that five to six years of consistent pumping at or below the 90 mgd limit will provide the data needed to determine the long-term sustainability of that pumping level so at the next renewal, in 10 years, it will be able to make a more educated determination of the correct pumping level. We will continue to monitor this permit renewal process.

Mitigation and Restoration

Indications suggest that environmental recovery has begun with the groundwater pumping reductions TBW was able to achieve early in this decade despite TBW's short-term permit exceedance. It is difficult to quantify the success of those reductions as environmental recovery is a long term process. However, as part of TBW's annual reporting for WY 2009 a Comprehensive Interpretive Report was prepared that found that median wetland water levels after production cutbacks in 2003 were generally much higher than pre-cutback medians. Certainly the long-term success of these pumping reductions will require continued monitoring, but with recent rainfall approaching normal levels it seems that the modest recovery identified in TBW's Interpretive Wellfield Reports should be maintained through the near future.

As part of the Consolidated Permit, issued by SWFWMD, TBW is required to monitor the impacts of its groundwater pumping in addition to the system ecological evaluations discussed in past Water Team reports. Tampa Bay Water's continuing monitoring has shown the benefits of the interconnection of the Starkey Wellfield as fewer wetlands have been referred for evaluation under the Optimized Regional Operations Plan (OROP) environmental management program, which is a program that evaluates wetland health through the monitoring of groundwater levels. The OROP is designed to rotate groundwater production away from areas showing higher levels of environmental stress.

TBW's Long-Term mitigation projects underway that are designed to improve conditions on the Pasco Wellfields include:

- Cypress Creek Wellfield Surface Water Management Project – This project is intended to capture and divert high flows into wetlands within the Cypress Creek Wellfield. There has been limited rainfall within the Cypress Creek basin from the time of the construction completion. Any improvement to water levels within the wetland as a result of the project will take a longer period to fully evaluate the efficacy of the project..
- Starkey Ecosystem Enhancement Project – This project is designed to capture and divert high flows from the Anclote and Pithlachascotee Rivers to the Starkey Wellfield wetlands. Studies suggest that more than 400 acres of wetlands can potentially be restored. The project could increase the yield of the wellfield and has become a facet of SWFWMD Regional Water Supply Plan. With the completion of TBW's West Pasco Improvements Project, combined with the resulting pumping reductions, the monitoring wells and wetlands will continue to be monitored to see how water levels change. The project is on hold to give more time to evaluate the effect of groundwater withdrawal reductions.
- The Starkey Wellfield Reclaimed Water Pilot Project – the feasibility studies for the project was completed in previous years and the project was approved and permitted by SWFWMD. In fact, the irrigation system has been installed and spray field design has been completed: but, as is the case for the Starkey Ecosystem Enhancement, this project is also on hold until groundwater reduction effects can be fully evaluated. TBW staff does not expect water levels in lakes

and wetlands to measurably increase in the near term as these systems have to fill up from the top with rainfall. TBW's monitoring program will assess surface water recovery to see whether or not the two Starkey wetlands projects should move forward.

- The Cross Bar Ranch Natural Systems Restoration Project was designed to improve water levels within the Pinellas County-owned Cross Bar Ranch wetland area. Existing agricultural ditches were blocked to restore natural flow patterns throughout the wetland system. Recent increases in rainfall totals have contributed to a significant improvement in the water levels within the wetland. These levels suggest that there may be flowing water in Jumping Gulley for the first time since 2004.
- Big Fish Lake Groundwater Augmentation Project – This project augments an area of shallow marsh/wet prairie approximately 2.5 miles east of Cross Bar Ranch with groundwater. SWFWMD issued a permit to Barthle Brothers Ranch Inc in 2000 to withdraw up to 310,000 GPD to augment Big Fish Lake which, historically, ranged in size from completely dry to 700 acres. In January of 2004, SWFWMD established MLL (Minimum Lake Levels), and HMLL (High Minimum Lake Levels). Augmentation would be allowed if the lake levels fell below 73.34 ft NVGD. To date, those monthly minimum lake levels have not been achieved for the last 6 years, the last 10 years, or for the entire period of record for that matter; consequently, augmentation continues. Even though those minimum levels have not been maintained, the project has been deemed somewhat of an environmental success. A 50 acre to 120 acre pool has been maintained providing valuable habitat for area wildlife.
- The South Pasco Wellfield Drainage and Modification Project was designed to modify existing drainage structures within the South Pasco Wellfield wetlands to retain additional surface water flows. Feasibility studies indicated that those drainage modifications would have a negligible effect on wetland hydrology and that a reduction in groundwater withdrawals would have a much more significant an impact on environmental recovery. Therefore, the project was abandoned.

Conclusion

As the renewal for the Tampa Bay Water Consolidated Permit approaches, it has been determined that a longer period of time is required to more accurately assess environmental recovery. Wetland health enhancement and water level improvements in and around wellfields can only be qualitatively and quantitatively evaluated over the period of several years. TBW, therefore, has applied for the renewal of the Consolidated Permit at the same 90 MGD groundwater withdrawal limit that is currently required. Tampa Bay Water will continue to monitor and assess water levels and wetland viability through the duration of a renewed permit from the SWFWMD. For TBW, maintaining and utilizing its existing supplies has proved challenging and efforts to add new supplies to its system will be increasingly difficult. The Pasco County Water Team will continue to monitor the environmental recovery and TBW's restoration and water supply planning over the next several years.

Joseph D. Richards
Senior Assistant County Attorney
Jeffrey D. Harris
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EXHIBIT-1



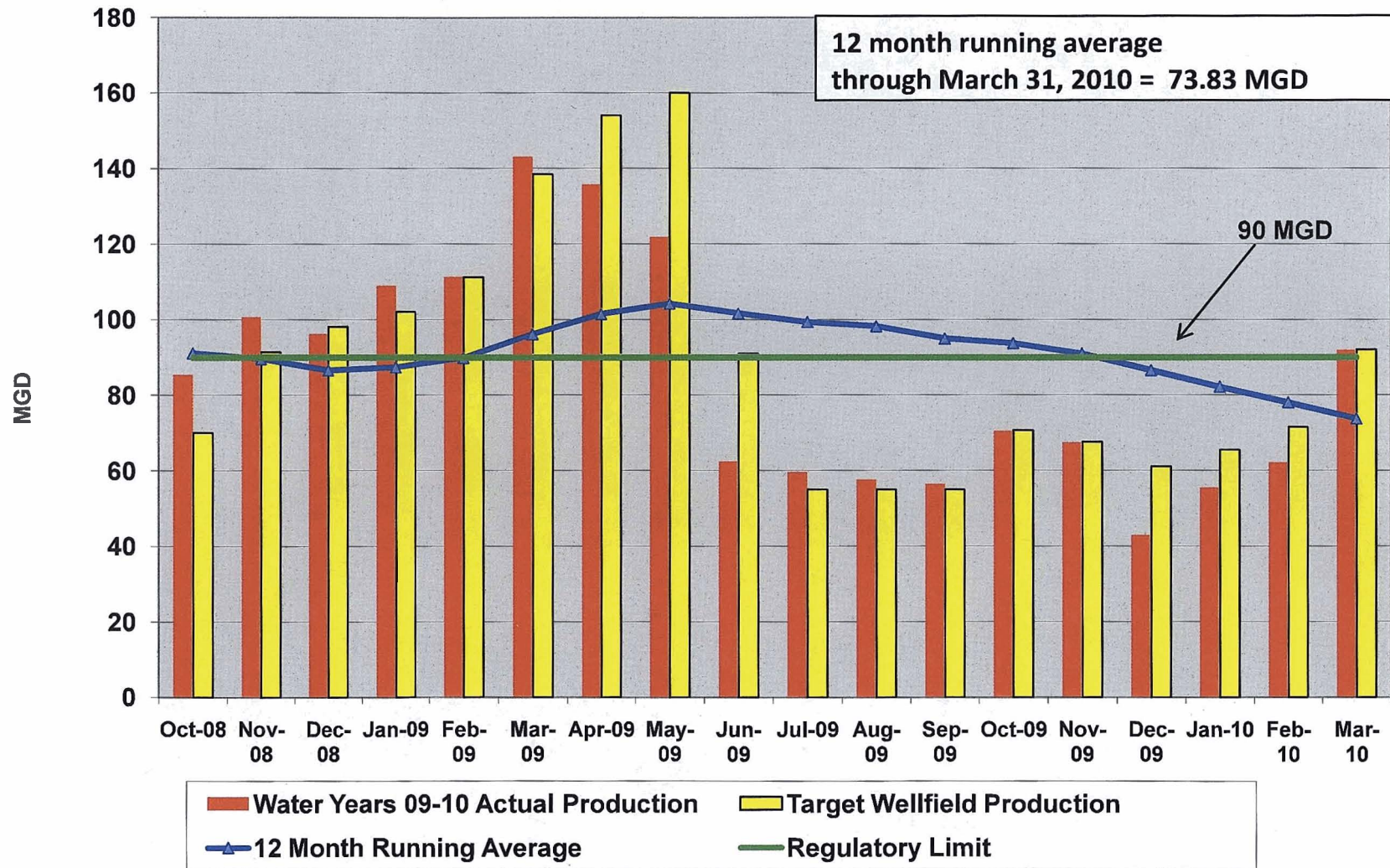
LEGEND

- Water Supply Source/Facility
- Member Government Delivery Point
- ⊕ Interconnect Between Member Governments
- Potable Water Pipeline
- Non-Potable Water Pipeline

Tampa Bay Water Regional System

EXHIBIT 2

Figure 7. Consolidated Wellfield Production



Actual Production Current through 3/31/2010

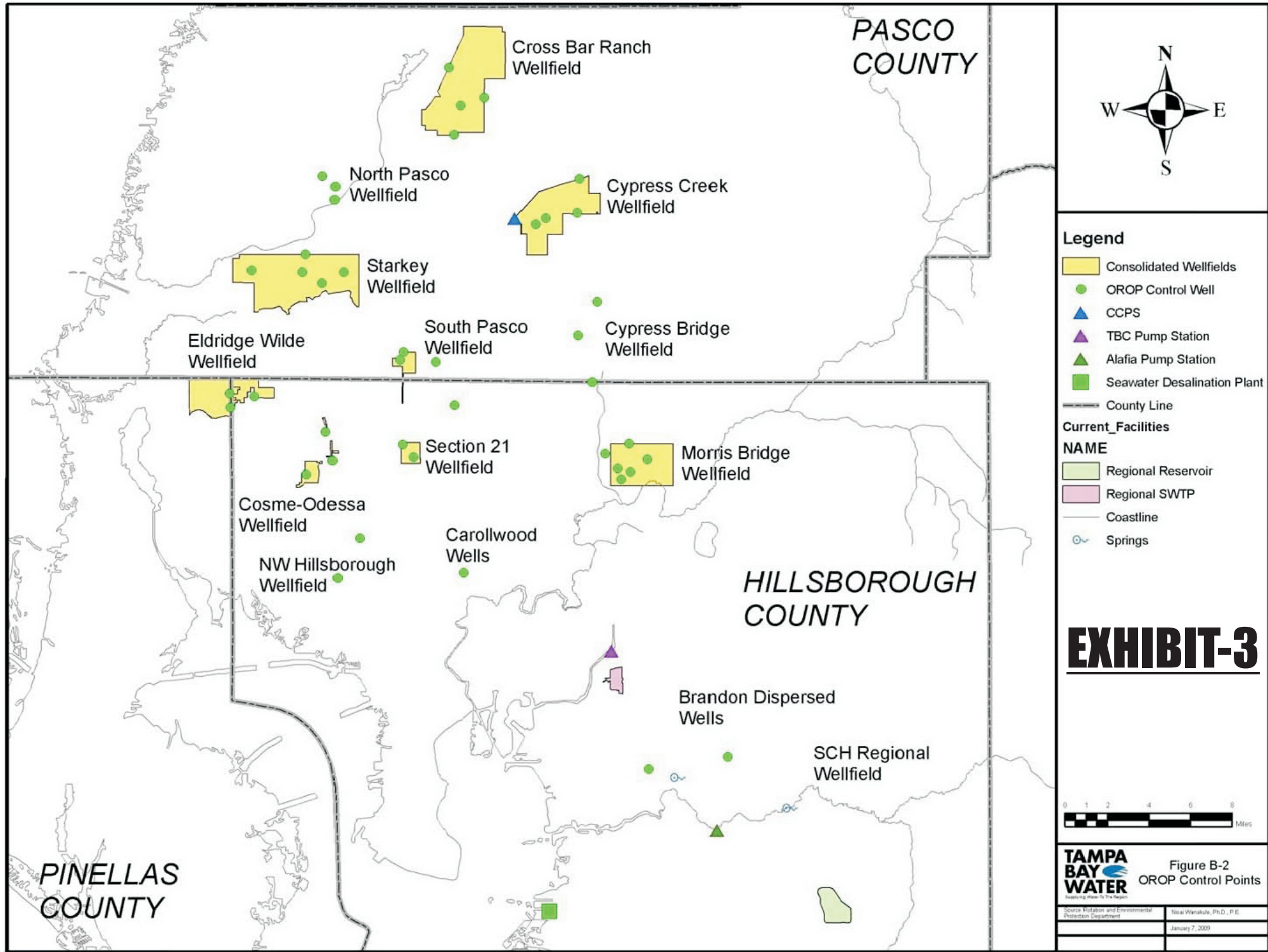


Figure B-2
OROP Control Points

Figure 8. Tampa Bay Regional Demands 2010 compared with 2009

