

whereby an officer would have certain graduate schooling, so much ROTC or organized reserve duty, so much military, and so much civil works service. I had not had any of the civil works duties as of then. I imagine that was one of the factors that they had in this assignment.

I think the other one was that from there I was sent up to Pittsburgh to take charge of the flood control survey in the Pittsburgh District. John Paul Dean, my classmate, had been in charge of that. He was ordered to the Chief's Office, and they needed to fill that slot, and I think John Paul probably recommended that I be assigned to it. That may have been one factor connected to my being assigned to Pittsburgh on civil works duty.

Q: Did any of your classmates or instructors at the Engineer School have particularly outstanding careers subsequently?

A: Instructors, we had Bill Hoge, and we talked about him. I had Bill Heavey, and we talked about him. Of the students, Em Itschner, later Chief of Engineers, was a classmate of mine, but he was one of the junior ones; and [Emerson L.] Cummings, who was later Chief of Ordnance, both with subsequent distinguished careers, but at that time didn't demonstrate anything particular. They were just second lieutenants and fellow classmates, and they didn't end up at the top of the class or at the bottom. They just went through with the run of the mill. I don't remember anybody special outside of Ed Leavey. He was very competitive and was fighting intensely with me to be number one.

Pittsburgh District

Q: Your first civil works duty was as assistant district engineer at Pittsburgh under Jarvis Bain. What were your primary duties in Pittsburgh?

A: The main purpose of my being sent up there was to take over from John Paul Dean the Pittsburgh flood control studies. Pittsburgh had sustained serious damage in 1907 from the " flood of all floods, " as they termed it, and John Paul had initiated these studies proposing a series of reservoirs on the various tributaries.

I was surprised to see that the program had not advanced further than it had. Much of the allotted appropriation had been spent, and there wasn't anything prepared on the report—it had all been field work investigation. So I was very busy in connection with preparing the report on that and finishing up the plans and estimates of the various flood control reservoirs. We had a number of reservoirs on the upper Allegheny River such as Red Bank, Crooked Creek, Kiskeminitas, and others; and on the Monongahela River, the Tionesta, Tygart, and others. We were primarily concerned with the protection of Pittsburgh and the lower reaches of the Allegheny, the Monongahela, and the upper reaches of the Ohio River.

I prepared this rather voluminous report. I might add that in doing this I had made a rather extensive hydrographic study. We studied potential rainfalls; we made up rainfall and runoff graphs of the different tributary basins; we worked out the relationship between rainfall and runoff and based on that we made plans for four different types of floods that could occur in the Pittsburgh area. We had plans A, B, C, and D, depending on—for instance, in one case where you'd have a flood on the Allegheny and then something would happen on the Monongahela, or vice versa; or another case where you'd have snow over the basin accompanied by rain, and so on.

We had these four potential situations, any one of which could have created a big flood at Pittsburgh, up to 45 feet on the gauge as compared to the previous flood of 35% feet on the gauge in 1907. When we submitted the report indicating a cost of nearly \$100 million on these reservoirs and various works, a very large sum at that time, the Pittsburgh Flood Control Commission, a civilian group in Pittsburgh, retained a Professor Thomas, who was the dean of hydraulics at Carnegie Tech, to review our report.

One of the things that they pooh-poohed was our over-planning for a “flood that had never happened and never would happen.” But I felt that you should not put in a flood control plan, let's say with river walls for floods up to a certain elevation wherein everybody felt secure, when after that a flood in excess of that could happen. In such cases it would do more damage than if you had not had the flood control plan at all.

In any case, they had hearings in Congress on our report and neither approved nor disapproved the project but just filed it without action. It was interesting that in 1936, some eight years later, my Plan B flood came down right on the button and the flood came within 9 inches—below, not

above—what our plans had showed. So within a matter of weeks they pulled out the report and Congress adopted the project for the flood control of the Allegheny and the Monongahela rivers and the upper Ohio, basically in accord with the reservoir studies and so on which we had prepared in our report in 1927-28.

Q: Flood control was a relatively new area for the engineers. I would assume that your work in Pittsburgh was relatively rare in the Corps of Engineers at that time?

A: It was. Prior to that time the only authorized projects for flood control were for the Mississippi River and tributaries. We had the Mississippi River flood control plan, and then we had some authorization, I think, on the Sacramento River. But the government had not yet adopted a policy of providing flood control on the many other rivers and streams spread throughout the country. It wasn't until later, you might say during the period when we were having the House Document 308 surveys, where we made studies of all important river basins in connection with their improvement for navigation, flood control, power development, and irrigation, that the federal government adopted a policy of providing flood control on minor streams and other streams such as the Allegheny and the Monongahela.

Q: Did you find any opposition among older engineers to Corps involvement in flood control surveys or work?

A: Well, I don't think any more than what prevailed generally. I mean, there was always the attitude on the part of some that the civil works type of engineering should be done by other civilian agencies and not by, let's say, a War Department agency such as the Corps of Engineers. There was jealousy between the Interior Department, because they were always working to get more projects for their personnel. There was a bit of jealousy and repercussion that way. But by and large, those were separate instances. For example, I was asked to give lectures and explanations of our projects to groups of engineers, and they all seemed very favorable to the work we were doing and what we contemplated doing.