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ABSTRACT This research note describes two simultaneous events: The Martin County coal waste disaster of October 2000 and our own research efforts in Martin County, Kentucky, in studying the effects of the disaster on the impacted community. Our research was unique in that we involved a large team of undergraduate students in our field and data collections efforts. We also applied more democratic and participatory methods than has been typical in the "techno-disasters" research. We believe that our expanded method has allowed us to glean insights and understanding into the effects and political dynamics of the Martin County coal waste disaster. In this note, we report some of our findings from both our field interviews and survey data. As in other case studies, we found high levels of blame and distrust of the coal company and of federal and state agencies. Much of this deep citizen distrust, as we came to learn, was due to EPA yielding power of jurisdiction to the responsible party. Many citizens simply distrusted the risk assessments and water test data being put forward by the coal company.

The Big Branch Coal Waste Impoundment owned and operated by the Martin County Coal Company, a subsidiary of Massey Energy (MCCC-Massey) occupied approximately 72 acres in Martin County, Kentucky. It rested at the top of the stream head to two of the county's primary creeks: Coldwater and Wolf Creek. Most of Martin County's eleven thousand inhabitants live between these two creeks and subsequently most of the County's inhabitants were impacted, in some way, by the disaster events of October 2000.

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On Tuesday, October 11 at midnight, a coal company employee for MCCC-Massey was working near the west mine portal when he noticed that the belt line had stopped. Based on documented events in one investigative report, the employee then radioed the dispatcher. According to documented events, other Coal Company employees were directed to travel to north-end mine operations. There, they observed coal slurry flowing out of a mine portal at a mounting velocity (U. S. Department of Labor 2001). By the night's end, the Big Branch Impoundment had emptied its 72-acre contents of black water, coal slurry, and sludge into underground mine works below the impoundment. The Mine Safety Health Administration (MSHA) estimated that three hundred million gallons of the slurry and sludge materials escaped into the County's two principal creeks (United States Department of Labor, 2001). One Martin County citizen, long involved in the coal mining industry, commented on what came down Coldwater and Wolf Creek that Tuesday:

> The coal company and the EPA like to call it slurry. Slurry is a fast moving substance. What came down Coldwater...was very, very slow moving. It's magnetite, very thick, thicker than any mud you'll ever see. Magnetite is used in the processing of the coal. To wash the coal, they use a Daniel's washer that uses iron ore magnetite and water. The gravity of the magnetite makes the gravity of the coal come to the top of the water. The coal floats and flows across the Daniel's washer. The water then goes back to a magnetic separator. A magnetic separator separates the water from the magnetite and it sends the magnetite back to the washer. But they only get 70 percent recovery of the magnetite on average. That other 30 percent goes to the impoundment....That magnetite settles to the bottom of the impoundment. There is so much weight to that magnetite that you can take a five-gallon bucket of it and you cannot carry it. It's that thick.

In the days ahead, coal sludge from the devastated creeks slowly traveled towards the Tug Fork of the Big Sandy River and then snaked its way up through to the Ohio River. In the days ahead, town water systems along the affected rivers were forced to close their water intakes while the massive sludge plume moved past. Based on state official estimates, nearly 28,000 people were without public water while emergency water lines were established by contingency teams of state, federal and coal company personnel (Mueller 2000b).

Meanwhile, persons in Martin County were describing the coal waste disaster as one that paralleled the Exxon-Valdez oil spill. The town Mayor, of the City of Inez, in Martin County, made such a comparison in an open letter to the Governor of the State of Kentucky. In calling for disaster relief, the Mayor wrote:

> After touring the site of destruction on Coldwater Creek, which also runs through the middle of Inez, I was amazed to see the effect that this catastrophe has created on the lives of many people as well as on all wildlife that reside in the area. I feel that the only thing that it could be compared to is the *Exxon Valdez* oil spill in Alaska in the 1980s.
>
> Not only am I concerned about our water supply, residents and wildlife, I am also concerned with the environmental impact and economic damage that this disaster will cause to Inez and Martin County. This could possibly set Martin County back for many years to come. The economy in Martin County is already bleak but this could be the straw that broke the camel's back.
>
> Also, the potentials for present and future health concerns are raised due to the chemicals and such that are contained in this spill. (Penix 2000:7)

During the weeks, months and year to follow, no federal disaster funds or federal emergency relief monies were forthcoming and many Martin County citizens asked why (Grayson 2000). In

later field interviews, citizens continued to comment on the lack of federal response to the disaster. One citizen commented:

> This has been the nation's largest spill.... Why this thing hasn't received national press is kind of a shocker. I know there were no lives that were lost, but this was a big, a huge environmental disaster. I think it is a shame that if this had happened in some nicer place, even Pikeville, Kentucky, it may have generated some publicity. But it happened in Martin County, maybe ten, eleven thousand people living here. The coal communities, you know, we're kind of forgotten anyway. So, that's something that bothers me.

Another citizen said:

> The coal company [MCCC-Massey] had it in the newspaper — saying this was 'an act of God' and that they were doing everything that they could to clean up the mess. But everybody knows it's not an act of God, it's a disaster.

A Technological Disaster

MCCC-Massey and federal and state regulatory agencies defined events in Martin County differently. Less than a week after the disaster, before full chemical testing on the sludge was even complete, state and federal officials were allaying public concerns. Agency press statements reported detectable levels of heavy metals and other compounds in the sludge but "not in harmful amounts." A spokesperson for the State of Division of Water was reported as saying, "we're saying right now the water is safe. If we determine there is a long-term problem we will let people know" (Alford 2000:1). The US Environmental Protection Agency (EPA), on October 18, released a press statement that they found "no acute toxicity levels in aquatic organisms used in tests" (Alford 2000:1). A consultant for MCCC-Massey was reported as stating, "there were some metals in the sludge, but the amounts were below drink-

ing water standards" (Mueller 2000a). By the next week, a Coast Guard official and member of the National Contingency team, or Unified Command Structure, that was set up to respond to the disaster, stated that "the metals pose no hazard to public water supplies with full treatment" (Associated Press 2000:1).

Competing definitions of risk, with the risk assessments of experts being privileged, tends to contribute to heightened levels of anxiety and stress among residents living in potentially contaminated communities (Edelstein 1988; Picou and Gill 1999). In his classic work, Barton (1970:49) describes individuals and communities struck by natural disaster as following a clear course of events: The predisaster period, the period of detection and warning, the period of immediate and relatively unorganized response, the period of organized social response, post-disaster equilibrium and the subsequent move back to the status quo. Freudenburg (1997) describes differences in the stages of technological disaster. He points out that residents and communities, confronting an impending, sometimes slow, long-term threat of toxic contamination, are typically left in a suspended state of uncertainty. Kroll-Smith (1995:387) likened this suspended state to living in a "*what if*" environment, in other words, what if the environment is not safe? What if the cause of my neighbor's cancer is due to the drinking water? In a letter to the editor, a mother in Martin County, expressed such fears of "ontological uncertainty" (Gill and Picou 1998:796). She wrote:

> We are faced with a situation that warrants major and immediate attention and begs a multitude of questions. Number one, we are being told that our water contains a list of chemicals that it would take a team of scientists to hold a class about for understanding to seem possible, so is our water safe to drink? We are also being told that the chemicals contained in our water are at acceptable levels for 'non hazardous' ingestion. What is an acceptable level of arsenic, barium, beryllium, etc.? After years of consuming these "acceptable" levels of chemicals, [the next question] will there be any long lasting, extremely painful, physically noticeable or

> perhaps fatal effects? If the answer to this question is no, then comes [the next question] How do they know? Have they exposed other people to this exact mixture of chemicals for extended periods of time and had no ill effects? ... I don't know about you, but it scares the hell out of me. It is not my life I am concerned about. I have a thirteen-year-old son who has his whole life ahead of him. At least, he's supposed to, barring some 'Act of God.'...He is a wonderful boy who makes straight A's and has a very kind heart. I have done the best I could. He is doing his best as well. I would find it unforgivable to learn that all of his efforts are in vain because someone decided to cut corners and some money by not disposing of dangerous contaminants properly.... (Hall-Smith 2001:4)

"Knowledge gaps" over the safety of the local biosphere tend to breed not only fear and uncertainty, but also heightened levels of suspicion in company, state and federal agencies that were supposedly mandated to protect the public and keep people safe. Freudenburg (1993, 1997) has described this loss of legitimacy in regulatory institutions after a technological breakdown as 'recreancy' — what he describes as "the failure of an expert, or for that matter a specialized organization, to do the job that is required (1997:33)." Richards and Womersley (1998), from their field and survey data, describe patterns of recreancy and the '*attribution of blame*' after the metam sodium spill in Dunsmuir, California. In Martin County, one resident blamed what he believed to be the complete and utter failure of company and government officials in preventing the coal waste spill — a disaster that, according to him, could have been prevented. He said:

> Their engineers knew just where the mines were at, if they didn't, then they need new engineers, but I know that they knew, and they should have taken better precautions. Everyone that is involved in this, I'm talking your state inspectors, your federal inspectors and the people over this mine, that had

anything to do with this, should be fired. It is a shame that this has happened.

In the aftermath of technological disaster, Kroll-Smith (1995) identified fear, uncertainty, distrust and suspicion as leading to retreat and inward withdrawal among some residents. This psychic retreat, according to Kroll-Smith, contributes to the further decline of community and a community's civic capacity. Others have also written on social corrosion after a technological or man-made disaster (Gill and Picou 1998; Gramling and Krogman 1997; Edelstein 1988; Shkilnik 1985). Erikson (1976) wrote of the 1972 coal waste flood in Logan County, West Virginia and wrote of the flood's annihilation of communities on Buffalo Creek and the social psychological stressors that ensued among survivors due to the loss of community. The 1972 Buffalo Creek coal waste flood released over 120 million gallons of slurry and killed 125 persons. The Martin County coal waste spill, in comparison, released over 300 million gallons of slurry and sludge materials but luckily, with no loss to human life (Ball 2000). Considering the parallels and contrasts between Buffalo Creek and the Martin County coal waste spill and considering other parallels with other cases, it seemed important to us, to assemble a research team and go to Martin County.

The Martin County Project

Soon after the coal waste disaster in Martin County, Kentucky, a team of sociology students and faculty at Eastern Kentucky University started to talk about the disaster and the prospects of starting a research project. Yet, if we initiated such a project, we would have to rely on undergraduate students for field assistance and research support since we had no graduate program. We asked ourselves was this possible? Was it possible to involve a large team of undergraduates in a sensitive and potentially litigious research project? Was this a good plan?

We decided to call Duane Gill at the Social Science Research Center, Mississippi State University and ask his opinion. When we called Gill, he listened intently of events in Martin County. By the end of our telephone conversation, he had agreed to visit our campus. In less than a week's time, Gill was at Eastern

Kentucky University, talking with students and faculty, in both lecture and in seminar, on researching communities hit by technological disasters. Beyond theory and case description, Gill also spoke on method and research design. He advised our team to replicate and fine-tune methods that he and Picou had used in the past: personal interviews, survey research techniques, random-sampling strategies, and the use of control communities (Gill and Picou 1998: 802). On the last day of his visit, Gill traveled with our team to Martin County. During the three-hour drive, up the Mountain Parkway, Gill provided his most important advice to the project team: He enthusiastically advised our team to go ahead with our original plan of involving a large team of undergraduate students in our research and field efforts. Gill, after spending several days with sociology students in lecture, seminar and on the road, concluded that such a research project on such a relatively isolated community, "could only be done well with the help of university students" — many of whom, as he observed, were, themselves, from the region.

In the weeks to follow, with added confidence, our research team made more visits to Martin County. We scheduled meetings with state emergency management personnel and coal company officials. We also attended public meetings. At these public meetings, we started to establish more and more field contacts with area citizens. Some of these initial citizen contacts proved crucial in getting our research project fully off the ground in Martin County. Some of our field contacts were, themselves, alumni from Eastern Kentucky University and they devoted much of their outside time in helping our research team get started. In informal conversation and in formal lectures to students, they explained the history of the county and its history with the coal mining industry. They explained the nuances of federal, state and local politics as well as the "politics" of regulating the coal industry. Later, when it was time to start to conduct field interviews with impacted residents, our key contacts helped us compile lists of people in the county that we '*should probably talk to*'. In short, the method that was emerging in Martin County was expanding beyond traditional field and survey practices and was becoming, increasingly, more democratic and participatory.

Table 1. Field Interview Schedule

- Can you share with me where you were when you realized that there was a sludge emergency?
- As best you can recollect, how have things unfolded from then until now?
- How are things, about getting back to normal?
- There's been talk about the public water supplies, what are your thoughts on that subject?
- Do you see folks' attitudes changing about things?
- Has this event caused some hard feelings among folks in the community?
- Is there anything that we missed that you think people should know?

Field Interviews

By January 2001, less than three months after the big break, and now with internal grant support provided through Eastern Kentucky University, our research team began to gear-up for the field interview phase of our project. In preparation, we called Shaunna Scott at the Sociology Program/ Center for Appalachian Studies, University of Kentucky. Scott had done extensive field and case study work on Appalachian coal mining communities (Scott 1995, 1996a, 1996b). When we called Scott, she listened and agreed to meet with our research team over a weekend workshop. Our citizen contacts from Martin County also joined our team that weekend. By the end of the workshop, citizens and Scott had helped our project team in drafting our set of field interview questions. The question schedule that we used in Martin County is presented in Table 1.

By mid February, our human subjects protocol and field interview schedule had been approved by our Institutional Review Board. We then made plans to conduct our field sweep. During the last two weekends of February, twenty university students, trained now in field interview methods, conducted tape-recorded interviews with area residents. Interviews typically lasted thirty to forty minutes. Each student usually conducted two interviews. Upon leaving the field, students were expected to transcribe their taped sessions

with residents. In the end, this resulted in a qualitative database of approximately 35 transcripts.

During these home interviews, students recorded resident's recollections of the first days of the disaster, as well as their comments on the spill's impact on the local environment and watershed. Citizens also commented on the cleanup efforts and how the Coal Company and state and federal agencies were handling the disaster. With respect to the first stages of disaster response, several citizens expressed anger that, at the time of the impoundment break, there was no warning or contingency plan in place to warn residents living downstream of the impending disaster. Some citizens commented:

> No one notified anyone downstream that this was coming and, at that time, it wasn't even down here, it was just in the process of coming. And at their [the Coal Company] security checkpoint, up there at the county road crossing, it was about 10 ft. deep there at the time. But you know, it was just like a big, gooey glob. It was a whole lot like watching lava. You know, the flow of it. And it just kept accumulating deeper and deeper. But this has been one of my biggest concerns since the spill happened, that no one notified anyone downstream that it was coming. No warning! Absolutely no warning! At any time! And during one of the community meetings I asked [the coal company president] as to why and who made that decision and he said, that he made that decision. I don't want [the coal company president] making that decision with my life and my family's life...but that was their answer to it, they just made that decision.

> I feel that the minute the Coal Company knew that it happened, they should have come down Wolf Creek and where I live here, on Coldwater, warning the people.

Shattered confidence in state and federal regulatory agencies was a constant theme in our field interviews with Martin County residents. Many residents expressed complaints with how state and federal agencies, especially EPA Region 4, conducted its mitigation and assessment strategies. It seemed to many of those that we interviewed, that Region 4 was deferring to MCCC-Massey and allowing the coal company to take the lead in environmental cleanup and environmental assessment. Several citizens that we interviewed were outraged over this. Some said:

> Well, generally things have unfolded sort of densely, as far as the public was concerned, the company and its officials tried to keep everything under the lid, under the cover, not letting any information out. So speculation was running wild among the public and I thought that was no way to handle it. Distrust began to set in about the Coal Company, the officials, and whoever the hierarchy is that we look up to. We automatically grew a gray cloud of distrust of what they were telling us, of what they were saying. That's my opinion and I would say the opinion of several other people that you may or may not have interviewed.... But we both know that folks will know better than that. It's just very, very confusing. The Coal Company isn't telling us the facts and they know it. I guess one of the main things that people were more troubled about more than anything else was that they thought that, because of taxpayers' money, that MSHA [The Mine, Safety and Health Administration], the EPA, that those agencies were in here to protect the citizens. But really the EPA set up their command station up behind Coal Company guards, who guarded the EPA to keep the people away from them. It is my understanding that the EPA either did not or could not release a press statement or any information without the permission of Martin County Coal. Now, that's that's very disturbing. That they would try to hide behind Martin County Coal and that they

would let the Coal Company approve any release that they would want to make. It's very disturbing.

The only people satisfied with the cleanup are the EPA! [1]

In my opinion, the Coal Company is not the problem. The Coal Company has done what it has been told to do. The problem is EPA and MSHA. The people who are supposed to be working for us and protecting us are acting like they work for the Coal Company. Protecting the Coal Company. If the Coal Company were forced to do it, they would do it. They are not being forced to do it because well, I don't know...

The EPA is the controlling agency. They can override MSHA and the Army Corp of Engineers or any state, federal agency. The EPA should have been the driving force. It's their responsibility to uphold the law. They were in denial and are continually telling us that nothing harmful is in the water or the soil that wasn't there before. They think that because we are mountain people that we are ignorant. They are the ignorant ones –to think that we are going to believe that.

Surveys

Based on what we heard being said, our research team started to build a survey that reflected what people were saying. We wanted our survey to be relevant to the people who received it. We included survey questions on water quality and water treatment and other standard inventory questions that measured levels of govern-

[1] Student field notes (February 16, 2001). Student notes on the interview report that the resident "expressed anger at the fact that they were not questioned by the state or EPA."

ment trust, perceptions of risk, and views on regulatory policy, environmental recovery and community quality of life. In building our instrument, we modified social impact surveys previously developed by Picou and Gill (1991, 1992 and 2001) and drew from other social impact and risk assessment surveys. [2] For the reader, the subset of survey questions that we used to measure resident views on the coal mining industry and mine regulations are presented in Table 2.

Our student-faculty research team held several weekend seminar sessions to discuss and devise a sampling and distribution method for our survey. In the end, we devised a residential sampling strategy and "*drop-off/ pick-up*" method similar to the sampling method described by Steele et al. (2001). They describe a "*drop-off/ pick-up*" method that has been used in communities in Pennsylvania and in other Western states. Up until our survey, there has been no comparable hand delivery method used in surveying communities in Appalachia.

In March 2001, less than a month after conducting field interviews with area residents, our research team surveyed the impacted area of Martin County during a weeklong survey sweep (Spring Break Week). During the survey sweep, students and faculty had more opportunity to talk on porch steps with a wider range of area residents; they heard their points of view and their perspective and comment on things, but this time, students had to politely excuse themselves and move on to the next *nth* house. By the week's end, our research team had collected 290 surveys (response rate = 62 percent).

With survey work in Martin County complete, our research team then made plans to survey a control community in accord with the suggested research plan. We selected Perry County, Kentucky as our control site because of several broad similarities with Martin

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[2] The project team would like to thank to Duane Gill for sharing the social impact surveys that he and Steve Picou distributed in 1991, 1992 and 2001 in impacted and control communities in Alaska after the *Exxon-Valdez* oil spill. We also modified questions from other risk perception surveys. Questions were taken from Freudenburg (1993) and Freudenburg and Jones (1991) in building our own social impact survey.

Table 2. Sample Survey Questions on Coal Mining and Mine Regulations. [a]

- The federal government should set stricter mining standards.
- A local committee should have the power to shut down the impoundment if they decide it is unsafe.
- The mining industry should provide the community with an emergency safety plan.
- An impartial inspector should be at the mining site at all times.
- The mining industry should contribute more financially for improving community facilities (schools, parks, sewage systems).
- The coal company should protect property values in communities downstream of the coal waste site.
- The coal company should dredge the creeks of sludge and silt.
- The mining industry should establish a local outreach office, in town, to keep residents informed of mining activities.
- The mining industry is already well regulated by federal and state agencies.
- The mining industry should explore other (cleaner) technologies to wash coal.
- The mining industry should invest in technologies to cleanup sludge spills.

a. Residents views were measured on the following scale:
Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree and Don't know

County: Both Martin and Perry County, for example, are defined by the Appalachian Regional Commission as "*Distressed Counties*" and "*Core Coal Producing Counties*" (Kentucky Appalachian Commission 2000). Using a similar 'drop-off / pickup' residential sampling design as before, our research team was able to collect 250 surveys from the Perry County area by the start of the next academic year, -September 2001 (response rate =50 percent).

Table 3. Martin and Perry County Demographic Comparisons.

	Martin County (*n=290*)	Perry County (*n= 250*)
Gender		
Male	39%	40%
Female	61%	60%
Average years spent living in County	37 yrs.	38 yrs.
Homeownership	85%	69%
Water Source		
Public Water	85%	89%
Private Well	14%	8%
Income		
Less than $10,000	20%	19%
Less than $20,000	47% *cumulative*	38% *cumulative*
$21,000 to 40,000	27%	33%
$41,000 to 60,000	17%	16%
Over $60,000	9%	13%
Voted in last local Election? (2000)		
Yes	75%	75%

Survey Findings

A comparison of household demographic data between Martin and Perry County indicated some striking parallels between samples on dimensions of gender, length of residence, public water use, voter turnout and income. These similarities in household demographics are reported in Table 3.

Though there were broad parallels between households at both sites, it appeared based on our analyses of other survey questions, that citizens in Martin and Perry County were thinking differently on various issues related to their communities, their economies

and their environment. We assumed that some of these attitudinal differences between like households, from like communities, were due to the impact of the coal waste spill on life in Martin County. For example, on several community / quality-of-life dimensions, Martin and Perry County citizens were asked to rate the quality-of-life in their community on the following scale: *Very good, good, fair, poor, and very poor.* Sixty-two percent of Martin County citizens rated the quality of the natural environment in their community as "*poor- to- very poor*" compared to only 23 percent in Perry County. On outdoor recreational opportunities, 79 percent of Martin County citizens rated outdoor recreational opportunities "*poor- to-very poor*" in comparison to only 35 percent in Perry County. On job opportunities, 90 percent of Martin County, in comparison to 57 percent Perry County residents, rated job opportunities in their community "*poor- to-very poor.*" These survey results are summarized in Table 4.

On another set of community livability questions, Martin and Perry County citizens were asked to rate community concerns on the following scale: *not a problem, a slight problem, a moderate problem, a serious problem.* Whereas crime and drugs was the highest rated problem among Perry County citizens, Martin County citizens reported drinking water as their number one concern. Eighty percent — *or 8 out of 10*— Martin County citizens compared to only 24 percent — *or 2 out of 10* — Perry County citizens rated drinking water '*a serious problem.*' Coal waste was also rated high as '*a serious problem'* in Martin County. An approximate 7 out of 10 of Martin County citizens (69 percent) rated coal waste a serious issue facing their community versus only 12 percent of Perry County citizens rating coal waste the same way. These survey findings are also reported in Table 4.

Based on survey comparisons, it appears that on standard community, quality-of-life and livability scales, Martin County citizens tended to think differently about their environment, the economy, their community, the local watershed and the public water system than other citizens from the region. Strong differences were also noted on reported levels of trust in the U.S. Environmental Protection Agency and in state regulatory agencies. Survey findings

Table 4. Community and Quality of Life Profile Martin and Perry County Compared.

	Martin County (*n=290*)	Perry County (*n=250*)
Quality of Community Life *(Poor to Very Poor)*		
Natural Environment	62%	23 %
Outdoor Recreation	79%	35%
Job opportunities	90%	57%
Community Problems *(A Serious Problem)*		
Crime/ Drugs	51%	74%
Local Environment	41%	16%
Coal Waste	69%	12%
Drinking Water	80%	20%
I have trust in... *(Strongly Disagree)*		
The Environmental Protection Agency	35%	12%
State agencies...	31%	11%

show Martin County citizens outweighing Perry County citizens at a 3:1 ratio on reported levels of strong agency distrust: Martin County citizens were more likely to '*strongly disagree*' (35 percent) that they '*have trust in the Environmental Protection Agency*' in comparison to Perry County citizens (12 percent). Likewise, Martin County citizens (31 percent) were more likely to '*strongly disagree*' that they '*have trust in state agencies*' in comparison to citizens in Perry County (11 percent). These survey results are also reported in Table 4.

Formation of a Citizen Advisory Committee

In September of 2001, our research team received funding through the *Flex-E-Grant* initiative of the Appalachian Regional Commission. This funding allowed us to complete our survey data collection efforts in our control community. It also allowed our research team to assemble a citizen advisory committee (CAC). The *Flex-E-Grant* program is a civic-capacity building initiative designed to offer support for community projects in economically distressed communities of Appalachia (Kentucky Appalachian Commission 2001). We argued that an advisory committee of citizens was essential in building civic capacity and assisting in recovery since the environmental disaster. Aronoff and Gunter (1992) documented a case of local citizen efforts at recovery after an incident (statewide) of polybrominated biphenyl (PBB) contamination in Michigan. Through grant-writing efforts, and dialogue sessions, citizens developed an eight-year strategic and civic action plan to move their community towards economic and environmental recovery. This case investigation, rather than the wealth of literature on corrosive communities, provided us with a policy-oriented model. We cited heavily from this case in our bid to secure civic-capacity building dollars from the Appalachian Regional Commission.

With funding, our research team began working closely with our CAC in identifying the issues facing Martin County and in building a set of recommendations to assist the community in its recovery after the disaster. In seminar sessions with students, in dialogue sessions with other outside persons, on the telephone, through email and through informal conversation, we, with our CAC, began to review and catalogue, together, site-specific events and site-related documents. With CAC guidance, our research team initiated a content-review of regulatory documents and other regulatory agency records on file at the state Division of Water and available through the Administrative Record from EPA Region 4 (U.S. EPA 2001a). Our content-review of agency reports and water test data, as well as our separate content-review of local newspaper accounts, tended to corroborate many of the citizen concerns we heard first being expressed in our February 2001 fields interviews and then conveyed through our survey percentages: Our content-review of regulatory documents tended to confirm citizen suspicions

over the on-site response structure that was established to guide clean-up operations and conduct environmental impact assessments after the coal waste spill. It appeared, for example, based on our review of enforcement documents, that EPA Region 4, by March 2001, had indeed awarded power of local jurisdiction to the responsible party —MCCC-Massey— in site cleanup, site monitoring and in developing site mitigation strategies (U.S. EPA 2001b). As one citizen had stated, "it is like a fox guarding the chicken coop." Citizens, in their field interviews, and now, as part of our CAC, had expressed grave concerns with such a response structure, and the subsequent water quality and environmental monitoring data that was being collected and compiled through the coal company. In short, in Martin County, based on our research and documentation, it appeared that citizen distrust was more than a lack of confidence in the scientific and technocratic discourse of regulatory experts, and was more due to the response structure that was set up to monitor and mitigate the coal waste spill's impact. Many citizens simply distrusted the environmental impact statements and mitigation plans that were being conducted and filed by MCCC-Massey.

This response structure, along with a number of other documented events, many of which were conveyed to us by our CAC, seemed out-of-sync with several environmental statutes and Superfund guidelines that were designed to promote citizen involvement in environmental recovery decisions at contaminated sites (Szasz 1994:133). It appeared, based on testimony from our CAC and our own content-review of site relevant documents, that citizens were being routinely excluded from environmental recovery decisions in Martin County. Instances of citizen involvement, effectively being by-passed by EPA Region 4, were documented in our final report on civic capacity to the Appalachian Regional Commission (McSpirit, Hardesty and Welch 2002). We put forth in our report that active citizen participation in community and environmental recovery, would have to be a central component to any civic capacity building initiative in Martin County. In our final report, we recommended that the channels for citizen input in environmental recovery be expanded. We recommended: 1) citizen participation in stream reclamation and stream recovery strategies and more importantly, 2) citizen involvement in water quality testing and monitoring. These recommendations were developed in

close consultation with our CAC. But we also believed that these recommendations were reflective of broader local opinion, given what we had heard in our field interviews and had seen reflected in our survey percentages.

If, in the end, EPA Region 4 follows through with either one of the above two recommendations —and there have been some agency maneuvers to that effect— then the implications of our study design and research model may be of importance to other researchers who have to assemble a rapid appraisal team to monitor and assess the social impacts of a technological disaster on another community.

But there are certain limitations to this type of research and policy model. Aronoff and Gunter (1992:361) speak to these limitations, stating that active citizen involvement in environmental recovery might only imply that citizens are not "disempowered" by the effects of a disaster and such involvement does not necessarily imply "empowerment." Considering that technological disasters tend to happen out-of-sight, at less-regulated, often high-risk facilities, in poor communities, here, and elsewhere, there are larger structural policy changes that need to be made before such communities, and the people living in them, are empowered enough to have some say in the quality and livability of their local environments and their communities.

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