

Forty years ago this week disaster hit the Black Hills of South Dakota
We're taking a look this hour at the 1972 Black Hills Flood.

The storms that brought the 1972 Flood dropped up to 15 inches over parts of the Black Hills. Two hundred and thirty eight people died as streams along the eastern slopes Black Hills roared out of their banks. It remains not only the worst disaster in South Dakota but also among the most deadly flash floods in United States history. In addition to the human tragedy—the flood destroyed 13-hundred homes and five-thousand automobiles. But to get a real understanding of this disaster it's best to hear from those who witnessed the flood itself. Charles Michael Ray compiled this montage of voices of flood survivors.

"At noon on June 9th we took a departmental picture and just about everybody came to the Police Department I don't think we were only missing a couple of people, but it was a funny, funny day--very humid, kind of gray sky, kind of warm, easy to sweat but no air movement it was an odd day," says Tom Hennies former Rapid City Police Chief. Hennies survived the '72 flood and died in 2009.

"I stopped at this one clients house who was blind and when I went in she said what's going on outside – and I said you wouldn't believe the color of the sky it's kind of a pea green and she said something bad was going to happen," says Nancy Brady '72 Flood Survivor.

"When it started to rain it was black and when you looked west out this direction it was absolutely stunning how black It was," says Jim Coleman Flood Survivor.

When we got home the TV was on and on the bottom they were scrolling 'Possible heavy flooding along Rapid Creek.' That was really the only warning, no one really knew what was going on," says Lovonnee Masters '72 Flood Survivor.

"The radio and TV were telling people to evacuate. A lot of them didn't evacuate because the year before there had been several small flooding areas from some of the creeks in the west part of town, so I think people weren't too concerned, they thought it wasn't going to amount to much," says Margaret Kovarik '72 Flood Survivor.

"It was about eight o'clock or something the wind come up and by then the whole hills were a solid wall of water it just set there it wouldn't come off," says Alex Koscielski who was a meteorologist that worked for the National Center For Atmospheric Research.

"The rain instead of being raindrops was big sheets of water coming down one after another just these huge sheets," says Charlie Ray '72 Flood Survivor.

"Of course it kept getting darker and darker and pretty soon the electricity went off and the phones were gone," says Chris Coleman '72 Flood Survivor.

"Just as we were standing there watching it the water just started coming up on those windows and wasn't more than just a few minutes and we were standing on our tip toes looking out over the water and we got to thinking you know this isn't smart we better get upstairs. And we no more than got to the top of the stairs and a telephone pole came through one of those big windows and five feet of water came crashing into the whole house shook the whole place," says Charlie Ray '72 Flood Survivor.

"We pulled up, back up on scene on the highway and there was a car ahead of us. For some weird reason I looked off to the left, my brother was driving, and I saw this wall of murky, muddy red water coming down at us, coming out of the canyon. I even know why we could see it, it must have been lightning. I quite literally told my brother to get the hell out of here. That's probably one of the first times my older brother ever did what I told him to do, he started to back up. The car in front of us started to float away and I understand that guy died," says Jerry Wright '72 Flood Survivor.

"I had a four-wheel drive international Scout so I said let's take the scout because it's a little higher profile and it was higher off the ground because the water was already running across our ankles and across our feet and partway up our leg across our yard. So I said we'll take the scout, we'll take the scout. We got the family situated in the scout and backed out of the driveway. It was just a few feet to Jackson Boulevard and the bridge and took a left. We didn't get across the bridge and the first wall of water caught us," says Ron Masters '72 flood survivor.

"You could not see anything at that point because it was just pitch black outside unless some lightning would and that would just light up the creek. The night was punctuated frequently with lightning and that as kind of a godsend in a sense because you had some idea of what was going on," says Chris and Jim Coleman '72 Flood Survivors.

"I felt the vehicle start floating and it cut the engine out immediately. Then it spun us around and we started to drift with the current," says Ron Masters '72 flood survivor.

I did see a big frame house come down on the east side of our house and hit a big cottonwood tree and just explode just literally designated right there on the spot. And I saw other objects float by at a good 20 miles per hour not exaggerating," says Charlie Ray '72 Flood Survivor.

But all of a sudden we're floating backwards facing into the water and all of a sudden we hit a hard jolt. We found out later we had wedged between some of those great, giant cottonwood trees, says Ron Masters '72 flood survivor.

"And at this point I was starting to roll and somersault through the water and had my drowning experience. I remember my father calling out to me and saying you know grab on to something and what's so crazy about all of that is that during all of this there were trees and houses breaking up and other people in the water and other I mean I thought it was the end of the world," says Merlyn Manger '72 flood survivor.

"When the water came up in the front and it was already up to our necks, going like this to keep our heads above water at this point. My first thought was, I didn't know I was going to die like this, says Ron Masters 72 flood survivor.

"The sound was unbelievable just like a freight train running you could hear those kids hollering for help and the fire truck was floating and there was no way we could get to them we had no equipment we had no way to tie people to a rope or anything and as the night went on it got quieter and they quit yelling some fell off, some fell out of other trees and those that stayed on those houses were safe as it turned out the houses didn't leave the foundation," says Tom Hennies former Rapid City Police Chief

"But for some reason, immediately, I let my feet float up across Lavonne who was sitting in the passenger side of the vehicle. I put my feet against that window and just shoved it as hard as I could and it dropped about that far. The old saying is if you can get your head through it, you can get your body through it. I did get my head through it and I got the rest of my body through it and I got up on top of the vehicle. This time the water is still right at the top of the vehicle, it hasn't covered it yet. So I'm standing up on the cab and I reach back into that open space to see if I can get ahold of anybody," says Ron Masters 72 flood survivor.

"I just thought I was going to die because I started breathing in water. I said, 'Well, here I come, Lord.' I began to feel the beginning emotions and feelings of death. It was like I was being pulled toward this beautiful, marvelous light. I began to feel so euphoric that when he got ahold of my arm and pulled me out of there, it was so disappointing. Here I was, going I knew to this wonderful place, heaven, and I get pulled out into this chaos around us that was unbelievable, it's really difficult for me to describe everything that's going on. He hangs me in this tree. I'm holding onto this branch on the cottonwood, thank God for those wonderful cottonwoods were there in that area near the creek. I was hanging on to that and then he reached back in," says Lavonne Masters '72 Flood Survivor.

"So I reached back in there to see if I could get anyone else. I happen to grab the arm of our oldest daughter, Karen, the 14-year-old, and pulled her through. She had in her arms in the backseat our little guy Timothy who was two and a half. When I pulled her through that, she lost him. She lost her grip on him. I think I can probably insert at this point that Timothy was the last body that was found. He was found in Rapid Valley. He had actually floated all the way from Rapid City all the way through and was found way out in a tree. The only way he was identifiable, he was the 238th body, was his little Minnesota Twins jacket that he had on. We were able to identify him because of that," says Ron Masters '72 flood survivor."

"The thing I remember that was the most profound to me was there was a young lady in there with a baby and if I remember right the baby was like a week old. And she said, 'Would you carry this baby for me?' Because as I remember the water was about waist high and it was still pretty fast and they wanted to get out because they didn't know what was going to happen next. I said sure and I took the baby. We were walking out to the truck and the mother was ahead of me we were going all the way up and I stepped in a hole and went under water, baby and all. I remember thinking, 'Well, I'm not letting go. We're either making it together or we're going together, but I'm not letting you go.' I couldn't live with that. We bumped into something ground or whatever and I was able to get back up. It's not like it was 10 feet deep water but it was fast. It was probably three or four feet. We caught something and I finished walking over to the truck and handed the baby over to the mother and went back in to get more people. It was an interesting thing," says Jerry Wright '72 Flood Survivor.

" Then I just knew that I didn't have really any time left because my lungs were filling with water and I thought, 'This is how it's going to be, this is it, I'm going to die," says Merlyn Manger '72 flood survivor.

"So we're all in the car and its floating already and I attempted to use the wheels of the car as rudders and what we done – the only house that stood up at the end of the block belonged to the Baldwin family. The only reason it stood up was because there was a big cottonwood tree right in front of it forcing the water to go around it. So the car circled around the house and came around by this rut iron steps there which I reached out the window and grabbed it and held on for dear life and the car settled right there and then we boosted up everybody on the roof," says Vern Bauer '72 Flood Survivor."

"At that point, things just started happening because things were breaking loose. There were parts of houses that went by us, automobiles that went by us. I'll never forget the sound of the propane tanks that came down from the Braeburn addition that was beyond Canyon Lake. Some of those tanks were spewing some of the bottle gas. The fumes you could smell that none of them were on fire, but the fumes and they were hissing and they were sailing by us. On one occasion, I looked down at a flash of lightning and saw the body of a rather large man face down that just went sailing by us rapidly in the water and disappeared out of site. All kinds of debris and things that we would see go by us," says Ron Masters '72 flood survivor.

"Across from us and across from Rapid Creek on the north side was trapped a young girl, probably junior high age girl. We could hear her above the roar of that water. It was so loud we almost had to shout at each other to be heard. This poor girl was apparently trapped in a tree also and she cried throughout the night. She'd be quiet for a while and we'd think if she had been lost into the water, but then after maybe 10 minutes or so she'd start crying, 'Oh help me! Help me! Somebody help me! God help me! Please help me!' And she'd just cry out, it was just so pathetic and there was nothing that we could do to help this girl, but to hear her so desperate and crying out would tear at your heart to hear her besides what was happening to us. You go into shock. We were in some degree, the water was cold, we hung on then, I hung on to Lavonne with one arm to keep her from being swept away and then hung on and dug my fingernails into this

big ol' tree with the other arm and almost miraculously was able to hang on to her from 10:30 to maybe 4 o'clock in the morning or so when dawn started to break and the water started to subside. I was hanging in that tree and when debris would come and hit us at the back of our legs we would swing forward. I will never forget there was one heavy thing that hit us at the back of our legs and we found out later it was a kitchen countertop, had come and just hit us with the force of that water. We swung forward almost out straight and I thought I can't hang on like this. In fact, I yelled that to him, 'I can't hang on any longer!' And he said, 'Baby, I brought you this far you're not leaving me now.' Ok, ok." says Ron and Lavonne Masters 72 flood survivors.

"But then later, a lot of thoughts go through your mind. I can't say my life flashed through my mind, my whole life like some people say when they're facing death. But a lot of thoughts went through our minds. I had some thoughts about things I had thought were so important that very day that no longer seemed important. You suddenly have a totally different perspective about living. What is important? It's your loved ones. It's people that matter, not things. I think as we were standing there seeing all those things washed away and gone forever, most of them, you realize that things are not important." says Ron and Lavonne Masters 72 flood survivors.

Hanging on there for that period of time you're in some degree of shock and finally what to do to bolster ourselves we just started to sing, we just started to sing. We sang some of the old hymns of the church that we knew like, 'Great is thy faithfulness, great is thy faithfulness.' We sang another song that was kind of inappropriate, 'Praise the Lord, praise the Lord let the earth hear his voice, praise the Lord, praise the Lord, let the people rejoice.' The earth was hearing His voice. We sang the old hymn, 'How great thou art when I hear the rolling thunder, thy power throughout the universe displayed.' We were listening to the power and the raging of the storm and we just sang our way through it. We sang and sang and our daughter Karen joined us. The Bible talks about in the Old Testament about God giving us songs in the night and sometimes He does that. In the darkest and most difficult times, somehow a song will carry us through." says Ron and Lavonne Masters 72 flood survivors.

We were just getting settled and we heard a voice from inside the vehicle. I couldn't believe that we heard a voice. I went to see if I could look in the back window and I couldn't see in. I got on my knees and just put my head down to see if I could see in but it was so full of the mud and the gunk that had gone through that you couldn't see anything. I went back to the window, laid my cheek in the water because the water was now right at the level at the top of this window that is down. I laid my cheek in the water and put my mouth in the opening and said, 'Who is it?' And at this point, our daughter Joanne who at that time was 10 floated across and came right up to her daddy's face and was this close to me, just right up to my eyes. I looked into her eyes and saw a look I'll never forget as long as I live of this child. What had happened to her in the course of this night was her two brothers died beside her. She said that for a while they were trapped in an air bubble because of the way the car was titled. She was trapped in this air bubble and she said for a while Steve and John and I talked for a while. Pretty soon, Steven didn't talk anymore and he slumped down into the water and he was gone. So Jonathan and her talked and pretty soon he didn't talk anymore and slumped into the

water and died beside her. She continued, there was enough oxygen to sustain her yet in this air pocket that was inside the vehicle. She was trapped in there from 10:30 to 4:30 in the morning. The first thing she said to me when she looked me right in the eye in all the innocence of a child, 'Daddy, God wants me to be a missionary.' And I said to her, 'Honey, He surely must, He surely must.' I pulled her out of there and of course she was so pleased to see she still had a mommy and a daddy and a sister. She said during the course of the night she forget she was alone, that her parents were gone, all the family was gone and she was wondering who will want me now? Will I go to live with maybe Grandpa and Grandma or my Grandma down in Iowa? Where will I live? If I live through this who will want me to be part of their family? She was happy to see she still had her parents and we were happy to see we still had her." says Ron and Lavonne Masters 72 flood survivors.

"Then finally later in the morning about 5 o'clock some men of the National Guard appeared across the Rapid Creek on the other side of the bridge. They did rescue this girl, the first thing they did was rescue this girl that we had heard and got her out of the tree. Then they floated a boat across to rescue us. They had to work at it. The current was still very swift, the water was high. I remember one of the men fell out of the boat and had to hang on to a tree because the current was still so strong coming to rescue us. We're standing there and of course we're in such shock that a lot of things don't penetrate in your consciousness anyway. That is just vivid in my mind to struggle to keep his own life in tact when he was coming to rescue us. We have been so grateful for their courage and their daring to come in waters like that even at that stage of the flood before it was really safe to come to rescue us and they were able to get us out." says Ron and Lavonne Masters 72 flood survivors.

"This one young man was especially heart wrenching because he and his wife and baby had just come to town and taken a house on Omaha street and he'd gone out looking for a job and when he got back of course it was gone and everyday he would go to this place and dig in the mud trying to find his wife and baby and everybody was aware of it and he was such a tender young man that he just grabbed everybody's hearts and everyday he would come back with the same look – despair, utter despair," says Nancy Brady, 72 flood Survivor.

"Now that I've seen a phenomena like the '72 flood I know that it can happen again, or that an even bigger flood can happen. People that weren't there and who were born later have no idea the possibilities that can happen, and they're like we were before the flood, they never dreamed that they'd be flooded out," says Charlie Ray 72 Flood Survivor.

This Montage of 1972 flood survivors was produced by SDPB's Charles Michael Ray. He used SDPB's own archived audio and interviews gathered by the Rapid City Public Library's 1972 Black Hills Flood Oral History Project.

We just heard a montage of 1792 Flood Survivors produced by SDPB's Charles Michael Ray.

He also spent time talking with scientists who've been researching the frequency of flash floods like 1972. New research that shows 1972 was not the biggest flood in the Black Hills. The studies delved into the past by digging in the flood sediments deposited in caves along places like Dark Canyon. What scientists found, is a surprise to many. SDPB's Charles Michael Ray starts this next segment on tranquil section of Rapid Creek, 40 years after the 1972 flood.

"I'm standing right now in Sioux Park on the Westside of Rapid City. This area is very different than it was four decades ago. Today, Rapid City has a series of parks running along the creek through the entire length of town. It's a big open green space, all the homes that were here in 1972 were removed, these parks are a buffer zone, left open and free of houses in case another major flood happens again."

Scientists like Dan Driscoll with the United States Geological Survey know that it's only a matter of time before the next flood hits. But the '72 flood also leaves behind some tough questions.

"So one of the big questions that's always been out there is what's the context of the 1972 flood," says Driscoll.

Driscoll and others are asking how often large flash floods like this happen, and how big can these floods actually get.

"Is this something that happens every 100 years, every 500 years every 1000 years every 5000 years. So we've struggled with that question for many years," says Driscoll.

Scientists like Driscoll know the '72 flood is the biggest ever recorded--but flood records only go back about 50 years prior ... and lacking a time machine it's difficult to know if larger floods occurred before record keeping. Dan Driscoll and a group of researchers have a different way to delve into the past --namely, paleo-flood research.

"These large floods can leave various sorts of evidence they basically can leave behind in the right locations a chronology of these exceptionally large flood events," says Driscoll.

Driscoll and his team discovered a number of small caves, or alcoves lining sides of the canyon walls on Rapid Creek, and other streams. Inside these protected caves and overhangs the researchers FIND layers of hidden flood sediments that tell the story high water events.

"This particular location is pretty much head high I'm about 6 feet tall it's about 6 feet back to there so this roof like feature is very important in shielding these deposits and it helps preserve the organic material for radio carbon dating," says Driscoll.

The flood sediments in these caves are laid down when the water actually got deep enough to fill them up. When scientists know the water level they can calculate the flood magnitude. By digging down into the caves and alcoves, Driscoll's team finds layers on layers each representing a different flood.

The flood deposits enable Driscoll's team to look back about two-thousand years into the past. And what they find- might be surprising - the 1972 flood, as big as it was -was not even close to being among the biggest... Not even in the top 10. In fact the '72 flood was rather mediocre in size.

"You know with certainty from this research we now know that the flooding in 1972 was not exceptional and you know floods have occurred on this time frame you know every few hundred years more or less and one would expect all things being equal you might expect similar reoccurrence in the future," says Driscoll.

The research shows that over the last 2000 years Rapid Creek has seen 12 or more major floods.

"You know all of these floods were at least twice as large as that which occurred in 1972, says Driscoll

So a dozen or more floods twice the size of 1972 are now on record. It turns out that the topography of the Black Hills adds to the potential for floods here. The hills act like a speed bump for storms, they can occasionally cause bad weather to slow down and stay for a while. Susan Sanders is with the National Weather Service.

"When the winds above the tops of the hills are light then the thunderstorms keep growing but they don't move off into the plains like they do sometimes so they stay in the same place and we keep getting the southeast air feeding more moisture into the storm and when the storm is anchored in the same location then they keep raining in the same location and that's what causes the heavy rain and the flooding. Now in 1972 it was a large area where those thunderstorms formed so all the way up from Sturgis

down through Hermosa. Other time we've had similar situation but re area where the floods formed were a lot smaller so the flooding was more localized like we had in Hermosa in 2007," says Sanders.

When these storms get trapped over the hills they can drop huge amounts of water in a short time. All that water then gets concentrated in the canyons and comes gushing down. To put the magnitude of these giant floods into context let's go back to Rapid Creek.

Fade in (Water Sound)

It's a nice cool late spring day. A few trout are darting around in the clear water below. Below me the creek is rushing by at a rate of about 55 cubic feet per second. Cubic feet per second might sound a little strange. But you can think of a cubic foot as more or less about the volume of a basketball. So in other words right now about 55 basketballs are going by this point every second.

Fade in: (more rushing water)

But that storm on June 9th 1972, dropped over a foot of rain on parts of the Black Hills, and this creek swelled exponentially in size. At its peak Rapid Creek was running at about 50-thousand cubic feet per second. It ended up about a mile wide at one point. That makes today's flow look like a little trickle.

Fade out: (water sound)

Remember 1972 was just a medium sized flood. The biggest flood on record was *four* times the size of the 72 flood. The debris from this flood deposited in a cave high on a canyon wall carbon dates around 440 years ago. Now South Dakotas should be able to understand that biggest Rapid Creek flood on record way back then. Because we saw something similar last year--on the Missouri River. Dan Driscoll puts it into context.

"Basically the largest flood that we have evidence along Rapid Creek our estimate is at least 128-thousand cubic Feet per second and you know that's almost as large as the 160-thousand cubic feet per second which was being released from the Oahe Dam and other Dams along the Missouri River," says Driscoll.

A flood four times the size of 1972 is mind boggling even for the scientists who study flash floods.

Perry Rahn is a recognized expert on Black Hills floods. He is a professor emeritus of Geology at the South Dakota School of Mines.

"It makes us think," Because normally, you don't get all these big floods then all of the sudden you get a whopper," says Perry Rahn is a recognized expert on Black Hills floods

I wanted to get an idea of what a flood four times the size of 1972 would do to Rapid City today. So I took a walk with Rahn through downtown. Rahn takes me to a spot on the Hubbard Mill – it's s big landmark in the middle of Rapid City – it's about a block from the creek.

"Right on Omaha Street you see that little grey square that's the marker the US Geological Survey put in that marks the high water from the June 9th 1972 flood," says Rahn.

Rahn uses the high water mark from 1972 to estimate where the WATER would be downtown, if four times more water were flowing through this spot.

"I would judge and I ran through some preliminary math it would be about 15 feet higher," says Rahn

15 feet higher?

"Yea"

In some back of the napkin calculations Rahn works out that a flood four times the size of 72 would put water up to the stop lights on Omaha and Fifth. He calls this a conservative estimate, he says more detailed work needs to be done. But this shows a flood of this size would mean a fair amount of downtown Rapid City would get wet. We walk up 5th street on the east side of City Hall.

"It's be over our heads here... so it would certainly come up to that statue on main street. He'd be under water... and I think it would catch up to Saint Joe Street," says Rahn

We can get an idea about the potential size of future floods by looking at the past. But Mark Anderson who heads up the USGS Water Science Center in Rapid City points out that the past isn't always the best predictor of the future. Anderson talks about non-stationarity - it's a fancy scientific term... in the context of climate change -- it means that what we thought was normal, might not be the norm anymore.

"And unfortunately when we see things like temperature records and precipitation records falling and being replaced by really abnormal events, we begin to think we're in this period of non-stationarity, and so we're starting to see more weather events. Not only here in the Black Hills but in East River we had a big storm last year and back in 2008 we had that event that washed out the Rosehill dam and so it can rain hard when it wants to around here, says Anderson.

Fade UP: Back to Rapid Creek -- sound--

On Rapid Creek tranquil waters are flowing through the city's greenway. A number of those who survived the 1972 flood are still here. Many more are returning to Rapid City for THE 40th anniversary commemoration events. In another four or five decades no one alive will remember what happened in the Black Hills on June 9th, 1972. The science, shows that major flash floods in the Black Hills are not a matter of if – but rather - when. Those who who did survive this flash flood hope their stories aren't forgotten anytime soon. Merlyn Magner is among them.

"All I know is that I lost three members of my family that night, and I almost lost my own live because a flood came through this flood plain one night in 1972 and it will happen again, please do not build homes in a flood plain," says Magner.

This weekend Rapid City residents remember the 1972 flood. On Saturday the community gather for a commemoration event including a reading of the names of the 238 people who perished. On Sunday a multi-denominational memorial service is planned for the early afternoon.

SDPB needs to thank a number of people for their help with this production.

Former Mayor Don Barnett along with Keith T. Johnson and Verne Sheppard. All who help with archived audio and copy.

The Rapid City Public Library 1972 Flood Oral History Project. On line here → http://www.rapidcitylibrary.org/lib_info/1972flood/index.asp

Plus the Journey Museum and the the Minnilusa Pioneer Museum for their help throughout the process

Musicians with the group "FROM THE MUSES OF MOUNT HELICON" for composing and producing the music used in today's production.