

### **3. Survey**

#### **Background**

In 2013 Peconic Green Growth (PGG) developed a questionnaire, with input and testing by the Orient Association (OA), to assess the public's opinion about and its awareness of decentralized wastewater issues. The survey was designed to evaluate the current knowledge and practices relative to onsite wastewater treatment, the public's receptiveness to enhanced treatment systems, and their tolerance for the increased costs associated with them. The survey was designed for use throughout the East End. Outreach was phased, starting with the North Fork. The towns of both East Hampton and Shelter Island were approached, but chose not to participate in the survey effort. The most successful outreach efforts occurred when local civic and home owner associations partnered with PGG. In addition, Peconic Green Growth went door-to-door in those communities that were selected for the engineering evaluations, but where no local association existed.

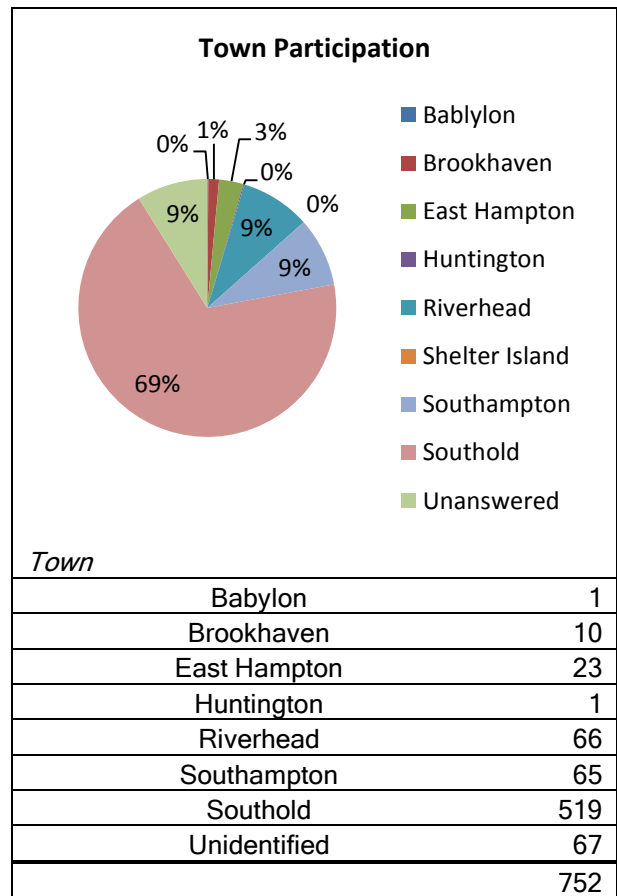
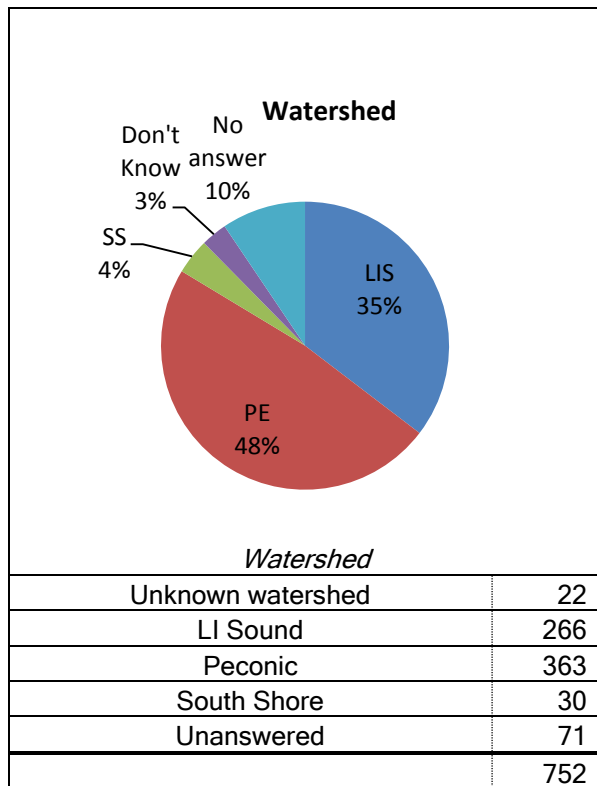
We used many methods of outreach to encourage people to take the survey including email requests through local civic or home owner associations, presentations at public libraries (Riverhead, Mattituck and Greenport), home owner association meetings, links on websites including those of the Town of Riverhead, Peconic Green Growth, and the Orient Association. Presentations were made to all town boards except East Hampton. Hard copies of the survey were distributed in two local country stores, at local meetings and forums, via solicitations in front of one post office, and through personal contacts made by project volunteers. Door-to-door outreach was conducted in Aquebogue, East Marion, Flanders, Peconic, Mattituck, North Sea, and Riverhead. Outreach to ten homeowner associations located within the Peconic Estuary watershed was made.

The Town of Southampton was going to send the surveys to target neighborhoods, but ultimately opted to develop a parallel survey with Stony Brook University. The Nature Conservancy also conducted a separate survey with focus group feedback. Our survey differs from these in that personal information was requested, though not required. We wanted to assess neighborhoods for receptivity to real projects. Due to the varied methods of outreach; including forums, newspaper articles, town hall meetings, and partnerships with local civic associations, responsiveness varied by community. As of September 1, 2014, there were 752 unique responses. Where there was an indication or knowledge that the same owner had more than one property, the duplicate responses were kept (4).

#### **Responsiveness**

A few of the survey respondents did not know within which watershed their home was located. Where address information was available, PGG assigned the listing to the correct estuary. Ninety-three responses had unidentified watersheds after those assignments. Forty-eight percent (363) of the respondents had homes in the Peconic Estuary. Residents of Southold Township were much more responsive (69%) than other areas. Much of this is due to the involvement, or lack of it, of local civic and home owner associations. The Orient Association, East Marion Community Association, New Suffolk Civic Association, Flanders Riverside & Northampton Civic Association, and the Bay View Pines Civic and Taxpayers Association all participated actively, while other groups only initiated outreach, such as Southold Voice and South Jamesport Civic Association. It is important to note that some participating associations did get backlash from some of their members. These members expressed concerns regarding costs and non-conformance.

Orient evidenced the highest participation rate with 26.5% (199) of all responses. This was due both to the continued efforts of the Orient Association and the fact that residents predominantly rely on individual wells instead of public water for their drinking water making them more sensitive to water quality issues. New Suffolk (69), East Marion (66) and Southold (65) also showed relatively high participation rates. Some target areas did not have associations with which to partner. PGG spent a day in each of the latter communities conducting door-to-door interviews and distributing surveys. The immediacy of the impacts of water quality on personal welfare, even more than environmental benefits, probably had an impact on the participation rate.



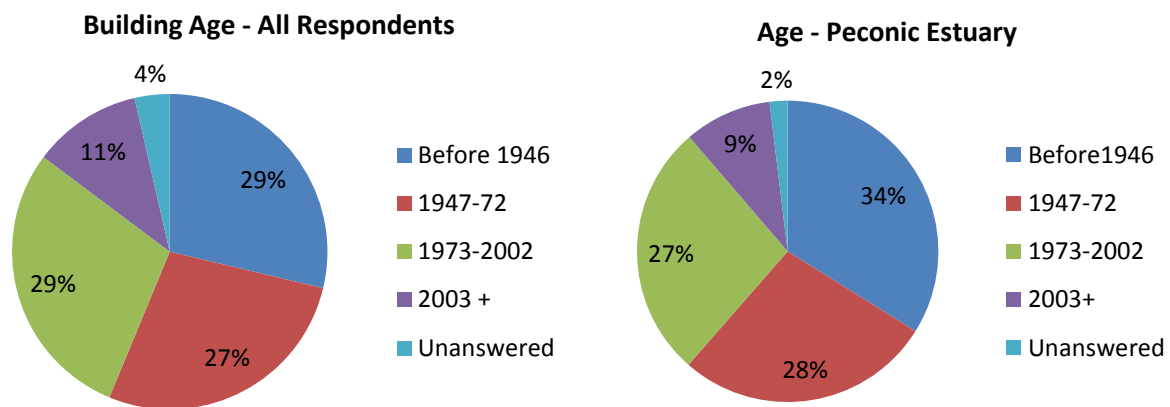
Orient responses were analyzed independently to assess overall influence. Other than drinking water source being mostly from individual wells rather than publically sources from the Suffolk County Water Authority, most Orient responses were in line with answers from the other hamlets.

### Survey breakdown by question

Total Survey Responses: 778 responses as of September 30 2014; 26 were discarded due to duplicate records, resulting in 752 unique responses.

1 When was your house built?							
	All Responses			Peconic Estuary			
Before 1946	216	28.7%	28.7%	Before 1946	123	33.9%	33.9%
1947-72	207	27.5%	<b>56.3%</b>	1947-72	100	27.5%	<b>61.4%</b>
1973-2002	218	29.0%	85.2%	1973-2002	99	27.3%	88.7%
2003+	84	11.2%	96.4%	2003+	34	9.4%	98.1%
Not sure/unanswered	27	3.6	100.0%	Not sure	7	1.9%	100.0%
	752			363			

Buildings built before 1946 represent 33.9% of the homes in the Peconic Estuary watershed, with another 27.4% being built between 1947 and 1972. Therefore, a total of 61.4% of the housing stock was built prior to 1973. Any building built before 1973, with no substantial addition, is likely to have a cesspool. Since PGG did target some older neighborhoods, the overall numbers are probably more realistic for the estuary. This percentage can also be compared to data obtained from the Town of Southampton, which had information regarding the age of structures in their data sets. Examining all properties in the Peconic Estuary in Southampton, 56% of the buildings were older than 1973 – almost the same percentage as the survey results for all respondents, and therefore a reasonable and recommended starting point for evaluating need throughout the watershed. Since the proposed clustered systems would be in older neighborhoods, this percentage is expected to be higher for targeted project areas. The 2002 partition date was chosen, as water conservation regulations were then introduced to limit fixture consumption. From this, an assumption that 85% percent of homes do not have water conserving fixtures was selected as a reasonably conservative starting point for projects combining wastewater improvements with water conservation efforts.



<b>2 Which kind of wastewater system do you have?</b>				
	<i>All Responses</i>		<i>Peconic Estuary</i>	
Cesspool	321	42.7%	154	42.4%
Septic + leaching pits	215	28.6%	116	32.0%
Septic + field	77	10.2%	39	10.7%
Community	9	1.2%	2	0.6%
Central Sewer	11	1.5%	5	1.4%
Don't know	82	10.9%	33	9.1%
Unanswered	37	4.9%	14	3.9%
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If one combines the percentage of people who have cesspools with even half of those who don't know or didn't answer, the estimated total of cesspools is 50.6% (48.9% for the Peconic Estuary), both of which are lower than the 56% of homes older than 1973. The lower number is appropriate for calculating need, as some older homes may have expanded and replaced cesspools with code compliant systems. Therefore a conservative assumption that 49% of the homes have cesspools could be considered an appropriate starting factor for calculating the need for cesspool upgrades in the Peconic Estuary. The cesspools will be priority systems for upgrade, especially if in vulnerable areas, such as flood zones or in areas with shallow depth to groundwater.

<b>3 How many leaching pits does your system have?</b>				
	<i>All Responses</i>		<i>Peconic Estuary</i>	
	#		#	
1	54	24.7%	25	20.0%
2	61	27.9%	35	28.0%
3	29	13.2%	20	16.0%
more	25	11.4%	20	16.0%
Don't know/Not sure	50	22.8%	25	20.0%
	219		125	
% of systems with more than 1 pit	52.5%		60.0%	
unanswered	532		238	
S+ LP -(215) # answered in excess	4		9	

In the online survey, this question became applicable when a septic system with leaching pits was selected for question #2. Since the overall number of responses was higher, we assume people with more than one cesspool also answered this question on the hard copy survey. The answers would indicate the prevalence of shallow depths to groundwater. If a system had more than one leaching pit, the design had most likely been adjusted to allow the installation of a shallower system with multiple leaching pits to accommodate wastewater recharge clearances to groundwater. The shallow systems will be expected to fail when groundwater levels rise due to climate change. For the Peconic Estuary 60% of the responses had multiple pits, indicating that SCDHS requirements for alternative designs were triggered by shallow depths to groundwater. In the Peconic Estuary, 20% of the respondents did not know how many pits they had.

The percentage of shallow systems was high compared to the mapping in Chapter 3, which identified 33.8% of the buildings in the Peconic Estuary having shallow depths to groundwater. Shallow depths to groundwater are a more apparent and recognizable condition of potential failure than any other attributes, triggering interest from owners who know they have untenable conditions. When conducting the survey, a family told us that the cesspool was under their deck. The deck sat approximately 18 inches above the adjacent surface waters. The cesspool had been installed in 1966 and was never pumped out. They knew they had a problem and had witnessed first-hand the deterioration of their local water quality. On the other hand, people living on higher ground, even those living on small lots with porous soils, did not have the same concern about the local impacts of their wastewater discharges.

<b>4 Do you know where on your lot your wastewater system is?</b>				
	<i>All Responses</i>		<i>Peconic Estuary</i>	
Yes, precisely	491	65.3%	250	68.9%
Yes, approximately	168	22.3%	76	20.9%
No, not sure	39	5.2%	21	5.8%
no answer	54	7.2%	16	4.4%
	752		363	

A high percentage of people were knowledgeable about the location of their systems. Of all respondents, 87.6% knew either precisely or approximately where their systems were located, with 89.8% knowledgeable in the Peconic Estuary. Since most of these individual systems have buried hatches, this percentage was encouraging.

<b>5 When was your septic tank last pumped out?</b>				
	<i>All Responses</i>		<i>Peconic Estuary</i>	
<3 years	198	26.3%	105	28.9%
3-5 years	85	11.3%	49	13.5%
5-10 years	72	9.6%	39	10.7%
>10 years	60	8.0%	26	7.2%
Never	165	21.9%	71	19.6%
Not sure	96	12.8%	44	12.1%
No answer	76	10.1%	29	8.0%
	252		363	

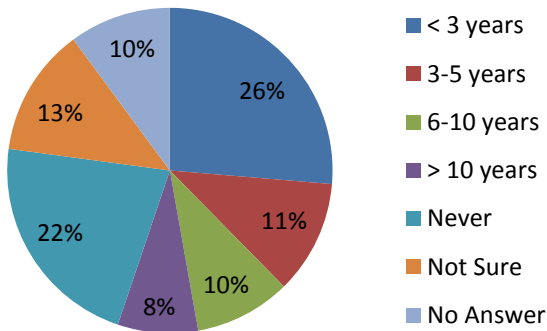
A relatively high percentage of people (26.3% of all respondents & 28.9% of those in the Peconic Estuary watershed), have had their systems pumped out within the last three years. Since most people only pump out their systems when there is evidence of functional failure, the systems that were recently pumped have probably had issues that would impact local water quality. Seasonal overloading in tourist areas also can stress onsite wastewater treatment systems, requiring additional pumping. The second highest category (21.9% all, 19.6% PE), people indicated that their systems had never been pumped out. When people never pump, it is probably due to small households, partial use, or possibly cesspools in very porous soils. The latter condition may be causing environmental harm without showing any recognizable evidence of system function failure.

6 How often do you need to have your cesspool or septic tank pumped out?				
	<i>All Responses</i>		<i>Peconic Estuary</i>	
<3 years	44	5.9%	23	6.3%
3-5 years	97	12.9%	49	13.5%
5-10 years	107	14.2%	59	16.3%
>10 years	152	20.2%	72	19.8%
not sure	266	35.4%	132	36.4%
n/a sewer	11	1.5%	4	1.1%
unanswered	75	10.0%	24	6.6%

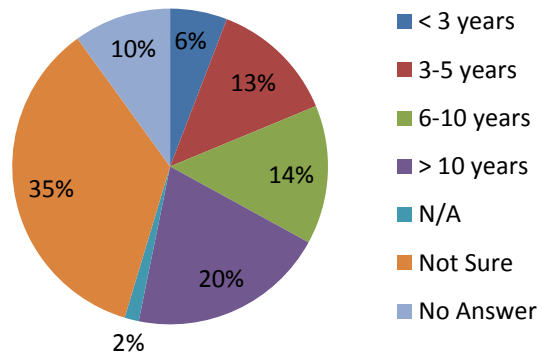
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**Last time System was Pumped  
All Responses**



**Frequency of Pump-out Need  
All Responses**



Thirty-five percent of all respondents (36.4% PE) were not sure when their wastewater system should be pumped out. Other responses were probably based on experience, with 20.2% indicating greater than ten years as appropriate. Optimal periods between system pump-outs vary according to system size, usage (number of people per household), and the use/flushing of chemicals harmful to the natural microorganisms processing the waste. Cesspools in porous soil will drain wastewater rapidly, with tanks often being found empty, meaning that solids as well as liquid effluent are entering soils.

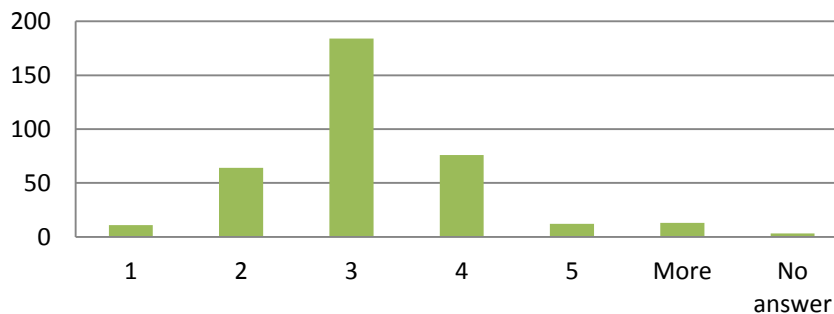
While system failure due to overloading is not a prime issue regarding nitrogen loading, its prevention does allow the septic tank to function properly (~5% nitrogen removal), avoids surface contamination, public health issues and owner inconvenience. The response to this question indicates a need for both an educational campaign and an inspection program that identifies optimal pump-out schedules for each property.

<b>7 Do you ever experience flooding on your site or in your basement?</b>				
	<i>All Responses</i>		<i>Peconic Estuary</i>	
Yes	64	8.5%	38	10.5%
only major storms	107	14.2%	63	17.4%
first time Sandy	24	3.2%	17	4.7%
No	514	68.4%	239	65.8%
No Answer	43	5.7%	6	1.7%
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% homes that have experienced flooding			25.9%	
			32.5%	

In the Peconic Estuary Watershed, 32.5% of homes have experienced flooding (compared to an overall response of 25.9%). This number is high compared to the 4.8% of buildings located in the 100-year flood plain, or the 12% located in the 500-year flood zone mapped in chapter four. Again, this speaks to people recognizing their vulnerability in flood prone areas, prompting higher levels of reporting, as well as the potential influence of efforts by PGG, in the summer of 2014, to target neighborhoods chosen for the engineering study. Cesspools are particularly vulnerable during storm events, as solids leach into flood waters, potentially transporting pathogens and ultimately impacting shellfish harvesting as well as algal blooms. Pollution from temporary events can have a severe, even lasting impact on marine ecosystems. The USGS is currently studying the impacts of flood waters inundating onsite systems on marine quality and recovery (Storm Sandy). Salt water intrusion in coastal locations will hinder/halt the natural processing of waste until the microbial community recovers.

<b>8 How many bedrooms does your dwelling have?</b>				
	<i>All Responses</i>		<i>Peconic Estuary</i>	
1	16	2.1%	11	3.0%
2	119	15.8%	64	17.6%
3	349	46.4%	184	50.7%
4	171	22.7%	76	20.9%
5	35	4.7%	12	3.3%
More	23	3.1%	13	3.6%
No answer	39	5.2%	3	0.8%
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**Number of Bedrooms per Dwelling Unit  
Peconic Estuary**



The number of bedrooms influences the size of the system needed to properly treat the home's wastewater. Forty-six percent of the respondents (50% in the Peconic Estuary Watershed) had homes with three bedrooms. The second most frequent response (22.7%) was homes having four bedrooms (20.9% in the Peconic watershed). When compliant with current codes, five or more bedrooms require larger capacity septic tanks (1500 vs. 1000 gallons). On the East End, occupancies are generally slightly lower than the county-wide estimate of 2.93 occupants per dwelling. But this is countered by the overcrowding evident in the summer and fall tourist seasons. In addition, the influx of day-trippers increases loading during an expanded tourist season that is stretching now to December. Year-round partial residents (weekenders) counter this development somewhat. Together these conditions seasonally stress systems beyond their design capacity even though they may operate under-capacity at other times of the year.

<b>9 To what extent is your home being used?</b>				
	<i>All Responses</i>		<i>Peconic Estuary</i>	
Full-time	442	58.8%	216	59.5%
Partially, year-round	169	22.5%	93	25.6%
Seasonally	94	12.5%	48	13.2%
No answer	47	6.3%	6	1.7%
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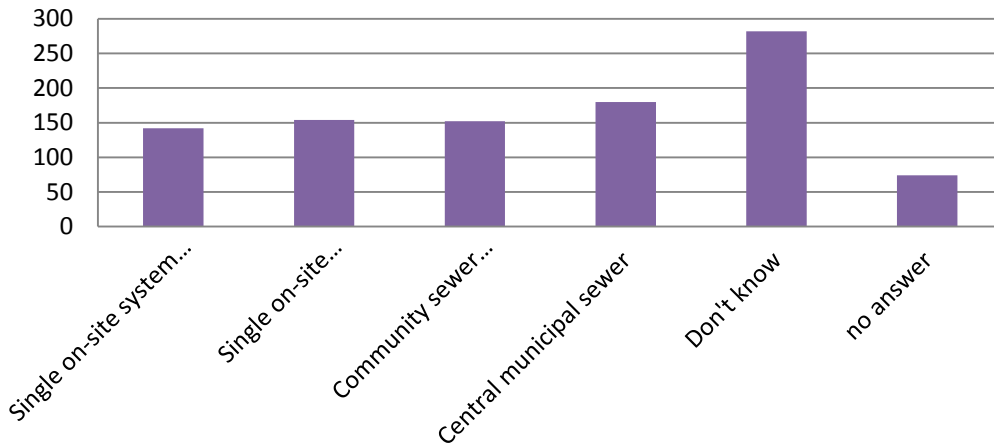
Roughly sixty percent of the homes in the Peconic Estuary are used full-time, slightly more than the overall response of 58.8%. Twenty-six percent in the Peconic Estuary Watershed use their homes partially year-round, while 13.2% occupy their homes seasonally. The statistics indicate a robust second home market, which is most likely fueled by attractions related to the marine environment. Use is still predominantly year-round, rather than seasonal, supplemented by a strong tourist season. These numbers indicate a fluctuation in use that will influence treatment choices.

<b>10 Looking ahead, if you needed to change your wastewater treatment system, which of the following would you consider? (you may pick more than 1)</b>				
	<i>All Responses</i>		<i>Peconic Estuary</i>	
Single onsite system (septic)	142	18.9%	75	20.7%
Single onsite enhanced	154	20.5%	79	21.8%
Community (decentralized)	152	20.2%	75	20.7%
Central sewer	180	23.9%	96	26.4%
Not sure	282	37.5%	136	37.5%
No answer	74	9.8%	21	5.8%
	752		363	

Respondents were tentative about their future wastewater treatment options, with more people responding that they were (37.5%) not sure about what they would prefer to consider for their homes. The other responses were more evenly distributed, with central sewers slightly edging out the other choices. This set of responses would suggest the need for more education and information, but also supports the idea that we need an array of solutions that match local conditions and neighborhood character.



**Interest in Alternative Treatment  
All Responses**



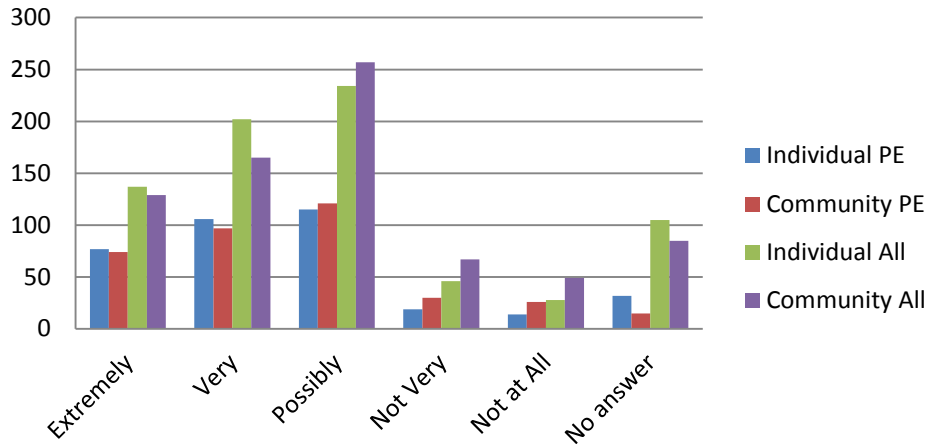
<b>11 How interested would you be in learning more about advanced wastewater treatment for individual homes? (These reduce the level of contaminants leaving the system)</b>						
	<i>All Responses</i>			<i>Peconic Estuary</i>		
Extremely	137	18.2%		77	21.2%	
Very	202	26.9%	45.1%	106	29.2%	50.4%
Possibly	234	31.1%	76.2%	115	31.7%	82.1%
Not very	46	6.1%		19	5.2%	
Not at all	28	3.7%	9.8%	14	3.9%	9.1%
No answer	105	14.0%	23.8%	32	8.8%	17.9%
	752			363		

<b>12 How interested would you be in learning more about decentralized community wastewater systems? (These are shared by a group of houses and treat effluent to a higher water quality.)</b>						
	<i>All Responses</i>			<i>Peconic Estuary</i>		
Extremely	129	17.2%		74	20.4%	
Very	165	21.9%	39.1%	97	26.7%	47.1%
Possibly	257	34.2%	73.3%	121	33.3%	80.4%
Not very	67	8.9%		30	8.3%	
Not at all	49	6.5%	15.4%	26	7.2%	15.4%
No answer	85	11.3%	26.7%	15	4.1%	19.6%
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People on the whole were cautiously interested in learning more about enhanced onsite treatment systems for individual homes or community systems. Positive interest outweighed negativity, with

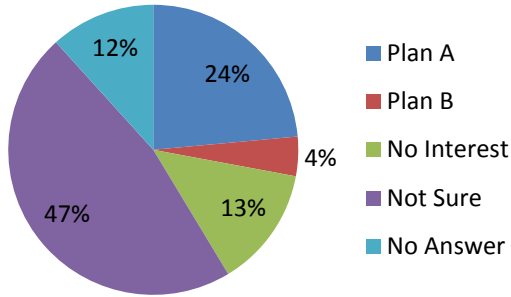
50.4% of people in the Peconic Estuary watershed expressing positive interest in enhanced single onsite systems and 47.1% positively interested in enhanced community systems. Interest was greater in the Peconic Estuary than in the overall responses (5.3% increase for onsite systems and 8% increase for community systems.)

**Interest in Individual and Community Enhanced Treatment  
Peconic Estuary vs. All**



<b>13 Clustered wastewater systems are designed to fit the existing need, resources and environment of a community. If at some time you were to participate in a community system, which of the following payment plans would you prefer?</b>				
	<i>All Responses</i>		<i>Peconic Estuary</i>	
Plan A Pay an initial fee, lower monthly fees	177	23.5%	103	28.4%
Plan B Pay no access fee and have higher monthly fees	33	4.4%	17	4.7%
Don't know/not sure	353	46.9%	186	51.2%
Would not be interested at all	101	13.4%	41	11.3%
No answer	88	11.7%	16	4.4%
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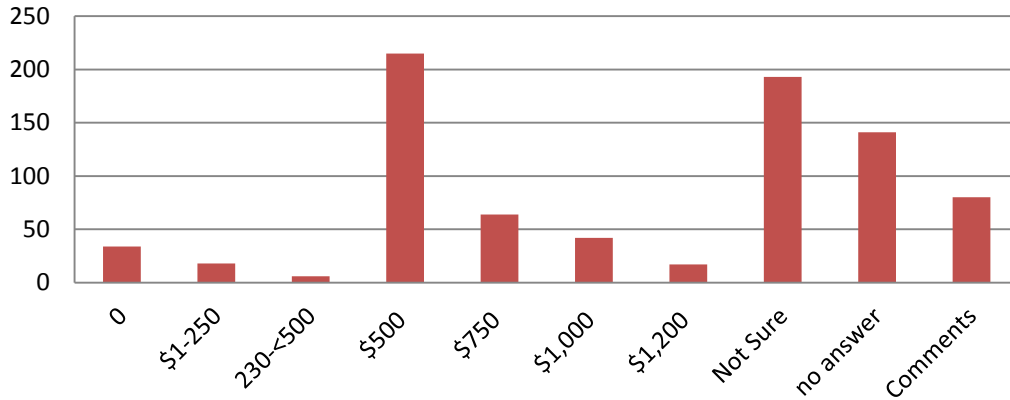
**Preferred Payment Plan  
All Responses**



The majority of people in the Peconic Estuary watershed (51.2%) were not sure how they would be willing to pay for enhanced wastewater treatment. When people were willing to consider payment options, significantly more preferred paying an initial hook-up fee with lower monthly fees (23.5% overall/28.4% PE) compared to no access fee and higher monthly fees (4.4% overall/4.7% PE). Of all respondents, 13.4% were not interested in any payment option, and 11.7% did not answer the question. The number of responses was slightly higher in the Peconic Estuary.

<b>14 Communities look at different financing options. If you were to consider a community solution, how much would you be willing to pay annually? (Includes construction and maintenance costs.)</b>						
	<i>All Responses</i>			<i>Peconic Estuary</i>		
\$500/yr	215	28.6%		113	31.1%	
\$750/yr	64	8.5%		39	10.7%	
\$1,000/yr	42	5.6%		26	7.2%	
\$1,200/yr	17	2.3%	44.9%	11	3.0%	44.9%
Not Sure* (only online)	193	25.7%		85	23.4%	
Additional Comments	80	10.6		43	11.8	
No answer	141	18.8%		46	11.8%	
	752			363		
\$0	34	4.5%		29	8%	Comments
\$1-250	18	2.4%		12	3.3%	Comments
\$250-<500	6	0.8%		4	1.1%	Comments

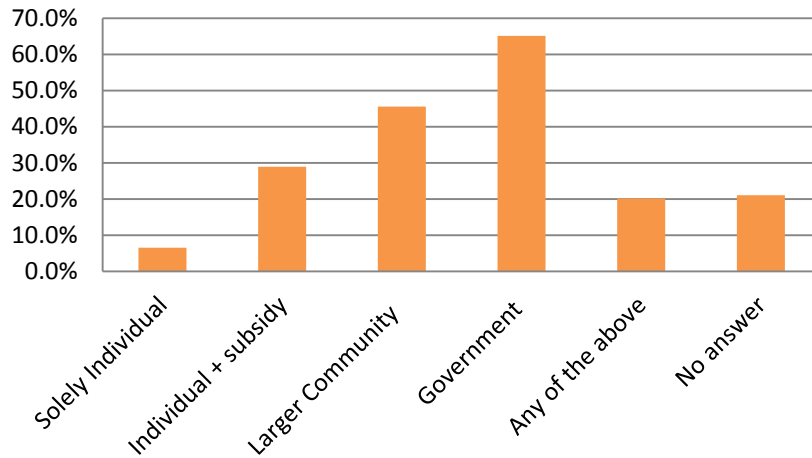
**Number of Respondents Willing to Pay Annual Costs  
for Enhanced Wastewater Treatment - All Responses**



Forty-five percent of the respondents both overall and in the Peconic Estuary watershed were willing to pay at least \$500 annually for enhanced wastewater treatment. Another 4.4% were willing to pay some amount (from write-in responses). Twenty-six percent overall (23.4% PE) were not sure what they would be willing to pay. The number of people who did not answer the question was relatively high compared to the other survey questions. The additional comments received on the question expressed a desire for more information. Evident was a desire to address capital costs and maintenance costs separately. One person expressed a willingness to spend \$1,250 for a connection fee, and \$50 annually for maintenance. Another wished to see a graduated fee structure, with costs initially higher to accelerate payment of capital costs followed by a lower fee to cover ongoing maintenance costs. Some had a sense of inequity, expressing that only those who have not upgraded their system should pay, implying that people with cesspools should pay more or that nitrogen mitigation should be a subsidized cost. Others expressed willingness only if the system was to be public, possibly run by the town and backed by the local community.

15 How do you think a community system should be funded (You may answer more than one.)								
	<i>All Responses</i> *				<i>Peconic Estuary</i> *			
Solely by individual participants	50	6.6%	218*	30.0%	24	6.6%	94*	25.9%
Supplemented by larger community that will benefit	200	26.6%	343*	45.6%	120	33.1%	176*	48.5%
Subsidized by County, State, or Federal Funds	354	47.1%	490*	65.2%	202	55.6%	255*	70.2%
Any of the above^	152	20.2%			63	17.4%		
No answer	159	21.1%			51	14.0%		
			543	72.2%			288	73.8%
Notes: % believing some subsidy is appropriate ^option only online, but could pick multiples * adds # of responses where item was not checked but <i>Any of the above</i> was chosen								
Note: % was calculated by dividing number of responses for the category to number of respondents (752all/363PE)								

**% of All Respondents Favoring Subsidy Options**



A vast majority of the people who answered the survey felt that enhanced wastewater treatment was a service that should be subsidized (72.2% all/ 73.8% PE), preferably by county, state or federal funds (65.2% all/ 70.2% PE). Subsidy by the larger community that will benefit from regionally improved water quality was also considered viable (45.6% all / 48.5% PE). Only 6.6% of respondents indicated that individuals should bear all costs. Compared to the rest of the survey, a relatively high percentage of people (21.1 all / 14% PE) did not answer this question.

<b>16 What is the primary source of water in your home?</b>				
	<i>All Responses</i>		<i>Peconic Estuary</i>	
Individual well	311	41.3%	139	38.3%
Shared private well	2	0.3%	2	0.6%
Public water/SCWA	352	46.7%	211	58.1%
Not sure	4	0.5%	3	0.8%
No answer	84	11.2%	8	2.2%

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More of the respondents used public water than individual private wells for drinking water. However, in the Peconic watershed, a significant number (38.3%) still relied on local groundwater for their supply. Data on actual numbers of homes linked to public water were not available, so the estimated percentage could not be compared with other data sets. The answers to this question might be skewed due to the high participation of Orient residents, who mostly use individual private wells. The data from the Peconic Estuary watershed figures would therefore be more reliable than overall percentages. Improvements to area’s wastewater treatment infrastructure and increasing enhancements of these systems will help improve and maintain drinking water quality for both individual wells and the public wells scattered throughout the area. People who are cognizant of the quality of their aquifers are more likely to be receptive to improvements in wastewater treatment than people who rely on public water. If a water conservation program were supported simultaneously, costs of the wastewater system might be reduced. Wastewater treatment planned in a coordinated manner can tackle quality issues for both the marine environment and drinking water sources, increasing community receptivity to upgrades.

Overall, we feel that 752 respondents provide the most significant dataset to date and clearly demonstrate the need for increased education and awareness about these issues, due to the number of people who expressed a lack of knowledge or did not answer. Improvements which are badly needed for water quality purposes will only happen with a well-informed and engaged local population.