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ENVIRONMENTAL PROTECTION

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PUBLIC HEARING

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A L S O P R E S E N T:

NEW JERSEY CLEAN WATER COUNCIL MEMBERS

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MR. VAN ABS: Thank you all for coming. My name is Dan Van Abs. I'm chair of the New Jersey Clean Water Council and I'd like to welcome you all here to our 2014 public hearing on behalf of the Clean Water Council.

Stan Cach was good enough to put together this photo with a clear reminder of what we are trying to deal with in the State, that is a Combined Sewer Overflow in full spate, as one might say.

The agenda that we're dealing with here is, we're going to have some opening speakers, starting out with Commissioner Bob Martin. Then we will have two talks, one from Dr. Ray Ferrara and one from Mike Ruppel and Ryan Krause, as you can see. We will do a bit of Q & A for those two sets of speakers, and then we will move to public testimony. And I'll deal with the public testimony portion when we get there.

The Clean Water Council members, there are many of them in the room today. This is the full list. It's also on the agenda, right underneath the agenda. But I would like to acknowledge the Clean Water Council members, if you folks would all stand and be recognized. So these

are the Clean Water Council members. Thank you. And we're an interesting mix of both state agency representatives and representatives of various public interests and members of the public who have been designated by the Governor to serve as an advisory body to the Commissioner of the Department of Environmental Protection, and we've been working for a long time. This body was formed in 1977 and has been working with the Department very closely ever since then.

The person we advise is the Commissioner of the DEP, and I would like to introduce him to you. Sort of the man who needs no introduction, I will introduce him.

Bob Martin has been Commissioner throughout the Christie administration, and one thing that has worked extremely well for the Clean Water Council and I hope the Department over those years is, the Clean Water Council has been very focused on this whole issue of asset management and water infrastructure, and Commissioner Martin has been directly on that topic from day one. He came in knowing this issue, believing in the importance of asset management, been a very strong supporter of the work that the Council has been doing and the

work that his staff has been doing with regard to asset management issues. So we asked him to come today and talk with us about the topic of today's hearing and anything else he might wish to share with us. Commissioner Martin.

COMMISSIONER MARTIN: Good morning, everyone. A lot of familiar faces again. Great to see all of you. On behalf of the Governor, I'm very proud to be here again today. And the New Jersey Clean Water Council is, you know, again, one of the councils that I do spend a lot of time with. I do listen to what you bring forward and I think you provide incredible value to me as Commissioner, which then ultimately shows up with the Governor in the policies we shape, and so what you bring to us is extremely valuable and I thank you for that.

And I don't spend time with all the different boards and councils unlike I do with your group because of the fact that you guys put the time in, you bring the expertise to the table, you help to shape the policies of the State. And as Dan has mentioned, you guys have been in place for a long time. And that's extremely important, that you've been able to bring that, bring the caliber of people that are on the Council to the table. So thank all

of you and I thank everyone else in the room for being -- participating today, and look forward to getting the comments you bring to us, the shape of the policy directions you bring forward to us, it's going to be extremely helpful to us, so I thank you for that.

Again, today, focus of your hearing and your input today is going to be on CSOs. This issue continues to be an extremely important issue to the State of New Jersey and one of my priorities since I've taken over this job.

Again, we recognize there are still -- there are 217 permitted CSOs in the State and they discharge significant amounts of stormwater and untreated sewage over our waterways every single year. But this issue is not a new one. It's taken us a hundred years to get here, and again, it's going to take us time to work out of this issue.

This administration has stepped up and is focused on this issue. We are going to be taking it seriously, we're going to continue to focus on that. And the Governor has made it clear that water quality and protecting water quality in the State of New Jersey is a priority. We are going to continue to focus on that going forward.

We know that solving the CSO issue will take time. We've already taken the initial steps, and we'll continue to make progress on this issue and we're going to continue to take more steps as we go forward.

The ultimate goal is to make New Jersey's waterways swimmable and fishable. We recognize the municipalities can't do this alone. We are working on ways to assist towns in meeting their requirements and in improving their communities and improving the quality of life in those communities. We're also looking, going to -- looking for the leadership, a lot more leadership and continued leadership from our Regional Utility Authorities. That's going to be a common theme you're going to hear from me, they've got to play a key role in this moving forward. The burden cannot continue to fall only on the towns to make this happen. We need cooperation from both the Regional Utility Authorities, from the State, from EPA and all the other agencies to make that happen as we go forward.

The Regional Utility Authorities should help their member participant utilities in finding solutions that work and demonstrate

continued progress along the way. It's my belief that we'll able to come up with reasonable solutions, but it's going to take a lot of effort, cooperation, time and resources. And it's going to take our commitment to make that happen. Just waiting for those things to happen aren't going to happen overnight, but it needs our long-term resolve to make that happen.

I want to talk -- start by telling you what we've been focusing in on and how we are going to make this happen from our side, from the DEP side and our involvement and all the other pieces to it.

The two first pieces I want to talk about is how we've organized ourselves at the DEP and how we spend our resources focused on this. The second part I want to talk about the permitting component to this and our cooperation and work with EPA. And our relationship with EPA on the permitting for CSOs has been extremely good and a very cooperative relationship with them in Region 2 in making this happen, and that's extremely important. We need that partnership with EPA from a regulatory point of view to make sure that works and right now it's working extremely well on this particular issue.

An important part of our efforts in reorganizing, we've reorganized within water resources management, we created the Office of Water Resource Management coordination. This office will work with community groups, local government, permittees, utility authorities and environmental groups to focus on resolving the issues around CSOs. It will address Long Term Control Plan issues that are typically outside the scope and expertise of the permits -- permitting staff. We're also reassigning CSO program to the NJPDES permitting program itself. Again, focusing on the overall water discharge issue itself. This supports the integrated approach to permitting that addresses surface water, stormwater and pretreatment requirements.

On a permitting front, DEP is issuing individual NJPDES permits to municipalities and regional treatment plants that have CSOs. There are 21 municipalities and nine treatment plants that have received draft permits already. The goal of these permits is to reduce discharges and ultimately to eliminate the 217 CSOs. Final permits are anticipated in January of '15, so next month. These permits will provide a framework for an integrated approach to address water quality and quality of

life issues.

We understand the CSO watersheds have various owners and operators, service areas -- I'm sorry -- service areas and customers that make it challenging. The municipalities and treatment plants are interconnected and both have reasons to combat CSO issues. The permit requires treatment plant management, collection systems and stormwater management as a focus.

Municipalities and treatment plants can work together to develop Long Term Control Plans. It's absolutely critical in our mind that we have a cooperation with all of them working on these Long Term Control Plans and not just dropping this specifically on the towns themselves. We want utilities to take leadership role in developing solutions for that entire region. And I think that's a key point you'll continue to hear from me.

We at the DEP are also offering incentives, such as $500,000 in principal forgiveness for regional integrated plans and providing more time to develop Long Term Control Plans that address the region in support of that goal.

Shared services should also be

employed to reduce costs. Simple examples would include signs, websites and planning. Those things can be done in a cooperative team effort. PVSC is a great example of a utility that has already stepped up to address these issues. PVSC funded Rutgers cooperative extension water resources program for a multi-year grant to inform member communities about the benefits of using Green Infrastructure. The project also provided technical assistance to municipalities that are willing to meet certain goals. The following CSO communities have also committed to cost sharing: Newark, Paterson and Bayonne.

Camden County MUA also continues to take a lead role by agreeing to develop Long Term Control Plan for their region and continue all their great efforts to support Green Infrastructure through the Camden SMART Program.

Proper operation and maintenance for wastewater treatment plants is a must. Owner manuals should not be sitting on the shelf, they need to be updated and used and maintained themselves on a constant basis. Regular inspections, scheduled preventive maintenance and timely repairs are essential. Facilities must know

their customers and the nature of their discharge to reduce potential environmental impacts. Facilities need to know which significant indirect users can reduce or hold flow during wet weather events. And, again, having the ability to have full information and be able to manage those does make a critical -- does make a critical importance to the success of these.

And it's things that you've already heard from me, continue to hear from me and Dan mentioned. You know, critical things like asset management, Green Infrastructure and long-term capital investments are keys to success in working on a CSO program. You've heard that from day one when I took this job, you're going to continue to hear that. Those are things that I believe are necessary to make things happen.

Permittees need to locate an inventory of all their assets, asset -- assess conditions of assets and define the remaining useful life. They need to define the level of service, they need to identify vulnerable and critical assets, they need to establish life cycle costs for each asset, they need to implement a long-term funding strategy to reinvest fees collected back into the wastewater

infrastructure itself.

The need for good asset management, note, can be seen in very simple examples. Right now, as you know, Jersey City had a sewer main break, 54-inch force main in Jersey City broke on November 20th. Pumping station had to bypass the main and discharge from nine CSO outfalls into the Hudson River. An estimated 300 to 700,000 gallons per an hour of untreated sewage went into the Hudson River. It shut down service on the Hudson-Bergen Light Rail between Liberty State Park and the West Side Avenue for repair or replace -- so they could repair or replace damaged pipe section. DEP issued advisories not to fish off the Jersey City coast, and again, it took time to replace, took several days to replace and rebuild that pipe structure that was broken.

And, again, if they had had a better up-to-date detailed inventory and mapping could have helped minimize this project and the delay in repairing and replacing this. Long-term asset management and repairs and maintenance help minimize these kinds of impacts. When you see projects like this and the disruption it has, both to the community with the rail, light rail being disrupted,

and at the same time you see what the volume of raw sewage that ends up in the Hudson River because we don't have asset management and we're not managing on a long-term basis, that does have environmental consequences at the end of the day. It's absolutely critical that we continue to address these issues.

There are a number of alternatives listed in the permit that the permittees are required to consider. We want true assessment of Green Infrastructure which will manage stormwater and reduce the volume of runoff entering the system or to reduce the flow rates into the system. Green Infrastructure also enhances the beauty of the community. Stormwater can be considered a resource, not a nuisance. It can be stored and reused. Green Infrastructure also provides a great mechanism to educate the community about water infrastructure issues. The use of Green Infrastructure is becoming more common in the State of New Jersey. Newark with their Doing Infrastructure Green pro [sic] Partnership focus on addressing the CSO and flooding issues in Newark throughout the -- through the use of Green Infrastructure. The Camden SMART Partnership focused on addressing flooding problems in Camden through the use of Green Infrastructure.

And finally, long-term capital investments are needed to ensure that the program can be funded adequately. Investments need to be made on a consistent basis. In viewing it within the lens of a 20 to 30-year period, given the cost of these programs, we need pragmatic and -- we need to be pragmatic and realistic about how we invest money over a long period of time. We cannot put local communities under further financial pressure with expensive short-term capital investments only. It needs to be viewed in a long-term lens.

The critical components to funding water infrastructure in the State of New Jersey continues to be through the use of the SRF program and the EIT program. The current fiscal year program has received more than $1.2 billion in applications for all areas of water and wastewater infrastructure. To date, $382 million has either already been received -- has already received bids or presently out to bid. Another $300 million is anticipated to be bid by next spring. With this amount of also 250 million worth of Sandy SRF funds would match to the State with CDBG dollars and leveraged by EIT, it results in $350 million of available project money.

Included in these projects are innovative designs by South Monmouth Regional Sewerage Authority for a mobile pumping unit that can be moved out of harm's way in the event of upcoming storms. This week SMRSA received the Governor's Environmental Excellence Award for this in Innovative Technology. Over the past three decades, SRF and EIT has funded approximately $1.6 billion for CSO abatement projects. In 2014 nearly 200 million was disbursed for water infrastructure projects overall, which creates a total of about 20,000 jobs. In addition, 71 projects have completed construction in 2014. For CSOs particular, we've already set aside $3 million in principal forgiveness for CSO abatement projects with a focus on Green Infrastructure. We have offered $500,000 at 50 percent principal forgiveness as well.

DEP will continue to support permittees and municipalities in developing clear requirements and providing a series of training seminars to support those requirements. On January 8th we will, along with EPA and New Jersey Future, be conducting a workshop to design -- that's designed to help mayors, utility operators, business

administrators, permittees, consultants understand the requirements and opportunities with these permits that we're putting out there for NJPDES permits. In addition, in the post Sandy world DEP is providing new guidance around critical areas of water and wastewater infrastructure, around flood protection, auxiliary power, asset management, environmental -- I'm sorry -- emergency response preparation and planning, precautionary measures for wastewater and stormwater systems, and the operation and maintenance of best practices guide. Again, these are critical things we've learned post Sandy, and a critical part of how we are going to operate going forward here at the DEP.

Green Infrastructure website were also being set up that provides best management practices as well as success stories. We're also developing a CSO website to provide a centralized source with the Department guidance and links for outside information. We'll also require submittals, guidance, permit requirements and information for the public. We are currently updating our non-structural provision of the stormwater management rules to promote Green Infrastructure and low-impact development.

The DEP CSO team will be available to assist permittees throughout the entire process. It's going to be a complicated long-term process, there's going to be many issues, but again, we need to focus our time, our effort and our financing to solve the CSO issues.

The key components of this, of the CSO permits, what we want to focus on is we want to spur urban renewal; we want to improve the quality of life in the CSO communities; we want to revitalize waterfront areas and provide new recreational opportunities; we want to reduce service interruptions by poorly managed assets; we want to reduce sewer backups thereby reducing property damage and public health risks; we want to reduce flooding and thereby reducing property damage and improving transportation, which is very important for economic growth; we want to reduce unpleasant odors due to backups and overflows and we want to redesign neighborhoods through Green Infrastructure.

DEP is also working to involve the community. Our permits require public participation, but again, we're looking beyond the typical public standard participation. We want to do something different. Permittees can require --

can receive input from the public on problems within their communities which help prioritize limited funding on areas which will provide the greatest benefit.

The keys to success, and I've said them several times within my talk today, continue to be using major players in all of this. Again, major players like PVSC and the Camden County Municipal Utilities Authority. They can help provide the overall direction and financial muscle necessary to work the cities and towns through the challenges of CSOs.

The other major area is leveraging SRF and EIT. EIT continues to be an incredible partner with the ability to work on both water supply, but most importantly on wastewater infrastructure and CSOs. We see that as critical as our bank for leveraging for the future in this area.

And, again, the components that I continue to talk about, asset management and long-term capital investments, those are key principles we must adhere to. We've got to believe in those and they have to be part of all our process, our approach, our policy going forward.

And finally, we need to have a close

relationship with EPA. EPA needs to be a critical close partner and a working partner with us on this. So far they have been, and that's been wonderful, but this is a long road and they need to be a partner with us working with the communities, working with DEP, working with those municipalities and the permittees to make this work. In the past, one of the obstacles in the past has been the large financial commitment and the push that's come and very hard, very short time period looking as if this was a sprint. This is not a sprint. This is a marathon that we need to put our long-term time and investment into to make it work. So those are the key components to it.

And again, in my closing -- in closing, I want to emphasize a couple of things. DEP is committed to this, I am committed to this, I have been since day one, this has been a critical component to this administration, and our overall commitment to clean water in the State of New Jersey. This continues to be the Governor's key commitment in protecting the waters in the State of New Jersey and focusing on the CSO issues in particular.

I want to thank you again. The Clean

Water Council's done fabulous work in the past. I look to you guys to help us shape this policy and continue to move forward with the permittees in how do we address this problem and any way you can help us to move this even faster and much more rapidly and help implement this over time.

So thank you very much, and I thank you for allowing me to speak today.

MR. VAN ABS: And thank you very much, Commissioner, for being with us, for taking the time. The Commissioner takes a break from his very busy schedule to come and give us these words. And I'll tell you, these are the words that we want to hear. The amazing thing is that in all of these financial difficulties that the State has been facing, through the recession and the post recession and Sandy and post Sandy, that the commitment to CSO controls and the CSO permitting program has been maintained through that whole period of time, which is truly a wonderful thing for us.

The focus of the remainder of our presentations are in two parts. You heard the Commissioner talk very extensively about sewer overflow control, and one of -- our first presentation is on that topic.

But there is another side to this, which are the sanitary sewers, the non-combined sewers, if you will. And the issue of sanitary sewer overflows that have occurred in various places in the State at various times. So we're going to have a presentation to address that issue as well, and that will be our second set of presenters.

So I would like to start with Dr. Ray Ferrara, who was -- who is a long-time consultant in the water and wastewater field, currently the Director of Wastewater and Water for Kleinfelder. Previous to the merger of Kleinfelder with his -- the firm that he founded on the environmental, Ray was a principal of that firm with one of our Council members.

And so we'd like to invite Ray to come up and talk to us about a very interesting case study for CSO control in -- not in New Jersey, but something that we think we could emulate here.

DR. FERRARA: Thanks, Dan. I appreciate the invitation to be here today. I thank the Council. I thank the Council for having me here, and it's good to come back and see people that I work with all the time and people I haven't seen for 30 years, like Dick Field and Dennis Hart

somewhere here. I haven't seen him in quite a while as well. So it's always good to come back and see everybody.

You've heard the Commissioner talk about a couple of themes that I think you're going to hear specifically apply to what I'll be speaking about today, and that's integration of programs and planning, and asset management. Those are two key aspects that are going to have to be resolved if we're going to be successful in this whole process.

Interesting about CSOs is that they're really a remnant of how we used to manage our water systems more than a hundred years ago. And I think it's useful to go back and view some of this, some of this may be obvious and may be redundant for many of you, but it always helps me to step back and think about how we got to where we are today. And the reason we're here is because hundreds -- not hundreds, a hundred or more years ago the objective was to get water away from us as quickly as possible. Whether that be wastewater or stormwater, the idea was to move it away from the activities that we humans wanted to conduct on the land surface. So we built these large sewer systems to capture as much of that water and to move it away

from us as quickly as possible.

That worked because back in those days the concept was that the environment outside of where we immediately were located had sort of a limitless opportunity to assimilate whatever we threw at it. So it could take whatever flows, whatever was in those flows, it could take it and it could handle it, because the globe is large, okay. And we didn't have to worry about that, just had to get it away from us and where we were.

So these system were built to efficiently move water away from us. And they were built primarily in urban systems, urban infrastructure. What's happened then as we moved further and further in time we realize that, well, maybe the environment does not have a limitless capacity to accept our waste loads, and we need to deal with some of that. So we built wastewater treatment plants. We built wastewater treatment plants, but they didn't necessarily have the capability, nor it was cost effective, to make those large enough to treat all of these water flows that we were throwing at them. So in order to handle that capacity issue we put in overflows so that during the times of high flow and waste -- flows

that had lower loads in terms of pollutants, we would bypass, we would have these CSOs occurring in our systems. One small benefit of that is actually the small storms, or actually flows from the small storms were actually getting treated at these wastewater treatment plants. But of course during larger periods of time, the larger flows, they were not getting treated at all.

So we've got these systems, CSS is for Combined Sewer Systems, it's the term commonly used, these systems are located in areas where the remedies are not only difficult, they're very expensive. Costs in these system are going to be in the range of hundreds of millions of dollars, not millions of dollars, hundreds of millions of dollars. In fact, if I heard Commissioner Martin's comments earlier, the kinds of numbers he was talking about are really representative of what you need probably in one system to cure that kind of thing. We'll see some numbers in the Springfield system that I'll put up a little bit later. So we're talking about large dollar investments that need to occur here.

The other aspect of it is where we need these investments to occur are typically areas

where the income levels or the finances available to fund them are actually quite low. Median household income in these particular areas are particularly low. Nonetheless, we have a mandate to cure this problem, so we have the classic dilemma. We don't have good funding, we have a very high cost, and in some cases we're not even sure what the benefit is going to be, because it's not always clear what the actual benefit will be with these kinds of systems.

(Discussion held off the record.)

DR. FERRARA: We've been working at this for some time, as you know, and it's been a work in process. You've heard that draft permits have been issued, they've been on the street for quite a while, you're going to see final permits very soon and the clock is going to start ticking on the implementation of the terms of those final permits. One particularly interesting aspect of all of that is some of the entities who are now getting these individual NJPDES permits have never had individual NJPDES permits before. So municipalities are now getting individual NJPDES permits. That's the change in the entire paradigm. So there's going to be a lot of confusion. I think some of them haven't even realized the extent of it even with the

draft permits being issued. So there's going to be an actual change in the paradigm in how systems operate here. Many of them are going to look toward the regional facilities like Passaic Valley, Camden and so on to guide them through this system, but there's going to be a little bit of shuffling here and I'm sure Michele is looking forward to all of that. So we're going to get these final permits very soon, probably in a month or so, and we're going to see the clock start ticking.

Next slide, please.

Up till now this program that's been evolving has dealt with what I call the low-hanging fruit, okay, the nine minimal controls. These are the things that the communities who have CSOs can more readily do than other things. And I won't go through the list there, but it talks about taking care of the easy stuff, having good O&M programs, solids and floatable control, pollution prevention, getting the public involved, and so on and so forth. So the Nine Minimum Controls has been the heart of the program up to today.

Next one, please.

With the advent of these individual permits you're going to see something called the

implementation of Long Term Control Plans. And coincidentally, there are nine aspects to the Long Term Control Plans, and there's some similarity between some of the things you saw under the Nine Minimum Controls as well. But there's much more detail in what needs to be done with the Long Term Control Plans. Characterization of your entire system, perhaps modeling of that system, monitoring of that system, evaluation of sensitive areas, prioritizing those sensitive areas, detailed cost analyses, detailed operational plans, implementation and then monitoring after you put in the implementation. So we're going to have to put in some very significant effort in putting together these Long Term Control Plans. The draft permits now call for a three-year period for development of these Long Term Control Plans; whether or not that's going to work, we'll see. There are many communities throughout the country who have actually started these Long Term Control Plans. Some of them have developed them within three-year periods, others have not.

Next one, please.

These are some of detailed exercises that are going to need to be completed with the Long

Term Control Plans, and the first one goes to the heart of the whole asset management issue. There has to be clear mapping and identification of all of the facilities that are involved in the Combined Sewer System. That's not an insignificant effort. Not everybody knows where all their sewers are. All the CSOs seem to be known, at least we think so, but not necessarily all the connections that go to those CSOs.

There's going to be a lot of effort put in to monitoring, there's going to be a lot of effort put in to modeling of systems and looking at different scenarios and how things operate, there's going to be a very extensive public participation process, and that's going to take quite a bit of effort as well.

Number 6 is one that is really of critical importance. This whole system only works if there's coordination between all of what we call the hydraulically connected communities. Some of those hydraulically connected communities may not have CSOs, they might not get permits, or they won't get permits because they don't have CSOs. But they're hydraulically connected so their flow goes into the system or to the community that has the

CSO. So we've got quite a bit of coordination that needs to be conducted here between all the communities that contribute any flow to the Combined Sewer Overflows.

Next slide, please.

In order to show compliance in your Long Term Control Plan you have had basically two approaches. One is called the Presumption Approach, where if you meet certain performance criteria you will have been presumed to satisfy the requirements of the Clean Water Act. That typically says get your overflows down to less than four, that can be bumped up to six, but get your flows down to four per year. That may be possible in some situations, and in fact some communities have gone ahead and actually eliminated all of their CSOs, so that is certainly a possible approach, and that's the standard way or the simple way to do it, if you can do that you're presumed to be in compliance with the Clean Water Act. And in fact, compliance with the Clean Water Act is what we're talking about here.

But if that doesn't seem -- is not effective or cost effective or not possible, there is another way to go about this. You can use what's called the Demonstration Approach. And in the

Demonstration Approach you can show that, well, I don't have to necessarily have to go down four activations per year if I can demonstrate that we're going to satisfy water quality standards and that we're reducing pollution to the maximum reasonably achievable degree, and we provide for some flexibility to upgrade if we have to in the future, we will show that we're in compliance with the Clean Water Act. Again, that's an option but now that requires another higher level of proof that's necessary.

Those two approaches are good, but they still target CSOs as if it was an individual program regardless of any other capital and government programs that relate to water quality that a community has to undertake. So it still looks at CSOs in a silo.

The third approach which I'm going to talk about more is the Integrated Planning Approach.

Next slide please.

So whereas the traditional approach to demonstrating compliance with the Clean Water Act says look at each requirement individually, look at your wastewater requirement, look at your stormwater requirement, look at your CSO requirement, look at

whatever requirements you have and you look at them separately and come up with a plan for each one individually. The Integrated Approach says no, that doesn't work. We don't have enough resources to cure all of these things all at the same time. We need to come up with a prioritization of all of our issues, all of our needs, and put them together into one integrated plan. And that's the whole concept here. You get more bang for your buck, you address the most pressing issues first, and it's affordable. You show how to do this affordably rather than forcing it on a community and saying you must do this, administrative orders, et cetera, et cetera, they don't comply, penalties, et cetera, et cetera, and it just becomes an adversarial process.

Next slide, please.

My first bullet on this slide goes to just that point. In the traditional approach we wind up with adversarial situations, we keep butting heads because the regulatory agency says you must do this, the regulated entity says I can't do this, and we wind up with an adversarial situation. Integrated Planning is much more collaborative. It says that okay, let's work this out, guys, let's come up with a plan that you can afford and that we

can live with and shows compliance with the Clean Water Act. Rather than regulatory enforcement simply by new administrative orders over and over again in terms that perhaps the permittee can't live with, we now work this into some sort of a permitting framework, not necessarily only enforcement framework, it may have enforcement aspects as well, but it's a much more holistic approach to doing this whole thing. It's much more definitive. In previous traditional approaches where you said you must do X, whereas now in the Integrated Approach we look at an adaptive approach, we're going to be looking at things perhaps every five years and seeing how we can iterate and make things better as we move through the process.

The fourth bullet, affordability is a key aspect. In four -- in the former approach with looking at things in a silo, you'd look at your CSO plan and say can you afford this. Well, maybe you can afford this, but that means you can't afford upgrading your wastewater treatment plant or curing other problems that you may have. Under the Integrated plan you look at all that together, and look at how it can be afforded to achieve Clean Water Act requirements.

And finally, I'll just go to the last bullet. The traditional approach, again, has no coordination between all these activities, the Integrated Approach is a much more holistic management approach to the problem.

These are kind of the four steps or four things that you would do. First of all, you'd look at your primary, what your requirements that you have to meet. Second, you identify all of your different needs, CSO, wastewater, treatment system needs, et cetera. Third one, you come up with a plan, not just for CSO abatement but also for your wastewater stormwater capital improvement plans. And finally, you'd integrate them, wrap them all together into one integrated plan for all of these water quality issues.

This slide and the next slide will show you sort of a timetable as how this might occur, and we wedged it into a 36-month total timeframe to show what -- how it might work in that kind of a situation. Typically you're going to spend the first nine months of your project collecting data and building information bases and making sure you've got what you need to then go on to the next steps to build your plan.

After that you're going to probably spend about six months doing your analyses, looking at your various models, how you build your models, how you can simulate your system, how you can evaluate how your system is going to perform. Following that you're going to probably spend another nine months looking at the different scenarios. So after you go through the first two steps you may have or may define facilities that you can put into place, you're going to look at your different scenarios to optimize water quality benefits, minimize human health impacts, satisfy financial requirements, et cetera. So you're about two years into the process after those first three steps.

Fourth step is then to come up and select your optimal scenario, and come up with some recommended set of CSO controls.

Throughout all of this there's going to be stakeholder involvements. You may choose to do it at certain times in the process, but it's probably going to occur throughout the entire process. Environmental justice is a key aspect to all of this. Looking at sensitive areas as we mentioned earlier is another key aspect to all of

this. So there's going to be stakeholder outreach and stakeholder input throughout this entire process.

Finally as you approach the last few months of the process you're going to come up with a recommended plan, you're going to choose your scenarios, you've got three months in this particular scenario, it may take much longer in other situations. And then once you do that now you move into implementation, and that could take 10, 20, 30, 40 years to actually implement the entire program. And then finally throughout that you're going to do monitoring to see how your plan and implementation of that plan is performing. That may cause you to go back and to revise certain aspects of the plan so there'll be an iterative kind of approach to the process.

Finally getting now to the Springfield, Massachusetts case. Springfield is a community in central western Massachusetts. It serves not just the city of Springfield, but it serves a number of communities in the area around it, so it's very similar to the kinds of communities we have dealing with the situation in New Jersey.

Next slide, please.

This slide sort of contrasts the characteristics of Springfield in relation to various municipalities who have CSOs in New Jersey. I'm sure you can hear me from here. First line is Springfield obviously. Population of 150,000 and they've had 25 combined sewer overflows, median household income is about $30,000, 19 percent of the families are below the poverty line.

Strikingly similar to Paterson, which is on the fourth row of this table. Population is almost identical, so are the number of combined sewer overflows. Median household income is almost the same, and percentage of families below the poverty line is virtually identical as well. And you can see some similarities to some of the others as well. So this example is probably a good prototype for the communities in New Jersey, so if it worked in Springfield hopefully it can work in these communities as well.

This is just an illustration of using Springfield as an example of why we've had so much procrastination in this process. Prior to looking at CSO and all this other water quality issues as an integrated plan, the city of Springfield had spent $88 million on CSO reduction, $88 million over a

12-year period. That cured three CSO outflows, and so they were spending about a million dollars per million gallon of overflow per year. It was not a sustainable approach, it was extremely expensive, and extremely expensive for a community with this kind of income level. So this is the kind of thing that many of the communities particularly in New Jersey have been saying, we can't afford this because we have to face these kinds of expenses and we just can't do this.

So we actually, or our guys up in Massachusetts actually put together a plan for Springfield and looked how can they comply with the Clean Water Act requirements. And they looked at initially two scenarios. The first scenario said what if we go with the Presumption Approach and get ourselves down to four activations per year. They calculated the cost of that would be over $300 million to get that program in place, and again, I think that was analogous to the kind of numbers Commissioner Wolf was throwing out this morning. One community, $300 million.

However, if we can show that we could be permitted to have eight activations per year, now the cost goes down to $196 million. So we've saved

over $100,000 in going from four activations to eight activations per year. So then the question is going to be what's the benefit that you'd achieve by having four verses eight compared to the $116 million additionally you'd have to spend to go from eight down to four.

Next slide.

So we're talking about cost for CSO alone in the range of 200 to $300 million. We also looked at Springfield's other capital improvement programs needed, and you may not be able to read each line there, but it talks about pump stations and treatment plant upgrades and collection system upgrades and all that sort of stuff. And it comes down to a total of about $315 million. So this is stuff they would need outside of the CSO requirements.

So if you add that up, the total cost for compliance with the Clean Water Act was in the range of 5 to $600 million. Okay, can they afford this.

Next slide, please.

So what we did is say okay, let's look at trying to balance all of your future costs and see how you might be able to afford this. So we

looked at the impact on a typical household, and we used the median household income as an indicator. We also looked at things like ability to finance, can they do bonding, and how they might do this, what are the trends that they might see in the next several years as well. So an affordability analysis becomes a key component to balancing the need for up to $600 million in capital improvements.

A threshold that's being used is to set an acceptable cost at a level equal to two percent of the median household income. So two percent of the median household income is affordable in these kinds of situations. That resulted in something in the range of about 230, $250 million being available in the city of Springfield over the next 20 to 40 years or so. If you compare that with the identified cost of over $600 million potentially, or even $315 million for just the non-CSO parts, clearly we see there is a financial gap in this situation. So they need an approach to prioritize. And here's where the integrated plan comes in. It enables them to do just that.

As part of this then we went to another step and said okay, what are the benefits that are achieved if we went with the Presumption

Approach versus a Demonstration/Integrated Planning Approach. And water quality modeling was done, and it showed there was really no significant benefit in terms of water quality improvement if you were allowed to have eight activations as opposed to four activations. So that went into the prioritization and the planning and the justification of the program.

So we finally came up with a plan that said okay, let's integrate CSO and non-CSO elements of the program, put together a 20 to 40-year plan. We would take care of the CSO issues in 20 years. We'd have the non-CSO issues taken care over a 40-year plan. The CSO plan would take care of 89 percent of the volume reduction, which is good, 85 percent is one criterion in the rules, water quality criteria would be attained 95 percent of the time, and we actually reduced the cost for CSO improvements down to less than $500,000 per million gallons compared to the over $1 million per million gallons they had been spending up to this point as well.

So what have we got. Now we've got a -- these dollar numbers are based on using that two percent of median household income. Now we've

got an affordable approach that they can implement, projects that can be prioritized, and they've got something that says okay, we're looking at this thing holistically, we're not going to have to rob Peter to pay Paul occasionally to get different things done.

The other benefit of this is it creates accountability for both the regulated entity as well as the regulatory entity. We've got now a plan, we're both agreed to it, they agree to continue to evaluate it on a regular basis, and we've got a program that provides incentives to get things done.

Finally my last slide, just a perspective on New Jersey. Clearly I think the conditions are analogous to New Jersey so I think this approach can be used in most of these New Jersey communities. I think without it we're doomed to failure. There's no way it's going to happen because we're going to continue to bang heads on the process. And it shows that there's a willingness on the part of the community. So the regulators and the regulatory community get together and they come up with a plan that they both agree on rather than argue about it.

Okay, questions later or now?

MR. VAN ABS: Questions later. Thank you very much.

(Discussion off the record.)

MR. VAN ABS: We have a tag team here. Mike Ruppel and Ryan Krause are from the South Monmouth Regional Sewerage Authority, and they are going to be dealing with a somewhat different issue because they are not a Combined Sewer System, they are a separate sewer system. So they're going to be talking with us about I&I control. And so without further ado.

MR. RUPPEL: Good afternoon. I'd like to take the opportunity now to thank the Council for allowing us the opportunity to speak today, for myself and my partner here Ryan Krause as well as the entire Authority.

You know, it's funny when I listened to the opening comments by the Commissioner it reminded me that this coming March will mark the 40th year of my career in the public sector, in providing service to the public. And I&I was an issue when I first came in, it was an issue today, it's going to be an issue tomorrow. And hearing his comments and listening to Ray's presentation, I

think we would like you to view our presentation more as the telling of a story than a presentation.

So in moving on, what we want to do is tell a story about a situation that occurred at our Authority. We'll get into the background of what developed, why we needed to take action, who we are. We are going to get more into the investigation process, the technical areas of some of the scope that was involved, move right into repairs and then the actual -- the results that benefit from constructing repairs.

If we could move to the next slide.

So who are we and -- who are we what got us into this. We provide sanitary sewer service for eight municipalities that for the most part lie immediately along the Atlantic coastline. Some of those systems date back in age to as the early 1900s, where at that time they had developed primary treatment plants. And believe it or not, these were primary treatment plants that would collect sanitary wastewater, treat it during the summer months and store these sledges all summer long, and then once the bathing crowds left in the fall they would discharge those sledges offshore. It's an amazing concept, isn't it. So over time with the advent of

the Clean Water Act those plants began to evolve to meet new standards, and ultimately in the early 1970s those existing treatment plants could not meet the needs of the regulatory requirements and it resulted in the creation of our Authority.

What got us into I&I is, so in 1970, or in the early 1970s our treatment facility was built with communities connected, and things were fine until the mid 1980s where we began to see an outcropping in the development, to see increased density within our service area, our baseline flows began to come up, and as the baseline flows came up and we began to see increased wet weather events, all of a sudden there were issues, not only in the local sector where they were having SSO problems, we began to have problems with our treatment facility where in periods of wet weather events we were having hydraulic issues and actually being able to -- we could receive the water in the treatment plant, we could treat it, we actually couldn't discharge it into the Atlantic. In fact, on multiple occasions it led to the deployment of emergency pumping equipment and the potential breach of a Class III dam that would have resulted in even further damage to the communities.

So all of this kind of precipitated some decision-making by the Authority. How are we going to deal with this issue. We knew that I&I was becoming a critical factor in our operations, and we knew that we needed to convince the communities that were generating that I&I that there was a way to either -- either we were going to have to build infrastructure to treat groundwater, or we would have to convince them that they needed to make an investment in their local systems.

So we took a regional approach, we went out, we talked to the communities and solicited their involvement and buy-in in what ultimately became a regional package.

And just maybe some -- at that time when we first began, this was in 1998 and we had average daily peaking factors that were about 3.5 orders of magnitude over the design capacity of the treatment plant.

I think I touched on what we needed to do with this slide.

MR. KRAUSE: Yeah, I'd just also like to comment, SMRSA only actually owns 11 regional pump stations stakeholders and we have a common forcemain header. Shown in purple here is the SMRSA

service area, which involves the eight communities, and you can see our 11 regional pumping stations and the common forcemain header shown in red.

MR. RUPPEL: Yeah, so it really kind of gives you some graphic view of what were localized problems within the service area were not necessarily owned nor operated by SMRSA. And then there was -- at that point in time there was really a community disposition that, you know, hey, our job is to generate the wastewater, put it in a pipe and deliver it to your pumping station, and once it gets there our job is over. And what they failed to recognize was that, and it didn't take much to convince them by the way, what they failed to recognize, that they were paying the bill for us to treat it. So if we treated it and we had to invest in capital infrastructure improvements to treat the I&I, they were going to pay that bill anyway. So it kind of made our job a little bit easier, as we talk later on we'll get into that in terms of developing a stakeholder view.

So we can move to the next slide I guess.

MR. KRAUSE: Yeah, so I'm going to get into a little of the nuts and bolts of the process.

At time I was a young engineer just starting out, and this was a good project for me. It was six, seven years of my life, so it was a good project.

First thing, first phase was planning and investigation. Some of our goals, as Mike indicated, reduce the baseline flows to the plant and reduce the peak flows. Typically the baseline flows is the infiltration part of I&I and the peak flows are as a result of inflow. And all this was in an effort to eliminate having to expand the plant for these extraneous flows.

MR. RUPPEL: You might add, Ryan -- I have the habit of interjecting all the time, so I'll just do that anyway -- one thing that we didn't note on the prior slide is that in 1998 our baseline flows, when we began the concept of an I&I project our baseline flows were 6.9 mpd at a regulated 9.1 mpd facility, so when you add the committed flow to that we were at a capacity assurance level. So as -- if we didn't recognize the -- if we didn't get the towns to recognize the magnitude of this problem it was going to halt construction and it was going to result in further violations in our discharge permit. As a result of this program, just bear this in mind as we keep moving forward, we're at 6.9 in

1998, today we're at 5.8. So that's about a 16 percent reduction in overall baseline flows and it does not account, in the arithmetics [sic] there, for all the new connections that were made in that same time interval.

MR. KRAUSE: So back in the beginning we met with the members communities, we established stakeholders, we tried to find out problem areas in their specific systems, we met with their sewer operators and tried to really figure out where the problem areas were. We also identified where they had previously made improvements because we didn't want to go back and investigate areas that were newer pipe infrastructure. And we got into a data collection phase.

You didn't really hear GIS back in those days, we're talking the early 2000s, so GIS was kind of just coming about. So this was a lot of work, it was a lot of paper maps, maintenance records were iffy at best, and there was a lot of interviews, as I said, with the sewer operators. So part of taking those paper maps, we digitized them, we put into AutoCAD at the time and primarily worked off of that.

We tried to identify some funding

sources. I think at that time it was pretty clear that none of the communities or SMRSA had the funds on hand to do the extent of work that was necessary, so that's when we began looking and working with the EIT, which was very successful.

MR. RUPPEL: Yeah, we had looked at independent borrowing, and as we were looking at that we ran a concurrent path in talking with EIT and they very much embraced the concept of us going out as a regional entity to do work in our member municipality towns. In fact, I think it was one of the first if not the first project that was successful in making that happen.

MR. KRAUSE: So another thing we had to identify was the manpower, you know, how was this work going to get done. What we did, we used in-house SMRSA staff to help out with traffic control and confined space entry, and used consultants to do a lot of the legwork, doing the studies, preparing plans and specifications for the repairs, and then we ended up bidding out the projects for contractors to do the repairs.

MR. RUPPEL: I think one of the critical elements, and so we're kind molding the program right now, and in molding the program one of

the critical elements was going go be who are the stakeholders going to be, how do we gain their support, and how do we keep them on board for a project that's not going to be a six-month flash in the pan, this is going to be a long-term investment in time and effort just to identify where the actual problem lies, and then additional time to construct improvements.

So what we did was during each step of the way we had -- we had committee meetings with the stakeholders who ultimately engaged the project, we went to their mayor and council meetings, we had public presentations, and we continued to tell our story. We continued to tell the plight of the Authority, the need to do this, the order of the cost magnitude and how this plan was evolving, and it worked very well. So we had actual public comment that began to really come out and support a project that they were opposed to originally.

And then secondly, we engaged the local DPWs, so that as we began to identify issues that could remediated very easily and very quickly, why wait for the design engineer, why go out and fund it, let's get these DPW guys involved with making some onsite repairs. They turned to be a

very critical element in keeping the group together and demonstrating that the long-term goal were going to be -- provide a net positive cost savings.

MR. KRAUSE: Okay. The next step was we made a conscious decision to not move forward with further investigation until we knew the groundwater was up at a sufficient level that we knew it was actually impacting the gravity sewer pipes. So we actually went out throughout the collection system and installed monitoring wells, which were just small wells drilled to the depth of the pipes in that area, and we recorded the groundwater levels. Using one of these guys, this is just a water level meter, you drop it down into the well and it has a tape measure attached to it and you're able to see what the actual groundwater level is.

And again, we didn't proceed with the flow monitoring phase until we knew the groundwater was affecting the pipes. And that actually pushed the flow monitoring phase for -- out about two years. So we started doing some of the other phases in the meantime. '98 was a wet year, just so happened '99, 2000, 2001 were pretty dry.

MR. RUPPEL: And I think in today's

testimony is what Ray said earlier, is that if you're going to go into this, if you're going to start trying to abate I&I, that you really need to enter into it as a long-term program. If we collected data during that period it would have been insufficient data or, in fact, false data. And we would have been making investments in an area that wouldn't have provided return compared to those areas that did, in fact, show negative results where the groundwater levels were elevated.

MR. KRAUSE: The next phase of the project was a manhole inspection phase. The goal was to determine the existing conditions of the manholes throughout the service areas. To do that we used the paper maps, we developed a manhole numbering system, there was a lot of coordination with police for traffic control and coordination with public works to actually get access to some of the manholes, some of them were paved over, you know, so they had to allow them in county roads, a lot of coordination.

So then we went and physically inspected every manhole, you know, it's thousands of manholes. I was actually in pretty good shape, you know, over those summers. Those manhole's lids

probably weigh more than I do.

So during the inspections we did handwritten reports, took that back to the office and prepared a final report for each town as a conditional assessment report. Some of the things we looked at were the depth, material of construction, a lot of these manholes in some of these older systems were brick. We made an estimation of the infiltration rates in these manholes and if debris were present, you know, in the channels or on the benches, we identified if the manhole covers were in low-lying areas, made recommendations in those cases to put a dish, a water-tight dish in the top of the manhole cover to help prevent runoff going into those manhole covers.

And then, as Mike indicated, sometimes we made recommendations to do an immediate repair depending on if it was a structural issue with the manhole, possible collapse. At that point we had public works go out and make those repairs immediately. Otherwise for the most part many of the manhole repairs were done along with the pipe repairs.

MR. RUPPEL: But the inspections were necessary to generate the data by which you could

make a decision as to whether or not it would be cost effective in remediating the infiltration.

MR. KRAUSE: I guess another point to make is that although GIS wasn't really a thing back then, this report was pretty good information to make GIS maps later. They had the, you know, basically every manhole in their system with a conditional assessment associated with it.

The next phase, and we kind of did them coinciding depending on time of year and what the groundwater levels were, but manhole inspections and smoke testing pretty much went on concurrently. And here the goal was to find major sources of inflow through cross connections or broken connections. The equipment we used was a blower, you basically place this on the cover of a manhole and you use a smoke bomb, and that fan actually blows smoke out into the gravity sewer system. And then you just walk up and down the street and look for smoke, which is what you didn't want to see.

MR. RUPPEL: But you had better coordinate with --

MR. KRAUSE: Yeah. So, again, there was coordination with police for traffic control, access to those manholes, and the fire department.

We got to meet those guys quite a few times during smoke testing. And I'll show you some pictures why.

MR. RUPPEL: We had notices in the newspaper, we had spoken to public meetings, we put out door knockers. And it was the first day in one of the communities where we first began smoke testing that within the first 20 minutes a young woman was running from her home carrying her child because the house was on fire. Only to find out that she had -- her husband was renovating their bathroom and had the toilet and the bathtub out of the master bath. So when he got home, boy, he got an earful, I can tell you that.

MR. KRAUSE: So this photo just kind of shows how the smoke testing works. Again, you set the blower up on top of the manhole and it blows it out and the smoke comes out at any cracks or connections in the system.

MR. RUPPEL: These are actually some of the discoveries that we made within our systems.

MR. KRAUSE: So what you're seeing here, probably either broken or purposely removed clean-out caps. People tend to use those as yard drains. So you have your -- any runoff from the people's yards is just going right into the sanitary

sewer clean-out caps.

MR. RUPPEL: And that presents a very unique problem. Because the community doesn't own that line, the Authority doesn't own that line, the homeowner owns it. And so -- so now you're engaging, you know, John Q. Public and you're telling him you've got to go into your yard and fix this problem, and it was a very difficult task and it's still a difficulty task today. The one thing we did, we were very successful in was getting the local sub-code officials to help us along the way. There is a very typical example of a roof connection, and there were many more.

MR. KRAUSE: So that's just their roof draining tied right into their sewer line.

MR. RUPPEL: So when you look at this you have to think about that. So that connection was a deliberate connection, somebody did that because they didn't want the runoff off of their roof going into their back yard. And so now we're going to go in there, we're going to have a sub-code official tell them that that's a violation of the sub-code. And they're going to have to fix it. So they fix it, and then the sub-code official leaves.

So what prevents them or a future

owner from going back and reconnecting that to the sanitary? And what prevents them, at least in our service area, is that we have a very vibrant program with those sub-code officials. They have the list and they go back on a cyclical basis to look at those things that were corrected early on in 1998 to see that they have not been reconnected to the system. And it's an integral part of the program; you can fix the pipe, those type things you have to continue to follow up on.

MR. KRAUSE: All right. The next phase -- and we've got to move along here, Mike, Dan is giving me the hook over here.

MR. RUPPEL: We talk too much.

MR. KRAUSE: So the next phase was the flow monitoring. To do this we used the maps, coordination, and what I did was I developed little mini systems for -- to place the flow meters in. It's kind of hard to tell, but you'll see some color-coded identifier rings identifying the mini subsystems, and within those subsystems we had to identify the lengths of each diameter of pipe, and that was used to calculate an effective diameter of pipe within that subsystem. So that took quite a bit of time. You have to scale off, figure out how

many feet of pipe, what diameter is it, and then I did a weighted average of and created an effective diameter.

So then, we placed area velocity flow meters into the systems, that's kind of a picture, this is an Isco flow meter, these have batteries. This unit kind of hangs in the top of the manhole, it's a computer that collects the data, and this is a transmitter here that takes the depth of the flow and you -- it calculates using also with the velocity of the flow, it calculates the flow rate.

We used the Flowlink software was used to do those calculations. And particularly we were interested in low flow periods, 12.00 a.m. to 4.00 a.m., really these are bedroom communities, there really should be no flow in the sewer system, so what we said was any flow there was probably infiltration.

MR. RUPPEL: And it was actually an excellent time to target sump pump activity from within the system as well.

MR. KRAUSE: So we came up, there's an industry, a benchmark that lead to future investigation in the cleaning and televising phase was this number here, which is 1,500 gallons per day

per inch diameter per mile of pipe. As Mike indicated, other considerations, there were sump pumps, pump stations pumping into different other subsections. So you kind had to back out, do some math there, and subtract flows from one subsystem from another, got pretty complicated.

And then, also at night there's limitations on how low of a flow those flow meters will detect. That sensor is about an inch high, so your flow to get the velocity had to be at least an inch depth in the bottom of the pipe.

So then the next phase was clean and televise. What did is we met with the stakeholders and basically compiled the information from the previous investigations and made recommendations on the areas of most concern. And we went in and clean -- first clean those sewers and then televise. We publicly bid that project. This is a photo showing a jet truck that would be used to clean the sewer prior to televising, and then here's actually the TV truck, basically sends a camera up the pipe and you can get a pretty good idea of what's going on from those videos.

So yeah, after the videos we reviewed the TV inspection reports, we made recommendations

for repairs based on those reports.

MR. RUPPEL: And that was really -- that's where collaboration really became an issue, because in some communities, particularly a community that had sanitary sewers that dated back to 1910, if we used the industry standard for I&I they would have had to replace their entire system. So we really had to focus in on where are you going to get the biggest bang for your buck and remind them that this is a process that we are not looking to correct overnight, we're looking into get into and begin to remediate over time.

MR. KRAUSE: Some examples of the repairs that we made were grouting of joints, spot repairs, cured-in-place pipe, and removal and replacement of some pipe segments.

So then we went on to the actual repairs. Again, we met with the member communities and we made recommendations to the stakeholders to define the scope of the projects, we prepared plans and specifications for those repairs, and then we ended up bidding out multiple projects concurrently because there was so much work to be done. We didn't want it to take three years, we basically put out, I think it was three contracts?

MR. RUPPEL: Three contracts.

MR. KRAUSE: Over the six towns. And some of those bid items were grouting was per gallon of grout, pipe replacement per linear foot, cured-in-place pipe was per linear foot per diameter of course.

MR. RUPPEL: And the administrative exercise to bifurcate all those costs and assign them to the communities that were stakeholders was a feat in and of itself.

MR. KRAUSE: This is just a slide showing cured-in pipe placement, if you're not familiar with that. Basically they take a resin-impregnated tube, send it up the pipe, and then fill it with either hot water or steam and it basically cures as a new pipe pretty much inside the existing pipe.

So moving along, this is just showing grouting, basically send a mechanism down the pipe and it can grout joints that are leaking. And this is showing grouting of a sewer lateral connection.

MR. RUPPEL: So we're -- we did all of the development discovery, got stakeholder buy-in, facilitated construction, and then we held our breath and said, you know, what type of results are

we really going to get here? And in our view -- in my view the results were pretty astounding. It resulted in $7 million of construction costs, again it was funded in partnership with the EIT --

MR. KRAUSE: Seven is the total cost.

MR. RUPPEL: The seven is the total project cost. And in fact through a refinancing with the EIT we were hoping to reduce that number. We chose to really reduce the borrowing period, went from a 20-year amortization period down to a 19-year amortization period as a result of a re-fi. But most importantly, what we had told the communities from day one began to ring out as being true. We were able to easily document a baseline reduction of flows order of magnitude every day of the week, every week of the year by 650,000 gallons per day. Again, that's about 20 percent reduction in baseline.

The intangible number that's more difficult to qualify is -- or quantify are the peak flows. Where we had peaks four, five, six times the order of magnitude of the baseline, we're now seeing a dramatic reductions in them. By way of example, just this storm we had this past week was actually one of the most significant coastal storms we've

seen since Irene and -- since prior to Irene, and our peaking factor during that event was about 3.5. In 19 -- in the 1990s it probably would have been about 8. So we're seeing significant reduction in peaks.

MR. KRAUSE: 1.5.

MR. RUPPEL: I'm sorry?

MR. KRAUSE: Current one was only 1.5.

MR. RUPPEL: 1.5, I'm sorry.

And when you look at this reduction in flow, the marketing position of the Authority was you need to -- we need to do something about the I&I because we have hydraulic problems within the plant, we have environmental issues, so we're either going to spend the money to build infrastructure or we need you to spend the money to correct your problems.

It resulted in -- the 650,000 gallons per day has an equivalent value of $700,000 a year in annual savings to those people that regenerated the I&I. So it's simple math, 700,000 over 7 million, there's a project that has a net positive return in ten years. So they were able to pay for this project in ten years. They're now able to take those savings that they're seeing in their sewer use

rates and reinvest them into a continuation of the program. When we left them back in the early 2000s we left them with a document, a benchmark or a template for them to continue to move forward with I&I. And we didn't leave them, we continue to work with them today. The community of Belmar has invested millions into I&I and it's paying off to them every day, every year as time rolls out.

So other ancillary effects is we now have capacity back in our treatment plant. A connection -- we never had an interruption in our ability to accept connections. I alluded to those conditional assessment reports, they are the tool by which the towns continue to abate I&I in their programs.

So I think, in closing out here, you know, if we can impress anything on you we hope I&I is really a weighing factor when you're dealing with SSOs. And not to consider it would be -- you'd be cutting yourself short. I think that when you look at I&I it can absolutely be remediated with net positive effects. And most importantly, it never sleeps. Once it's there it continues to worsen. And if it's left unabated it's just going to become a larger problem that brings larger cost and larger

effects on the environment in the user base.

So I thank you for having us, and if there are any questions.

MR. VAN ABS: Thank you. Thank you to all three speakers. Do we have the mikes open on the front there? All right.

So what we're going to do is we're going to take a few minutes for questions from the audience that our speakers will be able to respond to. And once we're done with that we'll probably take a five-minute, ten-minute break, and then come back for the public testimony portion of the hearing. Obviously we started a little bit late, and so we're hoping to come pretty much on time.

So are there any questions for our three speakers from the audience? And we have a microphone here. So, gentleman there.

MR. FIELD: Richard Field, I'm retired from EPA, I'm now with Baker.

As far as the I&I which was an excellent presentation, but something in my history seemed to be missing the SSO. Did you take a close look at SSOs while you were investigating your sanitary lines, and did you find that you had them or that it was a reduction due to I&I reduction?

MR. RUPPEL: I think the SSOs, there were really two types. One that was occurring in that local system to which we didn't have any prior data on. We had knowledge of them existing, we -- they were never really quantified to a point where we could tabulate them. So we get feedback today that they no longer occur.

The larger issue was that the combined effect of the I&I had an impact at the treatment plant that we could bring the water into the treatment plant, we could bring it through our primary, secondary processes, we had a limited capacity in our discharge line. We discharge a mile -- our treatment plant is a mile inshore, it has a line that extends to the coastline and then a mile offshore. And that had a hydraulic issue when the I&I was considered part of the flow. So we -- we were accepting flows we couldn't discharge, and it was going to result in, and nearly resulted in, the rupture of a Class III dam that we own. And as we looked down the road into the future we were very much concerned that the I&I would cause that rupture, number one, and/or begin to affect us from a treatment point of view, or a qualitative point of view.

So I hope that answers your question. Thank you.

MR. FIELD: Thank you.

MR. VAN ABS: I believe Chris had a question.

MS. STURM: Thank you. Great presentation on Springfield and integrated planning. And my question has to do with how we could apply this in New Jersey where the Department is looking for regional Long Term Control Plans where the treatment plant would take the lead and coordinate, you know, the municipalities that it serves. So the treatment plant doesn't have all the stormwater obligations, the municipalities do, and clearly they all have a lot to benefit from this approach. But I'm just curious about your thoughts on that.

DR. FERRARA: Yeah, I think I think the regional facilities are going to provide coordination. But there's no question in my mind that the individual communities are also going to have to do something on their own. There's no way around it. They're going to have to identify their facilities, they're going to have to do their own affordability analysis. The regional facility will be able to define what it can handle, define the

characteristics of the combined flows that are delivered to that regional facility, and will have to play some role in the apportionment of what can be accepted from each community. But then each community on its own is going to have to do its own analysis and come up with its own component that feeds into the larger Long Term Control Plan.

So I don't see how they're not going to do it themselves. The regional facilities cannot do everything in my opinion.

MR. VAN ABS: Question to the rear again?

MR. LEN: For Dr. Ferrara, as I understand it --

MR. VAN ABS: If you could introduce yourself also?

MR. LEN: Oh, yeah, Chris Len, staff attorney for Hackensack Riverkeeper and New York/New Jersey Baykeeper.

Integrated planning approach, as I understand it, you're looking at a Demonstration Approach with sort of a broader perspective, so that you're getting more low-hanging fruit into the kitty that you can take care of to meet water quality standards. Is that sort of a fair --

DR. FERRARA: In a way. The Demonstration Approach looks strictly at the CSO aspect.

MR. LEN: Right, so you're looking at more things.

DR. FERRARA: This considers a larger holistic picture, and yes, what it would do is prioritize your projects so that you get the projects that have the greatest benefit done first.

MR. LEN: Do you agree that sort of the terms of the Demonstration Approach still need to be met if you're doing an integrated planning approach? Because I guess my basic part of the question is that the Demonstration Approach specifically requires total maximum daily loads. If you're choosing that approach and not totally meeting water quality standards, which it seems like you aren't expecting to do right away, is Springfield working on that, or are you not that far enough in, or are you not agreed that that's necessary?

MR. FERRARA: Well, I'm not sure I fully understand your question. The Demonstration Approach says that you'll satisfy water quality criteria, but in connection with your CSO issues

only. All right, so it doesn't look at the larger picture. If you put it all together in an integrated plan you're looking at all water quality requirements, all the Clean Water Act requirements, and you're prioritizing them to get the best projects done first. So what's happening in the case of Springfield is they're looking at pump station improvements, improvements to their treatment facility as well as CSO management issues to be conducted at the same time.

The integrated approach basically uses a Demonstration Approach, but it looks at the affordability aspect to stage the activities, and not just for the CSO.

MR. LEN: I understand that, but the question I'm trying to get to you is you still have to have a TMDL if you're not meeting water quality standards, and I don't know how it's working in Massachusetts or whether you have gotten to that point or you plan to get to that point, but in New Jersey our TMDL progress is largely stalled in a lot of these areas, so I was wondering if you had some insight on that.

MR. FERRARA: Yeah. You can establish a TMDL, I mean you don't have to have a TMDL, but

yeah, TMDL approach is a way to look holistically at what loads are going into your system and how you satisfy water quality criteria. So yeah, it could be a component for sure.

MR. VAN ABS: Are there any other questions from the audience? Name first?

MR. STEPHANSEN: Hi, Stan Stephansen with EPA Region 2.

I just had a question on the I&I program and regarding peak flows reductions. Did you say the peak flow generally was about -- could go as high as about eight times the baseline flow and due to the I&I reductions you were able to reduce that to about down to two times baseline during storm events.

MR. KRAUSE: No, I think the prior peaks were more three and a half to four times, and currently they're at only about one and a half.

MR. CLERICO: Ed Clerico, Natural Systems.

Dr. Ferrara, the two percent mean household income, is that targeted for all water, wastewater only or CSO only? I wasn't clear.

DR. FERRARA: For the whole program.

MR. CLERICO: So that's the CSO

program? So how would that stack up with other expenses, is there -- how would that leave them in terms of their wastewater cost from an affordability standpoint, if two percent went to the CSO?

MR. FERRARA: No, no, no, two percent goes to the whole program, all the improvements.

MR. VAN ABS: All the water quality improvements, I think.

MR. CLERICO: All the water quality improvements?

DR. FERRARA: Yeah.

MR. CLERICO: Okay.

MR. VAN ABS: The water supply and drinking water costs are a separate issue.

MR. CLERICO: That is correct.

MR. FERRARA: Clean Water Act requirements.

MR. CLERICO: Thank you.

MR. VAN ABS: Any other questions?

(No response.)

MR. VAN ABS: Seeing none, what we'll do is we'll take a ten-minute break, and then we'll come back for the public testimony portion of the hearing. Thank you.

(Recess.)

(Dr. Ferrara no longer present.)

MR. VAN ABS: Okay, at this point we're doing the official hearing portion of the hearing, and the way that this works is very simple. We have so far two people who have signed up to give testimony, and the official rules are that you have about five minutes to give your oral testimony; in the absence of a cast of thousands, we can be a little bit lenient on that, but we ask that you not make it too long. And I will note that from the two people who have signed up to give testimony we also have written testimony from both of them.

All of this material, the material that you heard earlier this morning, the presentations, video from the presentations will all be posted to the Clean Water Council website sometime early this coming year. So we will be providing the slides, the video, the written testimony that we receive and so on, on the Council website. The Council will be taking all of the material that we've heard today and developing a set of recommendations. We generally write a letter to the Commissioner with our recommendations that come out of the hearing, and so that we will eventually be posted to the Council website also.

So if you want to find the Council website you go onto the DEP website and you search for Clean Water Council and that will take you to it.

So with no further ado, the first person that we have registered to speak is Jane Rosenblatt, Planning and Policy Associate from New Jersey Future. So come forward please. Thank you.

MS. ROSENBLATT: Hello. Thank you, Dan, for the brief introduction. Again, hello, my name is Jane Rosenblatt and I'd like to first thank the Clean Water Council for the opportunity to testify today. I'm here representing New Jersey Future which is a nonprofit, nonpartisan organization that promotes smart growth through research, policy and advocacy.

Solutions for Combined Sewer Overflows and community revitalization must go hand in hand. Addressing CSOs will be mandatory for the 21 cities with combined sewer systems, imposing a tremendous economic cost upon the cities, their residents and small businesses, many of which have limited resources. The only way to justify the expense and to build public support for the necessary investments will be to design the Long Term Control

Plans to simultaneously invest in the community and generate tangible benefits. New Jersey needs a strategic approach for addressing CSOs.

New Jersey Future has convened key stakeholders and an urban water solutions working group. Last May the group published an Agenda for Change that outlined the guiding principles and identified action steps for catalyzing the transformation of New Jersey's urban water infrastructure. The five action steps include educate and raise awareness, optimize existing systems and implement asset management, build capacity and foster cross-jurisdictional collaboration, leverage early successes to generate political support, and diversify funding sources.

Additionally, the urban water solutions working group is in the process of identifying best practices for Long Term Control Plans and creating a model RFP to be shared with permit holders. We applaud the New Jersey Department of Environmental Protection and the U.S. Environmental Protection Agency for co-hosting with New Jersey Future the January 8th workshop. New Jersey Future commends the DEP's commitment to assisting CSO permittees with compliance with the

new permit. We have identified a handful of recommendations that will make that effort much more successful. They're described in detail in our written comments, but I will summarize them for you here.

First, as we just learned DEP has extended the New Jersey environmental infrastructure financing program for CSO municipalities, but clear guidance and more technical assistance should be provided.

Additionally, clearer guidance on the Long Term Control Plan requirement for Green Infrastructure should be provided. The draft permit requires applicants to consider Green Infrastructure as an alternative, but it is not clear what this briefly worded requirement entails. DEP should work with its sister agency, the NJ DOT, to incorporate green stormwater management techniques into road projects or green streets, which offers a tremendous opportunity to better manage stormwater.

The stormwater management rule should be improved to establish a strong standard for onsite retention of stormwater runoff for the development and redevelopment of large and small sites. To ensure our stormwater and sewer utilities

have the funds needed to comply with their CSO discharge permits, DEP should provide administrative support and technical assistance to CSO municipalities and utility authorities that seek to adopt stormwater fees.

Finally, the DEP should facilitate partnerships among CSO permittees, elected and appointed officials, staff and community groups to advance CSO solutions that strengthen their communities. The DEP should foster partnerships by holding several regional workshops for CSO municipalities and regional wastewater utilities organized by the regional utility in 2015.

On behalf of New Jersey Future I would like to thank you again for the opportunity to testify. We look forward to working with the Clean Water Council and the DEP to help our cities achieve a strong economy, a sound environment and excellent quality of life.

MR. VAN ABS: Thank you.

Our second speaker providing testimony is Christopher Len, who is with Hackensack River Keeper and the New York/New Jersey Baykeeper.

MR. LEN: Thanks, Dan. I'll try to speak slowly and end quickly.

I wanted to first talk about something that Dr. Ferrara said that came up in my question earlier about total maximum daily loads, which for those in the audience who are unaware is sort of a pollution budget for water quality. Total amount of a pollutant that can go into a water body and still have it meet water quality standards.

Now, the talk about the Presumption Approach and the Demonstration Approach that comes from the CSO control policy, an EPA document from 1994, A is the Presumption Approach and B is the Demonstration Approach, and there is no C. And so if you're doing an Integrated Planning Approach you're really -- it's B, a Demonstration Approach or it's not legal. I just wanted to say that B, Demonstration Approach part two says, where water quality standards and designated uses are not met in part because of natural background conditions or pollution sources other than CSOs, a total maximum daily load including a wasteload allocation and a load allocation or other means should be used to apportion pollution loads.

Now, that seems to me to be pretty clearly saying that you need to have a TMDL, and that's, you know, in addition to the normal

requirements of the Clean Water Act, that you need a TMDL or you aren't meeting water quality standards.

The thing about TMDLs, though, that's good news for this whole process, is that they provide a lot of positive incentives that's going to make this work better. A TMDL when it's working properly creates a budget for the pollution that's then split up amongst dischargers, but then those dischargers can reduce their pollutants, they can change their practices and become more efficient. They can potentially trade allocation and in this way you have a market signal that encourages people to reduce their discharges into the water body.

Now, when we talk about CSO problem in New Jersey, which I think is also an SSO problem in New Jersey, we talk about it as though it's a regulatory and technical problem. It's really a problem of incentives. The problem is that for a hundred years we've been burying sewer pipes in New Jersey and once they're buried the easiest thing in the world for a politician to do is to not worry about it ever again until it breaks.

So we had a 54-inch force main break in Jersey City just before Thanksgiving that put, according to the estimates I saw, half a million to

three quarters of a million gallons of sewage into the Hudson River per hour for about two weeks. That's an awful lot of sewage because someone let a pipe sit there long past its useful lifespan. And it's going to have to come off line again when they put the permanent fix in which they're looking at in the next week or two.

So if you have pipes that are underground and no one looks at them, and we have so much other stuff to spend money on, how do you incentivize people to make different changes or their choices? TMDL is one way. If you have a municipality that has a budget for a stormwater pollution it has an incentive then to investigate and fix its sewer pipes in a more timely way to avoid costs under the regulatory system.

Another problem with the CSO things, and I want to say as I have often that the DEP I think has done a very good job in writing these new permits, and I hope that their MS4 work coming up will be just as good, is that the CSO municipalities under their Long Term Control Plans need to meet water quality standard. But the SSO municipalities don't have a similar requirement in their permits, and I don't know that there will be one in the new

permits.

So you have a situation where cities with CSOs are discharging into waters that already violate water quality standards for pathogens, and they're supposed to meet water quality standards, which is not possible and it's completely inequitable if you have a town like Elizabeth, say, that has CSOs and they have to spend millions of dollars trying to address to a new regulatory requirement, but just up river you have other municipalities that don't have those requirements and they can continue roughly business as normal.

A TMDL would apply to both SSOs and CSOs and put everybody on the same budget, give everyone the same incentives, and I think would be a good way to overcome some of these incentive problems that we have. Another basic problem is the idea that New Jersey has adopted a system of socialized stormwater. You have stormwater impacts that are borne by the people of the state rather than the individuals who contribute to the stormwater discharge.

So you have a big parking lot. That big parking lot collects stormwater, puts it into the pipes, goes into the river that causes all sorts

of problems that everyone in this room pays for, and our taxes are in our water bill. The people who own the parking lot don't particularly pay for them. Now, if we were to have a stormwater utility, that parking lot owner might have a relatively small, even, amount of money that they would have to pay to account for those discharges. And when you have that signal that parking lot owner may say, all right, well, I can continue paying this bill all the time, or I can do relatively simple steps like regrade my parking lot so that it flows into a rain garden.

I think that we are going to find if we have market signals like that, that there's going to be a lot of cheap or free to the people of New Jersey improvements in our water quality that can be attained rather simply.

There is a bill for allowing municipalities to adopt stormwater utilities. I think that that should be available to all the cities in New Jersey that want to adopt it, if we have home rule I don't understand why municipalities can't adopt programs like that, that I think make a lot of market sense. And I would hope that the Commission would ask the DEP to support that. I

would think that the DEP should be encouraged also to accelerate the adoption of TMDLs which if they continue at the pace they've adopted since 1996 wouldn't be done until 2075. The Clean Water Act required them in 1979.

So I think that those are two things that you can ask the Commissioner to move forward i the Department's planning, and I hope that you will. Thank you.

MR. VAN ABS: Thank you.

There are no other people who have registered to submit testimony, so I'd like to open it up at this point to anyone has not registered but would still like to submit testimony to the Council.

Does anyone have testimony to provide?

(No response.)

MR. VAN ABS: We had a prior request to give testimony from Jeff Tittel from the Sierra Club; is anyone here who can provide testimony on his behalf or is planning to provide testimony on his behalf?

(No response.)

MR. VAN ABS: All right. Hearing none, then what we'll do is we can reach out to Jeff. I will note that we are accepting written

testimony to the Council, and the means for submitting the testimony are on the side of the agenda with an e-mail address. So if you would provide your testimony by December 31st, the Council will be able to consider it at its first meeting in 2015, in early January.

So, any additional testimony?

(No response.)

MR. VAN ABS: Going once, going twice. Closed. So our hearing is closed.

I thank you all for coming, and I hope you have a wonderful holiday season. Thank you.

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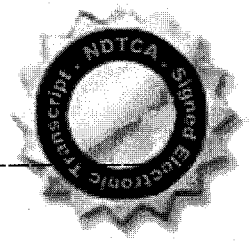
(Hearing adjourned at 11:32 a.m.)

C E R T I F I C A T E

I, MIRIAM RIOS (License No. XIO2031), a Certified Court Reporter and Notary Public of the State of New Jersey, do hereby certify the foregoing to be a true and accurate transcript of my original stenographic notes taken at the time and place hereinbefore set forth.

Miriam Rios, CCR

MIRIAM RIOS, C.C.R.



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