In the Matter Of:

GROUNDWATER RESOURCES MANAGEMENT PLAN

LONG ISLAND COMMISSION

November 30, 2017

Volume 1



1	SUFFOLK COUNTY WATER AUTHORITY
2	x
3	
4	LONG ISLAND COMMISSION AQUIFER PROTECTION
5	
6	
7	IN THE MATTER OF:
8	GROUNDWATER RESOURCES MANAGEMENT PLAN
9	
10	x
11	735 Veterans Memorial Highway
12	Smithtown, New York 11787
13	November 30, 2017
14	Time noted: 3:00 p.m.
15	
16	
17	
18	
19	
20	
21	
22	Reported by:
23	GinaMarie DeMarco
24	
25	



1	APPEARANCES:
2	
3	STAN CAREY, Chair
4	Nassau-Suffolk Water Commissioners Association
5	
6	FRANK KOCH
7	Suffolk County Water Authority
8	JEFFREY W. SZABO
9	Suffolk County Water Authority
10	
11	BRIAN SCHNEIDER
12	Nassau County Commissioner of Public Works
13	WALTER DAWYDIAK
14	Suffolk County Department of Health
15	
16	MICHAEL WHITE
17	Suffolk County Legislature Presiding Officer
18	SARAH MEYLAND
19	Nassau County Legislature Minority Leader
20	
21	JOHN MILAZZO
22	Counsel for Suffolk County Water Authority
23	
24	
25	



1 (Time noted: 3:00 p.m.) 2 MR. CAREY: Let's start with the Pledge of 3 Allegiance. 4 (Whereupon, Pledge of Allegiance was recited.) 5 MR. CAREY: 6 Thank you for attending 7 today's public hearing hosted by the Long Island 8 Commission for Aquifer Protection for LICAP. 9 name is Stan Carey and I am the Chairman of LICAP. 10 I am joined today by Jeffrey Szabo from 11 the Suffolk County Water Authority; as well as 12 Walter Dawydiak, Suffolk County Health; Frank Koch, 13 Long Island Water Conference; Brian Schneider, 14 Nassau County; Don Irwin, Nassau County; Sarah 15 Meylend; and also our attorney John Milazzo is on 16 the end. 17 The purpose of these hearings is to elicit 18 public comment on LICAP's draft water Groundwater 19 Resource Management Plan. The draft is available 20 online at LIAquiferCommission.com. And in just a 21 minute I will introduce Steve Colabufo, who will 22 give a brief presentation on what the Groundwater 23 Resources Management Plan consists of as well as an 24 outline of some of its key recommendations. A list of the plan's top 15 recommendations is available 25



1 | outside if you haven't picked one up already.

Before we begin, I would just like to remind everybody that today's proceedings are designed to form a forum on today's comment on the plan. And that is not a question-and-answer session. Any questions you may have can be submitted electronically by e-mailing to LICAP@SCWA.com or by mail, PO Box 38, care of Suffolk County Water Authority, Oakdale, New York 11769. Either I or one of the other LICAP members will get back to you with an answer as soon as possible.

All comments made today will be brought before the LICAP voting board for consideration during our upcoming general meeting on December 13th. And the final report we expect to be published before the end of the year.

As an organization, our mission is to make sure our sole source of drinking water here on Long Island is protected for future generations, and we so love to see Long Island residents such as yourself engaged in these discussions and seeking to become more educated about the issues that impact our groundwater.

So thank you once again for attending



today's public hearing and with that said I'll turn 1 2 it over to Steve Colabufo. 3 MR. COLABUFO: Thank you, Stan. As Stan mentioned, my name is Steve 4 5 Colabufo, I'm the Water Resources Manager, Suffolk 6 County Water Authority. And we're here tonight to 7 talk about the whole new LICAP Groundwater Resources 8 Management Plan. This is the second major 9 deliverable from LICAP since it's inception a few 10 years ago. Last year we did a similar set of 11 hearings for the State of Aguifer Report. 12 Groundwater Resource Management Plan is a lot more 13 comprehensive and more forward thinking as opposed 14 to more of a summary of existing of status quo with 15 the State of the Aguifer Report was. 16 So tonight we discuss how the plan was 17 formulated -- context and what the plan actually 18 contains. 19 For those who may not know, LICAP is Long 20 Island Commission for Aquifer Protection. And it's 21 basically a partnership for water resource 22 professionals from all over Nassau and Suffolk 23 County. And it includes water suppliers, regulators, government officials, academics and 24

citizens and activist groups. It was formed to



- address the quality and quantity issues facing on
 Long Island Aquifers on an island-wide basis, rather
 than focusing on a minute, smaller area. It's
 really an overall island-wide partnership for water
 resource professionals.
 - It was created back in 2013 through legislatures passed by both the county legislators. As you see on the bottom of the slide, the website for LICAP is there, LIAquiferCommission.com.
 - LICAP members include all water suppliers. We together serve about 3 million people on Long Island, representatives of the Nassau and Suffolk County executive offices, representatives of the Nassau and Suffolk County legislatures, employees of the Nassau and Suffolk County health department, as well as the DEC. There's a very broad tent of groundwater resource professionals in Nassau in Suffolk.
 - This is kind of a collage of the logos of various participants. There's actually a lot more than that. This is all that can fit on one page.

 Again, very broad based group of groundwater resource professionals.
 - We have nine voting members. Many of them are up on the dais behind me. We also have numerous



nonvoting members representatives in various other units of the county government, as well as some other entities that are involved in the groundwater studies, groundwater in some fashion on Long Island.

One of the more signification internal structures of the LICAP is the formation of the LICAP subcommittees. We formed two subcommittees based on the initial legislation that enabled LICAP. One was the water resources and infrastructure subcommittee. That was chaired by myself. And the charge of that committee was the plan to assess or identify long-term risks to the water supply industry. The other subcommittee is water resources opportunity. Subcommittee chaired by Bill Merklin, of the D&B Engineers. And it was looking at potential short-term risks facing water suppliers involving the treatment, distribution of the potable water on Long Island.

So the subcommittees began meeting on 2014. And the initial meetings were attended by a very wide cross section of Long Island groundwater community, suppliers, environmental regulators, et cetera. And at those initial meetings following the adopted law for LICAP the attendees at those meetings determined the subject matter that was



going to be included in the management plan. So then once those subjects and topics were decided on the subcommittee chairs, then divided into two main groups based on the mission on each subcommittee WRIS focused more on long-term resource oriented topics. WROS focused on the more short-term facilities oriented topics. So those subcommittee chairs writing teams organized and over a couple year period oversaw report — to write and edit the reports for inclusion and plan.

When we were done, we ended up with 15 individual reports created over about a three-year span. And those reports are kind of a raw material that comprises of the Groundwater Resources

Management Plan.

The plan, like I said, is a combination of about a three-year effort. Again, LICAP was created in 2013. And the main difference between this Groundwater Resources Management Plan and the other groundwater plans that have come before it, that this plan was produced as a result of the cooperative efforts of existing practitioners within all aspects of the groundwater industry on Long Island. Rather than giving to a consultant to do on his own, this was truly a cooperative and volunteer



effort among the existing working professionals within the groundwater industry all over Long Island. So really kind of stuck out as a very unique effort.

So the management plan, the goal of it is to provide a clear picture of the specific threats to the aquifer system, discuss the adequacies of existing management programs and regulations, create an action plan for long-term sustainability, and even more importantly an implementation program and prioritization schedule for various recommendations going forward. And recommended regulatory amendments of legislation actions as well.

So mentioned earlier, the plan could not have been possible without the incredible effort of all the people who authored and edited the reports. I don't expect anybody to commit these next two slides to their photographic memory, but certainly all the people who contributed to the plan, who authored reports, deserve a shout-out and kudos. There's one page of authors and there's another. And again, I would like to extend my own personal thanks to all those who helped and assisted with this report and plan. There's no way it could have been done without their efforts.



2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

So we ended up with 15 individual reports. We decided to organize them according to a couple of categories. The starting point was the report done by Paul Pouturo on regulatory framework for Long Island Groundwater Resources actually where we are in terms of regulations affecting or regarding the use and the management of Long Island's groundwater.

Then we, sort of, divided it up into other natural versus cultural issues affecting Long Island's groundwater. We have a report on climate change impact and the report on the Pine Barrens and other land preservation efforts on Long Island which is designed to, sort of, preserve the quality and quantity of Long Island's groundwater. And then cultural issues of man-made type things that effect the quality and quantity of Long Island's groundwater. Waste water management being a very important part. Sewers -- how things are handled in Nassau versus Suffolk. And that's kind of an up and coming technology. Utilizing groundwater to heat and cool homes, very energy efficient, very "green," but certainly not without certain issues that have to be discussed and made aware of. So the report was done PW Grosser on that.

And water supply alternatives, these were



3

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

1 sort of glanced at at previous reports. So we made sure we had a report on technology such as desalination, active storage and recovery and 4 potable water reuse.

And certainly water quality and water quantity issues have their share of page space on the report. Regional groundwater contamination events, the Bethpage Grumman and other plumes, are affecting mostly Nassau, but some Suffolk County groundwater. And then chloride contamination for with saltwater intrusion, road salting, and a few other things. So chloride contamination report goes over that.

And then other water quality issues emerging and a few other things as reported by the Suffolk County Department Health Services.

And then, certainly, water quantity -- the other competing users. Water suppliers aren't the only people using groundwater on Long Island; agriculture, golf courses, industry. All of whom use their fair share of groundwater. So having an idea of the quantity used by the other users besides public suppliers is certainly a worthwhile effort and was a subject in both of those reports.

And similarly the Lloyd Aquifer is used



- pretty extensively in Nassau and very minimally in Suffolk as a water supply unit. So its use, regulation, and future use was discussed in one of the reports.

 Efficiency and conservation, again,
 - Efficiency and conservation, again, certainly going forward that will become more and more of an issue more so than it has been in the past. So there's a report on that. In addition, part of that report centers on the reuse of treated sewage out in Riverhead to use on Indian Island Golf Course.
 - And then cross-county transmission, usually to supply Nassau from Suffolk County or from the City, there's a report on that. There's certainly an option that was discussed briefly in the past, but we have a report on that.
 - And then probably one of the hottest topics of any, the reactivation of the public supply well system, formally the Jamaica Water Supply Company located in Queens, New York. Brian Schneider -- behind me -- did a great report on that.
 - So we have the full spectrum of water quantity and quality issues covered within the Groundwater Resources Management Plan. These



reports kind of serves as the raw material from which the plan was formulated on.

In addition to these reports. We also wanted to highlight a couple of issues that were underway that have been either completed or at least started since the LICAP was formed. One of the more significant was WaterTraq, a user friendly water quality mapping and database that was started and is up and running within a fairly short timeframe since LICAP was started. And the address is here of the WaterTraq -- that we're showing here on slide.

And also, the U.S. Geological Survey, a Long Island sustainability study, is basically a reworking or re-examination, again, of the Long Island hydrogeologic framework. So that would be pretty interesting. We did start it -- it was started, shortly after LICAP began.

So the plan is organized into 10 specific sections. The first section being the executive summary introduction. We made sure to include the major recommendation in that first section so you don't have to read the entire report and dig through the 230 pages to find out what the major recommendations are. They're available out in the lobby. People may have them already. The executive

summary introduction is available with the recommendation there already.

Then the next four sections discuss existing conditions with natural groundwater conditions, regulatory, management status-quo, as well as existing threats and existing programs that deal with those threats.

Next couple of sections discuss in the future, going forward: Management implementation opportunities, and probably most importantly the recommendations and implementation schedule for them.

And then finally we acknowledge the report authors and provide their references so that if somebody is interested in a specific subject addressed by the plan, you could go on and look in further detail. You have all of the full reports available in the Appendix. So again, if somebody is interested in some of the topics discussed in the plan they can read the actual report of one of those 15 reports I talked about earlier and get more information on that.

So one of the most important sections are -- the recommendation section. You got the 15 reports used with a total of 143 recommendations.



- Many of those are specific, very specific to one of 1 2 the reports. So all the recommendations were 3 summarized and provided to the LICAP voting board 4 for the board members for them to rank. They were ranked in this A, B, C fashion as you see here. 5 There was also another category for "E" for 6 7 elimination. We decided the recommendations to be 8 eliminated from consideration because they're not 9 significant to the overall groundwater picture on 10 Long Island.
 - And similar recommendations that may have popped up in different reports were combined within the recommendation section. But the main thrust is the 15 A-list recommendations which you have in front of you and is shown here as well. They're in no particular order. That's important to realize. It's not like the number one recommendation is the highest priority, number two is second. They're listed in no particular order. These are the top 15 recommendations as recommended by the plan, as formulated by the plan.
 - So again, here we are public comment. As said before, the full reports -- all 15 of those reports, are available in the Appendix and as well -- all of this is available at the LICAP



12

13

14

15

16

17

18

19

20

21

22

23

24

1 | website.

This final draft would be available for public comment until next Friday. And the plan is to be scheduled to be adopted at the full LICAP meeting on December 13th. You can submit comments on the web, via e-mail or telephone or written correspondence, the old fashioned way to the address you see here.

And concluding thoughts -- well, going forward one of the things left to do is publish the update for the State of the Aquifer Report. That will probably be done in two to three months, I guess. And we will continue to budget based on funding potentially received from New York State. Such funding will be used to expand on WaterTraq and also assist the USGS Sustainability Study expanding on the data available.

So with that I will conclude. You can open up the public comment.

MR. CAREY: Thank you, Steve.

I also want to give Steve a special thanks. He put a lot of heard work into this Groundwater Management Plan. He pretty much led the charge and coordinated all of the reports and spent a lot of time. So thank you for your hard work.



MR. COLABUFO: You're welcome. 1 2 MR. CAREY: Before we get to the speakers, 3 I would just like to recognize Michael White from 4 Suffolk County. He just joined us right as we 5 began. 6 For the speakers, I'll call them as I 7 received the cards. When you come up, if you could 8 just please state your last name for the record so 9 our stenographer could have it accurately in the 10 transcript. 11 Out first speaker today is Peter Scully 12 from Suffolk County. 13 MR. SCULLY: Thank you. My name is Peter 14 Scully, I'm Deputy County Executive for Administrations in the office of County Executive 15 16 Steve Bellone. 17 I wanted to take a moment to thank 18 everybody involved in the LICAP process so far. 19 Especially Jeff Szabo and Stan Carey for the 20 extraordinary job they've done in creating what I 21 see as an inclusive and transparent process. 22 The County board detail technical comment 23 will be provided by the Department of Health 24 Services. I'm here to provide more broader comments

about the overall LICAP process and the need to make



sure that it fulfills its objectives.

Having attendance of a LICAP and working -- for meeting and knowing first-hand how difficult it could be to manage a process that involves so many different prospective and divergent views, this has been a tremendous effort involving a lot of hard work by many people, many of whom were recognized by Steve during his presentation. And for precisely that reason, that the County feels that LICAP should take whatever steps are necessary to ensure that the process achieves its full potential, for that reason we respectively urge LICAP to consider requesting a 12 month extension for the final plan preparation to enable completion of the most useful plan possible.

This is not a criticism. We have been knowledgeable that the statutable time period was insufficient to complete the herculean task you have undertaken.

The draft plan consists of a combination of a series of chapters developed by various committees. Couple of them -- executive summary which present 15 priority recommendations in a generic fashion.

In our view LICAP needs to take additional



time to take the next step and develop a more
meaningful strategy which better captures priorities
for each county as well as the region as a whole.

It shouldn't -- their possible costs, benefits
responsible entities, timeframes, and next steps,
critical pathways.

The role of LICAP should be considered and articulated whether LICAP would be a primary entity for development of programs for policy recommendations, simply provided tools or oversight for tracking progress.

In addition, integration of the LICAP process with other initiatives such as the Long Island Nitrogen Plan should be emphasized.

With respect to Suffolk County, many of our key objects are included in the wastewater chapter or are incorporated in the description of Suffolk County's Comprehensive Water Resources Management Plan.

The County will be happy to work with the commission to better integrate these into a strategy and an executive summary which time, unfortunately, did not permit during the compressed statutory plan preparation period.

I hope that these comments are helpful and



1 I'll be pleased to have you be rest assured that the County will continue to offer its unqualified 2 3 support for LICAP's efforts. 4 Thanks very much. 5 MR. CAREY: Thank you, Peter. 6 Next speaker is Supervisor Ed Romaine from 7 the Town of Brookhaven. MR. ROMAINE: Romaine. First of all, I 8 9 want to thank you for inviting me. I want to thank 10 the commission for their work. This is an extremely 11 important work. I just came down personally to 12 thank you, make a few comments. 13 The Town will be submitting its 14 official comment in writing, but I wanted to make 15 some personal comments. 16 Obviously the significance of groundwater 17 that connect our counties, Nassau and Suffolk -- I

Obviously the significance of groundwater that connect our counties, Nassau and Suffolk -- I didn't mention the City, by the way, I know they're looking to tap into tap our water, but I'm not looking to do that, and it's importance to our bodies of water body, our streams, our lakes, our rivers, harbors, all effect our aquifer. It's imperative that we get this groundwater plan right. And yes, Peter mentioned a lot of diversity in opinion regarding this from counties with different



18

19

20

21

22

23

24

perspectives. But this is a plan we all have to get behind and support.

I know that this plan -- I read it very briefly, and it appears to be dominated by concerns by drinking water companies. And I didn't know whether this was a drinking water protection plan or an aquifer protection plan because they involve different things. And I am concerned about that. I prefer it to be an aquifer protection program. As opposed to dealing with suppliers, and I understand water is a commodity, and it's sold, and it's a form of a utility. But I am more interested in the generic protection of the aquifer.

You talked about geothermal. We have a code that protects the aquifer regarding contaminants from geothermal. And I was amazed of the amount of time and energy spent on that in this program because I don't know how widespread geothermal is. I know, for example, I used to represent Shelter Island. It's bad in Shelter Island because we have a very shallow aquifer there and therefore geothermal is not permitted there. It is permitted in my town. And it is controlled. And I'll talk about that, and my town will talk about that, when they submit its plan.

The link between clean water and natural areas cannot be empathized. The best way I have found over a long career to protect groundwater is to limit development. Because development -- I think there was a comic strip in the '70s, a pogo, and he says, "We've met the enemy and it's us." And someway he was right. Because development does pose a challenge to groundwater. And I am concerned about that.

And I'm just looking at my notes because I wanted to make some points. The plan states the designation of our aquifer is the sole source aquifer results in a high level of protection. No, it doesn't.

The aquifer is protected by State and local action. And every time the State and localities act to strengthen those regulations, we benefit. Every time they don't enforce those regulations or look at those regulations, or look at other legislative remedies that can come out down the pipe, we suffer.

The designation of sole source aquifer alone does not protect the aquifer. Laws from towns, villages, counties, and the State of New York and of course, the Federal Government, God willing,



doesn't get twitted out of existence. The aquifer is dependent on the state of local controls.

I notice that the plan also talks about sewers. And I guess that's kind of a divide between Nassau and Suffolk because Nassau is sewered and about 70 percent, if not more of Suffolk, isn't sewered. And I have concerns about sewers. We have sewers. We started to think in terms of how we could protect and deal with liquid waste. In the '70s we started the Southwest Sewer District. And it was a plan for a large regional sewer district. And had it been successful, we probably would have had regional sewer districts through Suffolk. But it was my understanding -- and it became a dirt word. And I became an elected official in '85. It was still taboo in terms of sewers.

So instead, the building regional -- every little project that needed some type of permission from the Health Department to build, wound up building the small inefficient sometimes, ineffective sometimes, costly for a small project sewage treatment plant.

How many sewer treatment plant do you think we have in Suffolk County? There are over a 190 sewage treatment plants because every small



- little project has one. I happened to be going up
 little project has one. I happened to be going up
 little project has a sewage treatment
 plant. That project has a sewage treatment plant.
 No regionalization.
 - So you know the sad thing about it? The sad thing -- Walter can tell you. At any given time 20 percent of those sewage plans failed to meet standards. And probably continued to fail to meet standards because some of them can't even afford to upgrade. Like the one at Calverton Hills, which was built about 35, 36 -- much more. 1973. A lot of years ago. And it has failed to meet -- it's in the middle of the Pine Barrens. And the county can't get it to meet standards because they don't have the money. It's a low to moderate income condo community. And you think about that.
 - And as I said before, a Supervisor of
 Brookhaven, I represented Shelter Island, Southold,
 Riverhead and Eastern Brookhaven in the legislature.
 They're not convinced about sewers because they
 acquit -- they believe that sewers lead to
 development. And if you notice there's a huge
 difference between Eastern Suffolk and Western
 Suffolk and they want to keep it that way. That's
 where our farms are. That's where our open space

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

is. They don't want to see it developed. They don't want sewers. They don't believe that's a solution. And I'll tell you definitely what isn't a solution, many of those sewage treatment plants empty into the sound like Port Jeff and Stony Brook, or the bay like, Patchogue, or the ocean like the Southwest Sewer District.

That sucking sounds you hear is a dump treating effluent out to bodies of water is our aquifer being drained.

The county executive and I had a different point of view about a big project in my town called Ronkonkoma Harbor. I had hoped -- and when I sat over there, I voted for a sewage treatment plant on that site. That tertiary was a plan. It would recharge. He believed it was better from a sewer point of view and I'm sure you can argue both cases to hook the southwest sewer. That's millions of gallons a day, 1,450 apartments. Thousands. of thousands. Hundreds of thousands of square foot of retail commercial space and office space that will all be shifted. I used to joke, you flush the toilet in Ronkonkoma Harbor, probably three days later you wind up at Birken Point. It all gets put out to the ocean. How is that helping our aguifer?



That's something we should think about in a day of climate change when we have rising sea levels and we have saltwater intrusions. The more we pump from our aquifer out to the ocean, to the bay or to the sound, the more we harm our aquifers. The more we question our water supply.

So I would ask the commission to take a look at that. And again, I'm speaking off the top of my head. But my town will probably step in and the environmental guys will write something very nice and submit.

But at the end of the day, I don't believe that sewers are the answer. Particularly for Eastern Suffolk County. I don't believe that development is the answer because there is a fear with sewers come development. If you're in Southold, as our Water Authority Executive Director can tell you, they have the water map over there. They even fear water mains breaking additional development. That's how concerned they are, let alone sewers.

So yes, there is a place for sewering, but I would hope our sewers would be tertiary. And I would hope we would take a look at our existing sewers and try to convert them to tertiary so we can



1 get a higher level of treatment and we can replenish 2 our aguifers. It is critical to the future of water 3 supply on this island. 4 I want to thank you for all your work, I know you put lots of hours into this. I know 5 6 there's a lot of concerns. And I'm just one more 7 guy making a lot of noise. But you guys have worked 8 very hard. I particularly want to thank Sarah 9 because she's mentioned. I'll thank John Turner, 10 because he's not, and I'll thank Poly Weigand, who 11 was with the -- now she's with some other, Pine 12 Barrens for their work also, as well as all the 13 gentlemen up here and the people that were 14 mentioned. Thank you so much. Appreciate it. And 15 my town will submit more formal comments. I'm kind 16 of the rough edge of those comments. Have a great 17 day. 18 MR. CAREY: Thank you, Supervisor Romaine. 19 Next speaker is Steve Jones from the 20 Peconic Land Trust. 21 MR. JONES: Hi, good afternoon. Steve 22 Jones, Chairman of Peconic Land Trust. 23 I'm sure many of you remember a report 24 many, many, many years ago by Robert Abers 25 [phonetic] called Toxic Fairways and it was a golf



course report. It was about all the problems with golf courses with pesticides and fertilizers.

Suffolk County parks came out really good on that report. But the irony wasn't because they were virtuous or doing the right thing, it was because they couldn't afford the fertilizers and the pesticides at the time.

Interestingly enough if you come to the present day now, I would say the farming community in general can't really afford a lot fertilizers and pesticides. It's a low margin business. They have to be very careful as to what they're applying and how much they're applying simply from an economic standpoint let along anything else.

So the people -- I think that we need to be concerned about the people that can now afford the pesticides and herbicides, which is the homeowner. Like, somebody like me. Although I don't do this, but people go to the garden center on a Saturday morning and they get their little jug of Roundup with their sprayer attachment. And they're now an unlicensed, unregulated, pesticide applicator.

I think that to some extent the regulations that we have now on pesticides and



- 1 herbicides really are for big volume users. 2 think that the homeowner is getting off the -- is just off the radar. And I think when you stand 3 4 there at the Home Depot and you watch this stuff 5 flying off the shelves on a Saturday morning, it 6 just -- it's very upsetting to see how much this 7 stuff -- and I think it goes for fertilizer as well. 8 A homeowner who doesn't understand really figures 9 "Hey, if I take a little shot to kill this weed, I'll give it two shots, then I'll be sure to kill 10 11 it."
 - So I think there's a tremendous amount of overuse going on on some of these compounds that are easy to get. They're cheap. And you could go back week upon week upon week for the whole summer and keep getting this stuff and keep using it.
 - The homeowners also, I think we need to look at them with respect to green lawns. They're wanting to -- if it says on the bag I should "X" amount, I'll X plus Y, because it will make my lawn even greener than my neighbor's and I'll be better off than they are.
 - So I remember when I was at the water authority there was a well field in East Northport where the water authority would pump water out of



13

14

15

16

17

18

19

20

21

22

23

24

the ground and treat it for nitrate removal. It would cost about \$3 per 1,000 gallon, let's say, to treat it. And then they would sell it to people on the area for a buck fifty. Which was -- even from a business model standpoint, was not very sustainable.

And I think that probably still goes on, that you have circumstances where you're selling water to people. They're putting down huge amounts of pesticides, herbicides, fertilizers. They're washing all the stuff. They're buying the water. Washing all the stuff in the ground and then it has -- you have to spend a lot of money to take it out again.

So it's -- there are a number of ironies out there that I hope you continue to look at. From the Peconic Land Trust standpoint we're trying as best as we can to promote responsible lawn care.

Any Tuesday during the summer you can go to Ridge Gardens and you can learn all about one-on-one with a consultant from Perfect Earth project. We have a partnership with them. You can learn about how to responsibly maintain a lawn and not be using a lot of nasty chemicals on your lawn.

We also have an incubator project that's been going on for a couple of years called "Farms



for the Future." We have a facility on the North 1 2 Fork and a facility on the South Fork where young 3 people who want to get into farming can come. They 4 can rent one acre, two acres, something like that. 5 They can learn about farming. We provide the 6 technical help for them, as well as some of our 7 other partners. So we're trying to promote and do 8 the right thing through education. 9 And I hope that part of your ongoing efforts will involve a lot more education, 10 11 especially for those homeowners out there. 12 Thank you. 13 MR. CAREY: Thank you, Steve. 14 Next speaker is Robert Bender, from R B 15 Bender Group. 16 MR. BENDER: Thank you gentleman and lady, 17 for giving me a few minutes to speak here. 18 Basically, I want to bring to your 19 attention to technology, Bio Organic Technology, 20 that can solve a lot of the problems that face our 21 water supply today. 22 One is we could move for nitrogen using 23 existing infrastructure. In other words, we can use 24 the existing ring that's already in the homeowner's

property. It reduces technology and reduces



- nitrogen leeching into the aquifer. And we could do
 it for a lot less than \$17,000. In fact, my
 sestimate is probably around \$3,500. And most of
 that would be for electrical hookups.
 - Another thing we can do is -- with this technology is that it has agriculture ramifications. In parts of the world, Saudi Arabia, Israel, United Arab Immigrants have reduced the amount of water on the crops by 30 percent and we could increase the crop yield by 40 percent.
 - Another added bonus is that the technology strips the oil in certain insects and less pesticides are required.
 - Another advantage to this technology, hydrocarbon contamination. The amount of times hydrocarbons runs into our water supply after a heavy rain storm -- with this technology we can take the hydrocarbons and reduce their constituent components to carbon dioxide and water. Over here we have water and carbon dioxide.
 - So I just wanted to bring this to your attention. I've offered the County a free pilot, that means no cost to the County, to, you know, substantiate these statements that I'm making here. We can take -- we can use your lab. We can use an



independent lab. But we can reduce the nitrates 1 2 leeching into the aquifer. And we can reduce the 3 amount of the sewage treatment. We can make a 4 sewage treatment plant 30 to 40 percent more 5 efficient without any capital expenditure. 6

That's all I need to say.

MR. CAREY: Thank you, Mr. Bender.

Next speaker is Kevin Hyms from the Ronkonkoma Chamber of Commerce.

MR. HYMS: Good afternoon. I would like to thank LICAP for all the hard work and studies you have been doing. My name is Kevin Hyms and I'm the Secretary of the Ronkonkoma of Chamber of Commerce and I'm also on the Suffolk County Legislator's Lake Ronkonkoma Advisory Board.

So I do have a few comments. And I believe as part of this study, which we should have more time to implement the results of it because there are so many issues at stake here. But what we must do is balance land development with land preservation to preserve the preservation of the environment and the aquifer system for our future generations.

I'm also in favor of some downtown revitalization incentives such as the Ronkonkoma



7

8

9

10

11

12

13

14

15

16

17

18

19

2.0

21

22

23

24

project. And as Supervisor Romaine had suggested we should have constructed a tertiary treatment plant which would reserve the groundwater and reinject it into the aquifer system instead of discharging it into the ocean.

I'm very concerned about the levels, over time, decreasing from our water table and aquifers. For instances, if you look at Lake Ronkonkoma, it's among the lowest levels it's been in many years. And once all this pumping at the Ronkonkoma hub, that could be millions of gallons a day that do not get treated, reinjected into the groundwater, but instead end up into the ocean. I'm concerned about decreasing levels in our aquifer systems as well as our lakes and other bodies of water.

I'm also very concerned about the chemicals and products such as the opioids and pharmaceuticals. They've identified over 100 man-made chemicals and products in the water quality of Lake Ronkonkoma. And I'm sure throughout the County and Long Island's lakes, rivers, streams, harbors, et cetera.

You must -- to minimize these contaminants from entering the groundwater, as they have an effect upon people. Look at our schools, we have to



do more to test the water for lead. 1 There are some 2 old school buildings that contain lead in their 3 piping. Lead is a big concern as well as all of the 4 other chemicals. 5 And we must explore other treatment 6 options that are low in cost such as Mr. Bender's 7 bioremediation. We need to treat the water more to 8 lessen the contaminants that enter the system by 9 flushing them all into the ocean. That is not a 10 sustainable long-term solution. 11 So thank you very much for your time. Oh. 12 I also hope that local communities such as the 13 Chambers of Commerce and the civic organizations can 14 be involved in this process. 15 So again, thank you very much for your 16 time and I hope to see some very positive results of 17 the outcome. Thank you. 18 MR. CAREY: Thank you, Mr. Hyms. 19 I do not have any additional cards. Τf 20

there's anyone who did not fill out a card that wishes to speak, please come up to the podium.

Anyone else want to address the commission?

[No response.]

MR. CAREY: The second part of the hearing



21

22

23

24

will begin tonight at 6:00. And again, you could 1 also submit comments to our website or to Suffolk 2 3 County Water Authority, PO Box 38, Oakdale, New York 4 11769. So if there aren't any other speakers, I 5 6 just want to thank everyone for coming. And the 7 next hearing will start at 6:00. 8 MR. MILAZZO: We noticed this hearing from 3:00 to 5:00 so we'll be here. If we have to open 9 it up again, we can. We'll just take a recess. 10 11 MR. CAREY: So we'll be at recess. 12 Thank you. 13 (Whereupon, a recess was taken at 14 this time.) 15 MR. SZABO: Can I have everyone's 16 attention for a minute? It's 4:12, we're going to 17 come out of recess and go back into session and 18 allow for public comment. 19 I would like to recognize Legislator 20 William Spencer who would like to read us his 21 Thank you. comments. 22 MR. SPENCER: Good evening and thank you 23 for this opportunity. My name is Dr. William 24 Spencer. I'm Suffolk County Legislator representing 25 18th District, which is Huntington. I was proud to

have Suffolk County bring the LICAP idea and allow me to participate and be the lead sponsor. And I'm proud today to express my support of the Groundwater Resources Management Plan.

I commend you on working together. I commend you on having something that's a tangible document that really lays the groundwork for us planning for the future.

Some of my remarks I will put on the record. Although I think that you're well aware of these things, but I think it's important to get these comments out there.

So I believe that water is something that can easily be taken for granted because it just seems like it's everywhere and easily accessible. But it's so critical to our lives and critical to our way of living. And a lot of times we're not aware of them until that prescious resource is no longer available or is contaminated. It's critical to our public health, our economy, our recreation, and our overall wellbeing. We all play a role and together we are proactively working on a process to address water quality and the issues of our aquifer.

It is through the collaboration that you all have made tremendous strides and we can see that



in the work that LICAP has done thus far in your state of the aquifer report and the historic GIS base water quality mapping and database WaterTraq.

The State of the Aquifer Report WaterTraq technology not only allows for our multiple water experts to tackle issues with the team approach, but it also makes the quality of our water supply, which knows no municipal or political lines, transparent and open to the watchful eye of the public. And this is extremely important.

Over the past four years LICAP has stayed at the very center of water quality discussion on Long Island, and the facilitator of that dialogue among multiple levels of government and regulatory agencies. This collaboration is making an impact Island-wide, but also state and regionally, and is helping to connect various styles of work and knowledge all acting simultaneously to address our water quality issues.

The Groundwater Resources Management Plan takes it further serving as a roadmap moving us forward. The plan provides a comprehensive and in-depth look at the many varying issues impacting the aquifer and the current structures in place.

But most importantly it offers specific



1 actionable steps and measures to quide us in 2 government as we collaborate regionally to protect 3 our drinking water and move vital policies forward. So I want to thank the members of the 4 commission for your dedication, for your 5 6 preservation throughout this process. Each of you 7 brings unique expertise and perspective to the 8 issues. While there are undoubtedly times of 9 disagreement, you work through it and you get the job done for our water quality for all the people. 10 11 You have my full support and I look 12 forward to continuing to advance our shared 13 admission. Please let me know how I can assist you 14 in the future. And thank you for giving me this 15 opportunity to address the commission. Thank you. 16 Thank you, Legislator Spencer. MR. SZABO: 17 Much appreciated. 18 Is there anyone else here who wishes to 19 address the commission? 20 [No response.] 21 I see no hands. At 4:18 we MR. SZABO: will, once again, recess until 6:00. 22 23 Thank you. 24 (Time noted: 4:20 p.m.) 25



CERTIFICATE

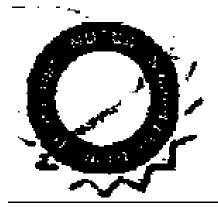
I, GINAMARIE DeMARCO, a shorthand reporter and Notary Public within and for the State of New York, do hereby certify:

That the witness whose testimony is herein before set forth was duly sworn by me, and the forgoing transcript is true and accurate record of the testimony given by such witness.

I further certify that I am not related to any of the parties to this action by blood or marriage, and that I am in no way interested in the outcome of this matter.



GINAMARIE DeMARCO





LONG ISLAND COMMISSION Volume 1 November 30, 2017 GROUNDWATER RESOURCES MANAGEMENT PLAN Index: \$17,000amazed						
	1973 24:11	39:24	acknowledge	addressed		
\$		 - 5	_ acquit	adequacies		

 \$	1973 24:11	39:24	acknowledge 14:13	addressed 14:16
<u> </u>		5	acquit	adequacies
\$17,000	2		24:21	9:7
32:2		5:00	acre	Administrat
\$3	20	36:9	31:4	ions
30:2	24:7		acres	17:15
\$3,500	2013	6	31:4	admission
32:3	6:6 8:18		act	39:13
	2014	6:00	22:17	adopted
1	7:20	36:1,7	acting	7:24 16:4
	230	39:22	38:18	advance
1,000	13:23			39:12
30:2		7	action 9:9 22:16	advantage
1,450	3			32:14
25:19		70	actionable	
	2	23:6	39:1	Advisory
10 13:18	3 6:11	70s	actions	33:15
		22:5	9:13	affecting
100	30	23:10	active	10:6,9
34:18	32:9 33:4		11:3	11:9
112	35		activist	afford
24:2	24:11	8	5:25	24:9
11769	36	0.5	actual	28:6,10,
4:10 36:4	24:11	85 23:15	14:20	16
12	38	23.13		afternoon
18:13	4:8 36:3		added 32:11	27:21
13th	3:00	A		33:10
4:16 16:5	3:1 36:9		addition	agencies
	3 1 30 3	A-LIST	12:8 13:3	38:15
143 14:25		15:14	19:12	agriculture
	4	Abers	additional	11:20
15		27:24	18:25	32:6
3:25 8:11	40	academics	26:19	Allegiance
10:1 14:21,24	32:10 33:4	5:24	35:19	3:3,4
15:14,19,		accessible	address	alternative
23 18:23	4:12	37:15	6:1 13:10	s
	36:16		16:7	10:25
18th 36:25	4:18	accurately 17:9	35:22 37:23	amazed
	39:21		38:18	21:16
190	4:20	achieves	39:15,19	
23:25		18:11	,	



amendments	aquifers	36:16	13:13	board
9:13	6:2 26:5	attorney	31:18	4:14
amount	27:2 34:7	3:15	basis	15:3,4
21:17	Arab		6:2	17:22
29:12,20	32:8	authored	0.2	33:15
32:8,15	52.0	9:16,20	bay	bodies
33:3	Arabia	authority	25:6 26:5	20:21
33.3	32:7	3:11 4:9	began	25:9
amounts	area	5:6 26:17	7:19	34:15
30:8	6:3 30:4	29:24,25	13:17	34.15
anartmonta	0.3 30.4	36:3	17:5	body
apartments 25:19	areas	30.3	17.5	20:21
25:19	22:2	authors	begin	1
appears	2000112	9:21	4:2 36:1	bonus
21:4	argue	14:14	1 1	32:11
	25:17		believed	bottom
Appendix	articulated	aware	25:16	6:8
14:18	19:8	10:23	Bellone	
15:24		37:10,18	17:16	Box
applicator	aspects		-	4:8 36:3
28:23	8:23	_	Bender	breaking
20.23	assess	В	31:14,15,	26:19
applying	7:11		16 33:7	20.19
28:12,13	7 • 11	back	Bender's	Brian
	assist	4:11 6:6		3:13
appreciated	16:16	29:14	35:6	12:20
39:17	39:13	36:17	benefit	
approach			22:18	briefly
38:6	assisted	bad		12:15
	9:23	21:20	benefits	21:4
aquifer	assured	bag	19:4	bring
3:8 5:11,	20:1	29:19	Bethpage	31:18
15,20 9:7	2011	29.19	11:8	32:21
11:25	attachment	balance	11.0	
16:11	28:21	33:20	big	37:1
20:22	attendance	_	25:12	brings
21:7,9,		Barrens	29:1 35:3	39:7
13,15,21	18:2	10:11		_
22:12,13,	attended	24:13	Bill	broad
15,22,23	7:20	27:12	7:14	6:16,22
23:1		base	Bio	broader
	attendees	38:3	31:19	17:24
25:10,25	7:24	J 0 • J		11.74
26:4 32:1	attending	based	bioremediat	Brook
33:2,22	3:6 4:25	6:22 7:8	ion	25:5
34:4,14	J.O 4.43	8:4 16:13	35:7	D17
37:23	attention		Dimbor	Brookhaven
38:2,4,24	31:19	basically	Birken	20:7
	32:22	5:21	25:24	24:18,19



LONG ISLAND COMMISSION Volume 1 November 30, 2017 GROUNDWATER RESOURCES MANAGEMENT PLAN Index: brought..compounds

brought	17:7	Chamber	code	commercial
4:13	35:19	33:9,13	21:15	25:21
buck	care	Chambers	Colabufo	commission
30:4	4:8 30:17	35:13	3:21 5:2,	3:8 5:20
budget	career	change	3,5 17:1	19:21
16:13	22:3	10:11	collaborate	20:10
		26:2	39:2	26:7
build	careful			35:23
23:19	28:12	chapter	collaborati	39:5,15,
building	Carey	19:17	on	19
23:17,20	3:2,6,9	chapters	37:24	commit
	16:20	_ 18:21	38:15	9:17
buildings	17:2,19	-1	collage	
35:2	20:5	charge	6:19	committee
built	27:18	7:11		7:11
24:11	31:13	16:24	combination	committees
huginas	33:7	cheap	8:16	18:22
business 28:11	35:18,25	29:14	18:20	
	36:11	ah amil calla	combined	commodity
30:5		chemicals	15:12	21:11
buying	cases	30:23	aomi a	communities
30:10	25:17	34:17,19	comic	35:12
	categories	35:4	22:5	
	10:3	chloride	commend	community
C		11:10,12	37:5,6	7:22
	category	circumstanc	comment	24:16
call	15:6		3:18 4:4	28:9
17:6	center	es 30:7	15:22	companies
called	28:19	30 • 7	16:3,19	21:5
25:12	38:12	citizens	17:22	Company
27:25		5:25		Company
30:25	centers	City	20:14	12:20
30.43	12:9	12:14	36:18	competing
Calverton	cetera	20:18	comments	11:18
24:10	7:23		4:13 16:5	complete
capital	34:22	civic	17:24	18:18
33:5	chaired	35:13	19:25	TO.TO
	7:10,14	clean	20:12,15	completed
captures		22:1	27:15,16	13:5
19:2	Chairman		33:16	completion
carbon	3:9 27:22	clear	36:2,21	18:14
32:19,20	chairs	9:6	37:12	
	8:3,8	climate	Commerce	components
card		10:10	33:9,13	32:19
35:20	challenge			compounds
33 23	22:8	26:2	35:13	Compounds



comprehensi	19:7	26:25	33:14	38:24
ve	consists	convinced	34:21	
5:13	3:23	24:20	36:3,24	_
19:18	18:20	∠ 寸・ ∠∪	37:1	D
38:22	10.7∩	cool	Combrel -	
	constituent	10:21	County's	D&b
compressed	32:18		19:18	7:15
19:23		cooperative	couple	
comprises	constructed	8:22,25	8:8 10:2	dais
8:14	34:2	coordinated	13:4 14:8	6:25
0.11	consultant	16:24	18:22	data
concern	8:24	10-21		16:17
35:3		corresponde	30:25	10.17
-	30:20	nce	courses	database
concerned	contaminant	16:7	11:20	13:8 38:3
21:8 22:8	s		28:2	
26:20	21:16	cost		Dawydiak
28:16	34:23	30:2	covered	3:12
34:6,13,	35:8	32:23	12:24	day
16	33.0	35:6	ana ab c	25:19
	contaminate	gogt1	create	
concerns	đ	costly	9:8	26:2,12
21:4 23:7	37:19	23:21	created	27:17
27:6		costs	6:6 8:12,	28:9
conclude	contaminati	19:4	17	34:11
	on		1	days
16:18	11:7,10,	counties	creating	_
concluding	12 32:15	20:17,25	17:20	25:23
16:9		22:24		deal
	context		critical	14:7 23:9
conditions	5:17	county	19:6 27:2	
14:4,5	continue	3:11,12,	37:16,19	dealing
condo	16:13	14 4:9	criticism	21:10
		5:6,23		DEC
24:15	20:2	6:7,13,	18:16	
Conference	30:15	14,15 7:2	crop	6:16
3:13	continued	11:9,16	32:10	December
	24:8	12:13		4:16 16:5
connect	21.0	17:4,12,	crops	
20:17	continuing		32:9	decided
38:17	39:12	14,15,22	amo a a	8:2 10:2
		18:9	cross	15:7
conservatio	contributed	19:3,15,	7:21	d
n	9:19	20 20:2	cross-	decreasing
12:5	controlled	23:24	county	34:7,14
considerati	21:23	24:13	12:12	dedication
	4.4.4.7	25:11	± 2 • ± 2	39:5
on	controls	26:14	cultural	59.5
4:14 15:8	23:2	28:3	10:9,15	deliverable
considered		32:22,23		5:9
	convert	3/4////	current	





November 30, 2017

Index: department..enemy

	COMMISSION Vo R RESOURCES			ovember 30, 201 ndex: energyfre
energy	19:22	38:10	favor	focused
10:21	25:11	0370	33:24	8:5,6
21:17	26:17	eye 38:9	fear	focusing
enforce	existence	30.9	26:15,19	6:3
22:18	23:1			
_		F	Federal	foot
engaged	existing		22:25	25:20
4:22	5:14 8:22	face	feels	Fork
Engineers	9:1,8	31:20	18:9	31:2
7:15	14:4,6	6	£	£
	26:24	facilitator		form
ensure	31:23,24	38:13	29:7	4:4 21:11
18:11	expand	facilities	fertilizers	formal
enter	16:15	8:7	28:2,6,10	27:15
35:8		£	30:9	£11
	expanding	facility	£1.13	formally
entering	16:16	31:1,2	field	12:19
34:24	expect	facing	29:24	formation
entire	4:16 9:17	6:1 7:16	fifty	7:6
13:22		fact	30:4	formed
entities	<pre>expenditure 33:5</pre>	32:2	figures	5:25 7:7
7:3 19:5	33:5	32.2	29:8	13:6
7.3 19.3	expertise	fail	29.0	13.0
entity	39:7	24:8	fill	formulated
19:8		failed	35:20	5:17 13:2
environment	<pre>experts 38:6</pre>	24:7,12	final	15:21
33:22	38.0	24.7,12	4:16 16:2	forum
	explore	fair	18:14	4:4
environment	35:5	11:21	10.14	4.4
al		fairly	finally	forward
7:22	express	13:9	14:13	5:13 9:12
26:10	37:3		find	12:6 14:9
estimate	extend	Fairways	13:23	16:10
32:3	9:22	27:25		38:22
34.3	extension	farming	first-hand	39:3,12
evening	18:13	28:9	18:3	found
36:22	10.12	31:3,5	fit	22:3
events	extensively	JI • J , J	6:21	44.5
11:8	12:1	farms	0.21	framework
$\tau \tau \cdot o$				

24:25

30:25

18:24

fashioned

16:7

7:4 15:5

fashion

flush

25:22

flushing

35:9

29:5

flying



extent

ry

28:24

17:20

extremely

20:10

extraordina

everyone's

36:15

executive

6:13

18:22

13:19,25

17:14,15

10:4

13:15

3:12

32:22

Frank

free

,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	TT	W/ (14/ (OEIVIEITI I		x. i naayinginig
Friday	33:23	5:24 7:2	groups	11:16
16:3	generic	22:25	5:25 8:4	17:23
friendly	18:24	38:14	Grumman	23:19
13:7	21:13	39:2	11:8	37:20
		granted		hear
front	gentleman	37:14	guess	25:8
15:15	31:16		16:13	
fulfills	gentlemen	great	23:4	heard
18:1	27:13	12:21	guide	16:22
full	Geological	27:16	39:1	hearing
12:23	13:12	green	G117	3:7 5:1
14:17	13.12	10:21	guy 27:7	35:25
15:23	geothermal	29:18	21.1	36:7,8
16:4	21:14,16,	greener	guys	hearings
18:11	19,22	29:21	26:10	3:17 5:11
39:11	GIS	29.21	27:7	3.17 3.11
	38:2	Grosser		heat
funding		10:24	н	10:20
16:14,15	give	ground		heavy
future	3:22	30:1,11		32:17
4:20 12:3	16:21		handled	
14:9 27:2	29:10	groundwater	10:18	helped
31:1	giving	3:18,22	hands	9:23
33:22	8:24	4:24 5:7,	39:21	helpful
37:8	31:17	12 6:17,	happened	19:25
39:14	39:14	22 7:3,4, 21 8:14,	24:1	helping
	glanced	19,20,23	24.1	25:25
	11:1	9:2 10:5,	happy	38:17
G		7,10,14,	19:20	
	goal	17,20	Harbor	herbicides
gallon	9:5	11:7,10,	25:13,23	28:17
30:2	God	19,21		29:1 30:9
gallons	22:25	12:25	harbors	herculean
25:19	16	14:4 15:9	20:22	18:18
34:11	golf 11:20	16:23	34:22	110
	12:10	20:16,23	hard	Hey 29:9
garden	27:25	22:3,8	16:25	29.9
28:19	28:2	34:3,12,	18:7 27:8	high
Gardens	20.2	24 37:3	33:11	22:13
	good	38:20	harm	higher
30:19				
	27:21		26:5	27:1
general	28:3	groundwork	26:5	27:1
general 4:15	28:3 33:10	groundwork 37:7	head	highest
general 4:15 28:10	28:3			
general 4:15	28:3 33:10	37:7	head	highest



November 30, 2017 Index: Friday..highlight

ROUNDWATE	R RESOURCES	MANAGEMENT F	PLAN	Index: Hillsisla
Hills	Hundreds	14:9,11	incubator	13:16
24:10	25:20	importance	30:24	Interesting
nistoric	Huntington	20:20	independent	ly
38:2	36:25	important	33:1	28:8
Home	hydrocarbon	10:18	Indian	internal
29:4	32:15	14:23	12:10	7:5
nomeowner	hydrocarbon	15:16	individual	introduce
28:18	s	20:11	8:12 10:1	3:21
29:2,8	32:16,18	37:11	0.17 10.1	3.77
29.2,0	32.10,10	38:10	industry	introduction
nomeowner's	hydrogeolog	:	7:13 8:23	n
31:24	ic	importantly	9:2 11:20	13:20
	13:15	9:10	ineffective	14:1
nomeowners	TT	14:10		intrusion
29:17	Hyms	38:25	23:21	
31:11	33:8,10,	in-depth	inefficient	11:11
homes	12 35:18	38:23	23:20	intrusions
10:21			information	26:3
1	I	incentives		
nook		33:25	14:22	inviting
25:18		inception	infrastruct	20:9
nookups	idea	5:9	ure	involve
32:4	11:22		7:9 31:23	21:7
	37:1	include		31:10
hope	identified	6:10	initial	
19:25	34:18	13:20	7:8,20,23	involved
26:23,24	34.10	included	initiatives	7:3 17:18
30:15	identify	8:1 19:16	19:13	35:14
31:9	7:12	0.1 19.10	17:13	involves
35:12,16	Immigrants	includes	insects	18:5
borod	32:8	5:23	32:12	10.2
hoped 25:13	32.0	inclusion	instances	involving
23.13	impact		34:8	7:17 18:6
hosted	4:23	8:10	34.0	ironies
3:7	10:11	inclusive	insufficien	30:14
hottost	38:15	17:21	t	30.14
hottest	immosti	income	18:18	irony
12:17	impacting	income	integrate	28:4
hours	38:23	24:15	19:21	Irwin
27:5	imperative	incorporate	⊥J・∠⊥	
hh	20:23	đ	integration	3:14
nub		19:17	19:12	island
34:10	implement		intoroctod	3:7,13
nuge	33:18	increase	interested	4:20,21
24:22	implementat	32:9	14:15,19	5:20 6:2,
30:8	ion	incredible	21:12	12 7:4,
	_			



8:24 9:3	job		led	4:10,14
10:5,12	17:20	L	16:23	5:7,9,19
11:19	39:10		leeching	6:9,10
12:10	John	lab	32:1 33:2	7:6,7,8,
13:13,15	3:15 27:9	32:25	32.1 33.2	24 8:17
15:10	3.13 27.9	33:1	left	13:6,10,
19:14	joined	33.1	16:10	17 15:3,
21:20,21	3:10 17:4	lady	legislation	25 16:4
24:18	joke	31:16	7:8 9:13	17:18,25
27:3	25:22	Lake		18:2,10,
38:13	23.22	33:14	legislative	13,25
	Jones		22:20	19:7,8,12
sland's	27:19,21,	34:8,20	Logialator	33:11
10:7,10,	22	lakes	Legislator 36:19,24	37:1
14,16	in a	20:21	39:16	38:1,11
34:21	jug 20.20	34:15,21	39.10	
sland-wide	28:20		Legislator	
6:2,4		land	s	3:18 20:3
38:16	K	10:12	33:14	LICAP@SCWA.
30.10		27:20,22	7	G01
srael	<u>.</u>	30:16	legislators	4:8
32:7	Kevin	33:20	6:7	4.0
ssue	33:8,12	large	legislature	limit
12:7	key	23:11	24:19	22:4
12.7	3:24			lines
ssues	19:16	law	legislature	38:8
4:23 6:1		7:24	S	30.0
10:9,15,	kill	lawn	6:7,14	link
22 11:6,	29:9,10	29:20	lessen	22:1
14 12:24	kind	30:17,22,	35:8	liquid
13:4	6:19 8:13	23		23:9
33:19	9:3 10:19		let along	23.7
37:23	13:1 23:4	lawns	28:14	list
38:6,19,	27:15	29:18	level	3:24
23 39:8		Laws	22:13	listed
	knowing	22:23	27:1	15:19
	18:3			
J	knowledge	lays	levels	lives
	38:18	37:7	26:3	37:16
amaica		lead	34:6,9,14	l living
12:19	knowledgeab	24:21	38:14	37:17
	le	35:1,2,3	Liaquiferco	
eff	18:17	37:2	mmission.	Lloyd
17:19	Koch	J 1 • Z	com.	11:25
25:5	3:12	learn	3:20 6:9	lobby
effrey		30:19,21		13:25
3:10	kudos	31:5	LICAP	13.45
5 = 0	9:20		3:8,9	local



CITOONDWATE	IN INCOUNTED	TWO TO TO ENTER THE	I L/ (I I I I I I I I I I I I I I I I I I I	iodaiiticoi vaosaa
22:16	27:5	32:24	meeting	minute
23:2	love	38:15	4:15 7:19	3:21 6:3
35:12	4:21	man-made	16:5 18:3	36:16
localities	low	10:15	meetings	minutes
22:17	24:15	34:19	7:20,23,	31:17
located	28:11	manage	25	mission
12:20	35:6	18:4	members	4:18 8:4
			4:10	
logos	lowest	management	6:10,24	model
6:19	34:9	3:19,23	7:1 15:4	30:5
long		5:8,12	39:4	moderate
3:7,13	M	8:1,15,19 9:5,8	momorti	24:15
4:19,21		10:7,17	memory 9:18	moment
5:19 6:2,	made	12:25		17:17
11 7:4,	4:13	14:5,9	mention	
18,21	10:23	16:23	20:18	money
8:23 9:2	11:1	19:19	mentioned	24:15
10:4,7,9,	13:20	37:4	5:4 9:14	30:12
12,14,16	37:25	38:20	20:24	month
11:19	mail		27:9,14	18:13
13:13,14	4:8	Manager	Merklin	months
15:10	4.0	5:5	7:14	16:12
19:13 22:3	main	map	/・14	
34:21	8:3,18	26:18	met	morning
38:13	15:13	mapping	22:6	28:20
	mains	13:8 38:3	Meylend	29:5
long-term	26:19		3:15	move
7:12 8:5	maintain	margin	Michael	31:22
9:9 35:10	30:22	28:11	17:3	39:3
longer		material		moving
37:19	major	8:13 13:1	middle	38:21
lot	5:8	matter	24:13	
5:12 6:20	13:21,23	7:25	Milazzo	multiple
16:22,25	make		3:15 36:8	38:5,14
18:7	4:18	meaningful	million	municipal
20:24	17:25	19:2	6:11	38:8
24:11	20:12,14	means		
27:6,7	22:11	32:23	millions	N
28:10	29:20	measures	25:18	
30:12,22	33:3	39:1	34:11	NT
31:10,20	makes		minimally	Nassau
32:2	38:7	meet	12:1	3:14 5:22 6:12 14
37:17		24:7,8,	minimize	6:12,14, 15,17
lots	making 27:7	12,14	34:23	10:19
	∠ <i>1</i> • <i>1</i>		51-25	10-10



November 30, 2017 Index: localities..Nassau

11:9	number	ongoing	oriented	past
12:1,13	15:17,18	31:9	8:5,7	12:8,16
20:17	30:14	online	out some	38:11
23:5	numerous	3:20	<pre>outcome 35:17</pre>	Databoano
nagtri	6:25	3.20	33.17	Patchogue 25:6
nasty 30:23	0.25	open	outline	25.0
30.23	-	16:19	3:24	pathways
natural	0	24:25	oversaw	19:6
10:9 14:4		36:9 38:9	8:9	Paul
22:1	Oakdale	opinion		10:4
needed	4:9 36:3	20:25	oversight	
23:18			19:10	Peconic
	objectives	opioids	overuse	27:20,22
neighbor's	18:1	34:17	29:13	30:16
29:21	objects	opportuniti	_, _,	people
nice	19:16	es		6:11
26:11	±2 - ±0	14:10	P	9:16,19
	ocean			11:19
nitrate	25:6,25	opportunity	p.m.	13:25
30:1	26:4	7:14	3:1 39:24	18:7
nitrates	34:5,13	36:23		27:13
33:1	35:9	39:15	pages	28:15,16,
	offer	opposed	13:23	19 30:3,8
nitrogen	20:2	5:13	parks	31:3
19:14		21:10	28:3	34:25
31:22	offered			39:10
32:1	32:22	option	part	37.10
noise	offers	12:15	10:18	percent
27:7	38:25	options	12:9 31:9	23:6 24:7
		35:6	33:17	32:9,10
nonvoting	office		35:25	33:4
7:1	17:15	order	participant	Perfect
North	25:21	15:16,19	s	30:20
31:1	offices	Organic	6:20	
Non-the-	6:13	31:19		period
Northport			participate	8:9 18:17
29:24	official	organizatio	37:2	19:24
noted	20:14	n 4.10	partners	permission
3:1 39:24	23:15	4:18	31:7	23:18
notos	officials	organizatio	nartnarahir	
notes 22:10	5:24	ns	<pre>partnership 5:21 6:4</pre>	permit
22·10	a:1	35:13		19:23
notice	oil	omaon!	30:21	permitted
23:3	32:12	organize	parts	21:22,23
24:22	one-on-one	10:2	32:7	
	30:19	organized		personal
noticed	30.13	V-3W	passed	9:22



20:15	place	pleased	potentially	prioritizat
personally	26:22	20:1	16:14	ion
20:11	38:24	Pledge	Pouturo	9:11
	plan	3:2,4	10:4	priority
perspective	3:19,23			15:18
39:7	4:5 5:8,	plumes	practitione	18:23
perspective	12,16,17	11:8	rs	
s	7:11 8:1,	PO	8:22	proactively
21:1	10,15,16,	4:8 36:3	precisely	37:22
pesticide	19,21	podium	18:9	problems
28:22	9:5,9,14,	35:21	profer	28:1
20.22	19,24	33.71	prefer	31:20
pesticides	12:25	pogo	21:9	
28:2,7,	13:2,18	22:5	preparation	proceedings
11,17,25	14:16,20	point	18:14	4:3
30:9	15:20,21	10:3	19:24	process
32:13	16:3,23		prescious	17:18,21,
Peter	18:14,15,	25:12,17, 24	37:18	25 18:4,
	20 19:14,	24	37.10	11 19:13
17:11,13	19,23	points	present	35:14
20:5,24	20:23	22:11	18:23	37:22
pharmaceuti	21:1,3,6,	policies	28:9	39:6
cals	7,25	39:3	presentatio	
34:18	22:11	39.3		produced
phonetic	23:3,11	policy	n 3:22 18:8	8:21
27:25	25:15	19:9	3.22 10.0	products
27.25	37:4	political	preservatio	34:17,19
photographi	38:20,22	38:8	n	professiona
С	50.20,22	30 - 0	10:12	ls
9:18	plan's	Poly	33:21	
picked	3:25	27:10	39:6	5:22 6:5,
4:1	planning	popped	preserve	17,23 9:1
4.1	37:8	15:12	preserve 10:13	program
picture	37.0	13.12	33:21	9:10
9:6 15:9	plans	Port	33.21	21:9,18
pilot	8:20 24:7	25:5	pretty	nrograma
32:22	plant	pose	12:1	<pre>programs 9:8 14:6</pre>
	23:22,23	22:7	13:16	9:8 14:6 19:9
Pine	24:3		16:23	19.9
10:11	25:14	positive	previous	progress
24:13	33:4 34:2	35:16	11:1	19:11
27:11		potable		project
pipe	plants	7:17 11:4	primary	23:18,21
22:21	23:25		19:8	24:1,2,3
	25:4	potential	priorities	25:12
piping	play	7:16	19:2	30:20,24
35:3		18:12	1)·4	30.20,24
35:3	37:21	18:12	19.2	30:20,



34:1	16:10	question-	17:7	33:1,2
promote	published	and-answer	recess	reduced
30:17	4:17	4:5	36:10,11,	32:8
31:7	4.17	questions	13,17	32.0
31.1	pump	4:6	39:22	reduces
property	26:4	4.0	39.44	31:25
31:25	29:25	quo	recharge	references
prospective	pumping	5:14	25:16	14:14
18:5	34:10		recited	14.14
10.3	34.10	_	3:5	region
protect	purpose	R	3.5	19:3
22:3,23	3:17		recognize	regional
23:9 39:2	put	radar	17:3	11:7
protected	16:22	29:3	36:19	23:11,13,
4:20				
	25:24	rain	recognized	17
22:15	27:5 37:9	32:17	18:8	regionaliza
rotection	putting	ramificatio	recommendat	tion
3:8 5:20	30:8	ns	ion	24:4
21:6,7,9,		32:6	13:21	
13 22:13	PW	_	14:2,24	regionally
	10:24	rank	15:13,17	38:16
rotects		15:4		39:2
21:15	Q	ranked	recommendat	regulation
proud		15:5	ions	12:3
36:25			3:24,25	
37:3	quality	raw	9:11	regulations
	6:1	8:13 13:1	13:24	9:8 10:6
provide	10:13,16	re-	14:11,25	22:17,19
9:6 14:14	11:5,14	examination	15:2,7,	28:25
17:24	12:24	13:14	11,14,20	regulators
31:5	13:8		18:23	5:24 7:22
provided	34:19	reactivatio	19:10	
15:3	37:23	n	recommended	regulatory
17:23	38:3,7,	12:18		9:12 10:4
19:10	12,19	read	9:12	14:5
19.10	39:10	13:22	15:20	38:14
public		14:20	record	reinject
3:7,18	quantity	21:3	17:8	34:3
5:1 11:23	6:1		37:10	34.3
12:18	10:14,16	36:20		reinjected
15:22	11:6,17,	realize	recovery	34:12
16:3,19	22 12:24	15:16	11:3	romanira
36:18	Queens		recreation	remarks
37:20	12:20	reason	37:20	37:9
38:9		18:9,12		remedies
	question	received	reduce	22:20
publish	26:6	16:14	32:18	



remember	representat	30:22	role	schedule
27:23	ives	rest	19:7	9:11
29:23	6:12,13	20:1	37:21	14:11
remind	7:1	20.1	Romaine	scheduled
4:3	roprogented	result	20:6,8	16:4
4.3	represented 24:18	8:21	27:18	10.4
removal	24.10	results	34:1	Schneider
30:1	representin	22:13	34.1	3:13
rent	g	33:18	Ronkonkoma	12:21
31:4	36:24	35:16	25:13,23	school
	requesting		33:9,13,	35:2
replenish	18:13	retail	15,25	33.2
27:1	10.13	25:21	34:8,10,	schools
report	required	reuse	20	34:25
4:16	32:13	11:4 12:9	mauah	Scully
5:11,15	reserve		rough 27:16	17:11,13
8:9 9:24	34:3	revitalizat	27.10	14
10:3,10,	34.3	ion	Roundup	T-4
11,23	residents	33:25	28:21	sea
11:2,7,12	4:21	reworking	running	26:2
	resource	13:14	13:9	Secretary
12:8,9,	3:19		13.9	33:13
14,16,21	5:12,21	Ridge	runs	33.13
13:22	6:5,17,23	30:18	32:16	section
14:13,20	8:5 37:18	ring		7:21
16:11	0.3 37.10	31:24		13:19,21
27:23	resources		S	14:24
28:1,4	3:23 5:5,	rising		15:13
38:2,4	7 7:9,13	26:2	sad	sections
reported	8:14,19	risks	24:5,6	13:19
11:15	10:5	7:12,16	salting	14:3,8,2
	12:25		11:11	14.3,0,2
reports	19:18	Riverhead	11.11	seeking
8:10,12,	37:4	12:10	saltwater	4:22
13 9:16,	38:20	24:19	11:11	sell
20 10:1		rivers	26:3	30:3
11:1,24	respect 19:15	20:22	Sarah	
12:4		34:21	3:14 27:8	selling
13:1,3	29:18		3.14 27.0	30:7
14:17,21,	response	road	sat	series
25 15:2,	35:24	11:11	25:13	18:21
12,23,24	39:20	roadmap	Saturday	
16:24	rognongihla	38:21	28:20	serve
represent	responsible		29:5	6:11
21:20	19:5	Robert	49·3	serves
— -	30:17	27:24	Saudi	13:1
	responsibly	31:14	32:7	10.1



LONG ISLAND COMMISSION Volume 1 November 30, 2017 GROUNDWATER RESOURCES MANAGEMENT PLAN Index: Services..statutable

ROUNDWAIE Services	29:5	25:15	space	square
11:16			11:6	25:20
17:24	shifted	slide	24:25	
	25:22	6:8 13:11	25:21	stake
serving	short	slides	27.21	33:19
38:21	13:9	9:18	span	Stan
session	13.7	7.10	8:13	3:9 5:3,4
4:6 36:17	short-term	small	anon't	17:19
4.0 30.17	7:16 8:6	23:20,21,	speak	17.19
set	shortly	25	31:17	stand
5:10	-		35:21	29:3
	13:17	smaller	speaker	
sewage	shot	6:3	- 17:11	standards
12:10	29:9	sold	20:6	24:8,9,14
23:22,25	_	21:11	27:19	standpoint
24:2,3,7	shots		31:14	28:14
25:4,14	29:10	sole	33:8	30:5,16
33:3,4	shout-out	4:19	33.0	50.5,10
lewer	9:20	22:12,22	speakers	start
sewer		solution	17:2,6	3:2 13:16
23:10,11,	showing	25:3,4	36:5	36:7
13,23	13:11			att - d
25:7,16,	shown	35:10	speaking	started
18		solve	26:8	13:6,8,
sewered	15:15	31:20	special	10,17
23:5,7	significanc		16:21	23:8,10
•	е	someway		starting
sewering	20:16	22:7	specific	10:3
26:22		sort	9:6 13:18	10 3
sewers	significant	10:8,13	14:15	state
10:18	13:7 15:9	11:1	15:1	5:11,15
	significati	<u> </u>	38:25	16:11,14
23:4,7,8,	on	sound		17:8
16 24:20,	7:5	25:5 26:5	spectrum	22:15,16,
21 25:2	7.5	sounds	12:23	24 23:2
26:13,16,	similar	25:8	Spencer	38:2,4,16
21,23,25	5:10	40.0	36:20,22,	-1 -1 -
shallow	15:11	source	24 39:16	statements
21:21	similarly	4:19		32:24
	11:25	22:12,22	spend	states
share	11.72	Court le	30:12	22:11
11:6,21	simply	South	spent	
shared	19:10	31:2	16:24	status
39:12	28:13	Southold	21:17	5:14
J 9 + 1 Z		24:18	∠⊥•⊥/	status-quo
Shelter	simultaneou	26:17	sponsor	14:5
21:20	sly		37:2	T4.7
24:18	38:18	southwest	an wattar	statutable
		23:10	sprayer	10.17
shelves	site	23.10	28:21	18:17



	COMMISSION Vo R RESOURCES			November 30, 20 ndex: statutoryte
statutory	stuck	23:12	suppliers	34:7
19:23	9:3	au al-i na	5:23 6:10	tabaa
		sucking	7:16,22	taboo
tayed	studies	25:8	11:18,23	23:16
38:11	7:4 33:11	suffer	21:10	tackle
tenographe	study	22:21	_	38:6
	13:13	g££11-	supply	L -1
17:9	16:16	Suffolk	7:12	takes
	33:17	3:11,12	10:25	38:21
step	55	4:9 5:5,	12:2,13,	talk
19:1 26:9		22 6:12,	18,19	5:7 21:24
teps	29:4,7,16	14,15,18	26:6 27:3	
18:10	30:10,11	10:19	31:21	talked
19:5 39:1	styles	11:9,16	32:16	14:21
	38:17	12:2,13	38:7	21:14
Steve		17:4,12	support	talks
3:21 5:2,	subcommitte	19:15,18	20:3 21:2	23:3
4 16:20,	е	20:17		
21 17:16	7:10,13,	23:5,6,	37:3	tangible
18:8	14 8:3,4,	13,24	39:11	37:6
27:19,21	7	24:23,24	Survey	tap
31:13	subcommitte	26:14	13:12	20:19
14		28:3		
Stony	es	33:14	sustainabil	task
25:5	7:7,19	36:2,24	ity	18:18
storage	subject	37:1	9:9 13:13	
11:3	7:25	37.1	16:16	team
	11:24	suggested	sustainable	38:6
storm	14:15	34:1	30:5	teams
32:17		summarized	35:10	8:8
strategy	subjects		33.10	
19:2,21	8:2	15:3	system	technical
	submit	summary	9:7 12:19	17:22
streams	16:5	5:14	33:22	31:6
20:21	21:25	13:20	34:4 35:8	technology
34:21	26:11	14:1	# - # L c	10:20
trengthen	27:15	18:22	systems	11:2
22:17		19:22	34:14	31:19,25
∠∠•±/	36:2		Szabo	32:6,11,
strides	submitted	summer	3:10	14,17
37:25	4:7	29:15	17:19	38:5
ı+min		30:18	36:15	30.3
strip	submitting	Supervisor	39:16,21	telephone
22:5	20:13	20:6	55.10,21	16:6
strips	substantiat	24:17		—
32:12	е		T	Tens
	32:24	27:18		_ 25:19
structures		34:1	+able	tent
7:6 38:24	successful		table	6:16



	26.5.	0 - 5 -		0000
erms	36:14	27:15	turn	28:22
10:6	39:24	towns	5:1	upcoming
23:8,16	timeframe	22:24	Turner	4:15
ertiary	13:9		27:9	• .
25:15		Toxic		update
26:23,25	timeframes	27:25	twitted	16:11
34:2	19:5	tracking	23:1	upgrade
	times	19:11	type	24:10
est	32:15	transcript	10:15	upsetting
35:1	37:17	17:10	23:18	29:6
hing	39:8	17.10		29.0
24:5,6	+ - d	transmissio		urge
28:5 31:8	today 3:10 4:13	n	U	18:12
32:5		12:12		user
hinaa	17:11	transparent	U.S.	13:7
hings	24:2	17:21	13:12	13.1
10:15,18	31:21	38:8	understand	users
11:12,15	37:3	30.0	21:10	11:18,22
16:10	today's	treat	29:8	29:1
21:8	3:7 4:3,4	30:1,3	29.8	USGS
37:11	5:1	35:7	understandi	16:16
hinking	L-21-L	treated	ng	10.10
5:13	toilet	12:9	23:14	utility
1 1	25:23	34:12	undertaken	21:12
houghts	tonight	34.12	18:19	Utilizing
16:9	5:6,16	treating	10.19	10:20
housands	36:1	25:9	underway	10.20
25:19,20	+1 <i>-</i>	treatment	13:5	
-l	tools 19:10	7:17	undoubtedly	v
hreats 9:6 14:6,	19.10	23:22,23,	39:8	
9.6 14.6, 7	top	25 24:2,3	39.0	varying
1	3:25	25:4,14	unique	38:23
hree-year	15:19	27:1	9:4 39:7	30.23
8:12,17	26:8	33:3,4	unit	versus
hrust	topics	34:2 35:5	12:2	10:9,19
15:13	8:2,6,7	34.2 33.3		view
13.13	12:18	tremendous	United	18:25
time	14:19	18:6	32:7	25:12,17
3:1 16:25	14.19	29:12	units	
18:17	total	37:25	7:2	views
19:1,22	14:25	Trust		18:6
21:17	town	27:20,22	unlicensed	villages
22:16,18	20:7,13	30:16	28:22	22:24
24:6 28:7		20.10	unqualified	1
33:18	21:23,24	Tuesday	20:2	virtuous
34:7	25:12	30:18		28:5
35:11,16	26:9		unregulated	l



November 30, 2017

ONG ISLAND COMMISSION Volume 1 SROUNDWATER RESOURCES MANAGEMENT PLAN				November 30, 201 Index: vitalyoun	
vital	7:9,12,	Western	8:5		
39:3	13,16,18	24:23	write		
	10:17,25	rate data		0	
volume	11:4,5,	White	8:9 26:10	U	
29:1	14,17,18	17:3	writing		
volunteer	12:2,19,	wide	8:8 20:1	4	
8:25	23 13:7	7:21	written		
voted	19:18	widespread	16:6		
25:14	20:19,21	21:18	10.0		
25.14	21:5,6,11	21.10	WROS		
voting	22:1 25:9	William	8:6		
4:14 6:24	26:6,17,	36:20,23			
15:3	18,19				
	27:2	wind	Y		
	29:23,25	25:24			
W	30:8,10	wishes	year		
	31:21	35:21	4:17 5:10	0	
Walter	32:8,16,	39:18	8:9		
3:12 24:6	19,20				
	34:7,15,	word	years		
wanted	19 35:1,7	23:15	5:10		
13:4		words	24:12		
17:17	36:3	31:23	27:24		
20:14	37:13,23		30:25		
22:11	38:3,5,7,	work	34:9		
32:21	12,19	16:22,25	38:11		
wanting	39:3,10	18:7	yield		
29:19	Watertraq	19:20	32:10		
	13:7,11	20:10,11			
washing	16:15	27:4,12	York	•	
30:10,11	38:3,4	33:11	4:9 12:20	0	
waste		38:1,17	16:14		
10:17	web	39:9	22:24		
23:9	16:6	worked	36:3		
	website	27:7	young		
wastewater	6:8 16:1		31:2		
19:16	36:2	working			
watch	7	9:1 18:3			
29:4	weed	37:5,22			
	29:9	world			
watchful	week	32:7			
38:9	29:15				
water	randa a	worthwhile			
3:11,13,	Weigand	11:23			
18 4:9,19	27:10	wound			
5:5,6,21,	wellbeing	23:19			
23 6:4,10	37:21				
		WRIS			

