Thurston County Board Briefing

Briefing Date/Time:	**Wednesday February 26 at 2:00 PM**
Office/Department & Staff Contact:	**Environmental Health Division** **Thurston County Public Health and Social Services** **Art Starry (2587) and Jane Mountjoy-Venning (2582)**
Topic:	**Scatter Creek Aquifer Septic System Management Project**
Purpose: (check all that apply)	☐ Information only ☑ Decision needed ☑ Follow up from previous briefing At this briefing we will review: • Scatter Creek area ground water quality data • Modeling results that assess the impact of septic systems on ground water quality • Status of advisory committee meetings • Next steps proposed for community outreach

Background & Overview of Surrounding Issues:

1. The Scatter Creek aquifer is a shallow, unconfined, and extremely vulnerable ground water supply. The aquifer serves more than 1,000 public water systems and single-family wells and is the sole source of drinking water for more than 18,000 area residents.
2. In the past septic systems and land use activities polluted the aquifer, resulting in violations of drinking water standards, increased public health risks, and water quality degradation of Scatter Creek and Chehalis River.
3. We have a grant that provides resources to evaluate the risks posed by septic systems to the Scatter Creek aquifer and work with area stakeholders to develop options to address those risks.
4. The goal of this project is to work with the advisory committee to formulate recommendations and long-term management options for on-site sewage systems that the Thurston County Board of Health, Health Officer and Board of County Commissioners can consider.
5. Project staff and the citizen advisory committee have met 14 times to learn about the aquifer, the geology of the area, and why the aquifer is vulnerable to pollution. The committee has also learned about the treatment capabilities of septic systems, the pollutants they produce and health effects from contaminated water.
6. Since September 2013, the advisory committee has reviewed results from a computer generated ground water model that evaluates how septic systems affect the aquifer. The model has evaluated current conditions and two future development scenarios.
7. The computer model predicts ground water nitrate concentrations. Nitrate is a ground water contaminate of public health significance. Septic systems release nitrate to the environment and can produce significant levels of pollution under certain circumstances. The model evaluates the impact

of septic systems by predicting ground water nitrate concentrations under different model scenarios.

8. We have inventoried development in the area. We believe there are approximately 3,400 septic systems currently in the project study area (see map).
9. Model results show that septic systems currently contribute 0.5 - 2.5 mg/l nitrate to groundwater in the region, in addition to other sources of nitrate pollution such as livestock waste and fertilizer. Total nitrate concentrations in our well network generally range from 1-3 mg/l; however, levels in one well spiked to 6.3 after heavy rains in October 2013 (see attached). The drinking water standard for nitrate is 10.0 mg/l.
10. Land use analysis indicates approximately 324 more septic systems can be built in the area (3,696 total) if every existing legal lot is developed. The model predicts these additional septic systems will raise ground water nitrate concentrations by 0.1 to 0.3mg/l (3-5% - see attached tables).
11. Our analysis indicates that 840 more septic systems can be added to the area (4,536 total) if property develops the maximum extent allowed by current zoning. The model predicts these additional septic systems will raise ground water nitrate concentrations by as much as 0.5 mg/l (approximately 20 %). Under this "full build out" scenario, septic system could contribute up to 3.78 mg/l nitrate to a well in the northwest corner of the study area.
12. Land use activities contribute to nitrogen levels in the area. These sources add more than 1.0 mg/l nitrate to some wells.
13. This project includes a stakeholder process, community meetings and a significant education and outreach process to help inform and educate community members about the vulnerability of the Scatter Creek Aquifer and the need for the project. The stakeholders have been actively involved in the project. We expect some stakeholders will attend this briefing.
14. Stakeholders and concerned citizens have raised several concerns throughout the life of the project, including:
    - New county programs and regulations could reduce property values and development opportunities.
    - Improperly managed property development and septic systems could significantly pollute the Scatter Creek Aquifer.
    - The Tenino wastewater treatment plant could have impacts on regional water quality, especially if it expands and discharges greater volumes of water.
    - Growth projections may not accurately assess the impact of critical areas regulations and efforts to protect endangered species and their habitat.
    - Nitrate and current water quality standards may not be sufficient to gage the public health risk from septic systems.
15. We want to have a workshop in late April to update community members on the project and the modeling results. The workshop will help make us aware of community concerns as we develop recommendations for policy makers.
16. We plan to send a newsletter to all residents in the project area that tells them about the community workshop and the project. The newsletter will go out approximately 14 days before workshop. We will work with the PIO's office to develop news releases and solicit news coverage about the project and workshop.
17. We need to know if Board members:
    - Have questions or concerns about the project or the initial monitoring and modeling results
    - Plan to attend the workshop
    - Want to play a role in the workshop
    - Have questions or suggestions about the project or proposed community outreach efforts
    -

Documents Attached:

- Scatter Creek Aquifer Septic System Management Project Summary and Time Line
- Scatter Creek Watershed Preliminary Model Area 2013 (map)
- Scatter creek well network sampling data – 2012 to 2013
- Nitrate Comparisons thru Simulations, and, New Scatter Creek Model Simulations for Jan 8, 2014 (tables)

Summary & Financial Impact:

The total project cost is $237,509. The project is funded by a Centennial Clean Water Grant from the Department of Ecology. Grant match (25%) is provided south Thurston County ground water monitoring funds provided by Development Services and PHSS ground water funds.

The costs associated with any plan recommendations or strategies will be evaluated by staff and the advisory committee. There are not any recommendations at this time.

Affected Parties:

Scatter Creek area property owners, residents, water utility owners and customers, and project staff.

Options with Pros & Cons:

Our signed grant agreement stipulates the project design requirements. For this briefing staff will:

- Review the status of the project
- Review ground water quality and modeling results
- Discuss the proposed community workshop and public information strategy
- Work to identify and address any questions or concerns from the Board

Staff Recommendation(s):

This primary purpose of this briefing is to update the Board and to receive guidance on the community workshop. We recommend a workshop in later April to update community members on the project and the modeling results.

Board Recommendation(s): **Board Discussion, Deliberation and Direction**

Next Steps/Timeframe:

Conclusion:

Review Board's recommendation with next steps and time frames. Include when the Board should expect to see this issue before them again, along with the expected date of final outcome.

Scatter Creek Aquifer Septic System Management Project
Project Summary and Time Line
For February 26, 2014

PROJECT SUMMARY – from grant agreement

This project will use a numerical ground water modeling to quantify the risk posed by on-site sewage systems (OSS) to the Scatter Creek Aquifer and to evaluate different land use development and sewage management scenarios. The results will be used to develop sewage management regulation and policy options for consideration by policy makers. Properly designed and implemented regulations and policies are the best means available to protect the aquifer from risks posed by OSS.

Project Completion Date – December 31, 2014

PROJECT TASKS

<u>Ground Water Monitoring</u>

1. Monitor groundwater for nitrate and fecal coliform bacteria and hydraulic head measurements in the current domestic well network throughout the study area during the project. Wells are monitored twice per year.
2. Sponsor a drinking water well sampling event for single-family wells within the Scatter Creek area to assess the water quality and provide information to the owners and to supplement the water quality data throughout the aquifer.
3. Inventory and map existing on-site sewage systems (OSS) within the area using ArcGIS, the AMANDA permit tracking system, and assessor use codes (to identify number of OSS on a parcel).
4. Inventory and map existing undeveloped lots to be used in Task 3 to model future groundwater contamination scenarios under build-out conditions.
5. Quantify the pollutant load from different OSS for use in the Regional Ground Water and Contaminant Fate and Transport Model (Task 3) by calculating the amount of nitrogen released for the different types of OSS identified in Task 2.D.

Status:

- Ground water has been sampled four times as part of this project. More wells have been added to the sampling network. Results show that water quality (nitrate) in the aquifer has improved since 2008, though we did see increased levels of contaminants in the latest sampling following heavy rains. Sampling will continue for the duration of the project.
- Inventory work is complete. We are working to translate the inventory into pollutant loads that will be used in the ground water model.
- 35 households took advantage of the free water testing offered during the drinking water sampling event.

Regional Ground Water and Contaminant Fate and Transport Model

1. Refine the ground water model for the Scatter Creek area to evaluate ground water contamination and the potential impacts from various land use scenarios.
2. Simulate and calibrate the ground water model using the septic system and land use information collected in Task 2.
3. Evaluate the water quality impact of sewage management scenarios put forth by policy makers, stakeholder groups and staff.

Status:

- The model framework has created using new, more powerful software. The model is being refined so it can be used to evaluate current land use and different scenarios.
- The model was introduced to the advisory committee at the May meeting, and several modeling scenarios have been shared with the committee since September 2013.
- Maps that show how water quality has changed since 2008 were shown to the committee in May. These maps were also shown at the July community meeting.
- We are characterizing the pollutant loads from existing septic systems to help calibrate the model.
- The advisory committee and staff are creating land use and development scenarios that the model will evaluate.
- We plan to complete the modeling by March 2014.

Public Outreach and Education

1. Convene a stakeholder committee to help guide the community discussion of ground water quality and on-site sewage system pollution contribution. Stakeholder representatives will act as liaisons for the community. The stakeholder committee will assist in consideration of the sewage management issues and help develop a ground water protection strategy for the aquifer.
2. Conduct at least three public meetings; establish a project web site; and provide a minimum of two newsletters and direct communication to inform area residents of the vulnerability of the aquifer, identified ground water pollution problems, and project status.
3. Draft a ground water protection strategy with input from the stakeholder committee. The strategy will evaluate the risks posed by on-site sewage systems and evaluate sewage management options and priorities.

Status:

- The 11 member citizen advisory has met 14 times. They have learned about the project goals, the geology of the area and how it makes the aquifer vulnerable to pollution, the treatment capabilities of septic systems and the pollutants they produce.
- A project information sheet was mailed to area residents in April 2012. A newsletter was sent prior to the June 2013 community workshop and another is planned prior to the April 2014 community workshop.
- A project website has been up since April 2012. The site includes a project description, meeting agendas, presentations, notes and past ground water reports and studies for the region.
- A community workshop is tentatively scheduled for April 2014 in the Rochester area. The workshop will give community members an opportunity to learn about the project, the

vulnerability of the aquifer, and modeling results. The committee is seeking community input as they draft recommendations.

- We will send a newsletter to all residents in the project area that tells them about the community workshop and the project. The newsletter will go out approximately 14 days before workshop. We will work with the PIO's office to develop news releases and solicit news coverage about the project and workshop.

Policy Development and Implementation

1. Review the ground water protection strategy with the Thurston County Board of Health.

2. Prepare regulations and policies for consideration by the Board that are designed to address any public health threat identified by ground water modeling and the ground water protection strategy. Emphasis will be placed on OSS management options.

3. Work to implement any regulations adopted by the Board of Health.

Status:

- Policy recommendations will be developed as part of the stakeholder process. The June workshop provides an opportunity for community members to provide input on model scenarios and management strategies.

Scatter Creek Aquifer Area Project Timeline

Updated February 26, 2014

Spring 2012

- Ground water monitoring ongoing
- Initial public outreach including mailing & website

Summer 2012

- Ground water monitoring ongoing
- Citizen Advisory Committee members selected

Fall 2012

- Ground water monitoring ongoing
- Citizen committee meets
- OSS inventory begins

Winter 2012/13

- Ground water monitoring ongoing
- Citizen committee meets
- Ground water modeling begins

Spring 2013

- Ground water monitoring ongoing
- Ground water modeling continues
- Citizen committee meets

Summer 13

- 1st Community Workshop on July 30, 2013
- Drinking water event - 25 area residents sampled their wells
- Ground water monitoring ongoing
- Citizen committee meets

Fall 2013

- Ground water monitoring ongoing
- Citizen committee meets
- Ground water modeling in response to community input

Winter 2013/14

- Ground water monitoring ongoing
- Citizen committee meets
- Ground water modeling in response to community input

Spring 2014

- Ground water monitoring ongoing
- Citizen committee meets to draft plan and recommendations
- 2nd Community Workshop – Review water quality and modeling results

- Work as directed by BOH in response to recommendations

Summer 2014

- Ground water monitoring ongoing
- Citizen committee meets to draft plan and recommendations
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Fall 2014

- Ground water monitoring ongoing
- 3rd Community Workshop – Draft of recommendations
- DRAFT Plan and recommendations presented to BoH
- Citizen committee meets as needed to refine plan and recommendations

Winter 2014

- Ground water monitoring ongoing
- Plan completed
- Plan adoption if Board concurs

THURSTON COUNTY

Scatter Creek Watershed Preliminary Model Area 2013

Full Buildout Scenario Using
Current On-Site Septic, TRPC Projected Full Buildout, Vested Plat and Sewer Availability Data

- Full Buildout Scenario Added On-Site Septic
- Current On-Site Septic Convert Sewer in Full Buildout
- Tax Lot Buildout Scenario Added On-Site Septic
- Current On-Site Septic - May 2013
- Scatter Creek Project Area - Tax Lots
- Scatter Creek Preliminary Model Area
- Sections

Points represening On-Site Septic were placed within the tax lot using ArcGIS software. These point are not current or potential septic contribution locates and are intended only as a representational Latitude/Longitude location within the parcel for the purposes of modeling septic contribution to the Scatter Creek Project Area.

0 2,750 5,500
Feet

Thurston GeoData Center

Map Created by kah on 12/11/2013

SCATTER CREEK GROUNDWATER SAMPLING NETWORK

October 2012 through October 2013

Prepared for 2-2614 BoH Briefing

LOCAL WELL ID (SHORT VERSION)	SAMPLE DATE	Depth to Ground Water (in feet)	NITRATE (mg/L)	Total Coliform Bacteria	E_COLI
27RT04	10/8/12	41.28	1.200	Satisfactory	Absent
27RT04	3/6/13	29.21	1.300	Satisfactory	Absent
27PT03	3/20/12	5.17	2.000	Satisfactory	Absent
27PT03	10/9/12	18.61	1.700	Satisfactory	Absent
27PT03	3/6/13	7.76			
27PT03	3/13/13		1.700	Satisfactory	Absent
27PT03	10/9/13	10.33	1.900	Satisfactory	Absent
28RT01	10/8/12	19.15	1.900	Unsatisfactory	Absent
28RT01	3/6/13	8.67	2.300	Unsatisfactory	Absent
28RT01	10/17/13	12.10	2.200		
28RT01	10/22/13			Unsatisfactory	Absent
33BT01	10/9/12	17.73	1.500	Satisfactory	Absent
33BT01	3/6/13	8.27	1.600	Satisfactory	Absent
33BT01	10/9/13	11.24	1.700	Satisfactory	Absent
28LT01	10/9/12	17.52	1.700	Satisfactory	Absent
28LT01	3/6/13	5.47	2.300	Unsatisfactory	Present
28LT01	10/9/13	13.92	2.500	Unsatisfactory	Absent
33FT01	10/11/12	32.16	1.600	Satisfactory	Absent
33FT01	3/14/13	21.47	2.300	Satisfactory	Absent
33FT01	10/9/13	22.82	1.700	Unsatisfactory	Absent
33FT01	10/17/13			Unsatisfactory	Present
29QT03	10/9/12	24.77	2.400	Satisfactory	Absent
29QT03	3/5/13	12.58	2.700	Satisfactory	Absent
29QT03	10/10/13	18.37	2.800	Satisfactory	Absent
29QT03	10/10/13	18.37	2.800	Satisfactory	Absent
32KT01	10/10/12	30.28	0.900	Satisfactory	Absent
32KT01	3/13/13	17.94	0.900	Satisfactory	Absent
32KT01	10/10/13	20.83	1.100	Satisfactory	Absent
29BT01	10/9/12	41.69	2.100	Satisfactory	Absent
29BT01	3/6/13	30.24	2.200	Satisfactory	Absent
29BT01	10/17/13	37.74	2.300	Unsatisfactory	Absent
29QT02	10/10/12	22.97	1.900	Satisfactory	Absent
29QT02	3/5/13	10.64	2.200	Satisfactory	Absent
29QT02	10/10/13	16.36	2.200	Satisfactory	Absent
29L01	3/15/12	20.89	3.400	Satisfactory	Absent
29L01	10/8/12	35.02	2.700	Satisfactory	Absent
29L01	3/5/13	22.80	3.200	Satisfactory	Absent
29L01	10/10/13	29.11	3.000	Satisfactory	Absent
29DT02	10/8/12	42.15	1.200	Satisfactory	Absent
29DT02	3/7/13	29.76	1.500	Satisfactory	Absent
29DT02	10/9/13	38.00	1.500	Satisfactory	Absent
29NT01	10/10/12	27.11	2.200	Satisfactory	Absent
29NT01	3/7/13	14.43	2.900	Satisfactory	Absent

29NT01	10/16/13	18.85	2.600	Satisfactory	Absent
32MT02	3/12/12	16.75	2.700	Satisfactory	Absent
32MT02	10/1/12	29.53	2.500	Satisfactory	Absent
32MT02	3/6/13	17.49	3.000	Satisfactory	Absent
32MT02	10/7/13	21.28	3.500	Satisfactory	Absent
31JT03	3/14/12	13.15	2.100	Satisfactory	Absent
31JT03	10/1/12	25.79	2.400	Satisfactory	Absent
31JT03	3/7/13	14.00	2.900	Satisfactory	Absent
31JT03	10/7/13		3.200	Satisfactory	Absent
31JT04	3/12/12	17.85	2.200	Satisfactory	Absent
31JT04	10/1/12	30.25	2.400	Unsatisfactory	Absent
31JT04	3/7/13	18.47	2.700	Satisfactory	Absent
31JT04	10/8/13	21.00	3.100	Unsatisfactory	Absent
31KT06	3/12/12	19.64	2.400	Satisfactory	Absent
31KT06	10/1/12	32.62	2.500	Satisfactory	Absent
31KT06	3/4/13	20.41	2.900	Satisfactory	Absent
31KT06	10/7/13	24.65	6.300	Satisfactory	Absent
31KT05	3/12/12	16.48	3.100	Satisfactory	Absent
31KT05	10/2/12	29.87	2.600	Satisfactory	Absent
31KT05	3/4/13	17.13	3.500	Satisfactory	Absent
31KT05	10/7/13	20.90	3.700	Unsatisfactory	Present
31KT05	10/16/13			Unsatisfactory	Absent
06GT02	10/8/13	34.89	2.100	Satisfactory	Absent
31KT07	3/20/12	11.53	3.000	Satisfactory	Absent
31KT07	10/2/12	26.73	2.800	Satisfactory	Absent
31KT07	3/4/13	13.71	4.000	Satisfactory	Absent
31KT07	10/8/13	18.15	4.000	Satisfactory	Absent
31MT02	3/12/12	15.30	2.400	Satisfactory	Absent
31MT02	10/1/12	29.65	2.300	Satisfactory	Absent
31MT02	3/5/13	16.36	2.600	Satisfactory	Absent
31MT02	10/8/13	19.74	2.900	UnSatisfactory	Absent
31MT02	10/8/13	19.74	2.800	Satisfactory	Absent
06LT01	10/8/13	31.06	2.200	Satisfactory	Absent
06DT02	3/13/12	20.82	3.600	Satisfactory	Absent
06DT02	10/2/12	33.27	3.200	Satisfactory	Absent
06DT02	3/4/13	21.97	3.600	Satisfactory	Absent
06DT02	10/7/13	29.51	4.400	Satisfactory	Absent
06DT01	3/13/12	20.40	3.200	Satisfactory	Absent
06DT01	10/2/12	33.01	3.100	Satisfactory	Absent
06DT01	3/4/13	21.57	3.400	Satisfactory	Absent
06DT01	10/7/13	28.57	4.200	Satisfactory	Absent
36QT01	3/13/12	27.08	2.600	Satisfactory	Absent
36QT01	10/3/12	34.30	2.300	Satisfactory	Absent
36QT01	3/7/13	23.18	2.600	Satisfactory	Absent
36QT01	10/14/13	28.04	2.400	Unsatisfactory	Absent
36PT02	3/13/12		2.000	Satisfactory	Absent
36PT02	10/10/12	35.39	1.800	Satisfactory	Absent
36PT02	3/11/13	24.34	2.300	Satisfactory	Absent
36PT02	10/14/13	27.75	2.400	Satisfactory	Absent

01CT01	3/20/12	18.73	3.200	Satisfactory	Absent
01CT01	10/3/12	31.15	2.100	Satisfactory	Absent
01CT01	3/13/13	20.97	2.700	Satisfactory	Absent
01CT01	10/14/13	26.39	2.400	Satisfactory	Absent
02BT02	3/20/12	17.26	2.200	Satisfactory	Absent
02BT02	10/3/12	28.43	1.600	Satisfactory	Absent
02BT02	3/12/13	18.74	2.000	Satisfactory	Absent
02BT02	10/14/13	25.44	1.700	Satisfactory	Absent
02BT02	10/14/13	25.44	1.800	Satisfactory	Absent
02G01	3/15/12		2.300	Satisfactory	Absent
02G01	10/4/12		1.800	Satisfactory	Absent
02G01	3/12/13		2.200	Satisfactory	Absent
02G01	10/14/13		2.100	Satisfactory	Absent
11MT05	3/14/12	27.15	1.600	Satisfactory	Absent
11MT05	10/2/12	33.51	1.600	Satisfactory	Absent
11MT05	3/7/13	26.45	2.000	Satisfactory	Absent
11MT05	10/16/13	31.55	1.700	Satisfactory	Absent
03R01	10/4/12	34.77	1.400	Satisfactory	Absent
03R01	3/5/13	26.00	2.100	Satisfactory	Absent
03R01	10/8/13	32.85	1.700	Satisfactory	Absent
03KT01	3/14/12	17.41	1.800	Satisfactory	Absent
03KT01	10/4/12	27.78	2.000	Satisfactory	Absent
03KT01	3/11/13	17.41	2.300	Satisfactory	Absent
03KT01	10/15/13	25.48	2.300	Satisfactory	Absent
03FT02	3/15/12	20.32	2.300	Satisfactory	Absent
03FT02	10/3/12	31.34	2.000	Satisfactory	Absent
03FT02	3/11/13	20.47	2.100	Satisfactory	Absent
03FT02	10/15/13	29.05	2.300	Satisfactory	Absent
03FT02	10/15/13	29.05	2.400	Satisfactory	Absent
03PT03	3/20/12	18.21	2.700	Satisfactory	Absent
03PT03	10/3/12	29.05	1.800	Satisfactory	Absent
03PT03	3/11/13	20.18	2.300	Satisfactory	Absent
03PT03	10/15/13	26.95	2.200	Satisfactory	Absent
34M01	3/13/12	20.94	1.100	Satisfactory	Absent
34M01	10/3/12	36.64	1.300	Satisfactory	Absent
34M01	3/11/13	21.44	1.900	Satisfactory	Absent
34M01	10/15/13	34.03	1.600	Satisfactory	Absent
33KT01	3/15/12	27.65	1.600	Satisfactory	Absent
33KT01	10/11/12	39.81	1.400	Satisfactory	Absent
33KT01	3/14/13	28.73	1.400	Satisfactory	Absent
33KT01	10/16/13	38.06	1.600	Satisfactory	Absent
04B01	3/15/12	20.45	2.100	Satisfactory	Absent
04B01	10/4/12	32.80	1.500	Satisfactory	Absent
04B01	3/14/13		2.200	Satisfactory	Absent
04B01	10/10/13	30.93	1.700	Satisfactory	Absent
09G01	3/14/12	24.76	2.700	Satisfactory	Absent
09G01	10/4/12	30.02	2.400	Satisfactory	Absent
09G01	3/12/13	25.16	3.100	Satisfactory	Absent
09G01	10/16/13	27.93	2.500	Satisfactory	Absent

Table - Nitrate Comparisons thru Simulations

		X	Y	NO3 Conc mg/l	
Simulation 1	NW Corner	2871.9	17590.6	**3.171466**	*Highest Concentration in Model*
Simulation 2				**3.268395**	
Simulation 3				**3.781119**	*16%* increase in contamination *(Sim2 to Sim3)*
Simulation 1	TW-2	14420	7790	**1.905**	
Simulation 2				**1.99684**	
Simulation 3				**2.377**	*19%*
Simulation 1	TW-1	15888	7156	**1.874**	
Simulation 2				**1.94031**	
Simulation 3				**2.344**	*21%*

New Scatter Creek Model Simulations for Jan 8, 2013 Meeting

	Septic Cells	House/cell	Simulation A Existing Septics	
9/18/2013	281	12	3372	
	Septic Cells	**House/cell**	**Simulation B** ***Current + Build Out*** **Septics**	
12/4/2013	308	12	3696	*Existing Lots 'Buildout': 324 adds*
	Septic Cells	**House/cell**	**Simulation C** ***Current + Legal Build Out + Future*** **Septics**	
1/8/2014	378	12	4536	*Future Buildout: 840 adds*

Other Facts:

Model Cells Active	Active Area mi^2
3927	**23.4**

	%Septic Cells/Active
Simulation 3	9.6%