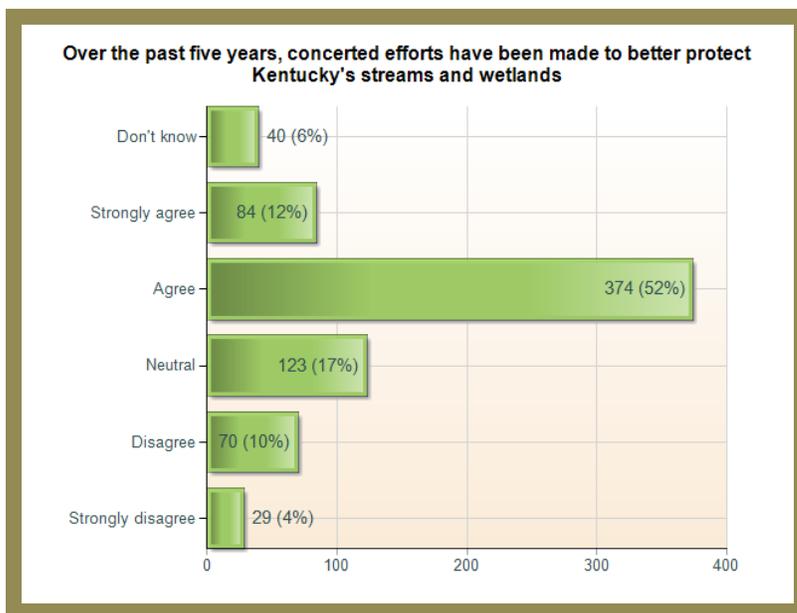


CURRENT REGULATORY EFFORTS:

The Challenges and Opportunities facing Federal 404 and State 401 Permit Programs and Kentucky's Mitigation Program in Conserving and Restoring Kentucky's Streams and Wetlands

OVERVIEW:

This section continues the discussion on Kentucky's efforts at stream and wetland conservation and restoration by focusing on the current challenges and future opportunities facing Kentucky's regulatory and mitigation programs. In general, when knowledgeable stakeholders from across the state were asked to respond to the following general survey question: "Over the past five years, concerted efforts have been made to better protect Kentucky's streams and wetlands," a large majority of stakeholders (64%) either agreed (52%) or strongly agreed (12%) with that statement (Survey results below).



Survey Results: The vast majority (64%) of respondent either strongly agreed (12%) or agreed (52%) that concerted efforts have been made over the past five years to better protect KY stream and wetlands.

These survey numbers (n=723) provide some sound indication that Kentucky is making headway in its stream and wetland restoration and conservation efforts, insofar as a majority of knowledgeable stakeholders do concede that the state has made solid progress. However, a number of our advisory committee members and other persons that we talked with over the telephone sounded words of caution in addressing some of the regulatory challenges, but they also provided positive direction.

In keeping with this guidance, the following section focuses on our panel and telephone interviews with steering committee members and other stakeholders. The first section summarizing their views on current regulatory efforts and the challenges facing our state's regulatory agencies and mitigation program while the second section presents their views on the potential opportunities and next steps that should be taken to improve upon Kentucky's stream and wetland restoration and conservation efforts.

Section 1: CURRENT REGULATORY EFFORTS AND CHALLENGES:

When asked to tell us their thoughts on current efforts in Kentucky to conserve and restore stream and wetland areas, 16 of our 33 advisory members spoke directly about Kentucky's regulatory efforts. And, as with the first section on "no-net loss," a good number of advisory persons mentioned the Federal 404 program, the State 401 programs or spoke about the *In-lieu Fee* Program. As one, steering committee member noted, "Sections 404 and 401 of the Clean Water Act are responsible for many of the current conservation and restoration efforts in Kentucky." And as another noted, without these programs, "there would be no restraints at all." Others had other comments regarding the 404, 401 and *In-lieu Fee* programs:

- It hasn't been around that long [referring to the *In-lieu Fee Program*] I don't know, 4 or 5 years, but their starting to get a lot of products built. They do natural channel design type work and when they go in and restore the stream, they restore the functions supposedly and try to recreate the natural meandering pattern of the stream versus a channelized ditch which we mostly have. There's lots of projects that have been implemented, their kind of in the monitoring stage. So that's been a pretty good success



- I feel like there are some good programs out there. In-lieu Fees is a good program. Though I do feel like that program does need some flexibility in order to be able to address the needs of streams in Kentucky
- Good question! What came to mind first was that most of the wetlands and streams being built in Kentucky now, are being built because we have to build them, they are being built for required mitigation. When I go out and see a stream or wetland restoration project, most of the time it is financed through required contributions through a program. It's being designed by a business, such as an engineering company, that is a profit-making company, and this is being required to make up for losses to wetlands and streams. Seems like much of the work is because somebody had to fill a wetland for development or they had to move a creek because they were putting in a highway and they have to do this. I'll just go briefly into why that is a concern to me: The wetlands and the streams that many of these contractors are building, they are meeting requirements for mitigation. A comparison is: would you rather live in a tent, or your own home? Well, everyone would rather live in their own home. A tent may provide the requirements for shelter, but a home is going to be much more comfortable, and that is what I see with many of these mitigation projects, unfortunately, is that they are meeting the requirements, but the wetland doesn't really look and function like a natural wetland would, so I think there is a lot of room for improvement.
- Compared to many other states in the United States, Kentucky falls way behind them in stream and wetlands issues; both with regard to regulation and the level of citizen involvement in these issues. When considering stream restoration and stream mitigation, the opposite is true.
- We are still learning stream restoration techniques. The 401 program seems to be getting much better at its handling of projects....



Stakeholders who Commented on Current Efforts in Streams and Wetlands Protection by referencing the 404 and 401 Permit Programs and/or the *In-lieu Fee* Program:

Well, that is a good question. As in whose efforts, like the State of Kentucky or Kentucky overall? I see a lot of involvement on the regulatory side such as the Army Corp of Engineers on giving permits and I think that is pretty active enforcement in this state. Of course there is the mitigation fund and the US Fish and Wildlife and Kentucky Fish and Wildlife do a really good job at managing that so in that aspect when it comes to stream impacts I think that they are pretty good programs...

...Being from Western Kentucky, there are plenty of programs that help the avian flyways. Fish and Wildlife have done an excellent job with that restoration. It is my understanding that they are doing a pretty fair job, but that is hard to say without having all of the information in front of me.

Well, I think they are acceptable, but I think they could be a lot more aggressive in the sense that we could be utilizing more of those mitigation funds from transportation ... we could be more active in getting more resource protection with those dollars if we were a little more aggressive in that effort.

Adjacent photo: Kentucky stream in need of major restoration. *Above photo:* Same stream several years after restoration and re-vegetation of riparian zone. *Photo Courtesy:* Joseph Zimmerman, Kentucky Department of Fish and Wildlife Resources, February 6 2009 presentation.

When speaking about the *challenges* facing the protection of our state's water resources, several steering committee members continued on the same track and made references to challenges facing the federal and state 404/401 programs and Kentucky's mitigation program:

- I feel that the 401 and 404 programs are (ironically) barriers to the efforts to conserve and restore our streams and wetlands. The permitting process is extremely cumbersome and extremely expensive... It seems you can more quickly get a permit to impact a stream than a permit to fix a stream. There is just something inherently wrong with that I think... It takes a huge amount of work and man power. In my opinion it should be quicker to get a permit, we should not have to wait so long.
- Permanent protection of our projects... [and] Long-term stability: who pays for projects if they go under or if there are complications? It is a challenge to try and figure out where the responsibility lies. The In-lieu Fee program has a limited number of staff on board and the in lieu fees continue to increase every year. People only have two choices right now: either pay in lieu fee or do mitigation yourself. It is easier to pay up the money and write a check than to do the work individually. Another challenge connected to in lieu fee is the economic factor of funding. Appropriate use of funding does not always occur. Many external forces push for the money to be spent in certain areas such as in sewage treatment. People want to use the money on projects it was not intended for which as an end result causes a loss in productive work on stream and wetland mitigations.
- [Referencing the State 401 Water Quality Certification Program] they have four people that cover the whole state of Kentucky. I think they do ok, but really, if you want to get your permits faster or get your mitigation on the ground faster, then they need more people to evaluate and get those done.
- We have to make sure that we do mitigation not in the easiest place, like in the flat cheap ground where we have a farm field where we can make a bunch of wetlands and streams. We have to do it where it's right for the environment. We have to think about the people who are there, too. We don't want to take away every stream that they have just because it's easier to make this huge 100 acre plot of land where we can do all the mitigation. It's a real balance—you want the mitigation and we want to be able to balance and get enough credits and that kind of thing, but we can't lose sight of what we're losing whenever we fill in those streams and say, "Let's run two or three counties away and make this a mitigation site."

One steering committee member, very familiar with the workings of all three programs, spoke at some length about the on-the-ground challenges to stream restoration:

..Well, I think there are three, almost like programmatic things that are challenges....

1. **One is easements themselves.** You've got to put these things somewhere, and in a stream you have a long length, there is usually a lot of property owners, and so...to get an easement to do this kind of work, or to even get access so you can walk and do your assessments, that's a challenge. So, and there is an easy solution that people should be paid for that. The fee-in-lieu program, right now, people have to sign an easement, but they typically don't pay the person for the property. If that was my property, and I didn't...want to have a prairie in my back yard and you said 'well, we are going to put a prairie there'...most people aren't going to do that. But, if you are willing to pay them, and I think that's appropriate for the state to pay people for a perpetual easement, then that would certainly reduce that impediment right now. That's one of the main impediments for the in-lieu-fee program, or anybody trying to do stream restoration.
2. **The other one is the utilities** that are being placed, and are going to be placed in eastern Kentucky at some point. When you put a pipe up the middle of the valley, and you have a highway in the middle of a valley and you have a stream in the valley, if you do the stream restoration first or along with putting utilities in, that makes sense. Once the utilities are in, it's a nightmare trying to do a stream restoration, that's why urban stream restorations are so difficult. So, I would recommend that the in-lieu-fee program or anybody else, if there is a sewer line going through, that they do the stream first, then the sewer line, or do them together. You can actually use the sewer line placement as part of the restoration to do controls, if you are clever enough to work with that.
3. **The other one is other funding sources:** It was mentioned that...right now, basically, we have to damage a stream to restore one, and sometimes we are burying the stream, and then we are doing a restoration on a stream that, maybe, if you let it alone for two hundred years and I mean, that's a long time, two or three hundred years, that's what I suspect it would take some of these things to work themselves out of the system, could be longer than that, but...if you are to damage somewhere and then come over here and try to replace it, that seems like not quite the system we want to work on in the future. That's...going to not balance out after a while. So, we need some other source besides a damaged source for funding streams. This is important for the state. And after people see how streams turn, how they change, and how other species come back in, and how the diversity increases after you do these restorations, even in so called pristine areas, I think people would see the value of doing this. So there needs to be some other source of funding.

Two steering committee members spoke directly to the difficulties in promoting investments in stream and wetland banking:

- That would be great if we could have more banks. To me, a bank is an entrepreneur. We have to have somebody who's out there, who's got a bunch of money and wants to sink it into some part of the ground where he can sell mitigation credits to people. So, it's almost a gamble. He's got to think, "How many projects are we going to have come through this particular area that I can sell credits too?" We have a few dedications, but not a whole lot. We've had a few over by Louisville, where there's a couple of wetland banks and one stream bank, but that's been about it. We just haven't had a big outpouring for people wanting to do those.
- Federal regulations require a private bank to be the first option to be utilized for such programs as 'in lieu fee.' The main problem is that there are no significant banks in Kentucky. Small private businesses are struggling in this economy and profit from a stream bank usually does not return to the bank until about five years down the road from the bank's investment point. Thus, people do not want to take the risk of going bankrupt just to help the environment. There needs to be a way to make the success criteria achievable and obtainable so that permits will get out in a more expedient manner. Projects have to be economically sustained to survive.



US Fish and Wildlife Service officials introducing a new wetland and stream mitigation site that USFWS helped acquire for the Kentucky Transportation Cabinet. According to the Federal Highway Administration, the 60-acre site includes 3,700 linear feet of stream and will be owned and managed in perpetuity by the Southern Conservation Corporation. *Photo credit:* U.S. Department of Transportation. As one steering committee member mentioned, "Most state highway departments have an antagonistic relationship with the U.S. Fish and Wildlife Service but Kentucky does not. There is an amicable partnership in motion. They help us locate locations for mitigation for large scale watershed projects."

Stakeholders who Commented on the Challenges facing Streams and Wetlands Protection by referencing the 404 and 401 Permit Programs and/or the *In- lieu Fee* Program:

Again, freeing up that mitigation fund; ensuring that there continues to be financial incentives for land owners who protect those resources from a state perspective, and then the ability of technical expertise to assist individuals in protecting those resources..."

...Probably funding and then, sometimes there is a problem with getting the land to develop these wetlands on. Some of it is on private land, and going through all that to get that done

A lot of the programs I think have good intentions but become very difficult to implement on the ground. We need more flexibility in programs like the stream mitigation program so that even though credits might be generated in one water shed, if you know that you have a significant outstanding resource water someplace else that needs protection and could benefit from a mitigation project, it would be great if we could figure out a way to spread those credits around- making sure that we are getting the conservation where it's needed, basically. There are lots of folks that have developed guidelines for watershed significance and the Nature Conservancy certainly is one and Fish and Wildlife has their own plan and a lot of them do very closely resemble one another. Anything we can do to remove political or programmatic barriers, I know that sounds very typical and it is, but it's still a problem. Anything we can do to enhance agencies being able to work together instead of making it more difficult for these agencies to work together. One obstacle we seem to have trouble with, again, is the implementation of the Clean Water Act in general. Just trying to overcome this difficulty in enforcement which I know sometimes stems from a lack of staff or support for that and finding ways of getting over that hurdle.

I think narrow exclusionary partnerships. I think in certain aspects of the field, there is a certain perceived favoritism between individuals that control the funding and the individuals that receive funding.... There is still that. I think we need a strong scientific basis for some of the stuff we are doing. And, you know a lot more transparency in what projects are selected and why they are selected, and what ones are not selected, and why they're not so that people can maybe understand better how to focus those resources instead of doing such a shotgun approach.

Restoration, in most of the cases, you can't see improvement right away, or within the first five years, it may take ten to fifteen years before you start seeing the anticipated improvement,-and that is a major challenge to restoration work.

In short, many advisory committee members acknowledged the role of the 404/ 401 permit programs as well as the *In-lieu Fee* mitigation program as the cornerstone behind the state’s efforts at stream and wetland restoration and conservation. Advisory members also remarked on many of the challenges facing these three programs: Several, for example, noted the challenges in enticing investors into stream and wetland banking while others spoke about the on-the-ground challenges of securing easements and permissions from landowners to carry-out mitigation and restoration projects. Others mentioned funding for not only securing easements but for staffing. One advisory committee member noted that the State 401 Water Quality Certification Program is understaffed and that “they need more people to evaluate and get those permits done.” For one advisory member it was not only a question of securing additional funds but also protecting current pools of funding and staying vigilant as there are “many external forces” out there that are pushing for mitigation funds to be spent in “certain areas such as in sewage treatment.” They warned that “people want to use the money on projects it was not intended for which as an end result causes a loss in productive work on stream and wetland mitigations.”

Likewise, similar themes were repeated in our telephone interviews. Several stakeholders mentioned either the 404/401 or mitigation programs when talking about current efforts at restoring and conserving Kentucky’s wetlands. When mentioning the challenges facing these programs several mentioned the funding challenges and the challenges of securing permanent easements from landowners. However, one stakeholder (an engineer heavily involved in stream reclamation work) spoke about their *impression* of some “favoritism” within the mitigation program in how projects were selected and called for more “transparency” in why some projects were awarded funds over others. Besides more transparency, they argued for more rigorous methods in evaluating and assessing project successes as they said, “I think we need a strong scientific basis for some of the stuff we are doing.”

This tends to coincide with some of the comments made by several advisory members in that while the science of stream restoration is “relatively new,” Kentucky tends to “lead other states” in stream and wetland restoration techniques. As the science and application starts to become more established -it seems that now there is more opportunity for transparency and rigor in the coordination and sharing of project data and methods.¹ As one steering committee member, who is a heavily involved in mitigation work, suggested, “What I would like to see is instead of having to launch reports which are expensive and not seen by all parties, it would be nice for all entities involved to get together in a conference type of situation and present on the progress of our projects. This way everyone can talk about their successes and failures without being penalized for failures. This would be a time for the sharing of information and making the playing field level and equal between all parties.”

1. This is now a recurrent theme in restoration research. Hassett (2007) found that many project managers rated their restoration projects a success but that few projects had explicit quantifiable objectives. Many managers admitted the need to establish better methods for project monitoring. *Taken from:* Hassett et.al. 2007. Evaluating Stream Restoration in the Chesapeake Bay Watershed through Practitioner Interviews. Restoration Ecology. Vol.15. No.3. pp.563-572.



Top photo: Another Kentucky stream in need of major restoration. Bottom photo: Same stream after restoration and re-vegetation of riparian zone. Photo provided by: Kentucky Department of Fish and Wildlife Resources.

...I’m going to say that education is always going to be a challenge—making sure that we get the word out. Not only getting the word out, but also developing the understanding about how to do mitigation and that kind of thing. We’ve gotten really good at doing wetland mitigation because it’s been around for a long time. Since the late ‘80s or ‘90s, we’ve been doing wetland mitigation. Stream mitigation just came around in 2002. It’s a new and evolving science to get people to understand how to do it, what we need to do to control streams and prevent erosion and that kind of thing. That’s a true challenge here. It might be years, I think, before we’ll really be experts at how to design new channels and springs and fix problems out there on streams.
– SWCP Steering Committee member

Section 2: STRATEGIC DIRECTIONS AND OPPORTUNITIES:

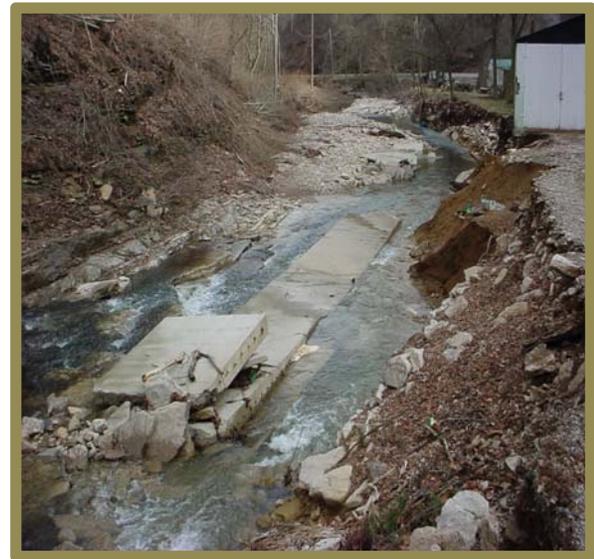
When speaking about current challenges facing the 404 /401 permit and mitigation programs, steering committee members began to recast these challenges into positive opportunities for stepping up the state's efforts at stream and wetland conservation and restoration. While one steering committee member noted that one of the problems "is that we tend to treat streams as drainage ditches or pipes, and there is little understanding of the connectivity to the landscape," they also noted the huge new potential for funding from such federal agencies as the National Science Foundation, US EPA and the USGS for further research and development within the field. And, as with several others, another advisory member admitted, "that stream mitigation is a very new science" but "as new and more accurate knowledge comes from this science then we will see more and more opportunities develop."

As the field of restoration ecology advances, two steering committee members mentioned the opportunity to expand and develop Kentucky's own set of monitoring tools so as to better assess stream and wetland functions, values and their recovery:

- The other end of that spectrum is that it goes back to what I was talking about earlier with the projects that are being implemented; we need to make sure that there is enough bio monitoring there as well, so that we know in fact what is being implemented is actually aiding the aquatic organisms that are there. A lot of these programs have five years out of monitoring; some of them don't include bio monitoring; make sure they include bio monitoring, and even periodically, at least, be able to go out even long term down the road, past that five-year point, and see if it is in fact the way it should be. I know that boils down to funding again, and I know that that's the problem. ...So we need to get the funds there for the monitoring, and we need to emphasize that.
- I know I'm kind of repeating what was already said... but, we have to have bio monitoring in order to see how effective these changes are. I mean, we can protect a stream. We can do things. We can stabilize riverbanks. We can add vegetation. We can put bends back in if we want to restore a stream. But it's going to be more than just a pretty-looking stream with clear water. Think of a functioning stream or wetland ecosystem. It should have members of – invertebrate members, vertebrate members, fish members – and that's something that can be addressed through bio monitoring. So, that should be at least a part of the restoration efforts, part of the effort to protect streams.

Developments within the science of stream and wetland restoration also have important regulatory implications in assessing and assigning value to our stream and wetland resources as one stakeholder noted in their telephone interview:

- We need to figure out how to, really, value our streams and wetlands. Because, right now, we don't have a good counter measure...someone says 'this factory is going to bring this many jobs and this much money so that's why we need to...fill a stream, or move a stream, or pollute a stream, or whatever it is.' And, right now, we don't have a really good way of saying...that's not good enough, because...this stream and the downstream uses are worth more than that. Find a really good way of trying to value our streams."



Kentucky stream with a high bed load of rock and gravel.
Photo provided by: Kentucky Department of Fish and Wildlife Resources.

...High bed-load stream designs: those are risky designs. There are already some in place and we have to wait and see how they hold up. These systems are where most people are having trouble in the state. There have been several farmers wanting to do projects on similar stream types and we have had to turn them down because we are saying I do not know if I can stabilize this stream channel. Aid needs to come from various participants such as universities, private entities, etc. In order to be successful everyone needs to start working together. –SWCP Steering Committee Member

Other persons stressed the need and opportunity for more education and outreach of the general public, landowners and local officials. For them, it was important to not only generate knowledge through scientific developments and research but that there were also opportunities ahead for generating understanding through public and landowner outreach. Yet, one advisory member did mention that even on this front, opportunities for education and outreach were improving and that, among local officials, restoration and conservation were less of a "foreign concept" than in the past. But others had this say:

- Educating the public about resources is very important. On the other hand, many people are getting farther and farther away from the 'natural' world. People need to know why wetlands and streams are important and how these systems work. Streams protect water quality, land, etc.

- ... I want to mention this is a good place to talk about land owners and farmers. I can tell you by experience one of the first things that you do if you go onto a farmer's field and he has a stream with a lot of erosion and stream bank problems, flowing out at corners and bends, when you start telling him what you can do to fix that problem, if he's been living on that property for his whole lifetime and maybe his parents' lifetime, if you start rattling off a lot of jargon to explain to him how you can fix his problem, depending on what you propose, he's going to know whether or not you actually know what you're talking about. I would say that because he's a farmer, not a stream geo morphologist, but what he has done that we haven't is witnessed what that stream has done for potentially the past 40, 50, 60 years of his life. He knows what happens when a tree falls down and blocks the flow and what happens when the water goes around it; he knows what happens when you put in a culvert and it blasts out that bank, because this gentleman or lady has witnessed this for their lifetime. I think when you're approaching people, it's very important not to come in to try to tell them how you're going to solve their problem, but again, it goes back to the education, to help them understand and utilize the knowledge that they have, because they've observed one stream their whole life and we've come out for three days and analyzed this stream and said, "Well, this is what we think we can do." What I would like to point out is that's a good opportunity for us to go, "What do you think we could do in this situation?" and incorporate that education into this program in the process of restoring the streams, because I think that's an area of — maybe I shouldn't use the word expertise — but there's knowledge that we sometimes overlook of these landowners and people that live on those streams.
- Well, my critical piece of advice for those who may be involved in this: show people how they can restore wetlands and streams, and they will do it. You've heard the saying; give a person a fish, they eat for a day, show them how to fish, they won't go hungry. Show someone how to build a wetland, how to restore a stream, especially a young person. I'll give you an example, (name) in New York; we built a wetland together four years ago. She has now built over 80 wetlands. (Another name) British Colombia...we built a wetland four years ago, she's built over 30, and she is helping the blue listed spade foot toad. I mean, it's amazing, once people see that they can do this and they monitor their success, and they improve on it, it's amazing what they will do. And it also comes to protecting wetlands; show them how they can protect a wetland. You are out for a walk, and you see something happening to your wetland, you notice that the water is really foamy, well, maybe you've got effluent coming into it, and maybe you could help track it down, and treat that. Or, if you know what a head cut is, you're looking at a stream, and you notice a head cut advancing in a stream, maybe you can take action to prevent that from advancing. So, again, it's education, it's showing people, and then giving them the information and the tools, and then, over time, I think we will have the funding, so that more of those will be going on, and it will be fairly common. Go to a school now, and ask a group of students, 'how many of you have been in a wetland?', and chances are no one will raise their hand. Maybe ten years from now, half the class will raise their hand, and that will be a good thing."
- ...there is no single change that we need to make that is most important, -there is no way to do one thing here. This is too great a problem. So, I would look at the three most important things and I think, education, of course, probably tops the list... We need to promote an environmental ethic.... I was at a youth summit yesterday and I asked how many children caught crayfish in the steam, I thought that was an American thing that you had, when you're a kid you catch crayfish, you bring them home, that's just an American thing. Well, it's not anymore. And that should tell us something about how people value streams, and I'm not sure they do. There is an environmental movement, but I think it's a lot of, really...a bit of fluff. The truth is - do they really appreciate it? I'm not sure that it's there yet. So, an environmental ethic is, by far, the top of the list for this whole thing.
- In the future we will need more land owner cooperation in restoring streams... and more education of Kentucky elected officials who are the "higher ups" with power. This would help us get more funding and support for this crucial work.
- ...Education... we keep mentioning, that reoccurring theme; I have a member of my own family who has a creek running through his property. The water backs up in the flood plain as it should, and the first thing he's telling me is, "I need to get a backhoe in there and straighten this creek out and get that water out of there." He had no intentions of harming that creek; that's not his goal; those are not his reasons. His mind is not understanding that through the morphology that's going on there, is that creek is doing what that creek wants to do and needs to do, and that is not in the forefront of his mind when he's thinking he needs to go in and straighten up this stream channel. What's more is he doesn't understand the additional principle of when you straighten that up, you start to cause the head-cuts, you start to cause the blasting out of the banks, you start to have erosion, and eventually, he's going to end up with more a problem by straightening up that stream channel than he would have had leaving it the way it is, allowing that river or that creek to come out of its banks into the flood plain. So there's where education can help. Now, if we can find someone that can come up with a brilliant way to educate those folks, we'll be in good shape.



Gravel dredging in a Central Kentucky stream. When responding to the question “what is the number one change we need to make in the years ahead to ensure the long-term health and viability of Kentucky’s streams and wetlands?” -a steering committee member, involved in mitigation work, said: “The number one change is to get land owners to stay out of creek channels...This extends beyond the agricultural community.” This sentiment was expressed by another agency person also involved in on-the-ground restoration and mitigation work:

- ... One of the many things, that I feel effects our stream and land is unregulated use of heavy equipment... like bulldozers, but everyday a farmer or landowner can do a bunch of damage in a short time with heavy equipment. They just need more responsible training on it.

Photo provided by: Kentucky Department of Fish and Wildlife Resources.

Outside of advances within the field of restoration science and ecology and expanded opportunities for outreach and education, other steering committee members stressed the significant opportunity in the years ahead in securing easements for restoration work and/or putting more emphasis on conservation over restoration:

- A positive opportunity for Kentucky would be to purchase some unusual wetlands that the best way to preserve them is to own them. Regulatory methods only work to a certain extent. If you own it no one else can do anything detrimental to your site. In regards to restoration efforts, there are several drained wetlands that can be restored. The main factor (once again) preventing this is money. You have to have the funds to complete the restoration efforts. ‘In lieu fee’ can be very beneficial to Kentucky’s restoration efforts with streams and wetlands.

- ...I want to add another program that I think there is a lot of opportunity and we’ve worked together on, it’s...schools; we’ll call it a school program; wetland and stream restoration at schools. Do you know how much land some of these schools own? Some of these schools have many, many acres. I looked at a school Tuesday in Jefferson County; Ninety acres of land! And much of it had been modified historically like you mentioned, the streams and the wetlands. So what can you do at a school with a wetland? Well you can build it to enhance habitat for endangered species, you can enhance habitat for reptiles and amphibians, water fowl, for fish, right at the school grounds. And when you do this work, it provides the enhancement opportunity, the chance for learning by the students. And, based on the number of phone calls that we are getting, it works. These teachers know that if you get students outside, into a restored stream or wetland, they are going to remember what they are taught. So, you can build wetlands at schools to treat storm water. In many communities the waste water is combined with the storm water, called a combined system, we can now build wetlands to separate out the waste water from the storm water. Also, we can build these to treat natural waste water from the school. We are working on one project at Jackson County, Kentucky, at Tyner Elementary, where we are developing a wetland system to treat waste water from this elementary school. We want the wetland to be attractive, we want it to function, and we feel it will work better and we believe it will work better, than the current chemical treatment plant, for treating waste water. So, I think the potential of schools is really great,
- ... [Continued from above] If you’ve been on a timber sell, you’ll see the skid roads, the logging roads, and if you’re on private land and you have a timber sell, there is often a problem, in that it brings in unwelcome motor vehicle traffic; ATV, mud boggers, and so folks who have timber sells are often frustrated because they have all these erosion problems and all these unauthorized vehicles running around, well, if they get into a wetland program in forestry areas, we can use those wetlands to block ATV access, we can use the wetland to improve habitat for wildlife, to treat runoff from these skid roads. ...So, wetlands in forested areas, there’s a lot of potential...
- ... [Continued from above] We are building wetlands in power line corridors now. I mean, who ever thought of a transmission line corridor as a place for building a wetland? And we are doing that: East Kentucky Power Cooperative is very supportive of the program, American Electric Power, and interest in this program is spreading. We have to keep trees out of the right of way, why not...build a wetland in the right of way? It works... and that is on other opportunity.....

- Well, I think that conservation/restoration of our riparian habitats are the most critical. I think the single most important thing that we could do for our rivers and streams would be to restore riparian vegetation, and I can't think of an area that this is more obvious than the bluegrass region of the state where...it's heavily developed and intensely managed, and as a result of that the majority of streams in the bluegrass region no longer have a riparian corridor. It's mowed, or manicured...pasture grasses all the way down to the edge of the stream, and so that just results in a multiplicity of issues and that result in a loss functions in those streams, such as...sedimentation, because there are no rooted plants such as trees to hold the banks and retain the stability there, so we have erosion that also results in bacteria being carried into the waterways, nutrients that are absorbed to those soils being carried into our waterways. The loss of the function of those riparian plants take up those excess nutrients, and to act as a filter before it actually gets into our waters. It also acts as a good protector for...applied chemicals to lawns as well as agricultural fields. Another issue related to the riparian corridors (is) the loss of canopy, tree canopy, on those headwater streams, and streams that are as large as fifth order, which are very large streams, when that canopy is removed...the intensity of the sun is not filtered and that allows the water to get extremely hot in the summertime, and that also results in large algal blooms...which manifest themselves in wide swings and dissolved oxygen in the water column from super saturation to too little dissolved oxygen in the water column. So, as you can see, if we could...restore the riparian corridor in these streams in the state, as well as the nation, that that's where we need to focus the majority of our efforts. That one thing would cure so many ills. That would be my suggestion [*for the most important change we need to make in the years ahead...*]
- Conservation, purchase of critical watersheds and associated habitat...would be very important. Right now the State Wild Rivers program is probably the best example of...conservation of riparian corridors in the state. We have been successful in buying a significant amount of riparian corridors in a lot of wild rivers and protecting watersheds, especially in the upper Cumberland basin. Our threatened and endangered waters, those are, federally threatened and endangered waters, often referred to as outstanding state resource waters, that is a designated use that we apply to those waters that have threatened or endangered species, and...I think through outreach (and) public participation...those waters would be a high rank...high public importance to see the habitats conserved; because right now while we give them that special use protection which allows us to, if someone wants to go into one of those watersheds and disturb it,...they cannot disturb and lower the habitat or water quality to a point that would remove that use. But yet, they have a right to still access, and if they meet the requirements to receive a permit for those waters, so, if we had a similar program that would purchase conservation easements in these watersheds like we do in the State Wild River waters that would be a really significant step forward, I think, for some of our more important waters.



Typical degraded stream in a residential area. Several steering committee members mentioned as the single most important opportunity being to restore riparian buffers and vegetation. *Photo provided by Kentucky Department of Fish and Wildlife Resources.*

- ...Capacity building and forming land trusts are important changes to make. We need to make partnerships to own land and help protect it. Kentucky has an incredible amount of biodiversity; mostly because of aquatics. There are some elk stomping on our wetlands. It is important that money comes back to our park areas. We need to think of the long term health of our state. A land trust network and forming partnerships are great changes to make in the near future. Non-profits can take advantage of the tax code. There are green jobs out there. We need to promote the job creation that goes with conservation.
- --I still think as far as wetlands go...the Wetland Reserve Program is probably the premier program in the state. In the near future there is also another program that's going to hit real soon as part of the economic stimulus package which is the Emergency Watershed Protection Floodplain Easement Program which could bring as much as 1,000-3,000 of wetland restoration into the state over the next 20 months, so that's going to be an important opportunity and, of course, the fees in lieu program headed by the Kentucky Department of Fish and Wildlife... I think it's got tremendous opportunity to do stream restoration, but I think there are some things with that program where flexibility needs to be improved so that it will work for more private land owners and be able to address more stream situations.

The economic stimulus package, recent changes in Administration and recent court decisions were also mentioned by other steering committee member when referencing the positive opportunities facing the 404/401 regulatory programs and state mitigation fund:

- There are some positive initiatives coming our way through the President's stimulus package. Habitat restoration will be getting funds along with monies going towards cost-share programs through my department. Also, quite a bit of money should be spent on Natural Wildlife Refuges and National Parks to aid in habitat restoration. Carbon sequestration is really starting to take off. There is also the potential to reforest areas which may allow for some wetland restoration and riparian zone forest restoration. In urban areas, green building initiatives will be good opportunities for not only restoration but also opportunities for local interest groups to really push for community ordinances that can help preserve or restore the resources that they have in their community
- There has been a recent change in administration. We have just come through some really bad times for the environment; it has not been good in over twenty years. Within the last eight years many former rules were changed in an arbitrary nature. These rules were very destructive to the environment. Within the area where I work we saw the impact of fallible rules. The streams were crucially damaged over the last few years. On a positive note, this seems to be changing and turning around.

Funding was a recurrent theme across all of the moderated panels with steering committee members. When one advisory member was asked what is the most important change to make in the years ahead to ensure the long-term health and viability of KY's streams and wetlands, he responded:

- I wrote down some dollar signs here on my paper. Yeah I think we need programs like I talked that give us the flexibility to do stuff for years ahead. We need things that we know are going to be around, we're going to need money to do it. We're not going to be given that funding just directly from, in our case, from Washington. We're going to have to do work with partners whether it be..I didn't mention this before.., but we do a lot of work with *NRCS*, because they have money with the farm bill to do work entirely with private land and farmers. A lot of listed species occur in those lands, and they have some goals within their agency to do conservation for listed species. So we can work with them to meet their goals, and also meet our goals. They have been a very important partner for us...

Stakeholders who Commented on the Potential Opportunities facing the 404 and 401 Permit Programs and/or the *In-lieu Fee* Program:

I think most land owners in the private sector want to do the right thing with the environment, so the availability of good information and technical expertise in how to protect those resources is probably very valuable and informing folks...how to accomplish that on their own property.

Well, I'd say, for one thing, to enforce existing regulations. And I know, especially in agriculture, they don't; and no one wants to hammer on a small farmer, obviously, but...you also don't want them to run rampant and do whatever they want, if they're not doing the right thing...There certainly could be an update state wide of buffer law(s) or regulations. That would be extremely helpful. Tax incentives, and things like that, -that would be one of the most effective ways to acquire land in sensitive areas, natural areas, that are high quality to protect natural resources...give private land owners incentive to do that, either through easements or through selling their land. And, I think, just more educated more responsible local governments...I think, ultimately, that it's their responsibility to protect: I'm all about local stuff...you don't depend on somebody down in Frankfort, you depend on support around here to do that sort of thing...call your own shots...it's our community.

Again, I think we need a better regulatory structure, we need better enforcement...I think we need a healthier Environmental Cabinet. They have taken budget cuts virtually every year; even when we didn't have big budget deficits the environmental cabinet has seen, in terms of real dollars, has seen their budget go down every year, and I believe it's basically at a really critical point where, I'm not sure how they can do their job with the money and the personnel that they have. So, I certainly see that as a really important change...we've got to get the legislature and the people of this state to realize that; number one, this is their quality of life and in terms of the legislature we've also got to get them to see that...this is not your favorite whipping boy! These are mandated regulatory programs and I think that they have just about starved the program to the point where they can't effectively do their job

I guess it would probably be kind of doing some of the stuff you're doing now. As far as gaining information from what the public views as critical habitat, because I think one of the number one reasons people quit using the resources in the state is that they have don't have a place to go, or it's too far away. So trying to create critical habitat in or close to the population of the state of KY is probably important. You can generate all the miles of stream land and restore them back to pristine conditions in the mountains of Eastern KY, but with gas prices the way they are and people looking to get out and recreate close to home because of time constraints or funding. They are constrained near their household I think having opportunities close to home is very important...

Others that mentioned funding provided some creative insights on how monies could be used during tight economic times:

- We have existing funding sources that will be available for a while into the future. Although we do not need to reinvent the wheel in regards to funding sources but we can learn from these opportunities through research and possible updating performance standards. A positive opportunity would be to use some funding to start up local organizations and help them grow. Local organizations can really take ownership of environmental efforts in their community. Since these are the citizens who are invested in the project, large agencies can put the funding on the ground and get results that show a tangible or visual difference.
- There is a Supplemental Environmental Project (SEP) located in the Licking River Basin. With a SEP what occurs is that an entity is fined for violating standards and rather than paying a fine, they choose to perform a beneficial project in that watershed where they violated some codes....
- ... [Continued from above] Another opportunity is that if you want to restore more wetlands than you are required to, you can bank points instead of selling them. For example, the Kentucky Transportation Cabinet knows that they will be regularly involved in stream and wetland restoration. Sometimes they will do a restoration that they are not required to and they will bank those points because they know that they will be doing a restoration project there in the future.



Mill dam deposits in Kentucky stream. Photo provided by Kentucky Department of Fish and Wildlife Resources

Stakeholders who Commented on the Potential Opportunities facing the 404 and 401 Permit Programs and/or the *In-lieu Fee* Program, Continued...

Honestly, at this point, one of the best things I think we can do is to pump more money into purchasing more acreage to protect it. It may not be the soundest way or the most economical way, but probably is the most logical way to really conserve, especially some of our damaged areas. We just have to purchase more ground.

I think the education of Kentucky's elected officials. I mean, in either the administrative branch, from the governor down through the cabinet secretaries including the environmental protection cabinet to both houses in the state legislature. I don't think that our elected leaders really appreciate the importance of Kentucky surface water. Kentucky is blessed with one of the highest numbers of surface water of any of the states in the union and those water resources are becoming more and more important with each passing year.

Protect the best of what we have first. I really feel strongly about that. I know that we need to apply the clean water act everywhere and all the time, but what we've been left with here in Kentucky: everything is not equal. Our streams that still have significant populations of rare or threatened or endangered species should rise to the top in terms of our efforts to protect them. More money and effort should be directed towards those areas while at the same time not ignoring the opportunities to restore degraded ecosystems when that's possible. I would also say that making sure that long term planners are bringing everyone to the table so that hopefully some type of consensus can be reached and you've got a whole lot of partners that feels as though they have a stake in the process.

...I think it's to get meaningful laws and regulations on the books in the state and federal level to allow regulators to do what they are supposed to do; what they should be doing...to protect the streams and wetlands. Again, I've mentioned this before, adequate funding...and I think, when you have mineral extraction companies, the permitting process should be paid exclusively by the industry, it shouldn't be using state money to pay for the overhead as it relates to the cost of the permitting process, so I think industry needs to bear the cost of that...

One of the most important changes is realizing that the underlying cause of these environmental problems is people. We cannot change people overnight but overtime progress can be made through such avenues as education. The department cabinet has cut out a lot of the education positions that they had or at least when I started my job back 20 years ago there seemed to be more emphasis on education. There needs to be more economic analysis done on the benefits that the waterways and streams provide to Kentucky. You cannot put a price tag on these benefits. Also, proper funding for the regulatory staff in the Division of Water is very important for positive changes to occur in the years ahead. Their case loads are tremendous and there are not an adequate number of staff members to handle all of the cases efficiently. Without a good number of fine staff, the ground work follow-up that is crucial does not always get completed or it is not always completed at a satisfactory level. Conservation districts as well are in dire need of more funding so that more staff can be brought aboard.



Above and bottom photo: A mill dam and a culvert on two Kentucky streams. Both types of structures pose significant impacts by degrading and fragmenting stream habitats.
Photo provided by Kentucky Department of Fish and Wildlife Resources

- The State is considering taking out a lot of the mill dams that are spread throughout Kentucky. Many of these were built in the 1800's so that people could mill their grain. Sediment builds up behind these and this impacts streams because no one is maintaining these old mill dams anymore to take care of the sediment.
- Dam removal is going to be quite an opportunity in the future. [Also] the existing highway corridors, including passage of fish through culverts, that's an area that, certainly, is fragmenting streams and the migration of...fish, and probably has impacts on mussel populations... All of those provide enormous opportunity for doing work.

Stakeholders who Commented on the Potential Opportunities facing the 404 and 401 Permit Programs and/or the *In-lieu Fee* Program, *Continued...*

I think we need to identify the most critical habitats in the state some of these very unique areas like you are talking about like the tunnel pools and areas along the stream corridor. The state already has outstanding water resources and wild scenic areas I think there is only one and it is in Red River Gorge. There needs to be some designation along the stream corridors where you have about a hundred feet worth of buffer and we need to identify these areas. We need to take every measure possible and taking an idea from Florida they have a land legacy program along with a tax that exists across the state that generates funds to buy stream corridors across their state. That is one of the big things that we ought to be doing is trying to get these critical habitats and buffers areas that haven't really been disturbed and get them into some kind of protection, whether this is done through easements or outright purchases in cases where the landowner is willing to sell. This is something in particular the state needs to look at when it comes to protecting these areas.

There need to be more incentives in place. "I think that that is something that works better than just passing more laws." The majority of land owners and farmers do not like being told to do something, especially something that no one is willing to help them pay for. Thus, "offering more incentives to farmers to better take care of their streams is the direction that I think it should go." We have a program called CRP (Conservation Reserve Program). This particular program is a bit different than that EQUIP Program mentioned earlier. "One of the main functions of the CRP is to repair riparian buffers along the stream; planting trees that had been cleared years ago." Cattle are restricted from this area and woodlands start to grow there. In a way this becomes an avenue for wildlife. Now, the streams ecosystem is healthier because sediment is no longer getting into the stream and the cattle no longer have access to the stream. The trees will then shade the stream, lowering the water temperature in the process. This is especially critical during the very hot summer months because the fish and animals living in the stream are used to certain temperature of water that is not extremely hot. Through this process the farmers get something back for their investment which makes them more likely to participate in one of our programs as opposed to following a mandate.

Try to identify better priority areas such as pristine streams and wetlands. Areas that are in good shape are in dire need of protection to prevent them from being degraded. At the same time the streams that need help need to be ranked and prioritized. Those areas need to be target whether it is with cost-share funds or another monetary source. The USDA had an enhanced Conservation Reserve Program paying farmers an additional dollar to protect around the Green River because it was a target water source that needed work. A shotgun approach does not seem to be the best or most feasible option. Goals are accomplished in a smaller area much sooner than when efforts are very spread out.

Rather than speaking broadly, some steering committee members spoke more pointedly about some of the programmatic directions that the 404/401 permit and mitigation programs should take in the years ahead. Some, for example, mentioned the need to get more restoration projects on the ground and to continue to build partnerships with landowners and other agencies. Still others advised that the mitigation program perhaps prioritize efforts and target certain areas for restoration. And finally, there was mention of better enforcement, as one advisory member aptly put it, “restoring through the permitting process.”

- The ‘*In lieu fee*’ program already has the ground laid out for positive opportunities which is very beneficial for a continuation of mitigation in the future. “There are many states in the United States that do not have ‘in lieu fee’ programs.” When there is a large amount of mitigation done at a site it has a ‘Field of Dreams’ effect where one farmer does a project and his/her neighbors find out how great the project is and want to complete a mitigation venture too.
- With that I’ve seen and with these restoration projects, if you can get one landowner on board, a lot of times you can get others on board, because they see the positive effect. That’s mainly the problem of restoration is that we’re sticking Band-Aids all over the place, and we’ve got a lot of open wounds still to take care of. You take care of one open wound, but you’ve got several others that are upstream of it, so I think the more people see this and the more we can kind of scatter this along statewide with these programs, with these restoration efforts, the more people are going to see this, and again, it goes back to educating the people and letting them know what this does for them, what kind of benefits they get out of it



Successful wetland restoration. Photo credit: Tom Biebighauser, U.S. Forest Service.

- Common sense. I think we need quite a bit of that in the plan that we make in dealing with stream restoration and mitigation. You know, we’ve got a lot of problems that we know about, and we have a few areas that are actually in pretty good shape. There are streams that fall in the middle ground. Obviously, there’s not a whole lot of sense in spending time and resources on the Ohio River. That’s pretty obvious. But my point there is to illustrate that there are also other streams, smaller-scale streams, there really is not much of a chance that we have in throwing millions of dollars into that stream and restoring it to any kind of semblance of what it used to be. We can use the common sense to look at some streams and go” There are areas that we can restore and should restore, and let’s put the money we have into those streams.”
- ...[Continued from above] it was mentioned earlier the cost of stream restoration, and it’s a heavy cost; there’s a heavy price to pay, and that money has to come from somewhere, and there’s absolutely no sense in throwing money into a stream if we can’t really bring that back. It’s sort of like triage would be a good analogy; you’ve got to look at what you can save: Save what you can, and when you look at one and go, “You know, there’s really not much we can do,” I’m not saying that we should totally turn our backs on that watershed or that stream, but I think that there are other areas that can benefit more greatly by using money in other watersheds and streams.
- [Continued from above] I do think that we should pursue regulations in certain circumstances. You can tell by my earlier comments that I think education will work better in terms of relationships with agencies and people, but at the same time, we can’t ignore the regulations, the need for those, as well, because there are always going to be those folks who take advantage of what they can and do what they can, so I think just in the future, we’re going to have to look at some common-sense regulations and some common-sense approaches to restoration.
- [Continued from above] Now, one of the best things we could do — that’s the restoration facet of it. I think we also need to focus on the protection side, and that may be where the regulations really should come into play, because we’ve got some resources out there, there are some streams and watersheds in Kentucky, that are absolutely beautiful. I wouldn’t call them a perfect 10, because there’s always some — a lot of places, we may not see logging activity, but there has been logging activity there, and that has degraded the stream at some point — but by today’s standards, these streams are pretty close to a perfect 10, and those are the ones I think we need to focus on protecting and not waiting until we need to restore them.



- I guess I have a couple of things. First of all, I know we have a lot of regulations out there. We need more enforcement of those regulations, - number one, and I realize that statewide with personnel that sometimes that's a very difficult thing to do, but I see a lot of things going on right here just in our own town that are not being regulated, things like not putting up silt fences, whatever it is, so I think there needs to be more enforcement of regulation, and then in some cases even perhaps some more stringent regulations. I know we're regulated to death, and people on their own land feel like they're regulated to pieces sometimes, but I think that we're a little loose sometimes in some of our regulations.



Brushy Fork Stream Restoration Project, funded through the state mitigation and restoration fund. *Photo provided by:* Kentucky Division of Water.

- [Continued from above] A second thing is, you know, when planning these particular projects, I think sometimes we tend to plan a little bit too much and we don't implement. Maybe it's just because sometimes it's hard to find a starting point. I think we're at a phase now where we need more implementation. We know a lot of what's going on, although like I said earlier, there's still a lot to be learned, of course, especially with returning these streams to an historical regime, emulating habitat and so forth. That's totally out of my hands; I know nothing about that; that's the engineer's perspective, and there are a lot of engineers out there that have a good perspective on that. So I think we need to really start implementing more of these projects.
- [Continued from above] Another thing is that — this comes from both directions, and sometimes I'm guilty of this as a scientist — we tend to monitor things, and we tend to maybe monitor things to death sometimes, literally, to death, where we're monitoring and saying over and over, "We're documenting declines." I don't know how many times I've written, even myself, "documented decline." Decline, decline, decline; and we're doing nothing about it.



Subdivision and road development. Silt fencing installed to control siltation into bottom stream though on wrong side of creek. *Photo provided by:* Kentucky Division of Water.

Several more steering committee members, as well as others who were interviewed over the telephone, also expressed the view that there needs to be more on-the-ground implementation of projects along with the "talking" and/or planning. To end this section, one federal agency official provided this piece of critical advice:

- While you are making these plans and while you are developing these strategies, do not sit on your laurels and wait until you have the plan to start acting. There are a lot of good tools out there and while we are developing these plans we need to be restoring and conserving wetlands with the tools we currently have available. Act now! One of the things I do not think people realize is how much has already been lost. The longer we wait to act, the more we are losing without gaining.



Constructed wetland and evidence of new emerging functions: Crayfish Towers. *Photo credit:* Tom Biebighauser, U.S. Forest Services