

WATER USE/RESOURCE MANAGEMENT COMM. MEETING MINUTES
January 15, 2019

Committee Members Present: Andy Boyar, Fred Peckham, Al Henry, Jim Greier, Pat Jeffer, Ginny Dudko
Committee Members Absent: Doug Case, Evan Padua
Staff : Laurie Ramie, Pete Golod, Ashley Hall-Bagdonas
NPS Partner: Absent
Guests: Dr. Peter Kolesar, Jim Serio

The UDC's Water Use/Resource Management Committee held its monthly meeting on Tuesday, January 15th, 2019 at the Council office in Narrowsburg, NY. Chairperson Peckham called the meeting to order at 7:03 p.m. A motion by Henry, seconded by Jeffer, to approve the Dec. 18th meeting minutes was carried. There was no public comment on the agenda.

Election of Officers: A motion by Jeffer, seconded by Dudko, to elect Andy Boyar as Committee Chairperson was carried. A motion by Henry, seconded by Dudko, to elect Evan Padua as Committee Vice-Chairperson was carried.

Old Business

1/11 Local History Roundtable meeting: Ramie attended the meeting in White Mills, PA. This is a group of historic societies from Northeast PA that meets every two months. This meeting focused on establishing dates and programs for 2019. One program they sponsor is the Thomas Kennedy Local History Festival at the Dorflinger Factory Museum in White Mills on April 27th. The group spoke about logistics for the Festival such as publicity and advertising. The Rt. 6 Heritage Alliance Organization has named White Mills their Community of the Year. On May 22nd and May 23rd they will hold an awards ceremony to recognize White Mills for all of its historic endeavors as well as have an educational summit on May 22nd along with tours of various properties. They have the glass factory, Dorflinger-Suydam Wildlife Sanctuary, glassworker cottages, the fire station that has been restored, as well as the ongoing restoration of a historic steam engine. The educational summit is open to everyone, to help communities make better use of their downtowns, empty storefronts, to help revitalize their businesses and attract visitors. The theme for the event has yet to be announced. They also discussed their local history "past-port" which is a booklet with a page dedicated to each of the historical societies. Visitors get a stamp at each one then can get a prize if they redeem a completed book. They will be printing a 2019 past-port and are branching out and adding additional historic groups. They discussed partnering with realtors and banks to help distribute them as they are trying to target newcomers to the area. The cost is expected to be around \$5000 and they are generally successful in raising grants to cover that cost or they will ask each local historical society to contribute \$100. The next meeting for the Local History Roundtable will be March 22nd and hosted by the Wayne County Historical Society in Honesdale.

Release & Flow Regimen at Lake Wallenpaupack when Brookfield Renewable Generates Power out of Kimbles: Golod was asked to follow up with Brookfield Renewable regarding the flow regimen, specifically the flow releases that's generated from the power at Kimbles. Golod emailed Brookfield Renewable but has yet to hear back. As soon as he gets an update he will be sure to relay it to the committee.

Presentation by Dr. Peter Kolesar and Jim Serio: Update on Subcommittee on Ecological Flows (SEF): SEF is a subcommittee of the DRBC. Its function is to provide tactical advice to the Regulated Flow Advisory Committee (RFAC). RFAC is the group through which the Decree Parties function. SEF is charged with being a scientific advisory committee for that group. It's been active in the past. In 2006 when the FFMP was being designed SEF was active and influential. SEF auspices were also responsible for a white paper done by New York State and Pennsylvania fisheries groups. SEF had been dormant and has now been resurrected. Its purpose is to respond to two specific issues related to the new 2017 FFMP that is a ten-year agreement. It has some elements in it that are not fully specified. That is of great interest to the fishing community and the Upper Delaware community. One aspect is the issue of thermal stress in the river, sometimes with trout. Also, activities of the River Master sometimes cause

sudden drops in the river level which can be destructive. There are proposals in the new FFMP to deal with those new issues. The subcommittee has been charged with evaluating the proposals. They are very pleased as they have been agitated about this for many years. UDC members may remember Dr. Kolesar presenting in 2013 on alleviating thermal stress on the Upper Delaware. Those ideas that they proposed are in some part incorporated in the FFMP. SEF is a committee comprised of reserved members: Ross Shramko, New Jersey is from NJDEC; Daryl Pierce, Pennsylvania from the Fish & Boat Commission; Ian Park, Delaware; Chris VanMaaren, NYSDEC; Peter Sharpe, NPS; Lori Emery, NYCDEP; Molly Hesson, Philadelphia as well as Non-Reserved Members: Peter Kolesar, Columbia University; Jeff Skelding, FUDR; Jim Serio; Erik Sildorff, Delaware River Keeper; Sheila Eyler, Delaware River Basin Fish and Wildlife Management Committee (DRBFWMC), U.S. Geologic Survey (USGS) and Garth Pettinger, Trout Unlimited. Reserved members have no term limits and were appointed by their agencies. Non-reserved members are volunteers with two year terms subject to DRBC/RFAC approval. This is a group of environmentally oriented, scientific people. They are either biologists or hydrologists with technical backgrounds that are able to contribute to work or evaluate work.

The first issue they must address is Rapid Flow Reduction. The River Master rigidly follows the rules of the 1954 Supreme Court Decree to keep flows at Montague at 1750 cfs. Every day the River Master estimates how much water is going to go down to Montague and whether there will be precipitation. The River Master can then order New York City to release more water from the reservoirs, making up for any gap of that 1750 cfs. Those are called directive releases. As a consequence of their very rigid interpretation of the Supreme Court Decree, sometimes they turn the valve on and the next day they turn it off. Turning the valve off is devastating for the river because it is very unnatural and can harm the fish and other organisms in the river. Boyar asked if the River Master can also order water out of the Mongaup through a system that's not associated with the City of New York. As far as Dr. Kolesar understands the River Master has no authority over that but the River Master has to be aware of what's happening. There are problems that can be caused because of what happens on those tributaries. A decade ago, there was a consequence of what happened on the Lackawaxen with yo-yo releases on the weekend. Dr. Kolesar provided a graph of September 2015 showing the river levels at Lordville, NY. The graph shows the river level dropping really suddenly, the River Master called for an additional release and it jumped back up. Dr. Kolesar said this is dysfunctional, no matter anyone's point of view. Dr. Kolesar was able to provide pictures of the river the day before on September 28, 2015 and the day after at Lordville. The difference is absolutely devastating. It's not so bad for the fish as they believe most of the time the fish can move but it is bad for the insects the fish feed on. The insects can't move quickly and if it's a hot day the bed that was pictured full of insect life will perish. Boyar asked if there was a name for this act. Dr. Kolesar said it's called "dewatering" or "yo-yo releases".

Dr. Kolesar spoke about the Rapid Flow Change Mitigation Proposal in the 2017 FFMP. The proposal timed around June 1st is to allocate a certain amount of water of 1,000 cfs-days that can be expended to overcome these situations at the discretion of NYSDEC. They, in conjunction with the River Master can release additional water to overcome that from that allocation. There are some rules. If the flow is very high they will make that reduction over two days instead of suddenly. When flow is over 700 cfs, releases are reduced over two days, first to 500 cfs, then to 300 cfs. If the flow is lower, they will do a one-day reduction. When flow is between 700 and 450 cfs, they do a one-day reduction to 300 cfs. Peckham asked where is this measured. Dr. Kolesar said at Lordville. Peckham also asked what does 1,000 cfs-days means. Dr. Kolesar said a cfs day is a day (24 hours) in which you release one cubic foot per second. Peckham asked if 1,000 cfs was the maximum in the bank and Serio said yes. Dr. Kolesar said it looks like there is enough water to handle a single event or two events if they use the method of dropping down over two days. Serio said, by comparison NYC uses about 700 cfs per day.

Some major questions before them are: is that bank of water enough; how frequently does this happen; how bad is it and is this a proper way to go. It is a matter of accounting, going back into river records and finding when these instances happened, how frequently and imitating how they may play out. SEF is expecting a report from Pettinger on some of these findings. Henry asked if the River Master is on board with this project as the River Master will now have to monitor Montague and also Lordville. Dr. Kolesar said the idea is NYSDEC is going to monitor Lordville and then is going to make a suggestion to the River Master. The River Master has essentially signed on in the sense that in one fashion or another the River Master agreed to the 2017 FFMP. In fact, when it was unveiled it was the River Master who made the presentation of it. Dr. Kolesar's own feeling about this is SEF should make as few rules as possible and consider NYSDEC will act in good faith and give them maximum flexibility to implement

these changes. Greier asked if PADEP and NYSDEC work together. Dr. Kolesar said they do and they communicate quite well but the rules in the FFMP give the obligation to NYSDEC. Serio said he believes that is because the reservoirs are in New York State. NYSDEC was the first body to try to impose on this whole system any kind of conservation releases; it wasn't in the Supreme Court Decree. No one was doing it. NYSDEC sued the city and forced them to implement the very first conservation rules.

The second issue SEF is looking at is Thermal Stress Mitigation. Trout are a cold-water fish species. They thrive best when river temperatures are below 68°F. Temperatures above 75°F can be lethal to trout if sustained for several days. The health of the Upper Delaware trout fishery is dependent on cold water releases from the bottom of the three NYC dams on its headwaters. Dr. Kolesar said the coldness comes from the dams. The water at the bottom of the dam is cold because that's when the water is released and that's created trout fisheries. We are the beneficiaries of these reservoirs; at the same time SEF is doing battle with them to try to ameliorate conditions in the river. NYC releases more water from Cannonsville Reservoir because the drinking quality is lower than that of Pepacton. There are ample releases almost always under the FFMP to keep the West Branch of the river cool down to Hancock. The issue is from Hancock to Lordville, partially because water comes through Pepacton, warm water comes in from Beaverkill. The concern among anglers is the main stem from Hancock to Lordville and keeping the river temperature below 75°F. One of the reasons that section is special is because it is a wonderful rainbow trout fishery. Dr. Kolesar provided a graph of Lordville daily temperatures for the summer of 2010. In the graph the dotted red line shows 75°F (or 24°C Centigrade). The red line is the maximum daily temperature taken off of the Lordville gage. Every time it goes above the dotted redline there is a problem. There were 24 thermal stress days from May 1st to September 30th clustered in 4 stress events. This was a bad year. They are also interested in forecasting that kind of event is coming, anticipating and doing something in advance. Their thermal mitigation strategy theory is when the river gets too hot, or when it is predicted to get too hot, temporarily release more cold water (pulse release)- particularly from Cannonsville to protect the wild trout in the upper mainstem – Hancock to Lordville. Boyar said these were the times in 2010 when you would read in the newspaper “get ready for the heatwave”, the river would be a certain level and you would know there would be a thermal event. UDC members would start to call and find Decree party members who would be out of town on vacation or unavailable. What SEF is doing is to have a mechanism in place instead of what UDC had to do in 2010. Referring to the Lordville Daily Temperature Summer 2010 graph Henry said he knows there were releases at the same time at the reservoirs. Were the drops in the peaks of the events in temperature due to an additional release? Dr. Kolesar said that is exactly part of their research, understanding the peaks and valleys. There are some major factors at play. The amount of cold water coming out of the Cannonsville reservoir, the air temperature in the region, how hot and how much water is coming out of the Beaverkill and cold water coming out of Pepacton Reservoir are all factors. Their research is looking at those factors simultaneously to sort out which is the dominant factor and particularly their big question is how much influence can you have by increasing the discharges out of Cannonsville.

Peckham said a third of the water that comes out of Montague comes out of Cannonsville and to have releases from other places without Cannonsville you will never make the marks. Dr. Kolesar said that is their policy because as said earlier the Pepacton water is cleaner, so they have to put water into the river. It suits the people that enjoy fishing just fine because it protects the West Branch. Serio said one thing that may not be clear is that water that NYC uses goes down an underground tunnel. That's a diversion. Water that comes down the river is what New Jersey uses and also Philadelphia. The releases to maintain Montague are directive releases which come down the river. NYC can make the Montague target anyway they like. They can release water from the Neversink, Pepacton, or from Cannonsville. It's almost always released from Cannonsville. Henry said the River Master also takes into account releases from Mongaup and Wallenpaupack. The whole strategy of the FFMP was to have a floor and they can't go below that; otherwise, they could dry it up. Jeffer said it is interesting to look at that temperature chart and see a high spot right after there is a low spot, it's not gradual. Dr. Kolesar said more than anything else this is driven by the air temperatures. It is also driven by the River Master. For example, in 2010 the River Master did some directive releases and that's the kind of meticulous research they are compiling. Some implementation questions SEF is tackling are: When should you do a mitigation release, do you wait to get in trouble or do you anticipate, do you depend on the weather forecast; how much additional water should you release; how much water would you need over a summer?

The Thermal Mitigation Bank proposal in FFMP 2017 involves a bank of water (2,500 cfs-days) to ‘permit’ increasing releases during thermal stress events in the Delaware main stem, East Branch and Neversink. Releases are made at the direction of the NYSDEC and administered by the River Master and NYDEP. That means there could be a possibility of releasing 250 cfs for 10 days. The interim proposed guidelines suggest from September 15th to July 6th the goal is to prevent a first day above 75°F with use capped at 1250 cfs days. From July 7th to September 14th, the goal is to prevent three consecutive days above 75°F or a 1st day above 77°F. Peckham asked if the thermal stress days are predicted days. Dr. Kolesar said he is looking at days that actually happened between 2008 and 2018. Some questions they’ve started to address are: How big is the problem, they went back to 2008 for a few reasons. The Lordville gage was not always functioning before that date and 2008 is when the FFMP started. Taking the 75°F criteria they started counting. Over the whole time period there were 78 days on which we were above that stress. They clustered into 18 events. In six of those events the Decree parties tried to do some thermal mitigation releases. They were partially ameliorated. One day got as bad as 81.3°F. There is no doubt that if trout are exposed to that temperature they will die. There were some extraordinarily severe events. One lasted 12 days, another lasted 10 days. This data is an underestimate of how bad the problem really is, for two reasons: due to the six thermal mitigation releases and the Cannonsville seepage drawdown in July of 2015, the above are underestimates of the thermal load at Lordville. Henry asked Dr. Kolesar to elaborate on what Decree Parties’ special thermal releases meant; is that something that is already in place. Serio said it was special because there wasn’t anything in the existing document to say how to do this. The issue was that it required the unanimous consent of the Decree parties. Peckham asked if they gave that power to the River Master. Dr. Kolesar said no, they’ve given that power now to NYSDEC. Peckham asked if the River Master controls the flows. Dr. Kolesar said the River Master just controls the flows to extent of meeting the Montague target. NYSDEC can now call NYC and say they need water for thermal, it doesn’t require anyone else’s approval as long as that bank is available. It was important to SEF to understand the seasonal pattern of thermal stress over the years. Global warming doesn’t seem to be a trend but there does seem to be a pattern. July is clearly the worst month. May and September are also problematic months. To formulate a policy, they have to take these patterns into account. The history over these eleven years tells us something and that can be amplified by looking at other weather records, for example by looking at Callicoon whose gage has been operating for a long time and there is a relationship between temperatures in Callicoon and Lordville. The second research question is how much water does it take to cool the river at Lordville. If you knew we are now at 76°F and you want to knock it down two degrees, how much water do you need? The committee is trying to answer that in two ways in parallel. They can statistically analyze the peaks and valleys and what they are caused by and build an equation for the temperatures at Lordville as a function of the temperatures at Binghamton as a function of the water being released at Cannonsville and the temperatures there and the water being released at Pepacton, the amount of water coming in from Beaverkill and its temperatures and build a picture from that. It also makes sense to look at the six thermal mitigation releases that were made between 2008 and 2018. The Decree parties did what SEF would have liked them to do under duress. They are using this information as ‘experiments’ and can find out what happened on those days and what the impact is. Another crew on SEF is using analysis done by the U.S. Geological Survey. Dr. Kolesar stacked up all of the summers from 2008-2018 and referred us to a slide of that data to see the “ups and downs” impact of Cannonsville releases. Dr. Kolesar provided a slide of an engineering perspective to cooling Lordville. The contributions to Lordville are: 35% of the water is from Cannonsville at 27 river miles; 11% from Pepacton at 42 river miles; 22% from Beaverkill at 35 river miles and 32% from tributaries. The further the water travels the more it heats up. Weather is also a factor. In theory there are complicated equations that explain

this;
$$\frac{\partial T}{\partial t} = -\frac{\partial(QT)}{A\partial x} + \frac{\partial}{\partial x} \left(EA \frac{\partial T}{\partial x} \right) + \frac{H_f}{\rho c_p D} + S_b$$
 but the theory doesn’t apply too well because it involves factors they aren’t able to measure, said Dr. Kolesar. They are trying a simpler equation. Peckham asked when Dr. Kolesar says Binghamton air temperatures does he mean National Weather Service. Dr. Kolesar said yes. Peckham’s follow-up was are they readings for Hancock and Lordville. Dr. Kolesar said for this work he has been using Binghamton. The Binghamton data is the most reliable data. The gages at Lordville, Hancock and Pleasant Mount go up and down so data is missing. Dr. Kolesar knows there is a correlation between Binghamton and local gages. In the next phase of their research Dr. Kolesar wants to try to forecast when these episodes are going to happen. From Binghamton he has the weather forecasts so he can compare those with the actual temperatures. Another group of researchers at the U.S. Geological Survey has made the same decision. Dr. Kolesar’s team derived a regression equation that measures the simultaneous impacts of Cannonsville releases, Binghamton air temperatures, and Pepacton releases together with Beaverkill flows at the Fishs Eddy gage. From this they estimate it takes roughly 65 cfs from Cannonsville to lower Lordville temperatures by 1°F. This isn’t a precise measurement yet. Henry said he understands it’s not

precise, but how long do they have to release the 65 cfs. Dr. Kolesar said they don't know. That number is the marginal impact of Cannonsville releases and the Lordville temperature. The question is how much to release, for how long and how that is related to the current air temperature and if the riverbed is heated up. From all the analysis they get their equation. Peckham said NPS wants 900 cfs at Callicoon; is that practical? From a fishing perspective that's a good question. Dr. Kolesar said he believes that is going to be something they try to answer in year two. It is on the agenda of the Decree Parties. He feels it will be a contentious issue because even now there are discussions in SEF that are about trout, down river there are people that are interested in small mouth bass and walleye and they want to make sure what SEF is doing for the trout doesn't interfere with warm water fisheries. When you start to talk about dwarf wedge mussels at Callicoon there are disputes. Part of the problem is the scientific basis for making judgments about dwarf wedge mussels is even more flimsy than the scientific basis on trout. Serio said they have continually had to tell themselves by May 31st SEF's task is to evaluate the two main programs and say if the programs are working and how can they improve them. All the other questions are down the road; you have to take them in sequence. Peckham said you have a situation at Lordville where you get major dwarf wedge mussel pits, some people have said cold water is good for them, some say it's not. Serio said one thing that is known is that they have to be covered with water. You can't expose them and the Lordville bed is exposed. Dr. Kolesar provided a chart from June 7th through June 15th, 2008 when they made one of the special thermal releases. The red graph is the discharge coming out of Cannonsville following the FFMP rules at about 200 cfs. They knew the river was warming up so it was jacked up to 400 cfs. It ran for a little over a day at 400 cfs then it was dropped to 200 cfs. SEF is trying to find out what was the impact of making that thermal release. The purple line is Lordville, it takes time for the water to get from Cannonsville to Lordville. It happens about twelve hours later. The releasing of water bumped it up and should have some cooling impact. The yellow line is the Lordville temperature. You are able to see the stress. They had to rant and rave for days for them to do something and the river was already in tough shape. The green line is Fishs Eddy, which is a gage on the East Branch of the Delaware. Dr. Kolesar noted that Lordville was warmer than Fishs Eddy but the yellow line is always above the green line. That happens most of the time and makes no sense, because the water is traveling further down the river. What happened is when the cold water got to Lordville it cooled down and the Lordville temperatures start dropping faster than Fishs Eddy drop and they hit at equilibrium at six hours after. Then for the next 24 hours you can see Lordville is below Fishs Eddy. SEF is trying to find a point where the cold water has an impact and look at the difference between Lordville and Fishs Eddy's temperature 24 hours before and 24 hours after and that's how you can judge what the impact is. They have done two completely, a third is almost done. They need analysis of the six thermal releases. The mixing idea is the key to the third approach to this. Dr. Kolesar said imagine at Lordville, forget for a moment that the water is moving and it's a big bathtub of water. You have a tub of cold water up in Cannonsville. Suppose you filled a bucket with cold water and you took it down to Lordville and you dumped it in and you go down. There's an equation. When the water is moving the same kind of thing is happening, of course it's more complicated. So the third approach is trying to estimate the impact with the mixing of the waters with the simultaneous effect of the air temperatures. They are hoping these set of equations go up on the U.S. Geologic Survey to try to take all of this into account so this can be a third way of estimating. SEF has carved out a set of questions related to thermal releases. They have made progress but there is a lot to be done. Again, they have their due date of May 31st and the Government shutdown is complicating that. They were supposed to have a meeting today and had to cancel that due to many members being Federal employees.

SEF's open questions include additional research on the impact of Cannonsville releases on Lordville temperatures, which is underway. Also needed are more statistical regressions, analyses of all six thermal releases, and an application of the thermodynamics river model developed by the USGS. Can the timing, intensity and duration of thermal stress events be predicted; is it more important to mitigate thermal stress at the beginning, or at the end of the summer; what should the rules be for commencing a thermal release? Making a release versus not making a release is taking a gamble and you will be wrong some fraction of the time. Some part of that 2500 cfs will likely be wasted. Something Dr. Kolesar found with the data is that they are pretty good at predicting heat waves. Boyar asked if there was any provision for resetting the 2500 cfs if it was spilling out of Cannonsville. Dr. Kolesar said it's not in the rules now but he wished he had thought of that. Greier noticed on the charts that July is the worst month. Maybe next year you can focus on that in the coming year regarding flexible flows to get a perspective. Dr. Kolesar said that is conceivable, and asked all to think about the summer of 2018. When there is a lot of water in the river you do not get thermal stress. It's not just air temperature but a combination of high air temperatures and relatively low flows. If we are in a new situation, their colleagues at Columbia University believe because a consequence of

global warming here in the Northeast, there will be more precipitation. More precipitation is a little better for us. Henry asked if SEF is looking at actual thermal kills. How many times has a true thermal kill been reported and has there been loss of cold water species? Serio said he would say none. Henry said that he thinks that would be part of the overall equation as well because a large project is to protect the fish. People can say "you're doing a lot of work but has it ever saved a fish?". NYC has said that to them on occasion in meetings. When those factors play in like high air temperature and low flows the fish will move to cooler waters. The counter-argument from the fish and biology people at NYSDEC and PA Fish and Boat Commission is that the purpose of this program is to keep the fish from moving. It is embarrassing that we say on one hand that this is one of the finest trout fisheries in the world and on the other hand say you have to protect the fish; they need more water. Serio said there have been observations of dead trout but he cannot quantify it as massive. The literature across the board suggests above 68°F trout start to get stressed. How much stress does it take to kill them? There are some numbers that actually show 77°F for 10 days is lethal. Peckham said essentially the FFMP is to stabilize and protect the fisheries. Dr. Kolesar said that wasn't their purpose but he believes that was an insurance against the rolling releases that used to happen. Serio said not just fisheries but the whole ecology of the river is impacted. A stable environment is good for a lot of things. Henry said when NYC put in their six mega-watt hydroelectric plant there are some concerns. There was some talk about pumping water over the spillway and what would be the adequate release for Cannonsville because they are going to shut off all of the valve work and spill. UDC asked what an adequate flow was if all they are doing is pumping water over the spillway. He wasn't sure if it would go back down to the 45 cfs. There's a few years before the project is to be completed but Henry believes this is the time the experts should be thinking about what an adequate release is. Serio said NYC has asked DEC and PA Fish and Boat what time of the year would be preferred; at least a conversation is happening. Remember all of this is off the table when a drought is declared.

Boyar said we have just heard a scientific and technical analysis. Everyone complains about the weather but no one does anything about it. Here is a river issue SEF is trying to do something about, figure out and learn something from. There is a five-year trial period and whether it is successful or not will be judged by others in time. How much do you get paid for these thousands of hours that you and Jim have spent researching, Boyar asked Dr. Kolesar. Boyar noted all that this is done on a voluntary basis and he applauds them for that. The interest in this is not casual; it is deep and profound. Members of UDC Water Use/Resource Management Committee thanked them for coming to speak. Dr. Kolesar said he appreciated the thought-provoking questions that were asked. Boyar suggested posting the Power Point presentation on the UDC website with the WU/RM meeting minutes.

Other: None

New Business

Joint Legislative Air & Water Pollution Control and Conservation Committee article: Golod provided the article for the committee noting we had Keith Pierson in to speak at the UDC meeting on January 3rd 2019 on Erosion and Sediment Pollution. Even though this article takes place in North Carolina the highlighted section emphasizes what the potential risk for storm water runoff is for a watershed. It reads, in part: "While nutrient runoff was one cause for dead zones in streams, there was another major culprit: storm water. In developed areas where a significant amount of surface area is covered in impermeable structures, storm drainage can result in intense flows to streams when rainwater would normally seep into the ground. These heavy storm water events have a few detrimental impacts. Firstly, they lead to heavy erosion. This can change the flow pattern of the stream, creating a series of pools rather than a consistently moving body. The other component of concern is what the storm water carries. Nutrient pollution and pesticides from managed green spaces and farms, pet waste, road surface chemicals and other harmful substances are washed into streams."

Delaware River Flow and Storage Report: A copy of January 14th NYC Current Reservoir Levels was provided in members' packets. Total combined storage was at 96.3%. Normal storage for the same date is 86.1%.

Other: Ramie said because of an article written in the paper by Peter Becker about the last UDC meeting, Ramie received an email from Lewis Mennig from Mid-State Communications. Mid-State Communications is the company which installed the outdoor warning siren system for Schoharie County. The company has offered to do a presentation for us to provide more details on how the technology works, the costs, and impacts. This information

could be extrapolated to the study underway by NYC DEP to improve its public notification system for any emergencies at the Cannonsville Reservoir. Ramie has asked them to come to the March full council meeting. We will be sure to invite the county Emergency Management Agencies so they may ask questions. Mid-state has said their system is cost effective and has saved lives for Schoharie County. Adam Bosch from NYC DEP offered to come back and report on the findings of their consulting study. The contractors, Schnabel Engineering, Inc. (SEI), received an extension of their contract. Bosch expects those findings by early April. Boyar asked if it would be prudent to invite Paul Rush. Ramie and Peckham agreed.

Greier said the *Sullivan County Democrat* ran an article on January 8th entitled “Kellams-Stalker Bridge Renovations completed.” Through the course of the article they refer to the Upper Delaware as a National Park four times. Greier feels maybe they didn’t know that it’s not a National Park. Perhaps UDC should be the ones to inform them or someone personally. It was something that became a main point in the opposition against this becoming Upper Delaware Scenic and Recreational area. That was the beginning of the formation of UDC. Ramie said that was a press release from the NY Governor’s Office; the paper itself is not responsible for the language there. Peckham asked what do you call this? Ramie said “a unit of the National Park System.”

Public Comment: None

Adjournment: A motion by Dudko, seconded by Jeffer, to adjourn the meeting at 8:51 p.m. was carried.

Minutes prepared by Ashley Hall-Bagdonas, 2/1/19