

Curgproj. [A] Archive / Document file -- verbatim

Top

General:

<http://www.curg.org/>

Specific contributions

[Biblo 10/13/09](#)

[Deaton 11/17/09](#)

[Hannahs 11/17/09](#)

[Deaton 11/17/09 - 2](#)

[Thaell 11/18/09](#)

[DRC Minutes 11/18/09](#)

[Mann 11/20/09](#)

[Deaton 11/22/09](#)

[Hall 11/23/09](#)

[Hall 11/24/09](#)

[Hannahs 11/24/09](#)

[Mendez 11/24/09](#)

[Mendez 11/24/09 - 2](#)

[Hannahs 11/24/09 -2](#)

[Caire/11/24/09](#)

[Mendez 11/24/09 - 3](#)

[Mendez 11/24/09 - 4](#)

[Hannahs 11/24/09 - 3](#)

[Mendez 11/24/09 - 5](#)

[Hannahs 11/24/09 - 4](#)

[Deaton 11/24/09](#)

[Hannahs 11/24/09 - 5](#)

[Deaton 11/24/09 - 2](#)

[Mendez 11/24/09 - 6](#)

[McGlynn 11/24/09](#)

[Hall 11/24/09 - 2](#)

[Hannahs 11/25/09](#)

[Hall 11/25/09](#)

[Hall 11/25/09 - 2](#)

[McGlynn 11/26/09](#)

[McGlynn 11/26/09 - 2](#)

[McGlynn 11/26/09 - 3](#)

[Hanson 11/27/09](#)

[Hall 11/27/09](#)

[Denker 11/28/09](#)

[Deaton 11/29/09](#)

[Hall 11/28/09](#)

[TalDem article 11/27/09](#)

[Gabordi 11/30/09](#)

[Fulford 12/07/09](#)

[Mcglynn 12/11/09](#)

[McArthur 12/11/09](#)

[Mann 12/11/09](#)

[McArthur 12/12/09-1](#)

[MvArhtur 12/12/09-2](#)

[Top](#)

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Biblo 10/13/09

BOARD OF COUNTY COMMISSIONERS
INTER-OFFICE MEMORANDUM

Date: October 13, 2009
To: Ryan Culpepper, Development Services Administrator
From: Adam Antony Biblo, AICP, ULI
Director, Development Services Division
Subject: Chason Woods Type C site and development application
Technical Coordinating Review Issues

In response to the proposed application, I submit to you the following issues which I believe are raised by the subject application and which should be satisfactorily addressed prior to garnering our support for recommending approval.

1) The application proposes a development of over 500 houses located a significant driving distance from employment centers, shopping opportunities, schools, and other public facilities. It will be approximately 4 miles from the center of the Woodville community, 10 miles from downtown Tallahassee, and 11 miles to Crawfordville, Fl. Consequently, the associated generation of vehicle miles traveled for this development will likely be significantly greater than were it a comparable sized development within the urban services area.

In comparison, the proposed Southside DRI will have approximately 3,000 dwelling units with much shorter trips to employment centers (2.25 miles to the CCOC and 5 miles to downtown Tallahassee), will contain a significant number of shopping opportunities and facilities within or close by, and will have access to transit; therefore, it is possible that although the Southside DRI will have approximately 6 times the number of residents, the associated aggregate VMT will be within the same level of magnitude as that of Chason Woods. Therefore, it would appear that Chason Woods would contribute a significant volume of air pollution, including greenhouse gasses, when compared to similar and larger sized developments located within the urban services area.

It is my understanding that the proposed development will also require the removal of a large quantity of vegetation, to accommodate the homesites, streets, and other attendant infrastructure. This vegetation presently serves to remove carbon dioxide (a greenhouse gas) from the atmosphere ("carbon sequestration"). Therefore, the proposed development presents two challenges to the County's air quality.

These air quality impacts raise issues of compliance with the following regulations set out in the Land Development Code:

Section 10-4.104, Objectives (related to Environmental Management) - Subsection (1) part b., to wit:

This article is intended to protect, maintain, and enhance both the immediate and long-term health, safety, and general welfare of the residents of the county. The following objectives support this purpose by encouraging productive and enjoyable harmony between humanity and nature. The objectives are listed according to their primary purpose, but many objectives also relate to and support other purposes of the article.

(1) Overall

b. To protect natural systems and avoid impairment of their beneficial function.

Section 10-7.104, Purposes (of subdivision and site and development plan regulations), subsections (1), (6), and (7), to wit:

The purposes of this article are to:

- (1) Protect and provide for the public health, safety, and general welfare of the residents of the county.
- (6) Provide for coordination between review of development and subdivision proposals with Articles III and IV and other applicable county requirements.
- (7) Provide for adequate light, air, and privacy, to secure safety from fire, flood, and other danger, and to prevent overcrowding of the land and undue congestion of population.

And, Section 10-7.505, General Principles of Design Relating to Impacts on Nearby Streets and Property Owners, subsection (2), to wit:

- (2) Minimize adverse environmental impacts both on-site and off-site;

2) The application represents the extension of central sanitary sewer and central potable water infrastructure several miles beyond their current termini, to a remote location outside of the urban services area, while other portions of the urban services area are not presently served by such infrastructure and can not sustain urban-intensity development. This extension of infrastructure will produce a classic pattern of leap-frog, sprawl development. Accordingly, it would appear to conflict with the following regulations relating to the orderly, efficient, progression of growth and extension of infrastructure:

Section 10-6.613 Urban Fringe zoning district (excerpt), to wit:

The UF zoning district is intended to provide for low-intensity development that can be accommodated without a full complement of urban services and infrastructure.

Section 10-7.104, Purposes (of subdivision and site and development plan regulations), subsections (8), (10), to wit:

The purposes of this article are to:

- (8) Encourage the orderly and beneficial development of all unincorporated parts of the county.
- (10) Guide public policy and private action in order to provide adequate and efficient transportation, water, sewerage, schools, parks, playgrounds, recreation and other public facilities and services.

Section 10-7.501, Substantive Standards and Criteria, Generally, subsection (e) part (1), to wit:

- (e) No development shall be approved unless it has been designed so as to reasonably achieve the following:
 - (1) The adequate and efficient supply of utilities and services to new land developments.

And, Section 10-7.524, Public Sanitary Sewer or On-site Sewage Disposal Systems., subsection (b), to wit:

- (b) Needed sanitary sewer facilities will be provided in a manner which promotes orderly, compact urban and cost efficient growth while optimizing the use of existing facilities.

3) The application would constitute a Development of Regional Impact (DRI) except that the applicant has represented to DCA that the development will provide workforce housing consistent with the requirements and guidelines for workforce affordable housing, as promulgated under HB 1363. This bill requires at least 15% of the total residential dwelling units to be dedicated to affordable workforce housing. The materials submitted for review provide no indication as to how the developer intends to facilitate compliance with this standard: the site and development plan does not provide estimated sales prices, or address any mechanisms that will be utilized to ensure recipients of the workforce housing units will be within eligible income levels and that units will remain affordable over time.

Should the application not be revised to address this issue, I would ask you to verify DCA's position that the proposed development does not represent a Development of Regional Impact and to recalibrate review processes as necessary, according to their answer.

4) Lastly, it comes to my attention that we have previously granted deviations to lot size requirements for conservation subdivision applications, and this occurred only once, for the Talquin Meadows application. For that application, we granted that deviation for 26% of the number of lots proposed; the deviation provided a 37.5% reduction in lot size for those lots. Any recommendation regarding the deviation proposed for the Chason Woods application should be able to be defensible on the precedence of the Talquin Meadows deviation.

cc: TCC staff
Record File
[Top](#)
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Deaton 11/17/09
<edde@nettally.com>

Hi Scott,

The American economy is a mess, as is our political system, top to bottom. Neither are rational unless big money dominated chaos is your preferred outcome.

I want to jack up the cost of stupid development. Way UP! And slow it down long enough so that our sinking, constricting economy makes stupid development near impossible.

I prefer something more rational, too, but don't see that in the cards this time around.

I support the establishment of a local weekly newspaper not dominated by money interests, as well.

edde

Scott Hannahs wrote in small part:

So it all comes down to what is cheaper, buying an election or buying 4 commissioners on a given Tuesday? So the best strategy is to have the BCC have 100 members so that you need to buy 51 rather than 4 and drive up the cost of modification to higher than the profit? :-)

I can see a lot of merit in both arguments. I am looking for a more fact based information rather than the "I would like to try it" or "I don't think we should try it" type reasoning. Government by plebiscite is messy and doesn't usually end up with a rational structure.

-sth
[Top](#)

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Hannahs 11/17/09 <sth@curg.org>

On Nov 17, 2009, at 13:44, Ed Deaton wrote:

I want to jack up the cost of stupid development. Way UP! And slow it down long enough so that our sinking, constricting economy makes stupid development near impossible.

There is a good argument that FHD will lower the cost of stupid development. I agree completely with your goal! Buying an election in Leon County is not that expensive. Buying one in Miami-Dade might be, but then probably buying a political decision there is more expensive also.

The goal is good, but will FHD just allow a Chason Woods developer to add \$1,000 to each house price and spend \$500,000 on an election. It certainly biases it towards the large developments getting anything they want. The problem is those are usually the worst ones.

This is more an argument about methods not goals!!

-Scott

[Top](#)

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Deaton 11/1709 -2 <edde@nettally.com>

Scott,

Yes, methods, not goals. But my guess is that many of us here are heading in the same direction.

Money can be overcome in an election, particularly if folks opposed to a development are organized locals, known as proponents of good development, high quality of life & protecting the environment. People will vote if they think there is a fairly good possibility of doing good. Its getting organized that is the sticking point.

When a locality gets the reputation of approving good developments and turning down bad developments, that alone will deter stupid development. Remember that Leon County/City of Tallahassee got a reputation for being anti-business (thanks Chamber of Commerce) when we elected a series of smart growth commissioners and wrote a pretty good Comp Plan back in the '80s & early '90s.

Add a weekly newspaper not beholden to big monied interests. A regular, reasonable, pro-smart solutions, appropriate tech paper will likely predispose members of the voting population to good (better) development.

All pie in the sky unless we actually get organized.

Ed

Scott Hannahs wrote:

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This is more an argument about methods not goals!!

-Scott

[Top](#)

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Thaell 11/18/09 <ThaellC@leoncountyfl.gov>

I am hoping that as the media reports on this topic that they look at:

a) what is the amount of nitrogen loading that will be reduced should the county proceed to impose the ordinance requiring performance-based septic systems in the PSPZ considering that the ordinance will exempt homesteads valued at \$204,000 or less (what % of total homesteads does that represent?)

b) what is the expectation of increased impervious surface that could be built in the PSPZ if the area was sewerred? What would the increased impervious surface mean to stormwater loading? What additional types of pollutants could be expected to affect the groundwater?

c) what the Comp Plan specifically requires of local government,

d) what the alternatives to performance-based septic might be, what are the relative cost differences of the different solutions?

e) what the "readiness to serve" charge might be to those households/businesses that are not ready to hook up to sewer if that solution is proposed,

f) what the cost per household will be to hook up to sewer (as an alternative to performance based septic systems),

g) what the annual cost to households will be maintain sewer service - there will be an annual charge,

h) what the ultimate cost of doing "nothing" will be,

I hope any articles addressing this issue consider these questions.

Cliff

[Message delivered by NotifyLink]

-----Original Message-----

From: "Waters, TaMaryn" <twaters@tallahassee.com>

Sent: Wed, November 18, 2009 2:45 PM

To: "CURG-List@curg.org" <CURG-List@curg.org>

Subject: Looking for Woodville residents concerned about performance-based septic tanks

NOTE: This is the CURG-List email group - all replies will be sent to the entire group as part of the general discussion.

Hi, all,

I'm working on a story regarding a proposed Leon County ordinance that would require performance-based septic tanks in the Primary Springs Protection Zone, which may have a significant impact on Woodville residents.

So I'm looking to hear from residents who support the proposed ordinance and those who have concerns.

Contact me no later than 5 p.m. Thursday at 599-2162 or e-mail

twaters@tallahassee.com<<mailto:twaters@tallahassee.com>>.

Thanks!!

TaMaryn Waters

City/County Government Reporter

Tallahassee Democrat | Tallahassee.com

Twitter.com/TaMarynWaters

(850) 599-2162 - Direct line/fax

[Top](#)

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DRC Minutes 11/18/09

Chason Woods Type "C" Site and Development Plan

Ryan Culpepper, Development Services, gave an overview of the project, and stated that the Development Services recommendation is to continue the project to a date certain due to remaining outstanding deficiencies. Special DRC Meeting November 18, 2009 Page 2

Mr. Snyder asked to delay discussion on the project since the recommendation is to continue the project to a date certain, but he did inquire as to the status of the EIA. John Kraynak, Environmental Compliance, responded that it is near completion, but that requested information was received from the applicant late Monday afternoon, and that his Division is still waiting on other requested information in order to complete their review for the EIA. Therefore, at this point, he stated that he is not in favor of moving forward with a conditional EIA.

Mr. Park reiterated that his Department has not had time to review submitted materials due to having received them late, and recommends continuance until a date certain to allow staff adequate review time.

Mr. Park made a motion to continue the Chason Woods Type "C" site and development plan until a date certain and Mr. Snyder seconded the motion.

Mr. McDevitt stated that the outstanding concurrency issues still need to be addressed. He stated that school concurrency information has been received from the School Board indicating a substantial impact to Woodville Elementary, but to date the applicant has not supplied information indicating how this issue will be addressed. Ryan Guffey, Development Services, stated that a preliminary certificate of concurrency has been issued for the project, but due to this project generating traffic mitigation costs over \$500,000 Board approval is required for the final concurrency agreement.

Mr. McDevitt added for the record that Development Services staff has worked with the applicant on revisions to the site plan to include commercial development in an effort to promote internal traffic capture to potentially reduce the number of vehicle trips off-site. The applicant has agreed with these changes, but has not provided a revised site plan to indicate these changes.

Mr. McDevitt also discussed the applicant's request for a deviation from development standards for minimum lot size, and shared his concern of a precedence being set if approved as this is a substantial decrease in size from any previously approved, similar deviation request (the example given was Talquin Meadows Subdivision). Therefore, adequate justification is required from the applicant to consider when reviewing the deviation request. If the DRC concludes that the justification is not adequate, and due to the substantial public policy issues involved with the extension of sewer service to the development, they may defer approval of the deviation request to the Board of County Commissioners.

Mr. McDevitt agreed with the recommendation of continuing the project to a date certain to allow the applicant sufficient time to address all outstanding issues prior to resubmittal.

Mr. Park asked if the concurrency agreement had to be approved prior to submittal of the project to the Board for review or if it could be submitted concurrently. Mr. Guffey determined that the agreement can be reviewed by the Board concurrently as an attachment to the Type "C" site and development plan when it is presented to the Board for review.

Mr. McDevitt also noted that all DRC members had received numerous public comments on the proposed project and would like adequate time to review all of them for consideration prior to making a decision on the project.

Special DRC Meeting November 18, 2009 Page 3

Due to the amount of material to review, and the items still outstanding, Mr. Park made an amended motion to continue the Chason Woods Type "C" site and development plan to a special DRC meeting on January 13, 2010.

Mr. Snyder seconded the motion. It was stated that to meet the submittal deadline for the January 13, 2010 DRC date, all materials shall be submitted no later than December 30, 2009. All voted in favor and motion passed. Meeting adjourned at 10:45am.

[Top](#)

Mann 11/20/09 <thormann@nettally.com>

Curgeans, don't ignore an argument that might be lurking behind such issues as Chason Woods, and enter at least some decision-makers' minds: If there is a real demand for housing of this kind (I don't know about the current estimates for housing demand) then if the county denies such developments, and developers deem infill housing too cumbersome or unprofitable to be bothered with, that demand will be met in places such as just across the county border; perhaps more spread out, but now with regular not high-performance septic tanks, and resulting in the same amount of traffic clogging up the main arteries and much the same damaging environmental impact -- but with the taxes going to another county, that will be more than happy for the 'growth'... This is one reason why I think we need a discussion format providing better overview of the larger, overall picture. I am not sure the 'coordination' mandate of the Growth Management Legislation has been working as well as it should; and I am afraid that such aspects will not be adequately addressed in the referendum campaigns under HTD, unless accompanied by better information tools.

Top
Deaton 11/22/09 <edde@nettally.com>

Greetings,

Please remember that growth does NOT pay for itself and the primary reason growth controls were enacted was a crisis in local funding of services to residents. A fairly recent study performed for Red Hills, etc shows that Leon County governments pay out \$1.40+ for every \$1 in taxes they collect.

Please note, too, that a considerable amount of Wakulla Springs pollution comes from Tallahassee sewage treatment facilities.

And the environment, including habitat for other species, water quality, air quality, and so forth, is negatively impacted by sprawl in any jurisdiction.

Also, please note that traffic patterns change when the cost of fuel rises. People choose to use autos more affordably and less. Also, congestion (and expensive parking rather than free parking) may be a good motivator towards alternatives. Of course, all this suggests there are alternatives available and given the lack of funding region-wide for mass transit and bike-walk facilities, people must rely on personal auto along with some ride sharing.

Its way past time we residents of the region take better control of growth - what we have now simply is inadequate.

Additionally, "grandfathering" needs to be severely limited and much more stringent "professional" requirements need to be imposed so that we get better (and fewer) developers. It is irrational that development permits last longer than a year or so with no development activity, certainly should not provide a ticket to ignore current environmental regulations and should not exempt a developer from paying their fair share of infrastructure costs..

That democracy stuff can be a double edged sword, too, if "we" were ever to get organized. SoFla steal NoFla water? If organized NoFloridians joined with pro-environment & quality-of-life folks in SoFla to impose the kinds of limits to growth that may really work, water transfer stops being a problem. Yes, Scott, there is no rest for environmental watchdogs;-)

Any economic activity (growth) that destroys the environment and quality of life ought not survive

Ed

Thorbjørn Mann wrote:

Curgeans, don't ignore an argument that might be lurking behind such issues as Chason Woods, and enter at least some decision-makers' minds: If there is a real demand for housing of this kind (I don't know about the current estimates for housing demand) then if the county denies such developments, and developers deem infill housing too cumbersome or unprofitable to be bothered with, that demand will be met in places such as just across the county border; perhaps more spread out, but now with regular not high-performance septic tanks, and resulting in the same amount of traffic clogging up the main arteries and much the same damaging environmental impact -- but with the taxes going to another county, that will be more than happy for the 'growth'... This is one reason why I think we need a discussion format providing better overview of the larger, overall picture. I am not sure the 'coordination' mandate of the Growth Management Legislation has been working as well as it should; and I am afraid that such aspects will not be adequately addressed in the referendum campaigns under HTD, unless accompanied by better information tools.

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[Top](#)

Hall 11/23/09

Hi there;

I apologize if the substance of my comments has already been discussed. CURG has been mighty busy ! and with some excellent conversation! Here's my two cents about the Comp Plan and Chason Woods.

-ph

On Nov 17, 2009, at 12:24 PM, Cliff Thael wrote:

[The consideration of Chason Woods is not even a "comp plan" issue but that's another point.](#)

No, it is a comp plan issue. EVERY development is required to be in compliance with the Comp Plan. That is why a member of the Planning Department is a part of the development review process and, I believe the DRC.

Just because this development is not seeking a comp plan amendment does not mean it's compliance with the comp plan can't be scrutinized.

That is the role of development review and explicitly in this case, the BCC, since it is a Type C review. And it doesn't take springs or sink holes for the review to include compliance with the intent of the land use goals of the comp plan to limit urban sprawl and promote urban infill.

On Nov 17, 2009, at 7:16 AM, Ed Deaton wrote:

[Hey neighbors,](#)

[A few more:](#)

[Miley Miers approved-but-still-not-started development out here on US90,](#)

What was particularly bad about the FLU change for Miley Miers property was that it was accompanied by a Comp Plan policy that allowed sewer to be brought outside the USA. This seriously weakened the entire concept of the USA. Ostensibly it was to provide for conservation subdivisions. However, our conservation subdivision provisions are, how to say this well...a complete contradiction of the intent and value of the clustering concept for residential development. [Our local conservation subdivision provision allows for an increase from 0.3 house/acre to 0.75 AND transfer of density from undevelopable land within the subdivision. The permanent conservation easement on 50% of the land (usually all the undevelopable land at least) is not a worth while trade off for the huge increase in density and transfer of development rights]

The argument used by the Planning Department that Chason Woods is in compliance with the Comp Plan is exactly related to 1) the allowance of conservation subdivisions to have a large increase in density relative to UF development standards and 2) the allowance of sewer to conservation subdivisions in the UF - outside of the Urban Services Area.

However, I believe the Planning Department has failed to justify compliance with nearly all of the policies in Objective 1 of the Land Use division of the Comp Plan: Growth Management/Urban Services Area. That some policies may allow a particular development plan does not constitute compliance. Compliance is that a development plan is allowed by ALL policies.

This is the distinction between necessary and sufficient. To wit:

1. It is necessary that there be a policy that allows the density of the proposed development (Policy 2.2.2[L] Conservation Subdivisions in the Urban Fringe FLU) since the proposed density is well in excess of the 0.33 DU/acre of UF.
2. It is necessary that sewer be allowed in the UF and must be provided in order to have lots less than 0.5 acres. (Policy 1.3.1 [SS]). This is the policy that was adopted in order to allow Miley Miers' proposed (and not yet built) development to have small lots in the UF by allowing an urban service, sewer, to be provided outside the urban service area.

HOWEVER, these are only the necessary policies to even accept further consideration of the site plan. Without these, the site plan would have to be dismissed out of hand. But these are not SUFFICIENT considerations. In fact, Policy 1.3.1 [SS] explicitly requires compliance with all other Comp Plan policies. While this is inherently true of all developments, it is emphasized for the consideration of extension of an urban services outside (way outside) the Urban Services Area.

For areas lying outside of the USA boundary and within the Urban Fringe land use category, central sanitary sewer service may be extended and/or provided by an existing utility provider under the following circumstances:

[...]

- b) To serve a new Conservation subdivision, Urban Fringe cluster subdivision or

permitted non-residential use that is otherwise in compliance with the Comprehensive Plan and its implementing land development regulations;

3. Sufficiency comes in consideration of all other Comp Plan policies that could pertain to such a development. And for that I direct CURG readers to Objective 1 of the Land Use Element of the Comp Plan and its 11 policies within. These need to be taken as a whole, not cherry picked.

4. Finally (HA!) the argument that "if it is not explicitly disallowed, then it must be allowed" has been used as a justification for allowing many developments that have contributed substantially to the urban sprawl and cost of providing public services and infrastructure that are unfairly distributed among the populace and home/land owners. But this argument, in my opinion, is ludicrous on its face. It suggests that we must have a massively detailed Comp Plan and LDRs that state explicitly where we can build what, when we can build it and how to pay for it. The language of the Comp Plan is to be interpreted broadly as the plain english meaning of the labels of its' component parts: "goals", "objectives" and "policies". It is not a list of development forms that are not allowed. It is a set of principles with which to judge development forms adequacy and sufficiency.

After all, the US constitution, Amendment I provides:

Congress shall make no law ... abridging the freedom of speech...

Yet it is not legal to "shout fire in a crowded theatre", though this prohibition IS technically an abridgment of the freedom of speech.

Do we require a list of all the ways in which the freedom of speech can be abridged be added to Amendment I for its' interpretation or do we, instead, recognize that this is the guiding principle, the policy that must be accepted on its face and only rare exceptions to it made with clear justification that is in keeping with ALL other principles and language of the Constitution and its amendments.

-ph

Pamela Hall, Ph.D.
5051 Quail Valley Road
Tallahassee, FL 32309 USA
phone: (850) 668-0118
phall@curg.org

[Top](#)

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Hall 11/24/09

NOTE: This is the CURG-List email group - all replies will be sent to the entire group as part of the general discussion.

Here's what I learned recently from City and County public resources and experts who provide information freely to the public. I greatly appreciate the time and experience these folks have shared with me over that last few months as I've sought to understand these issues. All errors and omissions are my responsibility. Yell at me first!

Comparison of providing sewer vs PBST (Performance Based Septic Tanks) in the Woodville Rural Community.

Warning: there is no single number that suffices. And I don't want to argue about these values. These values represent a lot of knowledge and research. I consider these reasonable, backed by evidence and actual charges. Other estimates will vary, but not by an order of magnitude, not even by more than 10% I bet.

The issue to keep track of, in my opinion, is who pays for what part : the home owner or the neighborhood (private costs) or all the sewer customers (the "city") or septic tank owners (the "county") or the state and

federal tax payers (all of us).

The equally important issue is what are the collateral effects of providing sewer vs requiring PBSTs? But that's for another email.

And finally, what is the logical first principle? land use or wastewater treatment? That should be a rhetorical question, BUT given that we have to start from the land use map we already have, it's important to keep this principle constantly up front.

I have rounded numbers off for ease of remembering them.

These are costs in 2009 \$.

1. Sewer

Plumber's fees for each DU about \$800 to \$1000. Tap location fee \$275
Installation of service lateral by City (if main sewer lines are available) about \$1500
The fee to hook up to COT sewer (tap fee for County residence) \$4500.

Monthly fee for use based on water usage was, in April, about \$56.00 (includes the readiness-to-serve fee).

The per gallon charge has gone up recently. I believe this reflects the City's process of paying for the upgrade AND expansion of the treatment facility. The \$220 million is for BOTH decrease in nitrogen concentration of waste put on the spray field AND expansion of treatment capacity. I haven't seen any number for the projected increase in load. It's load that matters, but that's a topic for later.

IF sewer exists near by:

1. If only a lateral has to be put in : about \$1500 and the charges above. The cost varies.
2. If no central sewer exists costs range from \$7500 to \$12,000 to \$13,000. The higher number more typical. Home owners pay a pro-rata share of this cost.

Putting it together into one useful scenario, the cost of providing sewer to an existing or new neighborhood not within Tallahassee (COT) has been estimated (median for nine targeted areas based on the 1988 Master Sewer Plan) as \$12,700. Add in the system charges and plumber's fees its \$18,200 per house. Amortize that over a 30 year loan (a mortgage) at 5%, the monthly payment is approximately \$100 per month. Combine this with the monthly sewer use charge it's about \$156.

So...\$156 a month to have a county residence on COT sewer.

2. PBST, performance based septic tanks

These tanks DO provide greater treatment of nitrogen than a conventional septic tank. Also, the irrigation/spray field that is used with them, in place of a conventional drainfield, provides even more treatment. There's evidence that combined it could be in concentrations as low as the projected COT sprayfield, or not. But then the sprayfield may hit its projected concentration target, or not. It's a projected value, remember.

And as I said above, it's load that matters to our water quality, not concentration. (Or else I could just flush my toilet twice every time I used it and lower by average concentration by a factor of 2. Three times and I'd be at about the current sprayfield concentration. :-)

Using a wide variety of sources, including local, state and national experts:

A good estimate of the purchase and installation price of a system is between \$8000 and \$12,000. Let's use \$10,000

(BTW, my conventional septic and drain field failed about 7 years ago. Replacement of a conventional system that worked better on site ran about \$7000. Remember, site conditions vary.)

\$10,000 amortized over 30 years at 5% (just as above for sewer) is \$56 a month for the capital costs. A contract for maintenance is about \$200 to \$300 a year, plus electricity to run the systems about \$10 (they have pumps) and it's approximately \$87/month to operate. The contract may run up to \$600 a year (\$50/month). Parts of the system will need replacement during those 30 years. Let's call it between \$100/month and \$120/month.

So...\$100 a month to have a county residence on PBST.

3. \$156 equal to \$100 to \$120.

It's clear that the total monthly costs are nearly identical. Neither is "much more expensive", in terms the capital and maintenance cost. I believe the COT sewer use costs will rise as they cost of upgrades and expansion to the plant kick in. Though I confess I don't really know the schedule of payment for this very expensive project.

The cost of PBSTs may decrease if demand increases and new businesses may move in to sell these. PBSTs are being used all over the country and areas with ground and surface water pollution problems, JUST LIKE US, are turning to them as well as choosing to sewer.

Also, the technology of the PBSTs will get better a lot more rapidly than central sewer technology for the next decade, I believe. This reflects the relative youth of the PBST technology and the relative maturity of the central sewer technology, not their relative value.

Central sewer is NOT a panacea. Nor are PBSTs. So, lets focus on the real issue - what sort of land use, density and intensities and mitigation for wastewater, stormwater, transportation, should our community consider for the Primary Springshed Protection Zone AND other locations where surface and ground waters are highly impacted by current development practices?

I'll provide more of what I've learned on that and try to follow up on Cliff's great questions. But please, any one else with good information, weigh in!

4. Who pays for what part?

So...who pays for what part ? The homeowner? The neighborhood? Sewer or septic tanks owners throughout the service areas of each? Taxpayers in Florida or Iowa or Vermont? (as in funded by the Federal government). Should it matter whether the house is sewerred or on septic?

All wastewater treatment systems, centralizes or decentralized, require maintenance and have operating costs. There is no such thing as free.

All have collateral benefits and costs. All of them.

-ph

Pamela Hall, Ph.D.
5051 Quail Valley Road
Tallahassee, FL 32309 USA
phone: (850) 668-0118
phall@curg.org

[Top](#)

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Hannahs 11/24/09

On Nov 24, 2009, at 00:20, Pamela Hall wrote:

4. Who pays for what part?

So...who pays for what part ? The homeowner? The neighborhood? Sewer or septic tanks owners throughout the service areas of each? Taxpayers in Florida or Iowa or Vermont? (as in funded by the Federal government). Should it matter whether the house is sewerred or on septic?

That is easy. It is Florida ruled by the Homer Simpson Republican philosophy. "Let someone else do it". I want it all free, and socialize the costs while privatizing the benefits. So when a politician keeps telling you that he/she can cut costs and increase services, he or she is lying through their teeth.

Reading in the paper there was a quote from a home owner that she was all for clean water and preserving the springs except if it cost actual money. The above analysis says that there is a cost for wastewater treatment no

matter how you do it. It costs more to do it right than to not do it. Duh.

All wastewater treatment systems, centralizes or decentralized, require maintenance and have operating costs. There is no such thing as free.

All have collateral benefits and costs. All of them.

Abbreviated as TANSTAAFL. <<http://en.wikipedia.org/wiki/Tanstaaf>>

-sth

[Top](#)

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mendez 11/24/09 <mmmendez@earthlink.net>

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Abbreviated as TANSTAAFL. <<http://en.wikipedia.org/wiki/Tanstaaf>>

-sth

[Top](#)

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Mendez 11/24/09 - 2 <mmmendez@earthlink.net>

Pam,

Thanks for some reasonable numbers to make informed opinions. It seems to me that we need to look at what our long range goal(s) should be as they relate to septic tanks south of the Cody Scarp. That is where these are being proposed isn't it? My core issue would be protecting Wakulla Springs.

My focus for this discussion is just on protecting Wakulla Springs. If it's decide to go with sewer hook-ups and a method for paying for those hookups is agreed upon then what next? What are the prospects that the City will maintain the sewer treatment facility at a level that has a positive influence On Wakulla Springs? If past performance is an indicator I think it will be very foolish to think that will happen.

The City resisted any upgrades to the facility in the past until the licensing permit came due with DEP despite multiple studies that showed the treatment plant was (is) responsible for the majority of the controllable nitrogen loading at Wakulla Springs. They had 125 million already in there budget to upgrade the facility before they did there own nitrogen study and upped the ante by another 50 million of so to meet licensing requirements. I

didn't double check these numbers but there in the ball park.

My vote would be for the septic tanks. Incremental development would have to pay for itself as it occurred. As for funding I think it needs to be a shared costs with the folks that are living there and the rest of Leon County.

So while the science seems to indicate that it's a tie, I think given human nature the septic tank option would be better for all concerned. The both have drawbacks and I'm sure we'll hear about them over the next few months.

Mike

[Top](#)

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Hannahs 11/24/09 -2 <sth@curg.org>

On Nov 24, 2009, at 10:46, mmmendez wrote:

My focus for this discussion is just on protecting Wakulla Springs. If it's decide to go with sewer hook-ups and a method for paying for those hookups is agreed upon then what next? What are the prospects that the City will maintain the sewer treatment facility at a level that has a positive influence On Wakulla Springs? If past performance is an indicator I think it will be very foolish to think that will happen.

Well I think that the city may have a better record than individual's maintenance of their septic tanks. There will be the cost of permitting monitoring and inspections of all tanks since there are many who don't get them pumped and/or inspected unless there is an obvious problem. Thus there are many where the drain field has failed but the problems are ignored. However inspecting and forcing individuals to maintain advanced septic systems will be more expensive per household than maintaing central sewer. But central sewer is very expensive to install and maintain in low density areas.

The City resisted any upgrades to the facility in the past until the licensing permit came due with DEP despite multiple studies that showed the treatment plant was (is) responsible for the majority of the controllable nitrogen loading at Wakulla Springs.

Actually I think the timing of that was a bit different. There were not multiple studies that showed the treatment plant responsible for the majority. There were a lot of scattered not very good evidence and a lot of assumption. That is the reason we should be paying for more monitoring and data collection.

My vote would be for the septic tanks. Incremental development would have to pay for itself as it occurred.

Hahahahahah... Where have I heard that before???

So while the science seems to indicate that it's a tie, I think given human nature the septic tank option would be better for all concerned. The both have drawbacks and I'm sure we'll hear about them over the next few months.

Actually there is no real solution to high density development outside the Urban Services Area (USA). Sewer should be extended to all areas inside the USA and not outside. This should limit low density development outside the USA and things like Chason Woods will not happen? It is land use again. If you put a lot of people near the springs it will degrade no matter what you do.

-sth

[Top](#)

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CAire/11/24/09 <nacycaire@comcast.net>

Let's not forget that to date the city is the only entity that has actually brought cash to the table for any action to clean up Wakulla Springs. City residents will all pay their share. On the other hand the county has yet to do anything to address the problem and county residents have yet to receive a bill for this problem we all have a part in creating.

NCM

[Top](#)

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Mendez 11/24/09 - 3 <mmmendez@earthlink.net>

Well, if you created 92% of the problem as studies have reported shouldn't you bring your piggy bank to the table? For years leading up to there license renewal for the spray field the City put there head in the sand and refused to listen to advocacy groups begging them to do something about the spray field. The City allowed the farmers that had leased the corn field where the effluent was being sprayed to add fertilizer to the crops to increase the yield. City residents got cheap water and sewer all those years, now the piper needs to be paid. I'm not quite ready to get out my yea City banner just yet. Admittedly I'm a bit emotional about this issue having watched this tale unfold over the years. The placement of the spray field was a huge ecological blunder. No evil intended as the eco-people at the time endorsed it whole heartedly. Just a big mistake.

Really this conversation doesn't start to address what needs to be done now.

Mike

[Top](#)

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Mendez 11/24/09 - 4

-----Original Message-----

From: curg-list-bounces@curg.org [mailto:curg-list-bounces@curg.org] On

Behalf Of Scott Hannahs

Sent: Tuesday, November 24, 2009 11:18 AM

To: Citizens United for Responsible Growth

Subject: Re: Sewering Woodville, PBSTs and water quality

NOTE: This is the CURG-List email group - all replies will be sent to the entire group as part of the general discussion.

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On Nov 24, 2009, at 10:46, mmmendez wrote:

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The City resisted any upgrades to the facility in the past until the licensing permit came due with DEP despite multiple studies that showed the treatment plant was (is) responsible for the majority of the controllable nitrogen loading at Wakulla Springs.

Actually I think the timing of that was a bit different. There were not multiple studies that showed the treatment plant responsible for the majority. There were a lot of scattered not very good evidence and a lot of assumption. That is the reason we should be paying for more monitoring and data collection.

No Scott, I'll forward you the studies and actually the City's own data suggested they were primarily responsible. The studies were very credible , why do you suppose the City agreed to the upgrades to the plant?

My vote would be for the septic tanks. Incremental development would have to pay for itself as it occurred.
Hahahahahah... Where have I heard that before???

So while the science seems to indicate that it's a tie, I think given human nature the septic tank option would be better for all concerned. The both have drawbacks and I'm sure we'll hear about them over the next few months.

Actually there is no real solution to high density development outside the Urban Services Area (USA). Sewer should be extended to all areas inside the USA and not outside. This should limit low density development outside the USA and things like Chason Woods will not happen? It is land use again. If you put a lot of people near the springs it will degrade no matter what you do.

10 acres one house with a septic. I wasn't endorsing high density.

-sth

[Top](#)

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Hannahs 11/24/09 - 3

On Nov 24, 2009, at 12:34, mmmendez wrote:

[Well, if you created 92% of the problem as studies have reported](#)

Hogwash. What study came up with 92% That is an impossible proportion! See it is all in the assumptions. I would challenge such a study myself, but I don't think anything that came up with such a high number was actually a study rather than a group pulling numbers out of their.....

My guess from reading some of the reports is that there is about 35% of the excess nitrates/nitrites was from the city spray field. About an equal amount from septic systems and about 35% misc runoff, etc. But that is my SWAG (Scientific Wild Ass Guess).

Anyone who tells you that 92% of anything is attributable to a single source will probably tell you that XXXX (pick your favorite dictator) was freely elected by 92% of their loyal citizens. Actually this is one case where Sturgeon's Law can be literally applied!

[Really this conversation doesn't start to address what needs to be done now.](#)
That is true.

Of course the "city" as we keep calling it is not a separate entity. It is us. It is our political will and willingness to take responsibility for our impact. We have met the enemy and he is us.

I can and will argue with Dr. Hall regularly. But in this case the sewerage cost was for a relatively high density area not the whole of S. Leon/N. Wakulla counties. That would make the sewerage very very very expensive. Basically the whole county is going to have to contribute to the cost of installing and *maintaining* advanced septic systems. I just hope that there is the popular will to do it.

-sth

[Top](#)

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Mendez 11/24/09 - 5

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-sth

[Top](#)

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Hannahs 11/24/09 - 4

On Nov 24, 2009, at 18:28, mmmendez wrote:

[Some facts please.](#)

It all depends on what you mean by "facts".

Groundwater quality impacts from the land application of treated municipal wastewater in a large karstic spring basin: Chemical and microbiological indicators
Brian G. Katz, Dale W. Griffin and J. Hal Davis

If you read through it, the natural background from atmospheric nitrogen deposition is about 20% of the current nitrates in the springs. The spray field is about 40% and the remaining 40% is a combination of , wastewater residuals, synthetic fertilizers, septic tanks, sinking streams, and livestock.

But the percentages for other pollution is much different with the spray field removing most of the organics, pharmaceuticals and biological contaminants. There was an interesting note about high biological content of enteroviruses from a nearby septic tank.

There is a whole bunch of work on how effective it is in removing many items.

Are these facts? How do we interpret them? Is the amount of nitrogen in Wakulla springs per person the actual measure? How about other springs? How do you compare the release of viruses to release of nitrogen? Amount of caffeine released into the aquifer? These kind of judgements are just that and not facts. The facts are how much caffeine is going into the aquifer and from where. The judgement is how much and who will pay to clean it up and should we clean that up before or after the nitrates? How much is enough reduction?

-scott

[Top](#)

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Deaton 11/24/09

Hey neighbors,

You reckon folks are ready for composting toilets instead of pooping in the drinking water? You reckon we can get site-built composting toilets approved? How about store-bought composters?

Ed

mmmendez wrote:

[On Nov 24, 2009, at 10:46, mmmendez wrote:](#)

[My focus for this discussion is just on protecting Wakulla Springs.](#)

[Top](#)

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Hannahs 11/24/09 - 5

[On Nov 24, 2009, at 20:03, Ed Deaton wrote:](#)

[You reckon folks are ready for composting toilets instead of pooping in the drinking water? You reckon we can get site-built composting toilets approved? How about store-bought composters?](#)

Ed,

Where do the nitrates go? How effective are they in removing pharmaceuticals?

I am guessing that the nitrates end up in the yard and thus into the water system. And I don't know about the pharmaceuticals.

These just spread the nitrates around the yard and hope that the organic layer chews them up before they go into the aquifer. This is exactly what an advanced technology septic system does. But the advanced system does more denitrification before dumping it onto the ground.

-Scott

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Deaton 11/24/09 - 2

Hey Scott,

My guess is that the folks who opt for composters will likely use the compost to grow stuff. By mulching and careful soil building, it may be that considerably more will stay in the soil rather than run-off.

I don't know about pharmaceuticals - how are they dealt with in the sewage treatment system? What do YOU do?

We don't do enough drugs to be an issue and stock only those we actually ingest so it hasn't been an issue at our homestead.

Ed

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Mendez 11/24/09 - 6

Lets review;

1. First I agreed with the parameters set up by Dr. Hall in her email
2. Next I stated very clearly that choosing between the two options the City would be a poor choice.

My focus for this discussion is just on protecting Wakulla Springs. If it's decide to go with sewer hook-ups and a method for paying for those hookups is agreed upon then what next? What are the prospects that the City will maintain the sewer treatment facility at a level that has a positive influence On Wakulla Springs? If past performance is an indicator I think it will be very foolish to think that will happen.

3. Next I showed why the City would be a bad choice based on past performance as related to being a good Stewart of Wakulla Springs.

The City resisted any upgrades to the facility in the past until the licensing permit came due with DEP despite multiple studies that showed the treatment plant was (is) responsible for the majority of the controllable nitrogen loading at Wakulla Springs. They had 125 million already in there budget to upgrade the facility before they did there own nitrogen study and upped the ante by another 50 million or so to meet licensing requirements. I didn't double check these numbers but there in the ball park.

4. Response to someone applauding the City's actions YTD

Well, if you created 92% of the problem as studies have reported shouldn't you bring your piggy bank to the table? For years leading up to there license renewal for the spray field the City put there head in the sand and refused to listen to advocacy groups begging them to do something about the spray field. The City allowed the farmers that had leased the corn field where the effluent was being sprayed to add fertilizer to the crops to increase the yield. City residents got cheap water and sewer all those years, now the piper needs to be paid. I'm not quite ready to get out my yea City banner just yet. Admittedly I'm a bit emotional about this issue having watched this tale unfold over the years. The placement of the spray field was a huge ecological blunder. No evil intended as the eco-people at the time endorsed it whole heartedly. Just a big mistake.

Really this conversation doesn't start to address what needs to be done now.

Sorry you don't like the 92%, you can damn it to your hearts content. But plug in any % you like and continue with the argument it still holds sewage. My basic premise still holds.

By the way if you want to start using hahahaha as an argument there's not much I can respond with except nannanewnew.

Mike

[Top](#)

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McGlynn 11/24/09

I do not thing the there will be much real Monitoring of the Performance Based Systems. This is a design based ordinance, like the stormwater ponds. They do not have to actually reduce nitrogen. They are rarely monitored with

that it was very expensive and prone to different interpretations. This will also be true for PBSTs. Putting test wells in drainfields is expensive (see Chanton's work and some of yours!).

BUT, I think that we can know the basic parameters of what will work under what site conditions. We can test the various technologies under controlled conditions and have base lines (like the EPA and gas mileage). We have to be realistic about the models. Then we have to write regulations that reflect reasonable model expectations and human capacities to manage and pay.

After all, we do know what stormwater technology will produce better treatments.

They are rarely monitored with actual analytical tests. They will be inspected by a licensed Septic Tank Technician to check if the individual components are functional, that is about it (no analytical testing).

The condition of the drain field will be inspected, but for gross morphology, not nutrient treatment. Again, it's like stormwater ponds.

PS. It would be relatively easy to test regular septic tanks for nitrate levels, since that is the form of nitrogen of concern. It travels easily through the ground (unlike other forms of nitrogen and phosphorus). We could check to see if they were working.

Ah. Some folks would really disagree with this! I don't think you're correct.

First, easy doesn't mean cheap. If it were cheap, research on these tanks would have produced many more samples.

Second, I don't think it is actually very easy to figure out the nitrogen budget of a drain field, at least not according to much of the literature on drain field denitrification rates, regardless of the technology used to treat the effluent.

Third, if it's cheap, how much are you willing to charge to do this measurement for each tank? And to demonstrate that your measurements are reliable and accurate? :-)

An older system with a well developed drain field, with mature bacteria mats, can effectively chew up the nitrates and can perform better than a new Performance Based System (which does not start out with a well developed drain field).

It can take several years for a drainfield to fully mature. It is unfortunate that common household chemicals can kill the bacteria quickly. Fabric Softener is notorious for this.

But that is the same for a new conventional systems. It does take time to develop the mats. Chemicals abuse of the biology any onsite system's drainfield is damaging to the mat, regardless of the technology of the tank that produces the effluent for the drainfield.

While the conventional systems develop a substantial bacterial mat, the net result is still relatively low levels of denitrification, estimates vary but 25% is a "typical" value, 50% is a good drainfield. (I can produce quite a pile of references for this, but Chanton's work is the most accessible.)

Is there a similar mat that develops in the drip irrigation systems "spray field"? I would guess any nitrogen fertilization (which is what septic tanks provide) will increase bacteria and plant growth, but I would not guess that the ecology would be the same. The biochemistry must be, but not necessary the community structure of the bacteria or their community morphology.

I'm curious.

Also, it is my experience that owners of new Performance Based Septic Systems often disconnect the electricity after they get their first few bill.

The estimates of electrical cost are only about \$10 a month. That's not very much of an increase in most household usage, though it can be more substantial if the home is small.

Then they are worse than conventional systems. I have also heard complaints that they make noise and keep people from sleeping at night.

I've heard this is due to choosing the cheapest model. It's like my first dishwasher - cheaper, noisier and more energy use. My new one cost more money up front but its much quieter and much lower energy use. Depends the short and long term compromises one want to make AND what one can actually afford. Up front capital costs are killers to many family budgets, hence compromises on life time value.

We can do something about the up front costs so that folks can make better choices.

-ph

[Top](#)

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Hannahs 11/25/09

NOTE: This is the CURG-List email group - all replies will be sent to the entire group as part of the general discussion.

On Nov 24, 2009, at 20:25, Ed Deaton wrote:

My guess is that the folks who opt for composters will likely use the compost to grow stuff. By mulching and careful soil building, it may be that considerably more will stay in the soil rather than run-off.

Actually this is the whole principle behind the "advanced treatment" septic systems. They can use mini-spray fields to do help everything break down in the organic layer. The problem with the nitrates/nitrites in the waste is that the ONLY way to break them down into atmospheric nitrogen is through a repeated cycle of aerobic (with oxygen) and anaerobic (without oxygen) digestion by microbes. The composting does not have this anaerobic cycle and thus does not break down the nitrates/nitrates as well.

The best way to eliminate these pollutants is through this digestive cycle and then through organic treatment on the ground. Skipping either step will lead to more pollution. Just composting or just digesting in a vault is not a solution. These advanced systems are just like the city is treating things in large digesters and then treatment in the top layer of the soil as you propose.

[I don't know about pharmaceuticals - how are they dealt with in the sewage treatment system? What do YOU do?](#)

Treatment in the organic layer is very effective. This is the drain field of a septic system or the spray field for a large sewer system. Looking at the studies most of the organic compounds except for DEET and carbamazepine (an anti-convulsant) seem to be effectively removed from waste by either septic systems drain fields or spray fields. So, if you need an ad hominem argument to bring this in personally, I use the natural bacterial digestion in a drain field at home and the city sewer system while at work.

To bring it back to the suggestion of a composting toilets, what is the effectiveness of those in that kind of removal.

[I We don't do enough drugs to be an issue and stock only those we actually ingest so it hasn't been an issue at our homestead.](#)

What you do at your house is not an issue. How this is a solution to be applied county wide is. Actually what is classified as a "drug" is a very classification here. The levels of caffeine in the city sprayfield have been increasing. Probably due to the new Starbucks in town? However it seems to be effectively treated by spray fields and drain fields. Some of the others are from clothes washing (flame retardants) etc. We put out a lot more crud in the water than we want to think about. It is in almost every product we buy and once it comes into the house, it then goes out through waste stream somehow.

Here is a list of the compounds checked for in a recent study:

fragrances and flavorants, flame retardants, antioxidants, fuel-related compounds, detergent metabolites, plasticizers, disinfectants, solvents and preservatives, poly-nuclear aromatic hydrocarbons, pesticides, plant and animal steroids, and caffeine

The main ones found are caffeine, AHTN (musk fragrance), DEET (insect repellent), and tri(dichloroisopropyl) phos-

phate (flame retardant)

The bottom line is that composting toilets are not a perfect solution. They may be fine in some cases, but there are still questions of how good they are for the environment in general. (not anyone's particular use, but a general application).

Making it personal is a useless exercise. I am not attacking Mike, or Ed, or Gerry but trying to discuss public policy here. This is a combination of technology and how we use it and the political question of who pays for it.

-Scott

[Top](#)

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Hall 11/25/09

NOTE: This is the CURG-List email group - all replies will be sent to the entire group as part of the general discussion.

On Nov 24, 2009, at 8:25 PM, Ed Deaton wrote:

[My guess is that the folks who opt for composters will likely use the compost to grow stuff. By mulching and careful soil building, it may be that considerably more will stay in the soil rather than run-off.](#)

Compost is just another form of putting the nitrogen back onto the earth. It's not denitrified in the toilet, is it? Probably some is, but I bet that compost is still chock full of nitrogen. That's one of the reason compost is good fertilizer. So if everyone in the city or county put the compost "on the ground" most of it would end just where it is now - on the ground and using the earth's surface to assimilate it. I think a lot would end up in stormwater ponds because urban areas don't have a lot of places to put dirt.

It would be interesting to know just how much nitrogen is denitrified in situ and how much is simply removed as compost - and put back into the landscape where it makes it way into the water (to some degree, sooner or later).

I do think the important point of compost toilets is to think of wastewater as a possible resource instead of as a nuisance. But it also has to work for 65,000 households and counting, plus many many large nonresidential uses. Where are they going to put all their compost? How much is there per household per year?? per public toilet per year?? Can you find out?

[I don't know about pharmaceuticals - how are they dealt with in the sewage treatment system? What do YOU do?](#)

The evidence from a USGS report (I'll post it on CURG when I can) is that the spray field is a very efficient way of degrading pharmaceuticals. Since the spray field applied the effluent to the O horizon of the soil (organic layer) there are lots of bacteria and fungi that degrade the compounds before they percolate further into the ground. The drip irrigation drain fields of PBST work on the same principle, though not exactly above ground spraying. So they probably do pretty well also.

It is the conventional drain fields that are in the A or B soil horizon where there is little biological activity but there is water flow, that do not treat either pharmaceuticals or nitrogen well. Even when the conventional drain fields are built to site specifications, they cannot provide high levels of denitrification or pharmaceutical degradation. And when these drain fields are not well made or maintained, when they flood or the water table rises, their contents can easily run into the closest water body or water table.

Inadequate treatment at centralized facilities, conventional drain fields especially poorly placed or maintained ones are a major source of pharmaceuticals in surface and ground waters.

-ph

[Top](#)

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Hall 11/25/09 - 2

On Nov 24, 2009, at 12:56 PM, mmmendez wrote:

Not according to Pam, the price is neutral. Take that the argument up with Dr. Hall. Cental Sewer is no Panacea.

I said the price was neutral, not the costs and benefits.

The cost of sewer is higher than PBST in capital investment: \$18K to \$10K, and in loan repayment for that investment: \$100/month vs \$56/month, respectively.

The cost of use is lower in sewer than PBST (\$56 vs \$56+electricity+repairs=\$87/month).

The \$87/month was fudged up to \$100/month to cover the cost of repair and replacement of parts.

So, for sewer is \$100 to build, \$56 to run. For PBST its \$56 to build, \$100 to run.

Total price is the same, but the "cost" structure is not. Keep in mind that similar "prices" is not the same as equivalent risk or responsibility.

Also, there are other price estimates we should consider. More on that in a later post.

And yeah, sewer is no panacea but neither are PBSTs. There aren't any silver bullets here nor are either nails in the coffin. (I think there are too many vampire and werewolf books and movies in my household - it's affecting the analogies that spring to mind!)

There's a lot more to be considered.

The nitrogen budget above and below ground.
The change in the budget over time (and development patterns that contribute to that change).
The collateral environmental impacts of development: stormwater, roads, etc.
The collateral environmental and fiscal impacts of exurban and suburban sprawl.
The wastewater treatment engineering required for urban densities (as we define them here).
The per capita nitrogen contribution, treatment effectiveness and where it's located.

I guess I should have said more clearly that I considered my email was only SOME information. Necessary but not sufficient for making any decision about what form of wastewater treatment to use and where to use it, and why.

Also, I think it's time to move forward on the issue, not rehash what has passed - don't forget it, but don't presume it locks in all that will happen in the future. Also, recognize that it sounds like demonization of the City even if your intent is to make sure that the past does not repeat itself. Part of effective political communication is to provide positive feedback or at least hold your tongue :-)

\$220 million is a fair chunk of change. The 65,000 customers of the city sewer facility are going to be paying for it and so will any new customers. Let's find out how much reduction in concentration AND load occurs and keep track of it, publicly.

I don't want to wait for 30 years to see if the City's reduction in the spray field is sufficient to lower the nitrogen levels in Wakulla Springs to preserve its current ecosystem (or its previous one).

I think there is sound evidence that septic tanks are a secondary significant source and their absolute contribution and proportional contribute will increase significantly over time. I also think that stormwater is a major contributor, but I'm a bit on my own on this one (still I will make the argument for it later).

I also think there's sound evidence that septic tanks and stormwater are contributors to surface water pollution which in turns flows through sink holes.

So, there's a lot of sh*t to still do, don't you think? Let's figure it out!

-ph

[Top](#)

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McGlynn 11/26/09

NOTE: This is the CURG-List email group - all replies will be sent to the entire group as part of the general discussion.

In a message dated 11/24/2009 11:08:47 PM Eastern Standard Time, phall@curg.org writes:

yeah. It is like stormwater ponds. We tried in Bradfordville to get a performance based policy in place but I actually got convinced by the stormwater engineers that assessing performance was actually quite difficult in that it was very expensive and prone to different interpretations. This will also be true for PBSTs. Putting test wells in drainfields is expensive (see Chanton's work and some of yours!).

You do not need a test well to check a PBST. An inflow sample is needed and one from the various tanks, maybe three samples at the most. The cost is probably \$20 each test. The real cost is in the sampling. If the manufacturer puts sampling ports in the system it can change the time of sampling from 4 hours per tank to 15 minutes. Sampling ports are cheap, the inflow port need only be a valve on the pipe leading to the septic tank so that you can bleed off a little of the raw influent. Without the sampling ports the sampler has to be a plumber, cutting lines and a digger, digging up lines and locating tanks underground. If a manufacturer says this is too complicated and expensive, they do not want the system to be sampled.

Yes, I have heard this line "data is too difficult to interpret." I like how Helge Swanson used to put it "going ahead without data is like driving in the rain without any wipers." Sure people dispute facts, look at the evolution debate, the global warming debate, and even the flat earth society. You have to agree that there is a certain attraction for a septic tank company or an engineering firm to be able to install a septic tank or a stormwater pond, according to an accepted design, and have no more responsibility if it actually works or not. I have seen quite a few PBSTs that should have worked that did not function. There are also stormwater ponds in Leon County that do not function at all.

Furthermore, an ordinance that accepts a certain design locks you into those designs. This limits innovations and technical advances because the ordinance must be changed to allow installation of the newer innovative system. I am all for improving septic systems and developing PBSTs but I know that in the future there will be much better systems.

Seán E. McGlynn, Ph.D.

Ph.D., Biology & Ecology, FSU; MA, History, FSU; BS, Biochemistry, LSU

Web Site: www.mcglynnlabs.com

McGlynn Laboratories Inc., Technical Director

A NELAC Laboratory: Nationally Accredited Environmental Laboratory (EPA / DoH)

Florida Lake Management Society, President, NW Chapter

Big Bend Sierra Club, Vice Chair/Conservation Chair/WaterQuality/Habitats

Friends of Wakulla Springs, Board of Directors

Leon County Science Advisory Committee, Board of Directors

Ochlockonee Soil and Water Conservation District, Supervisor (2000-2009)

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"We risk environmental catastrophe because we no longer see the earth as holy but regard it simply as a 'resource'. Unless there is some kind of spiritual revolution that can keep abreast of our technological genius, it is unlikely that we can save our planet. A purely rational education will not suffice."

Karen Armstrong, *The Great Transformation: The Beginning of Religious Traditions*, 2006. Anchor Books.

[Top](#)

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McGlynn 11/26/09 - 2

In a message dated 11/24/2009 11:08:47 PM Eastern Standard Time, phall@curg.org writes:

Ah. Some folks would really disagree with this! I don't think you're correct.

First, easy doesn't mean cheap. If it were cheap, research on these tanks would have produced many more samples.

Second, I don't think it is actually very easy to figure out the nitrogen budget of a drain field, at least not according to much of the literature on drain field denitrification rates, regardless of the technology used to treat the effluent.

Third, if it's cheap, how much are you willing to charge to do this measurement for each tank? And to demonstrate that your measurements are reliable and accurate? :-)

My previous answer touched on this. It is not the laboratory analysis that is expensive but the sampling. The manufacturer can install sampling ports in the tanks to eliminate this sampling difficulty. I am also not saying that every tank should be sampled, but you should have the opportunity to check to see if it is working if you or somebody thinks it is not. Laboratory testing is very reliable if nationally certified labs are used (NELAC Certification). These labs run blind EPA samples twice a year on every parameter and are audited every two years by the Department of Health. Our lab is certified but we really specialize in other analysis. We also run surface water and well water which are 100 to 1000 times cleaner than septic samples (with regard to nutrients). We are nervous that septic samples may contaminate our lab but we have run quite a few samples out of curiosity. We can run these easier tests but it is not highly profitable, we do it more as a service.

Again, it is not the analytical end that is expensive, but the sampling. The samplers will make the money. The sampling can be cheap if the manufacturer takes a few simple steps to facilitate sampling and to identify the sampling areas. There is a vast difference in cost, for the sampler, if they can do only one or two systems a day (no ports). With sampling ports they could do 10 or more a day.

I would advocate sampling as a way to settle disputes regarding the function of the tank. Without the proper means to sample and check the performance of your system the consumer is at the mercy of the septic tank technician who visually inspects the final tank, and if it is clear it is termed functional. From what I have heard in Wakulla County, there are doubts that all of the technicians actually perform this annual inspection since the tanks seem grown over by vegetation and there is no indication that they have been opened.

I would also encourage larger more complex tanks on clustered developments. The larger systems work better, are more reliable and many homes can share the maintenance costs or monitoring costs making it cheaper for the individual home and the system more advanced, with better monitoring and maintenance.

Seán E. McGlynn, Ph.D.

[Top](#)

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McGlynn 11/26/09 - 3

In a message dated 11/24/2009 11:08:47 PM Eastern Standard Time, phall@curg.org writes:

The estimates of electrical cost are only about \$10 a month. That's not very much of an increase in most household usage, though it can be more substantial if the home is small.

I have heard that the average cost of electricity is about \$30 per month for the blower and the pump. I know there can be other energy consuming devices in the systems and I will look at their energy usage. Also, the blower can make irritating noise, particularly if they malfunction, which seems to happen often. People say it keeps them up at night. This is more of a problem on smaller lots where the system is located closer to the house. Larger lots that can locate the system away from the residence do not seem to have this problem. The ordinance may want to consider putting a timer or counter on the system so that we can see how long it has been on. We have seen cut wired and pulled breakers.

I would be curious to see what the carbon footprint is for one of these systems. I know that we are in the early stages of this technology, but I think the carbon footprint is currently large.

Seán E. McGlynn, Ph.D.

[Top](#)

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Hanson 11/27/09

I can't imagine buying a large piece of land and not even look up the property on google (or google earth) where you could see environmental features (eg wetlands, sinkholes, ponds.).

Chad Hanson

-----Original Message-----

From: curg-list-bounces@curg.org [mailto:curg-list-bounces@curg.org] On

Behalf Of Robert Fichter

Sent: Thursday, November 26, 2009 9:00 PM

To: Citizens United for Responsible Growth

Subject: Re: Developments that should never be built

NOTE: This is the CURG-List email group - all replies will be sent to the entire group as part of the general discussion.

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Today's TD covered the Chason Woods situation. The unasked or unanswered question in the article was: "Was that land recognized as environmentally sensitive land when they bought it. If it was, then why did they buy it?"

Robert Fichter

rfichter@fsu.edu

[Top](#)

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Hall 11/27/09

Hi there;

To me, the most interesting question posed by the article on Chason Woods was whether 494 homes on sewer contributed less of a nitrogen load to the springshed than a development of 300 homes on PBSTs. Well, I did some calculations.

This is the first of two posts. This one contains the assumptions I am working under and my caveats about the quality of these assumptions, data available and how to use it. The second post is my calculations of the relative impact of 494 houses on sewer vs 300 houses on septic. I'm not giving away the ending up front!

But here's a few things to think about.

1. Influent is what gets put into the septic tank or into the sewer line, before any treatment. But for the purposes of comparison here, we assume influent rates are identical since we're discussing the identical homes.

2. Effluent rates are what comes out of the treatment plant or the tank. The effluent is then applied to the landscape. In the sewer system, it's what is applied to the spray field. For a septic tank, it's what is applied to the drain field.

3. The "landscape application" values are what is put on or in the ground. It is NOT the amount of pollutants that reach the aquifer. The amount that reaches the aquifer is a complex result of the geology, hydrogeology, rate of application and type of pollutant put on or in the ground. To put treated sewage "on" the ground, as in sprayed or via irrigation is different than "in" the ground as in a conventional drainfield located about 1 to 3 feet under to top soil.

It is the "load" that matters, not concentration. Load is calculated as concentration * volume. Remember, if it were concentration that matters, then flushing the toilet twice every time it's use will lower the concentration of N going into the tank, but not the total amount of N that the tank (or sewer) has to treat. Load is what matters to the ecosystem also as N is stored in various components (plants, soil) and released into the water column (which we measure) at varying rates depending upon many different things both abiotic (rainfall) and biotic (apple snails population level). The concentration at which N is "delivered" to an ecosystem may affect it's capacity to assimilate it, but this capacity is, I believe, most likely affected not just by concentration but by the rate and time period of delivery at a given concentration.

4. Both sewer and septic tanks have residuals. The sewer residuals are well accounted for in the mass balance of the sewer treatment facility (reported by COT). Septic tanks *SHOULD* have residuals if you get it pumped. It is very very rare that a septic tank has no measurable residuals after 5 years of use, unless there are very few people in the house and they are fanatics about what goes down the drain - all house drains. Septic tanks systems may appear to be "working" because the toilet flushes but that doesn't mean they are actually functioning in term of wastewater treatment, especially for nitrogen.

5. Denitrification is what we're looking for here : how to turn the additional nitrogen our waste stream adds to the environment into nitrogen in the atmosphere or retained in the upper soil horizons in a plant uptake/decay cycle. The point is to NOT put more into the aquifer or surface waters than these systems can assimilate.

6. Septic tank technology (OSDS or OSTDS, onsite sewage disposal (or treatment) systems) has a wide range of effective nitrogen treatment. Relatively little denitrification occurs inside a conventional septic tank. Mostly organic nitrogen is turned into nitrates and ammonia. Inside the performance based sewage treatment (PBST) denitrification does take place. Remember, PBST are essentially little sewer treatment facilities. They don't have all the capacities of sewer facilities, but they do perform denitrification which also takes place in sewer treatment.

7. A great deal of denitrification *CAN* take place once the effluent has left the tank or the spray field nozzle. The top layer of soil can provide a nitrogen reservoir, in that nitrogen sprayed on plants can be taken up by them, they grow, decay and the nitrogen gets taken up by new plant growth. The soil bacteria and fungi community also play a large role. Also the top layer can provide significant denitrification, nitrates can be converted to free nitrogen and escape into the air. This is again due to the biological community in the top layer of soil. Both of these processes can reduce the nitrogen makes it into the ground water and eventually (or

directly) into the aquifer. The amount that is trapped in the soil layer is finite in that the local soil/plant ecosystem will essentially saturate. Also the nitrate flux will vary, so the system will "leak" at times. The amount that is denitrified can be substantial, but hard to estimate. Still, if effluent is put into the top layer of soil, denitrification will occur. This is also true for stormwater ponds where the same biochemistry and biological community that results in denitrification is at play.

8. Conventional OSDS drainfields are buried 1 to 3 feet in the ground, usually well below the soil horizon where denitrification can rapidly occur. However, a biological community develops around the drainfield pipes that do provide some denitrification. But the rate vary tremendously and are very site and condition specific. Values from 3 drainfield sites south of the scarp were from a low around 10% to a high or >50%. (Katz, et.al. USGS, Wakulla Springshed Workshop 2009)

A drip-irrigation drainfield can be installed with PBST which is essentially a mini-spray field. It has all the biological advantages of that the COT sprayfield takes advantage of to process nitrogen. (It also can provide irrigation for the lawn. And it doesn't smell. But other pros and cons of PBST is not the focus of this discussion).

The COT sprayfield also varies over time (rainfall, volume discharge, growing season, etc.) but in general it is a more homogenous habitat essentially because it is one locale compared to the thousands of locales occupied by OSDS in yards. But, the COT sprayfield volume is HUGE.

So it's probably a pretty good bet that the spray field nitrate removal rate will be about the same as a drip irrigation removal rate, on average. But the question I'm addressing is the nitrogen removal rate BEFORE biological assimilation in the ground is used.

9. Centralized sewer provides various kinds of treatment to sewage. The upgrade and expansion planned will provide substantial denitrification of the sewage. The COT sewer handles sewage from both residential and nonresidential customers and I believe some industrial customers, though some of the latter two are required to do some pretreatment on site to remove or mitigate the worse of their sewage waste stream. But as the residential and nonresidential sewage gets combined, it isn't easy to separate out a denitrification rate for residential sewage only. Also, centralized sewer (of a variety of sizes) can handle much much larger volumes. This is fundamentally how one builds a compact, walkable, livable city - by increased density and intensity of use. To spread out over the landscape is sprawl and has huge environmental and fiscal costs for which, as a community, society and economy, we, collectively, have not been paying for for decades.

10. A lot of values are used to describe this problem. I'm going to try to focus on the ones that are agreed upon and are probably the best measured or estimated. Also, a lot of off the cuff comparisons are between the spray field effluent concentration (what comes out of the sprinklers) is compared to what comes out of a septic tank. I think these comparisons are erroneous. The COT sewage treatment plant handles sewer from many nonresidential customers. I have not seen values of nitrogen load for different customers as a proportion of total load. COT reports total load and nitrogen concentrations at the sprayfield, but not volume of water put on the spray field. At least I haven't seen it. Numbers of customers are reported, but again, these include residential and nonresidential. Also the number of people per household varies quite a bit between COT (about 2.1) and unincorporated Leon (nearly 2.5 in recent staff reports). So...its hard to compare the concentrations or the loads. BUT these are the most reliable numbers reported.

I have endeavored at all times to use the most conservative numbers relative to my hypothesis. To whit:

The 494 houses on sewer is a greater or equal nitrogen load on the springshed as 300 houses on PBST.

11. There are many other environmental impacts that include nitrogen loading such as stormwater. There are many other impacts, many fiscal, in order to provide services to residential development. I'm not going to discuss this yet.

12. Cliff, I haven't gotten to your questions yet, but I'm inching my way there.

13. Brian Wiebler, I hope you're reading this. The results are, well amazing. Did I do it right? Read post 2 of 2.

-ph
[Top](#)

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Hall 11/27/09 - 2
Hi there;

This is the second of two posts. This post is my calculations of the relative impact of 494 houses on sewer vs 300 houses on septic. I'm not giving away the ending up front! The first post contains the assumptions I am working under and my caveats about the quality of these assumptions, data available and how to use it.

I have endeavored at all times to use the most conservative numbers relative to my hypothesis. To wit:

The 494 houses on sewer is a greater or equal nitrogen load on the springshed as 300 houses on PBST.

My references are:

Chelette and Pratt, NFWFMD report on nitrogen load in Wakulla springshed I refer to this as C&P.

The May 12, workshop agenda for the BCC on OSDS in the Primary Springs Protection Zone. I'll refer to this as the BCCWS-OSDS (Board of County Commissioner Workshop).

1. OSDS effluent varies. The Chelette and Pratt (C&P) report used 4.2 kg-N/year per capita, is somewhere between 30 and 65 mg/L effluent concentration. The BCCWS-OSDS uses 40.5 mg/L. The concentration value varies due to different assumptions about daily water use. The literature uses lower values for folks on septic tanks than on sewer. I think this is because it's water use that is measured (and often on what the utility fee is based) not the water that ends up down the house drain and into the wastewater stream. Whenever possible, I use the 4.2 kg-N/year per capita because it is a "meta-value" - taken from many reports and averages daily variation over 1 year.

2. C&P report a 10 year average of 525,000 kg-N/year for spray field effluent and residuals combined. I'll use 65,000 customers (COT 2009 budget). That's : $525/65 = 8.08$ kg-N/year per customer. Assume 2.34 people per customer (dwelling unit) then you get $8.08/2.34 = 3.45$ kg-N/year/person.

This is a reduction in N from 4.2 to 3.45 = 18%.

See caveats about this computation post 1, point 9.

This calculation as a very low value for the current N removal efficiency per person for COT sewer = 18%

3. C&P report a 10 year average of 371,000 kg-N/year for spray field effluent only. I'll use 65,000 customers (COT 2009 budget). That's : $371/65 = 5.71$ kg-N/year per customer. Assume 2.34 people per customer (dwelling unit) then you get $5.71/2.34 = 2.44$ kg-N/year/person.

This is a reduction in N from 4.2 to 2.44 = 42%.

See caveats about this computation post 1, point 9. Also, all the residuals are currently put on the south side of the scarp so they are a significant part of the WWTF contribution to nitrogen in the springshed.

This calculation is an estimate of the current N removal efficiency per person for COT sewer, based on effluent only which is more directly comparable to the effluent only measures of PBSTs N removal efficiency.

4. COT claims that after the upgrade and expansion of their sewage treatment facility their total N load will be 278,000 kg-N/year. I don't know if this means in the springshed area (sprayfield only) or if it includes the residuals or what. But I'll use it as the best case scenario. I believe that 2018 is when the new facility is supposed to be fully active. If in 2008 there were 65,000 customers, I will assume that in 10 years there will be 10,000 more. (There's been about 1000 new customers/year for awhile.) So, to repeat the calculation above: $278/75 = 3.71$ kg-N/year per customer / 2.34 people/customer = 1.58 kg-N/year/person.

This is a reduction in N from 4.2 to 1.58 = 62%.

Same caveats as #2 above, but I'm just trying to provide maximums and minimums.

This calculation is a high value for targeted (2018) N removal efficiency per person for COT sewer = 62%

5. Repeat of calculation #4 under the assumption that the proportion of residuals in the targeted load value is the same as the current. The current is 71% of the load is effluent, $340,000/525,000$ kg-N/year = 0.71. $0.71 * 278 = 197$. I use the presumed customer base increase to 75,000. So, to repeat the calculation above: $197/75 = 2.63$ kg-N/year per customer / 2.34 people/customer = 1.12 kg-N/year/person.

This is a reduction in N from 4.2 to 1.12 = 73%.

Same caveats as #2 above, and I believe the 278 kg-N/year is the projected load for the unconfined layer (sprayfield that is south of the scarp). So I think #4 is the better estimate. But for completeness, I provide both with and without residuals.

This calculation is a high value for targeted (2018) N removal efficiency per person for COT sewer, based on estimated effluent only which is more directly comparable to the effluent only measures of PBSTs N removal efficiency = 73%

6. Conventional OSDS N removal values are low inside the tank and effluent has value vary a lot. They may be as poor at 10% and maybe as high as 25%. Annual average effluent concentrations also vary tremendously among households from 12 mg/l to over 65mg/l (Katz, et.al. USGS, Wakulla Springshed Workshop 2009). Drainfield denitrification also varies from 10% to >50%. BUT, denitrification in the ground is not a part of these calculations.

7. PBST N removal values are higher because the technology supports the biochemistry needed for denitrification. A BCC workshop agenda reports value of 55% to 85%. These values are for 5.8 mg/L to 17 mg/L effluent concentration. The influent concentration of 38 mg/L. I believe these are test results, not in situ measurements. The proposed regulation requires a 70% reduction and a "goal" of 10 mg/L.

Conclusion:

I think that what we need to compare is the number of houses weighted by the wastewater treatment system nitrogen removal capacity.

So to return to the ratio of the number of houses proposed for sewer vs septic: $494/300 = 1.65$

This equates to the following nitrogen reduction values. The ratio is N removal efficiency for sewer for 494 homes that is equivalent to 300 home with a N removal efficiency for septic. Sewer/septic. I provide the values computed above and a few other reference points.

$1.65 = .18/.11 = .42/.25 = .5/.3 = .6/.36 = .62/.37 = .7/.43 = .73/.44 = .8/.49 = .9/.55 = 1.0/.61$

So, sewer reduces nitrogen values somewhere between 18 and 73%.

This means that the OSDS systems for 300 house have to reduce nitrogen from influent from between 11% to 44% to equal the amount of nitrogen from 494 houses on current sewer.

The Comp Plan requires PBSTs for all new development. The regulations under consideration would require these systems to reduce nitrogen from influent at least 70%.

Here's the same computation in kg-N/year for a development on sewer vs septic for those who think in mass more easily than efficiency removal rates.

$X \text{ houses} * 2.34 \text{ people} * 4.2 \text{ kg-N/year} * \text{removal rate} = \text{nitrogen load of development per year}$

$494 * 2.34 * 4.2 = 4855 \text{ kg-N/year}$ for entire development on sewer

$300 * 2.34 * 4.2 = 2948 \text{ kg-N/year}$ for entire development on septic

Current removal rates (most generous value for COT, middling value for conventional septic tank, PBST regulated value)

For entire development:

494 houses on current sewer (42%) = 2816 kg-N/year

300 houses on conventional OSDS (10%) = 2654 kg-N/year

300 houses on PBSTs as required for new development (70%) = 885 kg-N/year

494 houses on future sewer (73%) = 1311 kg-N/year

CONCLUSION:

The 494 house development will result in a higher annual N load on the springshed than the 300 development with PBSTs. This is true for the current sewer treatment level and for the 2018 target.

A development on conventional septic tanks delivers only a slight lower annual N load than the development on sewer, but this value is much higher than the 2018 target.

If a development of 494 homes is built now on sewer, it will, eventually have a lower annual N load but it will never be as low as a 300 home development on PBSTs.

All wastewater treatment, sewer, conventional and PBSTs must be built to site and treatment specific design, must be operated properly and maintained in order to achieve treatment levels.

Remember, I'm not trying to actual estimate too many values, just the relative values. It's hard to be accurate about the actual level of environmental impact but we can often compute relative impacts pretty well. I think I have. Amazing.

You know what ? Sewer is not a panacea. I'm starting to repeat myself.

-ph

PS And we haven't considered all the other sources of environmental and fiscal impact of providing sewer or PBSTs in the springshed zone.

[Top](#)

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[Denker 11/28/09](#)

Thanks for a massive undertaking Pam!! But, your calculations are just about nitrogen loads, not all the other myriad impacts. Your PS at the end of your report really says it all. There are all kinds of other undesirable impacts of putting development in the wrong place. Also, when one considers public sewage utilities, one has to consider the downsides of such facilities, like human error and machine failure, which are both inevitable. Ask any engineer! Because sewage systems concentrate large amounts of pollutants in one place, when they fail the consequences can be catastrophic, as opposed to the failure of one or two septic tanks. Another big downside to sewage treatment plants is the gigantic amount of chlorine that they pump into the environment, which kills harmful pathogens but also many of the beneficial micro-organisms needed to break down nitrogen. The chlorine can combine with other carbon-based compounds in the environment to create, under certain circumstances, dioxin, trihalomethanes and other undesirable and toxic compounds. Sewage treatment, as it is presently designed, can be as environmentally problematic as a septic tank. What we really need to be discussing, if we want to protect our waterways from nitrogen and phosphorus loading (the two "biggies") is how to re-engineer our sewage system from its antiquated current form to a 21st century system that uses closed loop technology with zero discharge. Waste water would be pumped to the WWTP where it would be cleaned and sent back to people's toilets. The potable water system would no longer be used to fill toilets, which is a wasteful environmental practice.

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[Top](#)

[Deaton 11/28/09](#)

NOTE: This is the CURG-List email group - all replies will be sent to the entire group as part of the general discussion.

I, too, THANK Pam Hall for her excellent analysis and good work.

Randie also makes excellent points about creation of toxics, concentration of pollutants and transitioning to a closed loop sewage treatment system. It makes perfect sense to separate potable water from sewer water. Also makes sense to make use of resources generated by this system.

Lets also keep track of the energy expense each option entails. If these new systems use lots of energy, they may not be functional as energy costs continue to rise as budgets dwindle.

It may also be beneficial to examine the input side of any sewage treatment system, too. There look to be

opportunities here for public education leading to widespread changes in practices. And possibly a systemic approach to system use-pricing.

Ed

RANDIE DENKER wrote:

Thanks for a massive undertaking Pam!! But, your calculations are just about nitrogen loads, not all the other myriad impacts. Your PS at the end of your report really says it all. There are all kinds of other undesirable impacts of putting development in the wrong place. Also, when one considers public sewage utilities, one has to consider the downsides of such facilities, like human error and machine failure, which are both inevitable. Ask any engineer! Because sewage systems concentrate large amounts of pollutants in one place, when they fail the consequences can be catastrophic, as opposed to the failure of one or two septic tanks. Another big downside to sewage treatment plants is the gigantic amount of chlorine that they pump into the environment, which kills harmful pathogens but also many of the beneficial micro-organisms needed to break down nitrogen. The chlorine can combine with other carbon-based compounds in the environment to create, under certain circumstances, dioxin, trihalomethanes and other undesirable and toxic compounds. Sewage treatment, as it is presently designed, can be as environmentally problematic as a septic tank. What we really need to be discussing, if we want to protect our waterways from nitrogen and phosphorus loading (the two "biggies") is how to re-engineer our sewage system from its antiquated current form to a 21st century system that uses closed loop technology with zero discharge. Waste water would be pumped to the WWTP where it would be cleaned and sent back to people's toilets. The potable water system would no longer be used to fill toilets, which is a wasteful environmental practice.

[Top](#)

Hall 11/28/09

one question at a time, Randie !

Your point is well taken, but I believe it will need some quantification to make a mark on this issue.

Can you find some measures of risk? which should include the probability of failure and the intensity of the damage of such a risk. It would need to be a risk measure that relates to a system of the size and age of COT.

The closed loop system requires a lot more piping, which would include yet more ways to leak. Not that it's a bad idea, but see, one has to assess the risk in all systems.

I have yet to hear of any concern about the chlorine that is in the effluent in its' impact on the drainfield biological community. I wonder how much chlorine is in put on the sprayfield or if most of it ends up remaining in the residuals?

-ph

[Top](#)

[TalDem article 11/27/09](#)

Are Leon County Growth Management staff members who criticize development proposals at risk of losing their jobs?

Some local-government watchers and former staffers say the county has a history of forcing out employees who go toe-to-toe with developers. County officials, however, say workers haven't been unfairly treated.

Tony Biblo, a senior staff member with Growth and Environmental Management, was asked to resign last month after writing a memo critical of Chason Woods, a proposed development of nearly 500 homes located on environmentally sensitive land outside Woodville just north of Wakulla Springs.

Related

- * Tony Biblo's memorandum regarding Chason Woods
- * Development Review Committee meeting minutes 11-18
- * Development Review Committee report
- * Desloge e-mail to Grady Underwood

- * E-mail chain on Biblo's Chason Woods memo
- * Chason Woods rendering

The plan for Chason Woods has generated controversy on its own. Residents of southern Leon County and environmentalists say the development will destroy the rural character of the area, put a strain on public services and further degrade the once pristine spring. But developers say Chason Woods won't hurt the environment and would help the spring by bringing sanitary sewer to the area.

Read the rest of this story now by purchasing the electronic edition of today's paper.

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[Top](#)

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Gabordi 11/30/09

Paying 'hush money' no way to run government
Posted 11/30/2009 8:30 AM EST on tallahassee.com

Here we are again, back at the same spot we've been before on the issue of accountability by government officials for spending taxpayers' money in the dark.

Over the past two years, the Tallahassee Democrat has exposed the expenditure of hundreds of thousands of dollars by local government with the only purpose to get employees to go away quietly.

In a June 10, 2007, article, for example, we reported that since Jan. 1, 1997, Leon County gave \$549,453 to 36 workers. Combined with payments by Tallahassee city government, the number topped \$1 million.

We've not yet tracked all severance expenditures since that article.

But in a story on Thanksgiving Day, former Leon County growth-management employees said their staff members were particularly at risk whenever they challenge the wisdom of proposed developments.

Many businesses in our region and across the country – including the Democrat – have had to downsize and let go of good employees. That is hard and bad enough. But what Leon County is doing is not the act of a generous and fair employer in tough times: This is hush money, plain and simple.

Some \$55,000 paid to former Leon County director of building services Tony Biblo is the latest example.

Documents obtained by the Democrat under Florida's open-records laws show Biblo was a very good employee for 13 years. Then, suddenly, he was out.

All the evidence suggests his departure is linked to a report he wrote 10 days prior to his forced resignation that was critical of the proposed Chason Woods development. That proposal would place about 500 homes on environmentally sensitive land outside the established zone for such intensive building south of Woodville.

Biblo said it's a bad idea. Good sense would seem to agree. That's why that tract is outside the established zone. It is – make that, was – Biblo's job to say so. He did and, after 13 years of service, he is on the street looking for a new job.

That this would occur anytime is bad government.

That a good employee would be forced out of a job for political reasons in this economy, with unemployment in double digits, is unprincipled government.

Based on a series of reports in the Democrat, this is how county government behaves routinely in Leon County. To read a summary of the most recent story, click on this link. To get the complete story and an electronic edition of that day's Tallahassee Democrat, click here.

County officials, for their part, say they merely are following policy in paying off Biblo. As is policy, he got six months pay in salary and unused leave and sick time. Paying severance avoids the potential for more costly lawsuits, they have said.

But so does keeping good employees, and what makes more sense is to reward them for bringing to light viewpoints that might challenge the bosses' opinions. Let's hear and debate all reasonable ideas and viewpoints. Let the best ones win.

His dismissal (call it whatever else you wish) sends the message to every Leon County employee with an original thought in his or her head to hush up or else.

The way it is supposed to work is that you keep good workers, remove the bad ones and don't pay rewards for bad performance. Otherwise, what's the incentive for good work? In Leon County, that apparently is a prescription for losing a job.

And here is the bottom line: Every county commissioner who stands by quietly while this continues to happen in Leon County is just as culpable as the administration itself. Questions on Biblo's dismissal need to be asked and answered; and the discussion needs to happen in public.

Although paying people to "voluntarily" give up their free-speech rights may be legal, when it is done using public funds to circumvent public access to critical information about the conduct of government, it is time to pull back the blinds and let the truth shine in.

You can send your comments by clicking the button below, e-mailing me at bgabordi@tallahassee.com, sending a private message on Tallahassee.com, Twitter [@bgabordi](https://twitter.com/bgabordi), LinkedIn, Blogger.com or on my blog on Friendster. You can also find links to my blogs on Facebook.com, but you have to request to be my friend.

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[Top](#)
[=====](#)

Fulford 12/07-09

Are you two down off the mountain?

Regardless, a question....and an opportunity for comments.

In your and Richard's knowledge did the notion of Home Owners Associations predate the growth management movement; especially in Florida? Or, in my view, is the notion a fairly recent ploy designed to keep government off the developers' back?

In the current robbery attempt called Chason Woods the developer (a name free LLC called J&T out of Longboat Key, Florida) is proposing setting aside a large portion (more than half) of the land in a conservation easement and further proposes that management of it would be intrusted to an entity formed by the developer called the Chason Woods Homeowners Association.

County staff has stated that the applicant has not supplied reasonable assurance that such group would have the "financial and staff resources to monitor and manage the reserve area." My observation over the years would support that the applicant will not be able to produce such information, much less that the HOA could do the work.

Let me hear from you at you convenience.

[Top](#)

[Mcglynn 12/11/09](#)

Hello:

I hope these answers help. I also want to point out that my lab really is not a Walmart kind of lab where anyone can just send in a sample for analysis. My lab functions more to support my consulting with accurate analysis and we like to do studies. So I hope that this is not viewed as self-serving because I doubt that we will try to get any of the PBST homeowners samples. The only way MLI might get some of this work is if the samplers or septic tank contractors contracted with us. Regardless, this is messy, stinky work, and my employees do not like it at all. They might, in fact, quit.

In summary, the minimal sampling should be where the effluent leaves the

tank and goes to the drainfield. If the tank has a sampling port this could cost, with sampling and analysis, less than \$50. This will tell you if the system is functioning according to specs. Inflow sampling and drainfield sampling are possible but have associated difficulties that could elevate the total cost of sampling and analysis to \$500 (see below). Most of the experts seem to think they can get the information they need from the effluent (outflow) sample. My opinion is that this could be performed at least with the annual inspection. I would also recommend looking at clustered systems with a constructed wetland for a drainfield (see link at end). I hope that some of the details are fleshed out in the text below. The wetland can have subsurface flow so that the effluent travels through the root zone and there is no contact with the surface. Such a system would be very simple to sample.

PH wrote : Yes. that's what I've heard from others. I was, however, talking

about sampling the drainfield, but frankly, I think your points are of more interest. The drainfield is incredibly hard to sample, but in truth, it's the tank functioning that is the first line of treatment.

Yes, the drainfield is very fickle, but the septic system itself needs to function. This can be easily tested and greatly facilitated if the system has sampling ports. There has to be a 50% reduction here. There is also has to be bacteria in the second tank. The bacteria are sort of fickle, like the bacteria in the drainfield. If the bacteria in the system are viable one could assume that the bacteria in the drainfield are healthy too.

I might also add, when most people think of the drain field as being difficult to sample they are probably thinking of areas that have a more complex geology, like the Red Hills of Tallahassee. There you have thick clay layers and sand lenses that can conduct the septic effluent in mysterious ways. Most of the Woodville Karst Plain is very different geologically. Clay lenses, though they do occur are rather scanty. Usually the septic effluent diffuses down through the sandy surficial soils to the water table and then runs along the top of the water table in a generally southward direction. The effluent can eventually diffuse and descend lower into the aquifer but this takes a while. There are exceptions to this and generally geologists look at the slope of the land for local groundwater flow directions. So, it is not impossible to pick up the flow stream from the septic tank in the karst plain 50 to 100 yards from the tank. Wells need only descent to the to the water table which is usually around 10 feet deep. The wells can be installed by hand auger but geologists prefer a vibra core (this is not a full drill rig, but usually mounts on the back of one of those utility pickup trucks). Such a rig costs about \$1000 per day and usually comes with a crew and a geologist. If they can do ten wells in a day that is only \$100 per well per day. If they can do 15 or 20 it is even less. The number of wells per day is usually determined by access. They need to get to the site quickly and organize the route to minimize travel time. I would not recommend this for every septic system but it is possible and can be accomplished if we desire that amount of protection or have doubts that a system is functioning.

PH wrote : Do manufacturer's install sampling ports? if they don't, then we're stuck with a very expensive retrofit or custom fit problem.

PH wrote : Also, there would have to be a port for influent and effluent since the object is to do either reduce the nitrogen concentration to a given target, or increase the proportion of nitrogen removed. Right?

The sample port from pipe out of system to drain field, is just a small part that costs less than \$3.00 at Home Depot. This was explained to me, that like a toilet, the water has a cutoff valve; the person who puts in the equipment, not the manufacturer, installs that this. With a sampling port, the flow out of the septic system can be easily monitored.

Inflow needs some special equipment to be performed right. It really needs to be a 24 hour composite sample that must be homogenized, possibly with a grinder, in the field. Inflow TN concentrations can vary from 30 to 200 mg/L. It might be better not to sample the inflow and just sample the outflow. This would be one sample for Total Nitrogen (TN). To analyze TN one has to perform a TKN which measures reduced nitrogen and Nitrate/Nitrite, which measures oxidized nitrogen and add them together. Thus you would get TN and NOx (oxidized nitrogen which is 99% nitrate). I would think that a sampling performed on a system with a sampling port and laboratory analysis would cost less than \$50

PH wrote : And what sort of sampling rate would be necessary? The influent is highly variable and I'd suspect the effluent might also, though hopefully less so. A single sample taken once every 6 months would not really suffice would it? I'm not sure of how variable these systems are.

The influent is much more variable than the effluent. I would have to rely on experts to determine sampling rates. I think six months would be very sufficient. Most of all I would like to see that people could check their systems when they wanted to, cheap and easy, with a sampling port. This would also make some kind of mandatory sampling a lot easier.

PH wrote : It strikes me that total load would be a better performance measure that concentration or percent removed. but that would require a lot of a sampling.

To get a total load all one would need is some kind of flow meter on the water entering the system.

PH wrote : So, you're not suggesting this as a recurring part of inspection? or maintenance?

I personally think that sampling should be part of the inspection and if I had a system I would want to check, with sampling, to see that it was really working.

PH wrote : What do you think about the NSF certification?

This certifies different types of equipment or technologies, not an analytical test. NSF does not certify samplers or analysis. Laboratory certification is through NELAC that is run by the FL Dept of Health.

PH wrote : Is this because the parameters being measured aren't that many ? I do know that the analysis of lake water samples isn't cheap. Well, it might be OK for government, but not for individuals.

TN, and Oxidized nitrogen (nitrate and nitrite) is all that really needs to be analyzed at the effluent outflow to the drainfield.

PH wrote : I can see that this is true, but again, first decide what makes sense for land use, then decide just how much "centralization" is needed for wastewater (or stormwater, etc.) If we don't do that, then an offer to throw some money at a wastewater treatment system ends up determining how the community functions and how much it costs every now and in the future.

I kind of like the idea of using constructed wetlands to treat wastewater.

There are a lot of companies that can do this. Earthbalance in North Port, Florida is a good one. North American Wetland Engineering, in Minnesota has some nice example projects. This link will take you to their projects section, look at some of the residential projects. The wetland is really a very efficient drain field. They also cluster developments around their own properly designed wetland.

<http://www.nawe-pa.com/projects/>

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Big Bend Sierra Club, Vice Chair/Conservation Chair/WaterQuality/Habitats
Friends of Wakulla Springs, Board of Directors
Leon County Science Advisory Committee, Board of Directors
Ochlockonee Soil and Water Conservation District, Supervisor (2000-2009)

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“We risk environmental catastrophe because we no longer see the earth as holy but regard it simply as a ‘resource’. Unless there is some kind of spiritual revolution that can keep abreast of our technological genius, it is unlikely that we can save our planet. A purely rational education will not suffice.”

Karen Armstrong, *The Great Transformation: The Beginning of Religious Traditions*, 2006. Anchor Books.

[Top](#)

Mann 12/11/09

WHoa!

While it seems like the state purchase of the Chason Woods property may solve the problems with that development, there are some related questions that have not, as far as I can see, been adequately discussed here, let alone answered well enough to endorse that proposal without clarification of some other questions.

1. Is there real demand for the kind of housing -- in this area -- this development seeks to meet? If there is, will other (or the same) developers not try to develop other properties in that same area (Southern Leon County) to capitalize on such demand?
2. If so: would those developments not pose similar environmental concerns as the ones leading to the opposition against Chason Woods?
3. Would it be realistic to expect the state to buy those properties as well?
4. If there is NOT a significant demand for housing in that area: would this lend credence to a suspicion that actually was brought up in this forum: that the developers were actually considering such a buyout as one possible outcome -- by coming up with a project proposal that not only violated existing county regulations but raised all those concerns about its impact on Wakulla Springs, or on the Leon County budget (with the central sewer extension) or the prospect of setting a precedent for other, similarly questionable developments in the same area? So if the developers were to not just be held harmless (not losing money for having bought the property) but actually making some profit (are there numbers for this?) from that deal, is this going to set a

precedent for others trying for similar projects -- either making money on the buyout, or on questionable developments that will end up (barely) meeting standards that might be okay elsewhere but not preventing damage to Wakulla springs?
Unless questions such as these are answered properly, the easy-out to have the state buy the property might just be pushing the problem into a different area. State ownership may be the best for Chason Woods: but are the reasons why it might be so limited to Chason Woods?
Just asking.

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[Top](#)

12-11-09 McArthur

On Dec 11, 2009, at 2:15 PM, Sam McArthur wrote:

NOTE: This is the CURG-List email group - all replies will be sent to the entire group as part of the general discussion.

Dear CURG,

Please send statements of support to Mike Sole for the state to purchase Chason Woods.

The Florida Cabinet has recently released money for the Florida Forever program, so there is renewed hope that the state can purchase the Chason Woods property and add it to the Wakulla State Forest.

The landowner appears to be a willing seller. But it can only happen with your help. E-mails are needed to Mike Sole, Secretary of the Florida Department of Environmental Protection, urging state purchase:

Michael.sole@dep.state.fl.us

You can also call his office at 245-2011 to register your support.

FACTS REGARDING THE PROPERTY

The property, which may soon be under development, has many karst features that contribute to the aquifer. All of them are in the contribution zone to Wakulla Springs.

Because of the high vulnerability of these lands, the acquisition of this property is critical to the protection of Wakulla Springs.

The Chason Woods property lies directly south of the Ames Sink Area Swamp and comprises 700 acre of wooded lands heavily laden with karst

features

At least two of these karst features may have a direct link to Wakulla Springs due to their proximity to the Ames Sink conduit which has been linked to the Spring in the dye trace studies performed by Hazlett-Kinkade.

One of those sinks was surveyed by divers in December of 2007. They described a large fissure extending down through the limerock to three small spring vents each about 8" high and several feet wide at about 70' below the surface. The vent walls were scalloped limestone kept white by flow and cave crayfish were observed in the openings.

Other documented studies indicate the water flowpath from the Ames Area (and also the City of Tallahassee's Waste Water Treatment Sprayfield) pass through this property towards the Indian and Wakulla Springs cave systems.

Thanks for your help in protecting Wakulla Springs!

Thanks to Doug Alderson for the tip.

Sam

McArthur 12/12/09-1

-----Original Message-----

From: curg-list-bounces@curg.org [mailto:curg-list-bounces@curg.org] On Behalf Of Thorbjorn Mann

WHoa!

While it seems like the state purchase of the Chason Woods property may solve the problems with that development, there are some related questions that have not, as far as I can see, been adequately discussed here, let alone answered well enough to endorse that proposal without clarification of some other questions.

1. Is there real demand for the kind of housing -- in this area -- this development seeks to meet?

Here is the demand for houses in Leon County:

<http://blog.manausa.com/wp-content/uploads/2009/11/Tallahassee-Real-Estate-Market-Home-Sales-History21.JPG>

If there is, will other (or the same) developers not try to develop other properties in that same area (Southern Leon County) to capitalize on such demand?

2. If so: would those developments not pose similar environmental concerns as the ones leading to the opposition against Chason Woods?

Protecting our aquifer should be one of the most important functions of our comp plan. That and the land development regulations should ensure this.

3. Would it be realistic to expect the state to buy those properties as well?

We, the state, probably do not have the money. But, if we don't have the money, how can we possibly afford to treat the dirty water and somehow restore the aquifer in the future?

4. If there is NOT a significant demand for housing in that area: would this lend credence to a suspicion that actually was brought up

in this forum: that the developers were actually considering such a buyout as one possible outcome --

Welcome to the wonderful world of real estate and politics. They bought it for about 1.3 million dollars. It is currently appraised by the LCPA for 3.5 million dollars.

I think we need to save our water.

Sam

[Top](#)

[McArthur 12/12/09-2](#)

NOTE: This is the CURG-List email group - all replies will be sent to the entire group as part of the general discussion.

Read from the bottom up. It's an enlightening example of how the real estate developers interface with our government:

<http://www.tallahassee.com/assets/pdf/CD1474011125.PDF>

October 13, 2009 5:32 PM -Culpepper politely informs Bass of documents that will be at the technical review.

Wed, 14 Oct 2009 09:07:58 - Bass paints it as an economical way to support the extension of central sewer and water.

10/14/2009 6:01 PM - Then it looks like Desloge, Alam, Long, and McDevitt are into it.

10/14/2009 8:51 PM - Biblo responds professionally

10/14/2009 9:15 PM - McDevitt paints it as a "fire storm"

10/16/2009 Time unknown - Biblo defends his position and refuses to shirk from his duties despite feeling bad for the developer.

I'm not criticizing, just laying out the public records.

Personally, if the developer sells it for it's LCPA appraised value of about \$3,500,00.00, it appears it will make about \$2,100,000.00. I can't feel sorry for a developer making \$2,100,000.00 over the 6 years since its purchase in 2003. Maybe they can donate it to Friends of Wakulla Springs, 550 Wakulla Park Drive, Wakulla Springs, Florida 32327.

See also:

<http://www.tallahassee.com/legacy/special/springs/>

That's about \$350,000.00 per year. How many people on this list make \$350,000.00 per year? Not me!

Food for thought.

Sam

CURG-List mailing list
CURG-List@curg.org

<http://lists.curg.org/listinfo.cgi/curg-list-curg.org>

[Top](#)

Mann 1/3/10

Hello and happy new year. For whatever it is worth: Anybody interested in what I had started to organize on the Chason Woods issue -- based on the CURG emails only as a starting point (some of which I missed and discarded before I decided to take this on, and before the deafening roar of disinterest from this forum caused me to divert my efforts into other endeavors), -- please let me know.

I have, in separate files:

- a compilation of those emails I saved, in chronological order and tagged for lining to issues and arguments);
- a list of topics and issues pertaining to them, and a beginning collection of answers and arguments for these;
- a few issue maps showing the relationships between issues.

I have not developed an argument assessment sheet, since a decision (or first step, the review committee recommendation) is not going to be taken on the proposal as presented originally, and no arguments have been entered about a modified application. The material is obviously incomplete; (it would have been easier to compile a more comprehensive account if it could have been done day by day as the information comes in, instead of after the fact.) But I think it shows the basic idea, and organizes some of the information about this controversy in a way that might help inform both members of this forum and the general public. (I can't speculate on official decision-makers). I can email pdf files of this material to interested people upon request to [<thormann@nettally.com>](mailto:thormann@nettally.com)

My current best 2 cents judgment (based on the arguably incomplete information I, as many other residents, have been able to digest so far) as to what should be done: since Pam HALL's analysis that the number of units proposed will generate as much damaging effluent with PBST's as the 300 units allowable with standard septic tanks and central sewer will just set a precedent for more such development, it would seem that what's needed is a) a moratorium for any developments outside the USA, and b) some determined effort to improve the performance of the overall central sewer system (as related to what it does to the groundwater in general and Wakulla Springs in particular. Just turning down Chason Woods itself, even having the State buy the property, seems to just sweep the problem under a different rug.

[Top](#)