

ORAL HISTORY INTERVIEW

Anne Castle
Part 2

Tempe, AZ

26 March 2018

Interview conducted by:

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and

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Glen Canyon Dam Adaptive Management Program Administrative History Project

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Subject Anne Castle
Date 3/26/18
Location Tempe, Arizona
Interviewer Paul Hirt
Annotator Jennifer Sweeney
Project Glen Canyon Dam Adaptive Management Program Administrative History
Notes/Bio Anne Castle was Assistant Secretary--Water and Science at U.S. Department of the Interior from 2009 to 2014. She was the Secretary's Designee to the Glen Canyon Dam Adaptive Management Program and in this capacity acted as Chair of the Adaptive Management Work Group. Castle practiced water law in Colorado from 1987-2009 and earned J.D. and B.S. degrees from the University of Colorado.

Minutes Summaries of interview content during each minute of the interview

- 0 **Part 2 of 2.** After the break, interviewer orients listeners to part two of the interview.
- 1 **Q:** Can you talk about the differences between top-down and collaborative management styles in relation to AMWG? **A:** Castle's management style was influenced by the issues she encountered when her relationship with AMWG started.
- 2 NPS--or more specifically, GCNP administrators--"Had felt, for the entire George W. Bush administration, that they were under siege, and they, I think, in some sense envisioned themselves as the rebels that were saving the values of the park." This may be partly "why they felt at odds with other federal agencies."
- 3 Different agencies have different missions and are trying to achieve different goals, resulting in tensions. With GCDAMP this was exacerbated by politics. Because of her affiliation with USBR, Castle felt an authoritarian management style would have been counterproductive. Castle's personal values were aligned with the goals of the GCNP administration.
- 4 Furthermore, she felt public infighting among DOI agencies was "inappropriate and unseemly." Castle thinks GCNP administrators may have been more inclined to trust the Barack Obama administration's appointees and smoothed the path to making peace. Instituted the "pre-meeting" policy for federal agencies.
- 5 Federal agencies met with Castle before AMWG meetings to discuss issues and agree on how to vote. To make the tribes more comfortable with the AMWG process, they were brought into the pre-meeting scheme. The tribes had informed Castle that they felt their positions were dismissed within the larger AMWG group.
- 6 Castle felt this was legitimate because all of the federal agencies involved with AMWG bear a trust responsibility to the tribes. Western Area Power Agency (WAPA) then approached Castle, saying they were also a federal agency with a trust relationship to the tribes.

- 7 Getting the DOI agencies aligned proved the most successful element of the pre-meeting process. **Q:** These decisions are being made around different policy issues. What issues were the flashpoints for conflict, that required more collaboration and discussion? **A:** Permitting of the science. There was some conflict over who was responsible for certain things.
- 8 NPS has its own scientists--GCNP has staff who do science in the park--sometimes there was concern that USGS/GCMRC were overstepping their boundaries or duplicating GCNP efforts, particularly regarding cultural resources.
- 9 **Q:** Did tribes want to do their own cultural resource studies, too? **A:** In some cases, but that did not seem to cause conflict of the sort between federal agencies. **Q:** The GCNP Superintendent at that time was Steve Martin. Were there other GCNP Superintendents in office during your time at GCDAMP? **A:** Yes. Dave Uberuaga made sure GCNP had a good working relationship with the other DOI agencies, particularly GCMRC.
- 10 **Q:** You've mentioned the tribes a number of times. Would you like to say anything about the role of tribes, how it has changed over time, the kinds of issues that most concerned them, your success at facilitating their input?
- 11 There is an "interesting dichotomy between tribal cultural values and this highly western scientific effort that's going on in GCMRC, and that the majority of the AMWG members relate to." In addition to bringing tribes into the federal agency pre-meetings, Castle started having lunch with tribal representatives and members during AMWG meeting times.
- 12 There was usually no agenda, just an effort to build relationships. "At the end of the day, the AMWG functions as a complex set of relationships." Establishing communication with all of the AMWG members was valuable to Castle, but was particularly so with the tribes, because personal relationships are so important when working with them.
- 13 Tribal representatives have tended to be involved in AMWG for a long time. This deepens relationships and makes it easier to find solutions that work for all parties.
- 14 **Q:** Who are some key individuals who you think have been most consequential in the set of relationships that makes up AMWG? **A:** Mary Orton started as a representative for American Rivers and came back to AMWG as a facilitator.
- 15 Orton has relationships with the different generations of AMWG members. Castle learned a lot from her facilitation style. If a motion was coming up for vote, Orton would type it on her laptop, project it on the overhead screen, and members could "fiddle with" the motion together before voting.

- 16 This informal process was much more productive than strictly following parliamentary procedure. Concerns about wording, for example, could be addressed so that members were more comfortable with their votes. Orton had a habit, Castle says, of noticing if people looked unhappy, but were not saying anything, and would encourage them to speak.
- 17 Castle enjoyed her working relationship with Orton: as the SOI designee she ran the meeting, but Orton facilitated it, which are two different functions. They were a good team.
- 18 Orton's style is inclusive. Nobody gets left behind: "I think that's key to a functional group." This enhanced the collective problem-solving required for GCDAMP.
- 19 **Q:** Do you think it was reasonably successful during your time there? **A:** I like to think so. There had been a lot of conflict, controversy, divided votes, and litigation when she started with AMWG. By the end of her tenure most votes were consensus, in which the issues were treated collectively. Castle reiterates that federal agencies were battling each other when she arrived.
- 20 Castle humorously recalls "an interesting evolution." The Upper and Lower Basin states complained that they didn't know what the agencies and the SOI were thinking because they voted differently and were constantly at odds. Later, after Castle implemented the pre-meeting process, states complained that they didn't know what the agencies were thinking because they came to agreement on issues and spoke with one voice. They wondered why the federal agencies should have separate votes at all.
- 21 Castle understands their misgivings. It is unusual in the first place for federal agencies to be voting members of a federal advisory committee. Castle, as an experiment, decided about halfway through her time as AMWG chair that the DOI agencies would not vote. This gave the agencies some freedom.
- 22 The federal agencies would still participate and could freely express their views. AMWG members with fewer resources of time and money could benefit from agency employees' expertise, as they were immersed in GCDAMP issues as part of their jobs. Going back to notable AMWG members, USBR employees had to think beyond their traditional operations concerns as AMWG participants.
- 23 They had to think about the needs of GCNP, other DOI agencies, and tribes. This required "a significant evolution in the internal analysis" of issues for USBR employees involved in GCDAMP.
- 24 Ann Gold was the Deputy Regional Director of the Upper Colorado Region and USBR's representative on AMWG for many years, always worked for a way forward on difficult issues. GCMRC was responsive to AMWG needs, especially under Jack Schmidt's leadership. Expedited the dissemination of science findings.
- 25 NPS under Dave Uberuaga was open to AMWG "in ways it had not always been."

- 26 Jan Balsom, chief scientist at GCNP, worked with USBR to reach an agreement on preservation of cultural resources. **Q:** What significant events happened during your tenure at AMWG?
- 27 **A:** I was there five and a half years. The HFEs, and the development of the protocol to make them easier to do, were significant. **Q:** Were they being done annually by that time? **A:** Almost. "But interestingly, nature always throws us a curveball, right?"
- 28 An HFE was being set up when green catfish were found below the dam. They are more threatening than trout to native species in the Colorado River "by an order of magnitude." There was concern that a HFE combined with the green catfish presence would harm the ecosystem, although there was little science to support this theory. The HFE for that year did not happen.
- 29 SOI Ken Salazar came to the first HFE done under the new protocol. Castle attended three HFEs. **Q:** Is it like a party? Everyone gathers at the dam? **A:** "Totally like a party! Because it's a good-news story."
- 30 For one HFE Castle got to open the bypass valve. She describes a photograph of one of the HFE events.
- 31 The plumes of water shoot horizontally from the dam out of 15-foot diameter tubes. Castle has a picture with Mike [Michael] Connor, USBR Commissioner; Bob Snow, who works on Colorado River legal issues; Katrina Grantz of USBR; Castle's Deputy, Lori Caraminian; and Jane Lyder, Deputy Assistant SOI for Fish, Wildlife and Parks, during the HFE release.
- 32 **Q:** What were you able to accomplish during your term with AMWG, and what did you want to do but were unable to? **A:** "I wanted to correct what I saw as dysfunction in the AMWG." Wanted to eliminate litigation, resolve the discord among DOI agencies., and involve tribes in a more meaningful way.
- 33 Castle believes these issues were all resolved. She soon discovered a protocol for HFEs was needed and thinks that this and discussions of native fish population health were two steps forward for the program. They meant that Glen Canyon Dam was being operated in a way that addressed the concerns of AMWG stakeholders.
- 34 The LTEMP process was started during Castle's tenure but not completed until she was gone.
- 35 For many federal advisory committees, "their goal is to go out of business": it gives the advice and then disbands. This may not be true of AMWG. The science is ongoing; the nature of the river can change with climate, water distribution decisions, and other factors.
- 36 AMWG's advice should evolve as the situation surrounding the Colorado River evolves and stakeholders' needs and priorities change.
- 37 Changes in AMWG are a good thing, and are what is needed to fulfill the mandates of the Grand Canyon Protection Act of 1992.

- 38 **Q:** Do you think there is any structural element of the GCDAMP that could be improved? **A:** The Grand Canyon Protection Act mandates that an array of interests be represented on AMWG to give advice to the SOI, including academic interests. There is no specific academic representative on AMWG.
- 39 Some thought the charter should be changed to add academic representation. Dave Garrett, the first GCMRC Chief, thought that science advisors could be viewed as indirectly fulfilling that role. Still, their status is different from other AMWG participants'. "The role of the science advisors was always a little murky to me." This may have been the source of Castle's discomfort with the idea of them fulfilling the role of academic representatives.
- 40 Existing AMWG members may fear that adding more members would dilute their own voting power, so adding an academic representative would have political repercussions. Another AMWG structural aspect that comes into question is the fact that state representatives tend to be the state's highest-ranking water official, designated by the governor.
- 41 On the other hand, "the recreational representative might own a bait shop in Page. The concern that was expressed was that we didn't have parity among the members." Castle does not view this as a problem. She would rather have the bait shop owner on AMWG, someone who "is right there on the ground."
- 42 Castle jokes that having meetings in Phoenix in August is a structural problem. The AMWG charter actually requires meetings to be in Phoenix, but sometimes meetings take place in Flagstaff instead. **Q:** Are you hopeful about the future of GCDAMP? **A:** Absolutely.
- 43 Castle is certain that AMWG advice is taken seriously within the DOI. AMWG also helps keep controversies manageable. AMWG representatives establish relationships with one another and with related people and organizations that "are productive in so many ways that we can't even predict."
- 44
- 45 **Q:** What are your thoughts on the possible impact of climate change on AMWG and the Colorado River Basin? **A:** That Colorado River flows are being affected by climate change is beyond questioning, and evidence points to more drastic effects in the future.
- 46 A 35% reduction in flows is predicted for the next century. This creates questions about how differently the river may be managed in the future. This will affect Glen Canyon Dam operations. The "Fill Mead First" plan is one proposal for dealing with climate change and water management.

- 47 Jack Schmidt has studied the idea. Its main point is that less water will be lost to evaporation if only one reservoir is kept full. Schmidt's study finds that the projected water savings would be far less than proposed in earlier analyses. Castle believes that water savings at currently predicted levels are not enough to justify the political upheaval that a "Fill Mead First" protocol would cause.
- 48 The scientific data are not conclusive on this issue. More information is needed on evaporation, seepage, the potential impact on the downstream ecosystem, especially in Grand Canyon, of not having a dam at Glen Canyon.
- 49 There is a critical water-savings level, Castle believes, at which the protocol would be justifiable and the scenario should be seriously investigated. **Q:** Do you think there should be another working group established to deal with these kinds of larger issues, or can the current AMWG take that on?
- 50 **A:** The issue of what should be done about reduced flows needs first to be discussed among the [Upper and Lower Basin] states with DOI. The Interim Guidelines need to be revisited. [2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations...: <https://www.usbr.gov/lc/region/programs/strategies.html>] The current guidelines are valid through 2026.
- 51 The SOI is required to start the reassessment process for the Interim Guidelines by no later than 2020. Discussions among the states will likely segue into the reassessment process. The 1922 Colorado River Compact does not need to be changed, but its operational implementation needs to be revised based on climate change and increased water demands.
- 52 **Q:** Could the drought contingency plans in place now, or water shortages in general, potentially have an effect on the ability of GCDAMP to continue with HFEs? **A:** While drought contingencies can affect operations, Castle does not think they would curtail HFEs.
- 53 The dam is operated on an annual basis for water delivery, so individual releases can vary from one another while not affecting annual numbers. HFEs can still be part of a diminished-release plan.
- 54 The HFEs do have an energy cost, as water goes through the bypass tubes rather than the turbines, but as a portion of the annual revenue the loss is small. Still, this may be a concern in the future as hydropower is non-carbon energy.
- 55 Balance will be necessary as changes are discussed, another reason for AMWG to continue. **Q:** What advice would you give a new AMWG member?
- 56 **A:** Form relationships with other AMWG members. There are a lot of acronyms, legends, institutional history that may be intimidating at first, but everyone on AMWG was new at some point. People are proud of AMWG and willing to educate new members. Forming relationships will allow members to represent their constituents most effectively.

End of interview.

Paul Hirt: 00:01 Okay, this is the second half of my interview with Anne Castle for the Glen Canyon Dam Adaptive Management Program on March 26, 2018. So Anne, earlier you were talking about, when you came into the program in 2009, there was a little bit of conflict, policy conflicts or position differences, between the federal agencies involved in the program, and one of your first tasks was to figure out how to resolve those conflicts or differences. And I was struck by your description of the process that you utilized, which was to get everybody to the table, um, and including the tribes, and have everybody talk to each other and begin to slowly and incrementally but successfully work out a way forward that everybody could agree to. And it occurred to me that sometimes this is a little bit different than another type of leadership style, which we're familiar with in some federal agencies, in which you have a policy determined from the top and an executor, an administrator, make sure that everybody down the line is implementing that unified policy direction. And we assume that that's the way, that's how CEOs manage corporations. That's one style, sort of top-down policy conformance. There's also this sort of bottom-up collaborative process, which the AMWG [Adaptive Management Work Group] itself is kind of a representative of. I wonder if you could talk a little bit about the differences between those two management styles, why you chose one over the other, and any particular instances where you see the strengths and weaknesses are of those two different kinds of management styles.

Anne Castle: 01:47 I think that part of the reason for the way that I tried to manage the AMWG was the condition in which I found it. And this--the context is important. The Park Service--and when I say the Park Service, that's not really fair, because it wasn't the Park Service as the agency, but Grand Canyon National Park, which was the embodiment of the Park Service involved in the AMWG--they had, uh, felt for the entire George W. Bush administration that they were under siege. And they, I think, in some sense envisioned themselves as, um, the rebels that were saving the values of the park. So they felt embattled. I think that was part of the reason that they were so at odds with the other federal agencies, and it was partly because they, the different agencies have different mission descriptions and they, they have to do different things. They're trying to get to different goals. And so that, that natural tension is going to be there, but in this case it was exacerbated by the politics. And so if I had come in as the Assistant Secretary for Water and Science being identified with the Bureau of Reclamation and told the Park Service how to behave, that would not have worked. That would have been totally counterproductive.

Anne Castle: 03:44 Plus, I'm naturally inclined to value the same things that the Grand Canyon National Park was valuing. So I wanted to find a way that, that all the agencies could work together. And plus, I felt that it was inappropriate and unseemly for the different Interior agencies to be squabbling with each other in public, and I thought that the federal government should make a better showing than that embodied. And so--it was also, the change of administration allowed Grand Canyon National Park to be more accepting of the Obama political appointees than they had been of the George W. Bush political appointees. And so I had an opportunity to make peace. And so we instituted these pre-meetings with the federal agencies. And that was an interesting evolution as well because, the AMWG, let's say the AMWG meeting would be for two days on a Thursday and Friday. So we'd all come in on Wednesday, and the federal agencies would meet and we'd go through the agenda and figure out what we were, how we were going to vote, and what we were going to say.

Anne Castle: 05:18 And then, in order to facilitate input from the tribes in a setting that they would feel safer in expressing their opinions, we brought the tribes in as part of that meeting with the federal agencies, because one of the communications issues that was communicated to me was that the tribes felt that their opinions were not heard in the greater AMWG group, and that their positions were dismissed by other AMWG members. And so we thought that it might be helpful to meet with the tribes just as federal agencies, all of whom bear a trust responsibility to the tribes, to see if we could establish better communication and allow the tribes to be more forthright than they might be comfortable being in the larger group. And then, um, the Western Area Power Administration [WAPA], also a member of the AMWG, said, "Well, hey, wait a minute, we're a federal agency too, and we also have a trust responsibility to the tribes. So why are you just meeting with the Interior agencies?" So, we had this evolutionary process in which we, we started with just the interior agencies, and then we had Interior agencies and then the tribes came in, and then we had just the Interior agencies, then Interior plus WAPA, then Interior, WAPA and the tribes. And we'd all go through this day-long series of meetings, all before the AMWG meeting started, to get our ducks in a row. And some of that was more successful than other parts. I think the--getting the Interior agencies on the same page was the most successful portion of that.

Paul Hirt: 07:27 And, these efforts are all being made around particular issues, policy issues. You mentioned endangered species, chub versus trout in the Colorado River.

Anne Castle: 07:40 Right.

Paul Hirt: 07:41 What other issues were sort of the flash points for a potential conflict and that required more collaboration and discussion?

Anne Castle: 07:52 Permitting, as I mentioned, permitting of the science.

Anne Castle: 07:57 Um, and there were some conflicts around who was responsible for doing stuff. So, the Park Service has its own science, the Grand Canyon National Park has scientists that do science in the park. And so there were times at which they were concerned that USGS [US Geological Survey], or GCMRC [Grand Canyon Monitoring and Research Center], were usurping their responsibilities or overstepping the bounds, maybe duplicating efforts. That was particularly an issue around cultural resources, because the park has a responsibility to maintain cultural resources within the park. And because of tribal concerns, GCMRC had cultural resource experts, archaeologists, on staff who were also trying to do cultural resource investigation. And so there was a source of conflict there.

Paul Hirt: 09:12 and I imagine the tribes wanted to do their own archeology and cultural resource studies too.

Anne Castle: 09:20 In some cases, although that didn't seem to raise the same conflict as between the federal agencies.

Paul Hirt: 09:28 And if I recall correctly, the superintendent in Grand Canyon National Park during some of that period was Steve Martin.

Anne Castle: 09:35 Right.

Paul Hirt: 09:35 Were there other Grand Canyon National Park superintendents that were in during that time period that you were involved?

Anne Castle: 09:42 Yeah, Steve Martin's successor is a guy named Dave Uberuaga who was, who is very focused on ensuring that Grand Canyon National Park had a good working relationship with the other Interior agencies. And in particular with GCMRC. And so he put a lot of effort into understanding what GCMRC wanted to do, needed to do, was being directed to do, what that took in terms of park resources and permitting, and trying to work things out.

Paul Hirt: 10:26 So you've mentioned the tribes a number of times. One of the issues that has evolved over the life of the adaptive management program has been increasing and making more

meaningful tribal input. Many of the people we've interviewed have had things to say about that.

Paul Hirt: 10:47 Is there anything else you'd like to say about the role of tribes, how it may have changed over time, the kinds of issues they're most concerned about and how you were successful in getting their involvement and input on a more meaningful level?

Anne Castle: 11:05 I think the tribes will always have an important role, and--it is an interesting dichotomy between the tribal cultural values and this highly western scientific effort that's going on in GCMRC and that the majority of the AMWG members relate to. So, I think the sources of that tension will not go away. In addition to having this pre-meeting with the tribes, I also started having lunch with the tribal representatives and whatever tribal members were coming to the AMWG, because there'd usually be a member and an alternate or a TWG [Technical Work Group] member, sometimes tribal members in the audience. So we get all the tribal members together on one of the two days of the AMWG meeting and just have lunch together, usually without agenda, just to create that relationship and social interaction, which I found very valuable.

Anne Castle: 12:26 And I think that, at the end of the day, the AMWG functions as-- a complex set of relationships. And it was, it was incredibly valuable to me to establish relationships with all the AMWG members. And I think that's particularly important with the tribal representatives, because the, the personal relationship is so important in any sort of transaction or activity with a tribe. And so that was all really valuable. And the tribal representatives tended to be pretty long-lived on the AMWG, and so that provided an opportunity to establish and deepen those relationships. And when you have that, there's so much more trust and, um, willingness to compromise, and try to be creative about solutions that, I mean maybe you don't even have to compromise. Maybe there's a solution that, that gets everybody what they need without compromise. But, I think, if you don't have a personal relationship, that's so much harder to do.

Paul Hirt: 14:02 That's a great segue to my next question. I love your statement that the AMWG is fundamentally a complicated set of relationships. Our interview with Mary Orton focused a great deal on her efforts to develop those relationships in a way that allowed the organization to move forward as a, you know, as a kind of a team rather than a whole bunch of individuals fighting for a stake in the outcome. It's more collaboration, and that was her sort of contribution. Can you mention some of the key

individuals that you think have been most consequential in that complicated set of relationships, what role they played and-- some people who should be called out and remembered for their work.

- Anne Castle: 14:55 Well, I think Mary is a good start. She has had an interesting history with the AMWG, starting as an AMWG member representing American Rivers, and then coming back as a facilitator for a long time, going away for a little while and then coming back again.
- Anne Castle: 15:17 So she has institutional knowledge and relationships with a lot of the different generations of AMWG members. And I learned a lot from Mary, um, I learned a lot from her facilitation style and--a component of that was if we were going to vote on a motion, she would type the motion onto her laptop, project it on a screen, and then we'd fiddle with it real-time. And you could do that with suggestions from different AMWG members in a less than fully parliamentary procedure type manner that was much more productive. And we'd end up with something that everybody was looking at as a motion, that pretty much everybody could vote for because they had participated in the process of crafting it. And if they had some concern about this word or that phrase, they could get that corrected before we had to put people on paper, um, with their positions.
- Anne Castle: 16:33 And, and so I thought that was a really effective device that Mary used. And another thing I learned from Mary was that she would sort of scan the room and figure out if somebody was looking unhappy but wasn't saying anything. And she'd make them say something. And we developed a really nice working relationship because, uh--Mary had, for other chairs, I think, taken more of the, I'm going to run this meeting role, um--and, the person who was the Secretary's [of the Interior] designee was there to make decisions and kind of provide the big picture, but wasn't necessarily running the meeting. But I ran the meeting, but Mary could facilitate the meeting. And that freed her up to be able to figure out who was mad that wasn't talking, and tell me, and, you know, we could get that person to express their viewpoint and adjust the process accordingly.
- Anne Castle: 17:55 So I felt like we had kind of a good team thing going on, but I think Mary's style is very inclusive, and--she tries to make sure that people aren't left behind. And that, that, I think, is key to a functional group where people feel like they're contributing, that they're not being ignored, and they're part of this collective effort. And, you're right, that's what we were really trying to create. Okay, we've got a problem here. We've got a dam that

didn't exist before and it's upstream of one of the most iconic parks in the world. How are we going to solve that problem collectively? And yes, we have different missions, and different constituencies to respond to. But let's, let's work on it. Let's work on it together. And, so, that was a--

Paul Hirt: 19:05 Do you think it was reasonably successful during your time there?

Anne Castle: 19:11 I like to think so and partly because, um, there had been all this conflict and controversy and divided votes and litigation at the beginning, and toward the end of the time I was there--I think all the votes, I remember, were consensus votes without dissension. So we'd come to these decisions collectively. Now, one of the things we did as an experiment, and I'm not sure if it's still going on, but, this is really, this is another interesting evolution: so, so as I said, when I first started, the federal agencies are spatting with each other and, and voting differently, um--and I said, "We're not going to do that anymore, we're going to figure out how we're all voting, then we're all voting that way. And the other AMWG members, particularly the states, had been the most vocal about, "What's going on with these federal agencies? They're voting in different directions. We don't know what the Secretary thinks, how are we supposed to figure that out?" And then when we all started voting the same way, they said, "Well, you know, we don't know what the federal agencies are thinking because you all go in a room together, and you figure out what you're going to say, and then you do it and we don't know who's thinking what." And so that was, that was, you know, whatever you do, damned if you do, damned if you don't, I guess. But um, so there was a suggestion that, if the federal agencies were going to all vote the same way, then why should they vote? Why should they be voting members? Which, which is not as weird as it might sound at first, because it's really unusual to have federal agencies as voting members of a Federal Advisory Committee, which is what the AMWG is.

Anne Castle: 21:14 So it's a committee that's set up to advise the Secretary. Presumably, the Secretary can get advice from the Park Service or USGS or whichever, independently. And--so we decided to try as an experiment that the federal agencies would be non-voting members. And that was implemented about midway through my time as the chair of the AMWG. And, as I said, some people liked it, some people didn't. It gave the federal agencies some freedom though. And we were explicit at the time that--the agencies, the Interior agencies weren't going to vote, but they were still going to fully participate and they were going to make

their views known, so that AMWG members with less time and resources to invest in the program would get the benefit of the expertise and the insight from the federal folks who were, you know, immersed in these issues as part of their jobs.

Anne Castle: 22:35 And so that was a little bit of a struggle. But that was what we were trying to do. So going back to the question of who is influential: So Mary, I would say, but I really think that there were contributions from so many quarters, the Reclamation folks had to think outside of their traditional box, which is water operations. How are we going to manage this dam to get the water where it's supposed to be and generate electricity? Because that's what creates revenue. They had to go outside that and think, yes, we have endangered species responsibilities, but we're all part of Interior and we want to preserve Grand Canyon National Park, and how do we do that, and how do we honor the tribes? And so I think there had to be a considerable evolution in the--the analysis, the sort of internal analysis that the Reclamation folks went through. And that had been occurring over many years since, really, the enactment of the Grand Canyon Protection Act.

Anne Castle: 23:55 But it was happening in real time while I was there and I could see it happening. Ann Gold was the deputy regional director of the Upper Colorado region. And she was the Reclamation AMWG member for many years. And she was terrific in terms of her ability to understand the positions of other AMWG members and try to work with people to figure out a constructive path forward. The folks at GCMRC were very responsive, and under Jack's [Schmidt] leadership, I think, particularly so, to--not only let's do science that makes a difference to real people on the ground, but let's get our results out there. Let's not make sure that we've got thirty peer reviews and, you know, eighty-seven spell checks before we release something. Let's get it out as soon as we can, understanding and informing people that this may not be final, because it hasn't gone through peer review, but, but people want to see this stuff.

Anne Castle: 25:20 They don't want to wait for three years. And so that, that was a huge hurdle for USGS scientists to jump, but they were able to work on that and turn their results around much more quickly than they had before. The Park Service, I think, was also under Dave Uberuaga's leadership, very accommodating, in ways that they had not always been. And Jan Balsom, who was the chief scientist for Grand Canyon National Park, was really, really helpful in dealing with those tricky cultural resource issues and working with Reclamation to reach an agreement on historic

preservation that was part of what had to be done during the time that I was there.

- Paul Hirt: 26:34 We just arranged to interview Jan Balsom sometime in the next year.
- Anne Castle: 26:38 Good.
- Paul Hirt: 26:39 I'm looking forward to that. Yeah, she's been involved as a liaison with the tribes for Grand Canyon National Park for decades, so she'll have great insight.
- Anne Castle: 26:50 She does.
- Paul Hirt: 26:54 During the four or so years that you were involved, were there any really significant events that happened? Sometimes there'll be a massive flood that changes everything, like in 1983, '84, or a crash in an endangered species population, or a terrible fire. Was there anything that happened, some event that happened that sticks out in your mind as significant during your tenure?
- Anne Castle: 27:21 It was five and a half years that I was there.
- Paul Hirt: 27:25 Oh, OK... (unintelligible) Thank you.
- Anne Castle: 27:30 Probably the most significant things that happened were the high flow releases. And having the protocol in place to be able to do them really quick turnaround was pretty awesome. And so--
- Paul Hirt: 27:49 Were you doing them annually by that time?
- Anne Castle: 27:51 Almost.
- Paul Hirt: 27:52 That's a big difference from prior.
- Anne Castle: 27:55 Yeah, absolutely. But interestingly, I mean, nature always throws a curve ball, right? And there was one time that they were all ginned up to do a high flow release, and all of a sudden there was a green catfish problem below the dam, and green catfish are apparently even more of a threat to endangered species than trout, like by an order of magnitude.
- Anne Castle: 28:25 And there was some concern that doing a high flow release with these green catfish in the system was going to *really* upend the ecosystem. And they didn't have much science on the green catfish, and so they didn't know what would happen. As a result

of that, though, the high flow release for that particular year didn't happen. And so it was, I think that was right after I left, but I knew about it. It was in the works when, when I was still there--it was just a lesson on adaptive management, right? You just, you have no idea what's going to happen. You can't predict all these things, and you have to be nimble.

- Paul Hirt: 29:18 That's an interesting anecdote. I wonder if they engaged in the same kind of fish control, shocking and killing--
- Anne Castle: 29:26 I don't think so--
- Paul Hirt: 29:26 That you were suggesting for the trout?
- Anne Castle: 29:31 I don't think they did. I really don't think they've done electroshocking in the upper Canyon since like 2010, something like that. Secretary [Ken] Salazar came to the first high flow release under the protocol. And--I think I went to three of them.
- Paul Hirt: 29:57 Is it like a party? Does everybody gather at the dam and--
- Anne Castle: 30:00 Totally like a party! (Laughter.) Because it's a good-news story, right? You know, the media is all there and everybody supports, there's nobody who doesn't want it to happen. And, well, with minor exceptions. There's always an exception.
- Paul Hirt: 30:22 It took a while to get to that consensus, because there was controversy for a long time.
- Anne Castle: 30:23 It did. And um, you know, I got to turn the valve to open the bypass, too. Yeah, it's pretty exciting stuff.
- Paul Hirt: 30:32 Do you have any pictures of that?
- Anne Castle: 30:33 Oh yeah. Oh yeah.
- Paul Hirt: 30:35 Maybe you can send us a picture of you at the valve (unintelligible).
- Anne Castle: 30:40 (Laughing) Okay. I have a wonderful picture that's one of the ones I treasure from Interior, and I think it's from the first high flow release under the protocol, and there are six of us who were standing on the little concrete pathway right above the bypass tubes, which is what they open to create the high flow release. So there's tubes that are a little bit bigger in diameter than this room, um, so, maybe, fifteen feet in diameter? And they are shooting water, you know, maybe--the water is coming

out with such velocity that it shoots out maybe twenty, twenty-five feet horizontally before it falls into the river. And so this picture has the Commissioner of Reclamation, Mike Connor, the, our solicitor Bob Snow, who works on all sorts of Colorado River legal issues, the operator from the Bureau of Reclamation, Katrina Grantz, my deputy Lori Caramanian, the Assistant Secretary--Deputy Assistant Secretary for Fish, Wildlife and Parks, Jane Lyder, and the bypass tubes are shooting water behind us, and we all signed the picture. It's great.

Paul Hirt: 32:09 I would love to have a copy of that (unintelligible) that would be great. Next question, do you, what do you think, during your term, what do you think you were able to accomplish and what did you want to do that, maybe, you weren't able to accomplish?

Anne Castle: 32:25 Well, um, I certainly wanted to--uh--correct what I saw was dysfunction in the AMWG when I first arrived. I wanted to--hopefully get rid of the litigation, and ultimately that litigation was resolved by dismissal. (Pause) And I wanted to--resolve the discord among the Interior agencies. And I wanted to involve the tribes in a more meaningful way. And I think we moved toward all of those goals. I didn't know when I came in that I wanted to have a high flow release protocol, but I figured that out and we got that done and I think that, together with the non-native fish control program, those two things together were significant steps forward in--managing the operations of Glen Canyon Dam in a way that was responsive to environmental concerns, endangered species concerns and tribal concerns.

Anne Castle: 33:53 So I feel good about that. But there's always more to do. When I left, we were working on the Long-Term Experimental and Management Plan, the LTEMP, and that wasn't finished until after I left. I was hoping that it would be finished while I was there. The previous long-term plan had been finalized--it had been talked about, um, and I think finalized in the early 2000s. It was time to do another one and to incorporate all the scientific lessons we had learned and incorporate things like the protocol and the non-native fish control program, and to set the stage for the next fifteen years or so of [dam] operations. So I was disappointed that I didn't get to see that one through, but, but it got done and now is in place. Uh--I think--there are many Federal Advisory Committees that--their goal is to see themselves go out of business, because that advice is no longer required. They've given the advice that was requested and now they, you don't need them anymore. I don't know that that

applies to the AMWG. Partly because our science is always evolving.

Anne Castle: 35:39 And the--the nature of the river is changing, climate change is reducing flows. There will be, at some point, different agreements about the operations of Lake Powell and Glen Canyon Dam to deliver water from the Upper Basin to the Lower Basin that will mean different impacts in the Grand Canyon. And the AMWG needs to advise the Secretary about their interests in those impacts. So I think that-- it isn't and shouldn't be a goal of this group to put themselves out of business. Um, the nature of the problems will evolve--

Anne Castle: 36:39 The, um, direction that the federal agencies are getting from their political leadership will change over time and they need to hear from the interests that the AMWG represents about how-- how their constituencies view the operations of Glen Canyon Dam and how their interests are being affected. So, I think that need will continue to exist. And the fact that they've got different problems to deal with now than they did when I first started--that's great. And different people will be involved, different tribal representatives, different state representatives, and all of that is the mix that was intended when the Grand Canyon Protection Act was enacted in 1992 and said, the Secretary will get advice from these different interests about these operations. That's what the AMWG is doing. And I think it's, it's a really important function, and one that needs to continue.

Paul Hirt: 37:59 Yeah, that's a very compelling argument for the value of the program and why it should continue. Do you think that there is any structural element to the adaptive management program that could be improved? Are there any weaknesses in how the program is, how its representatives are selected, how decisions are made, the connection between science and policies, or anything that you see as a continuing weakness that might be focused on to strengthen the value of the program over time?

Anne Castle: 38:35 One of the things that I had been concerned about when I was at Interior was, the Grand Canyon Protection Act says that the Secretary will seek advice from these different listed interests that include the states and the tribes and recreation and environmental, scientific and academic, and there's not a designated academic member of the AMWG. And we thought about whether the charter should be changed to include that. There was some thought that the science advisors, through Dave Garrett at the time, served that academic function.

Paul Hirt:	39:28	David Braun now.
Anne Castle:	39:28	Okay.
Paul Hirt:	39:28	I would think that he kind of served that function, but maybe not.
Anne Castle:	39:34	Yeah. And should that be a different status than all the rest of the AMWG members? Um, I don't know the answer to that, but it was something that I was a little concerned about. The role of the science advisors was always a little murky to me. And so that was, I guess that was part of why I was concerned because I wasn't sure, exactly, what the charge of the science advisors was.
Anne Castle:	40:07	So that's something that I think could be considered if you start changing, especially increasing, the number of people on the AMWG, everybody gets worried that their votes are diluted, and so, it's a political discussion. It would, it would--have to be thoroughly vetted. So that's an issue. I remember it being raised when I was there that, um, the state representatives on the AMWG are usually the highest-ranking state water official. It's been designated by the governor, you know, so Tom Buschatzke [Director, Arizona Department of Water Resources], or the director of the water conservation board in Colorado, or the state engineer in Wyoming. And sometimes they'll send their designees, their deputies or whoever, but the member is usually the, <i>the</i> state water official. At least that was true, well, most of the time I was there. And then the recreational or, usually the recreational representative might own a bait shop at Page. And so, the concern was expressed that we didn't have parity among the members. I don't worry about that. I think that's okay. Because I think that--you don't want somebody on the board of American Rivers talking about, you know, going to AMWG meetings and sort of representing the recreational community. You want the guy from the bait shop, who's right there on the ground, and so that was not a concern that I had. I'm trying to think of anything else structurally.
Anne Castle:	42:18	It was hard, um, having meetings in Phoenix in August (laughter). And those are actually required by the charter.
Paul Hirt:	42:29	Oh really? I thought Phoenix was just a good airport hub, but it's actually in the charter?
Anne Castle:	42:34	Yeah. But we ignored it and had meetings in Flagstaff.

Paul Hirt: 42:41 They still do, occasionally.

Anne Castle: 42:41 Yeah. I used to get worried about people just wandering around at 117 degrees.

Paul Hirt: 42:53 Are you hopeful about the future of the program?

Anne Castle: 42:58 Absolutely. Yeah. I think it's a great program. I think--in my experience, the work of the AMWG is listened to in the halls of Interior. I think it serves as an outlet for some of the-- controversies that might otherwise erupt in more unproductive ways. I am definitely hopeful about the future. I also think that everybody who serves on the AMWG for any significant period of time establishes relationships with all the other people who are AMWG members and a lot of, the sort of--group that sits around the table, if not at the table, and those relationships are productive in so many ways that we, we can't even predict. For the environmental representatives to have a personal relationship and go out for margaritas with the head of the state water agency, in the state where their operations are located, that has benefits well beyond the operations of Glen Canyon Dam. And I think it's really, really important. And just a good incubator for, uh, for good things to happen because of those relationships in water operations throughout the Basin.

Paul Hirt: 44:48 You mentioned earlier on the interview, the impact of climate change on water supplies in the Colorado River Basin. I'm sure you already know, Lake Mead is about a third full and Glen Canyon Dam is less than half full and--

Anne Castle: 45:08 60 percent.

Paul Hirt: 45:10 60 percent now? And--none of them have been full for a while, and climatologists are not expecting or hydrologists expecting them (unintelligible). So there's suddenly some discussion now about how long into the future Glen Canyon Dam and Lake Powell are even viable. Do you ever think about that? Does it trouble you? What do you--I mean, this is a long-term program. What's your thoughts on, on the possible impact on the program and the Colorado River Basin as a whole under current conditions of drought and climate change?

Anne Castle: 45:47 Yeah, well there's, there's absolutely no question, but that climate change is affecting flows in the river. And the--the best and most recent scientific evidence is that that effect will be much more drastic in the years to come. 35 percent, maybe, reduction in flows by the next century. Huge numbers. And that,

that kind of possible future has to spark pretty intense conversations about how we are going to manage this river differently, if we're only getting 60, 70 percent of the flows that we're accustomed to on average. And--that will affect Glen Canyon Dam. As you know, there's a proposal called Fill Mead First that would put all available water into Lake Mead and only use Powell if there was excess.

Anne Castle: 46:58 You've talked to Jack Schmidt, but he's investigated that most recently. And the idea is of course that, if you only have one big water surface, there's less evaporation overall, less water loss overall, than if you have two big water surfaces, Lake Powell and Lake Mead. But there are other factors at work and the-- Jack's analysis, which is the most recent, seems to indicate that the projected water savings are not nearly as substantial as might have originally been thought. There was some science done in 2011 that suggested that 300,000 acre-feet a year could be saved if you follow the Fill Mead First protocol. Jack's analysis suggests that it might be on the order of 50,000 acre-feet.

Anne Castle: 48:10 And in my opinion, that's not enough to justify the really intense brain damage and Congressional uproar that it would require to do a Fill Mead First protocol. But--this is an area where we don't have the scientific data we need to reach well-informed conclusions. And we need more information about evaporation from both of the lakes. We need more information about seepage from Lake Powell in particular. We need more information about the potential impact of not having a storage reservoir at Lake Powell on the downstream ecosystems, particularly in the Grand Canyon. I think that if there's some potential to save 300,000 acre-feet in a river where we're spending millions of dollars to save 10,000 acre feet, I--that that--if there's that potential then the scenario needs to be investigated. I don't think it's justified by anything we've seen currently, but we need to develop the data to be able to do that analysis and reach more definitive conclusions.

Paul Hirt: 49:54 Do you think we need another adaptive management program working group authorized by Congress to deal with the larger issues of basin storage and water allocation and climate change? Or do you think the current AMWG could take that on? It's so much bigger than its original charter, but these are, this is science that needs to be done and collaborative decision making. Who would do that?

Anne Castle: 50:21 The bigger challenge about adjusting to reduce flows is in the first instance a discussion that needs to be had among the states, the seven Basin states, with Interior.

Paul Hirt: 50:46 Revisit the Colorado River Compact, you mean, of 1922.

Anne Castle: 50:46 No, I don't mean that.

Paul Hirt: 50:47 Oh, you don't mean that?

Anne Castle: 50:47 No, I'm talking about primarily the interim guidelines. And the interim guidelines were put in place in 2007, designed to be effective through 2026. But they, the Secretary of the Interior is required to start consultation on renewal, or the next iteration, of the guidelines by no later than the end of 2020. That's not that far away. And so the states need to be involved in those discussions. The drought contingency planning that's taking place in all of the Basin states, but most intensely in the Lower Basin, is part of that, and will probably, the DCP [Drought Contingency Plan] discussions will probably morph into the re-consultation under the interim guidelines. I think that there's enough flexibility in the 1922 Compact so that it doesn't need to be revised, but the operational implementation of the 1922 Compact needs to evolve based on climate change and increased demands. So, but that's something that the states have to deal with in the first instance. And I can tell you that the states would be very concerned about having an advisory committee with any sort of power around that discussion.

Paul Hirt: 52:28 Do you think that the drought contingency plans in place now could potentially have an effect on the ability of the Glen Canyon Dam Adaptive Management Program to continue its high flow event, experimental high flows, continue its research and its work. Is there any potential for water shortages to undermine the continuation of the program, in your opinion?

Anne Castle: 52:57 Oh, I think decisions around the drought contingency plan and how that plays out ultimately can have an effect on operations. I don't think it'll affect the high flow experiments, probably not, because the way the dam has to be operated for water delivery is on an annual basis, and so they can jigger around with the timing, and the high flow releases are part of that. So even with diminished releases, they should be able to do high flow releases. Maybe not as high, but even then it's just a question of how the timing of the releases works during the year. It doesn't have to affect the annual deliveries. And that's an important point. That was something people would be concerned, "Well, you're wasting water, you know, you're sending Upper Basin

water to the Lower Basin and you don't need to". And we'd say, "No, they're getting only the amount of water that they're entitled to. We're just re-timing it."

- Anne Castle: 54:08 So I think there's no reason why you wouldn't be able to do that, still. And there's an energy cost to those high flow releases, because you're bypassing the turbines, and so you lose the energy production that would have occurred had you released that water in a more uniform way. In the overall scheme of things, that's a relatively small loss compared to the annual revenue that's produced by the turbines. But that-- because it's non-carbon energy, that may be a concern in the future, not wasting a drop of water that could be used to produce hydropower. (Pause.) But, you know, that's a balance. That's been a balance that the system and the AMWG had to consider from the beginning. So, you know, climate change is having an impact on the Basin as a whole and that's going to continue and become more dramatic. But, you know, I think that's another reason why the AMWG needs to continue, so that all those diverse voices understand the impacts of climate change on their particular constituencies and interests, and are able to advise the Secretary.
- Paul Hirt: 55:44 Great. Last question. What advice would you give incoming member of AMWG? Somebody new coming on the team. What would be your best advice as they launch their participation in the program?
- Anne Castle: 56:01 Form relationships with the fellow AMWG members. People have been coming in new for as long as the AMWG has existed. So there are a lot of acronyms, there's a lot of legend, there's a lot of institutional history that may feel intimidating to a new member. But pretty much everybody there has been in that position at one time, and I found that people are proud of the AMWG history and are more than willing to help educate new members. But it's the creation of relationships with your fellow AMWG members that will have the most lasting effect and enable you to represent your constituencies in the most effective way and communicate on a personal level what their concerns are, what their interests are, and be able to work with other members at that personal level to create mutually beneficial solutions.
- Paul Hirt: 57:28 Thank you so much, Anne, it was a wonderful conversation and I appreciate you taking time to do this.
- Anne Castle: 57:32 You're welcome. My pleasure.

End of interview