

TKW CAPTIVA WASTEWATER ALTERNATIVE STUDY  
SUMMARY AND COMMENTS  
CAPTIVA COMMUNITY PANEL WASTEWATER COMMITTEE  
SEPTEMBER 4, 2018

Last year, at the request of the Captiva Community Panel, Lee County retained TKW Consulting Engineers of Ft. Myers to conduct a strategic assessment of Captiva's long-term wastewater alternatives. Three broad strategic alternatives were to be considered: (1) maintain the status quo with significant dependence on conventional septic systems, (2) implement a regulatory regime to ensure existing septic systems are functioning properly and encourage upgrade over time to advanced performance-based septic systems where appropriate, and (3) evaluate the cost and feasibility of establishing a central sewer system to service all or significant portions of Captiva.

The final TKW report was completed in August and has been posted on the Captiva Community Panel website ([www.captivacommunitypanel.com](http://www.captivacommunitypanel.com)). The Panel also intends to schedule public meetings in mid to late November where TKW will present a summary of its study and respond to public comment.

The Captiva Community Panel Wastewater Committee has reviewed carefully the TKW report. The purpose of this document is to summarize key findings in the TKW report and present what the Wastewater Committee believes are the report's important implications. In short, the Committee believes the TKW report is a valuable contribution to our community's understanding of its long term wastewater issues and alternatives. However, the Committee believes additional fact-finding efforts and analyses will be required before Captiva has the information necessary to achieve public consensus on any future wastewater strategy.

CURRENT WASTEWATER DISPOSAL

Captiva can be divided into four neighborhoods: (1) South Seas, (2) Village, (3) Tween Waters Stretch and (4) Estates, i.e. the Gold Coast and Roosevelt Channel properties. South Seas is served by a central sewer system operated by FGUA and accounts for about half of all Captiva wastewater processed. Tween Waters Resort, Captiva Shores and Sunset Captiva operate "package plants" which are essentially small central sewer systems. This is about 10% of Captiva's total wastewater. The remaining 40% of Captiva wastewater is handled by approximately 378 septic tanks, most of which are conventional septic systems. Conventional septic systems provide bacterial decomposition of the solids in the tank and rely upon drain fields to deliver the liquid effluent to the surrounding soil for "natural" processing." Central sewer systems collect all of the wastewater and provide various levels of in tank treatment before disposal of the processed wastewater.

## STATUS QUO POTENTIAL ISSUES

Conventional septic tanks are most appropriate for large parcel rural areas where the possibility of untreated effluent leaking into the underlying water table or coastal waters is minimal. In Captiva the soil is porous, the water table is only a few feet below grade, coastal waters are present and use patterns are seasonally irregular. Conventional and most performance-based septic systems do not treat nutrients and may result in nitrogen and other “nutrients” from wastewater effluent entering coastal waters. The TKW study cites research verifying this as well as a 2011 SCCF study that found higher levels of nutrients in Captiva coastal waters near septic tanks vs. Captiva coastal waters near the South Seas FGUA plant. Nutrients, of course, support the growth of algae and contribute to coastal water pollution. The TKW study cites several examples of Florida coastal communities that have abandoned the use of septic tanks apparently due to environmental concerns associated with their use. Sanibel is a prime example.

(Although not stated in the TKW report, it should be noted that conversations with TKW indicate its belief that Captiva may NOT be able to document a measurable water quality improvement if it were to abandon septic tanks in favor of central sewer wastewater treatment. There are currently too many other variables impacting water quality to isolate and measure the impact of septic systems vs. central sewer.)

The TKW study cites that sea level rise will pose a threat Captiva’s septic systems. Much of Captiva is only 3-4 feet above sea level. The water table under the existing septic systems is likely only 2-3 feet in most cases. Sea level rise will push up the water table and result in increased frequency of tidal flooding. The failure of septic systems will result in contamination of the water table and increased effluent washed into coastal waters, not the kind of failures that may be immediately and readily observable by property owners. The TKW study also cites the risk of sea level rise to the South Seas FGUA plant located in a tidal mangrove area. The study makes no prediction of WHEN sea level rise will begin to impact Captiva’s septic systems. However, the study does indicate that it will likely take at least five years to complete a central sewer project once sufficient community will to undertake such a project is evident. There could be risk in waiting too long for direct evidence of sea level rise before acting.

Current permitting requirements for new conventional septic systems include half-acre minimum parcel size and water table at least 24” below drain field. It is likely that many conventional septic systems in the village area do not meet these basic criteria. If a property owner needs to replace an existing conventional septic system, many may find that only a performance-based system can be permitted. As will be seen later, the cost of performance-based systems is relatively high.

Once permitted, conventional septic systems require no regulatory mandated routine inspection and maintenance. There is no means beyond owner vigilance to ensure that conventional septic systems are operating properly and not polluting

surrounding areas. This is not the case with performance-based systems, which require rigorous inspection and maintenance programs. As previously noted, most septic systems on Captiva are conventional systems.

Septic systems are less convenient for property owners vs. a central sewer system. Unpleasant odors, maintenance needs and incorporating large drain fields into one's property are issues that do not exist with central sewer.

#### REGULATION/SEPTIC SYSTEM UPGRADE

The TKW study reviews the possibility of regulating septic systems and promoting upgrades to performance-based septic systems over time. The study concludes that this is not likely a viable long-term strategic alternative for Captiva. In general, performance-based systems are likely to cost the individual property owner just as much as participating in a central sewer system. While performance-based systems may alleviate environmental concerns associated with conventional septic systems, such systems would not be as effective environmentally as a well managed central sewer system. The threats of sea level rise would not be addressed. Finally, TKW believes it would be difficult, if not impossible, to create an enforceable regulatory regime for conventional septic systems. (Apart from the TKW study, the Panel has explored with Lee County the possibility of regulating conventional septic systems. Lee County has not supported such regulation in the past.)

#### CENTRAL SEWER

The TKW report analyzes alternate central sewer scenarios for Captiva. These scenarios involve determining where central sewer wastewater processing would be done and what portions of Captiva would be served by a new central sewer collection system. The report concludes that the most likely scenario is to establish a new wastewater collection system for all of Captiva outside of South Seas and to process this wastewater at Sanibel's existing Donax wastewater treatment facility. South Seas would continue to be served by the existing FGUA facility. TKW reviewed this plan with Sanibel city officials and obtained their assistance in developing details of the sewer plan.

The TKW report contains a preliminary engineering study of how the wastewater collection system would be designed to collect and transport Captiva's wastewater to the Donax processing facility. Although the detail presented is comprehensive TKW does not intend that this engineering be used for purposes other than illustrating what a central sewer might cost to serve all areas outside South Seas.

The capital cost to establish this collection system is estimated to be \$15.7 million. It is assumed (but not 100% verified) that there would be sufficient capacity at the Donax plant to treat all wastewater Sanibel would receive from Captiva. To have their wastewater treated by the Donax facility each Captiva property owner would pay a \$5000 "impact fee" to Sanibel just as Sanibel residents do when they are placed on Sanibel's sewer system. Captiva property owners would also have to pay whatever costs were necessary to connect their homes to the new collection system.

Sanibel has told TKW that based on Sanibel's experience this cost averages to about \$5000 per property. Finally, existing septic systems on Captiva would have to be removed or mitigated after connection of homes to the new collection system. TKW estimates this cost would average \$2000 per property. In summary, the cost of this central sewer system would be a \$15.7 million capital investment to establish the collection system plus \$12,000 on average for each property owner in "upfront" costs.

(The Wastewater Committee estimates that each residential property would pay an annual cost of \$2744 per year over 20 years if the \$15.7 million capital investment and the aggregate of all "upfront" individual property costs remain the same at the time of the project and were financed at 3.5% for 20 years and all residential properties shared equally in the repayment.)

Sanibel charges each residential customer the same fee regardless of home size to process wastewater. The fee is currently \$778. Thus the total annual cost of the central sewer system would be estimated at \$3522 for each residential household for 20 years and then fall back to just the annual processing fee thereafter.

While the South Seas area is not included in the plan above, TKW does believe it would be feasible to include South Seas longer term. Cost estimates to accomplish this are included in the TKW report. TKW also evaluated the possibility of expanding the present FGUA South Seas facility to allow that facility to process all Captiva wastewater. Cost estimates for this approach are also included.

#### WASTEWATER COMMITTEE COMMENTARY

Central sewer is environmentally superior to septic systems in conditions such as those present on Captiva. Central sewer allows increased ability to protect Captiva from climate change impacts. Once installed, central sewer is more convenient for property owners. To achieve these benefits a number of Florida coastal communities have replaced septic systems with central sewer, Sanibel being a prime example.

The major negatives of establishing a central sewer system are high cost, potential community disruption during implementation and the possibility that a central sewer system might promote unwanted increased density on Captiva.

While numerous criticisms of the sewer plan presented by TKW are possible, the Committee believes that TKW has established a reasonable framework for Captivans to understand the cost of converting to a central sewer system. It seems reasonable to assume that that the typical Captiva property owner might have to pay \$2500-\$3000 per year over 20 years to create a central sewer system for all of Captiva outside South Seas. In addition to that would be the annual wastewater processing cost. The TKW report explains that "directional drilling" would be used to install the central sewer pipes and thus there would be no open trenching. Beyond this, the report has no description of community disruption. The Captiva Plan clearly states that preserving existing density is a chief objective for Captiva. Existing zoning

severely limits the possibility of density increases. The Panel is actively investigating other means of ensuring that unwanted density increases can never occur on Captiva.

Based on the information available to the community thus far, the Committee envisions that two competing points of view may emerge in the community. Many may believe that the negatives of establishing central sewer clearly outweigh the positives. They may argue that the environmental benefits and sea level rise mitigation benefits are too uncertain to warrant the high cost, community disruption and potentially unfavorable density impacts of central sewer. The other point of view may be that continued reliance on septic systems is clearly incompatible with a community that values water quality and preservation of natural habitat, and that the high water table on Captiva may compromise the proper functioning of septic systems and that sea level rise may inevitably threaten their viability altogether. How can Captiva advocate for water quality and preservation of the existing natural environment if the community is unwilling to “do its part” by utilizing the environmentally best system for wastewater disposal?

#### WASTEWATER COMMITTEE RECOMMENDATIONS

The Captiva Community Panel should not adopt a position on wastewater strategy at the current time. Rather, important additional information should be developed and analyzed before any Panel position is adopted.

The TKW report might lead many people to conclude that adoption of central sewer would be “environmentally correct” but there is little evidence presented that such action would lead to a measurable water quality improvement that could be attributed solely to that action. The Committee should conduct additional investigation of potential water quality benefits with experts on water quality to determine if the environmental rationale can be better understood.

The impact of sea level rise needs to be further investigated to determine if this is just a theoretical long-term threat that might be better addressed in the future when the threat is better understood or whether it is a threat that must impact community planning NOW.

All of the cost analysis of central sewer assumes that Captiva property owners would have to bear the entire cost of establishing such a wastewater system. The TKW report indicates past precedent that outside funding has been available to property owners to assist conversion to central sewer. This needs to be explored further to determine if the cost of central sewer to property owners might be dramatically reduced with outside funding assistance.

The TKW study cites little possibility that a regulatory regime could be established on Captiva for conventional septic systems. Yet, the Committee is aware of several examples where Florida counties have established pump out and inspection regimens for some of its conventional septic systems. This needs to be further explored.

The Committee does not believe it will be productive to debate at this time various central sewer scenarios or the specific assumptions in the illustrative TKW central sewer plan. The fact is that any central sewer plan will be very costly. The community's focus at the present time should be on better understanding the benefits of a central sewer system and whether or not those benefits warrant a major investment to revamp Captiva's existing wastewater practices.