

Transcript: National Association of Counties (NACo) "Stormwater Runoff for Counties" Webinar (November 12, 2009; funded in part by USEPA grant number 83342601)

>> Hello, everyone, and welcome to NACo's webinar. We're just having everyone filter in right now, and we'll start the broadcast, and you can be able to show the presentations in just a moment. So if you could bear with us, we're just gonna give everybody a minute or two to come into the webinar. Thank you.

[PAUSE]

Hey, Carrie.

[PAUSE]

Hello, everyone, and welcome to the NACo webinar. We're just giving everyone a few more minutes so that they can come into the webinar as they're logging on. So I'm just gonna give you about another minute or two, and then we will start the entire program. Thank you.

[PAUSE]

Hello. We're gonna start the broadcast right now, so if you're just still trickling in, we've just begun what we're going to present today, and you can have a few more minutes just to log on and make sure that everything is settled. If you are having a technical issue, please click on the little hand button to raise your hand, and Cindy Wasser, who's running the background here at NACo, will be able to answer that and solve any technical issues that you have. For everyone else, hello and welcome to the webinar. My name's Carrie Clingan, and I work on water, wetland, and green infrastructure programs here at NACo. Today's program is brought to you in conjunction with the U.S. Environmental Protection Agency, and we've been working with them for a few years on total maximum daily loads program and counties and how that connects. So Sarah from EPA is gonna actually cover some of the details and the history of that partnership, but right now we're gonna cover a few more things just about the webinar software. So right now you probably see on your right that there's a chat box and it says "Questions," and then there's buttons for raising your hand and also for some various things that you can do on the webinar. If you want to hide that box, please click on the little arrows that point to the right, and if you want to unhide those boxes and ask a question or if you have any technical difficulties, please just unhide that box and send the question to staff. If you are having trouble, please send us a message, and our organizer will reply to you privately. If you have questions during the webinar, feel free to put them into the questions box, but we're going to be answering those all at the end of our presentation. This webinar is recorded, and it'll be stored on [NACo.org/webinars](http://NACo.org/webinars) for future viewing. To access that recording, please follow the link on the webinar evaluation survey that you will get in your email box in the next 48 or so hours. Thanks in advance for completing that evaluation survey because we want to keep making these webinars better and better. As we begin our webinar, we have lists of today's speakers. First we're gonna hear from Sarah Furtak and Menchu Martinez at the Environmental Protection Agency. Sarah and Menchu are gonna go over some of the details of the TMDL program and how counties are using those and the other resources that are available from EPA to protect their stormwater. Then we're gonna hear from Rob Swanson, who works in stormwater management at DuPage County, Illinois. He's there with Stephen McCracken from the Conservation Foundation, and they're gonna tackle some of the approaches that they've used on stormwater that have involved very different

groups and how those groups have come together to protect water quality. Last we're gonna hear from Youn Sim from Los Angeles County, California, about the multiple watershed approach that L.A. County has had to protect their water quality. But first we're gonna very quickly run a quick poll to find out how many of you are out there. So if you can see that on your screen right now, if you can go ahead and select one of those options that we have, this helps us to just get an understanding of about how many people are out there and how many people we have attending our webinars. So that plus our evaluation at the end really helps us make these webinars better, and we really appreciate it. It looks like we have about 90% voted, so we're gonna give you a couple more seconds to fill that out, and then we'll proceed with our first speaker.

[PAUSE]

Ok. Thanks, everyone, for voting. We're actually gonna turn that over right now to our first speaker and our first presentation, which is from the U.S. EPA and Sarah Furtak. So, Sarah, if you can go ahead. Sarah's having a little technical issue, so if you can go ahead and say that you're ready.

>> Sure. I'm ready, Carrie.

>> All right. Thanks, Sarah.

>> OK. The presentation "Total Maximum Daily Loads (TMDLs): a Watershed Planning Tool for Counties." This presentation covers our NACo/EPA partnership to date as well as basics of the impaired waters listing and TMDL programs. And finally we'll give a little overview of the TMDLs to Stormwater Permits draft handbook. As Carrie mentioned, we've been working with NACo for several years now. What have been the highlights? In 2005, EPA held conversations with reps of watershed organizations from around the country to promote cooperative and collaborative watershed efforts and to encourage local input on federal decision-making. Representatives at the conversation included academia, nongovernment organizations, federal government, and NACo. NACo recognized the need for outreach and collaboration on TMDLs. So EPA participated in the western interstate regional conference in Tacoma that year as well as the annual conference in Honolulu. In 2006, we all held a workshop at the NACo Chicago annual conference, and NACo published a county water quality issue brief on TMDL case studies with EPA's input. In 2007, NACo won an EPA grant for building the capacity of county local- government officials to improve water quality workshops. And in 2008, NACo and EPA work included several workshops. EPA and NACo met at the legislative conference in March. NACo held an annual conference that EPA participated in in Kansas City, Missouri, in July with an emphasis on agriculture. And NACo supplemented the Maryland Association of Counties' annual summer conference in Ocean City, Maryland, in August. Finally, NACo, in conjunction with the Association of Minnesota Counties, co-presented with EPA in Duluth, Minnesota, in December of 2008. And in 2009, we bring you this Stormwater and Urban Runoff Webinar. In slide 4, you see the Clean Water Act Framework for Restoring Polluted Waters. At the top of the framework, starting with the very first box, states, territories, and authorized tribes establish water quality standards. EPA reviews and approves these standards. Moving down the framework, sections 305B and 303(d) of the Clean Water Act require states, territories, and authorized tribes to provide EPA with reports every two years, which include a summary of water quality within state boundaries and lists of impaired waters. Those are waters not meeting water quality standards, which need TMDLs. TMDLs are developed for these waters. And regulatory

permits and voluntary controls help turn written TMDLs into action. We'll look at county involvement in these processes in a moment. Moving on to slide 5, as just mentioned, under the Clean Water Act, section 303(d), states assess all existing and readily available information. States identify waters not meeting water quality standards based upon this information. And states establish priorities for TMDLs based upon the use of the water body and severity of the problem. To give you a view of the national picture in slide 6, nationally, about 40,000 water bodies are listed as impaired. Top causes of impairment include pathogens or bacteria, mercury and other metals, nutrients, which include things like phosphorous and nitrogen, low-dissolved oxygen, and sediment.

[PAUSE]

Types of sources which cause impairment are found on slide 7. The figure shows the prevalence in yellow of nonpoint sources. These are pollutants which include urban runoff, forestland, and rural-area runoff. Point sources are in purple. These are things like sewage-treatment plants and concentrated animal feeding operations. Permanent stormwater discharges are included in this portion in the TMDL's waste-load allocation. In the robin-egg blue shade, nonpoint-source and point-source blended waters are represented. The source of data for this graph is all TMDL documents to date. What exactly is a TMDL? A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards and an allocation of that amount to the pollutant's sources. So in another manner of speaking, it's a pollutant diet or a pollutant budget. And the TMDL includes point sources, nonpoint sources, and a margin of safety. Moving on to slide 9--TMDL requirements. States establish priorities for TMDLs on the basis of the water body's use and severity of the problem. So for example, priority ranking factors may include a public-health concern, a relatively low initial cost, and so forth. EPA established an 8- to 13-year timeframe from the initial date of listing for TMDL development. TMDL alternatives may be appropriate in some circumstances. For example, where there's nonpoint-source-only pollution, it may be more appropriate to look into a TMDL alternative. Moving on to slide 10--How can counties get involved? This on the left is the Clean Water Act framework that we showed earlier alongside how counties can get involved. And it's important to mention that generally a listing in the TMDL program benefits counties as a watershed planning tool sort of roadmap. It provides a common understanding of impaired waters to the state and county levels, and it can catalyze involvement improving overall water quality in watersheds. So at the top of that framework again, counties may offer ideas to the state on what the state should adopt for waters in terms of water quality standards in the county. Counties may submit monitoring data to the state. Counties may comment on the impaired waters lists. And counties can participate in state TMDL development and/or develop third-party TMDLs. Involvement early and often can have a great impact on potential restoration measures. Finally at the bottom of the framework, implementation of TMDLs is a place where counties can get involved. They can review and implement permits, implement nonpoint-source controls; for example, installing rip-wrap around a stream bank, broker water quality trading opportunities, monitor and review TMDLs. And this is where I will transition to Menchu, who will hone in on TMDLs and stormwater.

>> Now I'd love to focus on TMDLs and stormwater. There are thousands of waters listed for stormwater-related impairments, as Sarah mentioned earlier, there are tens of thousands of waters listed as impaired, but a big subset of them are listed for stormwater.

And though pollutants commonly associated with stormwater include pathogens, sediments, nutrients, and toxics like PCBs and metals, it is difficult to know the total number of stormwater-source TMDLs needed for all the listed waters, particularly because of the way the data is being reported from various states all over the country. However, we know that there are thousands of waters listed for stormwater-related impairments. And this led us to the development of the TMDLs, the Stormwater Permits Draft Handbook, which you can see on slide 12. Basically it is a technical reference for TMDL practitioners and permit writers how to develop detailed stormwater-source TMDL allocations and also how to develop TMDL implementation plans to go along with those allocations and finally how to translate TMDL allocations into NPDES stormwater permit requirements. Each chapter, it has detailed resources and references. And basically the chapters are arranged from cradle to grave, basically. First there's a chapter on watershed characterization to understand the stormwater source impairment and then to help identify the particular sources and then finally to identify the appropriate water quality standards that will then be used for the next step, which is the TMDL development. And the TMDL development chapter talks about various options for expressing the TMDL waste-load allocation, whether it be a single categorical allocation if there is not enough data or burrowing further down to specific MS4 allocations if data supports it. And in fact, there is one example in the handbook where it talks about a TMDL with a waste-load allocation for each of the pipes in a particular MS4 since they had enough data to do that. And from the TMDL development chapter, we then followed that with a chapter on how to translate those TMDLs to permits, and then the permits chapter is followed by how to select or identify BMPs in order to implement those waste-load allocations into TMDL. And basically that chapter talks about--finding out what is the current pollutant loading and then identifying the current pollutant-loading reduction still needed to meet the waste-load allocation and then the BMPs to actually realize the pollutant-loading reductions needed. And I understand that Youn Sim of L.A. County would be talking about their process for BMP selection and how they were able to optimize the selection of the BMPs in order to meet the various TMDLs and their permits. In the handbook, identifying the TMDL water quality target is a particular challenge for stormwater sources, and the handbook does focus on that. Usually it's hard to identify the specific pollutant with stormwater sources. Most waters usually are--waters affected by stormwater sources are often listed as impaired due to biological impairment rather than for specific pollutants like sediments or metals. And usually the impairment is a result of the cumulative effects of pollutant loading and physical effects from the stormwater, and that's why it's hard to identify the particular pollutant. The handbook has tried to address this by giving examples on how certain parts of the country have been innovative enough on figuring out how to use surrogate targets for stormwater-related pollutants. In Potash Brook in Vermont, they've used flow as a surrogate for sediment and other pollutants. Basically the stream was listed for a biological impairment, and they've set a flow-reduction target of 16% by relating stormwater runoff volume with--and sediments. And they use site-specific data to make this analysis. Another example is in Eagleville Brook, Connecticut, or Barbary Creek, Maine, they've used impervious cover as a surrogate for stormwater pollutants. Again the streams were listed for biological impairment, and they've set TMDL targets set at a particular level of impervious cover based on state-specific data relating impervious cover to aquatic-life criteria in their particular watersheds. So with that, I would just like to turn to

the next slide to let you know about other information that we have on the EPA and stormwater web site in addition to the handbook. We have a summary of 17 TMDLs that were developed specifically with stormwater sources, and it also talks about those innovative TMDLs using surrogates for impervious cover in hydrology if you're interested in finding out more of those. And in addition, there's a particular fact sheet on the website that talks about how to incorporate green infrastructure into TMDLs. With that, I would just like to turn it over to Sarah to close our intro.

>> Thank you. The very last slide--slide 15--is a series of references from the presentation for your fingertip access. And with that, back to Carrie.

[PAUSE]

OK. Did you want to pass it along to Rob now? Thank you.

[PAUSE]

>> Hello, everyone. I'm Rob Swanson with DuPage County Stormwater Management. I'm a water quality specialist for the county, and I'll be talking today about bringing regional watershed planning into the TMDL process. I just want to start by giving you background about DuPage County. DuPage County is located in the western suburbs of Chicago. It's about 334 square miles, the county. Population over 900,000. And it consists of parts--all the parts of 39 municipalities and 9 townships as well as the unincorporated areas. There are 3 main watersheds in DuPage County and the adjacent county. There's west branch DuPage River, east branch DuPage River, and Salt Creek Watershed. Nearly all of the counties and urbanized area, as compiled by the latest census--there are 12% of the total land area is forest-preserve property, which is about 25,000 acres. In 2004 the county was engaged in the first TMDL process, and as you can see on the screen, I have highlighted the major impaired assessment units for those 3 major watersheds. The initial process covered the parameters for dissolved oxygen and chloride particularly. For the dissolved oxygen impairment, there were waste-load allocations for publicly owned treatment works for the CBOD and ammonia parameters. This TMDL, the stakeholders noted that the current reported discharge loads from those POTWs were much less than was actually allocated in the reports, and so any efforts to meet those allocations was already being done, and there wouldn't be any water quality improvements realized. As for the chloride impairments, the waste-load allocations and the TMDLs were given to POTWs and MS4 permittees. The U.S. EPA recommended that chloride reductions were made through best- management practices rather than numeric limit. And the chloride TMDL is really the only TMDL in DuPage County that includes waste-load allocations for stormwater discharges. There were several shortcomings of the 2004 TMDL process, and in response to those, the DuPage River Salt Creek workgroup was formed. It brought together a diverse coalition of stakeholders across the two counties, and they wanted to work together to preserve and enhance the water quality within our main watersheds. In April 2005 the workgroup first met, like I said, to address those TMDL shortcomings.

[PAUSE]

And the role of the--sorry about that. I mixed up my slides. The workgroup membership is formed by numerous members. There's two sorts of members that can participate in the workgroup. The DuPage County is one of the largest financial contributors to the workgroup, and they're an agency member, which means they're one of 37 local government entities, or POTWs, who comprise this agency. Agency membership roster.

The agency members contribute \$200 per year plus an acreage and discharge component, as I've highlighted on the slide. Other organizations can join the workgroup as an associate member. 19 have done so so far. And they contribute \$100 fixed associate member fee. And all those fees collectively provide the workgroup about \$300,000 a year for workgroup activities. Now, these activities by the workgroup are to identify nonpoint-source pollution issues, develop strategies to address these, and they do this through consensus building to explore scientifically the sensible and cost-beneficial alternatives. And it's a collaborative process, so a lot of the political constraints that individual groups might otherwise feel in approaching these areas is otherwise removed. For the county's part, DuPage County will come in to implement regional projects that have been identified through the workgroup studies, and they dedicate county funds and staff, and also they might need to do some public outreach and other legal agreements with stakeholders to get these projects initiated.

[PAUSE]

The workgroups and the members have performed monitoring identify scientifically defensible solutions to improve water quality while DuPage County looks to implement these projects. Several instances where dissolved oxygen issues have been addressed--actually the removal of dams along the county's waterways. Benefits of the dam removals would restore natural flow to the waterway to decrease pool depths and also to minimize the contact between the water and sediment with high oxygen-demanding properties. I'll quickly give an overview of 3 projects that the county is involved with with the dam removals. In 2003 the Conservation Foundation, which is a nonprofit group in DuPage County, which also facilitates the workgroup, made a report the assessment of the impact of dams in DuPage County, and they recorded that at the McDowell Grove Dam and Warrenville Grove Dam. There were dissolved oxygen concentrations below the water quality standards. There was index of biotic integrity scores. They were very low both upstream and downstream of the dam. There was also reduced fish populations upstream of the dam as well as low species diversity at both sites. For the McDowell Grove Dam removal project, the county received \$1.6 million in federal appropriations fund. The county stormwater management also supplement those with 400,000 of budgeted funds, and construction was initiated in August and completed within August 2008. Completed within 3 months. Similarly, the Warrenville Grove Dam had allocated \$1 million of a grant from the National Oceanic and Atmospheric Administration, and the project seeks to remove the dam and restore the natural stream conditions. That has been delayed in being implemented due to thorium contamination cleanup activities upstream of the dam. In 2008 the DuPage River Salt Creek workgroup issued the streams dissolved oxygen improvement feasibility study for the east branch of the DuPage River. And as you'll see on the slide, there's a depression of oxygen concentration just above the Churchill Woods Dam in the modeling that was done based on our monitoring. The removal of the dam seeks to increase those dissolved oxygen concentrations at that site. For the dam removal, DuPage County has received almost \$700,000 in federal appropriations earmarked for construction aspects of the dam removal and provide another \$127,000 for the design permitting. The county's funds are supplemented by--provide us with a 40/60 cash match of the DuPage River Salt Creek workgroup's funds that they received through the Illinois Environmental Protection Agency totaling \$205,000. The construction might possibly begin as early as spring 2010. Public involvement in those dam-removal projects

was that the Warrenville Grove and McDowell Grove Dams were incorporated into the west branch DuPage River watershed plan, meaning that they have a 30-day public-comment period. Also outreach efforts were made to the group's DuPage County residents through a series of open houses. The forest preserve, which owns the land on which the dams are located and also represented some municipalities were reached out to in that the removal of the dams will impact their communities. Beyond dissolved oxygen efforts, there's also been chloride-reduction efforts--as I noted, the second pollutant in the TMDLs was chloride. The DuPage River Salt Creek workgroup has hired CDM--a consultant--to develop an education outreach campaign to reduce chloride application. They organize workshops to advocate BMPs for both public and private de-icing, and the county has supplemented those through financial funding and technical support and also looks for other opportunities to publicize the use of these BMPs. In order to ensure that the water quality improvement measures are providing a benefit to the waterways, both the county and the DuPage River Salt Creek workgroup are working with 7 other organizations to operate a network of 15 sondes throughout 3 watersheds to monitor ambient water quality. They deployed April-October and obtained data for temperature, pH, dissolved oxygen, and conductivity. In 2008 a second round of TMDL were initiated by the IEPA, and they were seeking to address the following impairments that I've listed on the slide. The number in parentheses identifies the number of assessment units there are included for each of these parameters.

[PAUSE]

In response to the 2004 TMDL public comments, the IEPA revised their TMDL process to include a 3-phase process. The first phase of TMDL development--it would outline the impairment issues, existing data, and the planned modeling approaches. The second phase would explore opportunities for additional data, and then the third phase finalized the TMDL report. In respect to the first phase of the TMDL process, the DuPage River Salt Creek workgroup invited IEPA and their associated consultant staff to make several presentations to the workgroup regarding the TMDL status on several occasions. The workgroup in the county and also other municipalities commented on phase one of the report. There were 32 comments that the IEPA reviewed to improve phase one of the report. And also the comments identified certain aspects where phase two could collect additional data to be used in the modeling for the report. One area where additional data could be useful is through bacteria monitoring. The fecal coliform bacteria that was collected by IEPA was very limited. The workgroup agencies will assist the work--will assist the IEPA with the monitoring plan development and also sampling efforts to be done, and the data will be used in the low-duration curve for TMDL development. County staff and resources will be used. I've spoken a lot about the efforts that DuPage County and the workgroup have been made to address individual parameters, but I also want to look at some of the current activities that they're looking beyond just a responsive approach. DuPage River Salt Creek workgroup has contracted with MBI to perform a bio-assessment of the watersheds. It's more of a proactive approach that looks holistically at chemistry, habitat, and biology rather than just individual pollutants. These serve as the benchmark for current conditions, and they can evaluate particular projects that can be used to identify and prioritize those projects for the future. This is done through--MBI will investigate impacts to healthy stream conditions and identify certain stresses that can be corrected to promote the appropriate biological response in stream. And those stresses are

featured in blue on the screen in the 5 circles in the center. Additionally, they're further described as subcategories in the 5 major factors on this next slide. Each of these can be addressed, and they can go back to improve the actual biotic conditions in the stream. After MBI has performed this, we look to go beyond these and improve--like I said, improve each in stream. Finally, the county will look at those top-ranked priority projects and implement them. I've spoken a good deal about the efforts that was made within the county to facilitate broader participation in the TMDL process as well as a more regional effort to improve water quality. Some measures that I recommend that would help in doing so successfully would be to build consensus based on monitoring and science across the broad range of stakeholders, again, involve parties initially, seek funding for regional projects, particularly those that offer stormwater quality and quantity improvements, and finally, to perform outreach to residents and elected officials prior to project initiation. If you have any questions, feel free to either contact myself or Stephen, who will be here. He's facilitating for the DuPage River Salt Creek workgroup, and he'll be here to answer any questions as well at the conclusion of the presentation.

>> Thanks, Rob. We really appreciate that presentation.

>> You're welcome.

>> And we just have one more quick poll that we're gonna launch right now to ask everybody out there if they could respond, and the question is: Has your county formulated or enacted any plans to treat stormwater runoff? And this would include TMDLs, but it also includes any plans that the stormwater runoff people have within your county or any other outside plans that have been involving your county. So the questions are your basic yes, only the municipalities within the county but not the county itself, no, or if you're not sure. So if you could just take a few seconds and click on one of those answers, we'll then close the poll and show the results.

[PAUSE]

OK So it looks like again a pretty split decision. And we have about--looks like 47% have plans in their county to treat stormwater runoff. Only about 8% have only the municipalities with a plan. 23% said no and 22% not sure. So thank you, everyone, for answering that poll. And we're actually gonna switch over now to Youn Sim from L.A. County, and Youn is going to present on the way that L.A. County has handled some of the stormwater problems that it has had and how the success in their various TMDL and runoff programs have gone. So, Youn, can you take it over?

>> Hi. Hi, everyone. This is Youn Sim from L.A. County flood-control district. Today I'm gonna be speaking about our county flood-control districts, an integrated watershed-based approach for urban runoff and stormwater quality.

[PAUSE]

OK. The outline of my talk today is for starting with the coastal watersheds of the county and also as my title of the presentation says, the integrated watershed-based approach. What does that mean? What is the background of that term, and what are the challenges we have in the county? And also followed by the project goals and tasks and a brief schedule and milestones. OK. Let me just briefly talk about our county's coastal watersheds. It has a drainage from the pristine mountains through the urban areas to ultimately discharge to the Pacific Ocean. It has about 530 miles of an open channel and 2,800 miles of storm drains. And the entire watershed size is about 3,100 square miles. It has approximately 6 large watersheds. The next slide will show you a better idea. So the



left-hand side of the boxes includes the watershed facts, which include just what I just mentioned--that this is the picture of it. The arrows--3 arrows basically shows the general drainage from the pristine mountain area all the way to the Pacific Ocean. Different sub-watersheds--6 major watersheds are color-coordinated. So it has about--we have about 23 TMDLs that have been officially adopted by the local regional water quality control board, and then the county area has about 5,600 MPDS permits based on which active discharge is happening every day during dry and the wet season. Let me talk a little more about the TMDLs in L.A. County. Today, like I said, about 23 TMDLs are currently effective. That includes trash, indicator bacteria, metals, and toxic pollutants and nutrients and chlorides. So pretty much all well-known pollutants have been recognized as impairment factors in the county. And again, TMDLs are typically in our county allocated to two major sources--point and nonpoint sources. Point source includes POTW effluent, meaning that the wastewater-treatment plant effluent-- and also municipal stormwater dischargers. And California DOT stormwater discharges basically mean the freeway discharges and also the industrial and construction stormwater and non-stormwater discharges. And nonpoint sources within the county have been identified to include aerial deposition of the metals and nutrients and also natural sources--from the forest and animals and birds typically--and also urban runoff. Since L.A. County is highly urbanized, the most L.A. County's pollution is from nonpoint sources. So far two indicator bacteria TMDLs have been incorporated into the L.A. County's MS4 permit as an enforceable standards. This picture basically shows the total number of MPDS permits that have been adopted and issued to the dischargers, variety of dischargers. And this table shows that it's a little bit of a breakdown of what are those dischargers. The right-hand side of the table, the two large red-color number basically shows the total of 5,600 permits that includes a variety of non- or stormwater dischargers. One thing to note is the bottom of the table in green color that shows the municipal L.A. County flood-control district and 84 other cities. This municipal stormwater permit, or MS4 permit, is the only one that has so far TMDLs incorporated into the permit. All the rest permits do not have TMDLs included as an enforceable limit. And briefly why integrated watershed- based approach. Let me give you the background issues and the challenges of the county's watersheds. As I said, the county has thousands of dischargers in the county, active dischargers, and include wastewater-treatment plant and refineries and all the other industrial dischargers and also stormwater from urban and industrial and construction facilities and other urban areas like the roads and residential and commercial. Another reason that we're applying this integrated watershed-based approach is because TMDL is simply difficult to comply with if not impossible. And for example, TMDLs are allocated only to municipal stormwater permittees at a system of thousands of stone drain outlets. So that makes it really challenging. And also multiple TMDLs so far, like I said, about 23 TMDLs, a variety of different kinds that are currently simultaneously in effect that require different sources need to be accounted for, and that's what we need is some integrated solution to address multiple TMDLs at the same time. And also water quality is not the only priority in the watershed, and there are so many other stormwater management decisions that need to be made to address the entire watershed issues. The next slide gives you some pretty good picture of the situation. That will be a concern for most of the watershed planners. This actually diagram indicates the key issues in watershed planning. If you look at the lower left, the circle, of course the water quality regulatory compliance is one of the

number-one issues for all the watershed planners, but also there are other competing issues such as water resources, flood control, and also open-space development. This is also equally important, very competing issues. But also the--in any watershed planning, of course the cost is the major deal. So how are we going to come up with a best, smart strategy to set the watershed priorities considering all these 3 very important issues? So basically this is one of the issues for most of the watershed planners, including the L.A. County. So our approach is basically to come up with a smart strategy. We decided to develop a tool for TMDL compliance and stormwater management that allows us watershed planning at the regional scale like county scale or even larger, but also we want to be able to focus and address local scale BMP implementations. And two projects that we came up with was first development of the watershed management modeling system. We call it WMMS. Basically this is a countywide watershed management planning tool. I'm gonna talk a little more detail about this tool and also water quality improvement plan for the whole county areas, and especially it addresses the comprehensive long-term TMDL-compliance measures that accounts for all pollutants listed and also quantifiable water quality benefits. And this plan will help develop the most cost-effective TMDL-implementation measures. And this plan is being developed with collaboration with the local regulators and federal regulators, EPA and regional board. And this plan is to be able to

provide the general guidance to the future water quality and permit efforts. And we are actively exercising a low-impact development-LID, but the tool that we're developing is also be able to help the planning of the LID practice at a partial scale but also to help MS4 permit implementation. And ultimately this tool that we're developing is to be able to provide an integrated watershed-management tool for the future planning of multiuse projects. That addresses the flood-control and the water resources and the water quality, as well as open space development. And the task, like I mentioned, is to address those priorities in the watershed effort, to develop those two systems--the watershed-management modeling system and also water quality improvement plan. So a little more about the watershed-management modeling system. It consists of actually watershed models and BMP selection system. The watershed models are actually based on the previously created models by the U.S. EPA in development of the TMDLs such as these listed. The second part of the system is the BMP selection system. This selection system has been originally developed by the Prince George County and U.S. EPA partner effort called a BMPDFS, and we're using their system and borrowing their system and actually customized for our county that will help us identify optimized BMP selection at the local and regional scale. This whole effort is being done with a partnership with the U.S. EPA for their technical as well as financial support. A little more technical details about the modeling system. Basically anyone who is familiar with the hydrologic model and watershed model would have understanding, some understanding about this first part. Basically it accounts for the full hydrological process from the rainfall to the infiltration to the urban runoff and all the pollutant generation and transportation carried by the runoff. Ultimately it addresses the impact on the receiving water quality. And like I said, the BMP selection system uses state-of-the-art BMP selection optimization technique for the selection of distributed and centralized BMPs. And this actually BMP selection system also help for the optimization of the different load reduction scenarios among different areas within a watershed, and that helps, actually, facilitate water quality credit trading

amongst the different communities or cities if they elect to do so. A little bit about the modeling of the watershed. Any model--always the challenge is the scale. From the entire L.A. County watershed, for example, in this case, in this picture, the left-hand side of the box is Los Angeles River watershed. This is 829-square-mile watershed. From that scale all the way to the local site scale, we want to be able to capture the important factors of the watershed from the large scale and also as well as we want to be able to pay attention to local site scale to be able to select the BMPs to address local issues. So that's the challenges that we have when it comes to watershed model, and this is the watershed model resolution that we have developed. And basically it addresses to the street scale. The upper right-corner box is showing where our headquarter office is just to show the resolution of the model. This probably is the one snapshot that probably says a lot of information. Basically, if you look at the top left corner showing the watershed. And so watershed model that addresses the hydrologic and pollutant-transfer system for the watershed. And if you move on to the right-hand side. And basically we test out or apply a variety of different BMPs--their size and the [INDISTINCT] efficiency. Considering all those things applied, those different BMPs. And also lower left corner, BMP cost. So cost is the important issue. So if we consider the BMPs and as well the associated cost, those are the important factors in selection of the BMPs at a local and a regional scale. So the entire optimization system will consider those two factors--efficiency and the cost--to come up with the most optimized set of BMPs for the watershed of any scale such as distributed BMPs like this. If you look and see--you see these menus, and you see variety of the different BMPs that must be--that most of you guys are familiar with--rain barrels, bioretention cistern, those things. And more of a centralized, more of a regional scale, large-scale BMPs. And a given watershed--the system will come up with the most cost-effective, optimized setup of distributed and centralized BMPs that are needed to achieve the goal of the watershed such as water quality improvement, and TMDL can be one of the targets. So and the next one is water quality improvement plan. So using those optimization and watershed-management modeling system tool, for each of the watershed within the county, which is 3,000-square-mile size, for the smallest size of each of the watershed, the water quality improvement will include cost-effective water quality improvement projects and which consist of a thorough list of distributed and centralized BMPs at very small size of subwatersheds. And it includes how much pollutant will be reduced using those BMPs and how much it's gonna cost to do it. And of course, that improvement plan will have to be updated as we get new water quality standards such as new TMDLs or any other water quality standards that might be established in the future. And this water quality improvement plan is going to follow EPA's watershed-management plan preparation guide for the water quality improvement purpose. And the plan will effectively provide guidance for short- and long-term planning for stormwater regulatory compliance such as TMDLs at a subwatershed scale. And also this plan will provide a starting layout from which specific multiuse projects can be developed such as green infrastructure planning and open-space development and water conservation and flood protection. So the plan will give good guidance that if you want to do a green infrastructure for the watershed, where or how many are gonna be needed and how many do you want to plan within the framework of the overall watershed goal achievement? And lastly, the plan will provide guidance for the LID implementation at new redevelopment projects. Everybody is talking about LID. Everybody is trying to incorporate and exercise the LID

practice, but when it comes to planning for the watershed, how much of the LID implementation do we need to meet the overall watershed's goal? That is one of the questions that everybody's trying to answer, and this--the tool and the plan will greatly help the planners to identify the need, the LID need for the watershed. Basically, finally, we are trying to improve the water quality and health of the watershed overall in L.A. County. And using those systems and the plan will greatly help us in how many BMPs are gonna be needed to achieve specific water quality goals. And the cost being one of the most important factor. So we try those BMPs and then monitor the water quality and how effective they are. And if it somehow doesn't meet the goal that we already initially established, then we adjust. To adjust using the plan and the system and try again. So basically everybody know about this iterative adaptive approach. Basically this system allows you to use an interactive and adaptive approach with specific and quantifiable water quality improvement goals. And of course, economics considered. Just like what the right-hand side, the figure indicates. I borrowed this from the EPA--one of the guidebooks, and I like this figure a lot. That's why I include it. So the schedule is we're in the second phase of the 3-phase project. We're about to--we're actually have made quite a progress in completing this system. And we will be able to complete the system by next spring 2010. And from the phase 3 on, continuous refinement of the plan and the system for the future watershed-management planning for the watersheds. That kind of wraps up my presentation, so if you have any questions, you can just contact me at the email address and the phone number shown in my presentation. Thank you very much.

>> Great. Thanks, Youn. And we're actually accepting questions right now, but if you have any questions and you want Youn's contact information or the contact information of any of our presenters today, we will be posting these presentations at [NACo.org/webinars](http://NACo.org/webinars). So we will have those as well as the recording of this webinar available for your download and your view probably by Monday at the latest, or you can contact me directly if you'd like to get any of that information. So right now, if you have any questions, please type them into the questions chat box that's on the right side of your screen with the webinar software, and then hit "Send question to staff" and "Send," and it'll pop up, and we'll be able to read those and ask any of our presenters those questions.

[PAUSE]

So it looks like we're getting a couple in right now, and this one is really for EPA. And, Sarah, could you or Menchu answer the question of whether there's a source for counties in a specific state that lists TMDLs specifically as they related to stormwater design?

>> Hello, Carrie. I was wondering if you could repeat that question again.

>> Sure. We can. Is there a source for counties in a specific state that lists associate TMDLs specifically related to ones where stormwater design solutions would be questioned? Basically, is there a listing per state of TMDLs that would relate directly to stormwater design?

>> Well, the way the states list their TMDLs, you go to their website, and they would have a listing of all TMDLs that they have developed or are developing, but usually they don't do it according to sources. They list them according to watersheds.

>> OK. Thank you. We have a question for DuPage County. Rob, is there a way that you would say--just if you were able to recommend your program to anyone else, what was the one thing that really made it if you had to just select one that made your approach very successful?

>> I think it was the initial approach building the watershed base consensus and getting all parties involved initially to get it. That way, each project is considered against the others, and they're prioritized, which--what would offer the greatest benefit for that watershed. So I think having all parties sit down at one time and work things out scientifically and build a consensus around that--I think that's probably the best thing that helped us.

>> Thank you. Youn, have you incorporated the wide range of on-the-ground effectiveness and cost for LID practices in the L.A. County project, or has there been piecemeal adaptation as it's gone along?

>> So far the L.A. County--the county of L.A.--since they have established the LID ordinance the--especially the ordinance has been just established beginning of this calendar year. Basically we are still developing in how much of LID is to be enforced through the ordinance. We're developing still this plan and to identify what would be the need. How much is the need to achieve the goal? So, yeah. No, we have not developed a specific, uh, basically standard, a guideline to enforce the entire county. But we have some interim standard we have established such as the on-site volume-retention requirements. It's things like that. But we are still looking into how much that requirement is gonna be helping the entire county's water quality improvement at a watershed level.

>> OK. Thanks. This question is not specifically directed at any of our speakers, but what top 3 water quality parameters for stormwater runoff should be checked by the county? Anybody that'd like to jump in? Maybe EPA would like to talk about what they see as being more of a county responsibility or what county officials can do to track some of these parameters.

[PAUSE]

Sarah?

>> This is Menchu Martinez. I'm not sure exactly what the question was referring to in terms of parameters, but if you mean pollutants, then it would be sediment and nutrients and sometimes [INDISTINCT] agents from roads and parking lots. But it would really depend on the particular pollutant associated with that watershed.

>> OK. Thanks. Rob, have you had any specific things that have come up that aren't captured in those 3 that you guys have been able to track?

>> This is Steve McCracken. I'm here with Rob. I'm answering that question. And just before I go into the specific pollutants, I would say one of the things that we did was we really tried to get away from, you know, ah, you know, look at pollutant A, look at pollutant B. We looked--we started looking at bio-criteria in our local streams and looking for anomalies in diversity of that bio-criteria--you know, fish and macro-invertebrates and what that could tell us about pollutant loadings. And on the basis of that, we then started targeted various improvements, be they stormwater or habitat-type improvements. So I would say, you know, it's something that needs to be led by local experience. However, then to answer the question more probably the way it was expected to be answered in our area was that chlorides were the number-one stormwater runoff. Actually, a TMDL was developed for that. But obviously they were also found to be affecting ecological communities, so therefore, you know, that TMDL fitted well with our process, so that was one that we really have been working to get the grips with. The other one I'll just mention by EPA was PAHs. I think that they're very ubiquitous in the environment. They've got high toxicity, and I think anyone with an urbanized watershed is going to find high quantities of them in their sediment. So I would suggest also that that would be--outside

my earlier comments, that's probably gonna be of the top stormwater loading pollutants that people are gonna find.

>> Thanks, Stephen and Rob, for answering that. Menchu, you had a little bit of interference on the phone. Could you actually name those 3 pollutants over again? We had a couple people that had some trouble hearing you.

>> Yes. Basically I would like to refer the folks to slide 11 of my presentation, and basically it says that pollutants commonly associated with stormwater, based on information reported by the states to our database are pathogens, sediments, nutrients, and toxics, particularly PCBs and metals.

>> OK. Thank you. We actually have a question for Youn.

>> Yes.

>> Do L.A. County ordinances require developers to consider LID alternatives prior to the final approval of the projects?

>> Yes. It actually--it's not just considered. It's actually--it's a mandate. So the site at the site-design level, the LID principle has to be included in designing the site. We have a specific criteria such as the predevelopment hydrology has to be maintained after the construction or site development happens, so that's a specific criteria that's being mandated. But we leave the actual selection of the BMPs up to the site developers as to what kind of BMPs are gonna be needed. But the criteria we have is predevelopment hydrology.

>> Thank you. And is L.A. County considering implementing any type of stormwater clarifier system in the various watersheds?

>> Clarifiers? Clarifier. I can't really understand what the clarifier means, but--

>> OK. I'm reading the question, and I'm not quite sure, so we can go on to another question actually specifically for you, and that's whether you're able to use any Section 319 funds for any of the planning or implementation.

>> We have, I think, very limited success so far in getting 319 funding so far, but we are actively pursuing any kind of a funding that are out there from the local or federal level nonpoint-source funding. That's our ongoing challenge like everybody else's.

>> Right. Right. Thank you. And for those out in the DuPage watershed, could you answer--have you had any experience with nonpoint sources from agricultural areas specifically? And could you talk about the difficulties of working with that as well?

>> No. It's pretty urbanized, DuPage County, so there hasn't been too much experience with agricultural runoff that we've dealt with.

>> OK. And, Sarah, could you and Menchu talk a little bit about that, about some of your experience working with highly agricultural counties?

[PAUSE]

>> Specifically you're referring to?

>> Runoff from nonpoint sources and agriculture sources and how that affects the TMDL in those counties.

>> OK. Well, folks may recall the chart, the pie chart that was in the presentation we gave. And nonpoint source pollutants are a very large percent of the total pollutants that are impairing the nation's waters. I don't have the statistic offhand, but agricultural sources account for a high percentage, a pretty good fraction of the total impairments nationally.

So I know with NACo we have emphasized case studies with agricultural success stories, so to speak, in our various workshops. For example, in Duluth, Minnesota, in December, we were able to speak to, I believe, the Yellow Medicine Creek in Minnesota. In Kansas City, we were able to speak to a case study there. So we are always looking for opportunities to connect with our agricultural partners and inform them about our listing and TMDL programs and how they can get involved.

>> Thanks, Sarah. And also the presentations from those workshops that we did are still available on the NACo web site, and we will put a link in with our webinar information on [NACo.org/webinars](http://NACo.org/webinars) as well as the presentations for this. It'll be a link to our overall TMDL projects. So you can take a look at those presentations that were from some of our county partners but also from the American Farmland Trust. And we had a speaker from them at both of those workshops that Sarah just mentioned who might be able to talk a little bit more about the highly agricultural counties and their issues. Yeah, and we had a background--Jeff Carter came in and actually explained what he meant by clarifier, and he means a gravity-separation system for oil and grease sediment and other pollution.

>> OK. Yeah. I think the question probably can be answered in a way that probably--that stormwater clarifying, meaning that to include all the other basically mechanical devices or filter or proprietary devices. We don't dictate what kind of BMPs needs to be used to implement LID principle and site design, yet we don't put any limitations. But probably any BMPs are gonna be OK as long as it provides the runoff control that we're looking for to preserve the predevelopment hydrology. But oftentimes some of the mechanical devices are focused specifically on removing certain pollutants only like oil-capturing filter. But those filters may have a little bit of a limitation in terms of controlling the hydrology of it. But again, ordinance and our standard does not actually limit what type of BMPs need to be used to achieve that standard.

>> OK. Thank you. Thank you to Youn, and thank you to Rob and Stephen and Sarah and Menchu and everyone else who has participated in our webinar today. We really appreciate you coming in and speaking, and we really appreciate all of our attendees out there who have listened to our presentations and asked their questions. If you have any follow-up questions, please feel free to email us with all the contact information that we emailed to you along with your invitation to this webinar. We also have a webinar coming up on December 3 on green infrastructure that you may be more interested in, as well as some other webinar offerings, and they're all available at [NACo.org/webinars](http://NACo.org/webinars). We would also like to point you to our further workshops and other green infrastructure and other information that'll be available at NACo's legislative conference in Washington, D.C. So if you have any questions or any issues with that, if you'd like to register for that, please visit [NACo.org](http://NACo.org) for more information. So thank you, everyone for participating today, and thank you to Rob, Stephen, Menchu, Saran, and Youn for all of your expertise and all of your willingness to share what you've learned with us. So thank you very much, and everyone, have a good day.