ORAL HISTORY INTERVIEWS

RAYMOND (RAY) H. WILLMS

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STATUS OF INTERVIEWS:
OPEN FOR RESEARCH

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Interviews Conducted and Edited by:
Brit Allan Storey
Senior Historian
Bureau of Reclamation

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Brief Chronology of Career
Raymond (Ray) H. Willms

1939–Born in 1938 in Twin Falls, Idaho.
Raised in Gooding, Idaho.

1957-1961–Attended undergraduate and graduate school at the University of Idaho.

1962–Joined Reclamation in Craig, Colorado, as a GS-5 engineer doing inspection work on transmission line construction. Worked out of Artesia, Kremmling, and Rifle in transmission line construction inspection and contract administration.

1965–worked in the office in Gunnison and then at inspection work at Blue Mesa Dam.

1967–Transferred to Morrow Point Dam for inspection work and general O&M activities (during a hiatus in construction).

1970–Detailed to work on inspection of penstock fabrication for the Third Powerhouse in Salt Lake City, back to Morrow Point for a period for inspection of the work there, and then detailed to Glen Canyon to do inspection work on installation of an elevator.

February 1971–Transferred to the regional office in Sacramento in O&M
Was a member of the region's dive team.

November 1976–Transferred to the Klamath Project as project manager.

1979–Transferred back to the Mid-Pacific Region office as head of the Central Valley Project Operations Coordinating Office.

April 1983–Became project manager on the Fryingpan-Arkansas Project, headquartered in Pueblo, Colorado.

May 1985–Moved to Loveland to head a consolidated project office including the Fryingpan-Arkansas Project and the Colorado-Big Thompson Project.

1989–Moved to Denver as Deputy Assistant Commissioner-Resources Management.

1994–Retired from Reclamation.

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STATEMENT OF DONATION OF ORAL HISTORY INTERVIEW OF RAYMOND H. WILLMS

1. In accordance with the provisions of Chapter 21 of Title 44, United States Code, and subject to the terms, conditions, and restrictions set forth in this instrument, I, Raymond H. Willms, (hereinafter referred to as "the Donor"), of Jefferson County, Colorado, do hereby give, donate, and convey to the National Archives and Records Administration (hereinafter referred to as "the National Archives), acting for and on behalf of the United States of America, all of my rights and title to, and interest in the information and responses (hereinafter referred to as "the Donated Materials") provided during the interviews conducted on April 21 and 28, 1994; May 6, and 19, 1994; June 3, 10, 24, and 28, 1994; at Bureau of Reclamation offices in Building 67 on the Denver Federal Center and prepared for deposit with the National Archives and Records Administration in the following format: cassette tape recordings and transcripts. This donation includes, but is not limited to, all copyright interests I now possess in the Donated Materials.

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Date: 12/13/2010

Signed: Raymond H. Willms
Raymond H. Willms

Interviewer: Brit Allan Storey

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Date:_____

Signed:_____
Archivist of the United States

Introduction

In 1988, Reclamation began to create a history program. While headquartered in Denver, the history program was developed as a bureau-wide program.

One component of Reclamation's history program is its oral history activity. The primary objectives of Reclamation's oral history activities are: preservation of historical data not normally available through Reclamation records (supplementing already available data on the whole range of Reclamation's history); making the preserved data available to researchers inside and outside Reclamation.

The senior historian of the Bureau of Reclamation developed and directs the oral history program. Questions, comments, and suggestions may be addressed to the senior historian.

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For more information about Reclamation's history program see:
www.usbr.gov/history

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Oral History Interviews
Raymond (Ray) H. Willms

Storey: This is Brit Storey, the senior historian of the Bureau of Reclamation, interviewing Ray Willms on April the 21st, 1994, in his offices on the 14th Floor of Building 67 at the Denver Federal Center, at about 9:50 in the morning. This is Tape 1.

Ray, could you tell me, first of all, where you were born and raised and educated and how you ended up at the Bureau of Reclamation, please?

Born in Twin Falls, Idaho, and Grew up in Gooding, Idaho

Willms: I was born on December 24, 1938, in Twin Falls, Idaho. I grew *up* in the town of Gooding, Idaho, it's in the southern farm part of the state.

Went to the University of Idaho in 1957, Graduated in 1961 in Mechanical Engineering, and Went to Work at Reclamation in Early 1962 after One Semester of Graduate School

I went to [the][1] University of Idaho in 1957 and graduated as a mechanical engineer in 1961. I then attended one semester of graduate school at the University of Idaho and left [the] University of Idaho to go to work for the Bureau of Reclamation.

Offered a Job at Flaming Gorge Dam with the First Six Months to Be Spent in Craig, Colorado, Working on Transmission Line Inspection

The way I got *into* that, is that I had been going to school for quite a number of years at that point in time and the Bureau offered me a job, and it just happened to come along in a time and a day when I decided I wanted to work instead of go to school. So I accepted the job and the job that I was offered was a mechanical rotation engineer at Flaming Gorge Dam with the first six months to be spent at Craig, Colorado, working on the transmission line. And after that, I was to be assigned to the Flaming Gorge Dam to work on the powerplant.

". . . first day I showed up at work at Craig, the boss there told me that was just a come on, in effect, and that I'd never get out of the Transmission Division and get over to Flaming Gorge and, in fact, that was true. . . ."

As it turned out, the first day I showed up at work at Craig, the boss there told me

1. Note that in the text of these interviews, as opposed to headings, information in parentheses, ( ), is actually on the tape. Information in brackets, [ ], has been added to the tape either by the editor to clarify meaning or at the request of the interviewee in order to correct, enlarge, or clarify the interview as it was originally spoken. Words have sometimes been struck out by editor or interviewee in order to clarify meaning or eliminate repetition. In the case of strikeouts, that material has been printed at 50% density to aid in reading the interviews but assuring that the struckout material is readable.

The transcriber and editor also have removed some extraneous words such as false starts and repetitions without indicating their removal. The meaning of the interview has not been changed by this editing.

that was just a come on, in effect, and that I'd never get out of the Transmission Division and get over to Flaming Gorge and, in fact, that was true. (laughter)

Storey: Oh, really? Did you know what the Bureau of Reclamation was when they approached you? Well, I guess you went in for an interview or something.

"I had . . . grown up in an area that was irrigated by the Bureau of Reclamation. But . . . I really had only a vague understanding of the agency . . ."

Willms: I had interviewed with them during the senior year interviews. I had, of course, grown up in an area that was irrigated by the Bureau of Reclamation. But at that, I really had only a vague understanding of the agency, I did know that they were building Flaming Gorge Dam and knew really not a whole lot other than that.

Storey: Did you live in the country or did you live in the town of Gooding?

Willms: I lived in the town.

Storey: So you were not raised on an irrigated farm?

Was Raised in the Town of Gooding, Idaho

Willms: I was not raised on a farm. My father ran a five-and-ten-cent store, and my mother ran a hardware store for a while. ~~Then~~ My mother actually owned the hardware store–part of it–and after oh, in the [late '40s,] ~~early 50s,~~ my dad gave up the work in the five-and-ten-cent store and went to work in the hardware store. However, my grandfather had been a country M.D. and made quite a lot of money and he owned several farms in the area. One of them particularly, he kept, and it's now in the family–has been since during the early stages of World War II.

Storey: Did you work on that farm at all?

Willms: No, I never did work on it. My grandfather was alive and owned and operated the farm until I had left high school. He didn't *ever* live on the farm, I mean, he always had somebody else farming it. Then, when he died when I was in college, my mother operated the farm after that. But I, you know, other than visiting it from time-to-time, never did work on it, it *was* about fifty miles away from where we lived.

Storey: Did you happen to have friends who lived on irrigated farms in the area?

Willms: I had a *lot* of friends because the community was about 3,000 people and it was primarily a farming community, and it was all like irrigated agriculture. So I had any number of friends that grew up on farms.

Storey: What are your recollections of what irrigation meant to those families out on the farm?

Willms: Well, in the community that I grew up, there wouldn't have been any farms, if there wasn't irrigation. It was very arid and hot dry summers and sandy soil. Outside of the farm area, there was no agriculture. If it wasn't irrigated, there just wasn't any.

Storey: Just wasn't there?

Willms: It just wasn't there.

Storey: Do you ever remember any conversations about water rights or any water disputes or anything like that?

Willms: Well, water rights and water issues, of course, were in the newspaper and discussions all along. I don't know that I had any particular interest in it at the time and don't remember a lot of details.

". . . the community, itself, was irrigated partially off of a Reclamation project with a real firm water supply, and part of the community was irrigated off of some private developments from other rivers and their supply was not good. . . ."

Now, the community, itself, was irrigated partially off of a Reclamation project with a real firm water supply, and part of the community was irrigated off of some private developments from other rivers and their supply was not good. Of course, the dinner table talk would often involve discussions of, "the water's going to be shut off at such and such a time," and things like that. (Storey: Uh-huh.) There were some other discussions from time-to-time about certain farms having particular success because they had better water rights than somebody else. I wasn't–I won't say "disinterested"– but just didn't have the knowledge base as a child for that to mean a whole lot to me.

Storey: It's very interesting, sometimes you get very *strong* responses to that question. I know Roland Robison, for instance, had a very early childhood experience where an uncle was assaulted (chuckle) and one of my earliest recollections is about a water rights dispute also.

Willms: Well, I do recall the stories about one of the things you didn't do was fiddle with somebody's headgate. It was, I think, a fairly–I don't know if I want to say "backwards," but I guess that's as good a word as any–approach to irrigation.

". . . the Fourth of July, a large part of the farmers in the community went to the hills, and when they did that, since the delivery of water was a constant flow, the water would run off the end of the fields, down the borrow pits, and flood the county roads. The better farms, more progressive, managed to be able to deal with that issue, and the less successful ones tended to have more runoff. . . ."

One of the things that I can remember that we talked about and observed,

is that on the Fourth of July, a large part of the farmers in the community went to the hills, and when they did that, [since] ~~the myth that~~ the delivery of water was a constant flow, ~~and~~ the water would run off the end of the fields, down the borrow pits, [and] flood the county roads.

The better farms, more progressive, managed to be able to deal with that issue, and the less successful ones tended to have more runoff.

"The other thing that we used to talk about a little bit was that the farmland around Twin Falls . . . did not have near as many pheasants because people took better care of their farms, took better care of their ditches, and didn't have all the weeds and stuff growing up around the ditches and fence lines. . . . a difference in how prosperous the farms were, and maybe some of it was soil conditions, but I think a lot of it was cultural. . . ."

The other thing that we used to talk about a little bit was that the farmland around Twin Falls–which was forty-fifty miles south of where we lived–did not have near as many pheasants because people took better care of their farms, took better care of their ditches, and didn't have all the weeds and stuff growing up around the ditches and fence lines. There was definitely a difference in how prosperous the farms were, and maybe some of it was soil conditions, but I think a lot of it was cultural.

Storey: Um-hmm. What caused you to decide to become a mechanical engineer?

Influences Which Guided Him Toward Mechanical Engineering as a Profession

Willms: I think probably the biggest influence is I had an uncle who was a mechanical engineer, [who] had gone to work for Shell Oil Company and worked up into a vice-president rank with Shell Oil Company and was very successful at it. I was interested in the field, and I think that probably was the swing there. I don't know that he tried to talk me into it or anything–maybe he was a role model or . . .

Storey: Oh, you were interested in the field of mechanical engineer?

Willms: Yeah, not in oil particularly but . . .

Storey: Yeah. Could you define for me what mechanical engineering is?

Willms: Well, my perception of it, at the time–it's a big field, you know, (Storey: Yeah.) it's got a lot of things. I looked at it, at the time, as being designing machines. I, in fact, was very interested in this and never designed a machine in my life. When I got into college, I learned that there were a lot of other things connected with it in terms of control of gas flow, and work with engines and airplanes and things like that. But, that was kind of where my interests lied at the time.

Storey: Yeah, I presume that you specialized as a mechanical engineer then?

Mechanical Engineering at the University of Idaho

Willms: There were really only two different *paths* at the University of Idaho for mechanical engineers, and they were not a whole lot different. But one of them was towards machine design, and the other one was aimed more towards gas flow, energy control type of things. I actually ended up working more in the gas flow, thermodynamic field, than I did in the actual machine design in college.

Storey: And does that include water control?

Willms: It *does*, to a limited extent, but most of the emphasis was on compressible gasses, [a] considerably more sophisticated field than water flow, and particularly at that time. At that time we were just starting to embark on the rocket field seriously, you know, there had been some fiddling around with it. Jet engines were now being used commercially but were still in sort of an infancy stage and there was an awful lot of new development in the area.

One of His Professors Worked on Rocket Engine Design

Just as an example, one of the professors I had was a leader in that area–and he was not a particularly well-educated person, I think he had a master's, his highest level of education–but he was into a field that was new and he was asked in the summers to tackle a number of special projects. One of them he was asked to look at was the development of a rocket engine to put a device into orbit. (Storey: Uh-huh.) Of course we'd never put anything into orbit at that time and they were looking for the greatest weight-to-thrust type of a ratio of a rocket engine.

Pratt and Whitney–under a contract with the government–had developed a hydrogen-fluoride engine which was an engine of the greatest potential thrust-to-weight ratio. The way those engines were built, is they had to pump up both the [hydrogen and the fluorine] ~~fuel and the oxidant~~ up to about 500 PSI. The way they tended to do that was [to] put it into a pressurized tank that may be one or two PSI, let it flow through a turbine type pump and then around the combustion chamber to pick up heat and then back through a turbine to drive the pump and then into the combustion chamber so the energy that the–I think they usually used the [hydrogen] ~~oxidant~~ for this purpose[.] ~~of the hydrogen~~ As it flowed around the combustion chamber [it] would pick up enough heat and enough energy to pump it up. (Storey: Uh-huh.) And so it would drive a pump to also pump up the [fluorine.] ~~fuel.~~

Well, the typical process to *start* the engine would be to just open a valve–probably electronically or electrically open a solenoid valve–let the hydrogen out of the low-pressure tanks flow through the pump and around the thing and then through the turbine that drives the pump and into the combustion

chamber. Of course, as it started, it would be just be kind of a flow-through process and it would join up with the [fluorine,] ~~fuel~~ and it would be ignited, and then the chamber would start to heat, and the heat would build up and then the pump would start to drive and then it would start to raise the pressure and it would slowly build up to operating pressure and various mechanical controls would start to control the flow to stabilize it.

Well, with these two fuels,–when they built their first engine–they started this process, the pumps reached their maximum speed and flew apart in less than a tenth of a second. ~~That~~ It just happened so fast, and what they found–after a long story to get to the point–what they found is that the old mechanical-electrical control systems would not operate fast enough to control this type of a system, and that they then would have to do something they had never done before; and that's start to mathematically model the flows of these things so that they could predict it and put in control systems that would operate preemptively. [Since they had] ~~And they've~~ never done any transient analysis of any compressible gas flows, ~~and~~ it just opened a whole new world. And a very interesting one that I really never got into, (Storey: Uh-huh.) but I think that's one of the areas that you poured–so many people, of some of our probably, best minds, poured years and years of time during the period that we developed our rockets and put Apollo on the moon to take care of a lot of these sort of issues that were a whole new field.

Storey: That's fascinating. And your professor was working on this?

Willms: Well, his task–and he just did this one summer–was Pratt and Whitney threw up their hands when they found out they couldn't do the mechanical-electrical control, to have him start guiding them to the solution of the problem. I think what he did was, he looked at the problem and recommended back to them that they were going to have to go back into a lot of basic development of engineering techniques on gas flow, you know, that they would *never* be able to control those sort of systems with the old methods, and they were just going to have to . . . . And I don't think he actually developed them, he may have started work on them, because he did do some early computer modeling. Remember, at this point, we were working with the old Univax computers, mostly being programmed in machine language.

Storey: What was his name, do you remember?

Willms: Professor Ted Norgaard [phonetic spelling] I think was his name.

Storey: How did you end up going to an interview with Reclamation in your senior year?

Interviewing for Jobs During His Senior Year at the University of Idaho

Willms: At that time there was a real demand for engineers and probably, oh, maybe a hundred different companies or more came through and interviewed. Students

then just looked at the list and signed up for them. I don't remember specifically why I chose the Bureau of Reclamation, I chose a number of completely different fields to interview. I interviewed [with] several aerospace firms. I also interviewed with some motor control firms, that I can remember. I think I probably was just kind of shopping. (Storey: Uh-huh.) Part of it may have been the fact that they operated primarily in the West, but I don't remember that. I did a lot of hunting and fishing throughout my earlier part of my life, and I suspect that I was attracted somewhat with the places that Reclamation tended to have facilities.

Storey: But, even as you were doing these interviews, you were thinking that you wanted to go to graduate school?

Willms: Yeah, I wasn't sure, you know, and I had it in mind. I was pretty open and pretty mixed and pretty fluid on that issue, and sometime toward the end of the senior year, I decided to go ahead and go into graduate school. I didn't take near as many interviews as most people did. I think I must have made up my mind before the interviewing process was near finished.

Storey: May I ask you how you paid for your college?

Paying for College

Willms: My parents paid for it, but the other part of it is, is that my annual bill for college– including living expenses–didn't exceed $1,000 in any year. (Storey: Yeah.) The University of Idaho had no tuition for residents. (Storey: Uh-huh.) The actual amount that we *paid* the University was about $100 a year, maybe a little more, maybe $120. We had, I think, a fifty-dollar registration fee, which covered things like the activity ticket, some payments to student union and stuff like that, and then you had to buy books. But other than that, they were the only fees you had.

Storey: I went to school in '59 and my fees were fifty dollars a quarter plus $120 for room and board. It's changed.

Willms: My room and board the first year–I lived in a fraternity–my first year was fifty-four dollars a month. I think that the highest it got was about sixty-two or sixty-three by the time I left.

Storey: Did you marry while you were in college?

Willms: No.

Storey: So, sometime in your first year in graduate school, I guess you got a letter or a phone call?

Reclamation Offered a Job as a GS-5 Rotation Engineer During Christmas Break

Willms: Actually, I was at home at Christmas and I got a telegram, (Storey: Uh-huh.) and the telegram asked if I was interested in the job. I had gotten several of these before, and with each of them I responded, "yes." I think the way the telegram was written that is if you responded "no," you wouldn't get another one. I think what they did then was send out to a number of candidates, (Storey: Uh-huh.) and it was basically off of the register, the Bureau interviewed, but the names went onto the Civil Service Register.

So I responded, "yes" and pretty quick I got a telegram back that offered the job and gave me a few days of which to respond, and a time which I would have to report by. I think this all happened during Christmas vacation, I'd get about a two-week vacation, and I think it all happened during that time and that I made the decision while I was home. The University of Idaho was about 400 miles from Gooding (Storey: Uh-huh.) you know. I know, you know, the decision to go was sort of one of these, "I've got a few days to make a decision and . . . ." and [I] made a decision. Nothing real strong, wasn't real sure of myself. I think a lot of it was that I think I was getting tired of going to school, you know, and all of a sudden, at a time when I was tired of it, here came a job offer.

Storey: What kind of an offer was it?

Willms: GS-5, rotation engineer. Made, I believe, $5,375 a year, (Storey: Um-hmm.) I *think* is what it was.

Storey: What's a rotation engineer?

"In return for that rotation, we were guaranteed a promotion to a GS-7 at the end of six months if work was satisfactory and at a certain rate. And I think part of the program, at that time, was is if work was *not* satisfactory at the end of six months, you were out. . . ."

Willms: What it was then–and it's changed a little, not a lot–is a person was to, over the course of a year's time, rotate through different jobs to get a broader base of experience. In return for that rotation, we were guaranteed a promotion to a GS-7 at the end of six months if work was satisfactory and at a certain rate. (Storey: Uh-huh.) And I think part of the program, at that time, was is if work was *not* satisfactory at the end of six months, you were out.

"At that time, it was not a . . . *functional* program . . . I didn't rotate anywhere except up and down a transmission line. I did get the promotion as scheduled . . . later on, I think the rotation engineer got to be a fairly formal program where a person worked about three months in [several] different offices . . . the idea being to give them a background training. The rap on the program from the local line management is that . . . they're really not available for a year. . . ."

At that time, it was not a, I don't think a *functional* program–at least it wasn't for me–because I didn't rotate anywhere except up and down a transmission line.

I did get the promotion as scheduled, and it worked out okay for me, it was not a problem. But, later on, I think the rotation engineer got to be a fairly formal program where a person worked about three months in different offices, and if a person here in the Denver office was in rotation, they may work three months in ACER [Assistant Commissioner–Engineering and Research] and then three months in ACRM [Assistant Commissioner–Resources Management] and then maybe go to a field office for three months, (Storey: Uh-huh.) maybe a regional office for three months–the idea being to give them a background training. The rap on the program from the local line management is that [when] you hire somebody, they're really not available for a year.

Storey: Well, what did they put you to work doing?

"I inspected the building of a wood pole transmission line, and I did that for about a year. . . ."

Willms: I inspected the building of a wood pole transmission line, and I did that for about a year.

Storey: How did you know what to look for? Did they give you a list of things or did you just know from school, or what?

". . . the basic engineering education is one of learning physical characteristics and problem solving. I think their [Reclamation's] view was that you could take an engineer who didn't know anything *locally* about building transmission lines and you could put them out with a minimum of instruction and expect them to use good judgement. I don't know that that always works, but I think that was the philosophy behind it . . ."

Willms: No, the education didn't offer anything in this area, *other than* you know, the basic engineering education is one of learning physical characteristics and problem solving. I think their view was that you could take an engineer who didn't know anything *locally* about building transmission lines and you could put them out with a minimum of instruction and expect them to use good judgement. I don't know that that always works, but I think that was the philosophy behind it, because at *that* period of time, the Bureau did hire an awful lot of engineers for doing construction inspection. There were a *lot* of them.

I'm not sure but what the offer to me as a mechanical engineer to work at the transmission line for six months and then go to the powerplant, where I'd be working on the installation of the power equipment–which *was* mechanical in nature–*wasn't* a serious offer. It may well have been serious, in the eyes of the personnel office that offered the job. (Storey: Uh-huh.) But, the person who was running the transmission office wanted somebody that was going to

stay with them. As he told me when I came in that I would never get out of there, I think he understood too that he had enough influence to make sure that I never got out. (chuckles)

Storey: Which transmission line was this, was it named?

Worked on Inspecting Several Different Transmission Lines[2]

Willms: Yes. There were actually two or three of them by name. There was the Vernal-Craig, 115 kV line, and then there was a Craig Oak Creek 115 kV line, and then the–I don't remember the names of the other two, but they were over in the Kremmling [Colorado] area. (Storey: Uh-huh.) One of them went into Green Mountain Dam, but they were all part of the same system.

Storey: Uh-huh. And what did you have to look for?

Willms: Well, they built the transmission line as an assembly-line process and the part that I inspected was putting the poles in the ground, and they did that as a structure. They assembled their H-frame type structures, they assembled them on the ground, picked them up, stuck them in the ground and tamped them in. The type of things that I looked at was to see that they were put in the right place, that they were at the right depth, they were straight, that the soil was tamped in–pretty mundane type of things. Then after the poles were all in, then they came back and would string up the conductor. And during parts of that, I would inspect the tensioning of the conductor and that the conductor was treated appropriately. Again, fairly mundane. And eventually [I] ended up going back over the line to see that all the pieces and parts were on it.

END SIDE 1, TAPE 1. APRIL 21, 1994.
BEGIN SIDE 2, TAPE 2. APRIL 21, 1994.

Storey: Let's see, I was asking if you were working only in one place or if you were moving around a lot?

Willms: Well, it's very transient in that sense. The crew that put the structures in the ground would put in about twenty a day. That would mean that they'd cover about four miles a day, and it was just a progress down the line. When I first started, we were working about twenty miles west of Craig–that's Craig, Colorado–and that was in early February and by late May, we had reached the state line and had completed it. The state line's about a hundred miles [west of Craig], so we covered about eighty miles in that process.

Storey: So you worked on that one transmission line, following along with *one* work

2. Originally Reclamation generated, transmitted, and marketed Reclamation hydropower. That changed in 1977 when the Congress created the Western Area Power Administration (WAPA) in the Department of Energy to market and transmit Federal hydropower in fifteen states in the West. Reclamation retained generation responsibility, but transmission facilities, marketing responsibilities, related records, and many Reclamation staff transferred to WAPA..

crew?

Willms: With one work crew to the state line.

Storey: Were there any other inspectors with you?

Willms: Not with me. Now, our office had a boss who spent a good share of the time in the office and one other inspector at the time I started. ~~at the time, was started and~~ The other inspector looked after other parts of this process. Now, the first part of it was just really a continuous assembly line where the first crew hauled out the poles, another crew came along and dug the holes and another crew assembled the structures on the ground. Then this crew put them in the ground and then there was another crew that did work on certain structures that you couldn't put into the ground whole. And they all sort of moved in an assembly-line process, all spaced out a few miles is all. Most of the work that went in front of where I was inspecting, I could inspect as I went by, because it was all out and visible. So part of what I would do, is I would see that the right fittings were all on the structures and that the structures were put together right and that sort of thing. So I basically did all of it in that first period of time.

After they started stringing the wire, then it got to be a little more intensive since work went on in several different places where people needed to be. We did add another inspector in that process. And then the crews over around Kremmling, a sub-contractor did that, and so we ended up with two different contractors working at the same time. And I ended up in the summer over inspecting the part around Kremmling, which were two fairly short sections–I think about nine, ten miles apiece–but also a very small crew. (Storey: Uh-huh.) [I had] a lot of fun over there because they really had very little equipment and a very homey operation.

Storey: You know, when I think of engineers, I think of *all* this technical stuff they do, and I'm wondering how technical that what you were doing? For instance, you mentioned that you checked the tension. Is there a way of measuring this, or was this just an eye thing, or how was it done?

Checking the Tension in the Transmission Line

Willms: The way it's done is the sag in the conductor is calculated, and that's done by designers, for a length of span. There's a table that says that this size of conductor and this length of span should sag so many feet (Storey: Um-hmm.) when it's at the right tension. The way that the process was done then, was a person would climb the pole, know how much sag you should have, measure down from where the conductor was, down the pole that far, put a survey target on the pole–some sort of a target (Storey: Right.) on the pole–then they would go to the next structure, climb the pole, put a transit bracket on there, mount a transit and sight the transit on the target on the other pole. The transit is also measured down that same distance. And then using usually a radio, the person sitting there on the pole looking through the transit would give

instructions to the, usually a winch operator maybe a mile away because they would string out a mile or more of conductor and you only had to do this at one span.

Storey: They would do that from the pulling side?

Willms: Yeah. And when they were doing this, the conductor was going over pulleys. They'd hang pulleys from the insulators and the conductor would be going over these pulleys. Well, then the winch operator then would start pulling the wire tight, and he would pull that wire up until you could look across the transit to the other structure then the bottom of the wire was right at the [crosshair] And then you'd have to do that for *each* of the three conductors. (Storey: Uh-huh.) And typically, the contractor would go set-up the targets and the transit base and then the inspector would actually climb the pole and be the one looking through the transit when the . . . .

Storey: When the pulling was done?

Willms: When the pulling was done.

Storey: And then they would take it off the pulley and put it onto the insulator and that would fix it? Is that what I'm hearing?

Willms: Well, the way it works, there are two different types of structures: what's called a suspension structure, where you just have the wire hanging off the bottom of an insulator; and then you have a tension structure and usually this would be at the top of a hill or a steep angle in the line, where the conductor comes in and is dead-ended and the insulator stands out straight. Then there's a jumper that goes to the other side of the pole where there's an insulator that goes out straight that way. (Storey: Uh-huh.)

Now, these things are at strategic locations with respect to terrain. So you may go–I've seen stretches maybe as much as twenty miles without a tension structure. When they would string up the conductor then–they would probably start at a tension structure, of which ~~dead~~ fixes it at that end. They'd hang it over the pulleys and when they ran out of a roll of wire–and I think a typical roll of wire was about 8,000 feet, if my memory is correct of this size of conductor–they would then take the wire over the pulley and bring it down to the ground and tie it off to a truck or a [bull]dozer or something like that. Well, they'd start off using a winch but eventually they'd have to tie it off to something. (Storey: Uh-huh.) And of course they'd pull it up to the right tension and tie it off down on the ground. Then a line crew would come along and take the pulleys down and put it into a shoe, but it's still suspended, so if you release the tension, the wire would go back, sag and pull the poles down. (Storey: Uh-huh.) So they'd keep it tied off and lay out another roll wire, splice the wire, which uses a hydraulic compression fitting–a compression fitting that's compressed with a hydraulic tool–they'd get the splices set up and then they would set-up some winches down at the end of the new one. (Storey: Uh-huh.) And they would pull that up and by the time they'd

pull it up, they'd pull it up far enough to take the slack off of the pieces that came down, and it would slide back a little but wouldn't slide back very much then. And then you'd go through that process of adjusting the sag again on the new reach. Then you just keep going that on down the line.

Storey: It's always tied off?

Willms: Always tied off.

Storey: Because if you release that end, it's just going to sag back (Willms: It's going to flow back.) and will cause all kinds of problems.

Willms: Yeah, if you let it go clear back, my guess is you'd pull over a number of poles before you got set down on the ground. This conductor's heavy.

Storey: The tension poles then, are the ones that are anchoring the ends of that (Willms: They anchor the ends.) of that stretch of the line?

Willms: Uh-huh. And then once you come to a tension pole, of course, they will fix it up there on the pole.

Storey: And then you'd start all over again?

Willms: Then you start all over again.

Storey: Okay. Was this particularly dangerous?

". . . I don't think it was particularly dangerous. We did take some precautions to prevent static build-up in the line, we kept grounds on them and stuff like that so a person didn't get electrocuted from induced currents. . . ."

Willms: No. I don't know that we had any injuries on that job other than one or two from horse-play. There may have been but I don't remember any, nothing very serious. (Storey: Um-hmm.) I think the biggest thing that got talked about was a lineman slipping when they're climbing a pole and sliding down the pole and filling their arms and chests with slivers. (Storey: Yeah.) But, no, I don't think it was particularly dangerous. We did take some precautions to prevent static build-up in the line, we kept grounds on them and stuff like that (Storey: Uh-huh.) so a person didn't get electrocuted from induced currents.

Storey: Okay. And you said you worked on four different lines?

Willms: Well, by *name* there were four different lines: It was one contract and all told, I guess there was maybe 150 miles of transmission line constructed under that. They name them by reaches, and there was intended to be a substation at Craig, so one reach went from the substation in Vernal, Utah, to the substation in Craig, and then it was to go from the substation in Craig to a substation in Oak Creek,

Colorado, and then there were two other sections over near Kremmling that they were shifting around to accommodate tying what then was the Colorado-Big Thompson System into the Colorado River Storage Project system. Those being the small ones, so I don't know you'd say they're really four lines, it was really one construction job that happened to have four reaches.

Storey: And did you start at the beginning of construction for that project?

Willms: No, it had been going on about a year, I think, when I started, or three-quarters of year maybe.

Storey: And how long were on it?

Willms: We finished that one up about a year after I came to work for the Bureau.

Storey: And if I'm figuring correctly, you would have arrived there about early '62?

Willms: I showed up there, I believe, on February 9th of '62.

Storey: [In] 1962. So by February of the next year it was over?

Willms: That job was over.

Storey: And what did they have you do then?

Willms: Well, during that summer that we were working on this line, we also awarded a contract for a steel tower line that would go from the Curecanti Unit to Hayden. Incidentally, when I said that the line went to Craig, it was planned to go to Craig but that was ~~abandoned and~~ changed to Hayden, which is just down the line a ways. (Storey: Uh-huh.) So this steel tower line was to go to Hayden.

". . . after we finished up the wood pole line, I ended up working in the Craig Office basically doing contract administration work on the steel tower line: not really doing any field work . . ."

Also, we awarded a contract to build a substation at Hayden, and after we finished up the wood pole line, I ended up working in the Craig Office basically doing contract administration work on the steel tower line: not really doing any field work, just mostly writing letters, working with the contractor on contract administration issues, and figuring out what the contractor gets paid for the job since he's paid by quantity. (Storey: Um-hmm.)

Also, the wood pole transmission line that we had built that was to go into Craig, was changed to have to go into Hayden and it required a partial relocation of that which we had done by another contract and in that following year, I worked on that some, which [we] probably had to relocate twenty miles of that line.

". . . towards the end of the second year . . . When the steel tower line came

along, the crew increased a whole bunch because there was a lot of concrete work connected with footings and things like that. And most of the crew was relocated to Rifle. I stayed in Craig until about Memorial Day of '64, and for about six months I worked on the substation at Hayden . . ."

Then eventually, towards the end of the second year, we were finishing up most of the work in the Craig area and most of the office staff there was relocated to Rifle. When the steel tower line [Curecanti-Hayden 230 kV] came along, the crew increased a whole bunch because there was a lot of concrete work connected with footings and things like that. And most of the crew was relocated to Rifle. I stayed in Craig until about Memorial Day of '64, and for about six months I worked on the substation at Hayden, which we were putting the finishing touches on, and we, I think, turned that over to O&M [operations and maintenance] people about the time I left there.

"I went to Rifle for three months and did contract administration in Rifle. . . . transmission line construction was being pretty well finished. Also, the work on Flaming Gorge was pretty well done. So, the Bureau . . . transferred all of the people working on the contract administration, which was mostly what was left, to the Curecanti project there at Gunnison . . ."

I went to Rifle for three months and did contract administration in Rifle. By that time, the whole transmission line construction was being pretty well finished. Also, the work on Flaming Gorge was pretty well done. So, the Bureau closed the office at Flaming Gorge–the construction office–and transferred all of the people working on the contract administration, which was mostly what was left, to the Curecanti project there at Gunnison, (Storey: Uh-huh.) and we were mass transferred from Flaming Gorge to the Curecanti projects.

". . . the construction engineer visited sometime during the summer there in Rifle, and he visited with all of the employees and asked what they wanted to do. At that time I told him, I was a mechanical engineer and I have been hired on to work at the powerplant at Flaming Gorge, and I really hadn't had that opportunity, and I'd still like to get back to work with the mechanical equipment. So he said, yeah, that he would honor that, and put me into the powerplant at Blue Mesa, but first I would need to work for six months on contract administration because they didn't have any mechanical work going on at Blue Mesa until spring. . . ."

At that time, the construction engineer visited sometime during the summer there in Rifle, and he visited with all of the employees and asked what they wanted to do. At that time I told him, I was a mechanical engineer and I have been hired on to work at the powerplant at Flaming Gorge, and I really hadn't had that opportunity, and I'd still like to get back to work [with] ~~in~~ the mechanical equipment. So he said, yeah, that he would honor that, and put me into the powerplant at Blue Mesa, but first I would need to work for six months on contract administration because they didn't have any mechanical work going on at Blue Mesa until spring. So I think in probably September, I moved to Gunnison and

worked in the Contract Administration Office–[office] engineering ~~Office~~, as we called it there in the project office–for about six months. This fellow *honored* his commitment. (chuckles)

Storey: What was his name?
xxx
Willms: Jim Seery.

Storey: Jim?

Willms: S-E-E-R-Y (Storey: Uh-huh.) and he was project construction engineer over both Blue Mesa and Morrow Point Dams.

Storey: Uh-huh. Where were you living? Was Reclamation providing living quarters, were you finding your own quarters?

Living Quarters on the Various Jobs

Willms: Well, I was still single during all of this period, and when I moved, I could put everything in the back-end of my old '57 Ford, when I moved to Craig. (Storey: Uh-huh.) And they had two Kit trailers in a trailer park there. The office in Craig was a trailer in a trailer park. (Storey: Uh-huh.) They had two Kit trailers about thirty feet long. These were these trailers that were almost a cross between a travel trailer and a small mobile home. They really weren't *made* for travel trailers, but they had a double bed in the back and a bunk-bed in the middle and a john [where] ~~there that~~ you could sit on the pot, take a shower and shave all at the same time. (Storey laughs) Then they had a little kitchen and a little front room and they charged me–if I recall–eight dollars and seventy-five cents a pay period.

Storey: For these accommodations?

Willms: For these accommodations.

Storey: And were there other folks living in the same trailer with you?

Willms: No, not in the trailer–I had the trailer by myself and I had it as a residence. (Storey: Uh-huh.) There were two of them, and the other one also had a young couple with kids [who] lived in that. They had actually been set-up as quarters for the transit survey crew. They had a survey crew located in Vernal and they did the work for the entire transmissions system there so they would come over usually for a week at a time or two weeks at a time.

Why the Survey Crews Wouldn't Stay in Reclamation's Trailers in Craig

They had set these trailers up so a survey crew could stay in them but the survey crew *wouldn't* stay in them for administrative reasons. The administrative reasons were, was we got $12.00 a day per-diem at that time, and that covered both lodging and food, it was just a flat $12.00. If a person stayed in government

quarters, that was reduced by some amount that strikes in my mind is reduced by $7.50 to pay for the government quarters. These trailers would hold four people, so all four people of a survey crew stayed in them, would get docked the $7.50. Then the trailers didn't have any maid service or anything like that, so people had to bring their own bedding and the beds weren't very good, they weren't very comfortable. They could stay in a comfortable motel in Craig for $4.00 a night at the same time. So the survey crew looked that all over and said, "Well, I'll go stay in a motel."

So nobody would stay in these trailers (Storey: Uh-huh.) so, ultimately they then released those for people like myself who would be willing to do it. When I came in, I drove in town one afternoon to report to work–of course I didn't have any place to stay, I'd never been in Craig in my life–and the boss says, these trailers are over there, do you want to stay in one? I said, "Yes." (chuckles) I stayed in it through into the second winter.

Winter got pretty cold and it froze up, [I] could never keep the temperature up during the winter in the little trailer anyway, and I came back actually, from a short trip back to Idaho–Christmas–came back, there's water running out of the front door and it took me several days to get it warm enough to melt the ice off of the floor. Then, a little later, the line froze and [I] didn't have any water at all and I told the government that they could stick that trailer in their ear and I went and found an apartment. After that, I always stayed in little apartments.

Storey: Do you remember how much the apartment rent was by chance?

Willms: The apartment I had in Craig, I believe was $35.00 a month. It was just a one-bedroom and a very small kitchen and a fairly good-size living room. It was quite adequate. The one in [Rifle] ~~Craig~~ I think cost about $45.00 a month and it was also an adequate [apartment], I think maybe it was a two-bedroom in an old building.

Storey: What was the town where you were first stationed?

Willms: Craig, Colorado.

Storey: I'm confused, because you just said you moved to Craig . . .

Willms: Well, when I moved from college to Craig.

Storey: Oh, I see, I see. Was the Craig Office, was that the name of the office?

Willms: It was the name of the office, yes.

Storey: And what did the Craig Office do?

The Office in Craig

Willms: They only administered the construction of that transmission line and the substation.

Storey: So it was a real small office?

Willms: It had three people most of the time permanently stationed there. (Storey: Uh-huh.) When we got to working on the steel tower transmission line [Curecanti-Hayden 230 kV], maybe another person or two was added in the process. I don't *ever* remember it being more than three or maybe four. But, when we got to working on the steel tower line and they set-up this office in Rifle out at the Anvil Points–the old Navy oil shale facility, which was pretty well shut down–there were sixty-, seventy-, eighty houses out there and the government employees then lived in those houses–many of them did–and the office was out there. So they moved almost the entire crew that worked on that transmission line to Rifle, I think maybe *almost* of it. The only people [who] were located in Craig was the person who was in charge of *that* section of the line. That happened to be Bill Groseclose, who ended up being a fairly well-known–well, he was Bill Frasier's [phonetic spelling] counterpart here, later on in his career. (Storey: Uh-huh.)

But, he had jurisdiction over the steel tower line from the Colorado River near Rifle to Craig and he administered that and then he used the crews that were stationed at Rifle and when the work got up towards Craig, he would have those crews come up there on TDY [temporary duty]. So actually the office there really never had more than three or four people. When I worked there on the steel tower line, I did the contract administration for Bill for all of that section of line.

Storey: Now Bill Groseclose was the man who, when you arrived, he said, "You're not really going on to Flaming Gorge"? Is that right?

Willms: No, I skipped a person there. When I first got there, the fellow's name was John Hanfelt [phonetic spelling]. He was an electrical engineer, had been at Flaming Gorge, and when they started work on the transmission line, had been assigned as head of that office. When the steel tower line bid was awarded, the work on it started on the south end, and so he moved to Paonia as head of that section of line. The fellow–the third person who was in the Craig Office–was acting head of that Craig Office then for the next five or six months. His name was Ole Olson. He was a lineman by trade.

Then Bill Groseclose came over along towards the end of '62. He had been a shift manager on the building of Flaming Gorge. When they finished the construction of Flaming Gorge, they didn't need the shift managers anymore, so he was assigned over to Craig, and then he stayed until Craig Office shut down.

Storey: Now, how did you arrange your travel when you were in Craig? You know, the transmission line was out of town all the time. Did they give you a government vehicle and you drove everyday?

Commuting to the Inspection Job

Willms: Yeah, I had a vehicle assigned to me, a four-wheel drive pick-up. (Storey: Uh-huh.) In fact, if it were close enough to commute from Craig–which I did until the work got to be maybe fifty or sixty miles away–I would just leave early enough in the morning to be out there when the work started and I probably wouldn't get in the office unless I came in at eight o'clock at night or something like that. We typically worked six days during the decent weather.

I can remember some of the interesting parts of this, is that I had a post office box, I didn't get mail delivered out there at the trailer court, I had trouble getting mail. I could get into the post office box, but if I had a package or something like that, I'd go in and have to yell over the partition to see if I could find somebody who was sorting mail on Sunday morning to . . . . (Storey: To give you your package.) Yeah. And my life, during that period of time, was my Sundays were pretty much a matter of washing clothes–which I'd go to a Laundromat–and taking care of paying any bills and that sort of thing so I could go back out on Monday morning.

Storey: How many hours a day?

"The crew normally worked ten hours a day, six days a week. . . . including the time it took me to drive from Craig out there . . . I may be getting four hours overtime each day along with twelve hours on Saturday. . . ."

Willms: The crew normally worked ten hours a day, six days a week. . . .

Storey: So, were you receiving overtime pay for the sixth day and the extra hours and all that?

Willms: Um-hmm, including the time it took me to drive from Craig out there, so I may be getting four hours overtime each day along with twelve hours on Saturday.

Storey: What happened when you felt the distance was too far to commute?

Willms: There was one little motel about seventy miles west of Craig, and then the town of what's now called Dinosaur–it was then called Artesia–had a couple of motels in there, and that course being another twenty miles. Whenever the crew got out there about fifty-five miles I think is about the place where I swung, and I moved out to that little motel and I'd stay out there during the week and then come back on the weekends. (Storey: Uh-huh.) Then, when it got on down towards the state line I moved to Artesia, and again, just stay in a motel, eat in a restaurant.

END SIDE 2, TAPE 1. APRIL 21, 1994.
BEGIN OF SIDE 1, TAPE 2. APRIL 21, 1994.

Storey: This is Tape 2 of an interview by Brit Storey with Ray Willms on April the 21st, 1994.

Ray, we were just talking about what you did when you were over in the Kremmling area, working.

Willms: Well, in the Kremmling area, that's about 100 miles from Craig and over a significant mountain pass, so if we were doing any more than a few hours' work during a single day, we'd stay over there, and I usually stayed at the hotel they had over there–I don't remember the name of it now, but it was adequate.

Storey: Then when you moved down to Rifle, what was the name of that office?

Willms: I *think* that was just called the Transmission Division Office in Rifle, or Anvil Points,[3] actually.

Storey: It, once again, was just interested in the construction of the transmission line?

The Craig and Paonia Offices Reported to the Division Chief at Anvil Points near Rifle

Willms: That's *all* it was there for. The organization was, there was a division chief in Rifle, at this time, that reported to the Construction engineer in Flaming Gorge. They had the office in Craig–that I worked in–and the office in Paonia and those two people reported to the division chief in Rifle.

That division chief *had* been located in Vernal, Utah, when I first came to work. And they built also a transmission line from Vernal *to* Flaming Gorge, and that one was managed out of the office in Vernal, and I didn't have anything to do with it.

Storey: And this was all as a result of the hydroproduction and Flaming Gorge, is that correct?

The Transmission System He Inspected and Did Contract Administration on was Being Built to Carry Loads from Flaming Gorge, Glen Canyon, and the Currecanti Units and to Connect the Southwest to the Pick-Sloan Transmission System

Willms: Flaming Gorge, also Glen Canyon and the Curecanti Units since when they built those plants they tied the transmission system, I think actually all the way from southern California, or at least the Hoover Dam area and the Phoenix area, *all* the way into the Pick-Sloan transmission system at Cheyenne. The lines were built by different offices at different times, but there's a tie from Cheyenne, I think all the way, at least, to Phoenix.

Storey: And you lived in an apartment in Rifle also?

Willms: I lived in an apartment in Rifle.

3. See text on 18.

Storey: In the town of Rifle?

Willms: In the town of Rifle.

Storey: Pretty small town at that time.

Willms: It was *very* small at that time.

Storey: You weren't out at Anvil was it?

Willms: Anvil Points. [Yes, but I didn't live out there.] ~~No, I didn't.~~ Those houses were really aimed for people with families. I didn't really want to be out there anyway.

Storey: Was it a large office? Were there a lot of people in it?

". . . the office in Rifle must have had forty or fifty people. It had survey crews, had concrete testing lab operations, and of course, a number of concrete inspectors and things like that all worked out of that office. . . ."

Willms: I would guess that the office in Rifle must have had forty or fifty people. It had survey crews, had concrete testing lab operations, and of course, a number of concrete inspectors and things like that all worked out of that office.

Storey: And transmission tower inspectors, was that part of it, and the tensioning and all of that?

"The bulk of the work in the steel tower line was in the footings, so that's where most of the people worked. I think the people who inspected the actual towers, maybe there were only two of them. Likewise, when they strung the conductor, there weren't very many. . . ."

Willms: That was part of it, yeah. You also had to go through the tensioning process on that. The bulk of the work in the steel tower line [Curecanti-Hayden 230 kV] was in the footings, so that's where most of the people worked. I think the people who inspected the actual towers, maybe there were only two of them. Likewise, when they strung the conductor, there weren't very many.

Storey: How far was Anvil Point out of Rifle?

Willms: Oh, I think must be six, seven miles.

Storey: So it was a small commute.

Willms: Small commute, yeah.

Storey: And you were doing contract administration?

Willms: Yes.

Storey: Now, how were contracts for transmission lines *paid*? Was it like on the number of towers and the number of feet of wire, or how did that work?

How the Contractors Were Paid for the Steel Transmission Line Work

Willms: Yes. Well, the towers were actually by pound of steel, the conductor by feet of conductor, the footings, some of them were by footing but most of it–I think some of them was by footing–but most of it was by yards of concrete and yards of excavation and pounds of resteel, number of stub angles–which is the part that the tower bolts onto. I think there were, all told, maybe about a hundred bid items, because there was different bid items for different towers. Different towers would have a different bid per pound of steel and different footings would have different price per yard of concrete, things like that.

Storey: Why would it vary like that?

"I think when the designers estimated these things, they do their estimate based somewhat on how much time it takes to assemble the tower per pound . . ."

Willms: I think in particularly a tension tower, you have a much, much heavier steel than I think much cheaper per pound. I think when the designers estimated these things, they do their estimate based somewhat on how much time it takes to assemble the tower per pound: you know, your time per pound type of thing. The same thing applies to the concrete in the footing. Some of the footings have the preferred type of a footing, if the soil conditions are right, you just auger a hole, put a prefab resteel cage into it and pour the concrete and the only form is a little stub form at the top.

"The tendency in the designs of these things, then, is to try and compartmentalize these various components so that the contractor can look at a type of footing and say, 'I ought to be able to build that footing for so much money and there are so many yards of concrete in it so there would be so many dollars per yard.'. . ."

However, if the soil conditions aren't adequate for that, you need to have a pad footing. Then, you have to dig a big hole, have to form the whole thing, including the full stem all the way up, and the length of time it takes to prepare that is just a *world* of difference. (Storey: Yeah.) The tendency in the designs of these things, then, is to try and compartmentalize these various components so that the contractor can look at a type of footing and say, "I ought to be able to build that footing for so much money and there are so many yards of concrete in it so there would be so many dollars per yard."

Storey: Uh-huh. Now, if I'm understanding this correctly, Reclamation designers would design the kinds of transmission towers they wanted (Willms: Uh-huh.) and they would also have figured out how many pounds of steel would go into each tower, (Willms: Right.) and then we would go out to contract as Reclamation and say,

"We want you to build these towers, string the line, there's going to be this much line there are going to be this many towers and so on." And the contractors would come in and bid on the *materials* but they were factoring in all of the labor charges and everything? And then you, as the contract person for Reclamation, would be sitting there saying, "Okay, they built this tower, that's so many pounds of steel and there's this much wire, and this much of all of these things and so we owe them this much money." (Willms: Um-hmm.) So we never got involved in paying for labor (Willms: No.) in terms of they would come in and say, we had 100 eight-hour days . . . .

"The initial contract would be this schedule of . . . about a hundred bid items in there which the person would bid so much per yard of concrete for a certain type of footing–and if you look at the specs, right in the specs it will say that the cost of this concrete includes the cost of the forming, the cost of the materials, the cost of labor, and it's a fairly *common* way to do it. . . ."

Willms: Not until you had a claim or extra work which was paid on a actual cost basis, then we got into the labor, but not for the initial contract. The initial contract would be this schedule of, as I recall, I'd say about a hundred bid items in there which the person would bid so much per yard of concrete for a certain type of footing–and if you look at the specs, right in the specs it will say that the cost of this concrete includes the cost of the forming, the cost of the materials, the cost of labor, and it's a fairly *common* way to do it.

"By bidding it this way, you can change the quantities, because what we give the contractor didn't tell them the exact quantities, we estimated quantity. And you can change the quantities and the contractor gets paid commensurate with the quantity actually installed. . . ."

Now, if you go back to the tower, you could get a pretty good example of why. The towers, you had a body of a tower–there were a number of different types of towers, but any type of tower would have a body to it–and then it would have extensions and it would have legs. So each site–since the site is done topographically, to fit the topography–a particular site may have a certain type of say, an S-X tower, which I think was the name of one of them. It may have a twenty-foot extension, it may have two 30-foot legs, a 15-foot leg, and a 5-foot leg–that means it sits on a hillside. (Storey: Uh-huh.) So, each tower has its own weight then. But, what you would pay for would be: you would pay for so much per pound for the tower, so much per pound for the body, so much per pound for the legs. By bidding it this way, you can change the quantities, because what we give the contractor didn't tell them the exact quantities, we estimated quantity. And you can change the quantities and the contractor gets paid commensurate with the quantity actually installed.

Storey: Were change orders common?

Willms: Yes.

Storey: Lot's of change orders? What would a typical change order be about then?

Willms: On that particular line, most of them were associated with the footings. This line was put out right at the time that President–wait, I'm going to get confused here–yes, President Eisenhower, I *think*, or maybe it was President Kennedy. I think it was President Kennedy, made the decision that we would build public transmission lines.

The Steel Tower Transmission Line Contract Was Ready, but the Necessary Field Work Had Not Been Completed

I don't know if you remember during that period of time in the 50s mostly, there was a big flap as to whether there would be public development of powerplants or private, and a lot of it focused around the transmission lines because the transmission lines, people who owned the transmission lines tended to *control* a lot of what happened with the power. Since you had to have transmission lines to get the power, they were in a strong negotiating position. I think then, President Kennedy, early in his presidency made the decision that the United States would proceed with public construction of transmission lines. (Storey: Uh-huh.) But, it was a very political issue, a lot of this was sort of hearsay to me. But, my understanding is as soon as he made that decision, Reclamation went out with this bid on this particular transmission line and the contract was not quite ready. The contract was ready, but the field work wasn't ready. Surveys had been done by Claire Hill [phonetic spelling], by contract, and there had not been anything but a cursory site examination of tower locations. And we didn't have any right-of-way.

"Now, a lot of that crossed the Forest Service and we immediately reached understandings with the Forest Service, and that's the reason that the construction started in the Paonia area, is because it went over the edge of Grand Mesa and there was a large piece of Forest Service land that the contractor could go to work on . . ."

Now, a lot of that crossed the Forest Service and we immediately reached understandings with the Forest Service, and that's the reason that the construction started in the Paonia area, is because it went over the edge of Grand Mesa and there was a large piece of Forest Service land that the contractor could go to work on while we went through the process of acquiring the private land for the rest of it.

". . . this whole set of circumstances led to an awful lot of footing classifications that were wrong. . . . only cursory geology done . . . as soon as you hit a rock . . . you'd have to change the type of footing, and we got into an awful lot of claims and change orders there. . . ."

But anyway, this whole [set of] circumstances led to an awful lot of footing classifications that were wrong. They were done with only cursory geology done, and so the on-site inspectors would have to, when they got to

starting the footings . . . . All of the footings were specified to be auger type and what happens is as soon as you hit a rock, the auger doesn't handle the rock very well. Then you'd have to change the type of footing, (Storey: Uh-huh.) and we got into an awful lot of claims and change orders there. In fact, I think the contract for that transmission line was about $8 million and the claims exceeded that–we didn't pay near that much.

Storey: So, in designing and putting out the specs for a transmission line, we would have sited every tower and we would have looked at every footing on every tower, is that right?

Willms: Well, we sited them all and I can't tell you whether or not we looked at all of them, or looked at samples, or just what. We had sited all of the towers and that's a significant part because that designates, you know, what your spacing for the towers are, how high they are and what type they are and things like that. I think we also had a chart that showed what the type of footing was to be for each one. I think that's the one that we had so much trouble with and maybe the information was gathered from the Claire Hill survey, I really am not sure.

Storey: What was the name of that transmission line?

Willms: That was Curecanti-Hayden 230 kV.

Storey: And you were in Rifle for just about three months?

Willms: Just about three months.

Storey: And then you had your talk with–I've forgotten the man's name?

Willms: Jim Seery.

Storey: And he said, Well, we're going to move you to Gunnison and in a few months we're going to let you work on Morrow Point.

Willms: Blue Mesa.

Storey: Blue Mesa, excuse me. Did you like Gunnison?

Willms: Yeah, I did. I got married when I was in Gunnison and ended up living right along the river there on my in-laws' place and I enjoyed that.

Storey: She was a local woman?

Willms: She was local, yeah.

Storey: What were you doing now? You were doing contract administration?

Willms: I did contract administration for the first six months.

Storey: For the same power line?

Worked on Contract Administration in Gunnison Mostly on Construction of the Control Center for the Colorado River Storage Project and the Power O&M Center, both in Montrose

Willms: No. Most of the work I did was on the power O&M center that we built in Montrose, and we were building a center to control the CRSP [Colorado River Storage Project]. CRSP at that time was all under construction basically (Storey: Yeah.) and we built a pretty sizeable center down there which later went over the WAPA [Western Area Power Administration] when they were formed. But, I administered contracts on their warehouse and their machine shop and did that from the office, you know, I was in Gunnison, the work was in Montrose so . . . .

Storey: And then you started working on Blue Mesa?

Willms: On Blue Mesa Dam then in the spring of '65 . . .

Storey: Well, before we go any further, I need to ask you, it's after eleven now, do you want to keep going for another forty minutes or so?

Willms: Yeah, that's fine with me if it is with you.

Storey: No, it's fine with me. What were you doing specifically with Blue Mesa then?

"At Blue Mesa we were . . . doing the initial concrete work in the powerplant and finishing up the installation of equipment . . . Most of my work was with equipment: worked on the installation of the gates and valves in the dam. Also, did some work on the embedded equipment . . ."

Willms: At Blue Mesa we were at the *last* stages of the prime contract, they were just last year of fill on the dam and doing the initial concrete work in the powerplant and finishing up the installation of equipment, things like that. Most of my work was with equipment: worked on the installation of the gates and valves in the dam. Also, did some work on the embedded equipment that goes in the powerhouse, piping and things like that that goes in there. I did miscellaneous other things. We weren't real busy, as mechanical engineers we're not real busy during that period of time. I think I helped a little bit with shift work on concrete placements and . . .

Storey: Now, when you say, you "worked on," what does that mean exactly?

Willms: Well, essentially it's inspecting installations.

Storey: Okay, so you were inspecting what contractors were doing? (Willms: Right.)

Putting in the gates, putting in . . . not the generators?

"We always built power facilities in a two-stage process with the prime contractor building the heavy work–the building, the sumps, the mass concrete along with the dams and stuff like that–and then have a second contractor that comes in and installs the equipment and does the lighter concrete work. The reason for that is, it takes a different type of contractor, different set of skills. . . ."

Willms: No, that came later, I did that also, but the first period of time was with the prime contractor. We always built power facilities in a two-stage process with the prime contractor building the heavy work–the building, the sumps, the mass concrete along with the dams and stuff like that–and then have a second contractor that comes in and installs the equipment and does the lighter concrete work. The reason for that is, it takes a different type of contractor, different set of skills.

Storey: Would you talk about those skills for me?

Willms: Well, the prime contract installation is usually just bulk heavy construction. In the case of Blue Mesa, they did the compaction, moving of the earth, the compaction of the dam, they built the heavy concrete in the spillways and the tail races and things like that, and they physically built the powerplant building, put the roof on it, built the walls, and put in the penstocks, and things like that. But, their focus is in heavy construction. When the powerplant equipment is installed, well, now we're talking about putting in governors, generators, a lot of electrical wiring and things like this so the emphasis moves from heavy construction to mechanical-, electrical type of expertise, you might say. While they still have a certain amount of concrete work to do, typically it's a little different type of contract, and quite a little different focus–I don't know–the Bureau has just always done it in two stages, at least all of them I . . .

Storey: Is it done tied together or are they separate contracts?

Willms: It's separate contracts, usually one is done before the other's awarded. (Storey: Uh-huh.) And the second one just picks up where the first one left off.

Storey: Do you happen to remember the contractors at Blue Mesa?

Willms: The prime contractor was Teton Corporation, the completion contract was Eagle Construction Company, used to be up here in Loveland I think.

Storey: How long were you working there on that construction project?

Willms: I think I left Blue Mesa about the first of '67.

Storey: What does the inspection work involve for this second contract?

". . . the completion contract is really a rather intensive, mechanical-electrical job and gets much, *much* more into engineering. My part, as a mechanical engineer, was the installation, basically of the turbine and generator mechanical parts. . . ."

Willms: Well, the completion contract is really a rather intensive, mechanical-electrical job and gets much, *much* more into engineering. My part, as a mechanical engineer, was the installation, basically of the turbine and generator mechanical parts. And, the installation is fairly sophisticated in getting them aligned properly. Quite a lot of metal work goes on, a lot of welding, rivetting and things like that, a lot of *technique* issues.

". . . we would oversee the installation of all of the piping and the auxiliary systems, the pumps and things like that. . . . then once they get put in, we'd have to test them and there would be quite a little bit of adjustment. . . ."

In addition to that, we would oversee the installation of all of the piping and the auxiliary systems, the pumps and things like that. A whole lot of things have to fit together. And the inspection people tended to be the ones that saw that things all fit together, that the pumps were aligned properly and would pump, that the systems would work, then once they get put in, we'd have to test them and there would be quite a little bit of adjustment.

". . . testing the turbine and generators is a fairly sophisticated process also . . . That was fairly challenging. . . ."

The test process of just testing the turbine [and] generators is a fairly sophisticated process also, pretty extensive electrical control system that always has to be, to some degree, reconfigured, redesigned, if you will, due to various unanticipated changes and issues that come up. That was fairly challenging.

Storey: Did you enjoy it?

Willms: Um-hmm. Trouble shooting, a lot of problems occur with this kind of equipment when you install it and being able to figure out the solutions to the problems and get to where you understand it and then figure out how to fix it was interesting and fun. Yeah, I enjoyed that work.

Storey: What kind of hours did you have?

Willms: That particular job, most of it was pretty much a forty-hour week. We, occasionally–for one reason or another–had some overtime work. If the contractor happened to work longer hours than a standard work day and they were doing something that needed to be inspected, you'd have to stay around, but a lot of times they can work and you can see what they did afterward.

Storey: Tell me about the test process for a turbine generator.

Testing a Generation Unit

Willms: Well, once the system equipment is pretty much in, we'd start off by testing components, you know, you fill your water systems up with water, make sure they don't leak and a lot of the valves are electrically operated and then go through and see that they actually operate when somebody in the control room pushes the switch that what happens, really happens. So you have a certain phase of component testing there.

Of course, during the installation process, we usually pressure-tested most of our piping and things like that. Pumps and things of that nature, you can't really test until you have water. So once we'd get water, we would run the pumps, generally run them for a continuous period of time to make sure that the bearings don't overheat and things like that. Again, sort of doing it as components. Most of that comes pretty fast because it's usually fairly close to when you're actually ready to run it that you can start putting water in things, and so much of the testing, you have to do after you have water. So that would get to be a pretty intense period.

"The electrical people start off probably a full two years ahead of ready-to-run the units . . . it takes them about that long to go through and wire-check all of the components. "

The electrical people start off probably a full two years ahead of ready-to-run the units, starting to wire check components, and they essentially go through and make sure that every wire in a governor, [or] in a control cabinet is wired like the drawing says it is. Then they check that against the schematics to make sure that it will do what the design says it's supposed to do. *Enormous* number of errors are found, and some of the errors don't change the way it operates so all you have to do is mark the drawing up so the drawing *reflects* what's actually there so when somebody has to maintain it, and they have a hold of the red wire and the drawing says the red wire does a certain thing, that's what it really does. Others are wired wrong so that it won't work and then you have to either reconfigure it, some of them need to go back to the designers, some of them the electrical people in the field can figure out what to do. But, they start about two years ahead of time and it takes them about that long to go through and wire-check all of the components.

"The Bureau doesn't always do that and in the places where they haven't, it's been a minor disaster for the operations people; a lot of trouble getting the equipment to operate . . . and then the O&M people sometimes will spend as much as eight or ten years going through and trying to get it straightened out . . ."

[The] Bureau doesn't always do that and in the places where they haven't, it's

been a minor disaster for the operations people; a lot of trouble getting the equipment to operate, when it does get to operate, it's usually sort of patched-worked and then the O&M people sometimes will spend as much as eight or ten years going through and trying to get it straightened out so that they can work on the equipment with confidence.

". . . there at Blue Mesa and also at Morrow Point, the head of the mechanical-electrical believed in thorough pre-checking, and I think it . . . is worth the investment of time."

The particular job that I was on, there at Blue Mesa and also at Morrow Point, the head of the mechanical-electrical believed in thorough pre-checking, and I think it paid. I've seen since then on jobs that weren't pre-tested as well, and I think that pre-checking is worth the investment of time.

". . . once you get that component testing done ahead of time and it comes time to actually start running the turbines . . . this is a pretty touchy time for the turbine manufacturer because he's going to find out whether or not his units have balance, whether or not his bearings are going to stand up, and whether or not the unit is going to vibrate apart or have serious problems . . ."

Then, once you get that component testing done ahead of time and it comes time to actually start running the turbines, you'll start it–and this is a pretty touchy time for the turbine manufacturer because he's going to find out whether or not his units have balance, whether or not his bearings are going to stand up, and whether or not the unit is going to vibrate apart or have serious problems–and usually we'll start turning the turbine with nothing happening in the generator except the rotor turning.

"The generator people will have an erection engineer there . . . as will the turbine people, and they usually sort of direct it. We'll locate people . . . at various strategic points. . . to observe . . . then you hold your breath and you open the gates and let the turbines start to turn. Usually they'll let it come up to maybe twenty percent speed and then just shut it right back down . . ."

The generator people will have an erection engineer there from the company, as will the turbine people, and they usually sort of direct it. We'll locate people with earphones at various strategic points, usually maybe ten or twelve around the powerplant to observe either various pieces of equipment or gauges, and then you hold your breath and you open the gates and let the turbines start to turn. Usually they'll let it come up to maybe twenty percent speed and then just shut it right back down and collect everybody's thoughts, make sure nothing out of the ordinary was happening. If it isn't, then they'll go do it again and then eventually they'll let it come up to full speed, and at that point the governor will take control, and that gets to be another sort of a . . .

END SIDE 1, TAPE 2. APRIL 21, 1994.
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Storey: They would eventually run it up to full speed?

"Eventually run it up to full speed, the governor would take control of it and that's another area that is watched pretty carefully because it's the first opportunity for the governor to actually start controlling the unit. . . ."

Willms: Eventually run it up to full speed, the governor would take control of it and that's another area that is watched pretty carefully because it's the first opportunity for the governor to actually start controlling the unit.

Balancing a Generating Unit

Once we get it up to full speed, we'd probably run it a bit, maybe an hour or something like that, depending on how well it's in balance–balance gets to be an issue at this point–and check, see how the bearings are performing, whether the units are running straight and stuff like that. Quite often [you've] got to shut it down sometime in this process and add weight someplace to balance it, and that balancing process can be easy or it can take a long time, depending on whether you have difficulties. When you add weight, it's usually a matter of going inside the generator someplace and welding steel to some of the rotating parts.

Testing Electrical Components and Sensors

Once you get the turbine so that it's in balance, the bearings are okay, the generator bearings are looking pretty good, the testing then starts to look at the electrical components. There would usually be several days of control board simulation testing to see that the various protective devices work and they're all usually series of electrical actions that have to take place and while you've probably already tested most of the individual components, you need to test the system and they'll go through a whole group of simulated tests.

For instance, they probably go to a sensor for low oil in a bearing and manually move that sensor to indicate a low bearing and see that the control system does all the things it's supposed to do when low bearing oil occurs. Usually these sort of things cause a shut-down of the unit, but it's important that the unit be shut-down in the right sequence and the sequence is different for different faults. For instance, if you have a fire–something *hot* in the unit, or *hot* in the windings–you want to open the breakers and get all of the electrical off real quick. But, when you do that, the water column is moving down through a generator and that momentum is there so once you cut the electrical power, the generator's going to speed up. That's the proper reaction to a electrical fault in the generator. On the other hand, if you have a bearing problem, the last thing you want to do is to have the generator speed up. So then you go through a different sequence, you bring the power down as rapidly as you can, but you slow the water column down, then interrupt the breaker so that you don't cause stress on the bearing.

So there's several different sequences in the shut-down, and you go through simulated tests of these and you usually will find a few things that don't work right and that usually requires some study of the drawings to find out why, and then the electrician to do whatever rewiring's necessary.

Storey: One of these images that we non-engineers carry around is that the engineers know what they're doing and they sit down and they design a system and you turn it on and it works. What kinds of problems did you run into at Blue Mesa?

Issues with a Hot Bearing and the Brakes on the Unit

Willms: Well, Blue Mesa, we had a *hot* lower guide bearing in the generator and we spent probably a week trying to balance the generator so that there was less movement in that bearing. With that, I think we may have done some other corrective action, but we spent a lot of time on that. We had problems with the brakes. Brakes wouldn't all come down. When the unit stopped, the brake has pad brakes that come up underneath. The rotor on a disk and–they're air brakes–when you'd release the air, springs [are] ~~it's~~ supposed to bring them [brake pads] down. They wouldn't all bring them down so the contractor had to do some work on that.

A Unit Kept Shutting Itself down after Running During the Night and the Sensors Didn't Indicate Why That Was Happening

Any number of minor control problems that the controls didn't work. But, the *most* significant problem that I remember–it's been a long time ago, I don't remember all of the problems but–(Storey: Yeah.) the most significant one I remember is that once we got the generators so we actually generated power, as soon as we generated power, we went through what we call a "load rejection test," which is a matter of opening the breaker and letting the unit over-speed. The reason for that is that can occur any time and we measured the rise of pressure in the penstocks, there's certain limits that it needed to stay under; the designers had designed it to stay under it but, you know, the designs are not so sophisticated that you can't make mistakes in that.

So we would test it at first; 25-, 50-, 75-, and then 100- and then finally, 115 percent load, doing it sequentially because then you could watch the pressures and other things to make sure you weren't getting into a area that could be destructive.

We did those tests in the first day or two and then we started running the unit for– actually production of power during the night. The first night we ran it, the unit shut down by itself. The control systems are set-up so when a unit shuts down–when one of the protective devices trips–it has a parallel device that also sends a signal to–in those days–a light in a window with a name on it that says, "you've got low oil" or whatever it was that caused the shut-down. Well, we didn't get any indication of why. [We] also had an electronic device

that recorded these things, and we didn't get anything there. All we know is, is that all of a sudden the breakers opened, the shut-down sequence went in place, and we couldn't figure out what caused it.

". . . it's always worrisome to have something that shut-down, and you didn't know why. . . ."

We called Allis-Chalmers, the generators were [built by] Allis-Chalmers, and we had them come in, thought it was a problem with their excitation equipment. They came in, looked at it, they couldn't find any problem with it. We put it back on the line and it's always worrisome to have something that shut-down, and you didn't know why. When we put the thing back on the line the next night and it did the same thing, ran for a few hours and shut down.

Each time it would do this, we would run people out during the night–and I can remember coming out several times and looking at various things, trying to figure out why, do we leave it shut-down until morning or maybe even leave it down for a day or two to look–but it just happened as regular as clockwork. A few hours, an hour or two after we'd started to run it–and since we're always working on it during the day, we'd set it to run during the night, it *always* happened after people had left. Then, pretty soon we had people start to stay. Well, they would stay, we'd have electrical engineers staying around and it would shut-down and [we] still couldn't find out what it was.

". . . brought in . . . some oscillographs that we could put on various control points . . . On top of the headcover, we had a mercury switch . . . vibrations of the water going through the turbine then would be transmitted . . . it vibrated enough that the mercury in that switch would stand up like needles . . . And every so often, one of those needles of mercury . . . would . . . hit that contact . . . long enough to start the shut-down process . . ."

Pretty soon we got, I think probably brought in, maybe from Denver, some oscillographs that we could put on various control points and of course, there are hundreds of them around the powerplant, you could wire in so many of them on an oscillograph at a time. We'd set up this oscillograph and see if we could find out why it was, and we did that for a while. Lo and behold, we eventually picked it up. What it turned out to be is we had a device on top of the turbine headcover. The headcover is the structure that's between the wheel and the water and the powerplant, it's confining the water. The way their turbine's built, the water comes in the side and goes out the bottom. (Storey: Uh-huh.) And of course, the water wheel that the turbine runner goes clear across the top and there are some seal rings up there and then the headcover's over the top of the wheel. So, that area between the headcover and the top of the wheel is a void area. We admit–under some circumstances–admit air in there to smooth out the way it runs–we have a number of ways you can put compressed air into a turbine and that was one of them. But the designers had a schedule of what openings of the wicket gates you would have air going into what places–I guess based on the model test probably the manufacturer had run

on the turbines in the plants–and of course, we had everything set-up that way and at the particular speeds that we were running gate openings, we were not admitting air into the headcover.

On top of the headcover, we had a mercury switch that I think was just there in case the headcover–well, I don't remember now whether it could be for the turbine oil level or it could have been for the water level–but there were some mercury switches up there. I don't know if you've seen mercury switches, but what they are is just a glass bulb about so big around that's partially full of mercury.

Storey: About an inch in diameter, you mean?

Willms: Yeah, they're cylindrical, about maybe a half-inch in diameter and so long. (Storey: About an inch long.)

Storey: I think I've seen them in thermostat controls.

Willms: Yeah, they're very much like it, probably be a little bigger here. But you know how . . . . And they sit at an angle and you'll have a set of contacts . . . . They'll be about half-full of mercury, and they'll sit at an angle, and you'll have a set of contacts here, so your mercury would be right below your contacts. And then when that tips, the mercury flows over the contacts and completes the circuit. They're very durable because you never burn your contacts and things like that. They'll be set-up then so that they tip some mechanical–if water's rising, you have a float and it tips it or something like that. (Storey: Yeah.)

Well, the way we have these things set-up, we have these mercury switches with two switches in there; one of them for the alarm and one for the shut-down, on whatever it was we had it on there for. When the unit would run awhile, evidently–well, it's not evidently, we *know* this is what happened–the headcover would fill with water above the runner up to the headcover.

That would fill slowly, evidently, as the air is dissolved or something like that, it would take an hour or two for it to fill up. Once it became full, of course, you had water all the way through there and you didn't have an air cushion any more and the vibrations of the water going through the turbine then would be transmitted through to the headcover and the headcover would start to vibrate. It didn't vibrate a lot but it vibrated enough that the mercury in that switch would stand up like needles, just little needles of mercury would stand up from the vibrations. And every so often, one of those needles of mercury that would stand up and recede–you know, it would just be a quick little thing–would hit that contact, and it only did it on one of them, the other one, it would stand up but it never hit contact and it would just be the shut-down one that it would hit. And as soon as it would hit that, it would close for two-hundredths of a second, I think, is about how long the closure was, once

we got a oscillograph on there. But, that would be long enough to start the shut-down process, but it wouldn't be long enough to do all of the things that the shut-down process did, including telling us where it was coming from. (Storey: Um-hmm.)

And once we found out what it was, we were able then to correct the vibe . . . . Actually we corrected the vibration by admitting a little bit of air in there and keeping the [water] ~~air~~ out. We [also could have] fixed it by dampening the control. But, we spent weeks on that, trying to figure out what that was.

Storey: Because you don't want to have a real problem that isn't taken care of either.

". . . those sort of things, they were referred to in the testing process as 'gremlins,' they're not unusual to have. That one was probably a kind of a funny one because it took us so long to find it . . ."

Willms: Well, you couldn't keep it running for one thing, (Storey: Yeah.) you know, it'd shut itself down. But, those sort of things, they were referred to in the testing process as "gremlins," they're not unusual to have. That one was probably a kind of a funny one because it took us so long to find it, but you have things that you can't figure out what it is.

Storey: So it wasn't tripping the mercury switch that sent the signal?

Willms: No, it wouldn't touch the signal . . . .

Storey: It was just doing the one that initiated the shut-down?

Willms: Right. And, it wasn't staying in long enough that all of the things . . . . One of things that also happens on these shut-downs is, is that certain relays throw up targets when they trip, and I think one of the things that happened on those two, is it was so short a duration, that it would start to move the relay and then the circuit would be broken again and the relay wouldn't have moved far enough to stay, and it would just go back in and go back to its original position. The shut-down part itself that shut the unit down is a weighted solenoid in the governor, and you interrupt the power to that solenoid and that weight falls out. It was long enough, *always*, to make that fall out (Storey: Uh-huh.) and so you would *always* shut-down the unit, but sometimes it wouldn't open the breaker, sometimes it wouldn't open all of the breakers, sometimes, it would do some of them. (Storey: Yeah.) But, you never had a complete circuit shut-down.

Storey: Do you remember any other testing of things that came up while you were there?

Willms: I don't remember any particular problems after we got the bearing thing solved. We did have the automatic penstock filling devices, the air vent

devices wouldn't work, and by the time *I* left, that had never been solved. The plant was set-up to be run remotely and to be able to fill the penstocks and to do the whole thing remotely. And I think [by] the time I left, that had never been resolved, you had to have a person there. (Storey: Um-hmm.) Oh, I don't really remember any, I think we had a lot of you know, *little* things come up in the course of the testing that you'd run a test for a while and you'd have something that you would discover is not right and you'd need to stop it and fix it.

Control things were frequent. I think almost every day you'd run through a series of tests, we'd have a list of control rewiring that would need to be done that would probably be done during the swing shift.

Storey: In your experience, was this a fairly typical situation?

Willms: I think so, yeah.

Storey: Now, when they started doing the completion contract, were you there at Blue Mesa? (Willms: Yes.) Did you complete the completion contract?

". . . I went through the testing of Unit 1, and then while they were preparing for testing of Unit 2, I transferred to Morrow Point. . . ."

Willms: No, I went through the testing of Unit 1, and then while they were preparing for testing of Unit 2, I transferred to Morrow Point.

Storey: Okay, that would have been in '67?

Willms: I think it was about the end of '67.

Storey: How many units were there at Blue Mesa?

Willms: Two.

Storey: Now, when we say, two units, does that mean two generators? (Willms: Um-hmm.) What's an exciter?

The Exciter on a Generator

Willms: Part of the generator in order to make it run, is a synchronous machine. You have to, what we call "excite," energize the rotor poles. In a sense, they become electromagnets (Storey: Uh-huh.) and the exciter is the device that puts the power onto the poles. They're fairly sophisticated because the excitation rotates . . . . (Storey: Um-hmm, and reverses itself, as I recall.) Yeah, well, I think we had the poles on–gosh, it's been so long since I've worked on those–for a certain speed, you have a certain number of poles and I would guess on that generator at Blue Mesa there's someplace around twenty poles. (Storey: Uh-huh.) So they're lined up around that thing and your

excitation rotates around the poles. You excite one and the next one, and their excitation kind of builds up and comes down as it goes around it. By the way you excite it–then you get pretty well technically out of my expertise here–but the way you excite it affects what the power factor is.

Storey: Uh-huh, okay. Well, this is actually a very good point I think, your transfer from Blue Mesa to Morrow Point to end this interview (Willms: Okay.) it's been almost a total of two hours. (Willms Almost two hours.) And I appreciate it. I'd like to ask you if now that you're aware of what we've been talking about, whether or not it's alright for researchers from Reclamation and from outside Reclamation to use the tapes and any resulting transcripts from this interview?

Willms: It's fine with me.

Storey: Okay, I appreciate it, thank you.

END SIDE 2, TAPE 2. APRIL 21, 1994.
BEGIN SIDE 1, TAPE 1. APRIL 28, 1994.

Storey: This is Brit Allan Storey, senior historian of the Bureau of Reclamation, interviewing Ray Willms in his offices on the 14th Floor of Building 67 in the Denver Federal Center, at about eight o'clock in the morning on April the28th, 1994. This is Tape 1.

I believe during our last interview we left off as you were moving from Blue Mesa to Morrow Point, construction down there. If you could tell me what was going on at Morrow Point, please.

Inspected Installation of Gates at Morrow Point Dam

Willms: Well, at the time *I* moved to Morrow Point, the construction of the concrete dam, the pouring of concrete, was completed. The prime contractor was putting in gates and valves and that sort of thing and doing a lot of the finishing work that had to go on. As a mechanical engineer, that was the area of work, of course, I was most involved in. So I spent oh, I would guess, six or seven months after I went to Morrow Point working on the installation, primarily of the fixed-wheel gates that were the intake structure for the powerplant.

Summer of 1968 the Contractor Walked off the Job and the Construction Moved into O&M Status until Work Began under a New Contract

As I recall, in that summer–I think it must have been the summer of '68 then–the contractor just walked off of the job, said that he had done all he was going to do, and left the dam in somewhat less than a complete stage. Reclamation, at the time, was having its sort of characteristic budgetary problems and didn't have the money to award the completion contract

immediately. So there was no contractor on the site for maybe a year, or year-and-a-half then. The construction crew–mostly the civil [engineer] types, Bureau employees–were sent to work on Silver Jack Dam, which was just getting started, and most of the rest of us stayed and became an O&M crew for a partially done dam. (Storey: Uh-huh.) There are some interesting times in that period.

Monitored Dam Instrumentation at Morrow Point

We started to fill the reservoir, or *did* fill the reservoir during that period of time, and the task that *I* drew was monitoring the dam instrumentation. Morrow Point's a thin arch dam–one of the few or maybe the first, I don't know if it's the first, but close to the first thin arch dam the Bureau had built–so there was an awful lot of instrumentation on the dam.

"We spent a lot of time running through the galleries of that dam, measuring instruments and leakages and plumb lines and other instruments to see that the dam performed appropriately during the filling process. . . ."

We spent a lot of time running through the galleries of that dam, measuring instruments and leakages and plumb lines and other instruments to see that the dam performed appropriately during the filling process. Also, since the dam hadn't been finished, there was an awful lot of temporary equipment in place.

"One time, one of the instrument readers headed for the lower gallery and was traipsing off down the spiral steps about half asleep and he just walked into water and the lower gallery was flooded; and water was rising rapidly. . . ."

One time, one of the instrument readers headed for the lower gallery and was traipsing off down the spiral steps about half asleep and he just walked into water and the lower gallery was flooded; and water [was] rising rapidly. The people who were on hand there–the five or six of us that were still around the site during this period–mobilized all of the old discarded equipment we could find: pumps, pipe, and things like that. [We] did manage to set-up a temporary pumping system to pump the lower gallery of the dam and eventually did get it pumped out and restored. (chuckles)

Storey: How had it flooded?

Willms: It had two sump pumps and the lower galleries of the dam were sixty-feet below the level of which they could gravity drain. There were two sump pumps that pumped this out, and these were the permanent pumps in this case, but they were hooked onto temporary power. Both pumps seized from–I think–mineral deposits from the water, and they both seized the same day. They were set to alternate; run one pump one time and one pump the next. Those two seized the same day and wouldn't pump anymore, so the drainage into the lower gallery was substantial and the water, of course, started to rise.

Storey: Would that drainage be normal in the dam?

"All dams leak. There are several types of drains in a concrete dam. They have what they call 'formed drains' in the concrete . . . The bulk of the water comes from drainage that goes into the foundation. . . ."

Willms: Yes. All dams leak. There are several types of drains in a concrete dam. They have what they call "formed drains" in the concrete themselves that are set back in the concrete several feet and usually near the joints of the blocks. These drains are *intended* to pick-up any seepage so the seepage is collected in drains and controlled, rather than seeps out the downstream face of the dam.

The bulk of the water comes from drainage that goes into the foundation. Again, the foundations are all grouted; there's a series of holes drilled in on the axis of the dam, back into the rock at a varying distance up to a hundred or more feet and grout's pumped into it. Then they drill another set of holes just downstream of this grout curtain–we call that the grout curtain–that intercepts any water that comes by so that the water pressure is relieved at that point. A certain amount of drainage out of those is normal and that goes both out the sides and down across the bottom and back up. This is where most of the water comes from, is out of those drains.

"The Morrow Point Dam . . . had an underground powerplant . . . quite a lot of rock problems in there. . . ."

Drainage in Morrow Point, on the dam foundation itself–the dam axis–was not *terribly* large.

The Left Abutment Was Treated for Seepage with Chemical Grout

They did have on the left-hand side, left abutment, some seepage that was greater than desired, and subsequently used a chemical grout to control that considerably. The Morrow Point Dam and powerplant had an underground powerplant that was excavated–oh, I would guess it must have been 200 feet to when you entered the powerplant from the rock. Then it was, of course, a big cavern that was excavated back in that.

There was quite a lot of rock problems in there. There was a sloping fault right behind the powerplant–right into the rock–and there was some movement in the wall of the powerplant. This was discovered, I think, either during the excavation of the powerplant or shortly thereafter. The Bureau excavated a tunnel back into the other side of this fault zone and then bored holes through the fault zone. And through these holes ran a series of high-strength steel rods. They were about a quarter-inch in diameter, thereabouts. There would be a whole series of them for each hole, and then they tensioned those and actually used that to hold the powerplant wall to keep it from moving. That tunnel also had drain holes in it to try and relieve the pressure in the foundation. This pressure was back in the rock then several hundred feet. Those holes

developed *a lot* of drainage when the reservoir was high. I used to measure those with a fifty-five gallon drum. If you put a fifty-five gallon drum under those holes and fill it, maybe, in eight or nine seconds. Those were all holes all drilled up, and the water would just gush out of them with the reservoir high. If the reservoir dropped some, then that leakage would decline substantially.

Measuring Seepage in the Dam

One of the things during this period of time that I did in connection with the instrumentation, I also looked at it and measured all the seepage and stuff like that. We stuck what we called "packers" up in those holes, and all it was, was an inflatable, very heavy balloon that you put on the end of a pipe. You'd have concentric pipes, you'd have a fairly big pipe that this balloon would sit around then you'd have a little pipe going up the middle of it that went . . . get up with an elbow and turn into that pipe to inflate the balloon. You'd stick the balloon up, you'd inflate it and any water that was coming from above the balloon would run through the pipe. Any water that was below the balloon would be outside the pipe. Then you'd measure the difference and know how far the balloon had been inserted up in the hole.

". . . you could determine where the leakage was entering the hole. . . . from the information we gathered . . . they did this chemical grouting . . . to stop the leakage into that abutment of the powerplant. . . ."

From that, you could determine where the leakage was entering the hole. We would move the balloon up on five foot increments and map the leakage. It was a fairly challenging task because you're in a tunnel with maybe [an] eight foot ceiling on it, and having to run a pipe up as much as 130 feet up a hole–I think we were using inch-and-a-half pipe–so it get's pretty heavy when you have a hundred feet of pipe sticking straight up a hole and no equipment to do it with–it was essentially a manhandling job. And then you had maybe a hundred gallons of mineral water coming down through the hole right in your face at the same time you were doing all of this. (laughter) But we got that done, and from the information we gathered out of that–they did this chemical grouting–and the *intent* of the chemical grouting really was to stop the leakage into that abutment of the powerplant.

Issues in the Chemical Grouting Process

The chemical grout that they used was a–oh, it was some sort of an asphalt polymer stuff that you brought in hot–and it would be pumped into the hole along with–in a separate pipe–I think it was maybe just lime that they pumped in with it. The mixture of those two caused this stuff to set, and it would set in just a few feet after having been mixed. It would set in water–was the reason they used that–if they used concrete grout, of course, the flowing water would wash the cement out of the cement grout, you wouldn't get anything. So the idea is, is you'd put this chemical grout, as they called it, up there and mix it at the end of the hole and it would flow with the water. Within traveling a few

feet, it would set-up and supposedly plug up the hole. I'm not sure if this is the first time that Reclamation had used this sort of process or not, but from this design office here in Denver, they gave the instructions and it involved–of course you had to drill the hole, we got a drill crew to come in and drill the hole. And it was a difficult situation because it was back in the gallery of the dam so everything had to be carried in. You could lower things down by crane, down to the nearest adit into the dam, you could put it in, but then it had to be carried from there. There's not a lot of room for sizeable drilling equipment back in those tunnels.

Anyway, they would drill the hole–which would often take several days–and they'd get these pipes back in there and then they'd run a hose from the tank truck with the hot polymer down in and pump it with a regular grout pump, and also use another pump to pump in the lime solution. The first several holes they got started, they'd just get started and pump–oh, I don't remember how much, but not near enough of that grout–and the grout pumps would seize. What would happen is, is they'd start to work that asphalt–which didn't look a lot different than road asphalt–they'd start to pump that stuff and it would start to coagulate and get stiff in there until pretty soon, it would just stop the pump. Then the only way you could get it to pump again is take the pump apart and clean the stuff out. Meanwhile, of course, you had got this stuff going back into the hole and everything would set-up back there and you'd lose the hole; but [you] wouldn't have gotten enough grout in to have done anything as far as the solution to the leakage problems. So then, you have to drill a new hole and start over again.

Those of us out in the field–we were, of course, doing a lot of the work, observing this process–we finally came up with a solution that was really quite successful. What we did is we took two 300-gallon propane tanks and welded the proper fittings into them so that you could hook this hose up to a propane tank and then we got an air compressor. We would fill the tank with the polymer, charge it with air, and then just open a valve, and open the valve at the rate of which they wanted this grout to be injected, and we'd blow that grout with air pressure and so we didn't have any mechanical devices. We had two of them. You'd start off with two of them filled and two of them charged. When one would run dry, we could shift over to the other one in a matter of seconds then, just by changing valves and keep the flow going and then pull the cover off of the first one, fill it up and charge it again.

What we found is, is you could blow a tank in there, maybe, it seems to me, maybe as little as ten minutes. So it didn't give you very long to fill a new tank and start getting some air on it. You didn't have to get very much air on it because we were sitting on top of the dam and you had quite a little bit of just *head*. (Storey: Uh-huh.) But, the process worked well and we managed to get that abutment grouted and it did substantially cut down the leakage.

Storey: Now, the idea of grouting is that the material goes in and fills all of the little cracks or something?

Willms: Fills the cracks, yes.

Storey: So it's sort of runny, I would guess.

Willms: The stuff, when you started out, looked just like hot road asphalt, and it's quite runny (Storey: Uh-huh.) if you've watched the people spray the stuff on the . . . .

Storey: And then it gets in there with the lime and as it penetrates the cracks, it also sets up.

Willms: It sets up. And it seems to me that the *maximum* set-up time was twenty minutes. The idea of it was to mix with the water flowing and let the water carry it out into the various cracks. In this use of this sort of thing, the hope then was as you get an area filled up that was fairly good sized.

Storey: From what you said, I guess it worked at Morrow Point?

Willms: I think it worked fairly well. I never did know exactly what the expectations were. As I recall, it cut down the seepage out of those worst holes though, cut it down by maybe eighty percent or something like that–didn't eliminate it completely.

Storey: But you weren't getting fifty gallons every few seconds.

". . . when it was leaking like that, it was carrying some material with it. You could put a barrel under there and let it run for a week and the barrel would be covered with rock chips and stuff in it. So it was doing some of its own excavating . . ."

Willms: Right, yeah, it made a *big* difference. And when it was leaking like that, it was carrying some material with it. You could put a barrel under there and let it run for a week and the barrel would be covered with rock chips and stuff (Storey: Uh-huh.) in it. So it was doing some of its own excavating as it came through.

Storey: Going back, a couple questions I'm interested in. One is: *Why* put the powerplant back in an excavated cavern? It seems like that would be expensive and difficult.

The Powerhouse Was Underground Largely Because of Space Issues in the Narrow Canyon

Willms: The canyon was very narrow and I believe the reason was, is there wasn't really room for the powerplant at the toe of the dam, which is the typical place for it. The other thing they had at Morrow Point was free fall spillways–you've probably seen some pictures of it around, but there are *four* spillways that come right through the dam near the top and they just plunge

(Storey: Uh-huh.) to the bottom. I would guess that the decision to put it underground was a combination of cost issues, that there wasn't sufficient space for the powerplant down there. If they'd have tried to put it down there, they would of had to put their spillways through tunnels someplace and bring them out somewhere to maybe what they had done at Glen Canyon or Hoover. I never did see exactly what the decision [was] but it was basically a space problem. You really didn't have room to have a spillway *and* a powerplant at the toe of the dam.

Storey: The second thing I'm interested in that you talked about was the instrumentation in the dam. Could you talk more about that for me please?

Willms: Well, there's any number of different types of instruments. I can tell you about some of them and some of them I can't, because I just don't know what they did.

Storey: Well, the ones that you're familiar with.

Instrumentation in Morrow Point Dam

Plumb Lines

Willms: But, the *basic* instrumentation on the dam, most significant, is a set of plumb lines that run all the way from the top to the bottom. They're through ~~others a~~ [an open and] continuous well–there were three of them–actually, the plumb bob is at the top. The way they do that is, is they tie the plumb line at the bottom to a rigid point, and then they put a doughnut-shaped float in an antifreeze solution up at the top with a little bridge over it; when the wire comes out of the center of the bridge. The advantage of using that kind of a plumb line is, is that the line is then taut. You put enough fluid in the vat of which the float is floating in–which is also a doughnut-shaped vat so that your wire goes down through the center of it–you put enough fluid in it to tighten and get some tension on the line so the line is tight and if you happen to bump it, then it doesn't tend to swing for two days.

But, in any case, then they set-up some micrometer-type instruments for reading that plumb line. They're *optical* instruments but you move a micrometer type of a target to get it all lined up and you shoot it from two different angles. The dams do move. They move from temperature; as the sun moves, you have a daily cycle of movement in the dam. Then, of course, the water pressure will also cause some movement. And, I assume then, just the outside temperature, in addition to the sun temperature. We would record these things during the filling period, you would always note the time of the day when you read it, and the water elevation. While it was filling, we read those every day, and other times when the elevation wasn't changing, we would read them weekly for a while. Then I think as the dam history gets better, they lengthen that out probably to monthly. We would send those in here for analysis.

Survey Points on the Dam and Abutments

Then, there are also survey points around on the dam and also on the abutments where periodic surveys are taken–I did not do that, the survey crews did that. They'd take these various survey readings that would record both the position, I think, and elevation of various points on the dam and the abutment.

Strain Gauges

Then, there were a whole bundle, I think in excess of 1,000, strain gauges. These are wires imbedded in a tube that the wires come out to the surface and the tubes are imbedded in the concrete. If the tension or stress in the concrete changes and causes these tubes to move, the wires are either stretched or relaxed and you take a version [of a] wheatstone bridge–electrical instrument–and measure the resistance through the wire and you can tell from the resistance, what the strain is.

Now, this isn't something you can interpret in the field, you record the reading of the wheatstone bridge and send this data again, in here, into Denver, and they plop it into a computer and look at it. These I think are not read frequently. In fact, I think probably they may have been read every year or two or three or something like that and you never got any feedback. But during this period of time, we read every one of those 1,000 meters every week with a wheatstone bridge–it's a type of an instrument, it's a modified one.

It's kind of a slow process because the process of reading one of them is, they have plugs where you plug into the wires, so that's easy enough. But, then you have a series of dials and a meter and the idea is to get the dial set-up right so that the meter zeros. You set a dial and you push a button–you just push the button, you don't hold the power on it–and then you change your dial. I think there are probably five dials in the process, so a person is having to go through a whole series of movements to do that. And you'd be setting up at a panel, and they have a hundred of these things. [It's] a very, very tedious job to sit and center the dial, write down what the dial *numbers* are, because that's what's recorded, is the setting on each of the five dials, and then move it to the next one and do the same thing; and then move it to the next and do the same thing.

Storey: And the instrumentation is to achieve what?

Measuring Leakage in Morrow Point Dam

Willms: Well, the instrumentation serves two purposes. The first purpose, of course–and particularly with the plumb lines and leakage measurements, we also put weirs in and measured leakage–is to have a current performance of the dam, whether the dam is moving as the designers predicted it would. If it were doing something different, they would start looking at the "whys" to see if there were potential structural considerations there.

The strain meters, I think, were used primarily to learn more about the forces within the dam, and to improve their design characteristics. I assume that if they got in and found out that the forces within the dam that are being measured with the strain gauges are significantly different than projected, maybe they would use it for remedial purposes on the dam. But I think it's mostly a learning process that helps them confirm their analysis of forces within the dam. I think you would not–since it was one of the early, first, thin-arch dams–I think there was a lot more instrumentation in that dam than maybe you would have in other dams.

There was also a bunch of instrumentation in the powerplant itself that measured the strength . . .

END SIDE 1, TAPE 1. APRIL 28, 1994.
BEGIN SIDE 2, TAPE 1. APRIL 28, 1994.

Storey: You were saying that you didn't remember much about the instrumentation of the powerplant.

Willms: No, I don't remember much about it. There was a thing they called a "flat jack" and I think [it was] something you inflated, but I can't remember much about it.

Storey: How many folks were there working on the instrumentation project there?

Willms: During the period that I was there, where we were just reading instrumentation since the instruments had already been installed, there were three of us. We kept two people busy, pretty much, just reading instruments. I supervised the other two, and they did most of the reading, and I kept the schedule going and assembled the data. I did usually read the plumb lines and the seepage flows.

Plumb Lines

Storey: A little more about the plumb lines: These were wells, you said. How big around were these wells?

Willms: Oh, they were–I would guess–probably eighteen inches, maybe. Maybe twenty-four.

Storey: Were they completely full of this anti-freeze liquid?

Willms: No, the wells themselves, they're just formed open holes in the concrete. (Storey: Uh-huh.) So the plumb line is in air all the way from the top to the bottom. (Storey: Uh-huh.) Now, at the top, and right at the top of the dam, in fact, you had to take a manhole cover off of the top of the dam to get down into it. There was a room where the float was and it was just a room with the well in the center–just a hole going down that goes from the top of the dam clear down to the foundation to the bottom of the dam. (Storey: Uh-huh.) Sitting

over this hole would be the doughnut shaped pan that the anti-freeze went into. (Storey: Oh, I think I'm beginning to see.) The inside of it then would have been probably eighteen inches or something like that, but the outside may be three or four feet, so you had just a circular trough. Then the float, itself, as I recall, was about that thick, a doughnut about three inches . . . . (Storey: In diameter.) Well, the diameter probably would have been two-and-half-, three feet–two-and-a-half feet, say. For the whole doughnut.

Storey: But the tube that made up the doughnut was probably three inches?

Willms: Well, it would be just a continuous metal sealed container (Storey: Un-huh.) that was maybe three inches thick and maybe six inches tall. Then across the top of this, there was a metal bridge that came to a point right in the center of the hole. On that bridge, there was a device there to hold the plumb wire. (Storey: Uh-huh.) The plumb wire was piano wire–oh, I don't remember what the thickness of it was, but it may have been twenty thousandths of an inch or something like that.Of course, the way you would work that is, the wire would be tied down, clear down at the bottom at a point in the bottom, and then you would have the top of the wire, you'd stick it up through the device that held the wire on the bridge and then secure the wire, then you add the anti-freeze into the vat so it floats the float; it floats it out to a proper amount of tension. There was a way of tensioning it–and I don't remember what it was, but it was probably by the amount of submergence on the float.

Storey: You know, I sort of think of boats, and they sort to swing around on anchors. The principal is that you have this tension on the float at the top, and there's enough tension that it keeps it vertical all the time.

Willms: Keeps it vertical, yeah. (Storey: Okay.) If it moves off vertical, of course, it would have to sink it a little more. (Storey: Uh-huh.) So your natural position of it would be vertical. Now, this whole device, of course, is in an enclosed room so you have no wind. (Storey: Uh-huh.) *I think* in order to get to it, we had to have some sort of a hoist to lift the man door. I think it had a man hole over there that a person couldn't even get into.

Storey: Yeah. And then where did you measure it?

Willms: Down in the dam I think there were four or five galleries that ran through the dam that had access points to this well. (Storey: Uh-huh.) There would be a set of doors and you'd just open these doors and the well would come into the top, there would be a blocked out opening and it would go on down and the wire would go through it. Then, in these wells, you would have the mounted reading instruments with a target that you move and adjust to obtain the reading.

Storey: So you'd be taking maybe twelve readings?

"The lower two galleries were maybe six feet wide or something like that. But the upper two or three galleries were only twenty-four inches wide . . . it's

getting thinner as you go up. . . . And that's the reason the galleries were thin, is that dam I think the base of the dam–if my memory is correct–was only fifty-two feet thick and the top of it maybe eight feet. . . ."

Willms: I think about twelve, it's either twelve or fifteen. (Storey: Yeah.) They were at various levels in the dam. The lower two galleries were maybe six feet wide or something like that. But the upper two or three galleries were only twenty-four inches wide–I don't remember just how many there were–but they were only about so wide. They just went around the full width of the dam at that elevation. Of course, at that elevation, as you get up, the dam's getting wider.

Storey: As you go higher, the dam get's wider?

Willms: Yeah. The dam's in a canyon that's like this.

Storey: Oh, wider in length across the canyon?

". . . roadway on top was cantilevered: it had spiral staircases up each abutment until you got to about sixty-feet from the top, and then . . . there was an adit and you came outside and walked up a set of stairways that were fastened on the downstream side. I think the reason for that was is there wasn't enough thickness in the dam to accommodate a six-foot well for a stairway above that elevation. There are no elevators. . . ."

Willms: In length, across the canyon (Storey: Yeah.) it's getting thinner as you go up. (Storey: Okay.) And that's the reason the galleries were thin, is that dam I think the base of the dam–if my memory is correct–was only fifty-two feet thick and the top of it maybe eight feet. (Storey: Uh-huh.) I know the roadway on top was cantilevered: it had spiral staircases up each abutment until you got to about sixty-feet from the top, and then there was no spiral staircase the rest of the way; there was an adit and you came outside and walked up a set of stairways that were fastened on the downstream side. I think the reason for that was is there wasn't enough thickness in the dam to accommodate a six-foot well for a stairway above that elevation. There are no elevators. All the time, when we had to read these, you had to walk through the dam. If we could muster two people, you would get a ride to the top–because there was a road to the top–and you could go in at the top and walk down. If there was only one, if you couldn't muster two people, you usually drove to the bottom and walked up and walked up the spiral staircases and then did your reading–doing the reading either going up or going down.

Storey: Were you involved, at all, with anything to do with this contractor who walked off the job, who said, "Hey I'm done, guys."

Willms: Well, I inspected some of his work, particularly the work on their fixed-wheel gates and probably the outlet works–pipe and gates–but that was the extent of my involvement with him. They were–as I understand–a combine of companies that formed and incorporated for the sole purpose of building that

dam. They got to the point where they didn't want to do any more, and like I say, they must have had clean-up and stuff like that. They just decided to quit and to disincorporate. I think they went ahead and dissolved. As I recall–of course I was not involved, really in the construction management part of it–but as I recall, the Bureau was pretty unhappy with them.

Storey: Now, who was the person in charge of the project at Morrow Point?

". . . Jim Seery was the project construction engineer. At the dam itself . . . Gene Boyt was . . . field engineer. . . ."

Willms: At that time, it was also Jim Seery was the project construction engineer. At the dam itself–I think during this period in time–a fellow by the name of Gene Boyt [phonetic spelling] was in charge, I think they called [him the] field engineer.

Storey: What was it like working on the project (inaudible)? Let's see, as I recall, you were married at this time.

". . . we worked when the contractor worked. If they worked three shifts, we had crews going three shifts. . . . Work, of course, is generally dirty, noisy, cold. . . . So the elements were disagreeable a lot of the time. Generally, it was hard to take leave in the summer–since the contractor tended to do more work in the summer because you could work outside . . . Inspection work can be trying–it's sort of a policeman's job. The good inspectors often get pretty crossways with the construction crews. . . ."

Willms: I was married at that time. Well, I don't know how you really describe it. When the contractor was there, of course, we worked when the contractor worked. If they worked three shifts, we had crews going three shifts. If they worked long hours, we had crews going long hours. Work, of course, is generally dirty, noisy, cold. The canyon gets very little sun. At the top of the dam you have a little bit of a wind funnel effect, with air moving down the canyon, it comes to the dam and does that.

Storey: Comes up and over and down the basin . . . .

Willms: Yeah. And wind, it blows like heck up on top of the dam. Actually, it would be such that we'd have our gates sitting up on top of them–gates maybe eighteen-twenty feet tall–they were just sitting up there blocked when we were getting ready. You could climb up to the top of the gate and the wind wouldn't be blowing as hard. That just whipped over the top. So the elements were disagreeable a lot of the time. Generally, it was hard to take leave in the summer–[the] contractor tended to do more work in the summer because you could work outside and not be in freezing conditions. Inspection work can be trying–it's sort of a policeman's job. The good inspectors often get pretty crossways with the construction crews.

Storey: Did Reclamation recognize that? They sort of recognized this as a condition of the job?

"Reclamation, of course, started as a construction agency and the construction part was the part of the organization that, I guess, the Bureau identified with. . . . early construction had been much tougher than construction in *those* years. . . . at least we weren't living in remote sites and camps . . . So I think that there was sort of a attitude that, 'This is the way it is.' You didn't really get any complaints about working conditions. . . ."

Willms: Yeah. Reclamation, of course, started as a construction agency and the construction part was the part of the organization that, I guess, the Bureau identified with. So it was sort of a standard. I think that at times, early construction had been much tougher than construction in *those* years. You know, at least we weren't living in remote sites and camps and that sort of thing like some of the early construction jobs. So I think that there was sort of a attitude that, "This is the way it is." You didn't really get any complaints about working conditions. I can never remember complaining about a cold office, for instance, then you sat in a construction shack with the temperature maybe thirty-five or forty degrees in there and you were all bundled up and maybe have a little heater in there and you'd be hovering around it. A lot of the construction shacks would be, oh maybe a shack a little smaller than this room. Probably not more than eight-feet wide because they probably moved them around on a trailer. They would just have a bench around it and maybe some hooks on the wall for people to hang a book bag or something, and that was the place you could go to get out of the weather; they may or may not have any heat in them. Maybe they'd have a diesel–some sort of a combustion heater–but they didn't have very much.

"We always wrote a daily report–required. . . ."

They usually did have electricity wired into them so you'd have some lights, but then inspectors really didn't have desks or anything. You'd carry a book bag around and a clip board. We always wrote a daily report–required. Some of them were not much. Sometimes the grammar and spelling was pretty bad on them. (chuckles) But they were kept as a record for a long, long time, I don't know how [long,] I assume until the completion of the contracts, because those inspection reports were often used for negotiating claims, potentially, and litigation.

But *we* usually car pooled. Morrow Point was about twenty miles out of Montrose and there were a number of car pools that ran from Montrose to Morrow Point.

Storey: So you were living in Montrose?

"When I moved from working at Blue Mesa–which was closer to Gunnison–I'd lived in Gunnison. Then, when we went to Morrow Point, I moved from

Gunnison to Montrose. . . ."

Willms: I was living in Montrose then. When I moved from working at Blue Mesa–which was closer to Gunnison–I'd lived in Gunnison. Then, when we went to Morrow Point, I moved from Gunnison to Montrose.

Storey: When you moved, was that a promotion for you?

Willms: No. That move was just a matter of finishing up at Blue Mesa and having a need for mechanical inspection at Morrow Point. (Storey: Yeah.) Essentially, I was just told to move; it's the same project, same office. (Storey: Uh-huh.) I think they told me maybe a month or two ahead of time that on the first working day of January, I was to report to Morrow Point.

Storey: You mentioned that you were supervising a couple of the other inspectors, I guess, who were checking the instrumentation; when did you start supervising on that?

"When the contractor left the job . . . the Bureau sort of tried to reconfigure the staff so that they could keep the staff that they wanted during the installation of the powerplant equipment and tried to find [them] . . . jobs . . .but most of the people . . . were now surplus to the job. So they were put on a surplus list and shipped off to other projects. . . ."

Willms: Well, that was the first time and the only time during that phase of my career. It was fairly informal. When the contractor left the job and it became *apparent* that there would be a year or eighteen months lag between contractors, the Bureau sort of tried to reconfigure the staff so that they could keep the staff that they wanted during the installation of the powerplant equipment and tried to find either other jobs for those who might come back as concrete inspectors–because there would still be some need for that–but most of the people who had worked on it were now surplus to the job. So they were put on a surplus list and shipped off to other projects.

". . . one day the boss comes in and says, 'We're going to have you handle instrumentation until we start on the completion contract.'. . ."

Well, that kind of left that whole instrumentation thing unattended. So one day the boss comes in and says, "We're going to have you handle instrumentation until we start on the completion contract." They start[ed] off by just assigning it to me and there were still a couple of people there from the group that had been handling it before, but their focus was the installation–they were reading them at the time. So as they started to leave, I went to the boss and said, "I can't do all this by myself, I need help." Well, they then assigned an electrical technician to me–of whom they didn't have anything to do, but they wanted to keep him for it.

So then, shortly after that . . . They had an accident sometime before,

where a rock had fallen off of the abutment and hit a young fellow in the shoulder. The damage to the shoulder was such that he had lost complete use of one hand, and they were trying to find a place for him to work; they had him working in the office but he hadn't worked out very well. So they assigned him to me, and decided that was something that he could do with one hand–which, in fact, he could. So I got the second person there. It wasn't really a three-person job. It probably *was* a solid two-person job. But my supervision was pretty informal, I never got Form 52 or Personnel Action Notification that I was now a supervisor. I *do* think that I did their performance ratings–which were very simple at that time.

Storey: Did you continue to work after a new contractor came back?

"After we had a new contractor that came on board, I moved back over to the inspection ranks. . . ."

Willms: No. After we had a new contractor that came on board, I moved back over to the inspection ranks. I don't even remember who carried on with the instrumentation reading, but somebody did, probably at a reduced level, because I think at that time, we had finished filling the reservoir and we were reading the meters less often.

Storey: But you stayed at Morrow Point?

Willms: But I stayed at Morrow Point, yes.

Storey: So at that point you would have already been there maybe a little over two years?

Willms: Yeah, I think when the contractor came on, it had been about two years. I *think* he came on in the winter of probably the beginning of 1970, and I think I'd been there two years.

Storey: Do you remember the name of the first contractor, the one that said, "Hey, I'm done"?

Willms: You know, I sure don't. I know the second one was Wismer Becker, but I don't remember the name of the first one.

Storey: What were you doing after construction started up?

Willms: Well, then I went back and did the same thing I did at Blue Mesa, essentially installation of turbine generator mechanical equipment–the piping. I tended to do mostly piping and auxiliary equipment–installation of pumps and valves and compressors and that sort of thing–and sort of went through the same thing with Morrow Point that [I] had at Blue Mesa.

Storey: Went through the testing phases.

Detailed to Salt Lake City to Inspect Fabrication of the Penstocks for the Third Powerhouse

Willms: Yeah, although I wasn't involved in the testing phase, we had about oh, thirty-, forty-five days before the testing was to start. (pause) They were starting up the construction of the Third Powerplant at Grand Coulee, and they were fabricating the penstocks for the Third Powerplant in Salt Lake.

The regional engineer was charged with the shop inspection of that–they didn't have staff to do it. They were also putting in a freight elevator at Glen Canyon Dam, of which he was in charge of and didn't have the staff to do it. He borrowed two of our mechanical engineers to do those things, and I was one of them that drew the short straw. At this stage of the game, there were four mechanicals at Morrow Point and I was one of the two junior ones. So, when the regional engineer says, "I want somebody," I was detailed to Salt Lake. The other junior engineer–and *had* been for a number of months–was down at Glen Canyon.

So I went into Salt Lake on, I think it was, a forty-five day detail where they were fabricating that penstock. [I] got in there and found out in the fabrication of those penstocks there, they're all welded, and all the welds are radiographed. Of course, those penstocks for the Third Powerplant are enormous. The steel that they were using at the lower end of the penstock was three inches thick, and they had to fabricate test heads to weld on them because they would pressure test those penstocks after they were in place. They were about thirty-feet in diameter, so of course you couldn't *ship* anything that big, but what they do is, they fabricated it in as big a piece as what they could ship in the shop and then ship it to Grand Coulee and finish it.

". . . there were *thousands* of radiographs that had been taken and never been looked at by Reclamation. Reclamation had a policy of having an inspector look and confirm the integrity of a hundred percent of the welds . . . So I ended up back looking at weld radiographs, along with some other things. . . ."

When I got there, there were *thousands* of radiographs that had been taken and never been looked at by Reclamation. Reclamation had a policy of having an inspector look and confirm the integrity of a hundred percent of the welds, so somebody needed to look at that. So I ended up back looking at weld radiographs, along with some other things. They had twenty-five or thirty different contracts that that regional engineer was inspecting in Salt Lake–which nothing was going on, on most of them–but I drew all of those. So I spent that forty-five days being a factory inspector, and the part on Grand Coulee was the only thing that was of any particular interest or difficulty. That was a fairly interesting proposition.

Storey: Now, when you're doing this, were you in Reclamation's offices looking at these radiographs or were you out at the manufacturers?

Willms: I was at the manufacturers. I had an office in the regional office in Salt Lake and I'd go in there in the morning and take a government car and drive out. The penstocks were fabricated by Chicago Bridge and Iron and I think their plant was located out along Interstate 15, maybe fifty blocks South, [it would] take me about ten minutes to drive out there. They had all the radiographs on file out there, and they had all of the equipment–lights and stuff–for reading them. I would observe their work, and report on their work, and then spend time each day sitting at the light table reading these radiographs.

"Fortunately, the stuff that they fabricated, they all did with an inert gas welding procedure that does not tend to have very many defects in it, so it made reading the radiographs fairly routine. In fact, I think in the thousands I looked at, I never found a fault that needed to be removed. . . ."

Fortunately, the stuff that they fabricated, they all did with an inert gas welding procedure that does not tend to have very many defects in it, so it made reading the radiographs fairly routine. In fact, I think in the thousands I looked at, I never found a fault that needed to be removed. Now, the contractor also read them and they read them first before I'd ever see them, and they would pick up an occasional fault and fix it. That, of course, would happen before I ever saw the x-rays, so by the time I saw them, then they would be . . .

". . . Chicago Bridge and Iron was a reputable manufacturer with a *enormous* job–one that they weren't about to put something down there that would fail. . . ."

And I think Chicago Bridge and Iron was a reputable manufacturer with a *enormous* job–one that they weren't about to put something down there that would fail.

Storey: How did you learn how to read radiographs?

Willms: We had done a little of it at Blue Mesa after–most of the penstocks were in before I went to Blue Mesa–but we did extend the outlet work–pipe–and I was not the primary inspector on that. But when they would radiograph those, I would look at the x-rays just for educational purposes. The person who was my boss there had done the inspection of the penstocks at Flaming Gorge and had looked at a lot of them and was well-versed in what to look for. So whenever he would find a defect, he would show all those of us who were interested in it–show them to us–and we got a pretty good feel of what we were looking for.

In addition to that, there was a set of photographs that I had seen that showed x-ray defects and what they meant–what a crack looked like or what porosity looked like or slag inclusion. Those, however, were all easier than looking at the three-inch thick, things are pretty fuzzy. You can't really use an x-ray machine–an x-ray machine won't get through three inches. X-rays–incidentally, when you do x-ray steel, are quite clear, they're kind of like

a medical x-ray. I think you can use x-ray maybe only through about a half-inch-thick steel and then much thicker than that, they use a cobalt pill and it's just a chunk of radioactive cobalt that's in a lead container. They set this lead container in the center of where they're going to take the x-ray–you know, you're in a pipe and of course the pipe was big–put the film around the outside–and the lead container has a long cable and a screw device and whoever is taking it, lines this thing up in the center and he unscrews it and the lead container parts and exposes the cobalt pill to the circle of which you're . . . . To the circle of film. And he has a certain length of time, of course, that he exposes it, then he screws it back together. But the quality isn't of x-ray grade–by any means–but you certainly can see the defects you need to, but you have to look pretty carefully.

Storey: What happened when your detail was up?

END SIDE 2, TAPE 1. APRIL 28, 1994.
BEGIN SIDE 1, TAPE 2. APRIL 28, 1994.

Storey: This is [tape 2 of] an interview by Brit Storey with Ray Willms, on April the 28th, 1994.

When you returned to Morrow Point, they were just starting the testing.

Went Back to Morrow Point Where He Worked inspecting the First Generating Unit

Willms: Actually, they had gotten into it a little bit, and I came back [from] ~~on~~ the detail just before Christmas. They immediately canceled my leave–along with everybody else's–and said that they were going to test through the Christmas–end of the year holiday. In that particular case, they restored our leave if people had leave beyond the 240 hours.

I did participate in the power-up part of the testing of the first unit then–which went on there for several weeks.

". . . nearing completion of Morrow Point . . . they had placed all of the people on the construction crew on the 'surplus list,' . . . to take a person not on the surplus list, took a justification. There was a considerable push to get people placed. I had been on the surplus list . . . I got back from Salt Lake and within a day or two I had two job offers: one to go to Grand Coulee on the construction of the Third Powerplant and one to go to Sacramento in the 400 shop in the regional office. . . ."

But in the course of that *time–nearing* completion of Morrow Point–we had a construction crew that they needed to start placing. So they had placed all of the people on the construction crew on the "surplus list," as it was called. At that time, the surplus list was circulated over the Bureau along with people's 171. And usually in order to take a person not on the surplus list, took a

justification. There was a considerable push to get people placed. I had been on the surplus list–I think probably from about the time I went on the detail, they had issued that surplus list–and I got back from Salt Lake and within a day or two I had two job offers: one to go to Grand Coulee on the construction of the Third Powerplant and one to go to Sacramento in the 400 shop in the regional office. (Storey: Four hundred was?) supervisor of Water and Land. I would have been in their irrigation O&M branch of that.

Chose to Go to Sacramento Because it Offered the Possibility of Promotion While There Was No Chance of Promotion at Grand Coulee

As I got to looking at which one to take–I think I got those two offers the same day–I called the Grand Coulee office, which of course was the type of work I'd been doing now for several years and was very versed in it. They told me they had eighteen mechanical engineers at Grand Coulee and that seemed like about fourteen too many to me–from my perspective. I asked them what the chances for advancement were and they said "none." I asked them what the living quarters were and they said, "Well, we'll fix you up with some sort of a trailer to live in." So I called Sacramento and they said, "Well, yeah a good chance for promotion"–totally different type of work–but it wasn't a hard decision. I called back the Grand Coulee people and told them to stick it in their ear. I accepted the job at Sacramento. This was all occurring now about Christmastime of 1970.

Continued to Work on Testing at Morrow Point and Then Was Detailed to Glen Canyon to Inspect Installation of a Freight Elevator

I went ahead and participated in the testing and as soon as the testing was pretty much done, they up and detailed me to Glen Canyon. We did a shuffle there; the people in Salt Lake offered the other junior mechanical engineer a permanent job in Salt Lake doing the factory inspection, so he took that–the same job that I had been detailed to. So then he left the work he was doing in Glen Canyon so they detailed me down there and I spent several weeks down there; not real happy about it because that was several weeks right before I was moving to Sacramento. But I spent several weeks down there working on that freight elevator.

Moved to Sacramento in February of 1971

So my stay at Morrow Point, after I started that detail, was only for two or three weeks while we did some testing on that first unit. Then I moved to Sacramento in February, and they were still getting ready to start the second unit. I didn't have anything more to do with the plant. That was a *major* change in my career at that point.

Storey: What did they need you to do for the freight elevator?

Willms: It was an inspection job. The first part of the elevator was a hydraulic elevator and it worked on a cylinder and it went up several floors in the powerplant and it was

pushed up by a hydraulic cylinder. The *hole* for the cylinder had been bored into the sandstone there under the powerplant. Then they had put the cylinder in place. At the point that I went down there, they were starting to put in the rails and the hardware that went in the elevator shaft, and that's [the reason] I was down there to inspect the installation of that equipment.

During the period of time I was down there, all they really did was set anchors into the concrete [and] mount brackets, I don't recall that they actually put in any rails ~~or any of the hardware~~. They did put in some of the hardware, the elevator was an afterthought, so they had to put metal work in for landings and stuff like that, and I think they did get a bunch of that put in when I was down there. But I was there for only about three weeks.

Storey: Then you went back to Montrose, and I guess packed up? (Willms: And moved.) And moved. What do you remember about the move, itself?

Sold Their Mobile Home in Montrose and Went to Sacramento on a House Hunting Trip

Willms: It was different. This particular time I owned a mobile home, had it in a trailer park in Montrose and didn't want to live in a mobile home anymore. So we advertised it for sale and promptly sold it, in place, and [I was] very happy about that. With that sale, that allowed us to look at buying a house in Sacramento. So I left my oldest daughter with the grandparents, and my wife and I drove to Sacramento. I think we were entitled to a six-day house-hunting trip. So we drove out, I think [we] left on a Saturday or Sunday maybe, and got into Sacramento the second day. [We] had a map of Sacramento and had one person who had lived there who gave a little bit of a description of the community, but that really was all.

I had never been to Sacramento before, never been to California–well, I had, but just as a child–drove into the city and just wandered around the area where I *thought* we would probably want to live, found a motel, got a room. Right next to the motel was a real estate agent and we walked in there and said we'd like an agent, we were looking for a house. It turned out that the motel was about a half-a-mile from the Bureau's office and the motel that most of the people who traveled to Sacramento stayed in.

But anyway, the next day we went out looking for houses and I actually found a house and made an offer that afternoon. It was a new house. The developer, it took them a couple of days to process before they accepted–I guess two days maybe–but I was pretty sure they would accept our offer. Then we spent that time, got driver's licenses and a license for the car–did a whole bunch of things like that. [We] talked the developer into letting us leave the car in the garage of the house–since it was a new house, there wasn't anybody living in it–and we flew back.

Then we rented an Easy-Haul–a company that went out of business shortly

after that, but like a U-Haul–rented an eighteen-foot truck. We moved ourselves, loaded the stuff up. I had an International Scout, we towed it, so we drove that out. [We] left in a *heck* of a snowstorm. The roads across Utah were plowed only one lane, had about eighteen inches of snow, but we really didn't have any problem with it. (Storey: Uh-huh.) It took us about, I guess we drove all of three days and two half-days. It took about a half-day to unload the truck and we were settled. Everything fell in place real well. We got there, the house loan had been approved and we moved right in.

Storey: And did your daughter drive with you?

Willms: She rode with us, yeah. We all three rode in the truck and towed the . . . .

Storey: What did the government pay for in all of this?

Willms: They paid for a house-hunting trip for my wife and I to go back there; mileage to drive out and the plane trip back and per diem while we were there. Then they paid a per-weight payment for the move with the truck. I think they pay the same amount as if you hire a mover.

Storey: How about things like real estate expenses and that sort of thing? Was that done in those days?

Willms: Um-hmm, they reimbursed us for whatever expenses we had to buy the house, which, of course, they're nominal. We didn't really have any expenses connected with selling the trailer other than a newspaper advertisement.

Storey: And then you got there and you started in the 400 shop.

Willms: Then I started the 400 shop, yeah.

Storey: What were you doing there?

"What I learned in there–as I say, it's a *major* crossroads in my career–is that working in construction, I didn't know anything about the Bureau. I knew how to build things, but I didn't know how anything worked financially, I didn't know what planning was, I even didn't know anything about contracting, and just really didn't know *anything*. I didn't know that irrigation districts operated things. . . ."

Willms: Nothing. (laughter) (Storey: Nothing?!) That was an interesting transition. What I learned in there–as I say, it's a *major* crossroads in my career–is that working in construction, I didn't know anything about the Bureau. I knew how to build things, but I didn't know how anything worked financially, I didn't know what planning was, I even didn't know anything about contracting, and just really didn't know *anything*. I didn't know that irrigation districts operated things. So I went in there with a *solid* knowledge base on facilities. I probably was as knowledgeable about facilities as anybody in that office, and I knew quite a lot

about the administration side of the Bureau because of my early years in that transmission line, we had to take care of all of our own administration stuff–purchasing–and I knew quite a lot about that and quite a lot about construction contracting. But, I didn't know anything about anything else.

When I got into that irrigation O&M branch, they had about ten or eleven people in there and they did *all sorts* of different things: land, they had a couple of people who did land transactions. They had a person in there who automated canals. There were operational things to take care of and we had people in there that handled pesticides. You know, just a *whole* different group of things. The office was very compartmentalized and each person had their own little thing to do.

I was replacing the person who had been a section chief–now, I wasn't a section chief, but he had been a mechanical engineer and had retired and they felt that they needed a person with mechanical capabilities. But I think they failed to realize that they were getting somebody who didn't know anything else about Reclamation. I just sort of got lost in the process. In fact, later on, people would reflect on how they used to laugh at me. We'd have branch meetings–this was a period of time when the Bureau took a dip into participative management and team building and things like that. Of course, our construction operation was *strictly* a hierarchial operation, very regimented and get into these organization development meetings that they'd have out there and people would bare their soul and that was sort of a whole different world to me and I'd just sit there and never said anything. I think people couldn't figure out who I was, where I was, why I was there. And I was having a little trouble figuring that out too.

At First Was at Sea about Fitting into the New Job

I spent probably a year where I dealt with some specific mechanical problems, but the type of office it was, and what they wanted a mechanical engineer there for, was to give advice to our field offices and irrigation districts on mechanical problems. But, I didn't have any operational knowledge, you know, my knowledge was all back in construction and you had to really get down to a pretty concrete problem before anybody was interested in anything I had to offer.

Worked with Westlands on a New Pumping Plant

Now, they did have one piece that I fit into pretty well: they had just built a sizeable pumping plant that they were finishing the testing and putting into service–a pumping plant and powerplant are about the same thing–so I walked in with a *lot* of facility knowledge there and Westlands Water District was going to operated that and I worked with them quite a *bunch* on that. That was sort of the saving grace that gave me *something* to do in the process.

Worked in the Review of Maintenance Program Which Exposed Him to the Irrigation Districts and Their Operations

But, it didn't take a long time for me to carve my niche. The first period of time I was there, the person I worked for–section chief–did Review of Maintenance examinations of all of the major facilities. It happened to be a year when the Denver people were participating in this. He asked me to go with him on these–I don't know if you're familiar with the Review of Maintenance Program, but it is a program where, at *that* time, every two years people from the regional office would go look at facilities and see whether they're in good condition and whether they're being managed properly. It's a fairly formal program that *is* still administered out of here. In fact, out of your division, Darrel Krause administers it. Then every six years, people from Denver would go do that and a whole bunch of these facilities people from Denver would go look at that year and I went along on all of those. A lot of these were operated by irrigation districts and also by field offices. And one of the things that it did is, is it started to expose me to the irrigation districts and the way they operated. I learned an awful lot about that. I learned quite a lot about how the Bureau operated; quite a little more about Denver than I ever knew.

". . . I got to know the people in the field offices so I started to build up contacts. . . ."

Also, I got to know the people in the field offices so I started to build up contacts. I did a lot of that over the first year.

Became Involved in the Regional Office's Dive Team

The other piece that was going on at that time was the region had a dive team and it was a pretty effective dive team. It was run by a fellow that was in the same branch– in fact same section–and he and I . . . . (interruption)

Storey: . . . . about your first year and then a little after, I think, in Sacramento.

Willms: I'm trying to think where I was. Let's see . . .

Storey: Well, let's see. You established some contacts and were moving on into your second year.

Willms: Yeah, and I was talking about dive team, I think. (Storey: Yeah, you were.) Anyway, they had this dive team that did underwater inspections of our structures, and it was run by a person in the branch. He decided that there should be another person in our branch on the dive team and since I drank coffee with this fellow and we talked about diving quite a lot, I was interested in it and I took a course–I was not a diver, but I did like the ocean and spent quite a lot of time over there–so I took a course and got a diving certification and he, in fact, did ask me to join the dive team and I did.

". . . the dive team was treated somewhat as an elite group. . . ."

But what I discovered in this process was, is that the dive team was treated

somewhat as an elite group. I didn't get in there because of my skills, I got in there because I happened to be in the branch and then was interested. So that helped me carve a piece of my . . . power base, if you will. (Storey: Or your base within the organization.)

A Series of Personnel Changes in the Division, Branch, and Sections Resulted in a Rise in His Importance to the Branch

Also, in the process of development of the times there, the division chief had died, and the branch chief left and the new branch chief came in and a new division chief came in and they decided they would reorganize some. We had been organized as a division, a branch, and two sections. They decided that in the reorganization that they would eliminate the sections and not have quite as much hierarchy within the branch. So they eliminated the section; the two people that had been section chiefs, of course, were disenfranchised somewhat by that–the one that was my boss and the other section chief–and both of them started to look for other jobs. Both of them did leave. One of them went to Klamath Falls, and one went to the Design and Construction Branch. I think my boss went actually to the construction branch, went as a promotion. But that also changed the power base quite a lot. Several other people in the process, about that time, also left. The fellow that did canal automation moved to Denver, and Ken Collins was in there at the time and he moved on to something else, I don't remember what it was.

Assigned to Operate the Cachuma Project out of the Regional Office

Lo and behold, all of a sudden I moved from the bottom of the totem pole to one of the mainstays in this branch. As time progressed, they assigned some areas in this reorganization, area of responsibilities, and they assigned the Cachuma Project to me. The Cachuma Project was one of two projects that was actually operated out of the regional office. When they made that assignment, I had two people in the project that I was directly responsible for.

"I started to get into the local issues down there . . . started to move into the broader aspect of relations with constituents, and management of a project, and budget responsibilities, and *all* of that sort of thing that goes along with it. . . ."

And it was Cachuma Project down in the Santa Barbara area, sort of an interesting project with interesting politics. I started to get into the local issues down there, and they had some substantial water rights issues, and I got involved in the negotiation on those and really moved from a person who was doing technical engineering, started to move into the broader aspect of relations with constituents, and management of a project, and budget responsibilities, and *all* of that sort of thing that goes along with it.

". . . also was assigned a responsibility for Westlands from a irrigation operations point of view . . ."

I also was assigned a responsibility for Westlands from a irrigation operations point of view–not contracting and stuff like that–and I retained the mechanical responsibilities.

"Then the fellow, who was head of the dive team that had brought me on, retired, and I replaced him as head of that dive team. . . . the fellow who had been head of that dive team was also sort of the titular head of all the dive teams in the Bureau. . . . the coordinator . . . elected by the dive team themselves . . . we had a training session in San Diego . . . They elected a replacement for him, and, lo and behold, they elected me. That was a defensive election because there was a fellow down in Boulder City who was actively campaigning for it. . . It just sort of fell to me . . ."

Then the fellow, who was head of the dive team that had brought me on, retired, and I replaced him as head of that dive team. So over the course of about a year, I went from going on to being a member and then to being head of it.

In that same period of time, the fellow who had been head of that dive team was also sort of the titular head of *all* the dive teams in the Bureau. They referred to him as the coordinator and he was the one that organized training sessions and regulations and stuff like that for all of them. I think at that time there were five dive teams. That was a unofficial position that was elected by the dive team themselves, and the Mid-Pacific team had been the senior team and he had formed that team so he sort of owned that position. When he left, we had a training session in San Diego shortly thereafter, where all the dive teams were there. They elected a replacement for him, and, lo and behold, they elected me. That was a defensive election because there was a fellow down in Boulder City who was actively campaigning for it and he ticked an awful lot of people off in the process, and they were looking for somebody else. (chuckles) It just sort of fell to me since I was the replacement of the fellow who had been the leader.

"That provided another interesting set of contacts because then I started dealing with the Bureau safety officer quite a lot, and other levels in other regions in connection with that. . . ."

That provided another interesting set of contacts because then I started dealing with the Bureau safety officer quite a lot, and other levels in other regions in connection with that.

"I was there for five years and I just sort of gradually worked up to–probably at the end of the five years–as being the most recognized member of that group . . ."

I was there for five years and I just sort of gradually worked up to–probably at the end of the five years–as being the most recognized member of that group–from spending the first year of hardly having anything to do or any visibility.

". . . that was probably one of the greatest periods of personal growth. . . . I can't really think of anything I did during those five years that was very valuable, except personally, to transition into a more mainstream part of the Bureau. . . ."

Out of the period of time, the interesting thing that I noticed about it is, is that was probably one of the greatest periods of personal growth. I probably accomplished less useful work, I can't really think of anything I did during those five years that was very valuable, except personally, to transition into a more mainstream part of the Bureau.

Storey: Now, what did the dive team do that you worked on specifically?

The Work of the Dive Team

Willms: The reason for the dive team was, is there are certain pieces of our structures and equipment that are under water and are not easy to dry out to look at. We had had, of course, dams built shortly after the turn of the century that had pieces of them that had never been looked at. The time that dive team was formed, you didn't really have much in the way of underwater television cameras or submersible vehicles and things like that. The oil industry was really just getting wound up in the off-shore stuff, and we had made some runs at having commercial divers come in and look at stuff but they hadn't been very successful. One problem was, is that commercial divers tend to not be very reputable–at that time, I don't think that exists anymore. Second, they were divers but they weren't engineers, they weren't geologists and that sort of thing, and they really didn't know what they were looking for and the translation of what they saw into what you wanted to know was very difficult.

So the idea was is to put some engineers and geologists down so they could see these things themselves. Our team consisted of, essentially two mechanical engineers, two civil engineers and two geologists. The fellow who headed this was not a professional, he had been a commercial diver for the Navy and for the Corps of Engineers for years, and his background was serious diving.

"One of the big things we looked at was condition of stilling basins as to whether they were being eroded, damaged. [We] looked at a lot of intake structures, looked inside a lot of siphons, looked at submerged gate equipment and stuff like that to look at the condition of it. . . ."

One of the big things we looked at was condition of stilling basins as to whether they were being eroded, damaged. [We] looked at a lot of intake structures, looked inside a lot of siphons, looked at submerged gate equipment and stuff like that to look at the condition of it. I think the program was an excellent program when it was first started because I think it was started in the middle to late 60s and we had a lot of structures around that had been built in the 30s and 40s–and actually in that region, some back in the teens, that everything under water had never been looked at. So the team made–I think in the first probably

eight or ten years–made a round where they looked at about everything that you could look at. [They] found some problems that needed either monitoring or repairing. After that, I think the team still exists, I think the value of it has diminished a whole bunch because I think after you've gone and looked at a stilling basin two or three times and it's been in place for fifty years and it's not eroding or changing, you're probably a limited value in continuing to look at it. Maybe you need to look at it in another twenty years or something like that.

END SIDE 1, TAPE 2. APRIL 28, 1994.
BEGIN SIDE 2, TAPE 2. APRIL 28, 1994.

Storey: By the time you had left . . . .

Willms: By the time I left that office, in 1976, I was having the feeling that we were starting to look at things repeatedly and that the operation was starting to become questionable. Since diving carries with it a certain risk, we did have some policies that people had to remain proficient in diving and in physically fairly good shape. So we tried to dive at least once a month to keep the edge on. I think that was necessary and that's what sort of got into the repetitive thing. When I would schedule dives, of course, there would be several dives each year that had real merit, but then I would be filling it in with a number of dives that had *questionable* merit but tended to be in there because they would give us some proficiency diving. I don't know if we put any in that didn't have *any* merit but . . .

Storey: What about when you became the coordinator of the whole [of] Reclamation's effort? What kinds of activities were you engaging in then?

Focused on Training and Safety While Coordinator for Reclamation's Dive Teams

Willms: The primary thing that I did during the couple of years that I was that coordinator; Ron Searle [phonetic spelling] the Reclamation safety officer, didn't think that there ought to be any dive teams. He *actively* campaigned against it and was never successful in getting the program eliminated–I think the regional directors controlled that. There was always a sense that if we had a serious accident–a fatality or something like that– that would end the program, and that we needed to protect against that.

Felt Some Dive Teams Shouldn't Be Operating and Had Inexperienced, Unskilled Members

Several of the dive teams used pretty inexperienced and unskilled people in this diving. There were ones that I would classify as good and others that weren't good. There was a team at Grand Coulee, at the time, and that was an excellent team, well-run. Divers, while they may not be proficient to start with, the ones that weren't proficient were used in places that were appropriate with their skills and their proficiency was developed on an orderly manner so that they soon

became proficient and stuff like that–they had a good team.

The team down in the Southwest Region and the one here in the region that was in Denver, neither of those teams were–*I* didn't think from the training sessions we attended–should have been operating–particularly the one in the Southwest Region. We actually had a person there who had claustrophobia and in one of our training sessions had to be helped out of the water once and had a little panic attack in good conditions. Several of the divers had very, very little experience, and they were *not getting* much experience. You know, they had been on the dive team for a year and maybe only been in diving for two or three hours in their life.

The conditions that we dive in were difficult, the visibility was often zero–you just couldn't see anything so you're doing things by feel. One of the practices that had been developed out there to help see things in that condition was to take a plastic bag of clear water so that when you felt something, you could put that plastic bag up against it and your face mask up against it so you could see. (Storey: Uh-huh.) So the conditions were often bad. Of course in and around dams you might have running water and flowing water.

It's different than sport diving. Sport diving people go dive someplace where they can see pretty good because it's no fun if you can't see. But we went where we had to go, and a lot of close spaces and things like that. I didn't really feel that a couple of those teams had sufficient experience and didn't have a program set-up that allowed their beginner divers to be moved through to become proficient without endangering themselves in the process. There were a lot of other people that felt the same way–this wasn't an independent view of mine–so we developed a set of regulations.

Part of that regulations would deal with a minimum amount of diving to remain proficiency and also for physical conditioning. We also found that quite a few of the divers' physical condition wasn't very good. As an example, one of the exercises that we did in a training session when we were in San Diego–this session was put on by Scripps Institute there and their head of their diving program put on this week-long training session–the first day or two we spent part of the time in the pool. One of the things he had us do was, with our gear on, was to swim around this pool. The pool was a pretty good size, it was a twenty-five meter pool but pretty wide also. He had us swim around that pool underwater breathing on the apparatus, just swim rapidly two trips around the pool and then as we got around to the deep end, we were to take the regulator out of our mouth and to then turn and go straight towards the shallow end and see how far we could swim without having to surface. The trips around the pool were to get the heart rate and the oxygen use up a little bit to tire a person out.

The instructions were is when you had to surface, you were to surface and then to stay there wherever you surfaced. Well, there were about thirty-some odd people in this training session and the goal was to be able to swim the full length of the pool, after you had taken the regulator out of your mouth without having to

surface. When we got done with this exercise and looked around at where everybody was located, there had been six people that'd been able to swim the full length of the pool, and five of those were from the Mid-Pacific Region and the other one was one from Denver. The rest of them, some of them hadn't gone twenty-feet.

Now, the dive master–the fellow from Scripps–he just had a fit and his response to the situation was: If you're out there diving and you're at a hundred feet down and you have a loss of air supply, you've got to travel that hundred-feet before you can get a breath of air. Of course, a twenty-five meter pool, that was about seventy-five feet. He looks around there and some of them hadn't gone but about twenty-feet. And said, "How in the hell are you ever going to be able to survive any sort of an emergency situation?" He was pretty critical. And that type of thing is basically conditioning. (Storey: Yeah.)

So anyway, we then developed this set of regulations and they were pretty much in a final draft form at the time that I left the program, and I never did know exactly what happened to them. I know they were adopted among the teams, whether they were ever formalized or not, I don't know. But they dealt with those sort of things. (Storey: Yeah.)

Of course, then the other thing I did was to make sure that the training sessions, at least as far as these Bureauwide sessions got organized . . . . I didn't organize them; I think the last one we had was when I was coordinator was done at Grand Coulee, and the Grand Coulee team organized it, but I got the dates set.

Storey: You did that, maybe once a year?

Willms: *We* went to training once a year for Mid-Pacific. The Bureau-wide ones were done about every other year (Storey: Uh-huh.) and then we would have something locally on the off year.

Storey: Well, I'd like to keep going, but unfortunately our two hours is up. It has fled away on us. (Willms: Okay.) I'd like to ask you if you're willing to have researchers from Reclamation and from outside Reclamation use these tapes and any resulting transcripts for research purposes?

Willms: That's fine with me.

Storey: Good, thank you.

END SIDE 2, TAPE 2. APRIL 28, 1994.
BEGIN SIDE 1, TAPE 1. MAY 6, 1994.

Storey: This is Brit Allan Storey, senior historian of the Bureau of Reclamation, interviewing Mr. Ray Willms in his offices on the Denver Federal Center in Building 67, on May the 6th, 1994, at about eight o'clock in the morning. This is Tape 1.

I believe last time you told me there were a couple of stories about your work that you would be interested in telling me, Mr. Willms.

Discovered a Broken Hollow Jet Valve at Blue Mesa Dam

Willms: The first story involves an experience that occurred when I was at Blue Mesa Dam during its construction. We had finished the main construction and were in the process of building a powerhouse. The reservoir had been filled and the only way we had for passing water through the dam was through the outlet works–since the power house wasn't complete. We had two outlet works pipes and we alternated those pipes once a month so that we could enter the other one and inspect the interior to see if it was experiencing any cavitation or other damage. The job of doing this rotation and inspection was mine. So each month I would go out to the hollow jet valves which were downstream of the powerplant–a couple hundred feet–in a little building of their own. I would close one valve and I would open the other valve to shift the pipes. But, before I did this, I would climb into the discharge end in the outlet works of the valve that was closed. Actually, this valve would be open because we'd shut the water off upstream several hundred feet when a pipe was not in use, but there wouldn't be any water going through it.

I would go down to the valve that was not in use–it would be fully open–and I would climb into the discharge end of the valve and lay down on my back and slither between the seal and the seat and get up into the pipe; and then walk up the pipe to the ring follower gates, where the water was stopped and I would–using a flashlight– would inspect the pipes, and in the process, look at the valve seats and things like that.

After I'd get out of the pipe, I'd then make the switch. The reason I did it in this sequence is it gave the pipe a month to dry out and got me that [much] less wet when I slithered up through this valve.

Now the valve, when it was fully open, the opening would be about nine inches between the seat and the seal. The valve, however, was seventy-six inches in diameter so you had that nine inch opening all the way around. I was pretty thin at that time so I was able to get through that nine inch opening rather comfortably.

Well, this one day when I went down to do this, I was probably about half asleep and not paying a lot of attention and I went down and I climbed into the discharge end of the pipe and laid down on my back and started to wiggle up the pipe through this little opening and I couldn't get through–it just wasn't big enough. Well, I knew I hadn't gained very much weight so I laid there and thought about it a little bit and decided well, the valve must not be all the way open. So I climbed back out and went up the ladder, into the control room and turned on the controls and moved the controls in the open direction and nothing moved, nothing happened. So, I went back down and I laid down again and I tried to slither through this valve again and I still couldn't get through. So I laid there in a trickle of water that always ran down the pipe and pondered the situation.

As I did, I was sort of staring blankly at the hydraulic cylinder above me and this valve was made up of a large needle that was mounted on the end of a hydraulic cylinder that was about forty-eight inches in diameter. To close the valve, the control system would pump hydraulic fluid into the cylinder and push the needle upstream against the flow until it contacted the seats. The needle was attached to the cylinder with a four-foot diameter extension piece. As I sat there and looked at this mechanism, I noticed this extension piece was broken and it was separated and opened up by a couple of inches; meaning that the needle was upstream a little further than it normally was and the valve wasn't as far open.

Now, the piece that was broken was made out of–essentially–a four-foot diameter pipe, cast steel about two inches thick. It was broken clear through this as far as I could see around the circumference of this four-foot piece. So it was really a rather enormous fracture of steel. Well, the thing was only about two feet-, three feet from my face and there was no question [about] ~~that~~ what I was seeing, a jagged fracture of steel that was separated and opened up by a couple of inches.

So I climbed out of this and went back up to our little office shack and called my immediate boss, told him what I had found, [and I] asked if he wanted to go look at it. He said, No, he didn't need to go look at it. He didn't understand how something like that could be broken and it was a serious, serious problem then, because the valve was certainly unusable. So we got on the phone and we called the division chief in Montrose and we advised him of this. So he said he would go consult with the construction engineer, Jim Seery and then he would come on out.

So he went and talked to this construction engineer and the construction engineer said that he would call the chief engineer's office and seek advice on what to do now. The division chief then got in his car and headed up for Blue Mesa, which was almost an hour's drive. When he got up there to our office then, he called the construction engineer to see what instructions *they* had.

Well, the construction engineer advised us that he had called the chief engineer's office in Denver and had talked to the construction liaison that worked with the project, and that the project liaison had talked to the mechanical engineering people and the mechanical engineering people had advised him that the valve was *not* broken, and that there *wasn't* a fracture in this piece. So then the division chief then told the construction engineer that, "Jim, that's wrong, it *is* broken, it *is* fractured. These people need to provide us engineering assistance on what to do." So the construction engineer goes through and calls the Denver bunch again, and he got the same response back, that it wasn't broken, it couldn't be broken and therefore, it *wasn't* broken. This all was now occurring on a Friday afternoon.

After a considerable negotiation, the Denver mechanical engineering people agreed to send a person out to show us that it was not broken. But, in order for them to do this, they wanted us to remove the valve and get it off of the end of the pipe and up on the deck and disassemble it. Now, that's a fair task in itself. But the construction engineer agreed to do this and the fellow from the Mechanical

Branch or Division–whatever it was at the time–did come out. He would not go down and look at the valve. He came out on Monday morning, he would not go down and look at the valve in its *in situ* position. We got a contractor, brought a crane in, went through the disassembling process, which took about a week to disconnect the hydraulic lines and lift all the hatch covers off and to disconnect this valve from the end of the outlet works pipe–which involved removing probably forty-eight bolts two inches in diameter type of thing–and got it up on the deck and disassembled it. Sure enough, after we got it disassembled, he looked at this *major* fracture.

"The interest of the story though, was the arrogance that these people [Denver office] had, that they could not conceive how that could be broken. Therefore, they could not accept that it was and wouldn't even *look* at it. . . ."

The interest of the story though, was the arrogance that these people had, that they could not conceive how that could be broken. Therefore, they could not accept that it was and wouldn't even *look* at it. As it turned out–since that's the main part of the story–it was concluded–after considerable investigation–that the void that lay inside this pipe had gotten filled with water and had frozen and caused the fracture. It required sending the valve to a major machine shop and about a nine months' repair to repair it, bring it back and replace it.

Storey: The pipe that was fractured had water in it which had frozen?

Willms: That was the conclusion. The way it was configured, you had a hydraulic cylinder on one end, and this piece of pipe with a flange was bolted to it. Then the needle of the valve was bolted to the other end and it left a section of pipe maybe a foot to eighteen inches long in there that had just a void in there and it did have a drain hole in the bottom. It had been originally designed to be installed in the powerplant and had been moved during the construction, the pipe had been extended, and it had been moved.

In the powerplant, it had been designed to have a relief valve in this drain hole, and the valve took a couple pounds of pressure to open, and it had a threaded hole in the top. In the process of the change in the valve, the designers had omitted on their drawings showing putting a plug in the hole on top–as I recall. They had shown the check valve removed and the construction forces–our people out in the field–had missed that and had not removed the check valve. So, what it allowed was, is for a lot of spray in these things, for spray to spray up on top of this area, for it to gradually fill with water, and the relief valve in the bottom was set-up so that it didn't let the water *out*, so it did fill with water. It took a mistake on both of our parts–very minor mistakes–one of them of not removing this little release valve and the other one on the designers' part of not showing putting a plug in the top.

The reason for the changes was, is its initial location, it was in the powerplant in a non-freezing location, and then it was moved downstream and it was in a freezing location. But, I always thought that was interesting because it sort of

marked–I think, to a degree–the design group that existed at the time. They were very good–I think there's no question about it–they pioneered an awful lot of things in their designs, but they were also very arrogant. So you had the good and the bad of all of that.

Practical Joking in Construction Offices and a Bet with Jim Wedeward

The other story, I think also relates a little bit to the culture of the time, in that, in these construction offices, practical joking was fairly prevalent. This time it was maybe before safety was quite as important as it is today. Practical joking is pretty much unacceptable at today's construction sites, but it really wasn't in the early 60s. In the case of the construction crews, not necessarily the contractors' people, but the Bureau people, the type of job was a lot of time standing around watching a contractor or waiting for a contractor to do something so you can inspect it and check it out. So there was quite a little bit of idle time, just random idle time through days. I think that sort of tended to breed some practical joking. For the most part, it was fairly harmless, but it did keep things interesting.

One particular practical joke–and somewhat memorable to myself–and fortunately I was not the recipient–I was the joker, not the jokee. But we had a young electrical engineer, Jim Wedeward, he's now, I think, project manager at the Montana Projects Office. He was a Bureau brat. I think his father worked on Grand Coulee Dam. He had grown up in Grand Coulee and he had had polio–I believe–had a little hitch in his get-along. Very jovial person. I suppose at this time, maybe in his early to mid-twenties. He was just somebody that got all sorts of practical jokes played on him.

He was awkward–partly due to, I think, his having polio–and he had just gotten married and he had a wife who was a avid cowgirl, they had horses. He was *not* a cowboy–by any means–but he was trying to *become* one so he had something in common with his new wife and something they could do together. So they each had a horse, he seemed like every other week, he'd been thrown off or fallen off or something and was skinned up.

They had decided they wanted to buy a horse trailer so they could move their horses to better places to ride, and they had ordered this horse trailer from some place in Oklahoma and it was going to be delivered in Gunnison. He was living in Montrose, and at Morrow Point, was where we were working at the time, was in between. We all rode a car pool, and so typically we'd all leave the office at the same time to go home, and we'd have to take several car pools.

Along came April Fool's Day. He was anxiously waiting for this trailer and we decided that an ideal practical joke would be to leave a phone message for him, late in the afternoon, shortly before the car pool was to leave, that his wife had called him and said that the horse trailer was in and that she would pick him up at the office so they could go up to Gunnison and get this horse trailer, and she would be there at a certain time, shortly after the car pool had left. Of course, the result of this would be that he would stay there in the office, he'd miss his car pool, his

wife would not show up, he would eventually call up and find out where she was, and she would end up having to come out and get him and we'd all have a big *laugh* the next day.

Well, Jim wouldn't leave the office that afternoon, he was sitting in there writing some reports and he wouldn't leave, and he wouldn't leave, and it got down to the time where we really had to put the note out–we already had the note all written, of course, and ready. We needed to get him out of the office. His office was sitting in a, what we called the transformer untanking room in the underground powerplant at Morrow Point and the only way out was up a ladder. It didn't have any doors or anything out the side of it.

So, in desperation, I said, "Jim, you need to go run up and down that ladder a few times, see if you can work some weight off." He looked around at me and he said, "Well, you fat son of a gun. If you head up that ladder, I can bite you in the butt on every step." I said, "You mean you think you can get up that ladder faster than I can?" He says, "You damn betcha I can." So, one thing led to another and so I offered to have a race. The race that I offered was a race from the bottom of the dam to the top of the dam up the spiral staircases. The spiral staircases, actually from the access gallery went about 300 feet. They were just up and over. They would go up thirty feet, over ten or fifteen and up another thirty. There were two of these staircases, one went up each abutment of the dam. At the top of the staircases, there were some adits where you came out. So our challenge there was to run up these stairways and the first one to exit in an adit was the winner. The bet I offered him was, is that the winner needed to buy the loser a six-pack of beer. Well, he was all excited about all of this and he didn't catch the bet. Now, there were a number of witnesses around the room and they all caught it–at least [he] didn't catch the part of it where it was the winner buying, not the loser. In fact, [it] ~~he~~ was even suggested that he ought to think about that a little bit, but he was pretty agitated and he wasn't thinking all that well.

So he and I went out to have our race and we went out to the middle of the dam, the gallery in the dam–dams curve, so the gallery in the dam is curved and you can only see a little ways. We went to the exact middle of the dam and I took off my jacket and hung it over a knob on a meter box and he did the same thing. We did a one, two, three and he headed one way and I headed the other way.

The idea [was], we'd go down the gallery to the staircases and up to the top. Well, of course, I went about two concrete blocks down that gallery until I was out of sight and I just turned around went back to the office and I wrote my report and he ran that 300 feet all the way up that staircase as fast as he could. He shows up out there on the adit there and was standing there basking there in his glory when he realized what the bet was.

He came back into the office there a bit later and the four-letter words were flowing rather freely. He had worked *so hard* in that trip up that dam that he took two days sick leave to recover. (laughter) The story of the race became rather well-known around Reclamation for a few years. After I had gone out to

Sacramento, I would run into people from Denver–which I dealt with quite a lot at the time–and tell them where I come from and they'd say, "Oh! Were you around when they had that race?" (laughs) Jim and I are still friends. (chuckles)

So anyway, so much for my stories. [The race replaced the horse trailer gag. The note wasn't left.]

Storey: Well, those are interesting, though, they tell you something about the nature of the work for the engineers, too. So, I'm glad you did tell those.

Worked on Conveyance and the Dams

Moving on though to Sacramento, you were in the Conveyance Section, the O&M part of the Conveyance Section: First of all, could you tell me what conveyance is all about and what the *concerns* are in conveyance and what types of structures are involved and that sort of thing?

Willms: Well, actually, the group we worked in, provided support for not only conveyance but the dams and everything else. But the conveyance part of it on the office there in Sacramento–mainly was a Central Valley Project–had a *number* of *major* canals and diversion works, pumping plants and things like that. These canals–for the most part–operated year-round. There were lots of issues involving the canals, the capacities of them, I think, for the most part were never quite as great as what they were designed for.

Canals Were Affected by Subsidence in the Central Valley Project

The Central Valley was in a subsiding state–which is an interesting issue in itself–the land in the west side of the San Joaquin Valley subsided about four feet and you've got a canal that goes this end and it's not subsided here and it's not subsided here, and it subsides in the middle. All of a sudden, your canal has to be four feet deeper. (Storey: Uh-huh.) We did, in fact, have to go through and raise the lining on the canals and raise bridges and things like that. That's just a sample of the types of problems.

Cleaning Car Bodies out of the Delta-Mendota Canal

The Delta-Mendota Canal became a depository for discarded car bodies, I think many of them stolen car bodies. They would drain that canal about once every two years and we would always have an office pool as to how many cars would be found in the canal, and it often was thirty to forty in a hundred-mile-plus section of canal.

Asiatic Clams in the Delta-Mendota Canal

The canal had asiatic clams in it that, since the water was pumped out of the

Delta[4]–the clams were exotic species actually, I think, in the Delta–would get pumped up into the canal, they would propagate there and they would tend to draw sediments–just in their biology–they would cause sediments to build up in the canal and reduce the canal capacity, and one of the reasons we drained it is so we could clean the canal and increase the capacity. Also, there were a certain amount of slipping panels, lining that would fail in the canal and there would be some repair done and that sort of thing. There was a quite a lot of that sort of stuff.

Delivering Water Efficiently in the Delta- Mendota Canal Is a Complex Activity Which Encouraged Canal Automation

Just *moving* the water through the canal is considerably more complex than many people realize. It takes a couple of days, probably pretty much two days, to move the water from the head end of the Delta-Mendota Canal to the tail end of it. So, if you get a water order change, the change in the gate openings to let water into the canal or the pump operations, have to take place a couple of days ahead of time and it's not an exact science, by any means. So you *calculate* the amount of water to run, and the calculations won't be exactly right, so you end up with too much water or not enough water and of course, that's a pretty water-short area and you don't want to waste water. Quite a lot of effort was going into methods of which to improve those kind of operations, quite a little bit of automation.

One of the things on a canal, the way a canal is built, it of course, has a gradient to it and they're made to operate with a lot of water running or a little water running, or various flows. If you just had the channel, the canal, built just a straight gradient canal built to carry the maximum capacity, when you didn't have very *much* water in it, the water would be very low in the canal and velocities would be fairly high. If you had to make deliveries out of the canal, you'd have to have the turnouts right down at the bottom of the canal so you'd have to build the canal higher. Then, when the canal was running a *lot* of water, the elevation would be much higher and the elevation on the turnouts would mean that the deliveries would be different because most turnouts are some sort of a gated structure. So, a lot of fiddling around done to try and keep the water at the same elevation on the turnouts.

The way that's done is to put check gates every so often in the canal. I think on a canal like the Delta-Mendota–which was a big canal–there was probably a check every ten miles or eight miles or something like that. [We] try to put checks near turnouts, and what you do at the check gates then, is you would modulate the check gates to hold the water above the check gates at a constant level, regardless of what the flow is. But, as the flow changes, that modulation is difficult. We did put a lot of different types of sensing and automation on the canals. Instability is common, and we really did a lot of engineering, a lot of almost basic research in how to control the canals.

END SIDE 1, TAPE 1. MAY 6, 1994.

4. Referring to the Delta of the San Joaquin and Sacramento rivers that empties water into northeast San Pablo Bay/San Francisco Bay through Carquinez Strait.

BEGIN SIDE 2, TAPE 1. MAY 6, 1994.

Storey: You were just beginning to give an example.

Willms: I had watched a district try to put a dry canal into service and they had started the flow through the canal and started to move their check gates for controlling it, and they didn't know quite well enough what they were doing–although they'd operated the canal for years. The canal water got to doing this–one check going up and down, and another check . . . The water level in one pool going down while another pool's going up. Of course you had a *series* of these pools and they got it so out of control that they finally just had to shut it down, drain the canal, and start over again.

I think–over the years–on early canal operations, we tended to build the checks so the water would flow over the top of them. They would have maybe just boards that you put in slots. (Storey: Um-hmm.) Those were okay, if you didn't mind wasting water, because what you would do is then is you'd run excess water and you'd run the water down the canal someplace and just turn it out a wasteway. But as water became more precious, and you tried to get away from wasting it both from the canal and from the irrigation district, because if we don't control the water levels well in the canal, the water deliveries into the districts become variable and the districts end up wasting water. So, we put a lot of effort into that and made quite a lot of headway in devising methods to improve the modulation of the check gates.

Storey: Were you involved in that automation personally?

Willms: I was some.

Storey: What was being done?

Willms: Before I was involved, just offices through the Bureau–who had to put up with this problem–had developed what they called a "little man controller" and that's sort of a local name. But these things have been pretty widely used and refined. What it was, was just a float mechanism that sat in the canal above the check gate. It would be set such that if the water level went up, it would send an electric signal to the gate to close the gate a little bit; and if the water level went down, to open the gate a little bit. These things really did a yeoman's job in operating the canal. But, it was what we called an "upstream controller" and it always moved the mismatch~~ed~~ [water] downstream. In other words, you move the gate downstream and you pushed it [the water] downstream. So the typical operation with this kind of a controller would be to put a little bit of excess water in at the head end and these controllers setting on each gate then would modulate the gate and move the excess water downstream and finally dump it out at wasteway. In some cases, there would be balancing reservoirs which allowed us to recover some or all of that water.

". . . the very nature of this type of control did require excess water being put

in at the upstream end. If there wasn't excess water, the downstream end got starved . . ."

But the very nature of this type of control did require excess water being put in at the upstream end. If there wasn't excess water, the downstream end got starved, the users in the lower end would not have sufficient water and–well, you've probably heard enough stories about what happens when a person doesn't have water.

What *we* started to look at, and a person was working on this when I got involved, was what we call a "downstream controller" and this one would sense the water level in the pool *downstream* of the check gate, such that if you didn't have enough water in the reach of the canal downstream of a particular check gate, it would open the check gate to put more water in. Then, when that happens, of course that will draw more water out of the reach above the gate. That reach would start to drop and a controller in that reach would open the gate upstream and you should stair-step up to the headworks of the canal and put more water in. Theoretically–by using this, what we call downstream control–you should not starve anybody, you should be able to push upstream and open more water.

Now, that's not totally true because of the time lags that you would have to start to draw water out of a pool to make up for the shortage downstream and it just takes time to get the water through there, so you would actually drop all of the pools. That's probably tolerable because the changes are not that significant. However, the laws of physics cause this situation to become unstable and the tendency for unsophisticated controllers would be for the pools to become unstable; some of them to go up and some to come down. Fluctuate. And what we would refer to as having "a gain of greater than one" would cause the cycles to become larger rather than smaller when you made a change. Sooner or later, you would overtop a canal or something bad would happen. Canal gates would go all the way closed or they'd go all the way open.

So it was necessary to do a whole lot of really basic hydraulics in the canal to try and predict how far you could move a gate and how you would move a gate to dampen out the transients that were put into the canal through the movements of the gate. Again, hydrology is more empirical than it is a calculated or computation. The equations for flow of water through a canal rely a lot on very empirical data.

We really got into a lot of analysis there–I didn't do any of this personally–in trying to figure out how to dampen these controllers such that they would not move the gates more than they should, but would move them enough. We really made some major improvements. We got to where various installations had a number of these controllers in sequence and still were able to maintain stability in the canal. During the time I was involved, I don't think we ever got a whole canal automated satisfactorily that way.

The other thing we did when I was there, we put a new canal into service and

the operators had no experience. Most canals, people learn how to operate them through experience, and these people didn't have any, and of course, we were into modern times and they didn't want any big spills or anything like that. In fact, this canal didn't have much in the way of wasteways for spills. They were having *just* a terrible time operating this canal. The levels were varying widely and the users were complaining because they would be getting too much water one day and not enough the next.

Regional Office Took Canal Flow Formulas and Adapted Them for Reclamation's CYBER Computer to Guide Operating Canals Before Automation Was Installed

They finally came to those of us in the regional office and asked if we could help them. These automation schemes of course could have helped them, but most of them are equipment-intensive; you have to have a communications cable all the way along the canal because you have to be able to communicate from wherever you have your sensing devices to the gates. Often–if you're using a downstream-type control–you almost have to have your sensing device near the downstream gate. So, you're having to essentially transmit the full length of the individual reach of the canal, which was eight or ten miles. They just weren't set-up to do that on short notice.

So we took the basic equations for flow through a canal, very long and very complicated and require a lot of sensed data. We then looked at those equations to see which ones had large effects on the canal and which ones didn't–since it had lots of different expressions. And we managed to just throw out about nine-tenths of the equation that represented the flow and get it down to only a couple of the most significant expressions and ones that required much less data to be gathered. Then we put this into a computer and set it up such that a person could put essentially, the gate opening, the elevations of the water in each of the pools, and what the deliveries out of the pools was scheduled to be, and what the target elevations of the pools were. It would compute the amount of gate opening, what the gates had to be changed to in order to give the proper level in the pool twenty-four hours later.

What we were trying to do with this, was is that a ditch rider would go down the canals, since every was site operated–it had to be at the site–they would set the checks according to what this program would say to set them, such that the pool levels would be where they were supposed to be the *next* day when it came down the canal. Then the *next* day he would come down the canal–the equation wasn't perfect–they *wouldn't* be there, they would be somewhere else, but they would be close. Then he would take a new set of readings, he would go back to his office, he'd sit down at his computer, he would put in *that* set of readings and it would tell him where to move the gate the *next* morning so that the pool levels would be at the right place twenty-four hours later.

We developed all of this in two or three weeks and gave it to the people, something that would just run on our CYBER computer out of Denver–which they

all had terminals for–and lo and behold, it worked. It would keep the pool levels within an inch or two of where they were supposed to be, and it would tell the operator what changes they needed to make in order to do it. (Storey: Uh-huh.) And that office then operated that canal using that program for at least the rest of that year and maybe several years thereafter, until they got some automation equipment in. That was really one of my most successful endeavors.

Storey: Yeah. Now, are you saying these were Reclamation offices that were doing the (Willms: Um-hmm.) water regulation? (Willms: Yes.) Oh, I understand, (Willms: Yeah.) I thought we were talking about water districts.

Willms: No, these were Reclamation. At the time that I was in Sacramento–during this stage– the Reclamation operated the Friant-Kern, the Delta Mendota, and the Tehama-Colusa Canal. This was the Tehama-Colusa Canal that we were working on. I think those three canals, *now*, are all operated by the districts.

Storey: So our field offices had access to our Denver CYBER? (Willms: Yes, um-hmm.) And they had these formulas that they would put figures into (Willms: Um-hmm.) the computer. That's interesting.

Willms: Yeah, we developed the program and the format, and then we did it out of Sacramento on the CYBER, then we'd just give them the access to it and they would use that. It was a type of a program that a ditch rider could do. You just have to give them instructions on how to log-on and call up the program and the program would ask them to enter the data and what data to enter and run it.

Storey: I don't know how to put the next question, exactly. You said that you took these complicated canal flow formulas and you were able to simplify them, if you will. (Willms: To simplify them, yes.) Was this done on the basis of experience or–I don't even know the right words for asking this question–or was it a scientific process or what?

Willms: Innovation, judgement, and just knowledge. The way we did this, there were two of us–I actually had several people working for me–but I had one person who worked on canal automation and he devised the equation and then he and I sat down with the equation and we looked at the expression and made judgements, and we looked at *specific* expressions that used mostly information that we thought we would have trouble getting. That's where we started. We'd just look at those expressions and look at them relative to the others and decide whether or not that one would really have a big influence on the outcome. He was the hydraulics expert, and I was the judgement person. (Storey: Uh-huh.)

Between the two of us, we went through and pretty well decided which ones wouldn't have a big impact and he would take those back into the computer and kind of test that, you know, put in some dummy numbers with the whole equation. We could put the whole equation in the computer, that wasn't a problem, the problem was is that the whole equation had so much information data that we wouldn't have and wouldn't be able to get on a daily basis because we were

looking for something you'd put information in. Then he would dummy information in and put different ranges of information in and test it and see if we left an expression off, how much difference it would make in the elevations of the canal pool. We pretty much concluded which ones were important and which ones weren't. Not very many of them were important in this context.

What we had to do, is we had to accept the fact that we were going to have an inch or two or three variation in the pool elevation and that that would have to be acceptable. (Storey: Uh-huh, okay, that's interesting.) And it was, for that kind of an operation, that was perfectly acceptable. I think that's one of the things that's important in engineering, is that we do our engineering to what's acceptable.

Storey: You mentioned earlier that in the older systems, when they put in the stationary checks where the water was designed to flow over the top, that that worked fine as long as they were willing to waste water. Could you explain what you meant by that?

Willms: Those early canals, in fact, all but the latest canals, were built with what we call wasteways in [them,] ~~it~~ and they would be [at several] places along the canal and there would always be one at the end that just ran back to a river.

Storey: Belle Fourche is like that even today.

Willms: Oh, I'm sure it is, there are many of them that are like that today. Of course, looking at a typical canal system where you divert water *above* the area you're trying to irrigate, and it flows on the gradients above the area and ends up in the lower area of the irrigated land. If you run water out the wasteway at the lower area, it's no longer available for use up in the irrigated lands and goes back to the river and somebody else downstream may well use it. And as long as the project has an excess amount of water, that's probably acceptable to the irrigators because you can run more water than they need down the canal, they take off what they need and the rest of it goes on down. It does take the water out of the rivers and has all of the disadvantages of drying up rivers and things like that. If the project supply however, is not as large as what the irrigators want to apply or if it's deficient, then to do that just deprives the irrigators of water to use. Did I answer the question?

Storey: Well, I don't understand yet what the difference between the old system and the new system of using checks is.

Willms: Well, see the old system, generally you'd put in check boards into concrete slots and push them (Storey: Right, right.) to the bottom. And the water then runs over the check boards. (Storey: Uh-huh.) The only time you would change the check setting is if you made a significant change in the flow and then if you increased the flow significantly, a ditch rider would go down the canal and pull out the check boards so that he didn't overtop the canal. Those check boards managed to hold the elevation of the water *fairly* close to where it needed to be for the turnouts.

Now, it wasn't as stable as our newer systems and that would mean that when you had just a turnout valve there, that if the water level went up, more water would go through it and the irrigator would get more water than what he intended. He probably has his siphon pipes–or whatever he's using to irrigate–so set-up, it only takes so much water, so if *he* gets more water, he probably let's it run down the borrow pit, the county road, or into the drain and out to the river.

But this whole idea of using the fixed check gate there, is such that you have to have in the canal more water than the people are taking out, or *exactly* the amount, which means you always have some extra because the first irrigators on the canal will take their water, and if you don't have as much water as what the irrigators are demanding, then the irrigators at the tail end of the canal won't have any water. (Storey: Right.) So you end up having to run more water–can't modulate it perfectly– and *all* of the mismatch goes to the end. (Storey: Uh-huh.) So your end person will be deprived of *all* of the mismatch so you really can't afford anything but a minuscule mismatch. So the tendency is to send more water than you need, which means that you have more water than that *last* irrigator can use, and that water just flows out to the river. (Storey: Okay.)

Okay, now, the newer systems, what we would try to do is control it such that the right amount of water, *exactly*, gets to that end user. We do that in a downstream control system by controlling *to* that downstream user, and opening a gate above him to get the water to him. Then, stair-stepping that opening up the canal, so that if there's more water demand on the canal, that you would let more water in the headgate. (Storey: Uh-huh.) You actually *can* control the canal to eliminate any waste–virtually all waste.

Storey: So if I'm hearing correctly, basically what we have gained over the years from experience and improved technology is the ability to modulate the canal pool levels to the point where we basically don't lose anything out the end of it.

Willms: Um-hmm. And we do that on our more modern canals. Now, I'm sure a lot of the older canals, if they still have wooden check gates, you aren't going to do that, (Storey: Yeah.) they just don't lend themselves to that.

Storey: How have checks changed?

Willms: Well, our standard check gate now is what we would call a radial gate and it's a gate that sits out on the end of arms–arms are hinged–(Storey: Uh-huh.) and cables come to the gate and it lifts them up and lets them down by an electric hoist. They're fairly inexpensive, they work well, they're easy to maintain. So in order to control it, you just have to have electrical control and you end up ultimately electronic control of the hoist motors.

Storey: And I gather from something you said earlier that the water no longer flows over the top?

Willms: It flows under it.

Storey: It flows under it? (Willms: Uh-huh.) So you vary the amount of water that is let through underneath the gate in order to keep the pool level at the level you need? (Willms: Right.) Okay. Well, that brings me to one of my next questions, I think. And that is, what are some of the major dangers and problems for canals that you encountered?

Canal Dangers and Problems

Drownings

Willms: Well, of course *dangers*, there are two different types. One of them is just public drownings, and there have been a lot of people drowned in canals. Canals typically have steep banks, the flows are swift in them. They look inviting for kids and other people to swim in, but they're *extremely* dangerous–particularly concrete-lined canals. Of course when the canals, when Reclamation started, most of these lands were out in rural areas, and then often suburban and urban areas have built up around them and so that's one of the major dangers, and it's one that we have never dealt with very thoroughly. There's a lot of different cultures around. If you take, I believe, it's the City of Fresno, for instance, and we don't have canals there but they have canals all through town, and they absolutely *refuse* to fence canals. There are other places we fence them and fence them and fence them.

Canal Bank Failure

The other danger is a bank failure. If a canal is built in a fill situation where the canal is built up or one bank of it is built up, it in effect, becomes a dam with almost–in some cases–almost an infinite supply of water. If that canal berm fails, it can cause major, major flooding. We have had–over the years–a number of canal berm failures. I think that's something that we always worry about. Unlike a dam, they're miles and miles and miles long, so you don't have quite the opportunity to monitor them that you do with a dam that's just stuck in place.

". . . they're only a few feet high so you don't have the enormous flows, you don't tend to cause drownings, but you do tend to cause lots of property damage. . . ."

Of course, on the other hand, they're only a few feet high so you don't have the enormous flows, you don't tend to cause drownings, but you do tend to cause lots of property damage.

Water Quantity and Quality in Canals Can Be a Problem

Some of the other problems [we] get into now is the water quality. For years our canals typically followed a contour, they crossed a lot of drainages. [If] they were [a] drainage that ran any particular amount of water, we'd be able to siphon under the drainage. But, if they were just little drainages, we often took the water into the canal. Along comes some development, people put houses with roofs that

run water off real quick and they put driveways and they put streets that run water off real quick, and all of a sudden, you get a lot of water coming in on a rain storm. Often the water has a lot of both quantity and quality problems, so you have those kind of problems. A lot of that's changing time problems; problems you didn't have when you built the canal (Storey: Uh-huh.) but because of the changing environment around the canal, they become problems.

Dairy farms can be a real problem in water quality. Feed lots. Same thing, yeah. Probably dairy farms I think more than feed lots because dairy farms tend to bring their cows into the barn and keep them in the barn more, then they flush those (Storey: Uh-huh.) and that flushing tends to run into canals. (laughs) (Storey: Yeah.) But feed lots can do the same thing. That's some of the type dangers and problems that get associated with canals.

Storey: Well, those are good, I'm glad we talked about those, but I didn't phrase my question properly, I guess. You mentioned overtopping, for instance. What are the kinds of problems you have to avoid in order to protect the canal system?

Maintaining Canals

Willms: Oh, okay. Of course, the big one is to keep the canal structure in good condition. If you have a lined canal and the lining starts to leak, you need to get it fixed so that it doesn't erode the supporting material behind it. If it's an unlined canal, it's probably built to not need the lining but you need to make sure the conditions of the berms remain good.

Rodents can be a problem, any burrowing animals into canal berms, they can be a problem. Subsidence I mentioned before, if the canal subsides and the berms get lower, you come into greater risk of overtopping and overtopping on an earth or unlined canal will probably almost always cause an erosion failure. So the other issue then is making sure that you don't overtop the canal. Generally, overtopping isn't a big problem with just the plain operations of the canal. Certainly the old canal . . .

END SIDE 2, TAPE 1. MAY 6, 1994.
BEGIN SIDE 1, TAPE 2. MAY 6, 1994.

Storey: This is [tape 2 of] an interview by Brit Allan Storey with Ray Willms, on May the 6th, 1994.

The old systems weren't such a problem?

"Overtopping from side inflow, though, could be a problem in that if you're picking up some of the water off of cross-drainages and into the canal, you've got to watch that pretty carefully because you can get a good storm and you can dump a lot of water in there quick and overtop the canal. . . ."

Willms: Yeah. So before you'd ever overtop the canal, you'd probably overtop a wasteway

that would have check boards in it and it would sort of naturally spill. Overtopping from side inflow, though, could be a problem in that if you're picking up some of the water off of cross-drainages and into the canal, you've got to watch that pretty carefully because you can get a good storm and you can dump a lot of water in there quick and overtop the canal.

Storey: We've been talking about canals, so far. What about things like siphons and pipelines and flumes and that sort of thing? They *are* part of the conveyance?

Willms: Yeah, they're part of the conveyance.

Storey: And they're part of that responsibility for O&M? (Willms: Yes, um-hmm.) Did you run across any problems with those or issues with them when you were working in Sacramento?

"The one problem we tended to have in siphons was if they didn't get buried deep enough or you had a degraded channel, the tops of them could become exposed and subject to the battering of the flow down a stream or river. I assume . . . they may tend to float too. . . ."

Willms: Well, siphons, for the most part, didn't have a lot of problems except *one*. The one problem we tended to have in siphons was if they didn't get buried deep enough or you had a degraded channel, the tops of them could become exposed and subject to the battering of the flow down a stream or river. I assume that when they got uncovered–and this is where it really gets to be a design issue–that they may tend to float too. I think the earth tends to hold the siphon in place, particularly if you were to un-water it and if you were get all of the earth off of the top of it, it may just float up and self-destruct. But generally, our siphons have done well until we got to, of course, the Central Arizona Project siphons have built out of pre-stressed pipe and they have all sorts of problems with it, of which I'm not an expert on–but the problems are generally the result of the tension wires corroding and breaking. I can't remember a siphon failure–there may have been some but I'm not aware of any. We did, as I was on the dive team, dive through some siphons, swim through some siphons, to see if their condition was okay.

Flumes, we don't have an awful lot of flumes. We didn't have some concrete flumes and I assume, in a few places, we may have even had some wood stave flumes, but I'm not familiar with any of those. Typically, our flumes were concrete, designed structurally sound and I don't remember any problems with them. I didn't encounter any, let's put it that way.

Storey: What about pipelines?

We Did Have a Problem with One Type of Pipe

Willms: Pipelines, we had a lot of pipe, in distributions systems mainly. Again, I think we didn't have a lot of problems with them until we put in a brand name of Tectite well, it's called Tectite Pipe, which was a plastic-reinforced mortar pipe, and we

have had a *lot* of problems with those in recent years, breaking. I didn't have any of those in any areas that I manage, so I don't have any personal experience with that either.

Storey: We started out with a couple of stories. Do you have any stories about people who didn't get water that you were involved with?

Willms: I do, later on in my career, nothing real significant. (Storey: Okay.) We can maybe better touch those . . . (Storey: Some other time.) Yeah.

Storey: What about water losses? What kind of water loss? How do you figure water loss and how much water loss is there on the various components at CVP [Central Valley Project] and that sort of thing?

Water Loss in Conveyance Systems

Willms: I can't answer that quantitatively. Canals, all of them, even the concrete, leak some, they may evaporate so you lose a certain amount of water. Some of the unlined canals probably lose a lot of water, some of them may lose *half* of their water, depending on the soil conditions and stuff like that. I really can't answer. There are some numbers that are typical for losses out of a concrete canal per mile of canal, it's a function of the width and stuff. I don't know what they are.

Storey: Well, while you were there though, was there a concern about finding ways to eliminate or reduce water loss, or was it just something that was accepted as the facts of life, or . . . What's the attitude?

Willms: Well, operational loss, we attempted to eliminate. We did a lot of work in trying to operate our canals better. We did a lot of work to try to operate our reservoirs better. Particularly our reservoir operations, the savings of available water to the project could be enormous through improved operational practices.

[As] far as losses out of the facilities themselves, we did a little of that. If we had points where we were losing water, we would attempt to stop that. If you had leaky wasteway gates, we would try to replace the seals and stuff like that. But where the loss is sort of a non-point source loss, we generally just sort of accepted that. I guess I need to qualify that. We did do quite a lot of rehabilitation of distribution systems where the losses were high and tended to put them into pipe and stuff like that. So ~~it's~~ quite a lot of that sort of stuff [was] done. This was more on facilities that were O&M'ed by districts and probably the older systems rather than the newer systems.

Storey: Could you tell me about the positions you held in Sacramento? I have the sense that you were promoted once or twice.

Four Primary Responsibilities in Sacramento

Willms: Well, I was in Sacramento twice, during two different parts. (Storey: Yeah, the

first one.) Okay. I received one promotion from a GS-11 to a GS-12. But over the length of time there, my responsibilities increased substantially. I think I mentioned previously I didn't have very much of a job when I started, and over time, acquired to where I had four primary responsibilities.

One of them was this canal automation, that I talked about, which ended up being under me and I ended up being the supervisor of several people. I also was a supervisor of the field people who did the O&M work on Cachuma Dam, (Storey: Um-hmm.) on the Cachuma Project and I ended up having the primary responsibility for the interactions with the water users down there which involved a number of cities–Santa Barbara, Goleta, and Carpenteria–along with a board of control that operated the Reclamation facilities in the Santa Barbara area. And that was a pretty good growth of responsibility.

Then I was head of the dive team, which I think I talked about before. (Storey: Right.) And I was also the representative for physical facilities to Westlands Water District. That didn't involve a whole lot later on in this stint, since they were very competent to take care of it themselves. Then I just provided general mechanical engineering advice and consultation to our field offices. I did a fair amount of that.

Storey: Um-hmm. They'd call up with issues and problems?

Willms: Yeah, they'd have a problem and they would ask for assistance.

Storey: Who was the regional director that first time you were there?

Bob Pafford and Bill Martin

Willms: When I first went to Sacramento, it was Bob [Robert J.] Pafford and then within a year or so after I went there, he retired and Bill [E.] Martin became the regional director.

Storey: What was Bob Pafford . . .

Willms: I didn't know him very well. In fact, I only met him once. I really can't give much of a description. He was very–from *my* perspective as just a staff member, several levels of supervision between us–he was very aloof. The one thing I *do* remember about him is I followed him out the door, and headed to the cafeteria. The cafeteria was in another wing and you went outside. I can remember him opening the door, walking through it, turning around, look[ing] me in the eye, and turning the door lose so it came back in my face. (chuckles) (Storey: Oh, really?!) I don't know if he was just preoccupied and didn't see me, but he gave me the impression of, "Well, that's a peon behind me, so . . ." But I had no dealings with him at all, and was not even close enough to know what kind of a regional director he was.

Storey: What about Bill Martin (pause) at *that* time?

"He [Bill Martin] was a very structured person, he had sort of a tight-knit front office, and he dealt through channels with everything. I met him several times in this piece of my career, but I don't think I ever sat in a meeting with him. I don't think I ever talked to him about job-related issues . . ."

Willms: Well, at that time he was not–I don't think–much different than he was when you knew him here. He was a very structured person, he had sort of a tight-knit front office, and he dealt through channels with everything. I met him several times in this piece of my career, but I don't think I ever sat in a meeting with him. I don't think I ever talked to him about job-related issues, those all went through the chain of command to him. (Storey: Uh-huh.) He did have an open house, I think those were the times you tended to meet him. He would have an open house at Christmas so you'd go in there and shake hands with him and his assistant regional directors and . . .

Storey: He had an open house at the office?

"Dealing with water users, he was a very strong advocate of the United States, he represented them well. He understood the differences between the United States and the water users' interests. . . ."

Willms: At the office, yeah. (Storey: I see.) Yeah, not at home, at the office. Dealing with water users, he was a very strong advocate of the United States, he represented them well. He understood the differences between the United States and the water users' interests. (Storey: Uh-huh.) I think he got along with his users. I think he was well-respected, even though he looked somewhat like a hayseed from Arkansas, he was a very dignified person and I think he commanded respect. I think he had a pretty good working relationship with the users; but he could be very strong at times. (Storey: In dealing with them, you mean?) In dealing with them. I say that more probably from my experiences later on with him than actually in that period (Storey: Yeah.) but I think he was that way then too, probably. Storey: Well, let's see, you were in Sacramento from early '71 until?

Willms: November of '76.

Storey: Why did you leave?

"I applied for several GS-13 positions around in '76 and eventually the Klamath Project manager at Klamath Falls became open when the project manager that was there was promoted to project superintendent at Tracy, and I applied for that job and was selected for it. . . ."

Willms: I had been there now for five or six years and I felt that I had become probably the most respected staff person in that branch I was in–sort of like I had reached a pinnacle and felt that it was time for me to move on. So I started looking for a promotion, basically other jobs. I applied for several GS-13 positions around in '76 and eventually the Klamath Project manager at Klamath Falls became open when the project manager that was there was promoted to project superintendent at

Tracy, and I applied for that job and was selected for it.

Storey: And that was in the same region?

Willms: That was in the same region, yes.

Storey: So then who was your supervisor when you moved up there?

Worked with Both Regional Director Bill Martin and Assistant Regional Director for Operation and Maintenance Mike Catino While Project manager on the Klamath Project

Willms: Well, my immediate supervisor would have been Mike Catino, who was assistant regional director for operation and maintenance, but moving into a project manager's job, I also dealt a great deal with the regional director at that point.

That was an interesting step. The project manager's job was a GS-13 and probably one of maybe three or four in the Bureau that were not GS-14s. It was a small office, had about eighteen, twenty people–that was the reason it was a GS-13–but it was also a big project, 300 miles from the boss, was an office head, full functioning project, even though it was small. When the job became vacant, the people who applied for that–for all practical purposes–were all GS-12s, none of which had had any major office head experiences. I'd never been a head of a unit or anything, I had several people work for me, never carried a title of head of anything, but the panel of which the selection was made from, they essentially didn't have anybody that had any of that sort of experience, because all people that had had any of that sort of experience would be at least GS-13s. For some reason or another, GS-13s tend to not want to move for a lateral. (Storey: Uh-huh.)

So I ended up getting selected for it. I had done well in the last several years, and the fellow who was my immediate boss in Sacramento, Bill Brown, supported me heavily, and he and I both played golf every Sunday with Mike Catino. I don't know what influence that might have had on my being selected, Mike Catino definitely did not select me for the job, it was Bill Martin who made the selection. But I don't know what influence that had as far as *my* playing with him, but I think it had no doubt the fact that Bill, my immediate boss, was a heavy supporter *and* was a close friend of Mike Catino's, had a lot of influence.

Storey: Um-hmm, that always happens, those kinds of things.

". . . I think that was a situation, probably, where I was at the right place at the right time because that move to the project manager's job was probably singularly the biggest step in my career . . ."

Willms: Yeah, and I think that was a situation, probably, where I was at the right place at the right time because that move to the project manager's job was probably singularly the biggest step in my career–without a doubt it was the biggest step–because I really moved from a general staff position into an office head

position in one clean step. (Storey: Uh-huh.)

One of the people who had applied for the job was Ray Nelson, he's now, I think, the project manager in Yakima–or was, I don't know what they're doing up there now. But he had just come off of the departmental development program and I was very surprised to have been selected that, rather than him. I may be wrong on that, maybe it was after that, I *thought* he had just come off of that though. (Storey: Uh-huh.) But it may have pointed, again, back to the fact that I had real heavy support from my immediate supervisor, and that's so important because in the type of job I had, my visibility to people like Catino and Martin really are through my supervisor.

Storey: Yeah, it depends on what kind of supervisors you have too. (Willms: Yes, yes, that makes a difference too.) Their personality, whether or not *their* name has to be on everything or whether or not they say, "Ray did this."

Willms: Yes, well, and in that time and place, my name would have been on nothing. But I probably was known up there in the front office just because they do carry on discussions about staff and what's going on and who's good and who's bad and things like that. So I think it was pretty fortunate, (Storey: Yeah.) things just kind of fit in place there. I had a sense that I needed to take advantage of that–that's why I started putting in for jobs–because my sense was is that I was on top of things at that point and that if I stayed, there was a pretty good chance that someplace along the line, in the next year or two or three, I would stumble, and my stock probably would have gone down.

Storey: Uh-huh. Well, but before you stumbled, you knew Mike Catino fairly well. Tell me about him, if you would.

Mike Catino

Willms: Mike, he came out of program coordination and he was a numbers person you couldn't believe, and he had a *tremendous* memory, a wonderful personality–except when he got on the golf course and wasn't playing well, then he got grouchy as hell. (Storey: Uh-huh.) He was also a fairly sophisticated person, a person you respected. He was as honest a person as I have ever known. He–honest to God–would take his pencils out of his pocket before he went home so he didn't use the ink out of a government pencil at home. That may be a little, but *not* much, of an exaggeration, just absolutely honest. (Storey: Uh-huh.)

". . . he was a much, much better programs officer than he was an assistant regional director. I think he understood numbers, he had a fantastic memory. My impression was is that he did not understand irrigation facilities as well as he might have and he got into the assistant regional director's position, he got pigeon-holed a little bit. . . ."

But he was a much, much better programs officer than he was an assistant regional director. I think he understood numbers, he had a fantastic memory. My

impression was is that he did not understand irrigation facilities as well as he might have and he got into the assistant regional director's position, he got pigeon-holed a little bit. Maybe he got taken a bit by office politics a little bit, but he was not a particularly influential assistant regional director. There were three assistant regional directors; he had O&M under him, (Storey: Uh-huh.) all the operating offices; and the other assistant regional director had planning and construction; and then there was one for administration.

My sense of the three of them, that probably Mike had the least amount of influence. (Storey: With?) Well, with Martin. Well, generally and with Martin. Now, his program was more important than the administration, by a long ways, but when it got down to tough issues to deal with, Bill tended to deal with them himself rather than have Mike deal with them. When I got into issues of which I wanted a decision from a real boss, I tended to go to Bill, and Mike didn't seem to mind that. (Storey: Uh-huh.) Mike tended to allow the staff within the regional office to make decisions and tended to rubber stamp. But I don't know whether that was his personality totally, or whether it was an office politic issue. (Storey: Yeah.) The front office was fairly closed, so I don't really know.

Storey: Who were the other two assistant regional directors?

Ed Horton and Paul Obert

Willms: Ed Horton was the one for planning and construction and Paul Obert [phonetic spelling] was the assistant regional director for administration. Ed Horton was an outstanding person. He was fairly old at this point, maybe even up towards seventy–I think he had to retire at seventy then–but well into his sixties. [He] had been a *long*, long-time person in the construction field, and *very* good, very competent. Paul Obert was very smart but he was–in my estimation–a kind of a vicious person. I was always glad I didn't have to work for him, I think he was probably not good to work for and I think he tended to be a power player. I think he ended up being Bill Martin's hatchet man. I have a great deal of respect for Bill Martin, but if there was one area where I didn't like what he did, was his use of Paul Obert. My suspicion is is that Paul had a lot to do with Mike Catino's ineffectiveness.

Storey: And which of the two do you think was the most influential with Mr. Martin?

Willms: Well, of those two, between Catino and Obert, I think Obert was . . . .

Storey: Well, the three assistant regional directors.

Willms: Of the three, Ed Horton would have been the most influential, (Storey: Oh, okay.) *clearly* the most influential.

Bill Brown

Storey: Okay, good. Tell me about Bill Brown, if you would. What was he like to work

for? He was your direct supervisor, is that right?

Willms: He was my direct Supervisor, he was head of the Irrigation O&M Branch. He was a very personable person, very good to work for–of course I would say that because I got along with him real well. (Storey: Uh-huh.) He was a competent person, a good solid branch chief there. Probably close to the maximum level where he was effective. He had later went out to be project manager at Folsom and I think probably was not as effective out there. He may have maybe got to that level, but was starting to encroach on his capabilities. He was a drainage person, I think, by background, came out of Nebraska. [He] was brought in there because the regional supervisor of water and land had known and worked with him and he was his hand-picked person to come in as branch chief. Not terribly knowledgeable about Reclamation facilities but very willing to listen and use the staff very well–which I think is a key component to be good.

Storey: Well, why don't we move up to Klamath (Willms: Okay.) in '76? The biggest step in your career, because of the supervisory aspects, anything else about it?

"The Sacramento office tended to be–for all practical purposes –a Central Valley Project office. . . I actually looked at it as fairly good because nobody paid very much attention to us. We didn't have regional staff telling us how to do our work or interjecting themselves into what we do. . . ."

Willms: Well, no, mostly because I became an office head and I became Reclamation's representative to a sizeable contingency of interests up there. As I say, it was a long ways from Sacramento. The Sacramento office tended to be–for all practical purposes –a Central Valley Project office. You know, ninety percent of the staff worked on the Central Valley Project and these other projects tended to be orphans–and there's both good and bad in that. I actually looked at it as fairly good because nobody paid very much attention to us. We didn't have regional staff telling us how to do our work or interjecting themselves into what we do.

"It had features owned by the United States and operated by Pacific Power and Light, which put an interesting wrinkle on it. Irrigation districts operated *most* of the distribution facilities, we operated what we called the reserve works which were one canal, one drain, and several dams–dams are easy to operate so we didn't spend much time on that. . . ."

The project is fairly large, it involved a number of dams, five maybe, something like that, or six. Extensive distribution systems, some pumping plants–we didn't have any powerplants. It had features owned by the United States and operated by Pacific Power and Light, which put an interesting wrinkle on it. Irrigation districts operated *most* of the distribution facilities, we operated what we called the reserve works which were one canal, one drain, and several dams–dams are easy to operate so we didn't spend much time on that. The O&M crew was only four people. There were *about* twenty irrigation districts–approximately twenty–that we had contracts with and delivered water to, and then we had contracts with another 150, or thereabouts, individuals. So we

had *nearly* 200 contracts that we administered. We had partial jurisdiction over maybe 100,000 acres of land. About 30,000 of that was intensively row cropped, intensively farmed land that we leased. We had a *large* leasing program. The leasing program was on two National Wildlife Refuges, had extensive dealings with the Fish and Wildlife Service.

Fortunately at that time we had no endangered species–they do now (chuckles)–but the whole set-up; it had their 200,000 acres of land irrigated by the project, we delivered maybe around a half a million acre-feet a year . . .

END SIDE 1, TAPE 2. MAY 6, 1994.
BEGIN SIDE 2, TAPE 2. MAY 6, 1994.

Storey: We had maybe half a million acre-feet a year.

Willms: We started construction in 1906, I believe. An *interesting* history: If a person were looking for a project to do a history on, there's great information on it because the project office had been there all that time and files were good. I got a great deal of interest just reading files back in the 40s and 50s and some back before that. We were still doing some construction on it, so it had been in some states of construction for that whole seventy years. We had–on the project–one of the last homesteads, homesteading was carried out after the Second World War and two or three homestead openings in the late 40s. But it just really was an interesting project.

The other piece of it that was interesting is that the parts of the project were now right in town and caused lots of interactions with the city and the county. I frequently met with the city council, and city management, [and] with the county commissioners. In fact, I had some running feuds going with them there for a while. The project was a main part of the local economy. People in Klamath Falls knew who the Bureau of Reclamation was. The local TV station would–every few months–would call me up and would want something to put on their news programs. So I dealt with the media extensively up there.

Storey: So it sounds like you were having a lot of fun?

"It was a real interesting period, a real period of growth for me personally. . . ."

Willms: I had a lot of fun. It was a real interesting period, a real period of growth for me personally.

Storey: How many people worked for the project?

Willms: About twenty.

Storey: You mentioned an important time of personal growth: What was the area that most sticks out in your mind now about your growth then?

". . . before that in my career, I had been basically an engineer. . . . Now I was in a position of having to deal with *all* of the aspects of Reclamation and *all* of the aspects of the law, and to deal with the entities up there with the boards of directors and the attorneys and the city council . . ."

Willms: Well, I think the things that *I* remember so much is that before that in my career, I had been basically an engineer. Even though I had started to work around the margins in management, some on the Cachuma Project and stuff like that, but that involved only a few days a year. Now I was in a position of having to deal with *all* of the aspects of Reclamation and *all* of the aspects of the law, and to deal with the entities up there with the boards of directors and the attorneys and the city council and all of that sort of stuff. It's just something that I had never done before.

A person always wonders when they get put into a position of having to deal with these people–never having done it before–how well it goes. But actually, a person seems to sort of adjust to what you got to do. I really got to where I enjoyed it, and I enjoyed the speaking to the Rotary Club, and I enjoyed giving interviews with the media, and sort of enjoyed the battering I had with the county commissioners, and [I] got on first-name basis with most of these people, and [I was] often invited to various community events. That was a place that in my career after that, I never had, because Reclamation was never such a key part of a community as it was in Klamath Falls.

Storey: Well, I would like to go on with your stint on the Klamath Project, but unfortunately our two hours are up again. So, once again, I'd like to ask if the material contained in these tapes and any resulting transcripts can be used by researchers from within Reclamation and from outside Reclamation?

Willms: Most certainly.

Storey: Thank you.

END SIDE 2, TAPE 2. MAY 6, 1994.
BEGIN SIDE 1, TAPE 1. MAY 19, 1994.

Storey: This is Brit Allan Storey, Senior historian of the Bureau of Reclamation, interviewing Ray Willms of the Bureau of Reclamation, in his offices on the 14th Floor of Building 67 on the Denver Federal Center, at about eight o'clock in the morning, on May the 19th, 1994. This is Tape 1.

Mr. Willms, during the last interview we had just gotten you up to your work at the Klamath Project, beginning in 1976, and you had talked about why you enjoyed working there so much. Among other things, you mentioned that there were twenty irrigation districts, about 150 different people, community relations–all of that kind of thing. I was wondering, could you tell me what were the major issues that you as project manager had to deal with on the Klamath Project when you were there in '76?

The Klamath Project Was in the 1976 to 1977 Drought When He Arrived

Willms: Well, there were a number of significant issues from my perspective. We were just headed into the '76-'77 drought. The project had never had a drought that had any threat to water supply. The project had very little history and very few tools for analyzing and making decisions.

"Contracts were strangely written–and I say 'strangely written,' they were intended to be somewhat hierarchial in the sense that some contracts should have had a priority of water over others but they were not well-structured, and they were old. . . ."

Contracts were strangely written–and I say "strangely written," they were intended to be somewhat hierarchial in the sense that some contracts should have had a priority of water over others but they were not well-structured, and they were old.

There were many perceptions of what these various contracts meant. It ended up becoming a whole new arena to be dealt with in this drought. As it turned out, as we entered the spring, I gave a report to the local water users association–I don't recall just what it's called now–and simultaneously gave a press release to the local daily paper. The press release was long enough to take up more than a half of a page of paper and they put it verbatim on the front page. It had a number of graphs on it and it's kind of indicative of the importance of the issue to the local community. Other than having a few squabbles, I had made an attempt to not provide water to some lands that had bought water on a year-to-year basis and ended up yielding on that through pressure applied [from] higher authorities.

Conservation Measures on One District Resulted in a Lawsuit by Another Which Had Historically Relied on the Runoff from the First

Another situation, we got into one of these situations where historically one district had used the return flow from another district as their primary supply, and in a drought situation, the upstream district then exercised some conservation measures and the downstream district then ran short of water. The downstream district then attempted to sue the upstream district–I think both of them had the same attorney.

The attorney was a political animal, one who was very, very confrontational. But in the conflict of interest situation he convened a meeting of these districts and a couple of other districts that were peripherally involved and made the darnedest plea you ever heard for cooperation. It's the only time I've ever seen him plea for cooperation. (laughter)

How Reclamation Got Through the Water Shortage with Very Few Problems

Pacific Power and Light and Reclamation

But we got through that actually with very, very few water shortages and very

few problems. Times were a little different [then] than they are now, because one of the things we did, the river downstream of the Klamath Project, the Klamath River, has a sizeable salmon run. Downstream, Pacific Power and Light [PP&L] had a powerplant that was conditioned upon a FERC [Federal Energy Regulatory Commission?] license that they had to release so much water. However, Reclamation held the water rights upstream and PP&L also operated the dam of which our water rights were on, upstream. We had advised PP&L that we would exercise our rights and not permit enough release downstream for them to be able to meet their FERC license. They then went to FERC and negotiated a waiver of the license requirement. That would be something that we would not be able to do today. (Storey: Um-hmm.) You know, it was a whole different environment.

Storey: What do you mean, "a waiver of the license"?

Willms: Well, it wasn't actually a waiver of the license, it was a waiver of the condition of the license. There were "variances," they call it, and essentially PP&L asked FERC to permit them to not make that specified release but to make an alternate release of less water. FERC ruled on that and gave them formal permission so it kept them from being in a position of violation of the conditions of their license. *They* were between a rock and a hard spot because we had a legitimate legal right to the water and–I assume–that they would have escaped anything from FERC anyway because we had already told them that we would cooperate with them to seek their variance, but if they were unable to obtain the variance, we would take control of the facilities and we would divert the water, and they would simply have no way, *no way*, of meeting the license condition.

Storey: Uh-huh. So their dam, we took water out of?

Willms: Well, the sequence there was, is that we owned a dam on the outlet to upper Klamath Lake, which was the major storage lake for the project. It was a natural lake of which a small dam–only a few feet tall–had been put on the outlet that raised the level four or five feet (Storey: Uh-huh.) in the lake and stored about a half a million acre-feet.

The dam was actually built by PP&L or their predecessor–California-Oregon Power Company–under a agreement with us, and we *owned* the dam. We held the rights to the water dating back to about 1905–or something about that time. They had a prior right for a small amount of water for a small powerplant that they had right below this dam. By building the dam, they increased their power production of their powerplant because they were able to regulate the flow of water. Normally, there's enough water in the river to meet all the needs.

That was the old facility. The newer facility was built maybe twenty miles downstream, and it had another dam and a powerplant–strictly a power facility. It was built on the presumption that there would be a normal flow of water down the river from the upstream facility that *we* owned. (Storey: Um-hmm.) And *normally*, we allowed Pacific Power and Light to operate the dam and to regulate the flow of the water through the dam to produce power, because there was

sufficient water that a supply for the project was not a concern. (Storey: This is the downstream dam?) This is the upstream dam now. (Storey: Okay.)

The upstream dam, we allowed them to operate, the one we owned. (Storey: Yeah, okay.) We allowed them to operate it, they made the release decisions pretty much based on what they wanted to produce for power at the downstream dam (Storey: Uh-huh.) because the downstream dam is a major producer of power, the upstream dam was a minor producer. (Storey: Right.)

We would meet with them annually, they'd supply us with a schedule of releases, we would agree with it. But *they* knew what our needs were and, as long as our needs were met, we let them do the rest of the regulation for their needs and for the needs of production of power, for meeting their commitments downstream of their downstream dam. Of course, in this particular year now, there was *not* enough water to meet both the needs of the in-stream flow below the downstream dam and to meet the water demands of the project.

Storey: So when you were saying that Reclamation had notified them, they would take over and control the dam–we're talking about the upstream dam now? (Willms: The upstream dam, yes.) And the reason they had to have a variance from FERC was because they had to have in-stream flows for the salmon downstream of the downstream dam? (Willms: Of the downstream dam, yes.) Ah, I understand. And of course nowadays that would be a much touchier issue I think.

Willms: I would be a very touchy issue. And I don't know exactly *how* it's been dealt with since. I know that during the drought that we just finished, they had severe problems, and they did curtail the water supply. I assume they also had some variances, but I assume that they did not *totally* ignore the in-stream flows downstream of the downstream dam. Much more difficult situation to deal with today than it was then. (Storey: Yeah.) Had PP&L not been able to get the variance from FERC, we would have been able to sustain, politically, and public relations-wise, a unilateral move to move the water into the project. We would have prevailed in that without getting badly scathed; we would not today.

Storey: Do you mind talking more about the attorney you mentioned who represented both districts? Do you remember his name?

George Proctor

Willms: George Proctor.

Storey: And was he a major player in water law in that area?

Willms: Yes. He *was* probably the key local player as far as water issues in the basin. He was not what I would say a likeable person. [He] applied *extreme* pressure, tended to be devious. (Storey: Uh-huh.) But he did represent his clientele fairly well, in that sense. I never knew him to litigate anything. *Threaten* litigation–that was not uncommon– but his general approach was to endear himself to some official and

then to use that endearment to try and get favorable decisions. (Storey: Um-hmm.)

During my time, he attempted to endear himself to a number of different officials. [The] first dealings I had with him where he did that was he did it with Mike Catino, who was the assistant regional director. He later struck up some dialogues with Cliff Barrett, who was then an assistant commissioner. Ultimately, he had done the same thing with the then-deputy assistant secretary, whose name was Dan Beard. (Storey: Uh-huh.)

I don't think during *my* tenure he was particularly successful with any of those. The regional director, who was then Bill Martin, had previously experienced this type of maneuvering and was not at all either receptive or likely to be manipulated, and George did not attempt to take issues to Bill. He managed to make an absolute enemy out of the commissioner, [R.] Keith Higginson, *right* after he was in office. And to the best of my knowledge, he never took an issue to the commissioner.

Storey: I'm very interested in the dynamics of how politics and people interplay on a Reclamation project, and so he's very interesting. But also you mentioned earlier that you had tried to curtail water deliveries to water users who were on year-to-year contracts and pressure from higher authority caused you to yield on that, could you explain that in more detail what happened?

Dealing with Water Rental Agreements

Willms: Well, in this particular case, we had been selling water under what we call a rental agreement to the blocks of lands . . . that really–I don't know, I won't say "weren't part of the project"–but they were never developed and no long-term contracts had been signed, and we'd been doing this for many years. A practice that was questionable, certainly not consistent with our policies, and I would guess on the fringe of being legal under our processes.

I, of course, was very new at the time. I went up in the fall of '76–which was one year into the drought–and then this stuff all took place in the winter months. (Storey: Uh-huh.) As I got to looking at the water supply issues–I had come out of the Central Valley, so I had watched how they dealt with drought, which was much more severe in the Central Valley at that time–and had decided that what we needed to do was to unload our commitments to our, you might say, lowest priority of water delivery, and it looked to me like these water rentals were the very lowest of the priority.

"What I *learned* in the process of looking at that, is that we actually had rented water to certain groups for years, and then someplace along the line we quit collecting for it and were just giving it to them. I think it was a fall-through-the-crack issue. . . ."

What I *learned* in the process of looking at that, is that we actually had rented

water to certain groups for years, and then someplace along the line we quit collecting for it and were just giving it to them. I think it was a fall-through-the-crack issue. (Storey: Uh-huh.) I think that the way that the delivery took place, is it took place off of one of the irrigation district canals. We didn't regulate inflow to any canal, we did have meters on a lot of them but they controlled their own head gates, and these people just made deals with the irrigation district and started taking project supply. In fact, one of them who did this was a director of one of the districts–and I don't know if this was simultaneous or not–but I can remember him coming in to visit me and just *deeply* apologetic for the fact that they had been getting water and not paying for it for the last six or eight years. (chuckles) (Storey: Uh-huh.) I think genuinely it had just fallen through the crack. We hadn't done our job and he had a very high guilt feeling because he obviously knew he wasn't paying for it. (Storey: Yeah.)

But in this case, of the case that we had here, was a fairly sizeable block just in California, and they were represented by this attorney. (Storey: Mr. Proctor?) Mr. Proctor, yes. Of course, when I put out the press release in that I'd announced how we were going to manage the drought, one of the things was we wouldn't sell rental water. Well, he of course, tried to talk me out of that–I was not particularly yielding on the issue.

So he then scheduled a meeting with Mike Catino, of which I was then asked to come down to. It turned out to be a meeting with just the three of us, just Mr. Proctor, Mike Catino and myself. He made a real pitch, and his pitch was, is that this particular landowner operated, oh, 10,000-,15,000 acres on the project, and that he was going to put in sprinkler systems and conserve a lot of water, and that he wanted to use this conserved water on this land, and that if we would not allow him to do that, he wouldn't put in sprinkler systems. He made this pitch.

"So I reluctantly agreed to it. . . . I think that had I been more confident, and if had happened two years later, I probably would not have agreed to it. . . ."

I was pretty new, but did know Mike Catino fairly well, and just watching the body language in this process, it became obvious that Mike wanted to agree, and wanted to get this person off of his back; probably also realizing that this was only the first step, the next step would be somebody in Washington. So I reluctantly agreed to it. I say pressure from higher up, I think that had I been more confident, and if had happened two years later, I probably would not have agreed to it. (Storey: Uh-huh.)

"My view on the issue was, is that the in-stream fisheries probably had a more legitimate entitlement to that water than what these water rental people did, because of the fact that we had policies that say that you can do that for development purposes for five years or something like that–this had been going on for fifteen or twenty. . . ."

As it turned out, we got out of it okay, we didn't get any bad results. But whatever water was used down there was probably water that wasn't available to

the in-stream fisheries and things like that. (Storey: Uh-huh.) My view on the issue was, is that the in-stream fisheries probably had a more legitimate entitlement to that water than what these water rental people did, because of the fact that we had policies that say that you can do that for development purposes for five years or something like that–this had been going on for fifteen or twenty.

We did follow it up with a direction to them that they needed to step forward and start forming an irrigation district with the idea of entering into long-term contracts with us if they wanted to continue to get water. If I recall, we put some time limits on it that said we would go ahead and deliver water under a rental agreement for several years. [By] the time I left, that had not been done. I don't know whether it was completed or not. But that was the nature of that particular one.

Storey: That's interesting. Another aspect I'm sort of interested in is how the politicians become involved. Did you ever have contacts and pressure from either state or national politicians while you were on the Klamath Project?

"I had an awful lot of dealings with the staff of both senators and congressmen. Most of these dealings were over acreage limitation issues . . . the Secretary had received some sort of a court order, injunction, or something that resulted in him having to issue rules and regulations on the acreage limitation–this preceded the Reclamation Reform Act . . . Carter administration . . . They initiated it, and it was one of their initial actions in changing the direction of water use in the West. . . . rules and regulations that had a lot of fairly offensive provisions in it to farmers in the West: such things as that if they had excess land and they had to dispose of it, they'd have to dispose of it by lottery . . ."

Willms: I had an awful lot of dealings with the staff of both senators and congressmen. Most of these dealings were over acreage limitation issues, which was another very interesting period of time on the Klamath [Project]. This situation, the Secretary had received some sort of a court order, injunction, or something that resulted in him having to issue rules and regulations on the acreage limitation–this preceded [the] Reclamation Reform Act [1982]. ~~and was~~ Actually his action in terms of entering rules probably was the catalyst that started the development of that legislation.

This set of rules came out shortly after the Carter administration took office. They initiated it, and it was one of their initial actions in changing the direction of water use in the West. (Storey: Uh-huh.) They came out with a set of rules and regulations that had a lot of fairly offensive provisions in it to farmers in the West: such things as that if they had excess land and they had to dispose of it, they'd have to dispose of it by lottery–they couldn't sell it to a person of choice. [It] had a *number* of things in there–I don't remember a lot of details–that were really quite offensive to people.

They released the rules and scheduled a set of hearings. They scheduled the

hearings *I think*, generally in the regional office locations and Washington. There was not a hearing scheduled in Oregon, and the people in the Klamath Basin–and other places in Oregon too, but I think more in the Klamath Basin–became very upset about not having a hearing in Oregon, and would have to either go to Boise or Sacramento to participate.

Member of Congress Al Ullman Forced a Hearing in Klamath Falls on the Acreage Limitation Rules

At the time, the local congressman's name was Al Ullman and he was chairman of the House Ways and Means Committee. And this is a rural district, I think that district represented eastern Oregon and then swung down and picked up southern parts of the state through Klamath Falls–I don't know if it went on over to Ashland and Medford or not.

This attorney, George Proctor, of course was also very–I don't know how influential he really was–but had a lot of contacts and he went to work–at least he took credit for it–went to work with Congressman Ullman and Congressman Ullman applied enough pressure to the White House or the Secretary or whatever to have another hearing scheduled.

This hearing was a little different than the others, in that they *yielded* to the congressman to have a hearing, but they had to make it a little different, and it was not going to be run by the Department, it would be run by the Bureau. The other hearings were all done by the Department. And just some little nuances like that, but it would be held in Klamath Falls. This came along after the other hearings were well scheduled.

Staff in the Klamath Falls Office Set up the Logistics of the Hearing

There were a *lot* of procedural rules that had been established for these hearings, and those were forwarded to the hearing that we were going to have at Klamath Falls. So anyway I got the call–I'll call it a pleasure because it was a very interesting time–of putting this hearing on. I wasn't the hearing officer–the commissioner, Keith Higginson, was the hearing officer. But my staff and myself did all of the arrangements.

About 150 People Signed up to Speak at the Hearing and Each Was Allotted 10 Minutes by the Hearing Rules

The hearing was scheduled for one day. We had about 150 people sign up to be heard at the hearing. The hearing rules, I think permitted ten minutes, as I recall, per person. So if you take 150 people and ten minutes per person, that's only six an hour. You could nowhere *near* get through 150 people in a day. And it was the understanding that everybody would be able to testify.

We looked at the facilities and decided that there was enough interest there that we'd need to rent a auditorium. So the only auditorium in town that was

available and suitable was in a junior high school that had an auditorium with a stage that held 300 or 400 people. So we rented that.

This attorney, George Proctor, along with several other attorneys, really made a big deal out of this. They formed a work group to help people prepare testimony–in fact, I think they wrote a great deal of the testimony. There were the local grange, farmers' union–these type of groups throughout the little outlying communities. Many of them had forums on the issue. I was often invited to participate in those forums, in which we would discuss and debate the issue. I can remember giving a speech to the local Rotary Club on the issue before the hearing came up, and they had it in a large banquet room and there ended up being standing room only in that. There was just that much interest. There was something in the paper every day on the issues we went in.

The local TV station had a half-hour public interest program there where they had statements and interviews with various people who were interested in that. In this case, our public relations person from Sacramento for the region came up and did that. I regretted that, he didn't do a very good job, was not candid and ended up being on a panel with an attorney who sort of ate him up and spit him out–mostly because he wasn't candid, generally, but he tried to dodge the issues.

From my own role in this–of course I was representing . . . .

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Storey: . . . representing the United States who was viewed as the enemy in this process.

"I positioned myself in taking a role of explaining that the courts had forced the secretary to write rules and that he had to do that and that the acreage limitation was a legitimate issue. . . . the courts had agreed and said we had to enforce the law and the secretary had put out a set of rules and regulations, and that this was a comment period on the rules and regulations and it was important that people commented constructively on these provisions that were offensive . . ."

Willms: That's right. I positioned myself in taking a role of explaining that the courts had forced the secretary to write rules and that he had to do that and that the acreage limitation was a legitimate issue. And I based it often using the Southern Pacific Railroad example where in Westlands Water District they had owned approximately 100,000 acres of land and when the Reclamation put in the San Luis Project, the land value had escalated virtually overnight from about $500 an acre to $1,500 an acre or $1,000 per acre increased land value which, in effect, gave Southern Pacific–if you didn't have some sort of an acreage limitation–a $100 million windfall profit that was the result of a subsidized program paid by the taxpayers.

I tried to take the tack that this was a legitimate issue, and that it was

unacceptable to have those kind of speculative gains. That the courts had agreed and said we had to enforce the law and the secretary had put out a set of rules and regulations, and that this was a comment period on the rules and regulations and it was important that people commented constructively on these provisions that were offensive, and that that's what this all was.

"I came out of this, personally, unscathed. While I was on the wrong side of the issue in the eyes of the local constituency . . . I wasn't held personally responsible for the offensive provisions. . . . I felt that I supported the positions of the secretary effectively without making myself ineffective in dealing with the local entities. . . ."

I came out of this, personally, unscathed. While I was on the wrong side of the issue in the eyes of the local constituency, I did not see any repercussions as time went on. I wasn't held personally responsible for the offensive provisions. I felt pretty good about it. I felt that I supported the positions of the secretary effectively without making myself ineffective in dealing with the local entities.

The hearing itself, when it was finally held, was like a carnival. The local hotel/motel association donated coffee and doughnuts in the vestibule of the theater. They manned a station there throughout the entire day and into the night. Of course outside there wasn't really any parking lot, so people had to park on the streets, but I'm sure there was a considerable amount of alcohol consumed (chuckles) in the process. But people gathered and they stayed. The day was a fairly nice day. They just lounged in the vestibule and outside on the steps and out on the sidewalk and visited and talked and groused and what have you.

In the course of the hearing, the number of people inside the auditorium maybe varied from 100 to 200 or 300–200 maybe, depending on who was talking–if it was somebody that they wanted to hear, you'd see people come in–other than that, they'd go out. But there were always several hundred people around.

Commissioner Higginson's Handling of the Hearing

We took an hour break for lunch and we took an hour-and-a-half break for supper and got into about ten o'clock, nine o'clock maybe, in the evening. The commissioner was adamant that he didn't want the hearing go into a second day–he had some other commitment. It was also obvious that he wasn't going to be able to get through reasonably, and so he asked for a call about nine o'clock as to how many people there still were to testify and he got a fair show of hands and said, "Well, we'll have to resume at eight o'clock tomorrow morning," or nine o'clock, whenever it was. And he said, "But we'll go on tonight until eleven o'clock. So people counted where they were–they were all on a list anyway–where they were in the process, and they had quite a bunch of them left.

"He left me with the deck job then of calling those people who were on that list that had said they still wanted to testify, and I had to call them the next

morning and boy, I'll tell you, I got some cussings there–to call them and tell them that they had adjourned the hearing and went home after the commissioner had said that they would resume in the morning. . . ."

Well, along about eleven o'clock the commissioner asked how many were there remaining, and there were only two or three so he says, "Well, I'll hear you," and then he adjourned the hearing. He left me with the deck job then of calling those people who were on that list that had said they still wanted to testify, and I had to call them the next morning and boy, I'll tell you, I got some cussings there–to call them and tell them that they had adjourned the hearing and went home after the commissioner had said that they would resume in the morning.

". . . in that process, there were I think, ultimately 108 people testified and–what I'm going to say here of course is not literally true–but about 107 of them called the commissioner a Communist. That was their attitude. Yeah, they considered that a Communist plot to take their land . . ."

But in that process, there were I think, ultimately 108 people testified and–what I'm going to say here of course is not literally true–but about 107 of them called the commissioner a Communist. (chuckles) (Storey: That was their attitude, anyway.) That was their attitude. Yeah, they considered that a Communist plot to take their land, (laughs) and that was the nature of it.

Commissioner did real well. He had arrived, he arrived by plane from I think a hearing the day before in Billings, had arrived about two in the morning. I think we started the hearing maybe at nine, and I had arranged to have him picked up at the airport and taken to a hotel when they arrived–they arrived by a Bureau plane. Then we picked him up at the hotel at eight o'clock or something like that, and went down to the hearing room. He stayed attentive, he asked questions, did not show a lack of interest or anything like that through the entire hearing. I thought he did kind of an iron man's job of sitting there from nine o'clock until eleven o'clock listening to mostly babble about . . .

". . . there probably weren't five minutes' worth of constructive comments–they were almost all rhetorical. . . ."

And the comments, there probably weren't five minutes' worth of constructive comments–they were almost all rhetorical. In that sense, I was fairly disappointed in the people [in] ~~with~~ Klamath [Falls] ~~office~~ that they did not really focus on constructive ways of which to improve a set of rules and regulations.

Storey: How would you characterize them? You know, on not being constructive? How would you characterize them? They were, "You shouldn't be doing this," or what?

". . . it was generally along the lines that their property was theirs and the government needed to stay out of it and it was a Communist plot . . . and there should be no acreage limitation, and the government shouldn't be

telling them how many acres they can plant or anything else. It was that general tone. . . ."

Willms: Well, it was generally along the lines that their property was theirs and the government needed to stay out of it and it was a Communist plot to get the government and what they could do with their land and there should be no acreage limitation, and the government shouldn't be telling them how many acres they can plant or anything else. It was that general (Storey: Uh-huh.) tone.

Storey: Were there transcripts prepared?

Willms: Yes. [There] ~~It~~ was a court recorder there.

Storey: And do you know were they part of the commissioner's record or part of the Klamath office's?

Willms: I don't *think* I ever saw the transcripts. I think they were transcribed, they were put in the Washington office. (Storey: Uh-huh.) Washington office, their task, of course, was then to finalize the rules. As it turned out, they never did finalize the rules. Congress stepped in and started working on the Reclamation Reform Act–out of this set of hearings–then it went through the three or four years of negotiation between the various interests and ended up with the Congress passing a new act.

Storey: ~~State~~ Congressman Ullman come by chance?–send staff?

Willms: I believe he was there. I believe he did testify, but I'm not sure. Senator Hatfield–I don't remember whether he personally testified or sent staff either. (Storey: Um-hmm.) At least one of them was there and I'm not sure now which one it was, I think maybe it *was* Congressman Ullman.

During this period of time, Congressman Ullman had a staff member that he *essentially* [dedicated] ~~delegated~~ to this, and he probably called into our office almost daily over a period of a month or two. Ah, that's probably an exaggeration, probably wasn't that often–but I talked to him several times. But he dealt extensively with our staff person who was handling the technical issues, and it was mostly a gathering of information.

Senator Hatfield's staff also had somebody spend a lot of time on it and I talked to that person myself any number of times, not as often–I don't think–as Congressman Ullman, but they were very much involved in the issue. I think in this case, it was a staff member who came out and read a statement (Storey: Uh-huh.) for Senator Hatfield. I don't remember much from Senator Packwood, he may have had a contact, I think he probably did have a contact, but I think between the two of them, they decided that his [Hatfield's] staff would do the primary pursuit on that.

". . . staff people were *very* good to deal with; they were looking for

information, they were looking for ideas. They were very open-minded on the issues, and recognized that there were legitimate issues on both sides of it . . . I have not had very many, if any, unsatisfactory dealings with either a congressman or senator or their staff. . . ."

These staff people were *very* good to deal with; they were looking for information, they were looking for ideas. They were very open-minded on the issues, and recognized that there were legitimate issues on both sides of it, and I think they were genuinely hoping that a satisfactory solution could be worked out. This is sort of a general thing in working with the staff of the U.S. Congress, people found them to be fairly easy to deal with, that they often are dealing from a "mad constituency" reason. You know, they have a mad constituent, but they also seem to be fairly open to the fact that there are two sides to the issue, and that while you have a mad constituent that the other side of the issue, if we yield to the mad constituency without a sound ground, that there's probably a constituency on the other side that gets mad. (Storey: Um-hmm.) I have not had very many, if any, unsatisfactory dealings with either a congressman or senator or their staff.

Storey: So they're not generally trying to apply pressure, *per se*?

Willms: They haven't in my dealings with them. They'd often offer suggestions, but they really do want to get away with everybody being happy. (Storey: Uh-huh.) I'm sure if I think long and hard enough I'd find an exception to that, but generally speaking, my dealings with them have been quite constructive.

Storey: The general tenor, if I can paraphrase this is, they're calling to find out what's going on and why it's going on.

Willms: That's generally the case. Often it ends right there. If you give them a logical reason for doing what you're doing.

Storey: Let's diverge for a little bit. Having been in the government, I've watched the way *other* people respond to congressional and senatorial inquiries, and sometimes people interpret these contacts as being a form of pressure. (Willms: Uh-huh.) Have you ever seen that kind of situation in your career?

Situation Where Congressman Calvin Dooley's Staff Applied Pressure over a Proposed Water Cutoff That Would Have Affected Local Employment

Willms: Yeah. Actually there is one that I think would definitely have to be in that category, and that occurred since I've been in here. It was a staffer from Congressman [Calvin] Dooley's office out of California on an acreage limitation issue, (Storey: Um-hmm.) where we were getting down to the point where we were going to shut water off to a firm that had not filed forms. The firm was a foreign-owned firm and that was the issue, was that. And the situation they had–or at least as I understood it from the congressman's staff–a major employer that was receiving water, if we shut water off, there would be a

major employment problem. They didn't want to see that happen, and I would had to have read their's as applying [a] considerable amount of pressure. I would also have read it as the staff person being awfully close to the operation who wanted the water and getting an awful lot of advice from their legal staff in Washington. (laughs) (Storey: Uh-huh.) But, yes, in that case there's definitely pressure.

"This isn't one I was personally involved in, but out in Kansas, there was a private entity that wanted to build a resort on government land and I understand that Senator Dole applied a considerable amount of pressure and ultimately got Reclamation to agree to an exclusive use that we normally don't agree to. . . ."

This isn't one I was personally involved in, but out in Kansas, there was a private entity that wanted to build a resort on government land and I understand that Senator Dole applied a considerable amount of pressure and ultimately got Reclamation to agree to an exclusive use that we normally don't agree to. (Storey: Uh-huh.) I don't know a great deal of the details of it but I know there was a lot of grumbling around of the staff in the Billings office about ending up having to yield to . . .

Storey: Do you know which project that was?

Willms: I really don't.

Storey: That's interesting, but my question–I guess I didn't make it quite clear–in my experience there have been people who have interpreted congressional contacts to be *pressure*, when from *my* perspective, they *weren't* really pressure. Did you ever see that kind of thing going on, where they responded in a way that they thought was responding to the query? Maybe it's not a good question.

Willms: Yeah, I don't know quite how to answer. I think I understand what you're saying, and I think that anytime you get an inquiry from a congressman, the tendency is to feel that, "Uh-oh, there's somebody out there that's mad, and the congressman is going to put pressure on me." And I think a person may tend to start the conversation a little defensively. Yeah, I think that occurs and how it goes from there I think depends on the individual. Myself, I guess I defended my positions (laughs) because I don't recall tending to change my positions based on a contact from a congressman, and I never–with the exception of the one I just relayed–I don't remember coming away from those conversations feeling bad or that the person I was talking to felt bad. (Storey: Uh-huh.)

Storey: The meeting that you set-up for the regulations in Klamath Falls, how long did that take? What kind of notice did you have for the meeting?

Setting up the Hearing in Klamath Falls

Willms: I think the decision was made about a month before the meeting was held, and

I think that the decision to have the meeting included the date, so I think I didn't deal with the date at all. I think that was negotiated between the congressman's office and the administration. I think it was about a month.

Storey: Did you have anything else you had to do besides . . . well, obviously you were going to local meetings in preparation, you arranged for the auditorium, and you arranged to pick up the commissioner. What else was involved?

Willms: Oh, there was considerable amount of staff work that needed to be done. We had to, of course, arrange for a court reporter. We had to arrange for receiving requests for testimony and putting up a testimony schedule. We had to handle written exhibits when they came in. In the handling of it, I hired a couple of people from a temporary employment service to come in and just help with the paperwork. We had to build a stand for people to stand on and testify. Because it was in an auditorium, we ended up putting the hearing officers on the stage, but it had typical stage access, little steps off behind. So [the] people [who were] testifying, we didn't want to have to go to the stage. And so we put a stand there so that they were not looking up, (Storey: Um-hmm.) we felt better. So we of course had a podium and we had to have a sound system put in there. We did hire security guards and they kept pretty well out of sight and were not uniformed. We hired a local security service.

Oh, such things as the lunch and the dinner. We had scheduled time for lunch, an hour. We arranged in a hotel for lunch to be served to the party that was people on the hearing stand. We had the commissioner on there and two regional directors, and then there were some staff people that came along and we needed to get people fed. [We] had no parking so we had to arrange for transportation. [We] did the same thing for dinner so that we could get people out of the auditorium down to a place we'd get dinner and get them back on time. (Storey: Uh-huh.) That sort of logistics that we did quite a little bit of.

Storey: Okay, you've already touched on the next question: The commissioner did not come alone?

Willms: No, he did not.

Storey: Do you remember who came with him?

The Staff Who Joined Commissioner Higginson at the Hearing in Klamath Falls

Willms: Vern Cooper came with him, who was out of the Washington office that handled this issue on staff. I don't remember whether he had anybody else on the plane. I'm thinking he did, but I'm not sure. The assistant regional director from Boise came because this was portrayed as a Oregon hearing, and he sat at the table. I think there were four people at the hearing table: Vern Cooper, the commissioner, the assistant regional director from Boise, and Bill Martin, the regional director from Sacramento. Those four sat at the hearing

table, as I recall.

Then we had another table up there on the stage with one of our temporary clerical people who marked, categorized exhibits. Then the other clerical person–and they exchanged–was sort of a runner to run testimony up on the stage, to collect it and take it up on the stage type of thing.

Storey: So it's a cast of several.

Willms: Well, we had quite a few people. We kept a desk up at the front where we kept *track* of where we were in the testimony process–we had a testimony list–and we kept *track* there so we could advise people coming in as to who was testifying and what the order of the list was. (Storey: Uh-huh.) We had to keep a couple of people up there doing that.

One of the other things we did, the commissioner called the names of the people to testify. The day before we went through the list–of course there were a lot of people in the office that were familiar with the people, and we put phonetic spelling of quite a few names up there that would not be pronounced as spelled, (Storey: Uh-huh.) and we tried to get phonetic spelling on those to save the commissioner any embarrassment of mispronouncing names. That was one of *our* ideas that we had there–in fact, it was mine. I got to looking through the list and recognized a number of names that I would of expected to be pronounced wrong, which lead us then to go through the *whole* list and there were of course a number of other names in there that I wasn't familiar with. (Storey: Uh-huh.)

Storey: You've mentioned all of the *pre*-hearing publicity that came out in the local newspapers. Do you remember what the newspapers had to say *after* the hearing?

". . . immediately the next day there was a fairly lengthy news report on things that various people said and did and the tone of the hearing and things like that–which I don't have any recollection of right now. Then the issue just died. . . ."

Willms: I think immediately the next day there was a fairly lengthy news report on things that various people said and did and the tone of the hearing and things like that–which I don't have any recollection of right now. Then the issue just died. There was nothing left then but to wait for the new set of rules to come out. And I say it died, I assume that there were letters to the editor and an incidental article or two over the next couple of weeks. But it really did fall off.

Storey: You mentioned that this was an Oregon hearing: were there many people from off the project who came actually?

Willms: Oh, I would guess there were probably twenty, twenty-five from other places. Quite a drive from the next irrigation project, and so they tended to bring a contingent. I think we would have seen a contingent from maybe the Deschutes River areas, Prineville area, things like that, and they'd probably have a carload of

people. There were probably several who came. Now, there was a hearing in Boise, so those from eastern Oregon–for the most part, I think–tended to go to Boise, although there were a scattering of individuals from other parts of the state and there were two or three individuals from California that I think were just trying to hit *all* of the hearings. (Storey: Uh-huh.)

Storey: Did you happen to attend any of the other hearings?

Willms: No.

Storey: A different issue that I'd like to talk about is the districts. Were there districts that stood out among your districts there at the Klamath Project? Were there districts that sort of had "personalities," as it were?

How Districts on the Klamath Projects Differed from One Another

Willms: Oh, most definitely! They all have different personalities. There were really, I would say, four significant districts from *my* perspective. (Storey: Uh-huh.) The two big ones, the Klamath Irrigation District and Tule Lake Irrigation District encompassed over half of the project between the two of them.

Tule Lake Irrigation District

Tule Lake Irrigation District was in California, fairly professionally-run group. Staff had a lot of capabilities, and they sort of took over, did their thing. We had *some* dealings with them, but not a great deal, and they didn't look for us for much of anything.

Klamath Irrigation District

The Klamath Irrigation District was more of a farmer-run district. They had a local counsel, the Tule Lake Irrigation District's counsel was from Sacramento. Since they were in California, they were operating under California laws as far as their district organization was concerned and there probably aren't any attorneys in Tulelake and the Klamath attorneys were mostly Oregon law. (Storey: Yeah.) So that was a big difference in personality there.

Klamath Irrigation District relied on us a great deal for help in many things. We had a *lot* of day-to-day dealings with them. A lot of different issues came up there too. The Klamath Irrigation District was formulated about the time the project was built. At the time it was built, it was right outside Klamath Falls. A lot of drains and ditches right on the edge of the city. The city then expanded, the metro area expanded and a sizeable portion of the district became suburban. I say "sizeable part," maybe ten-fifteen percent, but sizeable in their dealings. That had a lot to do with the complexity of their operations since they were *definitely* a farmer-oriented and run district who had a bunch of land and facilities within the suburban area.

Langell Valley Irrigation District

The other two districts, Langell Valley [Irrigation District] was on the very upstream end of the Lost River, about thirty-, forty miles from Klamath Falls, very poor area economically, the farming area was not very good. They hired a part-time manager, they had lots of *problems* internally, a lot of infighting.

END SIDE 2, TAPE 1. MAY 19, 1994.
BEGIN SIDE 1, TAPE 2. MAY 19, 1994.

Storey: This is Tape 2 of an interview by Brit Storey, with Ray Willms on May the 19th, 1994.

The manager actually got into fist-fights, huh?

Willms: At least one, (Storey: Uh-huh.) and ended up with some charges filed against him, and I think eventually left. I don't know what the ultimate disposition was or even remember what the cause of it was. We didn't have near as much dealings with them either, they tended to–I think just from the distance–to kind of do their own thing.

Klamath Drainage District

Then the fourth district that we dealt with a lot was the Klamath Drainage District which was a district in which Mr. Proctor was not only the attorney but, for all practical purposes, the manager. The district consisted mostly of one–I shouldn't say that–but one landowner probably owned more than half of the land and was a *dominate* landowner in the district. We had regular *adverse* relations with this district.

Klamath Drainage District Application of Varying Water Charges Resulted in a Reclamation Audit and Demand for Restitution

Eventually, we audited the district. We had a situation there where the government owned a fairly sizeable block of land within the district, which the district–under the terms of the contract–was to deliver water to this land to the lessees of this land, at the same rate of which they delivered water to their own constituents. They didn't do that, they charged a little more, and they had a rationale for doing so, and that rationale had involved the use of a payment of money that the government had made *to* them some twenty years, fifteen years before, as a result of an Act of Congress that took these lands and said they would not be homesteaded–prevented the homesteading of the land. Their reasoning for charging more was, is that they were using this money that they had gotten from the government, which they felt was money that the district constituents were entitled to, to in effect, buy down the rate of water to their constituencies. So they were really charging their constituencies the same rate as the government lessees and then buying down, using this pot of money.

Well, I got to sitting at my desk one day and pondering this issue a little bit. This had been going on now for fifteen years or something like that. I started scratching on paper and figured out that 150,000, or whatever it was, would have been long, long gone. So it dawned on me that there was a violation of the contract, and in effect, they had their fingers in our till because if the rates to our lessees were higher, then our revenues we'd get off the lease would come down–assuming that you had an economic enterprise there that the lessee is going to take into consideration what they pay for water and how much they bid for the lease.

So I requested an audit and our finance officer in Sacramento absolutely did not want to do it. However, I persuaded Bill Martin–actually, I didn't have to do a lot of persuasion, because once I explained the situation to him, and I thought that we were being taken to the cleaners by these people, he went ahead and directed the audit.

Well, our auditors went in and looked. What they found was the district didn't *have* this money. The money was, who knows where it had gone. They didn't have any books. Almost no records, and potential for all sorts of other interactions that we had with them where they were essentially taking the United States to the cleaners. Some of it [was] our fault because we just made stupid business arrangements with them.

The auditors decided that because of the absence of the records, the question of this block of money that had been paid by the Kuchel Act [1964]–which was the name of the Act that had authorized this payment–that they really couldn't tell how much the district had their fingers in the till. They agreed that they did, but they couldn't tell how much. So they decided to write off all of that. I had real heartburn with that because my sense is, is they had an obligation to keep records and that we should have assumed a fairly worst-case situation and let them demonstrate from their records that wasn't the case.

But in any case, we did go and make a demand on them to pay restitution for a reconstructed overcharge, and have the restitution paid to us, rather than the lessees, because of the fact that we argued that the ultimate effect was on the United States.

I left shortly after that. I did have one very interesting discussion though. Once we sent the audit report in, George Proctor of course immediately protested it. This was one of the issues he took up to Dan Beard. As far as I know, he got nowhere with that. I was never really privy to what their discussions were. We continued to press for them to make the payment of the restitution, and George continued to protest here and there and delay the process.

Apparently the Audit Report Never Went to the Members of the Board of the District from Their Attorney

They had three members of their board, and all three of them came in to talk

to me about some unrelated issue and we had a fairly lengthy discussion over this other issue. It was a satisfying discussion. We got all done, one board member–in fact it was the same board member that had apologized to me about getting the free water–asked why we were on their back so much on this audit and why we wouldn't leave them alone. I thought the issue was so straightforward that I thought it was a strange question. I pondered it for a minute, and I finally asked if he had read the audit report. He said, "What audit report? Is there a report on that audit?" And I said, "Most certainly there's a report on that audit." So this fellow, who happened to be–I think was president of the board–looked around [at] the other two board members, "Have you seen that audit report?" Both of them shook their head.

So the writing was fairly clear on the wall that George Proctor had never given them the audit report. I think at least in the case of this president that he was substantially maybe more ethical than the attorney was, and I think that maybe they had been shielded from quite a few facts here. I then said, "Would you *like* to see the audit report?" "Well, sure." So I quickly went and got a copy out of the files and I made a copy for all three of them and I gave all three of them a copy of the audit report, and then I just left the conference room–our thing was over. They stayed in the conference room for about an hour. You could hear "buzz, buzz, buzz" and what have you. A little bit later one of them stuck their head in and thanked me for the use of the conference room and copies of the report and left. I left the project about ten days later. I know darn well that doggone attorney never told them what the issue was, and that probably the attorney was the one who had set-up the process and defended the process.

Storey: (chuckles) Well, you've touched on another issue that I'm very interested in exploring and that's relations between project managers and their water users. Right now, with the reorganization, there are a lot of people who are concerned about, as it were, "letting the fox loose in the chicken coop" by giving so much power to area managers who are *often* seen as being more sympathetic to districts than is appropriate or necessary. What's your perspective from when you were on the Klamath Project? And then I'd like to discuss your *general* perspective on the whole issue.

". . . my perspective on the Klamath Project *is . . .* I always viewed my role as a project manager as working for the United States government, and that my role was to protect the interest of the people of the United States. . . . the interest of the United States however, includes providing water to the users . . . We were *there* to provide them irrigation service. But, in return, they were to pay us a certain amount for that service, and I expected them to do that. . . . My general perspective was, is that we heavily subsidized the irrigation interests–the general public did . . ."

Willms: Well, I think, of course, my perspective on the Klamath Project *is* from my perspective. (Storey: Yeah.) And I always viewed my role as a project manager as working for the United States government, and that my role was to protect the interest of the people of the United States. Now, with that, the

interest of the United States however, includes providing water to the users and hopefully an economically-sound-based service. So *my* view was that we needed to make things–I don't know if I want to say "easy" on the water users–but we didn't want to be harsh with them. We were *there* to provide them irrigation service. But, in return, they were to pay us a certain amount for that service, and I expected them to do that. There were other interests connected with it that we had a lot of land. My general perspective was, is that we heavily subsidized the irrigation interests–the general public did–and that land ought to be available to the general public to use.

"We had, of course, a lot of laws and things like that, that we needed to follow. We need to follow NEPA and the Endangered Species Act and things like that. I think that was the obligation of a project manager to see that we followed those laws and that the lands were administered consistent with our laws and goals . . ."

We had, of course, a lot of laws and things like that, that we needed to follow. We need to follow NEPA [National Environmental Policy Act] and the Endangered Species Act and things like that. I think that was the obligation of a project manager to see that we followed those laws and that the lands were administered consistent with our laws and goals and things like that.

"My perspective was generally to try and fully protect the interest of the United States, but not to be obstructionist with respect to our users. . . ."

My perspective was generally to try and fully protect the interest of the United States, but not to be obstructionist with respect to our users.

There were areas where we aligned ourselves pretty strongly with the users. Other areas where we did not. I think it depend[ed] on the situation.

"One situation we had at Klamath Falls that we got aligned strongly with the users was an urban drainage issue where the city and the county had tended to–over the years–dump their drainwater into our canals and drains. . . . The city and the county began looking at our facilities as them having entitlement to use our facilities to dispose of their water."

One situation we had at Klamath Falls that we got aligned strongly with the users was an urban drainage issue where the city and the county had tended to–over the years–dump their drainwater into our canals and drains. As the city and county expanded, that got to be a problem. The city and the county began looking at our facilities as them having *entitlement* to use our facilities to dispose of their water.

Storey: Why was it a problem?

Concerns about Overtopping Canals

Willms: A couple of areas: We had a canal that circled around the high side of town, through town, but on the high side. *All* of the developed land above town, the street drains and everything, drained into the canal. We found that when the canal was running full, it was a big canal, an unlined earth embankment canal, that in a heavy thunderstorm, it was conceivable that you could dump enough water in that canal to overtop it and cause canal failure. In that case, the canal may run right down through Main Street. It was a *public safety issue* there, a plain public safety issue in the case of the canal.

Drains Weren't Designed to Carry the Amount of Water Being Dumped into Them During Storm Events

On the other part of it was dumping water in the drains. The drains were agricultural open drains and they are basically built to pick up subterranean seepage. They're very deep and very narrow and they aren't made to carry much flow; little culverts where they go under roads and things like this. Once a lot of surface waters run into those, then during rainstorms you get high flows, the channel and culverts won't carry it. You usually end up with a certain amount of debris in those drains, particularly in an urban area where people discard whatever in there. The culverts–many of them maybe being only eighteen-inch culverts–plug up. Drains fill-up, they overflow, they flood people's back yards, and maintenance becomes high.

"The view of the water users was, is that they were *agreeable* to allow the county to use the drains to drain, but they wanted the county to come in and modify the culverts and to either do the maintenance or pay for the maintenance to maintain them as a floodway drain rather than an agricultural drain. . . ."

The view of the water users was, is that they were *agreeable* to allow the county to use the drains to drain, but they wanted the county to come in and modify the culverts and to either do the maintenance or pay for the maintenance to maintain them as a floodway drain rather than an agricultural drain.

We had an *enormous* amount of conflict over this issue. The Bureau took on the point, particularly on the canal where it was a public safety issue, but also to a degree on the drains, and had many acrimonious meetings with both the city council, and the city government and the county commissioners on that issue. (Storey: Uh-huh.) It got to be a very involved issue. But that was one where we were definitely lined-up with the water users.

Storey: So contamination was not an issue?

Water Contamination from Water Dumped into Canals and Drains Was Not an Issue on the Klamath Project, but it Was on the Central Valley Project

Willms: It was not for us at that time, (Willms: Okay.) in that setting. Now, we had in the Central Valley Project, the contamination *was* an issue. But this water was essentially agricultural use water, none of it was used for municipal purposes, and I don't think we ever really ran into any issues on contamination. Ultimately, if it gets big enough, I'm *sure* you would be because that water is not good.

Storey: Were there some major personalities besides Mr. Proctor that stood out amongst your districts and the different constituencies you had to work with while you were at Klamath?

Willms: Oh, I think the manager of the Tule Lake Irrigation District was a substantial personality. There were any number of interesting personalities; people on the board of Klamath Irrigation District, a couple of those were personalities. Certainly the city manager of Klamath Falls. (Storey: Who were these people?) You know, I don't remember any of the names right now, they'd probably come to me in time. I can see the faces. Well, the manager of the Tule Lake Irrigation District's name was . . . . Oh gosh, what was it? I want to say Faulkner but that's not right. Fonner [phonetic spelling], Fred Fonner.

Tule Lake National Wildlife Refuge and Lower Klamath Lake National Wildlife Refuge

Also the manager of the Tule Lake and Lower Klamath Lake refuges was a personality that I had to deal with, a fellow by the name of Bob Fields.

Storey: That was the Fish and Wildlife Service? (Willms: Fish and Wildlife manager.) What kinds of relationships did we have with them? (Willms: Excellent, excellent.) And what were they about?

Willms: The Refuge overlaid the project and most of the refuge facilities were facilities that were either drained by the project, built by the project, and of course, the project was there long before the refuge.

"We had 30,000 acres of this agricultural land that we leased that was within the refuge and the Kuchel Act . . . put it into the refuge, stipulated that it would be lands used for the primary purposes of wildlife . . . but would be continued to be leased and farmed in accordance with past practices. . . ."

We had 30,000 acres of this agricultural land that we leased that was within the refuge and the Kuchel Act [1964], that I referred to before, set aside this land, withdrew it from homesteading, put it into the refuge, stipulated that it would be lands used for the primary purposes of wildlife, I believe, or waterfowl, I'm not sure [the] exact wording on it, but would be continued to be leased and farmed in accordance with past practices. It was kind of a weasel-worded phrase in there which lead to an awful lot of interpretation.

How the Leased Lands Were Managed in Cooperation with the Fish and

Wildlife Service

We had the immediate jurisdiction of the lands, we did the leasing, but we did it in cooperation with the Fish and Wildlife [Service] and had *extensive* dealings with them. Since they were within the refuge, we would lease them during the summer for cropping–well, we'd lease it year round–but the lease provided that they had to have everything off of the land at a certain time, and that at that time it was opened for hunters to hunt on. At that point, the lessee had no more jurisdiction over the land until the next spring when it became time to grow (Storey: Uh-huh.) on it. We had carefully restricted what had to be grown. We approved the crops on every plot of land, restricted it to no more than one-third row crop, the rest of it had to be grains. Policed it.

Storey: Why did we do that?

Willms: Well, that was part of the making it fit the wildlife. The idea that leaving two-thirds of the land in grains and telling them they couldn't plow the stubble under until spring, and governing their cultural practices, we were able to make it much more valuable as a wildlife resource. Also, the [one]-third row crop is not bad from a crop rotation point [of view] anyway. Then we made sure they *did* rotate crops. The leases normally were one-year leases with four years of renewal. So a person had them for five years.

Also, the leasing program, when it had started, before the Kuchel Act had been set-up to supplement the homesteads, the homesteads were pretty small and I think someplace along the line somebody had concluded that the farm family on these homesteads maybe needed some supplemental land to farm.

". . . the leasing was restricted to farmers on the project, basically. One lease per family type of a thing to try and spread it around. . . ."

So the leasing was restricted to farmers on the project, basically. One lease per family type of a thing (Storey: Uh-huh.) to try and spread it around.

"We had a situation there where–this was before I got there–that fraud on this leasing became fairly widespread and common knowledge . . ."

We had a situation there where–this was before I got there–that fraud on this leasing became fairly widespread and common knowledge that while the rules said only one lease per family, there would be leases to the dogs and the chickens and things like this. They also had to be residents of the area, live within fifty miles, I think is what the rules actually said. All sorts of false addresses and stuff like that. Also, they were supposed to be actually farmed by the person leasing it, and we had all sorts of violations of that.

"Eventually, there were complaints by, I assume, those who didn't get the leases since there were more people that wanted leases than there were lease parcels to lease out. . . ."

Eventually, there were complaints by, I assume, those who didn't get the leases since there were more people that wanted leases than there were lease parcels to lease out. (Storey: Uh-huh.)

"It led to an investigation by the Justice Department, FBI came in, and the U.S. Attorney came in. . . . there was widespread fraud . . . they were going to decline to prosecute, but recommended that we clean up the act. . . ."

It led to an investigation by the Justice Department, FBI [Federal Bureau of Investigation] came in, and the U.S. Attorney came in. What they found in their report was that there was widespread fraud but that Reclamation had known about this, it was common knowledge in the valley, we had turned our back and so they were going to decline to prosecute, but recommended that we clean up the act.

"I came up there about two or three years after this had happened and we really did clean up the act. . . ."

I came up there about two or three years after this had happened and we really did clean up the act. And this is where the process of looking at each one of these leases; each lessee–and there were a couple hundred of them–came into our office, presented a cropping plan, we interviewed them, they gave us a statement of their costs, how much they would put into it. We did that mostly to try and sort out those that were fronting for somebody and really weren't going to be farming it. We then did on-site checks of each lease. They usually did aerial photographs, and used a planimeter to make sure that they only planted a third and not more than a third into row crops. We did a post-interview with each one of them and then we picked out select ones for an in-depth audit of their books.

". . . I guess, a year before I went up there–we did plow under part of a potato field because a person planted about forty percent in potatoes . . . That cured that from happening again because potatoes are very expensive to put in. He plowed thousands of dollars under . . ."

During the three years I was at Klamath–actually this occurred, I guess, a year before I went up there–we did plow under part of a potato field because a person planted about forty percent in potatoes and we got him out there with his plow and stood there and watched him plow up enough to get it back down to a third. (Storey: Uh-huh.) That cured that from happening again because potatoes are very expensive to put in. He plowed thousands of dollars under–shed tears that you couldn't believe.

During the time I was there, we withdrew the lease from at least two people right in the middle of the summer. One of them because he was a fellow off of the street that somebody had asked to bid on it and was not the

lessee, the true beneficiary of the lease–he was just the name on it. We picked that up in one of our audits, so we terminated his lease at mid-summer. Then the person who had asked him to front for him, then we went and got him. (Storey: Uh-huh.) And each one of those people come in with their attorneys and we had no legal support on this, just didn't get anything out of the Solicitor's Office, so I became fairly good at sitting down with attorneys and staring them down. We did terminate these leases and the people did not file any suit or anything. We sustained those positions.

Storey: On these rental lands, during the drought, in '76 and '77, were there any water problems that came up where you were trying to deal with the wildlife issues?

Willms: Not in that area. We of course had already leased the lands when the drought came up. The water was all delivered under district contracts so we considered those [as] ~~of~~ having a contract and didn't make any attempt to *not* provide water and they all had supply water. (Storey: Uh-huh.) So that didn't really become an issue. It *could* have become an issue, and could now. I think if you were delivering water to those lands at the expense of an in-stream flow, I would guess you would struggle with that issue. (Storey: Um-hmm.)

Storey: I believe during the last interview you mentioned your participation in the Departmental Manager's Development Program. Was that while you were at Klamath?

Willms: No, I *didn't* participate in that.

Storey: Oh, you didn't do that? I wonder why I wrote this down then?

Willms: I think I had mentioned that I was selected over a person who had participated in it.

Storey: Oh, maybe that's it.

Willms: And I think he had participated before but I'm not sure. (Storey: Uh-huh.)

Storey: Well, what caused you to move on from the Klamath Project finally?

Moved from the Klamath Project to Become Chief of the Central Valley Project Operations Coordinating Office

Willms: Well, the Klamath Project was a GS-13–GM-13 at the time–and after I had been there for three years I had felt that I had done probably as much for the project as what I was going to get done, and that it was time to move on, that entered into it somewhat. Also, I had met and married my second wife while I was there and Klamath was a little bit of a redneck community, and I think we were both feeling some desire to get into something a little less conservative. We were both fairly well involved in the community. But these all just kind of a little background forces there. Then a job came up as chief of the Central

Valley Operations Coordinating Office. And a fellow up there who was . . .

END SIDE 1, TAPE 2. MAY 19, 1994.
BEGIN SIDE 2, TAPE 2. MAY 19, 1994.

Storey: So you had thought about applying for this position.

Willms: So we decided that that would be a reasonable move and career advancement, it was a GM-14 job. So I applied for it and *was* selected.

Storey: And that was back in Sacramento then?

Willms: That was back in Sacramento.

Storey: Actually housed in the regional office at that time?

Willms: Yes, it was. It was housed in the regional office.

Storey: So what kind of change did that mean in terms of your career then?

"It brought me into a regional setting where I had more contact with *that* level of management. Now, when I was in the regional office before, I really was not in the management ranks. Now the position there was essentially equivalent to a division chief position. . . . dealing with a regional office was different than a project office. . . . project manager is sort of the king of the hill . . . regional office, you're dealing more in a peer situation with a lot of people with parallel authorities. . . . your whole mode of operation was different. I would have to classify it as a growing experience. It was not a particularly rewarding experience. I didn't particularly like the regional office, at least in that role, I did like it before. . . ."

Willms: Well, of course it was a step up, at least grade-wise. It brought me into a regional setting where I had more contact with *that* level of management. Now, when I was in the regional office before, I really was not in the management ranks. Now the position there was essentially equivalent to a division chief position. So that was a change. Certainly dealing with a regional office was different than a project office. You know, in a project office, project manager is sort of the king of the hill, a long ways to the boss. You have the full gamut of management, administration, the whole thing. Where you get into a regional office, you're dealing more in a peer situation with a lot of people with parallel authorities. The regional office–at least Sacramento regional office, was in a fairly strong position relative to the field offices, but you still had a very much a shared responsibility with the field offices. So your whole mode of operation was different. I would have to classify it as a growing experience. It was not a particularly rewarding experience. I didn't particularly like the regional office, at least in that role, I did like it before.

Storey: And let's see, if I'm recalling correctly, at Klamath you had a staff of about twenty?

Willms: About twenty.

Storey: What was it when you moved down to this position?

Willms: I think it was around thirty. (Storey: Uh-huh.) A little larger, not a great deal larger.

Storey: What did this office do?

Three Major Functions of the Central Valley Project Operations Coordinating Office

Willms: We had three primary functions: We did the water scheduling and directed the movement of the water around the Central Valley Project, which, in itself, was the biggest part of the reason for the office and a fairly responsible important role. We did both the long-range planning and the direction of short-term movement of water for everything except the canals that were solely for irrigation purposes and those we didn't direct the movement of the water through the canals.

Then we had an electric operations piece there where we actually operated the powerplants from Sacramento through a computer system, had direct control over the powerplants. We did do the power scheduling, working with PG&E [Pacific Gas and Electric] basically, for timing of generation.

The third piece we had is we were the keeper of the computer system for the operation of the power facilities. We had a fairly sizeable staff, about eight, nine people, some fairly high-level computer programmers that worked on that system. It was still–to a degree–in the development or installation stage. It was operational but not operational at all facilities. We were doing a lot of programming there. Those were the three functions that we had.

Storey: The control and flow water pumps, that's very complicated in the Central Valley Project?

Willms: It's quite complicated, yes.

Storey: And how was it done at that time? Was it through a computerized system that controlled this, or was it done by experience and know-how, or what?

Monthly Ran a Simulation Model for Operation of the Central Valley Project

Willms: Well, it was a little bit of everything there. We had a simulation model that's run on a monthly time-step computerized model that was our primary tool for scheduling the movement of water from a planning perspective. You know,

we would run that model, and through the information that was fed back and making . . . And there was a lot of judgement went into that since it was a simulation model, you put in a proposed operation and then it went through, and it simulated how all the reservoirs would react and what the flows would be at various points and things like that. Then a person would have to look at that and see if it was acceptable. If it was not acceptable, he would judge what changes to make and run it again. So it's kind of an interactive–the model really doing all of the computations, but doing it based on a person's judgement. (Storey: Uh-huh.)

That gave us the schedule by month. Then inside that, most of the day-to-day decisions were done usually using fairly manual methods of computation, following, looking at the monthly schedule and a lot of judgements, a certain amount of just hand-run operational models where a person sits down and just works out something on paper type of thing. The actual changes were all done usually through the power system. You give the power operators a daily schedule of how much water to move through a particular powerplant and they would do it through the computer system that runs the powerplants. A lot of judgement in those kind of issues.

Working on Prediction of Water Supply with the National Weather Service

Flood control things, we had of course a lot of telemetered data that would come in. We did have a agreement with the state and the National Weather Service to have a joint flood center, which we had a meteorologist that worked with these people and jointly we developed a series of models that would predict the amount of water that would run down a river from a certain type of a rainstorm with a certain antecedent condition. We used that a great deal during floods. Now, that was all a short-time window thing, something you ran out for seventy-two hours. But this meteorologist we'd have would run those models and come back and give us a prediction of the amount of flow we could expect at a certain time of the day if certain amount of rainfall occurs. (Storey: Uh-huh.) Those were, I think, *very* useful and something sort of on the leading edge of predictions. The Weather Service would take a storm and predict the amount of water that would fall in the next six hours, in the next twelve hours, and then we could put that into this model thing.

"They weren't real accurate but they were *extremely* useful. . . ."

They weren't real accurate but they were *extremely* useful. (Storey: Um-hmm.)

Storey: Well, I would like to continue but this room is scheduled for a meeting in a few minutes.

Willms: That's what I understand.

Storey: Unfortunately I need a little time to pack up. So let me ask you if this interview and both the cassettes and the transcripts *from* this interview can be

used by researchers from inside and from outside Reclamation?

Willms: Yes, it may.

Storey: Good, thank you.

END SIDE 2, TAPE 2. MAY 19, 1994.
BEGIN SIDE 1, TAPE 1. JUNE 3, 1994.

Storey: This is Brit Allan Storey, Senior historian of the Bureau of Reclamation, interviewing Ray Willms in his offices on the 14th Floor of Building 67 in the Denver Federal Center, at about eight o'clock in the morning on June the 3rd, 1994. This is Tape 1.

Well, during our last interview, Mr. Willms, we had gotten to your move back to the Central Valley Operations Project Office, and I was wondering if you could tell me about the kinds of things that you dealt with in dealing with drought in the Central Valley Project while you were there.

". . . we had three *extremely* wet years, and one that was in the rather dry category . . . It *did* cause us some operational problems. . . ."

Willms: (chuckles) That's a pretty short answer–we didn't have any drought when I was there! (Storey: Okay.) Actually, we had three *extremely* wet years, and one that was in the rather dry category, but it was a single year. It *did* cause us some operational problems.

Storey: Did the very wet years also cause operational problems?

"In the very wet years we had a number of periods of flooding. And of course we operated a good share of the major reservoirs that were flood control in the Central Valley. So those periods of time during the winter rains we had floods, we really worked pretty hard at operations. . . ."

Willms: Just difficult operations. In the very wet years we had a number of periods of flooding. And of course we operated a good share of the major reservoirs that were flood control in the Central Valley. So those periods of time during the winter rains we had floods, we really worked pretty hard at operations.

"Flood control operations there are to a degree a crap shoot anyway. A lot of it's a matter of trying to outguess the weather. . . ."

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"The storm patterns that cause the floods, they're all rainstorms, all in the winter, and they tend to come off of the coast, out of the Pacific Northwest, or

north Pacific, actually, and they come in in waves, tend to be about eighteen hours apart . . ."

The storm patterns that cause the floods, they're all rainstorms, all in the winter, and they tend to come off of the coast, out of the Pacific Northwest, or north Pacific, actually, and they come in in waves, tend to be about eighteen hours apart, that you have these fronts come through.

". . . we put a great deal of effort in trying to predict how much rain would come out of these various fronts as they come through, so that we could position operations to handle the next front, and still be reasonably positioned to handle what may follow. . . ."

The storms are connected with them, and we put a great deal of effort in trying to predict how much rain would come out of these various fronts as they come through, so that we could position operations to handle the next front, and still be reasonably positioned to handle what may follow. And often you could look at the satellite pictures, you'd just see a series of these fronts, lasting for several days. You may see five or six of them in sequence. The tendency in the operation of those reservoirs, that rain floods had very high peak flows–volumes usually not too high, because they don't last very long. What the operations need to do, usually is to curtail the flows coming out of the dams at the times when the side inflows below the dams are high. That takes the peaks off the rivers. And then as soon as the side inflows recede, is to try and come up with releases from the reservoirs to evacuate space, and make space for the next storm. And damage you see in a flood plan, they have usually a designated channel capacity, of which, according to the plan, damage occurs if you go above that, but in fact, damage usually occurs *way* below that. So while that amount of damage is acceptable from a big picture, it's better to take that damage at all the peaks where the flow is less than the channel capacity, than to go *over* the channel capacity and start causing major damages. The individuals who are damaged on those lower levels of flood flows–don't see it that [way.] ~~much.~~ So you have a lot of tension in there, to try to not go any higher than you have to, but as you do that, you run the risk of higher releases in subsequent storms, because you haven't evacuated the reservoir. The decision time, the time you have to make decisions, is fairly short: sometimes it's an hour, sometimes it's almost minutes, when you start getting information from various remote rain gauging stations and things like that. And we tended to empower our journeymen operators to make those decisions. And typically, they're not reviewed. The supervisor over the group, the person who was the manager of the water operations, carried on regular strategy meetings with his staff, and they planned the strategy to that sense. It has a supervisory review, and of course I was *his* boss, and he and I also carried on status discussions and things like that. But the real decisions were made generally by GS-11 or 12 engineers, on just a very short time.

Storey: What kind of engineers are we talking about here?

Willms: Oh, I think most of them probably by education were civil engineers, maybe some hydraulic engineers. Their classification was hydraulic engineer.

Storey: What other kinds of expertise would we have been using normally.

Willms: We had a meteorologist that worked with the National Weather Service and the state in a cooperative arrangement that was where they developed a set of models, based upon the precipitation that *had* fallen, the antecedent conditions, brought in from remote stations that were in effect real time data sources that would come automatically into this computer. And then using the storm predictions that the Weather Service [provided] ~~predicted~~ in a quantity sense, where they were actually predicting a quantity of rain at various sites. And they put that information into the model, and that model would then predict what the flows into the reservoirs would be over the next, oh, twenty-four to forty-eight hours, on a time schedule. It would have a regular hydrologic curve of inflow versus time.

". . . we found those things to be very, very useful–their accuracy, if they were within fifty percent, they were very useful, much better than what a person could assimilate from this sort of data and make judgements. And that became one of our major tools. . . ."

And we found those things to be very, very useful–their accuracy, if they were within fifty percent, they were very useful, much better than what a person could assimilate [from] this sort of data and make judgements. And that became one of our major tools. Other than that, our major tool was just the amount of rainfall, the flow of the rivers, the rate of rise in the reservoirs and that sort of stuff.

Storey: And the experience of the people working there.

Willms: And the experience of the people working in it.

Storey: Well, were these wet years typical or unusual? Or how would you classify them?

1980, 1982, and 1983 Were Wet Years in the Central Valley

Willms: They were unusual. I think that all three of these, [‘80,] ‘82, and ‘83 were probably in the top twenty percentile of the historical runoff for the year.

Storey: So ‘81 was the year that it was a little off?

1981 Was a Dry Year in the Central Valley

Willms: Eighty-one [‘81] was on the other end of the scale. I’m thinking that it maybe was the fourth or fifth, at the time, fourth or fifth driest year we had had. So it was generally a drought year, but droughts in the Central Valley

Project don't manifest themselves in single years. So a very dry year, following a very wet year, and followed by a very wet year, did not cause drought. We did have one incident there, though, that from my experience was very significant. When we went into that drought year, we didn't, in my opinion, set up our operation very well. And the *piece* of our operation that was not well planned or well thought out–I think this being every year–was what the demands were. We tended to use average demands. And we later learned that average demands aren't very good, demands vary widely, and they vary widely depending on the weather, including whether it's been a wet year or a dry year.

". . . almost all the precipitation falls in the winter . . . if you've had a wet year, there is a lot more supplemental water available from runoff off of the minor streams, and this tends to relieve the demands on the project, because many of the irrigators have other supplies of water and the Central Valley Project provided a supplemental supply, and what they need to supplement is then smaller. . . ."

Now, in California, almost all the precipitation falls in the winter, so summers tend to be characteristically the same as far as precipitation is concerned, but it can vary quite a little bit in temperature. But if you've had a wet year, there is a lot more supplemental water available from runoff off of the minor streams, and this tends to relieve the demands on the project, because many of the irrigators have other supplies of water and the Central Valley Project provided a supplemental supply, and what they need to supplement is then smaller.

". . . we didn't plan the demands very well, and the demands far exceeded what our average demand was. We didn't alter operation models. The operation of the rivers had a lot of constraints on them that made them not as flexible as would be desirable. We always tried to get all the water through the powerplants, for instance. . . ."

Well, we didn't plan the demands very well, and the demands far exceeded what our average demand was. We didn't alter operation models. The operation of the rivers had a lot of constraints on them that made them not as flexible as would be desirable. We always tried to get all the water through the powerplants, for instance. And so that limited what we could bring out of Shasta without spilling water out around the plants and losing that energy. Also, the Sacramento River tended to have seepage problems into the adjacent lands if we ran too much water down the river too long. So we ended up somewhat constrained.

"Folsom Reservoir . . . provided a . . . source of water . . . very far downstream. That had two advantages: one of them, the maintenance of the salinity conditions in the Delta . . . you could *react* to changed conditions much better out of Folsom. Then, of course, by releasing water out of Folsom, we didn't load up the river and we could keep it through the

powerplant . . ."

Folsom Reservoir, located near Sacramento, provided a down[stream] source of water to add to the Sacramento River system, very far downstream. That had two advantages: one of them, the maintenance of the salinity conditions in the Delta were both a requirement of law and a requirement of good operations. You could get water into the Delta from Folsom in a day's time, where it took several days to get water from Shasta down there. So you could *react* to changed conditions much better out of Folsom. Then, of course, by releasing water out of Folsom, we didn't load up the river and we could keep it through the powerplant, where we'd probably exceeded powerplant capacity if we tried to meet all of our demands out of Shasta.

"This particular year, we used too much water out of Folsom too early, demands were high. We could have released more water out of Shasta earlier in the year and saved water in Folsom. We didn't do that, and we drew Folsom down too much, and then we got late into the summer, and we didn't have enough water left in Folsom without drawing it down to where we would dry up the marinas before Labor Day, which also gets to be a serious public relations issue. As an alternative to that, we drew much more water than normal out of San Luis Reservoir . . ."

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As an alternative to that, we drew much more water than normal out of San Luis Reservoir–San Luis Reservoir being on the San Joaquin Valley [west] side–you might say on the canal an off-stream reservoir on the [Delta-Mendota] canal that delivers water to the southern part of the San Joaquin Valley, and typically we would have tried to meet as much of that demand as we could by pumping from the Delta down. This year, we started to release water out of San Luis at a higher rate than normal.

"We used *all* of our supply of water in San Luis and borrowed water from the state. All that would have worked out fine, except in the process we took San Luis from a virtually full reservoir to a virtually empty reservoir. And on the upstream side of San Luis Dam we had a slide [September 1981]–a slide no doubt triggered by the rather rapid and long, constant drawdown of the reservoir. . . ."

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on the upstream side of San Luis Dam we had a slide–a slide no doubt triggered by the rather rapid and long, constant drawdown of the reservoir. Now I think that was a structural defect, because the reservoir was designed to be drawn down that way.

". . . had we not taxed that reservoir so hard, we probably wouldn't have had that slide. . . ."

But had we not taxed that reservoir so hard, we probably wouldn't have had that slide. Well, the slide occurred in September of '81, and it caused major, major problems. The reservoir had to be repaired, had to be repaired before we refilled it.

"The configuration of the project was such that during months of June and July, we *had* to supply water out of San Luis Reservoir to meet our demands, and we had to supply a lot of water out of the reservoir. So if we didn't have San Luis to operate the next year, with water in it, we would have had to curtail demands to our users during certain periods of time down to just a pittance . . ."

The configuration of the project was such that during months of June and July, we *had* to supply water out of San Luis Reservoir to meet our demands, and we had to supply a lot of water out of the reservoir. So if we didn't have San Luis to operate the next year, with water in it, we would have had to curtail demands to our users during certain periods of time down to just a pittance, as I recall, the possibilities of them getting maybe as little as twenty to thirty percent of their supply during certain months of the year, during prime growing season months.

". . . the reservoir is actually owned jointly by the state and Reclamation, but Reclamation built it. And when it came down to major structural things, we dealt with it. And we did, as an agency, manage to mobilize, do the investigations on that slide, do the engineering on the repair . . . it was not a minor job . . ."

So that, I think, put a real challenge on Reclamation, the reservoir is actually owned jointly by the state and Reclamation, but Reclamation built it. And when it came down to major structural things, we dealt with it. And we did, as an agency, manage to mobilize, do the investigations on that slide, do the engineering on the repair–and we're talking, it seems to me the repair contract was around $5 million, it was not a minor job–prepare a specification, negotiate a contract, and have a contract awarded by Christmas, which would have meant ninety days, some sort of a record for Reclamation to in ninety days go from an out-of-the-blue slide, which you didn't expect, to having a contract awarded. A lot of effort went into that, a lot of innovation in I think both in design and the contracting process.

"We negotiated with the contractor incentives to get things done by a certain

period of time. And the idea was to get the reservoir repaired to a point where we could partially fill water in the spring so we would have *some* water through the summer. And *some* water made a world of difference, because the legal conditions on our pumping out of the Delta kept us from pumping full capacity in June . . ."

We negotiated with the contractor incentives to get things done by a certain period of time. And the idea was to get the reservoir repaired to a point where we could partially fill water in the spring so we would have *some* water through the summer. And *some* water made a world of difference, because the legal conditions on our pumping out of the Delta kept us from pumping full capacity in June, which meant that most of the water we pumped in June went to a few specified users, and the rest of the users couldn't really get much, if any, water out of the pumping scheme, so they had to get their water from San Luis. If we could meet the month of June demands, we could increase that supply from maybe twenty-, thirty percent up to sixty-some percent, with not a whole lot of water. It was just being able to meet that [demand] during the critical period.

Working with the State and Metropolitan Water District to Supplement Available Water During Repair of San Luis Dam

In that process, as we looked at ways to supplement the water supply, we looked at the state operations, and the state was pumping water to the L.A. Basin through the same facilities, also using San Luis Reservoir. And the L.A. Basin, of course, had another supply of water in the Colorado River.

". . . the state and Reclamation entered into this arrangement with the Metropolitan Water District of Southern California, who was the wholesaler down there, and San Diego Power and Light, and Southern Cal Edison, PG&E [Pacific Gas and Electric], to not pump the water from the Central Valley to L.A., but instead to use water from Colorado River. And it was a pretty complex arrangement. . . ."

So we entered into–and this was really quite a negotiating experience–the state and Reclamation entered into this arrangement with the Metropolitan Water District of Southern California, who was the wholesaler down there, and San Diego Power and Light, and Southern Cal Edison, PG&E [Pacific Gas and Electric], to not pump the water from the Central Valley to L.A., but instead to use water from Colorado River. And it was a pretty complex arrangement. It cost considerably more to treat the water coming from the Colorado River–the Central Valley water was quite a little better quality. So Metropolitan Water District had a significant expense there. Also, they would have to pump that water from the Colorado River side, but in lieu of that, we wouldn't pump the water over the Tehachapis. The power agreements of the State Water Project, which were separate, completely separate from the Colorado River supply system, the power contracts were very favorable to the state, and *un*favorable to the power companies, due to

the change in ~~conditions of~~ the [price of] oil. ~~If~~ The contracts had been negotiated before the '74 oil embargo, and so you had a whole change in the energy market. So the power companies were willing to supply the power for pumping the water from the Colorado River side, at no cost in exchange just for not having to provide the power at their contract rate to pump it over the Tehachapis. But we had to have their agreement to do that. And of course you had to have the agreement with Metropolitan Water District to take the [lower] ~~higher~~ quality water. We had to pay Metropolitan for the additional . . .

Storey: You mean they had to agree to take the lower quality water, Colorado?

Willms: Yes, the poorer quality water. And we had to pay for the treatment costs. And then this all revolved around the State Project, and the Feds. of course wanted part of that water. We could offer *them* a benefit by offering that these favorable power contracts expired within a couple of years, and they would then end up having to renegotiate these contracts at market rates. We, of course, had a much better *power* supply situation, because we had our own powerplants. So we could compensate the state by offering to replace this water for them after the power rate changed, which would allow them then to [pump more] ~~replace the~~ water before the rate changed, at their favorable rates. Then they would provide and pump their own water at favorable rates, then we would replace this water that we borrowed from them, ~~and they would of course pump it at their favorable rates,~~ and we would replace it after their rates had gone up. And yet to look at these things, we're talking millions and millions of dollars in these power costs. And we actually got all these parties to agree to this arrangement, set a price for our users to pay for this water, and it came out at about, oh, thirty, forty dollars an acre-foot, and each district that bought, I think we had available to us 60,000 acre-feet. And each one of them contracted for a fixed amount. We collected this from them, and then as it turns out, the year was a very wet year, the contractor worked faster than anticipated, we got more water in the reservoir, we had a very cool summer, we had very low demands, and we didn't need any of this extra water. But the deal was so structured that they had to pay for it anyway, and our users actually paid for it without any major grumbling. They, all told, kicked in, I think it was five, six million dollars for that water that they never used a drop of.

"And there was only one party that we were unable to get an agreement with, and that was the City of L.A. L.A. Water and Power would not agree to shift. They also provided energy from the pumping over the hill. And the best I could tell, they surveyed the situation and decided that we would go ahead and do it whether they were a party to it or not. Therefore they would be able to take advantage of the curtailed pumping over the Tehachapis and not have to provide any power for the Colorado River, so they were able to have their cake and eat it too. They were the *only* party that would not agree. . . ."

It was an interesting time, a great deal of operational studies to figure

out how you could operate that system with the reservoir out of shape, and how you could operate the system to convey financial advantages to these various parties so they would agree to making the changes that needed to be made to carry it out. And there was only one party that we were unable to get an agreement with, and that was the City of L.A. L.A. Water and Power would not agree to shift. They also provided energy from the pumping over the hill. And the best I could tell, they surveyed the situation and decided that we would go ahead and do it whether they were a party to it or not. Therefore they would be able to take advantage of the curtailed pumping over the Tehachapis and not have to provide any power for the Colorado River, so they were able to have their cake and eat it too. They were the *only* party that would not agree.

Storey: And how were you personally involved in all of these negotiations?

How the Transfer Idea Developed

Willms: I did personally a great deal of the hydrology and operation study and set up a lot of the parameters. In fact, it was the idea of using the power, the shift in times on the power was, I don't know whether it was my idea or not–what it grew out of was a fellow by the name of Dave Schuster, who was an assistant regional director out there at the time, and one of the management operational people from the state and myself had come back here to Denver to attend a meeting on the repair of the dam, and we stayed in a hotel downtown, and we ended up in a bar down there. This was in the latter part of October, as I recall. And we sat there, the three of us sat there and essentially explored these power issues and how we could, the advantages to the state and of us repaying water borrowed from the state after the rate change, and the advantages to the power companies in not taking State Project water because of the rate structure, and those sort of things, and sort of generated that scheme. Then the negotiations themselves took place in so many facets, and I probably didn't even know one of them. I carried on quite a lot of the negotiations with the state. The state took the lead in negotiating with the Metropolitan Water District and the power companies because they were *their* (Storey: Contractees?) *-tees* and *-tors*. Yeah, both ways, because Metropolitan Water District . . . .

END SIDE 1, TAPE 1. JUNE 3, 1994.
BEGIN SIDE 2, TAPE 1. JUNE 3, 1994.

Storey: So Metropolitan Water District was contracting for water with the state, and then the state would have to turn around and purchase power from the power companies.

Willms: And part of these negotiations took place, I think, in a bar, everything done in a bar. I think it was a bar in Monterey between the director of water resources for the state and the regional director and the assistant manager of Metropolitan Water District.

Storey: That would be Mr. Gianelli?

Willms: No, this would have been Ron Robie at that time.

Storey: Okay, and the regional director would have been at that time?

Willms: Mike Catino. And David Kennedy, the now-director of the State Department of Water Resources was then, I think, assistant manager of the Metropolitan Water District, and sort of the chief operating officer as I would have understood his role. And they were at a ACWA [pronounced "aqua"] Convention–Association of California Water Agencies Convention– in Monterey, I think during the month of November then. And I think they agreed in principle to go ahead with this thing. And at that point then, the staff embarked on getting all of the various pieces together. My part of it was in the negotiation with my counterparts in the state as to how we paid it back and how we divided up the water, and of course we did the operational studies, so between myself, Dave Schuster, and Larry Molnix [phonetic spelling] of the state, we laid out the whole scheme. Now I think that Dave Schuster did a certain amount of negotiating directly with Dave Kennedy of Metropolitan Water District on various parts of it. He may or may not have been involved with the power companies, I'm not sure.

Storey: Let me see if I understand this completely: San Luis went out, so that meant water couldn't be delivered adequately through the California Aqueduct over the Tehachapis. So we agreed to obtain water from the Colorado to supply the southern California needs. I don't quite understand the water pay backs, whose water was being used and where the paybacks were coming in.

Willms: Let me correct a couple of things you've said. (Storey: Okay, good.) The state aqueduct and the San Luis Canal are one in the same facility. The loss of San Luis Reservoir, both curtailed the ability of the state to deliver water south of San Luis Reservoir, and for us to deliver water south of San Luis Reservoir, all out of the same canal. And part of that water that the state delivered south of San Luis Reservoir went over to Metropolitan–not all of it. They deliver quite a lot of water to agricultural lands in Kern County. Their contract was such that the Metropolitan Water District had the highest priority on that water. So they would have had to curtail their Kern County users in order to meet Metropolitan needs, unless they had San Luis Reservoir. So that's where their part of the shortage came in. Our case, if we didn't have San Luis Reservoir, we would have had to curtail heavily the water delivered to Westlands and to the San Luis Water District, which were the two primary districts south of San Luis. *We*, however, in our dealings with that, agreed that the Westlands had the same priority for use of facilities as the people *north* of San Luis along the Delta-Mendota Canal, so *we* were actually going to curtail *all* of the users along there, which the effect of then is that when we pumped [to] ~~out~~ the San Luis Canal instead of delivering water to those users, we would have sent *some* of that water down to Westlands.

Metropolitan had, within their *contract*, had the contract right to take water from the Colorado River System. We didn't have to enter into that. They, as a matter of choice, would take the water from the state system, and they had a sufficient supply of water that they didn't need *all* of both. So what our arrangement with them was, is for them to *forego* their state water during this period of time, and to use *in lieu* their entitlement of the Colorado River water. (Storey: Okay.)

Now the water payback issue, I have no idea at this time, my recollection just doesn't provide it, what happened as far as Met. and the Colorado River were concerned, as far as payback. And I'm assuming nothing, I'm assuming there was no payback, that Met. *took* their piece of the Colorado River Water, which I think they can't carry over anyway. So they don't lose anything there. And they gave up a piece of their state water, which they couldn't carry over anyway. So I think there's no payback *there*. However, the state pumped water from the Delta up into San Luis and stored it there and we used part of that water. And so our agreement with them was to pay them back for that water that they pumped up there and used. (Storey: Okay.) And of course we each had separate pumping facilities and capacities. I shouldn't say they stored it in San Luis–they really didn't store it in San Luis, they pumped it on through the Canal. Of course they have their own source of pumping, and so by us being able to use *all* of our capacity, and then use some water that the state pumped, we were able to, that amount that the state pumped would have been that much more water that *we* could deliver. Now, by the state curtailing the deliveries over the Tehachapis, we used part of that that was curtailed, and the state used part of it to meet their Kern County users' demands. And then the payback part came is that later on, after the power contracts had expired and the state had had to negotiate new contracts using current rate structures at higher rates, we pumped water, we paid them back with water delivered in San Luis. And the effect of that was that they then didn't have to pay the power costs of putting that water in there at the higher rates.

Storey: And we had favorable power costs because we controlled the source.

Willms: Yeah, we produced our own power. It really didn't affect ours, because we . . . . Well, it did. It didn't affect it from a standpoint of [the] San Luis [slide,] ~~hadn't slipped,~~ because we would have used that same amount of energy anyway. We just used it in a different year. And the different year didn't make any difference to us. But supplying the water to the state did make a big difference in what they had to pay for power costs.

Storey: So what we said was, "Until your power rate structure changes, you go ahead and pump at your favorable rates," (Willms: Um-hmm.) "and then when the structure changes, then we'll start paying you back the water we owe you." (Willms: Uh-huh.) I see, okay.

Willms: It was a fairly innovative scheme, and I was sort of amazed that we were able

to get *all* of the players that we *had* to get–we got all of them except City of L.A. to agree to this.

Storey: For the slide on the dam, who did the design work in that ninety-day period that you were talking about?

Design work ". . . was done here in the Denver office . . . it was a situation that was far beyond the capability of the Sacramento office to analyze and design a fix for. And I think there was no real question as to whether or not it came into the Denver office. . . ."

Willms: Well, it was done here in the Denver office, and I can remember only two names that I *know* were involved in it, both of them which are here: one of them was John Smart, and the other was Larry von Thun. And I can't tell you what their respective roles are.

Storey: But what was the relationship of the Denver office to the region at that time? How did they *relate* to one another?

Willms: Well, in this situation, it was a situation that was far beyond the capability of the Sacramento office to analyze and design a fix for. And I think there was no real question as to whether or not it came into the Denver office. As I recall, the notification of the slide actually came into my office in mid-morning. The state had discovered it. And I suspect by afternoon or the next morning we had people from then what we called the E&R [Engineering and Research] Center on planes to come out and look at it. And I can recall that we set up an immediate program for drilling, because they needed to get some information on foundation conditions there, that the slide itself, I think, was substantially [in] natural ground, right at the toe [of the dam] in a swale, or in a hummock actually, as I recall. I think it slid in *under* maybe the toe of the dam, but I don't remember for sure. But I think the drilling pattern was laid out ~~in~~ between our engineers in Sacramento and the people in Denver, with probably the people in Denver having the greatest emphasis on that. Now, this issue was sensitive enough that the commissioner, the assistant secretary, and the secretary all visited during the fall period of time, because there were a whole gob of users down there that were all of a sudden looking at no water, and they were really pushing to get something going. And the users did hire Gil Stamm as a consultant to follow the process of fixing it. So you had a lot of emphasis to get the job done at very high levels. That would have been when Jim Watt was secretary, and I can remember when he came out. I wasn't there, but then it was a significant event when he made a trip out to California to look at that slide. The first proposal by the people in the E&R Center was to take about a year to fix it. And we made a counter proposal to put a coffer dam around the toe of the slide to allow us to put, oh, 200,000 or 300,000 acre-feet in the reservoir. And we did a sort of a crude economic analysis that essentially said that that was a *cheap* expenditure, to put that coffer dam in, to have that amount of water, because of the fact that it filled in a very low spot in the water supply during the month of June. And

the E&R Center didn't like that proposal, they didn't want to do that. I'm not sure that it was for structural reasons as much as it was that it put an awful lot of work that would have to be wasted then, torn out or never be useful again. And it was after we made that counterproposal to them that they came back with a [repair] ~~fixed~~ schedule that would allow us to still store that amount of water, [by] ~~but~~ just get[ting] the fix done in time. And I think that proposal for the coffer dam was a very useful proposal. I think we moved the designers to a point that they realized the urgency of the situation. I think before that it was a dam they were fixing, and they hadn't really related it to the loss of service.

Storey: One of the things I'm interested in is how the various *parts* of Reclamation relate to one another. And I don't understand, at that time, where the responsibilities of the region began and ended, and where the E&R Center's responsibilities began and ended.

". . . the region was specifically responsible for the structure and the integrity thereof. However, the delegation of authority to do changes, to work on the dam, do design work, was vested in this office here [E&R Center]. These type of things, we seldom ever have problems with, because they're very serious and everybody mobilizes. We argue about little things; we don't argue about big things. . . ."

Willms: Well, the region was specifically responsible for the structure and the integrity thereof. However, the delegation of authority to do changes, to work on the dam, do design work, was vested in this office here [E&R Center]. These type of things, we seldom ever have problems with, because they're very serious and everybody mobilizes. We argue about little things, we don't argue about big things. (laughs) I don't know where I'm headed here, but I think the relationship was good. There was a obviously serious problem–those kind of problems are, of course, an embarrassment to us, they're an embarrassment to this office too, because they designed the dam and got a major problem with the dam. They put a lot of resources into it, they, I think, made it their top priority work. I think everything else got shoved aside. I think the arrangements were very cooperative. I don't think there was very much arguing about various . . .

Storey: The regional office was responsible for the dam and its integrity. Could the Denver office have sent somebody in if they hadn't been invited by the region?

Willms: Yes, I think they could have.

Storey: So at that time there was still some considerable power in the E&R Center?

Willms: Oh, I think the power was there, but I think that had it come to that, the commissioner would have ordered it. And I think it's far-fetched to think that the regional director wouldn't have asked for it, because the regional

director just simply didn't have the capability to deal with the issue. Mike Catino was regional director then, but he would not have undertaken something they didn't have capabilities to do.

Storey: So the E&R Center had expertise that the regions did not have? Is that what I'm hearing?

Willms: Most definitely yes.

Storey: How was that split up? What kind of expertise was in the regions? What kind of expertise was in the E&R Center?

Willms: I am not aware that the region had any what you might qualify as experts in earth dams in terms of design and this sort of thing, and in the soil analysis that would need to go on for this sort of thing. I think they just don't have it. And what the region's contribution to this sort of thing is, it was primarily in providing the drilling and the coordination of the work, and of course we did the construction inspection, which we would have had the expertise to do. But I don't think we had *any* recognizable expertise in the mechanics of earth dams.

Storey: Okay. Now, you also mentioned there was a contracting process. Where was the contracting done?

Getting a Contract in Place for Repair of San Luis Reservoir

Willms: The contracting would have been done out of Sacramento, by the contracting officer there. The process, however, was set up I think in a sort of a tri-parté cooperation between the people here in the E&R Center which also had probably a high level of contracting knowledge. You know, the contracting for years had all been done here, and then only shortly before that–I say "shortly," maybe eight or ten years before that–it had been disbursed to the regions. Between the contracting officer who was not in the design organization, *and* the design organization in Sacramento–and I think those three parties got together and figured out how they could go through this contracting procedure, meet the Federal regulations, comply with the Federal regulations, still get a good contractor on the job quickly. And they used some of the emergency provisions, I think, in the contracting regulations. The way they did that contract is, is they put out some sort of a notice–I don't know whether it was in the *Commerce [Business] Daily* or in the *Federal Register*, but they got out a notice that said that the specifications would be out at a certain time. And they got the specifications out towards the end of November. They asked for *proposals*, and the specifications, the bid documents, were prepared so that the evaluation would be done on the firm's experience in doing this sort of work. Their equipment that they had themselves, readily [and] available for work, *where* the equipment was located, and how quickly they could mobilize, and then cost, and they *all* were part of that. And I didn't get much involved in it, so I can't tell you

details of it, but they then met with contractors who supplied a proposal, and the requirement for having the equipment and stuff like this just wiped out a whole gob of contractors. And I think from that they met with the contractors, they did an evaluation, they limited it down to a few, and I think then asked them for additional information. *Maybe* they did that first round without dollars–it was maybe just looking at qualifications. And then they met with them again and did a further evaluation and selected (sigh) oh, I'm thinking it was Peter Kiewit that they selected on that. But whoever it was was able to mobilize and move in within days.

Storey: Now, who in the regional office was then responsible for contract inspections? Was that your office?

Willms: No, the actual inspections were handled, I believe, by the construction office in Fresno–maybe, and I don't remember who the construction engineer was, it had been Bill Frazier [phonetic spelling] but I think he had left by then, but I'm not sure.

Storey: They were building something else, were they?

Willms: We had construction going on in the Westlands area and had a construction office out there.

Storey: So they would have been responsible, rather than the operations office.

Willms: *For* the construction, yes.

Storey: Yeah, okay. Now, *after* the repair had been completed, did the operations office change the operations of the dam as a result of the experience of having had that slide?

". . . once the slide was repaired, it was being viewed as being stable and able to operate fully. Now, I think there were some drawdown rate restrictions– guidelines put on it, let's put it that way. . . ."

Willms: No. I think that once the slide was repaired, it was being viewed as being stable and able to operate fully. Now, I think there were some drawdown rate restrictions– guidelines put on it, let's put it that way. And certainly we would have been more conscious of the impacts of that sort of a drawdown.

"I don't think we made a lot of operational changes with respect to the San Luis Dam itself, although we had lots of discussions about how we operated the project on the whole, so that we didn't get into the situation we got when we had to rely *wholly* on San Luis for delivering that much water. San Luis, however, if we were unable to draw that from a full reservoir to an empty reservoir in the course of a year, would not serve the purpose for which it was designed. . . ."

I don't think we made a lot of operational changes with respect to the San Luis [Dam] itself, although we had lots of discussions about how we operated the project on the whole, so that we didn't get into the situation we got when we had to rely *wholly* on San Luis for delivering that much water. San Luis, however, if we were unable to draw that from a full reservoir to an empty reservoir in the course of a year, would not serve the purpose for which it was designed. If we didn't operate it outside of it's design parameters, we could have.

". . . I think what would have happened . . . is that if we had operated the project different that year, the slide would not have occurred that year, but my guess is it would have occurred sometime. We would have got it in the drought or sometime. . . ."

And I think what would have happened, Brit, is that if we had operated the project different that year, the slide would not have occurred that year, but my guess is it would have occurred sometime. We would have got it in the drought or sometime.

Storey: Can you describe what caused a slide like that in terms that a historian will understand? (chuckles)

Willms: Well, I think–and this isn't my field either–but I think what happens there is that the reservoir had been full. The slide was actually on the upstream side of the reservoir. (both talking at once) It's in the reservoir side. You had, of course, that soil very, very saturated. And San Luis Dam is a *long* dam, it's several miles long, and it's an offstream storage. The dam goes over some rolling undulations of natural terrain. I think what we had in there was clay lands against some other type of material. We drew it down and exposed it. It was very low in the reservoir behind it. I don't know if it'd been exposed before or not, but we drew it down rapidly and exposed it. We had a lot of saturated soil there, and saturated soil above it, and it was all lubricated, and when we unloaded the toe, so you've got the water off of it, and you didn't have the buoyancy effect of having the water, it was just not stable, just from the saturated conditions. And it just slid.

Storey: Now, the Central Valley Operations Office, did that deal with drainage issues also? Or is that a separate group in the regional office.

"We basically dealt with only the project operational scheme of operating the multiple reservoirs together; and the power system, in terms of providing coordinated energy delivery. . . ."

Willms: No, we really didn't deal with drainage issues. We basically dealt with only the project operational scheme of operating the multiple reservoirs together; and the power system, in terms of providing coordinated energy delivery.

Storey: Well, could you then sketch for me the big picture of what the Central Valley

Project did in the early 80s? What was going on? How did the system operate?

General Picture of How the Central Valley Project Operated

Willms: That's a pretty involved issue. The project started out in the first, earliest facilities that were built were to supplement the water in the east side of the San Joaquin Valley between Fresno and Bakersfield. And to do that we built Friant Dam–didn't have a powerplant or anything–close to a half-million acre feet of storage on the San Joaquin River as it popped out of the Sierra foothills. And diverted directly out of that reservoir were the Friant-Kern Canal going to the south, and also Madera Canal to the north–the Friant-Kern was the largest. That reservoir interrupted essentially a hundred percent of the flow of the San Joaquin River–essentially dried up the river. There were major water right holders, prior water right holders, downstream between Fresno and Los Banos that, of course, had an entitlement to that water. In order to replace that water then, we built Shasta Dam and the Delta-Mendota Canal.

"The Delta-Mendota Canal . . . ends in the San Joaquin River at the Mendota Pool. And the Mendota Pool was the diversion pool out of which these downstream right holders diverted their water. So we replaced the water that we diverted at Friant with water pumped from the Delta up the valley to the Mendota Pool. Shasta Dam provided the supply of water to pump from the Delta up there. . . ."

The Delta-Mendota Canal runs from the Delta up the San Joaquin Valley and ends in the San Joaquin River at the Mendota Pool. And the Mendota Pool was the diversion pool [out] of which these downstream right holders diverted their water. So we replaced the water that we diverted at Friant with water pumped from the Delta up the valley to the Mendota Pool. Shasta Dam provided the supply of water to pump from the Delta up there.

Storey: By way of the Sacramento River?

Willms: Run it down the Sacramento River into the Delta, pump it up from the Delta to the Mendota Pool. That sort of became the key part of the project. Now in the course of doing that, we built the Delta-Mendota Canal big enough to deliver to new lands along the Delta-Mendota Canal between the Delta and the Mendota Pool. The first priority of water, however, was always the Mendota Pool because that's a replacement supply for prior water rights. We also built the Canal large enough to be able to supply water to other lands down the San Joaquin Valley, such as Westlands.

END SIDE 2, TAPE 1. JUNE 3, 1994.
BEGIN SIDE 1, TAPE 2. JUNE 3, 1994.

This is Tape 2 of an interview by Brit Storey with Ray Willms on June the 3rd, 1994.

Willms: Subsequent to that, we also built the Trinity River Unit which increased the water supply and the power supply by moving water from the Trinity River over into the Sacramento River, essentially at Shasta Dam. We also built Folsom Dam–actually, the Corps [of Engineers] built that, but it was built as part of the project–and that provided an additional upstream supply. Then we constructed the San Luis Unit which consisted of a pumping plant on the Delta-Mendota Canal that would pump water from the canal up into a holding reservoir, what we call O'Neill Reservoir now. Then we built San Luis Dam that you can pump water from O'Neill Reservoir up into San Luis Dam and hold that. San Luis Dam, big reservoir 2 million acre-feet, off-stream. And then we did all of this in conjunction with the state in the State Water Project, *except* for the pumping plant from the Delta-Mendota Canal up to O'Neill. O'Neill was part of the State Project, San Luis was part of the State Project, and then we built, in conjunction with the state, the San Luis Canal, which went from O'Neill Reservoir south in San Joaquin Valley for, oh, it must go down there 150 miles, which we had one pumping plant in that. And at the end of the San Luis Canal, the state continued with the California Aqueduct. Concurrent with this, the state built the northern end of the California Aqueduct, which was a separate pumping plant in the Delta [Harvey O. Banks Pumping Plant], and a separate canal from the Delta to the O'Neill Reservoir. Those two canals run parallel, and if you fly over it, you see these two canals just snaking side-by-side. The state canal is sixty or seventy feet *higher* than the Delta-Mendota Canal, and it runs by gravity into O'Neill Reservoir, and we have to pump into O'Neill Reservoir.

The way *our* project was set up to operate then, is that we would pump full capacity of the Delta-Mendota Canal year-round. During the summer months, we would make our direct deliveries to the Mendota Pool for the exchange contractors[5] and to our contractors along the Delta-Mendota Canal. During all but the highest peak periods, there would be excess capacity in the [Delta Mendota Canal.] ~~San Luis Canal.~~ And during the winter, essentially the whole capacity is excess to the needs of those users along the Canal and the Mendota Pool. So we would pump that excess water from the Canal up into the O'Neill forebay. During the summer, what [was] pump[ed] would just go down the San Luis Canal for deliveries to the users along the San Luis Canal. During the winter, the water that's excess would be pumped up in the San Luis Reservoir and stored. Then during the summer months when the excess water in the Delta-Mendota Canal was not near enough to meet the demands in the San Luis Canal, we would release the water out of San Luis into the O'Neill Reservoir and let it go down the San Luis Canal to supplement those demands. That's essentially how that south part of the project operates. Then on the north part we also have the Tehama-Colusa Canal and the Corning Canal, which are in the Sacramento Valley and use water out of Shasta and the Trinity River Unit supplies. And those waters are diverted directly out of the river at Red Bluff Diversion

5. The "exchange contract" provides that prior appropriation water rights holders would have their water, formerly taken from the San Joaquin River, replaced with water from the Delta-Mendota Canal/Mendota Pool lower on the San Joaquin River.

Dam and go on down the valley to supply water on the west side of the Sacramento Valley. We also had a number of contractors that pumped directly out of the river, which we sold water to them. And then we also built the Folsom South Canal which was intended to take water from downstream of Folsom Dam and deliver water in the Stockton area. That canal was only partially built. I don't think we deliver much water down there now, essentially over an argument on the flows down the American River. We also built New Melones Dam, or the Corps built it, but it's part of the project, and that delivers water to all the areas right down between the mouth of the Stanislaus River and Stockton.

Storey: So I guess the picture that I see emerging is that there's more water in the Sacramento River Valley than is needed there, so that extra water is picked up and moved down into the San Joaquin Valley.

Willms: That's correct. The San Joaquin Valley, the precipitation distribution is such that the San Joaquin may get four or five inches of rain in a year. The upper end of the Sacramento Valley may get sixty or seventy inches of rain, or fifty. And the same occurs in the mountains–the precipitation in the northern part of the Sierras and the Cascades far exceeds that that occurs–and the Coast Range too, as far as that goes–far exceeds what occurs in the south end. So you do have the situation where you have the primary water supply in the north and the primary *use* is in the south. The San Joaquin Valley is, of course, quite a little bit longer and bigger than the Sacramento Valley, and I think soil conditions are better, and there's just a lot more agriculture down there–demand is much higher. There *are* a number of significant rivers that come out of the Sierras in the San Joaquin Valley, and those rivers are used virtually a hundred percent in every year but the very wettest year.

Storey: Now, we started out today with a missed question, I guess you might say, about drought. Even though you did not manage any significant drought periods while you were in that office, were you aware of the ways that that office *would* manage drought?

Willms: Yes and no. The only significant drought that we had had since the project had been in operation was the '76-'77 which included at that time maybe one of the four or five driest years in '76, and then *the* driest year in '77. And the operations for drought were quite difficult. There were some pretty heavy decisions that had to be made in terms of how much water you were going to deliver. And we of course had experienced that and had *learned* a lot from that. But we hadn't experienced anything like the drought that's occurred in the last ten years that went on for six or seven years. So while we had operational information and experience in the short drought, the other thing that I found interesting out of this, is we talked a lot about drought, drought was a concern. In fact, we talked in terms of whether we needed to do some operational planning and some pre-work in preparation for a drought.

"The project was planned based on a seven-year critical period . . . And the

plan in operating the project was that . . . of the seven years, you'd be able to meet a hundred percent supply in three of the years and seventy-five percent supply in four of the years. . . ."

The project was planned based on a seven-year critical period that occurred in the 30s, in which you had a series of very dry years with a couple of near-normal years interspersed in there, but in aggregate, an extremely dry period. And the plan in operating the project was that you be able to meet seventy-five percent . . . Let's see, of the seven years, you'd be able to meet a hundred percent supply in three of the years and seventy-five percent supply in four of the years. It distributed a twenty-five percent shortage or actually a one-year shortage over seven years, and broke it into four twenty-five percent shortage blocks.

Irrigators Used Political Means to Assure Reclamation Did Not Declare a Shortage Year in the Central Valley Project in 1976

When the '76-'77 drought came along, if you were to follow the operational pattern, we would not have delivered a hundred percent supply of water in '76. However, in an attempt to declare shortage that year, the irrigators used the political routes to have that overridden, and their argument was is that, "Well, this is just a single dry year. We've had other single dry years before, next year will be wet. We don't *want* a shortage this year."

"So we ended up operating '76 without a shortage, which resulted in a *heavy* drawdown of the reservoirs . . . And then we went into '77 with very low reservoirs and the driest year in record occurred. As a result of that, we ended up curtailing deliveries extensively. I think we curtailed them seventy-five percent on certain agricultural lands. In hindsight, everybody'd have been better off, probably, had we taken a shortage in '76. . . ."

So we ended up operating '76 without a shortage, which resulted in a *heavy* drawdown of the reservoirs–reservoirs were quite low. And then we went into '77 with very low reservoirs and the driest year in record occurred. As a result of that, we ended up curtailing deliveries extensively. I think we curtailed them seventy-five percent on certain agricultural lands. In hindsight, everybody'd have been better off, probably, had we taken a shortage in '76. And we did discuss a whole lot what kind of parameters you could use to make that decision, because really, the decision as it was made, was made banking on a normal year again in '77, which didn't occur. That's *part* of the difficulty in the operation of droughts, is you're really trying to *out-guess* Mother Nature for subsequent years. We didn't. We talked about rule curves and things like that. The state used to set rule curves and used them rigidly. They basically said that if this year's parameters were such, we would not draw the reservoir down below a certain level, and [they] just wouldn't do it. And they operated those as iron-clad rules. We talked about that. We never did, during the time I was there, implement anything like that, and whether it was ever done, I don't know. I didn't follow the intricacies of the drought management during this last drought.

Storey: Did you have any other significant issues while you were chief of the Central Valley Operations Project Office?

Willms: No, not that I can think of.

Storey: How many people were in that office?

Willms: We had about thirty-five.

Storey: So it's about the same size as the Klamath office.

Willms: Well, it was almost twice as large. (Storey: Oh, it was.) I think eighteen or nineteen in Klamath office.

Storey: Oh, I'd forgotten that. Did that present any new supervisory issues to you, or management issues to you?

New Supervisory Issues as Chief of the Central Valley Project Operations Coordinating Office

Willms: I had a couple of new ones there. One of them that I ran into was that the staff on the water operations side was almost all homegrown–they had come to work as young engineers, worked until the present–some of them were still pretty young–without ever working anywhere else.

". . . I was very concerned that we did not have a broad enough exposure, and that our people really needed to work other places too. And so I sort of declared that we were going to have to look hard at filling our vacancies, or at least part of our vacancies from outside. That caused a *major* morale problem internally . . ."

> And I was very concerned that we did not have a broad enough exposure, and that our people really needed to work other places too. And so I sort of declared that we were going to have to look hard at filling our vacancies, or at least part of our vacancies from outside. That caused a *major* morale problem internally, and we did in fact do that. That was one of them that I had gotten into that was new, and for the first time in my career, I ran into some of the nit-picking of work rules type of things. As an example, we had these people who worked during these flood periods and stay over and they may work all night, things like that. I happened to come to that office in the midst of one of these floods, and three or four weeks later the branch chief who was head of the water operations was gone for a week and I hadn't seen a leave slip or anything. When I got his time sheet, it didn't show him on leave. So I wouldn't sign his time sheet until he came back. I asked, "What's happening here?" And he said, "Oh, that's informal comp. time." And it seems that they had had a practice there in that office of carrying this informal comp. time probably mostly here and taking as much as a week off, they hadn't asked. And doing it many pay periods later. I felt obligated to put a stop to that, and my direction there was comp time is fine,

you put down on your time sheet, that's all you have to do, and it goes into your time records and you take it just like your other leave. And that caused quite a little bit of a problem. And that was never understood why, it just all of a sudden the view was that they had a new bureaucratic boss there that was going to stop these kind of practices.

The third thing that happened in that same group, at their initiation, they got pagers so that during these flood periods they could go home and go out to a movie or shopping or something like that. And it just evolved at their initiation, this branch chief's initiation, that they always had somebody who carried a pager, and the branch chief eventually mandated that one of them carry a pager. And then after a period of time, they wanted to be paid extra for carrying a pager. Well, the personnel rules don't permit that, pretty clear cut that there's no stand-by pay for people who carry pagers, since they're not restricted to their quarters. And we had a major rowel over that too. It was sort of interesting, I gave them the option of not carrying pagers. I told them it wasn't something that *I* was mandating. But they felt that carrying a pager was necessary for them to do their job right, so they continued to carry it. But they were awfully disgruntled that they didn't get paid for it.

You know, some of these things that I didn't really run into before or after. The other one that I ran into there that was new for me was we had one of these times we didn't have a budget–went into the new fiscal year without a budget, and everybody except critical personnel were sent home. Of course our office being the operations office, we had some that were critical, and I made the decision who was critical and who wasn't in conjunction with the branch chiefs, and we sent everybody else home. And of course everybody that wasn't critical was mad, as you could expect. You kind of expect that. Well, then Congress passed the appropriation, and in that specified that those people who were sent home were supposed to be paid. So now those people who got [sent] home ended up with a free day of administrative leave, in effect. Then those that were critical came back to me and wanted to have a day off so that they also had a free day at home. And when I didn't give them much sympathy on that, *they* were mad. (chuckles) So you can see a little bit of pattern in this particular–and that was just all in one branch. But beyond that, I didn't have any . . . You know, just a little more than we had in Klamath–we didn't have any of that stuff in Klamath.

Storey: Why did you decide to leave the Central Valley Operations Project Office?

"It became apparent after a few months that we weren't going to work that well together, and my attitude at the time was that when things don't work out all that well between a manager and his boss that the manager needs to move on. So I just started looking. . . ."

Willms: When I had come there, I had come Bill Martin had been regional director and he and I had developed a pretty good working rapport. I came in there and was parallel with the 400 [O&M–Land and Water Operations] chief in authorities.

He didn't like that–he thought he needed a great deal more authority in the operation of the project. Bill Martin got reassigned. We ended up with a *long* period of time without a regional director–Mike Catino acted. After finally about, it must have been nearly two years after I had come, Mike Catino was then appointed as regional director, and then shortly after that this fellow who was 400 chief was appointed assistant regional director. He then became my boss. It became apparent after a few months that we weren't going to work that well together, and my attitude at the time was that when things don't work out all that well between a manager and his boss that the manager needs to move on. So I just started looking. Nothing critical, we didn't have severe problems, but it wasn't going to be the working relationship that I wanted, and it probably wasn't what he wanted either.

Moves to the Fryingpan-Arkansas Project

Really never talked about it or anything. And so the Fryingpan-Arkansas project manager's job became open and I applied for it and was selected, and so I went on.

Storey: That would have been out of the region here in Denver at that time?

Willms: Out of the region here in Denver, located in Pueblo.

Storey: And the regional director was Bill Martin. (Willms: Yes.) Okay.

Willms: So I was back working for Bill again.

Storey: And back in Colorado.

Willms: And back in Colorado, yes.

Storey: What were the major issues on the Fryingpan-Arkansas Project?

". . . we were just finishing up construction and getting started in the operation and maintenance. . . ."

Willms: Oh, on the Fryingpan-Arkansas we were just finishing up construction and getting started in the operation and maintenance.

". . . closing down the construction offices. We had a *major*, *major* problem with the Fountain Valley Conduit, which delivered water from Pueblo Reservoir to the city of Colorado Springs . . ."

Things we dealt with there was closing down the construction offices. We had a *major, major* problem with the Fountain Valley Conduit, which delivered water from Pueblo Reservoir to the city of Colorado Springs and their suburbs.

Storey: What kind of problems?

"Construction was about ninety percent done when I came aboard, and we were into the issues now of not being able to make it work right. We had four pumping plants . . ."

Willms: Well, we didn't get it done on time, and costs were considerably higher than the estimates, and had a lot of technical problems with it, and the City of Colorado Springs became very critical of our ability to both design and to manage the construction. Construction was about ninety percent done when I came aboard, and we were into the issues now of not being able to make it work right. We had four pumping plants, we had used an 8-A contractor on the pumping plants. Three of the plants worked fairly well, but one of the plants we couldn't get to run in its total. It had four pumps that were set to come on automatically and we'd get one running, then the second one would come on and the first one would shut down. And you could never get more than one pump to run at once. We had problems with the automatic controls of the reservoirs, which were tank-type reservoirs, that controlled the pumps, water-level control devices. Then we had a computer system of which we had contracted with somebody that evidently was trying to work out of his garage and couldn't do it, and we had to terminate the contract for cause, which gets all bogged down in our regulations and reissue the contract to somebody else. These type of problems that typically we have a lot more problem handling than what a private outfit does. The City of Colorado Springs is a major utility anyway–they generate their own power and deliver it, they have a rather vast water supply system, they have all sorts of their own capabilities, and all they could do is see us bungling everything. And in fact, we did bungle pretty bad: the design wasn't particularly good, particularly the electrical part of it; the contracting process wasn't very good, we had contracted to the 8-A contractor. We actually had four or five different contractors building a single pipeline, things didn't fit very well.

Storey: What's an 8-A contractor?

Willms: That's a minority preferred business type contract where a minority business does not meet the basic qualifications for the job–bonding and that sort of thing–so you have a special set of statutes that allow us to negotiate with these people and to waive a lot of these requirements. That gets minority businesses up and started.

Storey: Uh-huh, but it also can sometimes cause problems, it sounds like.

Willms: It can cause problems. In this case, the contractor happened to be also a member of the Denver City Council. (chuckles) He was in fairly well over his head. He didn't typically do the type of work that we had, and he had to subcontract for an awful lot of work. He essentially came in and built the pumping plant buildings and structures and things like that, but all the mechanical and electrical equipment were done by subcontractors. Then he had some trouble getting those things coordinated. I think Bill Roberts himself was a real competent enough person but he was into a pretty sophisticated job without the sophisticated support that goes with it that you might get from a bigger

contractor and have their own engineering staffs and things like that.

But we had *real* serious relationship problems there, and we created a lot of them. I don't think we administered the construction very well. We did not have an engineer over the job and we had a person who was essentially an inspector of earth installations over the job. I think he was a fairly competent person, but unable to cope with a very technical type of construction that we get into with automatically-controlled pumping plants and things like that. And he had to rely almost a hundred percent on people supplied from the E&R Center here to help him with all of the technical parts of the inspection. Those people were transient–they'd come down for a few days, they'd leave for a few days, they weren't used to dealing with contractors, and it just didn't work very well. Then we put in some fairly sophisticated equipment on this thing and some of our designs were bad. I was pretty disappointed in our people here of not really taking responsibility for the design problems. And we didn't have, within the project, the capability to do this kind of design, so when we had a design problem we had to rely on the people here. And we didn't get near the support that we should have. I think we did not do a good job on that–that was not one to be proud of. Cost overruns, which got to be a big issue with the City and their suburbs, I think was a red herring issue, because the estimate was done in '78 and stipulated as an estimate based on current dollars. Well, we were in double-digit inflation in '78, '79, '80 and until we started bringing it down in the early part of the Reagan administration. Well, that's when . . . We did the estimate in '78, we did most of the construction in '80, '81, '82, and you could *easily* explain the increase in costs as a result of inflation.

END SIDE 1, TAPE 2. JUNE 3, 1994.
BEGIN SIDE 2, TAPE 2. JUNE 3, 1994.

Storey: So as far as the people from the Springs were concerned . . . .

Willms: Yeah, as far as they were concerned, the original estimate was what we had contracted to do the job for, even though the contract itself very clearly said that "this job is estimated to cost $43 million, estimate based on current costs," and goes right on and says that the contractor will pay the actual costs of the job. They ended up even writing to the president. (chuckles) And they filed suit. They went through all their congressmen, they put an *enormous* amount of pressure on us. Eventually, the only thing they got out of it, I think, was a GAO [Government Accounting Office] audit that ended up being critical of the way we handled overhead costs. But *that* was the most difficult problem–maybe one of the most difficult and discouraging problems that I dealt with in my whole career. And part of it was that we–Reclamation–didn't perform very well. And my assessment of the Denver office, *in this issue*–and I have to limit it to this issue–is they also didn't care very much. From a project manager out here trying to deal with a irate set of constituents on an issue that we're in a very defensive position and not being able to mobilize effectively our own forces to working on it, was pretty discouraging. I *did* have the pleasure, however, of getting Darrell Webber down there before the City of Colorado Springs and let

him take a little of the heat. (laughter)

Storey: What else does that project do besides provide water to Colorado Springs? What were some of the other issues that you dealt with?

The Fryingpan-Arkansas Project

Willms: Well, the project takes water from the west slope out of the Fryingpan River Basin and transports it through the Continental Divide and delivers it to both the City of Colorado Springs and irrigators in the valley. We had a regular array of operational issues and contract issues that came up during my tenure there.

"We had the floods in '83 that flooded down the Colorado River side and we were inundated with water there. We had several wet years, in fact, that we imported an awful lot of water and didn't have places to put all the water–created, oh, I would consider them rather small problems, but issues with the irrigators and we ended up spilling some of the irrigators' water that was in storage. That made them fairly mad. . . ."

We had the floods in '83 that flooded down the Colorado River side and we were inundated with water there. We had several wet years, in fact, that we imported an awful lot of water and didn't have places to put all the water–created, oh, I would consider them rather small problems, but issues with the irrigators and we ended up spilling some of the irrigators' water that was in storage. That made them fairly mad.

"We at one time declined to divert water from the West Slope because we didn't feel it could be used on the East Slope, and that the nature of the Colorado River Compact was that if you couldn't use it on the East Slope, you couldn't divert it. . . ."

We at one time declined to divert water from the West Slope because we didn't feel it could be used on the East Slope, and that the nature of the Colorado River Compact was that if you couldn't use it on the East Slope, you couldn't divert it. And we argued that issue.

Kansas Sued Colorado over Alleged Violation of the Arkansas River Compact

Probably the other thing that was significant during this period of time for me personally was that the State of Kansas sued the State of Colorado over the alleged violations of the Arkansas River Compact. And in that suit they alleged that the Trinidad Project, which I also had responsibility for from Reclamation's part of the project, and that the Fryingpan-Arkansas Project winter storage program were contributors to this violation. They asked us to usurp the powers of the state in administering water rights, of which we gracefully declined. [It] led me to have a considerable amount of dealings with my later-to-be boss, Bill McDonald, as a peer as he was working with the state. We attempted to market water out of Ruedi during that period of time, which ran

into the endangered species issues on the Colorado River, and to my knowledge we still haven't marketed any water. Out of Ruedi. Well, we had marketed a little before, but I think we're still futzing around with that marketing program and trying to get water marketed, and it's now eleven years later. (chuckles) It was an interesting project with a whole gob of little issues.

Storey: And you went there, it would have been about '83 was it?

Willms: I went there in April of '83.

Storey: And how long did you stay?

In May of 1985 the Pueblo and Loveland Offices Merged and He Moved to Loveland as Manager of the Combined Office

Willms: I stayed in Pueblo until spring of '85, May of '85. But in that period of time, or just before that, we decided to constrict the project office at Pueblo and to consolidate the project operations with the office in Loveland. And I took over [as] the manager of both offices, ~~the~~ consolidated in Loveland. Not in Pueblo. I'd just as soon stayed in Pueblo, but that wasn't in the political cards. (chuckles) So while I left Pueblo in '85, the responsibility for the project I retained and had until I came into Denver in '89. So a lot of these issues I mentioned were not single-year, not just issues I dealt with when I was in Pueblo.

Storey: Yeah. How many people were in the Fryingpan-Arkansas Project office?

Willms: When I went down there, there were, oh, maybe sixty. And we had office systems spread out–this was in the whole project *under* the project manager. We had a small office at Ruedi Dam that had three people. We had a little office in Leadville that had two people. We had a group of people located at Mt. Elbert [Pumped-Storage Powerplant], which probably had twelve-, fifteen located there. And we had a construction office at Salida that had another twelve or fifteen people in it. We had a little office out at Pueblo Dam that had both two or three operations people, a couple of operations people and several construction people. Then we had the office in Pueblo which probably had only maybe fifteen or something. I don't know if that adds up anywhere near sixty or not, but it was someplace in that area.

Storey: You had not had a disbursed work force like that before, I don't believe.

Willms: That's correct.

Storey: Did that add any new issues to your supervisory and management experience?

In Pueblo He Dealt with a Union for the First Time

Willms: Um-hmm. Oh yeah, it does. And the other thing we had there that [I] really

hadn't had much before was union. We did have a union. There may have been a union for the operators of the Central Valley Project, but I don't think so. Well, we had a couple of union people there, but for all practical purposes, the union wasn't part of the issue. We got into Fryingpan-Arkansas, it wasn't a *major* issue, but you did have to deal with the union. That would have been my first dealings with the union, and they were pretty minor. You did have just the communications issue: you had staff that was disbursed. The construction part of it, the supervisory lines were not very clean. The contracts, the people here in the E&R Center had a *lot* to do with the administration of the construction. The manager at Mt. Elbert and the construction manager at Salida both tended to work with people here in the E&R Center directly–which was okay. It really wasn't a problem because the people were all easy to deal with. The project, of course, was new and a new project has some advantages of not having a *whole* lot of "culture" that can be troublesome.

Storey: The kinds of issues you were talking about in the Central Valley office.

". . . the people are much more transient in a construction-based operation than they are in a long-standing O&M type operation. Actually, it was a very *pleasant* time for me. I really enjoyed the time in Pueblo, I liked Pueblo as a town–surprising to a lot of people. I found the town friendly. . . ."

Willms: Um-hmm. Yeah, and the people are much more transient in a construction-based operation than they are in a long-standing O&M type operation. Actually, it was a very *pleasant* time for me. I really enjoyed the time in Pueblo, I liked Pueblo as a town–surprising to a lot of people. [I] found the town friendly. The staff was easy to work with, I enjoyed working with the irrigation district and the irrigation district manager, Tommy Thomson. The farmers were *fun* to deal with–we had a lot of arguments and disagreements, but they were fun to deal with. The only really unpleasant thing was the Fountain Valley Conduit, and I could not characterize the people in Colorado Springs as being pleasant to deal with. But other than that issue, the rest of it was.

Storey: And then in '85, was it, you moved up to Loveland?

Willms: Moved up to Loveland.

Storey: And that was then the Eastern Colorado Projects Office? (Willms: Um-hmm.) How many staff are we talking about there?

The Consolidated Offices Had about 160 Employees

Willms: Well, when we got the two projects consolidated, at that point I think we probably had around 160-, 165, total, on board at that time.

Storey: And so that was Fryingpan-Arkansas and Colorado-Big Thompson. (Willms: Um-hmm.) Anything else?

Dealt with the Trinidad Project Which Was Built by the Corps of Engineers, but Reclamation Administered Water Supply under its Program

Willms: Not in the staff sense, but we still had the Trinidad Project that we dealt with.

Storey: Which I thought was a Corps project.

Willms: Well, the Corps built the project, but the water supply is administered under Reclamation's program, and we have a contract for delivery of water and repayment of the irrigation part of it. Now the Corps operates it physically, so we don't do anything physically down there.

Storey: That's on the Purgatory?

The Narrows Project

Willms: That's on the Purgatory, right out of Trinidad. We also had the Narrows Project which was in a pre-construction state and was in a state of limbo, and we were doing some contract negotiations, did have some lands connected with it, and so we fussed around a little with that during that time, early, first two or three years I was there until we sort of got that shut down, which is where it needed to be.

Storey: Why is that?

Willms: It was not an economic project–irrigators didn't have the ability to pay for the costs, and I don't think it had the benefit-cost ratio that would exceed one [1:1]. But those things die hard.

Storey: Well, it looks to me like this is actually a pretty good place to stop today. We've used up almost another two hours. So the next time we can pick up with that.

I'd like to ask you if the tapes and transcripts from this interview can be used by researchers from within Reclamation and from outside Reclamation.

Willms: It may.

Storey: Good, thank you.

END SIDE 2, TAPE 2. JUNE 3, 1994.
BEGIN SIDE 1, TAPE 1. JUNE 10, 1994.

Storey: This is Brit Allan Story, Senior historian of the Bureau of Reclamation, interviewing Ray Willms in his offices on the 14th Floor of Building 67 on the Denver Federal Center, on June the 10th, 1994, at about eight o'clock in the morning. This is Tape 1.

I believe during the last interview we got up to your move to the Eastern Colorado Projects Office in Loveland. Could you tell me about that assignment,

please?

Willms: That change, I think I maybe mentioned, came about when we consolidated the projects. (Storey: Uh-huh.) So we went up there, actually had jurisdiction over the Colorado-Big Thompson Project and the Fryingpan-Arkansas Project, the Trinidad Project and the Narrows Project–the Narrows Project being one in pre-construction. The Colorado-Big Thompson Project, of course, was the biggest from an operations point of view, and has had a long history to it. It had been operating since the late 40s, early 50s, and so that was more of a job of continuing a long-standing operation. We did make several significant changes.

Transferred O&M Activities on the Colorado-Big Thompson Project in the Granby Area to the Northern Colorado Water Conservancy District

One of the things we did was transfer the operation and maintenance of the facilities in the Granby area, the West Slope of the project, or actually, just in the Granby area, over to Northern Colorado Water Conservancy District for execution of the operation and maintenance activities. Before that, all of those facilities that served joint purposes, both power and irrigation, had been operated by the United States.

". . . we also transferred the storage reservoirs on the East Slope, Carter Reservoir and Horsetooth Reservoir, and the Charles Hansen Canal that connected the Flatiron Reservoir to Horsetooth, to the district for operation and maintenance. . . ."

Subsequent to that transfer we also transferred the storage reservoirs on the East Slope, Carter Reservoir and Horsetooth Reservoir, and the Charles Hansen Canal that connected the Flatiron Reservoir to Horsetooth, to the district for operation and maintenance.

". . . essentially what the United States had left to operate was the Adams tunnel and the conveyance, the power facilities that existed between the Adams Tunnel and Flatiron Reservoir, plus Green Mountain Reservoir and Powerplant, which is hydrologically disassociated. . . ."

So essentially what the United States had left to operate was the Adams tunnel and the conveyance, the power facilities that existed between the Adams Tunnel and Flatiron Reservoir, plus Green Mountain Reservoir and Powerplant, which is hydrologically disassociated.

Modifications to Horsetooth Dams

Also during that tenure, we did a modification of Horsetooth dams, the four dams on Horsetooth Reservoir–raised them to alleviate a safety problem from potential overtopping. Prior to the raising of those dams, the Bureau had put an operating level restriction on, and by raising these dams we were able to alleviate that restriction. The significance, I think, of that is that we did it

different than a regular fix under the Safety of Dams Act. We did it under a separate agreement with the district that made the entire repair reimbursable. And the irrigation portion of it, which would have been half of the cost, was repaid by the district and the other half was paid as a power cost. And of that that was repaid by the district, we got about half of that paid in advance. And the remainder of it was to be repaid within three years of the completion of the fix. And it was sort of, I think, new ground that we plowed for the Bureau in terms of getting better reimbursability on the repair, and by shortening the repayment period of the part that they did repay over time, we eliminated most of the interest subsidy that went into it. So that repair was done with a *very* small subsidy, as compared to the typical repair of Safety of Dams.

Tried to Market Water Out of Green Mountain Dam

We had a couple of other *substantial* issues. We embarked on marketing water out of Green Mountain Dam, which turned out to be a real donnybrook politically, that got the political people involved in it at the political levels of the Department, and in fact got pretty badly messed up. Eventually we did manage to market water, but I think the terms and conditions of which we eventually marketed the water were not favorable to *any* party.

". . . I think the Department managed to degrade both the *value* to the United States and the *value* to the buyers. They didn't do it by themselves. I mean, other parties all had a part in this, but we actually took what could have been a fairly win-win situation and made it a lose-lose situation. . . ."

And I thought that was not a particularly bright spot in Reclamation's conduct of business. I really shouldn't say "Reclamation," it really got to the Department, and I think the Department managed to degrade both the *value* to the United States and the *value* to the buyers. They didn't do it by themselves. I mean, other parties all had a part in this, but we actually took what could have been a fairly win-win situation and made it a lose-lose situation.

"One of the more difficult times . . . the assistant secretary for water and science . . . made an out-of-the-blue announcement that the remainder of the project was going to be transferred to Northern Colorado Water Conservancy District for operation and maintenance. . . ."

One of the more difficult times when I was there, the assistant secretary for water and science, at least from our perspective or view on the project, made an out-of-the-blue announcement that the remainder of the project was going to be transferred to Northern Colorado Water Conservancy District for operation and maintenance.

Storey: This would be John Sayre?

". . . the decision was made, evidently, in discussions between the district and the assistant secretary on that level, without the involvement of

Reclamation. And that caused a great deal of distress with the staff. . . ."

Willms: No, it was before John Sayre. It was Jim Ziglar made this announcement. I say "announcement"–that's not quite correct. He made that proclamation, but he didn't make it publicly–he made it to Reclamation officials and to the district officials, and sometime later it was announced publicly. But the decision was made, evidently, in discussions between the district and the assistant secretary on that level, without the involvement of Reclamation. And that caused a great deal of distress with the staff. We went way down the road in terms of implementing this, doing the front-end work of implementing it.

"We initiated negotiations with the district, and the negotiations, at least initially, largely involved how we dealt with the staff, for instance. And by having made the proclamation and made the decision without having conducted any of those negotiations, the district took the position then that they would hand pick who they wanted off of Reclamation's staff. And that's all they would take. . . ."

We initiated negotiations with the district, and the negotiations, at least initially, largely involved how we dealt with the staff, for instance. And by having made the proclamation and made the decision without having conducted any of those negotiations, the district took the position then that they would hand pick who they wanted off of Reclamation's staff. And that's all they would take. And in most previous transfers of that nature, part of the agreement would be that they would take *all* of the staff, or all of the staff that they *needed*–not hand-pick only the individuals they wanted, and then these people would be working *for* them, and if the people were not satisfactory over time, then the district of course was free to let them go, but that they would take them. And the negotiations then with the district were very, very difficult, because the decision had been made, and the district really was in their position of power.

". . . unfortunately, they also had some very biased views about who on our staff was good and who wasn't. . . ."

Unfortunately–and I thought highly of the district management on the whole–but unfortunately, they also had some very biased views about who on our staff was good and who wasn't. And they generally ran off of these views. Most of these views were rumor and hearsay. They, as a result, would want to pick up some of the more marginal employees, and some of the best employees they would not be interested in because of the reputation that had trickled [out], you know, just across the work lines in terms of rumor and things like that. I was fairly uncomfortable with this aspect of it.

". . . the approach we were taking then is that there was a certain amount of work that Reclamation would have to continue to do . . . and that Reclamation would maintain an office in Loveland for from one to two years to finish up these things, even after the transfer, and then the office would be closed in its entirety, and there would be an office *reestablished* someplace else, probably

in the Fryingpan-Arkansas geographical area that would continue the operation of the Fryingpan-Arkansas Project *and* Green Mountain . . . but that that office would not be located in Loveland. . . ."

The people, of course, on the staff, the agreement or the approach we were taking then is that there was a certain amount of work that Reclamation would have to continue to do, and this was primarily finishing up the repair of Horsetooth Reservoir and several other ongoing construction type of things that I don't recall what they are at this time–and that Reclamation would maintain an office in Loveland for from one to two years to finish up these things, even after the transfer, and then the office would be closed in its entirety, and [there] would be an office *reestablished* someplace else, probably in the Fryingpan-Arkansas geographical area that would continue the operation of the Fryingpan-Arkansas Project *and* Green Mountain, which was never proposed to be transferred, and would have oversight responsibilities and management or administration responsibilities of the contract with the Northern Colorado Water Conservancy District–but that that office would not be located in Loveland.

"That left the situation with the staff feeling that they needed to be looking for . . . . jobs. So we had quite a few of the staff that left right in that period of time and found jobs in other Reclamation offices, both professional staff and also craft people who were not getting indications that the district would take them. . . . the district went through an interview process . . . A lot of people didn't want to wait and see how that worked out. . . ."

That left the situation with the staff feeling that they needed to be looking for . . . . (brief interruption)

Storey: The staff felt they needed to look for . . .

Willms: They needed to look for jobs. So we had quite a few of the staff that left right in that period of time and found jobs in other Reclamation offices, both professional staff and also craft people who were not getting indications that the district would take them. And the district went through an interview process and things like this to try and decide which ones they wanted to take in addition to using their rumor mill. A lot of people didn't want to wait and see how that worked out. I worked a whole lot with the district to try and push them towards making those decisions, even though the transfer probably wouldn't take place for another four or five months, and make the decision so the staff knew–mostly to keep the staff from leaving, if they would have a job with the district and the job with the district would be a job that would satisfy them.

". . . district . . . They'd operated a lot of water conveyance and storage facilities, they were good at that. They were well prepared from an engineering sense, but they had almost no basis for operating sophisticated power systems. . . . we're transferring . . . They had neither . . . the *craft* capabilities to do that, or the engineering capabilities, and for that matter, the management knowledge . . . they really needed to pick up substantial people

out of Reclamation's organization in order to be able to operate those kind of facilities. . . ."

The district had very, very little capability to operate that kind of a facility. They'd operated a lot of water conveyance and storage facilities, they were good at that. They were well prepared from an engineering sense, but they had almost no basis for operating sophisticated power systems. And what we're transferring was largely powerplants. They had neither, I think, the *craft* capabilities to do that, or the engineering capabilities, and for that matter, the management knowledge to be able to start up running. So they really needed to pick up substantial people out of Reclamation's organization in order to be able to operate those kind of facilities.

". . . manager of the Northern Colorado Water Conservancy District had made some bold statements about how the project had always been operated for power first at the expense of the water users, and that that needed to change, it needed to be operated for water first and power second. . . . power industry . . . fairly critical of the statements. And also these responses tended to be couched in the sense that it was important for the United States to protect the interests of the power users and *not* become dominated by the water users . . . the power industry, of course, got pretty nervous . . .started to put pressure on the assistant secretary . . . It led very *rapidly* to the secretary withdrawing his decision. So the transfer was never made . . ."

As it turned out, prior to the decision by the assistant secretary to transfer these facilities, the manager of the Northern Colorado Water Conservancy District had made some bold statements about how the project had always been operated for power first at the expense of the water users, and that that needed to change, it needed to be operated for water first and power second. And his statements got printed in the newspapers, and it drew some responses from the power industry that were fairly critical of the statements. And also these responses tended to be couched in the sense that it was important for the United States to protect the interests of the power users and *not* become dominated by the water users so that the value of the power from the system was degraded. Well, as soon as the assistant secretary['s announcement] became publicly known that this transfer was going to take place, the power industry, of course, got pretty nervous, because what they saw then was a person who had publicly advocated a change in the operational procedures all of a sudden gaining control. The public power groups–I think it went up to the national group then–started to put pressure on the assistant secretary, and eventually brought about a group to look at it. And when the group looked at it, the group was a mixed group, and I think involved both power people and the district people. It led very *rapidly* to the secretary withdrawing his decision. So the transfer was never made, but this decision was not withdrawn for probably six or more months from the time of which we started to work on the issue.

". . . a lot of people had found jobs, . . . left the project, the project had been under a lot of stress, some people had actually left and gone to work for the

district. . . . we ended up being a little different organization. And really, the end of it was not all that bad. . . . So when it came time to refill those jobs, of course we refilled them competitively, and some of the people who left came back, and some of them *wanted* to come back and we selected other people. And I think when we came out of it, we actually came out with a stronger organization. A *very*, very traumatic period of time. . . ."

So a lot of things had happened: a lot of people had found jobs, they had left the project, the project had been under a lot of stress, some people had actually left and gone to work for the district. The district had offered them jobs already. So we ended coming out of this, we ended up being a little different organization. And really, the end of it was not all that bad. A lot of the people who left were those who got real nervous that they would not be able to find a job, and those were the same ones who probably sensed that their stock was not as high as it could be. So when it came time to refill those jobs, of course we refilled them competitively, and some of the people who left came back, and some of them *wanted* to come back and we selected other people. And I think when we came out of it, we actually came out with a stronger organization. A *very*, very traumatic period of time. And again, not handled, I think, very well. I think that, at least at the time, that Northern was not well positioned to operate a power system, they did not have a good working relationship with the power community, and technically didn't have it. I don't know that that'd *always* be the case, but it seemed to me at the time to be not a well-conceived idea that if we wanted to transfer the power facilities to a private concern, we would have been better off to transfer them to a power industry entity, Tri-State or the Platte River Power Authority, or somebody like that.

". . . in my review of the history of the operations, could never see any operation that had taken place that had any material effect on the water delivered to the water users. . . . the *aggregate* of operational decisions that were made that would benefit power and cost the project water, you probably couldn't have accumulated a thousand acre-feet of loss of water over the life of the project. And the *reason* . . . the operations for optimizing power and optimizing water were very parallel. And generally if you operated for one well, you operated for the other one well. . . . the bold statements that the manager made in the press may have had a whole lot to do with that transfer never having taken place, and it may have been on a bogus issue. . . ."

The other thing about that piece that I thought was ironic was is that while the district manager publicly allowed as how the project had been operated for power, I, in my review of the history of the operations, could never see any operation that had taken place that had any material effect on the water delivered to the water users. I didn't go back through the full history of the project and look at every operational decision, but I think I could safely say that there had never been–or the *aggregate* of operational decisions that were made that would benefit power and cost the project water, you probably couldn't have accumulated a thousand acre-feet of loss of water over the life of the project. And the *reason* wasn't necessarily because the project operators favored water

or anything like that, it's that the operations for optimizing power and optimizing water were very parallel. And generally if you operated for one well, you operated for the other one well. (chuckles) So . . . . (Storey: Um-hmm.) And I think, you know, that the bold statements that the manager made in the press may have had a whole lot to do with that transfer never having taken place, and it may have been on a bogus issue.

Storey: Do you remember when this was going on?

Willms: If my memory is correct, I was advised of the transfer about September 1, 1988.

Storey: And then it went on then into maybe the early spring or the late winter of '89?

Willms: Yeah, I think that . . . . Let me back up, I'm wrong here. It was '87. It would have been in September of '87, at about the same time that the reorganization for the Bureau, the documents, were put out. It went into, then, I think into the winter of '88. And during the winter, maybe February, when the decision was made to discontinue efforts to transfer.

Storey: Okay. Obviously, there are a lot of *different* kinds of interests involved in a complicated issue like this. I'm interested in what your perception of why Assistant Secretary Ziglar made this agreement with the Northern Colorado Water Conservancy District.

Assistant Secretary Jim Ziglar's Relationship to the Northern Colorado Water Conservancy District

Willms: I can give you my perception, and I think I need to make it clear, it's only a speculation, because I was not in his mind. But the assistant secretary had been the bond counsel for the sub-district of the Northern Colorado Water Conservancy District for the building of Windy Gap Project.

Storey: And the sub-district was?

Windy Gap Project

Willms: Well, it was made up of six cities: I think it was Fort Collins, Greeley, Loveland, Estes Park, Longmont, and Boulder. And these six cities organized this sub-district under the parent district of the Northern Colorado Water Conservancy District, and they had the same board of directors as Northern. They had different officers, but they had the same board of directors. And when they had meetings, they had concurrent meetings. Well, actually, I say "concurrent," that's not *quite* true. They would convene their Northern Board meeting, they would go through some preliminaries, as I recall, and then they would hand the gavel over to the president of the sub-district and they would convene the sub-district meeting and they would conduct *it*, then go back to the northern board Meeting, but they were held the same day, same board room, same period of time. Their interests were somewhat different, though. They did conduct

actually separate meetings. The sub-district was formed solely for the purposes of financing and building the Windy Gap Project. The Windy Gap Project *used* the Colorado-Big Thompson facilities to convey and store water, although they had their own pumping plant that pumped water under their water right from the Colorado River into Granby Reservoir. Then from there on it was conveyed through Colorado-Big Thompson facilities to the East Slope and distributed through whatever facilities existed by the various owners of the water.

My suspicion is that since the same staff and the same board of directors did the work on the Windy Gap Project as Colorado-Big Thompson Project, the assistant secretary, during the time when he was bond counsel, became very tied-into the district and became personally "connected" so to speak. The assistant secretary had also been a–I don't know if he was an officer or not, but a primary player, a significant player in the National Water Resources Association [NWRA], and was involved in that sense in water development and closely tied to water user organizations. My speculation would be that the district manager, probably, but it could have been some of their board met with him at one time and said, "We would like to take over the project" and convinced the assistant secretary that that was a responsible thing to do, and that the decision was made between the assistant secretary and the district in that manner.

". . . my perception is that the Bureau did not have a dominant commissioner. That would have been during the time that [C.] Dale Duvall was commissioner, and that the assistant secretary tended to have a great deal more day-to-day involvement in the management of Reclamation than maybe has occurred during other times. . . . I think that was the same time . . . the reorganization was done, which was sort of done under the initiation and direction of the assistant secretary's office. . . ."

During that period of time, my perception is that the Bureau did not have a dominant commissioner. That would have been during the time that [C.] Dale Duvall was commissioner, and that the assistant secretary tended to have a great deal more day-to-day involvement in the management of Reclamation than maybe has occurred during other times. I think that was the same time of which the reorganization was done, which was sort of done under the initiation and direction of the assistant secretary's office.

Storey: And the assistant secretary was from the Denver area then?

Willms: No, Assistant Secretary Jim Ziglar, was . . . I think he's from Mississippi or something like that originally. As I recall he was staff aide to [a] senator for quite a while. He ended up some part of the time working in the bonding industry, and that's when he became the bond counsel. I think he was an attorney–I can't swear to that either, but I think he lived on the East Coast most of the time, but the bonding for the Windy Gap was a fifty-, sixty million dollar, maybe a hundred million dollar bond issue. So they had sought bond counsel outside . . .

END SIDE 1, TAPE 1. JUNE 10, 1994.
BEGIN SIDE 2, TAPE 1. JUNE 10, 1994.

Willms: I have no idea. That all occurred way before I was involved. But in the processes, the assistant secretary became very involved in water resources, and I would assume that his choice as assistant secretary was probably advanced by people within the Northern Colorado Water Conservancy District, because they saw him as a friend, and probably other people in the NWRA, because they saw him as a friend.

Storey: One of the other groups, of course, that has an interest, is Reclamation. And one of the things I'm sort of interested in, was Reclamation doing anything, as it were, to foil the transfer? Or to educate the assistant secretary, or whatever you want to call it?

"I was advised of the impending transfer by the regional director . . . Bill Martin. He . . . made it *very* clear that the decision was made, and that our job was to implement it. . . . I wrote a little memo to Bill and advised him that there were two obstacles that I saw . . . the union and . . . the public power industry. . . ."

Willms: From my perspective, no. I was advised of the impending transfer by the regional director who was then Bill Martin. He did it over the phone, and he made it *very* clear that the decision was made, and that our job was to implement it. And he sort of started the conversation in a way that said, "Don't argue with me. It's not my decision. The decision is made." And I took that issue at heart. The only thing that I did, I wrote a little memo to Bill and advised him that there were two obstacles that I saw that could scuttle the transfer of this, and that I thought that as our role in implementation, that we may want to consider how we could mitigate these obstacles. And the two obstacles that I identified were the union and the power customers, or the public power industry. And I felt that if either one of those stood up and wanted to make an issue of it, that those were the two that I could *see* could stand up and make an issue of it, and that there were enough flaws, I thought, in the logic of that transfer, that if any group stood up and made an issue out of it, that it would be hard to sustain the decision. I don't know that anything was . . .

We talked a little bit about those issues. There really wasn't a lot we could do. Now, from what I could do personally, I could deal with the employees, and I tried very hard, and I think very successfully, to try and keep the employees from–in as calm a situation as we could, to attempt to prevent any sort of a union uprising on it. As it turned out, the union did not take a role in it, and I have no idea what discussions they may have had. I might speculate again that individually they looked at it as saying that if they got to agitating, the *employees* got to agitating, that that may lessen their chances of being able to get a job with the district, because the union really did not take any sort of an active role in this. I had regular, *regular* meetings with the employees to keep them informed of what we were doing and the steps we were trying to take to protect

their opportunities for employment. We were very up front with them in telling them what the attitude of the district was, *without* being *critical* of the district. We attempted very hard to keep the district in a positive light through this whole thing.

As far as the power industry is concerned, there really wasn't anything that I felt that we could do from the project aspect to alter that, except make sure that we didn't take any negative positions, didn't make any statements that would indicate that the district's operation would be detrimental to the project side. We did get a few letters from the power community, as I understand, as I recall, and I think we responded to them in a manner that portrayed the transfer as being something that would be at least not a negative to their interest. But I think that there really wasn't anything we could do on that. I think the public power groups probably looked at it from two perspectives: a local perspective of just statements that the manager had made, and then I think they looked at it from a national perspective and said, "We really would not like to see the United States give up the operation of major public power facilities to water user groups, that they would lose their influence if that were to happen." And I would guess probably the national picture was probably more dominant than the local picture in this issue.

Storey: Who was the manager of the Northern Colorado Water Conservancy District?

Willms: That was Larry Simpson.

Storey: Is he still there?

Willms: No.

Storey: The employees. I'm interested in, first of all, what happens to them, say the project had been transferred. What were you looking at was going to happen to employees that were not picked up?

Willms: Well, for those that were not picked up by the district, we were doing some outplacement type of things. We had the personnel office, I think in Billings, notify other offices that transfer was impending. We then tried to negotiate–I can remember doing this somewhat with Hoover, where they wanted to pick up some of our people by trying to get them to allow us to keep them until the transfer, because we had to continue to operate the facilities, and we were starting to lose enough people that we were actually starting to carry on discussions about doing some details back to the project to leave people to operate the staff. And I had approached the regional director about maybe having to go all the way to the commissioner and direct some details, because we couldn't afford to get into a situation where we didn't have enough staff to operate the facilities. And we never did get quite to that point. What we had, really, was an influx of people leaving that left right after we made the public announcement, or in the month or so after that. And kind of what happens here, particularly in the craft areas, is where we were most concerned about people

leaving, because we have to have a certain amount of operators to operate the facilities–got to have a certain amount of electricians and mechanics, or you just can't keep things running. And Reclamation tends to have sort of an informal revolving situation where an electrician, for instance, may, or an operator, may go from one plant, stay a few years, go to another one and stay a few years, go to an another one, never changing professions or never getting promotions–they may get pay raises, because you have different pay scales. Some of them probably actually give up money to leave. But they move for one reason or another, family reasons or don't-like-their-boss reasons, or whatever it is. And these things are difficult for Reclamation, because once a person leaves you have vacancies, and vacancies in some of these jobs put stress on other employees–particularly operators where you have to continue to have people on board. If you have a vacancy, then people are working overtime. So you know there's this continual movement. Well, with this situation, you start to get contacts then: people in the Loveland office would start calling up other places and finding out if there were vacancies, and if there were, they'd start calling the personnel officers, the foremen or the supervisors are anxious to fill these jobs, so they would start to negotiate for transfers without even going through advertising processes, which are basically legal here, because they're sort of lateral transfers. And so a lot of them got out of there pretty quick. After that first rush, however, it slowed down quite a little bit. I think by the time Christmas came around, people were starting to sense that maybe the transfer was in trouble. The American Public Power Association had started to make their noise, and activity started to slow down a little bit, and while nothing came out to suggest that the transfer wasn't going to take place, you really kind of got a sense that it was starting to bog down and that the district seemed a little less aggressive. Then as this team or committee or work group or whatever that the assistant secretary appointed to look at it was appointed and that seemed to slow it down a little further. You kind of got the feeling during this period of time it was dying, but I can't tell you why, I can't point to any specific thing. And I think the staff started to sense that a little bit, and they got a little less antsy.

Storey: Did you end up with the same size staff *afterwards* that you started out with?

Willms: Generally, yes. I can't say specifically. There may have been a position or two we didn't fill, but we were pretty well set with the staff that we needed to do the job. It *could* be, and I don't remember now, whether the transfer of the dams and of Horsetooth and Carter came out of this or occurred before that. It may have been that when the decision was made not to go ahead with the power system, that we went ahead and transferred those at that time. If that's the case, two or three positions probably would have dropped.

Storey: It sounds as if the power interests were also exercised. Is the Colorado-Big Thompson Project a major power producer?

Willms: Oh, it's not major in the terms of compared to Grand Coulee or Hoover or Glen Canyon or something like that. It puts out, I think the capacity is about 200 megawatts, and for this area, it is a significant producer.

Storey: Uh-huh, so having 200 megawatts become questionable in their mind would be a major issue for them.

Preference Power Customers

Willms: Yeah. And I think you have to remember that the benefactors of this power are the public power recipients: REAs [Rural Electrification Associations], cities, and other publicly-owned entities, as compared to Public Service of Colorado, which is a public utility, but a privately investor-owned utility and serves a different type of a customer. They serve *us*, where the public power we tend to serve only municipally-organized groups. We'd sell to the City of Loveland who delivers their own power in the city to the customers.

Storey: Is that a Reclamation-wide policy?

Willms: I think that's part of the Reclamation legal structure, that our power that we generate is generally either used for our project purposes, or is sold to public entities. And there are, I think, some interesting dichotomies in this, because ultimately, a citizen of the United States uses the power, whether it's delivered through the City of Loveland to the customer, or an REA to the customer, or whether it's through Public Service. And if you were to have looked at, say, the Sacramento area in the 70s or early 80s where Sacramento Municipal Utility District served the immediate area around Sacramento as a quasi-public entity that purchased a great deal of power from the Central Valley Project at cost, so to speak, at cost-base rates where PG&E, Pacific Gas and Electric, delivered the power to the outlying areas that were right adjacent to it. A person who lived in the Sacramento Municipal Utility District probably got their power for maybe, oh, 3½¢, thereabouts, per kilowatt hour. The people in the PG&E area maybe paid 9¢. I always felt there was a dichotomy there, because the end user on the Sacramento Municipal Utility District was being heavily subsidized, where the PG&E side was not, and why did we elect to provide a subsidy to the user that happened to live within the Sacramento Municipal Utility District? Because it ultimately gets passed down to the end customer. Now, I think in terms of REAs, there was a logic to that, because part of the reason the Rural Electrification Act was passed was is that the public utilities didn't serve the rural areas because it was too costly. It had too much distance between customers and so the Rural Electrification Act then provided for subsidized loans from the United States to these rural areas to form their mutual REA groups. (Storey: Uh-huh.) And part of that is we provided government power to them which was generally cheaper because of the nature of the projects. And between the subsidized loans and the source of power, these REAs were then able to deliver power to these rural customers at rates that were at least somewhat comparable to what the public utilities could deliver in the highly-dense areas. And I think you can make that logic. But when you get to issues such as whether or not you sell power to the City of Sacramento or the Sacramento Municipal Utility District at a subsidized rate, but won't let PG&E have it to [service] customers that border this area, I think you get a dichotomy there. But the public power industries, the cities that receive this, have a pretty

strong lobby at this point, or have had for years.

Storey: Uh-huh. And let's see, the assistant secretary is . . . . It used to be water and power, didn't it? the title? Or am I thinking of something else? Am I confusing it with something else?

Willms: Well, of course Reclamation had "water and power" in it's name for a few years back in the 80s.

Storey: Yeah, under Carter.

Willms: Yeah, coming out of the Carter Administration.

Storey: Maybe that's what I'm thinking of. But anyway, would our assistant secretary be responsible for power issues as well as water issues?

Willms: They would be responsible for power issues to the extent that the power is produced by Reclamation. They would *not* be responsible for any of this question of public power versus private power. That's all under the Department of Energy from the time it was formed.

Storey: It appears that there are two groups of employees that you were dealing with: unionized ones and nonunionized ones. Do you have any idea or perception of why people working for the Federal government feel they need a union, or why they unionize?

Unions in Reclamation

Willms: I really can't give you much on that. The craft unions I think probably grew out of the era in the 30s when unions were strong, tied back to the Depression and coming out of the Depression and recovery. The same crafts, electrician of course is the same craft that you have in any number of places in industries, including the construction industry, all basically unionized–or not all, but largely unionized. These unions were started during a time when it was legal for them to bargain for salary, and that was grandfathered in whatever legislation it was that . . . I guess, barred public employees bargaining for salary. And our unions, we actually did bargain salary.

Storey: Now, are we talking about the Eastern Colorado Projects Office? Or are we talking Reclamation-wide? Or how did this work?

Willms: Reclamation-wide, craft unions do bargain for salary.

Storey: And that's still the case?

Willms: That's still the case, yes.

Storey: So they're not controlled by the Workmen (Willms: No, they are not.) Schedule?

Oh, I didn't know that.

Wage Grade and Wage Board Employees

Willms: You have the Wage Board and Wage Grade, and I'm going to get them mixed up, but the two of them are different, and one of them we refer to as the union-negotiated scales and I think it's the Wage *Grade* is the one that is set by this board or group that sets, like the Labor Department sets these wages. And they apply to all of them that are not members of the union. If they're unionized–in *our* case–in a grandfathered union, then we go ahead and negotiate the wages. Now the unions are different–we don't have a Reclamation-wide union, but I think all of the major power facilities within Reclamation *are* grandfathered and do negotiate wages.

Storey: So we negotiate wages Reclamation-wide somehow?

Willms: Not Reclamation-wide.

Storey: Work unit by work unit, you mean?

Willms: Well, it's usually by the union local. For instance, in the case of the Eastern Colorado Projects, the local included the North Platte Project Office, the C-BT [Colorado-Big Thompson] facilities, and the Fry-Ark [Fryingpan-Arkansas] facilities. And when we negotiated wages, you negotiated wages for *all* of those. Now if you were out in Sacramento, the Central Valley I think had a local there, and all of the wages in the Central Valley Project were negotiated. And I think Grand Coulee's are negotiated separately. Now Grand Coulee, I think has actual . . . Let me back up. In the case of Eastern Colorado Projects, all of the craft employees were represented by the International Brotherhood of Electrical Workers–whether they were dozer operators, or whatever they were, they were all represented by that same union. In Grand Coulee, I think each of the craft unions have their own representation. You'll have a laborers' union, you'll have a mechanics' union, you'll have a electrical union, and things like this. And then they have a council up there, and I don't understand fully the role of the Council of Unions versus individual unions, but they have a lot of jurisdictional issues up there, where a pipefitter can't do the work of a boilermaker and vice versa. And on *our* projects, we were all under one union, so we had no jurisdictional issues–that same union was doing all the work, and the only jurisdictional question that comes up is, if you have classifications of work. If you have a mechanic, [he] does certain kinds of work. And if you have a maintenance man, which is another classification, they do a, you might say, a lower grade of maintenance work than what a mechanic does. A maintenance man can *do* mechanic's work, but you have to pay them as a mechanic. But it's legitimate to have the maintenance man do the mechanic's work. If you were to go to Grand Coulee and you were to have a union of maintenance men–and I don't know that those are classifications up there–and a union of mechanics, the maintenance person *couldn't* do the work, regardless of the pay issue, because that would be crossing the jurisdictional lines of the crafts. It changes the

management of the project immensely, because we had no union-management problems, because we didn't have any jurisdictional issues.

Storey: And is this what you were referring to earlier when you mentioned that they could take the same job somewhere else and the pay would be different, because the union scales would be different on each location?

Willms: The union scales, each local negotiated their own, and yes the scales were much different.

Storey: This was pre-locality pay?

Willms: Well, yeah. And they are, generally speaking, the agreements, what we would have for a agreement with the union is a long-standing master agreement–at least that's what we had in the local at Loveland. And it calls for periodic negotiation of a wage scale. And then the contract sets down sort of a criteria for developing a wage scale, and it is to be a comparable scale to other like crafts in the locality. So the negotiation sort of starts off with going out to see what, in the case here, we would look at what Public Service of Colorado paid their workers, and we would look to see what various other entities that were relevant . . . And of course we would look at them, the union would look at them, we would come up with different interpretations and results, and then you sit down and you negotiated. I never personally became involved in negotiations. Negotiations were conducted generally by the personnel people out of the regional office. In fact, I don't think any of the project people from Loveland entered into the negotiations, any of the management during the time . . . Well, that's not true, we did. We'd send, I think our maintenance chief would participate in negotiations, come to think of it.

Storey: But you did not personally become involved.

Willms: I did not personally do it, no.

Storey: Now, if I'm understanding what you said earlier, you could have people working in a powerplant who were union, and people who were nonunion–is that right? It was a matter of choice for the person?

Willms: I think that is correct. I think it is a union shop. No, I think it's an open shop, whereby a person does not have to be a member of the union. I think that's by law.

Storey: And how did the salaries compare?

Willms: Well, if they were nonunion they still got paid the union scale because it was like an open shop in that the person was represented by the union, but not a dues-paying member. And they got paid under the union scale.

Storey: So there wasn't a disparity.

Willms: Yeah, there was not a disparity. We did have, when–I think it was after we went to . . . At some point in time here, anyway, part of the Fry-Ark Project people at separate locations were GS grade and wanted to convert to craft . . .

END SIDE 2, TAPE 1. JUNE 10, 1994.
BEGIN SIDE 1, TAPE 2. JUNE 10, 1994.

Storey: This is Tape 2 of an interview by Brit Allan Storey with Ray Willms on June the 10th, 1994.

These folks' work was legitimately craft work, so . . .

Willms: And we did convert them to craft, and then they came under the union and I think got substantial pay raises in the process, because of the scale, and that's why they wanted to make the conversion. We did the conversion through, more or less a formal classification review–had classification people look at the jobs. I don't remember specifically what they were, but they looked at it and concluded that they should be under craft classifications.

Storey: I'd like to talk about Green Mountain Reservoir for a little while. You mentioned a couple of times that it was never considered for transfer to the Northern Colorado Water Conservancy District. Why was that?

Green Mountain Reservoir

Willms: Green Mountain was built specifically to . . . Well, for two reasons: to replace the water diverted from Granby, such that the prior rights on the Colorado River were met. And what that essentially meant was that you could store water on the Blue River and whenever the diversion to Granby would have infringed upon the rights of the Shoshone Powerplant, you could release water out of Green Mountain to meet those rights and the water diversions from Granby could be continued, which had the effect then of increasing the yield out of Granby, considerably, because the diversions didn't have to be curtailed to meet the Shoshone Powerplant rights. That was a *piece* of Green Mountain. And the reservoir is actually kind of partitioned that way. You know, there's a replacement "pool," so to speak, that's considered a pool for replacement of Granby diversions. Then the rest of the reservoir was put in there to, oh, ameliorate or pacify, or something, the objections of the West Slope people to the diversion of the water to the East [Slope of the Rocky Mountains]. And that's the bulk of the reservoir, I think, of about 150,000 acre-feet of useable yield out of the reservoir, 102,000 is considered in that pool of water for West Slope use. The continuing disagreements and distrust between the East Slope and the West Slope of Colorado required that to be built in the first place for them to receive some sort of a benefit from the East Slope grabbing off some of their water. And if you were to ask, say, the manager of the Colorado River Water Conservation District, he would look at that as compensatory storage over there to compensate the West Slope for the East Slope having taken [West Slope water.] And *he* would like to see compensatory storage a requirement of law.

But actually, in the case of Green Mountain–and I think it's really still the case–it ends up being not a requirement of law, but a negotiated thing in order to [keep] ~~get~~ the West Slope politically from blocking the development of the diversion project. And of course if you look at the history of Green Mountain, *enormous* amount of discussions went on between the people on the West Slope and the people on the East Slope and the political factors, the state government and the U.S. senators that seemed to be a key player in all of this, to try and get an agreement so that it could get through Congress. You know, Green Mountain, I think the key piece of that, if you were to look at Senate Document 80 which sort of constitutes the operating principles for the Colorado-Big Thompson Project, about nine-tenths of the document talks about the West Slope and Green Mountain–very little of it talks about what happens to the water after it flows through the tunnel into the east side. And of course the east side was still the reason the project was built, but all of the problems, I think, in terms of getting consensus, was getting consensus with the West Slope.

Now, to get more to your question, that distrust, of course, still exists. Green Mountain is looked at as being substantially a West Slope reservoir to benefit the West Slope–but not entirely, because of the replacement piece. So Northern would not want to operate Green Mountain particularly, because having the United States as a neutral party keeps them from being blamed or distrusted by the West Slope. I think likewise they may be–and I don't know this for sure–a little reluctant to have entities on the West Slope operate it, because the replacement piece of that is still very important to their being able to make their diversion at Granby. So we sort of become a neutral party there, that I think is important to all sides.

Storey: And then the power from Green Mountain was originally intended as project power, wasn't it?

Green Mountain Produces Project Power

Willms: It *is* project power. (Storey: It still is used that way?) Yes.

Storey: It runs the pumping plant at Granby?

Willms: Well, it's treated just like any of the other power produced by the Colorado-Big Thompson Project. The power that goes into the system [meets] ~~needs~~ pumping [needs] at Granby, and the excess power is then marketed to the public power groups, right along with the rest of it.

Storey: You're saying it goes into the grid for the West Slope?

Willms: It goes into the Colorado-Big Thompson power grid. You know, there's a power line that goes through the Adams Tunnel. I don't know if you knew that or not. (Storey: Yeah, I knew that.) But Green Mountain is tied to Granby as are the powerplants on the East Slope. Now the transmission facilities are so intertwined that it doesn't really make a lot of difference, but on paper, Green

Mountain power would be just like Flatiron power, as Lake Estes powerplant power–it's all a source. And then Granby uses power, and you on paper subtract the two, and what's left is delivered to the public power customers.

Storey: Okay. Now, I'm confused about . . . . You mentioned marketing water out of Green Mountain. The way you've just described it, it sounded to me as if all the water was "spoken for," as it were. So how could we *market* water?

Marketing Water out of Green Mountain Reservoir

Willms: The way Senate Document 80 was written, it stipulated that this 102,000 acre-foot–and I don't remember what it was called now–it's called Power Pool, actually–was to be used to generate power at Green Mountain and to be available to the people on the West Slope for their use. And I think it actually specified maybe not municipal, but domestic use having first priority on it. It was written in a way that would suggest that the water would be released to maintain a certain flow at the Shoshone Powerplant, which would be equivalent to the Shoshone Powerplant right at the time that Green Mountain was built. I'm kind of reading between the lines a little bit, and I've done a lot of studying, *tried* to figure out what was intended by the writers of Senate Document 80–in fact, I think I had you do some research on that at one time.

Storey: Yeah, I did quite a bit on that.

Willms: Unfortunately, we didn't find a lot of documents there, but my sense is is that what was intended was that if the Shoshone right was met, then all of the uses downstream that were contemplated at that time would also have water, that once the water went through the Shoshone Powerplant, there would be enough water in the river with the tributary inflows of the Roaring Fork and what-have-you, to meet all those downstream needs, and that if we made sure we released enough water to meet the Shoshone Powerplant water right–it wasn't defined as meeting the water right, it's defined as meeting a flow–that anybody upstream could divert water and we would automatically be replacing it, in order to meet that flow down there. And I think that Senate Document 80 was structured with the idea that, well, you have this–I think, I don't remember now, it was 1,250 cfs, or something like that–at Shoshone, then the West Slope is taken care of. But times have changed. At that time we didn't have this enormous ski industry over there, we didn't have all that development in Summit County and in Grand County. And I think that you didn't have the oil shale development, some of the developments downstream. Also, you didn't have water rights administration done quite the same way in Colorado. [In] Colorado now, a person drills a well for domestic purposes, or for any other purposes, they need to provide an augmentation if that well will pump from an aquifer that's tied to the surface. So people who were trying to drill wells were needing sources of water for augmentation to meet state water rights. All of these changes led, I think, to a conclusion that just meeting the flow at Shoshone Powerplant really didn't *serve* the purposes of the West Slope very well. So West Slope people I think actually approached Reclamation and wanted Reclamation to market

water. And what that would do is, that would give people a contract entitlement that they could use to substantiate their entitlement to use of the water, the *right* to use the water. And particularly this was useful for, oh, these people who were drilling wells that needed to be able to present to the state engineer that they were augmenting their flows.

And so that's, I think, the type of things that precipitated it, was to get it more orderly than that, just meeting a flow at Shoshone. Also, it would provide then for releasing water *more* than to meet that flow, if that was necessary to meet a need. ~~So sometime, I think, probably,~~ If I recall, it was in the late 70s, early 80s, the West Slope people approached Reclamation about changing the way the project handled the water, and to provide for some marketing process. So working between the West Slope and the East Slope people with Reclamation right in the middle, we developed what we called–I don't know if it was operating principles maybe–something like that, which we negotiated, published in the *Federal Register*, took a lot of comments on, *extensive* set of negotiations went on. It was before my time, but the records were fairly good and I read most of that. I think it was called *The Green Mountain Operating Principles.* And it reached a consensus with the exception of the users in the Grand Valley, of which I think they saw the setting that the old operations of flow–they had very senior water rights and the maintenance of a flow at Shoshone as being the best situation for them. And while they objected, they didn't object strenuously, and the Secretary went ahead and adopted these operating principles. And with the adoption of these operating principles, then the next step was to go set up a marketing process to market the water, so that you would then have the water specified to certain people. And the way this worked is, we continued to meet the flow at Shoshone. And then the excess over and above that, which ended up being, oh, I think around 20,000 acre-feet, that, based on hydrologic studies, would be available as a yield to market and still be able to meet the specified flow at Shoshone, we would market.

". . . Colorado River Water Conservation District . . . would then market the water . . . The district would then do the defense of that in any court action . . . I think that what they had going was real sound . . . we went and negotiated a contract with them . . . when several of the ski areas in Summit County decided that the amount that the district was going to charge for water was too much, and that they could get a better deal with the United States. . . . And what we ended up with then was a situation where you had the ski areas and river district at each other's throats, and the whole thing just fell apart. . . ."

Once those principles were put in place by the secretary, through the *Federal Register* process, we then contracted with the Colorado River Water Conservation District to write an EIS. They did that, and the idea was that we would sell all the water to the conservation district, and the conservation district would then market the water as they might market it to their constituencies, and their district encompassed the whole service area. And that looked like a pretty good proposition, because they were going to set up an *easy* process for people, particularly these individuals that needed augmentation for wells, to come in and

get a contract agreement with the district over there. The district would then do the defense of that in any court action type of thing. And it would be sort of a walk-in process: somebody who builds a home up there and wants to drill a well and needs a well permit, the state engineer says, "You got to have augmentation," they could just walk into the district, "buy it," so to speak, and not have to worry about it after that. I think that what they had going was real sound, but they set up a rate schedule, the district did, and we went and negotiated a contract with them, had the contract all negotiated and waiting only for the completion of the EIS to execute the contract, when several of the ski areas in Summit County decided that the amount that the district was going to charge for water was too much, and that they could get a better deal with the United States. And they went off and started to object to the United States signing this contract with the river district. There was always a lot of tension anyway–the West Slope did not ever present a common front, and some groups were willing to negotiate, some were not, and they fought among themselves all the time. And this ended up with a kind of a donnybrook within the West Slope itself. Anyway, this group of ski areas hired a attorney here from Denver to represent them. They also had an attorney on the West Slope, and they went the political route, went into the Department, into the assistant secretary's office and argued that this contract was not a good arrangement. The assistant secretary got involved in the issue and tried to negotiate with them, and in the process the river district got pretty uptight about it. And I think they felt that they had worked all this out with Reclamation, they'd had gobs of public meetings, they had spent $300,000 on an EIS, or some number like that, that everything was in order until these four, I think they were four, ski areas that got involved in it, and they managed to go back and convince the assistant secretary to get involved and to withdraw the authority of Reclamation to sign the contract or to withhold it, to want to change the terms and conditions, and they became very irate and difficult to deal with then. And what we ended up with then was a situation where you had the ski areas and river district at each other's throats, and the whole thing just fell apart. The *offshoot* of it was is that the district was no longer interested in being our contracting [agent] for the sale, unless it was conducted under the terms that we had negotiated the contract, and the assistant secretary would not go along with the terms and conditions of the contract. And I don't remember right now exactly what terms and conditions were changed, but there were some significant changes there. One of the arguments of the ski areas was that the district was going to go make money on this, and they convinced the assistant secretary that they *might* in fact make some money on it. And my view personally was, "So what?!" When we sell water to the City of Colorado Springs, they probably make some money on it in that they meld their rates. And that's all the district really could do, was since they're a nonprofit organization, they don't really *make* money, but they may meld [these] ~~their~~ costs [with] ~~of~~ *other* costs, and everybody does that. So I thought the argument that the district was going to make money was an unsound argument.

". . . the United States went ahead and marketed the water. . . . the district . . . could . . . sell to individual homeowners . . . We can't really do that because of our NEPA restrictions . . . We had to execute a separate contract and do

separate NEPA compliance . . . So . . . we lost that opportunity . . ."

In any case, it ended up with the district pulling out, or not being able to reach an agreement. So the United States went ahead and marketed the water. The thing that got lost there is that if we had sold water to the district directly, they could have used their processes to, say, sell to individual homeowners and things like that, and they could have the walk-in-the-door process. We can't really do that because of our NEPA [National Environmental Policy Act] restrictions and things like that. We had to execute a separate contract and do separate NEPA compliance with each one of these contractors. So [in] that process, we lost that opportunity, which I thought was a *great* public service that the district could have done.

". . . through the contentiousness of this, the ski areas made some arguments that the water was not firm, and that was the reason why the price was too high. . . . They prevailed with the assistant secretary that we should not consider that water firm, so when we actually executed the contracts, they were interruptible contracts. And the ski areas lost enormously with that. An interruptible contract to a ski area isn't very good. . . ."

The other thing that we ended up with is through the contentiousness of this, the ski areas made some arguments that the water was not firm, and that was the reason why the price was too high. As I recall, that was one of their arguments. They prevailed with the assistant secretary that we should not consider that water firm, so when we actually executed the contracts, they were interruptible contracts. And the ski areas lost enormously with that. An interruptible contract to a ski area isn't very good. If we got into a situation where we saw the water supply as being such that there was some question about being able to meet some of the demands of the future year, we can interrupt those. And of course [when] ~~what~~ they then had [to] execute those contracts with us, they objected immensely.

". . . from my perspective . . . *they* lost. They paid essentially as much to *us* as they would to the district and got non-firm contracts. And the advantages of all the other users of having to be able to deal with an easier process was lost. . . ."

And I viewed it from my perspective as saying *they* lost. They paid essentially as much to *us* as they would to the district and got non-firm contracts. And the advantages of all the other users of having to be able to deal with an easier process was lost. And it just looked to me like it was one of these things where we got in this infighting and ended up with a lose-lose [situation], rather than a decent arrangement.

Storey: And was this assistant secretary Jim Ziglar again?

Willms: It was. And I don't know whether Jim Ziglar was a particular player in this, as much as possibly Wayne Marchant, who was his deputy at the time.

Storey: Marchant? Is he a Reclamation employee?

Willms: Well, he now works for EPA. He was our director of research here for several years–recently. He just left a year-and-a-half or so ago.

Storey: Well, I want to ask you about the public policy issues involved in transfer of projects and what you saw at Big Thompson and all that kind of thing, but I don't think seven minutes is enough time, probably! (chuckles) Why don't we talk for a little bit, instead, about the Narrows Project. That was in pre-construction when you came. Was there a big staff working on that?

The Narrows Project

Willms: No, the Narrows Project had actually been started in construction, a construction office had been set up. There wasn't anything done on the ground, but lands had been purchased. And I think this had occurred in mid-70s, prior to President Carter being elected and his "hit list," and the Narrows Project was one of those on the hit list. The hit list of course delayed the process, and I don't know the sequence here, but the construction office was shut down–I think it only had a few people, it was just getting started–it was closed. And the administration was done out of the regional office in Denver when the Lower Missouri regional office existed. But in those issues, the Platte River endangered species issues came up. We did a whole bunch of work on consultation on those endangered species in the Platte River, and worked through some alternative studies and things like that, and had fairly well concluded that process. I think there had been a biological opinion issued, I don't even remember what it said now. It was, again, before my time. And when I got involved, we were in the process of negotiating a contract with the water users down there, that would be the contract as a precondition to actually [initiating] ~~initiate~~ construction. Those contract negotiations were conducted by the regional office, the chairman or the head or the leader of the negotiation team was the regional supervisor of water and land in the regional office. And those [negotiations] ~~contracts~~ were ongoing. When they made the decision in the summer of '85 to close up the Lower Missouri regional office and consolidate it with the Upper Missouri [Region to form] ~~into~~ the Missouri [River] Basin [Region], almost all of the work that the regional office did that was relative to Colorado, including the planning, which that was part of–certainly the endangered species stuff that was still going on, some of it was still going on, was in the planning–was all reassigned to the Eastern Colorado Projects Office, and I took over as chairman of that negotiating team. It was a completely new thing to me. We held a couple of negotiating meetings, and that led . . .

"In preparation for those, of course I reviewed the status of the [Narrows] project, the situation, and it seemed just absolutely clear as could be that there was no way we would be able to negotiate a contract with those people to pay enough money to recover the reimbursable costs . . . I concluded that they just couldn't go anywhere . . . I tended to be very frank in terms of what would be required for us to be able to execute a contract. . . . which I sensed

maybe had not occurred in the past . . . once we got it to that stage, both parties sort of lost a little interest in the negotiations, and so it just sort of ebbed. . . ."

In preparation for those, of course I reviewed the status of the project, the situation, and it seemed just absolutely clear as could be that there was no way we would be able to negotiate a contract with those people to pay enough money to recover the reimbursable costs, because simply the economics just didn't support it.

END SIDE 1, TAPE 2. JUNE 10, 1994.
BEGIN SIDE 2, TAPE 2. JUNE 10, 1994.

Storey: The irrigators' ability to pay was . . . .

Willms: The irrigators' ability to pay wasn't anywhere near enough to cover the costs of the reimbursable parts of the project, and the rest of it would have to come from municipalities and from state contributions for recreation, and it was just clear that there weren't municipalities that needed the water, that could get it, [or] that were willing to pay that. There was no sign at all that the State of Colorado would kick in money on the recreation. And I concluded that they just couldn't go anywhere, there was just *no* opportunity for agreement here. So after a couple of negotiating sessions, and in conducting those sessions, I tended to be very frank in terms of what would be required for us to be able to execute a contract. And when we *got* to being very frank, which I sensed maybe had not occurred in the past–maybe the negotiators for the United States in the past had not said, "You guys have got to come up with this amount of money in order for us to execute a contract, and if you've got to get it out of the state, you've got to go make those arrangements with the state to do it." And I think maybe that just hadn't been done. And once we got it to that stage, both parties sort of lost a little interest in the negotiations, and so it just sort of ebbed. We just didn't negotiate for some months, maybe six or eight months. And I finally approached Bill Martin and told him that I thought that we were not doing anybody a particular service in carrying on this charade as being a workable project, that it wasn't, and that we ought to do *something* toward suspending these negotiations. And I don't remember now just how we did it, but some way or another we reached an agreement with the parties that we weren't going anywhere and we just wouldn't do anymore work on negotiating it. I think we may have sent a letter, I'm not sure, in there, but we didn't come out and say that the project was uneconomic and that it ought to be deauthorized or anything like that–we just sort of agreed that it wasn't going anywhere in current times, and we just stopped.

Water Rights Claims for the Narrows Project Were Subordinated to the Poudre Project of the Northern Colorado Water Conservancy District

Sometime after that, the districts down there did want to preserve their water right, and I think they went through one of their triennial court sessions

where they have to show diligence in pursuing their project. Then I think it came up a second time, not too long before I left the Eastern Colorado Projects, and Northern Colorado Water Conservancy District then challenged the diligence. And there got to be quite a little negotiation went on there. Senator [George Hanks "Hank"] Brown got involved, or his office got involved, and his office sort of, oh, led or facilitated an agreement between the users and Northern Colorado, that in effect, the users agreed to subordinate their water right for the Narrows Project to the district's Poudre Project, which prior to that, the water rights for the Narrows had been senior. And I think the senator's objective was that there may be something that would materialize at the site, and that they should not give up the authorization of the project. But I think that action pretty well ended the prospect of the Narrows, as it's structured, ever being built. Maybe some other project could grow out of it.

Storey: The Poudre Project and the change of water rights, we're talking about?

The Narrows Project and Endangered Species on the Platte River

Willms: Well, the change of water rights on the Narrows I think pretty well was a, you might say, a final nail in the coffin of the project. It's still authorized, still sits there authorized, we still own lands down there, and the lands were primarily purchased for fish and wildlife mitigation. So I don't know what will ultimately happen to them, but I think that the project is . . . Conditions would really have to change before something gets reinstituted there, and I think the latest actions by Fish and Wildlife on the endangered species in the Platte are probably another shovel of dirt over the coffin now. It just seems like that kind of a project can go nowhere.

Storey: Do you remember which species are involved?

Willms: Well, the primary species that the negotiations were over were whooping crane. I think also the piping clover, another bird; and the least tern were also involved, but the key one there was the whooping crane. Now, I think in reality, these Sandhill cranes were an underlying issue, that the real push by the Audubon Society and the other environmental groups down there was to try and keep the Platte River as a satisfactory habitat for the Sandhill crane, but it isn't endangered, so I think the whooping crane became their avenue to do that.

Storey: Once you got to the point where you had reached this agreement that the project was dead for the time being, did you have to do anything to sort of disband the project or anything like that? It was already there?

Willms: No, I think that all we really did, I think we wrote a letter or something where we advised them that we thought we ought to discontinue negotiations, that it didn't look like we were going anywhere, for a number of reasons. And we were probably fairly vague and fairly diplomatic, and I think they responded that they agreed. That's the way I remember it, but I'm not real sure.

Storey: But we didn't have to do anything about letting personnel go, or closing offices or anything like that?

Willms: We really didn't have any personnel. We had several people who worked on the endangered species issues in the Platte, and that was actually, a lot of that was done out of my office, out of our office in Eastern Colorado, for a long time. And the only thing we did there is we eased and eased the leadership of that back out to Nebraska. The reason it had been done in the regional office was because of the Narrows Project–that was the driving force of that. And so the *work* had all been done out in Nebraska, but it had been sort of managed from the regional office, and [then] it was managed from our office. And once we got out of the Narrows issue, we just sort of let that go away from us, and it started to be handled totally by the office out in Grand Island. And then about that time the bigger issues on the Platte came up, and it started to involve the North Platte, and [we] ~~it~~ just sort of evolved away from it. Now the person that had been working on it from our office, he was sort of managing it or overseeing it, and was on a number of these various committees and teams, and he had other work to do, so he went on and did other work and there were no personnel changes there.

xxx

Storey: Okay. Well, let me ask if it's alright for researchers from within Reclamation and from outside Reclamation to use the tapes and the transcripts from this interview for research purposes.

Willms: It is.

Storey: Great, thank you.

END OF SIDE 2, TAPE 2. JUNE 10, 1994.
BEGIN SIDE 1, TAPE 1. JUNE 24, 1994.

Storey: This is Brit Allan Story, Senior historian of the Bureau of Reclamation, interviewing Ray Willms in his offices on the 14th Floor of Building 67 in the Denver Federal Center, on June the 24th, 1994, at about eight o'clock in the morning. This is Tape 1.

Mr. Willms, during the last interview you mentioned that there was some work going on to transfer all or part of the Colorado-Big Thompson Project to the Northern Colorado Water ~~Conservation~~ [Conservancy] District. I'm sort of interested in what the public policy issues involved in a transfer like that are, what kinds of things have to be negotiated out, and so on.

Policy Issues in the Proposed Transfer of the Colorado- Big Thompson Project to the Northern Colorado Water Conservancy District

Willms: Well, I think the public policy issue was really dealt with between the assistant secretary and whoever he was dealing with, before the rest of us were even aware that it was going on. I assume that his primary consideration was one of moving

towards a privatization of those kind of activities, utility-type activities, and probably a move towards local control. And I assume that's also the approach that Northern Colorado Water Conservancy District would have taken when they asked for the transfer. I have to give that as strictly speculation, though, because the reasons for transfer were really never articulated. They're not in conflict, however, from a *public policy* point of view, from where Reclamation's been headed for years and years and years, of trying to transfer facilities to user groups. We have not done that much with power facilities. And usually we haven't done it with power facilities because our primary user groups are water users. The power production is, to a large part, a byproduct of water development. But it's an important byproduct, and most of our water constituency isn't in a very good position to operate, maintain, and deal with the marketing of power. And I think the *power* constituency probably doesn't much want the water constituency to be in a controlling position.

Storey: Now when we're talking about transfer, we're talking about transfer of operation and maintenance, are we not?

Willms: That was all that was considered in this particular action, was transfer of operation and maintenance. With that, however, goes a lot of control, although there would be a lot of argument that the United States would still set the operating parameters and things like that. The fact of the matter is, that when a person operates those facilities, they *do have* a lot of control. Previously, however, the Northern Colorado Water Conservancy District had looked at actual purchase of the system.

Storey: Oh, they had? Was any of that going on while you were there?

Willms: No, that was prior to my being there, and I say "purchase," I'm not sure if you say purchase or taking of title, because I don't know what their thoughts were, if any, relative to reimbursement of the government for the facilities beyond what their contractual obligation was. But there had been some exploration of transfer of title.

Storey: Was the project reimbursement completed then?

Willms: It is not, no.

Storey:Oh, so it's still ongo**ing?**

"For the part that Northern Colorado Water Conservancy District is obligated to repay, they have an escrow fund set up that will repay that. And so they don't need to collect any more revenues from their users to do that. . ."

Willms: Um-hmm. I think the repayment will be complete in 2002, it's not far [away]. And in fact, for the water portion of the project, that allocated the irrigation, which is half of the project. I don't want to misstate this. For the part that Northern Colorado Water Conservancy District is obligated to repay, they have an escrow fund set up that will repay that. And so they don't need to collect any more

revenues from their users to do that.

Storey: Oh, really? They're just paying it off over the life of the loan?

". . . they'll continue to pay it over the life [of the repayment contract], because it's interest-free and there's no sense in paying it off early. . . ."

Willms: Oh, they'll continue to pay it over the life, because it's interest-free and there's no sense in paying it off early.

Storey: And I presume they can accumulate interest on the money they have in the escrow account.

Willms: And that's part of the escrow account, I think. I'm not *sure* that the escrow account today would have enough money in it to retire the debt, but it will have enough money with the payments made out of the escrow [and] ~~in~~ the interest accumulated by 2002 to make the last payment. I haven't studied that escrow account, I couldn't tell you myself exactly what's in there in terms of principal.

The power side of it also is expected to be paid up in 2002, but I think it probably has a considerable amount to actually be paid, and it, of course, will repay the portion of the irrigation allocation that Northern does not pay. If the original project cost $150 million. I stress the word "original," because there were some amendments thereafter that changed the numbers a little, but it stays in the same general range. And out of that $150 million, it was allocated fifty percent to irrigation and fifty percent to power. However, the project was *estimated* to only cost $50 million when it was started, and it was started before the Second World War, towards the end of the Depression Era there. I don't know if it was when the contracts were executed, or when some of the commitments were made–probably when the contract was executed. I think the contract was executed back before 1938 or '39. The obligation of the district was to pay half of that, or $25 million. Well, the project ultimately cost $150 million, but this contract stated ~~the~~ $25 million. So the additional $50 million will be picked up by power as an aid to irrigation. (Storey: Oh really?) So it also needs to be repaid. Typically, those types of things are repaid towards the end of the repayment period, so it tends to balloon some.

Storey: Northern Colorado, even only having to pay back $25 million sounds, though, as if it's a pretty prosperous district. Is that typical of the Reclamation projects you've have experience with?

Willms: Oh, I would think as a district it's probably one of the more profitable ones–certainly isn't in the same category as Central Valley Project in terms of crop revenue and stuff.

". . . the Colorado-Big Thompson really supplies only a small portion of the water to the lands of the district. It's the district's only source of water, but there are 600,000 acres down there, and I would assume that 600,000 acres

applies at least 2 million acre-feet over the course of a year. And the CBT only provides 230,000. . . ."

There is a very *large* crop revenue that comes out of the district, but a person has to keep in mind that the Colorado-Big Thompson really supplies only a small portion of the water to the lands of the district. It's the district's only source of water, but there are 600,000 acres down there, and I would assume that 600,000 acres applies at least 2 million acre-feet over the course of a year. And the CBT only provides 230,000.

Storey: Um-hmm, so there are major other sources of water I suppose.

Willms: Other major sources of water. And of course being a 600,000-acre district, it does then have a lot of crop revenue there.

Storey: When you were up there, did you attend any of the Northern Colorado Water ~~Conservation~~ [Conservancy] District board meetings?

Attendance at Board Meetings of the Northern Colorado Water Conservancy District

Willms: I attended most of them, not all of them but most of them.

Storey: Was it sort of a routine thing that you expected to be there?

Attended Many Board Meetings of the Northern Colorado Water Conservancy District as an Observer but at Meetings of the Southeastern Colorado Water Conservancy District Was Expected to Have a Role

Willms: Yeah, I expected to go. I don't know whether they expected me to be there or not, but I think they would have expected me to attend a pretty good share of them. I did *not* have a role in the meetings. I was strictly an observer, and that's in contrast to Southeast District board meetings, which we also had jurisdiction on the Fryingpan-Arkansas, where the Bureau *was* expected to be there and did have a role. We gave a report at every board meeting, and participated much more actively in the board [meeting].

Storey: Why do you suppose there was such a difference?

How the Northern Colorado Water Conservancy District Board Functioned

Willms: Well, there was a big difference in the way the two boards operated, and there's a big difference in the staff. Northern Colorado Water Conservancy District had a fairly large, very well technically qualified, professionally qualified staff. And they were an up and running business organization. The *staff* did a lot of work. When you had a board meeting the staff provided a lot of information, made lots of presentations, made recommendations, their board meetings were well-structured. In many senses to an observer like myself, they almost looked like

they were rehearsed. I think that's not true, I don't think they were rehearsed, but they were well-structured, people would come in, they'd make a presentation, decisions, for a large part there was not substantial debate, maybe *some* issues would come up that there'd be a debate, but largely there would be some sort of a presentation, there would be some sort of a proposal usually put on the table by the staff, the board may ask a few minor, insignificant questions or what appeared to be insignificant questions, and then they'd have a vote.

The board had what they called working sessions where they did not take official action, and I *think* did not announce, but I'm not really sure because they did talk about them in the board meetings and they often did say as if they were telling their respective members of the board, we've got a working session, or work session–I think that's what they called them–scheduled for such-and-such a day. I have no idea whether those were open to the public, if a person wanted to go, whether they'd get in the door or not. I never attempted to go to one, was never invited, and the impression I got was that they did most of their debate of issues in these work sessions. But I really can't tell for sure. You can tell because they often referred to them, "As you recall during the work session we talked about this" or "we talked about that," you know, so you could tell they obviously got into a lot of issues.

The Southeast District, on the other hand, had a very small staff. In fact, when I first started working with them, they had only the district manager and two, I think an office manager and a clerk. And the office manager was more of a clerk than anything else, in the sense of she dealt with only the mechanics of running the office type of things, and didn't really participate in any financial or other type of activities in the district. The board meetings then were quite active board meetings. They had active discussions. They debated many of their issues at the board meeting, fully–fully open and exposed to the world. They did have committees that met, but the committees, as far as I could tell, were pretty special purpose type of committees. They'd have an allocation committee for allocating water, and that committee would deal with and make recommendations to the board. They had a finance committee, of course, that dealt with their district financial issues. And the staff did not take a strong role in the district board meetings. The manager did give a report, and he gave a report at the end of the meetings, and his report often was just a written report of his activities. [On] some issues he would enter into the discussion or [sometimes] bring up [issues] during the course of the meeting. I think the attorneys brought up more than the manager did, and participated from a staff perspective much more than the manager did in the meetings. So you generally just had a whole different type of a working situation.

Storey: What was the full name of the Southeastern?

Willms: It's Southeastern Colorado Water Conservancy District.

Storey: Was there also a conservancy district for Trinidad?

The District Board for Trinidad

Willms: Yes, there was.

Storey: Did you also go to their board meetings regularly or intermittently?

Willms: No, I did not. I attended, I *believe*, only one of their regular board meetings.

Storey: What was your impression of *their* meetings?

Willms: I really don't have one, because the meeting that I attended, I attended for the purpose of talking to them about an issue, and I was the primary program item, and I think I left after mine. It was at night and I had been up in Wyoming and the Bureau plane had left me in Trinidad and I had rented a car and was headed back to Pueblo. And I think after I finished my part of it, I went ahead and left and returned to Pueblo. But my sense of their board in general, would probably be more in the lines of the Southeast District, but with much less structure. *They* did not really have a manager at all. Now they did have a person they *called* the manager, but he was a practicing attorney[, though not the district's attorney]. I think he did probably put together agendas and do some coordination work there and stuff like that. But my dealings were almost exclusively with the [district's] attorney. And the things that were reported back to me about their board meetings, and generally for some years past, by people on the staff that had attended them in other times, is that they were a rather . . . Oh, a lot of dissension among the board, a lot of discussion, debate, maybe arguing, maybe even go stronger than arguing.

Storey: As I recall, Reclamation began turning facilities over to Northern for O&M while you were there, or before you were there?

Willms: Oh, they turned some of them over, I think, clear back in the early 50s. (Storey: Oh, okay.) When *I* went up there, the district operated all of the facilities downstream of Horsetooth and Carter Reservoirs. And they had been doing that for many years.

Storey: And then they added the Granby area?

Willms: Then they added the Granby area.

Storey: And I think the pumping plant?

Willms: Um-hmm. At the time we transferred the West Slope facilities, we transferred Granby, Willow Creek, and Shadow Mountain Dams, and Granby Pumping Plant and Willow Creek Pumping Plant, and the interrelated facilities, up to but not including the Adams Tunnel Portal.

Storey: Well, one of the things that I am particularly interested in, is that when Reclamation turns over a project for O&M to a water district, the Federal

government still has an interest in the project. What does Reclamation do to protect that interest? What is the interrelationship between the water district and the agency?

Protecting the Interests of the United States When Projects Are Turned over to a District for O&M

Willms: Well, when we turn one over, we of course have a contract with them that puts appropriate requirements in there. And of course what's appropriate requirements depends on the situation. If we are turning over a distribution system, for instance, that's going to just distribute water within the district to the farmers, our primary concern historically–and this is changing some–but our primary concern historically would be that they paid their capital repayment obligations. When we've turned it over, normally they're then paying the O&M because they're doing it. And that they maintain the facilities in a reasonable condition. Of course on the *payment* issue, we follow that through our finance and collections processes, to make sure that the payments are made. Then for as far as maintaining the physical conditions, we have had for many years a process where we go out and look at the facilities on regular intervals. At one time, when I first got involved in that back in the 70s, we looked at every facility, I believe, every other year. And I think now we've moved it to every third year, and maybe even some of them go longer than that. I say "look at every facility," that's not quite true. We look at every district and sample the facilities and look at some of the more significant facilities. The other thing that we have done is kept track, to a degree, of the lands, because once we turn the operation and maintenance over, the districts then also have custody of the lands. And of course when you've got a canal, ditch system, drain system, there's a lot of right-of-way lands associated with it.

"We typically . . . have reserved for ourselves the role of issuing any rights of use of that land . . ."

We typically, and there are some exceptions to this, have reserved for ourselves the role of issuing any rights of use of that land, and usually done it with what we call a license or a permit, which by their nature are revokable. They usually are not a recordable document. And we have usually issued those in accordance with all our rules and regs. or policies. And in doing so, of course try to work with the districts so we honor their concerns. There have been *some* cases where Reclamation has delegated that to the districts.

"The piece that we probably didn't pay a lot of attention to for a long time, but are getting more and more and more involved in it, are things such as environmental considerations in the use of those lands, and particularly hazardous waste. . . ."

The piece that we probably didn't pay a lot of attention to for a long time, but are getting more and more and more involved in it, are things such as environmental considerations in the use of those lands, and particularly hazardous

waste. For a long time, we would build facilities, we'd probably build a maintenance facility, often build a office and maintenance facility, of which we would then turn over to the district or use ourselves until we turned it over to the district, usually had underground storage tanks for gasoline or for fuel. Of course you probably had places where they changed oil and things like that. And for years that stuff was just oil change, you know, old oil was probably taken out and poured in the gravel around the yards to kill weeds and things like that. And of course those practices have all had to change. And probably the people who have done this, irrigation districts, typically having been farmers, are probably some of the slower to change in that area. That's an area where we've had to change our involvement.

Storey: When in any of the situations where you've been on projects, did you run into a situation where the district was doing the O&M, and Reclamation felt that something was inappropriate and needed to be fixed or changed? And how did that work out?

". . . our contracts will usually have a provision in there that says that if a district doesn't do it, Reclamation can go do it, we'll bill them. . . ."

Willms: Well, that's not an unusual situation, and when we do these examinations of physical facilities, we will write out a set of recommendations and there's a set of criteria for how these are categorized, and then the categories of recommendations have time frames in which they are to be fixed. And we would write letters to the districts advising them of these recommendations and then we do a follow-up on, I think, either a semi-[annual] or annual basis to see if they're done and have kept a record of them. Now our contracts will usually have a provision in there that says that if a district doesn't do it, Reclamation can go do it, we'll bill them. I am not aware of a situation where we've actually exercised that, although we have threatened it a few times. And we may have exercised it, I'm just not aware of one.

Storey: But in your personal experience it's not been done?

Willms: No, it hasn't. And from my personal experience in the districts of which I was a manager over, we didn't have a real problem with that. Most of them, the type of things we'd recommend are things that they needed to do and would go do. Now fortunately I didn't have any of them that were massive in cost. You can get to, oh, on the Newlands Project, for instance, recommendations there were to replace the spillway on the dam. Well, that's a multi-million-dollar undertaking that was far beyond the capability of the district, either technically or financially, to do. I think *eventually* that got done through the Safety of Dams Program, but those were first identified before the Safety of Dams Acts had been passed. And they tended to be a high priority recommendation that's supposed to be fixed in six months, that were carried on there at that level for years. Then the problem really was that the district didn't have the financial capability to do it. And the Bureau really didn't have much in the way of authority to spend millions of dollars, without a contract that the district would repay it. And so you ended up between a rock and

a hard spot.

The things, too, that I've talked about, Brit, I've dealt mostly with situations where–we were talking distribution systems where other than custody of the facilities themselves, we didn't have a real interest in it. But we have also turned over to irrigation districts, and particularly the Newlands, as an example, facilities that had control far beyond just distribution. They also controlled the flow of water in the Truckee River and things like this. In the case of Newlands–which I'm not going to volunteer to go into very far because I'm not an expert on it–but there was a situation where we had . . .

END SIDE 1, TAPE 1. JUNE 24, 1994.
BEGIN SIDE 2, TAPE 1. JUNE 24, 1994.

Storey: The concerns extended clear up to the secretary on this project.

Willms: And as I recall, back in the 70s, the secretary actually issued a notice to the [Truckee-Carson Irrigation] District that they were going to assume operation and control, remove it from the district. As I recall, the district filed suit in Federal Court and got an injunction that prevented the United States from taking over operation and maintenance of the facility. That's my recollection of many years ago. But that has been a very troubled area for *many*, many years, and there has been much lawsuit connected with the operation of that project.

Storey: I believe Horsetooth repairs were done. Now was that before you came?

Willms: No, Horsetooth repairs were started when I was there and finished after I left.

Storey: And how did you go about getting repayment from the district for that?

Financing Repairs at Horsetooth Reservoir on the Colorado-Big Thompson Project

Willms: Well, the issue on Horsetooth started off as a Safety of Dams issue, and we ~~went~~ prepared in here–this was done before I was there–a Safety of Dams Modification Report that provided for raising the dams at a cost of about $3½ million, with a portion of that, I think $800,000-$900,000 of it to be considered an O&M charge because of subsidence and failure of the Bureau in this case to restore the elevation of the dams as they settled and what have you. And the rest of it to raise the dams above the original design heights to accommodate the local runoff into the reservoir. The issue got back to the Office of Management and Budget [OMB], and they would not approve a Safety of Dams repair. Of course the Safety of Dams Act is written such that the reimbursable purposes would pay fifteen percent of the cost, and the other eighty-five percent would be picked up as a general Treasury cost and not reimbursed. The safety situation could be dealt with adequately at Horsetooth, by operating the reservoir at a lower level. And of course that's essentially what OMB said we ought to do. The district did not like that at all: by lowering the level, that reduced the amount of storage and had some

impact on the yield of the project. I don't think it was all that large, really, but it did have some. They talked in terms of filing suit to see if they could not inspire the administration to move ahead with it. They never did do that, and when I took over jurisdiction of the project in '85, Regional Director Bill Martin asked if I would see if I could find a solution to that, since it was causing a considerable amount of heat, and dissatisfaction by the district to have that operating limit on there. So I dug into the issue a bit and came up with the idea that maybe we could do it as a hundred percent reimbursable fix, and allocate the cost of it between the purposes, just like we always would, which would mean fifty percent of it would go to power, and fifty percent to water–to irrigation. And of course the $800,000-$900,000, whatever it was, that was O&M would still have to be paid in the year of the fix. Of course the part that would be allocated to power is interest-bearing, and generally interest-bearing at the current interest rates, although I couldn't verify that as to how Western actually calculates that. It was my understanding that that's what would happen. So if we did that, the taxpayers would be fully reimbursed for the power portion. The irrigation portion, I think it rolled out to be about $1,800,000, of which some $450,000 were O&M and would be paid in the year. We would be looking at, then, financing approximately $1,350,000, and so if we could finance that over a short period of time, we could really cut the interest costs to the United States down a whole lot. And so I did a little looking at the district's financial statements and decided that their cash flow would probably allow them to pay off a fair chunk of that right up front, maybe another, I think we arrived at another $450,000 to be paid on the front end. And that would have left about $900,000 to be financed, and then looked at that to be paid off in three $300,000-dollar increments. So I proposed that to the district. I worked only a little bit with the district on their cash flow issues, to pay off that in three years and to make what might be a reasonable up-front payment, and essentially did some checking with them on their revenues and stuff like that, but really pretty minor. They were fairly cooperative with giving us information, and [we] made a proposal to the district and they accepted it. And we did finally negotiate a contract, but the negotiations really were very much on the margin. I don't recall that we negotiated those dollar issues at all. We did negotiate an escrow account where they would put their money that they advanced into an escrow that was interest-bearing, and then the escrow would actually be in their name, but the payments could only be made to the United States out of the escrow, and then we took money out at the time we had to make contract payments, and transferred it into the Treasury. Therefore, the interest then on that money that was put in there accrued to the account and the district got the benefits of the interest.

Storey: So this is maybe a $2½ million project that they paid back in three years, four years?

Willms: Well, the total cost was $3½ million or $3.6 [million]. They would have only paid $1,800,000, because the other $1,800,000 would have been allocated to power, we would have appropriated that and been paid back by the power users over the remaining life. But the $1,800,000 the district paid, it ended up they paid about $900,000 up front and $900,000 over three years.

Storey: So this wasn't strictly an O&M cost that they had to do?

Willms: No, raising the dam we looked at as a construction cost, appropriated money under the drainage and minor construction, and dealt with it as a construction repayment contract. And of the $900,000 that was O&M cost, of course only $450,000 did the district pay, because the other $450,000 was allocated, again, to power, and would have been funded with appropriated O&M dollars.

Storey: How did you, while you were at Yakima and Colorado-Big Thompson and so on . . . .

Willms: I was not at Yakima, I was at Klamath.

Storey: I'm sorry, at Klamath. Did you do any sort of community outreach activities personally, like joining the Lions Clubs or anything like that?

Willms: I did not. I did give, particularly at Klamath, I gave a great deal of presentations to both local clubs and entities, and also did a lot with the press, and a lot with the local community. I did do such things as participate [in] the development of the county master plan. And not just in that case, I did it as a Reclamation employee, but not just with Reclamation interests.

Storey: But you didn't actively go out (Willms: I did not, no.) and proselyte the community.

Willms: Now, some I did. At Loveland, for instance, my predecessor was an active member in the Rotary Club, and was active in the community.

Storey: Who was your predecessor?

Willms: Bob Burling.

Storey: Oh, really?! I thought he was with the district, but I guess I misunderstood that.

While you were at Loveland, of course, Reclamation began to feel that it needed to change direction somewhat, and began to move into a reorganization process. Were you involved in that reorganization process in any way?

Willms: I was not.

Storey: What was the *message* that was being presented to project managers about what was going on?

Willms: Of course it was a significant time of which everybody was quite interested in. The message (sigh), I don't really remember anything real specific.

Reclamation Studies on Improving Operations

One of the things that . . . I'm going to digress a little. We had had, over my career as a manager, four, five, six, seven, I don't know, different looks at the Bureau and how they operated and what changes ought to be made. Some of them were focused at specific areas, some of them were pretty broad-based, and these would all be talked up as big things that were being initiated and supported, always at the commissioner level, and maybe by committees or teams under the commissioner– maybe not all of them with a lot of subscription by the commissioner, but they were being done on an agency-wide basis, and they'd result in usually draft reports being presented to the commissioner or assistant secretary or somebody, and generally they'd go no further than that, no final reports would ever come out, and the issue would just all of a sudden die. And I think that from inside Reclamation at the working levels, this was looked at as *just* another study, and it was talked up and everything.

Assessment '87

And then of course the *Assessment '87* or whatever it was called, came out, was actually published, so it certainly drew a whole new scope of attention because it moved past the draft stage and it had the blessing of the assistant secretary, and had an implementation plan with it.[6] So it really was one that did become new and different at that point. Of course at *that* point, at the point it came out, it had *major*, *major* changes, and some of those were rumored. You know, there were people throughout Reclamation that worked on it, so it wasn't anything that was of great secrecy. But I think until it was actually published, nobody really knew for sure, was confident exactly what was in it. Once it came out, of course, there was a lot in the message there. I think that from that *much* of what came out, that the rank and file was pretty supportive of it. I think that certainly those in the operating offices where I was connected and supported the idea of the shift to operations and the shift to water management and stuff like that that was there, I think *all* of us saw the handwriting on the wall that the construction of dams and things and so forth, it was *going* whether we recognized it or not. And I think we all looked at that and thought it was good.

"I personally thought that the idea of reducing the Washington office down to the six or eight people that they had originally planned, and moving it to Denver was an *excellent* idea, and moving the *commissioner* to Denver was an excellent idea. That of course all went by the board in the negotiations with Congress. . . ."

I personally thought that the idea of reducing the Washington office down to the six or eight people that they had originally planned, and moving it to Denver was an *excellent* idea, and moving the *commissioner* to Denver was an excellent idea. That of course all went by the board in the negotiations with Congress. And I think personally I became a lot less enchanted with their recommendations once

6. U.S. Department of the Interior, Bureau of Reclamation, *Assessment '87: A New Direction for the Bureau of Reclamation*, dated September 10, 1987. U.S. Department of the Interior, Bureau of Reclamation, *Implementation Plan: A New Direction for the Bureau of Reclamation*, no date but probably 1987. U.S. Department of the Interior, Bureau of Reclamation, *Implementation Plan: Update '89*, November 22, 1988.

that happened, because that seemed to be maybe a compromise position that had some real strong built-in problems with it.

"The other piece that I would have questioned was the consolidation of planning in the Denver office. . . ."

The other piece that I would have questioned was the consolidation of planning in the Denver office.

Storey: You mean you didn't think it was a good idea?

Willms: I had some serious doubts from the beginning that that was a good idea.

Storey: Now when you say the "consolidation of planning," you're talking about taking it away from the regions, or what?

Willms: Yes, moving the planning staff into the Denver office. (Storey: From the regional offices.) And trying to run those planning studies in the regions. I think, in my mind, the idea that we would have, oh, planning teams in Denver that would go out and do planning, that would be managed by the regions, just is an awfully difficult thing to carry out, to start with. But to do it in an atmosphere where the regions felt like they were having something taken away from them, made it even doubly more difficult. And I think it was just one of those things. I wouldn't say that it couldn't work, but one of them that would have taken an awful lot of commitment from an awful lot of people, and a lot of "tender loving care," so to speak, to get that thing massaged through.

Storey: And where was this planning function to be housed in the organization?

Willms: Well, it would have been housed in the assistant commissioner for resources management, which of course was the new organization that was set up to do a lot of these things that were being brought in from both the regions and from Washington.

Storey: What was the idea of creating the assistant commissioner for resources management? How is that changing the way Reclamation was going to do business?

Willms: Well, I think that the original concept of reducing the Washington office to just a six- or seven-person liaison staff would have then, under that assistant commissioner, put all of the policy-type, program-direction-type activities that had before that been located in Washington under the commissioner's office, *and* the technical activities that were done relative to the operation and maintenance, and planning in Denver, all under a single organization. While they all reported to the same assistant commissioner before that in Washington, they were pretty much separate organizations. And I think that the idea was is that that part of it cut down a layer, basically eliminated one central office.

". . . the bringing of the planning part of it in was aimed at the idea that our planning program was on the decline, to the point that we could no longer afford to keep competent staffs in each of the regions, and so therefore it should be consolidated in one location. And I think that looking at it in a very pure sense, that that was probably right. I think the part that didn't get maybe *adequate* attention was the difficulty in actually carrying that out effectively–and the commitment, because there was obviously *not* a universal commitment. . . ."

They essentially eliminated Washington. Then the bringing of the planning part of it in was aimed at the idea that our planning program was on the decline, to the point that we could no longer afford to keep competent staffs in each of the regions, and so therefore it should be consolidated in one location. And I think that looking at it in a very pure sense, that that was probably right. I think the part that didn't get maybe *adequate* attention was the difficulty in actually carrying that out effectively–and the commitment, because there was obviously *not* a universal commitment.

Storey: Commitment where? The regions? The project?

Willms: Well, I think at the regions, and probably to an extent, the projects. Many projects didn't have planning capability anyway, some did. We had a little of it in Loveland. It wasn't a big issue for *us*, because we're so close to the Denver office that it wasn't any problem for us to get stuff done here, and we did. Of course soon after it was done, we had work done in here, and our people from Loveland could meet *regularly* with the people here. It worked okay. But I think it doesn't work that well for somebody in Bismarck, or Boise, or someplace like that.

Storey: You mean where they have to travel so far to get here?

Willms: Where they have to travel so far, yeah.

Storey: Uh-huh. The documents, you know, are easy to get ahold of, but I'm not quite clear on what the project managers thought the reorganization was going to accomplish: not what the document said, but what they were saying amongst themselves, "This is what we're doing here."

Willms: I don't recall any actual conversations. I'm sure we had some as we met from time-to-time. We didn't meet often, but I'm sure we had some discussions. Again, my impression is that we thought that the proposal to move Washington into Denver was a wonderful idea.

Storey: Why did people like that?

". . . my sense was is that Washington office did, always did and still does, lose track of what Reclamation really is all about. . . ."

Willms: Our sense was–and I say "ours," it's probably more mine, because I hate to speak

for other people on this–but my sense was is that Washington office did, always did and still does, lose track of what Reclamation really is all about. And particularly as we *moved* more to an operation and maintenance type organization. You know, operation and maintenance is done 100 percent with people. There's *nobody* in Washington that delivers a acre-foot of water or a kilowatt of power–same way here in Denver. It is a field activity. And through Reclamation's history of course an awful lot of what we did was plan projects, get them through authorization, and get them built. And that arranging for authorization and working these things through Congress was a very important piece of it, historically, that Washington had to do. And that was what they did, and I think, though, that when we got out of this project authorization mode, got out of constructing new projects, that an awful lot of what they had to do that was very important, that *had* to be done in Washington, went away.

". . . most of the people in Reclamation are westerners. Most of them don't *want* to go to Washington . . . my experience has been that most people, when they'd say they'd take a job, they'd often say, 'I'll take a job anyplace but Washington.' Most of them had probably never been there. Quite often when people went back there, they'd go back there with a raise, they'd stay for a year or two, and then decided they didn't like it, they'd try to leave, and they couldn't leave without giving up their grade . . . very hard to come out of Washington . . ."

But it *seemed* that people go to Washington, first most of the people in Reclamation are westerners. Most of them don't *want* to go to Washington, for good reasons or not good reasons–I don't think it makes much difference. But my experience has been that most people, when they'd say they'd take a job, they'd often say, "I'll take a job anyplace but Washington." Most of them had probably never been there. Quite often when people went back there, they'd go back there with a raise, they'd stay for a year or two, and then decided they didn't like it, they'd try to leave, and they couldn't leave without giving up their grade, because you had basically a hierarchical grade structure, and very hard to come out of Washington, somebody who's a 14 in Washington to come out . . . Certainly you couldn't come to a project, unless you went into a project manager's job, and many of them weren't prepared to do that. [It] made it very hard for them to come out.

"The other side of it was you got a certain number of people that went to Washington that found that they liked it, and the next thing you know, they've been there for twenty years. And I think the setting got to be a sort of 'loss of reality' with what happens really out in the field. . . ."

The other side of it was you got a certain number of people that went to Washington that found that they liked it, and the next thing you know, they've been there for twenty years. And I think the setting got to be a sort of "loss of reality" with what happens really out in the field. *That* was the perspective of an awful lot of people in the field. And with that, [we] really didn't like to have people in Washington muddle around in the things that we did.

The other piece, of course, is to say we were right next to the assistant secretary's office in the Department, and all too often if something got into the staff in Washington it got outside into the very pure political arena, which most of us looked at as the downside.

"I think that most of us viewed if this office got into Denver–and this may have been the biggest issue–that we would start having more influence on the policies, because we would have more opportunity to have interaction, personally. For instance, I never set foot in the Washington Interior Building until I moved in here. . . ."

I think that most of us viewed if this office got into Denver–and this may have been the biggest issue–that we would start having more influence on the policies, because we would have more opportunity to have interaction, personally. For instance, I never set foot in the Washington Interior Building until I moved in here. All my years as a project manager, I never went to Washington, to Interior. I did have a conference back there one time, but I didn't conduct any business, it was not a business conference, but . . .

". . . so my association through many years as a manager with Washington, was strictly over the phone, and on problems that I didn't want them to be involved in anyway, but hadn't been able to keep them out of. . . ."

And so my association through many years as a manager with Washington, was strictly over the phone, and on problems that I didn't want them to be involved in anyway, but hadn't been able to keep them out of. (chuckles)

Storey: Well, while you were project manager at Klamath, and Colorado-Big Thompson, and of course working high up in the Central Valley Project also, how did the managers relate to one another? Did Reclamation pull you together for managers' meetings or anything like that? Or did the regions pull you together? How did that all work?

Staff Meetings in Various Offices

Willms: Well, it, of course, is different by regions. When I first was a manager at Klamath, the region had monthly staff meetings where the managers all came to Sacramento, and we would meet with the regional director as a group–usually go most of a day. And then in conjunction with that, either before or after, quite often after, the managers who were of O&M offices would meet with the assistant regional director that had jurisdiction over the O&M program. The general meeting we had with the regional director tended to be more of a reporting meeting, and of the regional director or the regional staff, reporting on things that were changing and new developments and directions they wanted us to take. Occasionally we would have some debate areas concerning manage . . .

END SIDE 2, TAPE 1. JUNE 24, 1994.
BEGIN SIDE 1, TAPE 2. JUNE 24, 1994.

Storey: [This is tape 2 of] an interview by Brit Storey with Ray Willms on June the 24th, 1994.

The meetings with the O&M chiefs.

Willms: [The meetings] with the O&M chiefs tended to be . . . oh, I think more discussion-oriented of O&M issues. They were still related generally to common issues. And in the Mid-Pacific Region, the Central Valley offices all had some common issues often, connected with the computer system and controlling powerplants and things like that. As a manager at Klamath, I had very little interest in that, and many of those meetings I found not terribly useful to me *personally* for the Klamath Project. They were interesting, a lot of them, but . . .

"From my point of view, they [staff meetings] were useful, a lot of it because that gave me an opportunity to come into the regional office and to deal with people in the regional office. . . ."

Then as the time I was at Klamath progressed, travel was pretty tight, and those meetings fell back to probably quarterly. Something in *that* frequency level usually sort of scheduled monthly, but ad hoc canceled type of a thing. From my point of view, they were useful, a lot of it because that gave me an opportunity to come into the regional office and to deal with people in the regional office. Usually people would be around and you could get meetings scheduled, and things like that. I'd probably come in for maybe meetings that would last a day-and-a-half–the formal ones–but maybe stay an extra day to deal with *other* associated issues. That was pretty common.

We didn't do much dealing with each other, though, other than as you sat in these meetings you would pick up ideas and things like that. And of course once I was in the Central Valley office, we had the same sorts of regular, scheduled meetings. Same thing continued there, I was just coming from a different office. We did, in the Central Valley office, however, have some operations meetings, generally by area, where we would go meet with the manager in an area and talk about the operation, and then usually do that in conjunction with meetings with the public in the area. But those were very specific meetings dealing with the operation.

When I went to Pueblo and Fryingpan-Arkansas, and then to the Colorado-Big Thompson, those same sort of meetings continued, but I think they were even less frequently then. I think they were maybe a couple of times a year. And they were continued up in Billings maybe a couple of times a year–maybe three. Probably sometimes some get-togethers on budget, specifically, not regularly.

Not a great deal of interaction among the project managers. Individually we did some things. For instance, when I was at the Fry-Ark. Project, ~~Beckwith Bopper [phonetic spelling]~~ I went up to [meet with Bob Burling on] the Colorado-Big Thompson Project several times about doing some conjunctive things. And basically, I was looking for them to provide some services to us, since they were a

considerably larger office. We agreed to have a joint safety officer–he had a full-time safety officer–rather than us have a collateral duty one, because we really weren't big enough to justify a full-time one. It seemed to me we were better off to use his, so I just made an agreement with him, and he provided a safety officer for us. We had started negotiations on them remotely operating the Mt. Elbert facilities, because I thought that that's the way it ought to be done. And of course once the projects were consolidated, then those became moot issues.

We did, when I first was at Loveland, we did do the operational planning for the North Platte Project out of Loveland, and sometime during the course of my period up there, we did transfer that back to the North Platte office. I did spend considerable time with the manager in the North Platte office, talking about power operation issues and ideas–in fact, made a trip up there one time to see how they staffed, because I wanted to kind of do a "gut check" as to whether our staff was sized right, and went up there and looked. I chose that office particularly because it was a very similar office and they had a very strong, dominant power operations chief up there.

Storey: Looking back at the way you were managed and you managed, how would you characterize the organizational structure of the Bureau of Reclamation?

Differences in How Regions Managed Project Offices

Willms: Well, during the period I was a project manager it was a straight kind of line and staff pyramid structure. All of our project offices I think were organized that way also. As project manager I *always* reported either to an assistant regional director or directly to the regional director. I never did report to anything below that. The regional division did have considerable influence, but at differing levels of influence over what we did. And the projects that *I* operated, however, it was never great. If I had been managing a field office in the Central Valley Project, however, it would have been great. And that differed quite a lot by region. In the case of Central Valley Project, or Mid-Pacific Region, the regional office was very *dominant* and decisions were made in the regional office and the O&M people tended to be more just managing the O&M and not the contracts. Contract specialists, for instance, were all in the regional office. And the regional office did a lot of dealing with the constituency. In Klamath, that was not *quite* the case. They were so involved in the Central Valley Project they didn't get very involved in the Klamath Project, so we had a great deal more discretion. And as long as we could operate up there without them having to take on major tasks, that was best. So we were left much more alone.

[I] got to the Lower Missouri Region, the philosophy was ~~almost~~ diametrically different. There, the project managers were the primary operating decision point, and the regional staff was there to support them. I thought that worked very, very well, and particularly when Willis Ervin was the head of the 400 Division, because he was a very articulate, well-thought-of, well-respected advisor who didn't try to force his ideas down your throat, but he convinced you that they were right. That makes a person who is convinced to what he wants to

do is right, accepts that very well. And I thought that was a very good working relationship, and I thought the managers tended to pick up and do a very good job.

Then when the Missouri Basin Region was formed by the consolidation of the Upper and Lower Missouri [regions], my impression of the Upper Missouri was that they were a regional-office-dominated region where the division chiefs had almost line authority over the projects. But Bill Martin went up there as regional director, and he liked the Lower Missouri mode of operation. There were four project offices–oh, I guess actually three then. When the regions were consolidated, the Eastern Colorado, the North Platte, and the Nebraska-Kansas offices, and all three of us had been working a while under this type of operation where we were the primary focus of the work that we did within our projects, and that was not well received by the regional staff. I can't speak for how the other two project managers got along there, but I had a *great* deal of conflict with some of the division chiefs, primarily, and some of the branch chiefs in the regions.

Storey: I'm getting the sense that, if I'm remembering correctly, and have all this woven together, Bill Martin was the regional director in Mid-Pacific while you were at Klamath. (Willms: That's correct.) He was the regional director here in Denver while you were at the Fryingpan-Arkansas. (Willms: Correct.) And he was the regional director in Billings (Willms: That's correct.) while you were up at Eastern Colorado. I don't get the impression that the regional director radically influenced the texture and the shape and the actions of the regional offices.

Bill Martin's Management Style

Willms: Well, I think that's incorrect–he did. Now, when Bill Martin came to Mid-Pacific, I was at Mid-Pacific. And at the time that he came, the Mid-Pacific Region operated under sort of a team concept, I think, one of consensus, and everything was done in a series of meetings and encounter sessions of various natures all over the place. And they promoted what was often referred to as a "feely-touchy, touchy-feely" type of environment. Bill abolished that when he came in. He didn't like it. They had had a group of what they called facilitators who conducted gobs of meetings and gobs of training sessions. I think that he viewed these people as having become the unofficial management of the region, because they didn't involve division chiefs and regional directors or assistant regional directors, but they seemed to be running things. And he literally abolished them, he got rid of *that* part of the organization. Now these were all collateral duty people, but they had sort of tended to become full-time facilitators, so they just disbursed back, stopped that whole process of the management–I can't even think what it was called now, but they had a name for it–and went back to a more typical type of operation. So in that sense, he really did change it. He also replaced one assistant regional director. And I think the *mood* of the region changed a whole lot. But the role of the region with respect to the projects did not change. Now I have no idea what the relationship between the projects and the regions was in the Lower Missouri when Bill Martin went out there. I do know that when I went out there, it was much, much different than it was in the Mid-Pacific Region, and that he heavily subscribed to the operational arrangement that they had in the Lower

Missouri.

"When the two regions were consolidated, now he was taking over two regions, one that operated over here and one that operated on the other side of the scope of relationships there, and he forcefully set the Missouri Basin down the direction of having the projects in control and of the regional staff being support. . . ."

When the two regions were consolidated, now he was taking over two regions, one that operated over here and one that operated on the other side of the scope of relationships there, and he forcefully set the Missouri Basin down the direction of having the projects in control and of the regional staff being support. And I think he had to be forceful about that, and was forceful about it.

Storey: And it caused some tensions, I imagine.

Willms: It caused tensions, yeah. And I think the tensions–you know, as a project manager I had a lot of relationship problems with the staff, and particularly a division chief or two who really was not willing to accept this change. However, I always got unlimited support from the front office on these issues. And I think that that type of operation continued until Bill left, and I think Roger Patterson continued it. I wouldn't have any idea what's happened since Roger Patterson has gone. When Bill went up there, he took Gordon Wendler, who was his principal assistant regional director from Lower Missouri, up there with him, and he was the principal assistant regional director up there until Roger Patterson was hired, and then they had parallel positions. I think that he had "his team," so to speak. I think in the case of the Missouri Basin, he very much formulated the way it was to operate, and very much changed the staff up there.

Storey: Tell me, were you part of his team?

"I had a very good period of time from the time I came to the Fry-Ark Project to the time that I came in here. . . . I had a couple of things fall in my lap, which helped . . ."

Willms: Yeah, particularly during that era. I had a very good period of time from the time I came to the Fry-Ark. Project to the time that I came in here. I can't say just where or how I got there, but I had a couple of things fall in my lap, which helped.

Settled a Dispute Between Reclamation and the State Engineer's Office in Colorado

One of them was when I came to the Fry-Ark. the government was being sued by the state on a water rights–well, the issue was we didn't follow the direction of the state engineer's office and they were suing us on that issue. The first week I was here I was in Pueblo, I made a trip to Denver just to get acquainted, because I had no connection with this office before, and of course I did know the regional director well, but beyond that I knew almost nobody. I got pulled into the regional

director's office by the regional solicitor and the regional director and they explained this law suit to me and gave me marching orders to go get an out-of-court settlement, that they did not want to litigate the issue because they thought it was a nonsubstantive issue that could have a very large precedence, and they didn't want precedence set without substance. And so as I say, that sort of fell into my lap, because I went back, of course totally new, didn't know anything about the issues, didn't know the people, had no baggage, but I very quickly was able to pick up that there were some very, very strong personality conflicts. You know Tom Gibbons, (Storey: Uh-huh) he was one of them, and he and the district manager, absolute fire would fly when they'd get in the same room, just terrible tensions, probably one of the worst I've ever seen. That's one of those places where you're talking to one of them, and the other one would walk in the room and just electricity through the room. And the same sort of thing existed with the division engineer–not *quite as bad* and was probably more related to one of the staff members of Tom's, but just real tension in there. So I real quick could see the first thing you got to do is get Tom out of that, [or] ~~that~~ there would be no solution to anything. So right quick a decision, "I'm going to have to do this personally myself." So right after that we had a pretrial conference and I met with the judge and the U.S. Attorney's office, John Hill. I don't know if you knew John, but John Hill. (Storey: Yeah.) And he was also of the opinion that we had to settle this, we could not afford to litigate it. And the attorney general's office and the state engineer's office and the division engineer and the judge, Judge Tracy, he was the water court judge in the state court, had been changed from the state to the Federal court, then remanded back to the state court. And the judge also, after pretrial conference, told us to stay there and see if we couldn't settle the issue, because it was a purely nonsubstantive case. So we sat around and talked and I got to know the division engineer a little bit in this process. I got the sense that he really had better things to do than this and would like to settle it. It didn't sound like the Attorney General wanted to settle it. So afterward I made an arrangement to spend some one-on-one time with the division engineer. I got with him and told him that coming from a purely outside issue, it seemed to be a nonsubstantive issue and that I thought we all had better things to do with our respective taxpayers' money than litigate this thing, and that I would like to see if we can't work something out. It seemed to me that their requests of us were quite reasonable and that we ought to comply with what they needed to do, and that I thought we also had some other problems in there. I said, "It seems to me our staffs (chuckles) don't get along very well." And he agreed. And so we went to work on the issue and he and I wrote out a proposed settlement. All they wanted out of this thing was for us to agree that we would ask permission to divert water through Mt. Elbert. And in the agreement, they were willing to agree that they would grant us the permission.

Storey: And we were fighting over this?!

Willms: And we're fighting over that. And as far as I was concerned, I don't care, I don't mind asking them–particularly if they're legally bound to say "yes." And so we wrote up and we settled the damned thing. It took a little while after that, because it took quite a little bit of convincing of the *state* attorney general's office to settle

it, and I think it took quite a little bit of convincing of the state engineer himself, Jeris Danielson. But I think it was very hard for them not to settle it, because we essentially agreed [to] ~~for~~ what they were asking. And we did, I think probably within two or three months, actually have a signed agreement of which then was put before the judge as a stipulation, and he accepted it. And I was given a fairly sizeable reward for it. But it was something that just sort of fell in my lap. I'm not sure that any other, or any number of other people could have done the same thing, and I had the advantage of having no baggage. It was a new issue to me, and I think it gave me an opportunity to see through all of the little forces that were keeping us from settling the issue, including the problems that the division engineer had with it.

Storey: Now, when you say "the division engineer," what division?

Willms: Division II of the state engineer's office. The water rights administration is divided up in divisions in Colorado, and Division II is the Arkansas River Valley.

Storey: Do you remember his name?

Willms: Bob Jessie [phonetic spelling].

Storey: And so that worked out fairly well.

Willms: That worked out very well, as far as I was concerned, and we started a new era of cooperation then. And Bob and I, I think, have remained friends. In fact, he went to work for the Bureau eventually.

Storey: Really? Well, we started talking about this, you said this was something that fell into your lap in terms of dealing with Bill Martin. But you seemed to indicate there were one or two other things also maybe.

"My mode of operation with Bill at that time was to, if it was a decision that I thought that I could make, and that he did not need to be involved in, I made the decision . . . If it were one that I thought that he needed to know about because either he needed to know what was happening, or he may get bit, I tended to call him up and say, 'This is the decision that I'm going to make, and here's why.' And it kind of gave him the opportunity to step in if he so elected . . . If it were one that I thought that he personally really needed to be involved in–and I kept these down to a pretty small number–I would tend to call him up and say, 'Here's the issues, here is the circumstances surrounding it, and here's what I recommend we do, and here are the advantages of this and the *dis*advantages.'. . ."

Willms: Yeah, there were some other issues in there. We had, during the time I was there with the Fryingpan-Arkansas, a number of fairly controversial issues that we had to deal with. And generally speaking, I would lay out what the issue was. My mode of operation with Bill at that time was to, if it was a decision that I thought that I could make, and that he did not need to be involved in, I made the decision,

we went ahead with it. If it were one that I thought that he needed to know about because either he needed to know what was happening, or he may get bit, I tended to call him up and say, "This is the decision that I'm going to make, and here's why." And it kind of gave him the opportunity to step in if he so elected to do so. If it were one that I thought that he personally really needed to be involved in–and I kept these down to a pretty small number–I would tend to call him up and say, "Here's the issues, here is the circumstances surrounding it, and here's what I recommend we do, and here are the advantages of this and the *dis*advantages." I was always very careful, particularly if I had some strong bias, to point out also the pitfalls. And I think in doing so, I never led him into a trap that got him in trouble. When we got into these controversies then, I think he *always* went with my recommendation, and we were always able to prevail. We never got overturned politically or otherwise. And I think that helped in the process.

". . . time to consolidate the regions, the planning was shifted up to Loveland. . . . they wanted the planning to remain local. . . . the regional staffs . . . got it together and decided that there ought to be nineteen people in planning in Loveland. . . . I recommended five. So we ended up with my recommendation of five and the planning officers' recommendation of nineteen. . . ."

Once it came time to consolidate the regions, the planning was shifted up to Loveland. We didn't have a planning function before that, but since they were pulling out the office in Denver, they wanted the planning to remain local. So we put in a planning function. And the regional staffs in Billings and Denver got together and decided what the various staffs should be. Well, they got it together and decided that there ought to be nineteen people in planning in Loveland. Well, I wasn't involved in that process at all, didn't even know really what was happening here. But, I was in the process of reorganizing the office up there to take care of a couple of problems we had. And in doing this reorganization, I needed to decide what we're going to have for a planning staff. So I had got to talking with some individuals in the office about what planning functions were going on that we would have to take care of, and I came in and without having any idea what the planning officers in Denver and Billings had recommended, I went in to Gordon Wendler–well, and to Bill Martin, but I think this probably primarily affected Gordon–and I recommended five. So we ended up with my recommendation of five and the planning officers' recommendation of nineteen. There's a 400 percent difference! (chuckles) I was *much, much* closer to where Gordon Wendler thought that the issue ought to be. And I think that thing alone . . . I think what was happening here is, I think he was feuding with the planning officer about the size of these staffs, and he was by himself. Here he was an individual, saying that he didn't think they needed to be that big, and here he had the planning officer up in Billings and his staff's saying, "No, no, you're wrong, Gordon, we've got to have more, we've got to have more, and we've got to have more." Gordon wouldn't buy it, he didn't believe them. He thought they were padding. And I think I walked in there with a . . .

END SIDE 1, TAPE 2. JUNE 24, 1994.
BEGIN SIDE 2, TAPE 2. JUNE 24, 1994.

Storey: So you came in with this independent support for Mr. Wendler.

Willms: With some credentials. I think that helped just my status, the confidence of which the front office then had in me personally eventually. And I suspect that that was one of the . . . And that, again, was just sort of a "fall into" situation. I was just saying other things like settling–we talked quite a lot about Horsetooth, you know, being able to do that, those helped. And being able to transfer the facilities to Northern when my predecessor, Bob Berling, had been directed to do and hadn't done it, and I was able to get that carried off. I think these things . . . I had a good period.

Storey: Yeah. You mentioned you reorganized the Loveland office to "solve a couple of little problems." (chuckles) What were the little problems?

". . . the [Loveland] office . . . had big problems. . . . very loosely-run office and there were some outright violations of operating rules . . . And I *knew* that before I went up there . . . Bill Martin . . . asked me to go up there and take over that project. He told me that they needed some cleanup up there. . . . I tried to decline it . . . because I'd just moved . . . and we'd taken a real financial beating in moving . . . I sort of tossed out the idea of consolidating the projects. . . . Bill Martin became convinced that it's a good idea . . . and I accepted the job as a consolidated job. . . ."

Willms: Well, the office did have more than little problems, it had big problems. And it had become a very loosely-run office and there were some outright violations of operating rules, maybe even statutes type of things, just the way we did business, things like that. And I *knew* that before I went up there, and in fact was asked when I went up there to take the job that we needed to . . . . You know, first I was asked to go . . . By Bill Martin. ~~And I had not been . .~~. Well, in fact, when he asked me I would have been in Pueblo a little over a year, and he did not ask me to come out to consolidate the projects, he asked me to go up there and take over that project. He told me that they needed some cleanup up there. He didn't tell me anything about it, he told me he needed some cleanup. I tried to decline it, incidentally. And I declined it because I'd just moved, I didn't want to move the family again right away, and we'd take[n] a real financial beating in moving, and I needed some better guarantee that I would have enough time to sell the house–the market was very bad in Pueblo–and I sort of tossed out the idea of consolidating the projects. That's where that got started. And eventually then Bill Martin became convinced that it's a good idea, sold the commissioner on it, and I accepted the job as a consolidated job.

". . . we had a very compartmentalized office, and they had become physically separated, and the communications and coordination was just terrible. And one particular problem we had was, we had a Power Division, and the Power Division managed all of the electrical engineering and the power facilities. And then we had a Water and Lands Division that managed the water facilities. But you can't separate them, they're so intertwined and intermixed. . . ."

But when I went up there I knew we needed to do some changes. But the things that I reorganized for primarily was that we had ~~=it was~~ a very compartmentalized office, and they had become physically separated, and the communications and coordination was just terrible. And one particular problem we had was, we had a Power Division, and the power division managed all of the electrical engineering and the power facilities. And then we had a Water and Lands Division that managed the water facilities.

The Divisions Were Physically in Different Locations and the Main Office Was in a Rented Building in Loveland

But you can't separate them, they're so intertwined and intermixed. And then we had an Operations Division, and the Operations Division was located at the Flatiron Powerplant, or out there in an office adjacent to the Flatiron Powerplant. The main office was in town in a rented building, and the electrical people, the Power Division, was located in an office building over at our storage yard. Now it was only a half-a-mile away, but it might as well have been a hundred miles away for all they talked to each other. And I started to have staff meetings and would get in there, and somebody would be having a problem, and one of the other divisions would have contributed to the problem, and it was like these people had never met each other before. It was the worst communicating issue–just routine–I'm going to go out here and do something that's going to affect your work, and I don't tell you, type of thing. So between the two things of needing the change, having some very bad underlying operating characteristics, and needing to fix some of these communications problems, I decided, "Well, I'm going to reorganize." And part of what I did was I put the water and the power people together and made a maintenance group. I put them all under the same chief. And I put all the engineering people under the same chief, so we didn't have the issue of electrical engineers working with one division and the civil engineers working for another division, and not being able to work together. I don't know that the organizational structure was particularly any better than the old one, but it was different, and it brought different people together and created a whole different working atmosphere.

The other thing I did was shut down that office that was in the storage yard and brought all those people into the same office with the rest of us. Of course that makes an enormous difference when they're there.

Storey: You had space then?

Willms: Yeah, that was one of the interesting underlying problems in the office. There had been a push to get people space under the right whatever GSA put on us limits. And we had too much space up there in this office building. People had too much space, or something like that. I could never understand why they did it. What they did is, they turned around and took this electrical group out, put them over there in the yard. And those buildings, which were buildings that *we* owned, and didn't have any limit on space over there, we owned it, and then just turned back

to the building owner, the excess space. And when I went in there, the *whole* back *third* of the building was vacant. So all I had to do was go back to GSA and say, "We want this space back," and we moved our people back in. ~~building, but.~~

Storey: Well, I'd like to continue, but once again, we've reached the end of our time. Is it alright if we use the tapes, and any resulting transcripts from these tapes, for ~~interview~~ [research] by people within and outside Reclamation?

Willms: It is.

Storey: Great, thank you.

END SIDE 2, TAPE 2. JUNE 24, 1994.
BEGIN SIDE 1, TAPE 1. JUNE 28, 1994.

Storey: This is Brit Allan Story, Senior historian of the Bureau of Reclamation, interviewing Raymond Willms in his offices on the 14th Floor of Building 67 on the Denver Federal Center, on June the 28th, 1994, at about eight o'clock in the morning. This is Tape 1.

Last time, Mr. Willms, one of the things we were discussing was Bill Martin and the way he managed the regions as you associated with him. Could you characterize for me the way he managed, what he was like as a manager, how he dealt with people, those sorts of things?

Bill Martin

Willms: Well, Bill I would say was not really a people person, and definitely not a walk-around manager. He generally operated, as far as employees were concerned, is from his office, with a considerable amount of secretarial control of his time. I can only remember, I think during the course of the time I worked with him, other than maybe the year or so, six or eight months in ACRM, that he–I think he only dropped in my office unannounced once. And the rest of the time meetings were always called up by his secretary. Most of this time the meetings I had with him, the dealings I had with him, were pure business. I always felt a little intimidated by him.

". . . as I look back over the years, I think that of all the people I have worked for, he probably fit, or I guess *he* fit with me better than any boss I ever had. I did enjoy working for him, he was quite predictable, always knew what he wanted. . . ."

On the other hand, as I look back over the years, I think that of all the people I have worked for, he probably fit, or I guess *he* fit with me better than any boss I ever had. I did enjoy working for him, he was quite predictable, always knew what he wanted. The things that I encountered as a manager, I knew pretty well how he would respond to the things that I chose to do. I think, in my case, he and

I thought a lot alike in terms of the things that were important, and that made it easier. He didn't tend to be vocal or didn't chew staff out or things like that, with the exception of occasions when a person really made a severe misstep. If he needed to, however, he could take very direct and definitive action.

He was *very* intelligent and understood our program well, and when we had an issue come up, while he didn't have a great background of knowledge on a lot of the issues that we dealt with, he would accept briefings very well, understand them, and get right to the heart of the issues. He was very honest, he had the government's interests in mind as far as I could tell, in every circumstance. He could take some very strong stands with the constituency.

He also had a solid recognition of authority, even though he may not agree with a decision made from higher level, he would aggressively implement those decisions. Quite dedicated.

Storey: And I have the feeling that from your point of view, he was a very good person to work with.

Willms: He's a very good person, from my point of view, yes.

Storey: You meshed well personality-wise and so on.

Willms: But I can't say that we ever really were friends. We were friendly, you know, and in the latter years we did have a certain number of non-job-related discussions, and since he has retired I have had dinner with him and talked to him on the phone.

". . . I would characterize him as maybe an excellent administrator more than a manager, because I think that's where his skills were. He tended to let day-to-day things be run by his subordinate staff. . . ."

Yeah, I would characterize him as maybe an excellent administrator more than a manager, because I think that's where his skills were. He tended to let day-to-day things be run by his subordinate staff.

Storey: In *your* mind, what's the difference between a manager and administrator?

". . . I'm thinking of a manager more of a person who is close to the job, and managing tasks first-hand, where an administrator is somebody who is setting direction and dealing with broader issues, and issues of maybe greater visibility and with greater controversy. . . ."

Willms: Oh, I think in this context I'm thinking of a manager more of a person who is close to the job, and managing tasks first-hand, where an administrator is somebody who is setting direction and dealing with broader issues, and issues of maybe greater visibility and with greater controversy.

Storey: One of the first things that I remember when I came to Reclamation in '88 was a

big meeting in which it was announced that Terry Lynott was moving to a different position, and that Bill Martin was going to become the assistant commissioner for resources management [ACRM]. Why do you think he was moved into that position from his regional director's role in Billings at that time, wasn't it?

Bill Martin's Selection as Assistant Commissioner–Resources Management

Willms: Yeah, he was regional director in Billings, and I can only speculate as to why he was chosen. But my sense of the situation is that the EMC [Executive Management Committee] or certain key members of the EMC, of which Bill would have been one of, I think had identified that they didn't like the direction that ACRM was taking in it's first few months, and that they were trying to influence the direction and were having maybe only limited success. Again, it's really pure speculation, but I suspect that the EMC agreed that there needed to be a change in the leadership, and I would suspect that Bill may have been one of the pushers for this, and in the process volunteered to take the issue on. But I have no inside information–I say "inside," as far as that part–why Bill was chosen, I have no insight. I do know *some* of the things that went on during a couple of months' period in there, where there was an effort to change some of the directions.

Storey: Could you talk about that?

Willms: Well, I can talk about it only a little bit, because I'm pretty peripherally knowledgeable. I think it was a day in September, as I recall, of '88, that Bill Martin flying in the region's airplane, stopped in Loveland and picked me up and we went to meet with former Congressman Ray Kogosek in Pueblo.

". . . he asked me if I would be willing to come into ACRM as the deputy assistant commissioner. . . . " to work for Assistant Commissioner Terry Lynott

And on the way down there, we had a period of time when there was just the two of us and the pilot, and he asked me if I would be willing to come into ACRM as the deputy assistant commissioner. That, I thought, was somewhat of an odd request, since it was something, getting into an area of work that I had never had much to do with. I had had very little to do with planning, and of course they were consolidating the planning. And in probing that a little bit, I was advised that the EMC wanted to get a field manager–or, maybe better put, a person who was not tied to the Washington-Denver . . . complex or organizations, into one of the three SES positions in Denver, and that he did tell me that they had advertised for that position before, that Terry Lynott had proposed selections to the EMC and the EMC did not agree with those, and that they were going to insist that he readvertise those positions. But before they did that, they wanted to know or be assured that there were some acceptable candidates [who] would apply. And that's what he was approaching me [about]. I was not real comfortable with the situation there. I had never met Terry Lynott and knew very little about him. I didn't relish the prospect of going in to be a deputy for somebody who didn't want

me as deputy, and expressed that to Bill, told him that I didn't think that was a very good situation for either the organization or Terry Lynott, in this case, or myself. In the process of this discussion, he left me with the impression that if I did apply, I'd be selected, without outright saying that.

We concluded the conversation by Bill telling me that he would have Terry Lynott call me and arrange for us to get together and to talk a little bit to see whether there might be a chemistry that would work. And so we left it that way. Oh, a few days later, a week later, he called up and told me that he had talked to Terry and that Terry would arrange, call up and ask for a tour of the project and suggested that I take him to Estes Park and in the process give us some alone time in the car, and we could talk about the prospects of my becoming his deputy. Then after that I received several calls from Bill and several from Roger Patterson who was Bill's assistant regional director, asking me whether I had had the discussion with Terry, and I had not–in fact, never did hear from Terry. And this went on for, I would guess, probably a month, five or six weeks, something like that, and along towards the end of October, first part of November, Roger Patterson just told me one day in one of our conversations that something else was going on and just be patient. So we didn't even talk about that anymore until I was down at a Southeast District board meeting in November and got a message down there that Bill had been appointed as assistant commissioner and would take over immediately.

Out of that I sort of suspect, and I think having now known Terry Lynott for several years, I suspect that he balked at not being able to make his selections.

Storey: Do you know what the problems were within ACRM that they were concerned about on the EMC?

Why the Executive Management Committee Might Have Been Concerned about ACRM

Willms: Well, my guess is, and it's just really sort of a guess, is that the hierarchy was going to be made up all of former Denver- or Washington-oriented planning people. And I don't know that for a fact, and I think that they didn't want, that ACRM was more than a planning organization, and it was more than a Denver-Washington background that was needed there. And I suspect that they wanted to have the leadership more diverse, than have it just come from one area of expertise and at least immediate background. I never did hear, at least from *those* sources, any suggestion that there was anything particularly wrong with ACRM. I think one of the raps, though, that I heard in this process–this more came from just random comments, and I can't even attribute any of them to Bill, probably *don't* attribute any of them to Bill Martin–that ACRM was moving awfully slow in getting key positions filled and getting their organization up and running. I *do* think, though, as I look at it in hindsight, I think that it was almost a doomed-from-the-beginning effort to make that work very well.

Storey: Because?

". . . I think there were . . . very key flaws, and one of them was that the consolidation of planning, and any of the consolidation from the field to Denver was not well accepted by the field . . . they were unable to get the regions fully committed. . . ."

Willms: Well, I think there were two or three very key flaws, and one of them was that the consolidation of planning, and any of the consolidation from the field to Denver was not well accepted by the field, and that we didn't have a strong enough leadership in Reclamation. I don't *think* that–well, I *know* that Commissioner Duvall was not in a strong leadership position. I think that Joe Hall as deputy commissioner was not hands-on enough to be able to deal effectively with that kind of an issue. And I think they were unable to get the regions fully committed.

". . . I've been told that Dave Houston in Mid-Pacific just outright said that they were going their own way. . . ."

Now I think they did get some of the regional directors fully committed–they didn't get *all* of them, because I think Dave Houston–at least I've been told that Dave Houston in Mid-Pacific just outright said that they were going their own way.

". . .the commitments by, say, Cliff Barrett in Salt Lake were very strong. And the other regional directors had a commitment, but I think the commitment didn't really reach down into their staffs. And just the overall demeanor of Reclamation was not one that says, 'Well, the hierarchy, the assistant secretary has made a decision, and now we're all going to get in and make it work.' . . ."

And I think the commitments by, say, Cliff Barrett in Salt Lake were very strong. And the other regional directors had a commitment, but I think the commitment didn't really reach down into their staffs. And just the overall demeanor of Reclamation was not one that says, "Well, the hierarchy, the assistant secretary has made a decision, and now we're all going to get in and make it work." That was one very difficult thing.

". . . consolidation is always hard, and always has to be sort of forced. That particular one was hard to force, because so much of the work done in connection with planning is really locally oriented. . . ."

And I think consolidation is always hard, and always has to be sort of forced. That particular one was hard to force, because so much of the work done in connection with planning is really locally oriented. Then we did it by setting up some leadership structures for our teams, that I think were also doomed to fail, when we set up the process where the regions would manage the teams, be team leaders, and we'd have assistant team leaders in ACRM. And I think we ended up with more people on first than what the rules would allow.

Part of the Problem Was the Failure of the Commissioner's Office to Move to

Denver in the Reorganization

The other part of it that I think doomed the ACRM organization as a whole towards failure was it was set up with the idea of the commissioner being located in Denver . . . and the policy aspects of [it] being run from Denver as part of the commissioner's office. Well, the commissioner of course didn't ultimately move to Denver, and instead of having a six-person staff in Washington, ended up with eighty people in Washington. And I think again the natural tendency of our organization, the regional directors want to deal with the commissioner, they don't want to deal with an assistant commissioner. You put the commissioner and assistant commissioner in this kind of an organization a couple of thousand miles apart and the tendency was to go right into the commissioner's office.

". . . the eighty people who remained in Washington, many of them were fairly disgruntled. They stayed in Washington because they wanted to stay in Washington, but they were . . . losing their power, they don't like that, but they're right there at the commissioner's elbow. . . ."

The staff, the eighty people who remained in Washington, many of them were fairly disgruntled. They stayed in Washington because they wanted to stay in Washington, but they were under the–the organization was on paper, they were losing their power, they don't like that, but they're right there at the commissioner's elbow. And you know, as it turned out, ACRM got started in '88, we had a new president elected in the fall of '88, a new administration being put in place. While Duvall stayed on there for a while, he was definitely a lame duck commissioner.

"Jim Ziglar, who was really the political architect of the reorganization, left right after the election, . . . Underwood . . . made an announcement . . . that he intended as the . . . commissioner that the headquarters was in Washington, it was not in Denver. . . ."

Jim Ziglar, who was really the political architect of the reorganization, left right after the election, only a few months after it was implemented. When Underwood came in, one of the very first actions he took was to reassign the people who worked for the assistant commissioner of resource management in Washington, to the assistant commissioner for administration, I think it was called then. And he made an announcement, I think, in fact, [at] the first EMC meeting that he attended as the confirmed, sworn-in commissioner that the headquarters was in Washington, it was not in Denver. I think at that point "the dam was breached," so to speak, and that ACRM was then a staff office, located 2,000 miles from the executive that the staff was supposed to be serving.

Storey: But that was about the time you came to ACRM, right?

Reclamation and the Department Received the Necessary Approvals for Willms's Appointment to the SES in Mid-1989

Willms: Well, I actually came into ACRM–I started working in here about April 1st of '89, and Underwood didn't come aboard until, oh, December of '89. The first 'til sometime in July, I was just on a detail, because I'd been selected for the deputy's job, and it had been announced, but it had not received approval from the Executive Resource Board in the Department. Office of Personnel Management, [OPM] ~~OMP~~, also had to approve it. That didn't occur until July. So I was in ACRM for all practical purposes maybe seven, eight months before Underwood actually took over.

Storey: I would assume–though it may be an incorrect assumption–that you did not come to ACRM thinking that ACRM was not going to work out.

Views on the Evolution of ACRM

Willms: Well, I really didn't think of it quite in that term. And I still don't in many senses. I don't think that when I speak of ACRM as a failure that it's really a night-and-day situation. I think that the organization or what ACRM was supposed to provide and produce, never really materialized fully. And it certainly was not a particularly successful organization on the whole. That's not to say that it went bankrupt. You know, the current reorganization we're doing, I see very little change, really, from what ACRM was set up to do, initially. In fact, we've gone the full circle, back to where we have a policy organization here with staff working for the director *here*, that reside in Washington. And we've almost gone that full loop. You know, some of the responsibilities have shifted around a little and stuff like that, but I think the chances of our program analysis group functioning well are–maybe I shouldn't say the "chances," but the problems facing them are the same problems that faced ACRM back in '88 and '89. And I think the only difference really is is the players have changed. Whether that works out or not is probably in the hands of several key players, and whether they're dedicated to *making* it work. And I think then once the players change, while if the first set of players are able to get it up and a well-oiled, running machine, new players can probably sustain that. It's always going to be a challenge.

Storey: What did you see Bill Martin trying to do as the assistant commissioner for resources management for the organization. What was he trying to do with the organization?

". . . his highest priority was, one, to get the roles of ACRM better defined, and get a common understanding among the players both inside ACRM and outside ACRM as just what those roles were, so that we were not in a conflict situation, particularly with the regional groups. . . ."

Willms: Well, my sense of it was that he wanted to get the role . . . I think his highest priority was, one, to get the roles of ACRM better defined, and get a common understanding among the players both inside ACRM and outside ACRM as just what those roles were, so that we were not in a conflict situation, particularly with the regional groups. I think he also wanted to get the Washington groups in stride. But I did hear him tell me during that . . .

END SIDE 1, TAPE 1. JUNE 28, 1994.
BEGIN SIDE 2, TAPE 1. JUNE 28, 1994.

Storey: Bill Martin told you that he'd reached the conclusion . . . .

". . . he had reached the conclusion that the . . . *wrong* assistant commissioner was in Washington–it should not be the assistant commissioner for administration, it should be the assistant commissioner for resource management. . . ."

Willms: Yeah, he had reached the conclusion that the assistant commissioner for resources management could not function effectively from Denver, that it needed to be located in Washington, and that the *wrong* assistant commissioner was in Washington–it should not be the assistant commissioner for administration, it should be the assistant commissioner for resource management. And so I kind of read from that that he had reached that conclusion in that few months' time–I'd say he was here about a year and in that period of time that he was assistant commissioner–that it was just not going to work very well, that the assistant commissioner was too far removed from the commissioner.

I think the other thing that he wanted to do was to get some structure into ACRM and to get us functioning better internally.

Storey: In what way?

The Relationship Between ACRM and the Regions Was Unclear and Interpreted Differently in Various Offices

Willms: Oh, I think his first thing was to get our planning teams to working better, and to get them to providing the services that the regions wanted. I think there are really two issues connected with that. One was back to what I mentioned earlier, get the roles lined up as to just what ACRM was going to do with respect to the planning studies, particularly, and what functions had been transferred from the region to Denver. Because each of the regions had a little different view of what had been transferred, and it was a little hard to tell in discussing with them whether the view was different in terms of what had been, or what had intended to be, and what they wanted, because they were different. And then the other part of it was those things that we were clearly responsible for doing, to doing those in a way that made the regions happy with the products that we were putting out. And a lot of that comes back to the power issue, and I think this was one of the–in *my* view, now this is getting back to *my* view of ACRM, is one of the real anchors that we had towards being a functional service organization was that our people tended to think first in their oversight role and second in their service role. And they seemed to be, in my view at the time, totally preoccupied with being able to direct the regions to do something, or do it in a certain way, and the expectation that the regions would follow those directions. Almost every situation where we had a person in our office, or in my office, looking for intervention, came back to something where one of our people disagreed with the regions and how they were doing something,

and the regions were unwilling to take on ACRM's positions on the issue. They were frustrated by the fact that they couldn't just give those orders and expect them to be followed.

Storey: From your point of view, do you think ACRM was giving mixed signals to the organization about what it was, why it was there?

". . . the bulk of the leadership in ACRM below at least Bill Martin . . . were of the opinion that their role was to be in control of operation and planning, and all the little side elements. . . ."

Willms: There undoubtedly were *some* mixed signals, because it wasn't a real clean line, but I think the bulk of the leadership in ACRM below at least Bill Martin–and I'll kind of set myself aside of this, because I don't even know where I was in this understanding–I hadn't been part of the formation of ACRM–were of the opinion that their role was to be in control of operation and planning, and all the little side elements.

". . . I don't think they sent a very mixed signal then, but I think what was received by the regions was not received well. . . ."

And you can go back and consider the fact that before that time, the regions had done their *own* planning, and they'd prepare a planning report, probably having certain discussions through the process of the planning, as far as scope of study and things like this, they'd submit a planning report and Denver would review it. And that had been their role, they'd review it both technically and from policy perspective, but they didn't actually *do* the planning. Now, they were actually doing it. And that meant that the control aspect started to creep in, in nooks and crannies where it hadn't before. Also, I think that–and again I'm sort of speculating on this–but I think that when reports had been done and sent in for review, that the politics had already been sort of "ironed out," and that the reviews tended to deal with, oh, many technical areas which I would suspect were, oh, of limited substance. The suggestions or recommendations were probably rather small things that would improve the reports, but not change the politics of it. And then of course you'd have some big political issues that probably tended to go to the assistant commissioner themselves and/or the commissioner, because the regional directors would also have been involved in those.

". . . with us actually *doing* the planning studies, then we were in a role of starting to formulate our positions in those political things. And again, started to give a great deal more control than what we'd probably ever had before . . ."

I think now with us actually *doing* the planning studies, then we were in a role of starting to formulate our positions in those political things. And again, started to give a great deal more control than what we'd probably ever had before, just because we're doing studies, and if you will, the power of the pen type of . . .

Storey: Um-hmm. What did Bill Martin ask you to do when you came in as deputy assistant commissioner for resources management?

As Assistant ACRM He Was Asked to Be the Day-to-day Manager of the Organization

Willms: Well, he wanted me to run the day-to-day organization, to be really the day-to-day manager. And because I was not confirmed or approved in the position, the first several months I spent were, oh, a little bit tainted in terms of doing that. But by the time that he had left, I had, I think, pretty well assumed that role as the day-to-day manager.

Storey: And what did that mean to you, that you were doing?

Willms: Well, I think at that point I was still in the process of learning the organization. We had, I think, actually started before I came in, there had been a series of meetings scheduled with each region to bring key people in who could talk about ACRM's performance and issues that were materializing and needed to be dealt with. We had also appointed, before I came in, a team. Dick Whitson, I think, was head of that team, to look at the way our matrix teams functioned. We identified that we had some pretty significant problems with the performance of the matrix teams. We had a number of meetings, usually involving the division chiefs and program managers to look at how we might improve that. We came up with some new approaches. That's when the idea of the activity managers was developed. We eliminated the team leader as such and the assistant team leader. Got the full-time activity managers in to have a little more concentrated management. Then Terry Lynott and myself went out and visited all the regions and presented the way we proposed to do business.

Also during that period of time, we spent a lot of time working on what the roles of ACRM should be, and one of the charges that Bill had personally was to negotiate with the regional directors a statement of roles and responsibilities. And he worked on that personally.

We also didn't have any internal processes in place. There was no "manual," so to speak, at all. We had already run into some personnel problems. We had a couple of job selections that were made that proper interview and consideration procedures were not used: one of them that I'm sure had one of the individuals not selected challenged it on an EEO [equal employment opportunity] basis, we would have cleanly lost it. I think that one of the observations that both Bill and myself had made was that the supervisors who had been supervisors in Denver for years were very, very poorly trained in interview processes, selection processes in general, and considerations for selections. So we set forth some processes there. Staffing was another problem. ACRM had been sized, structurally, to accommodate more than 400 people, and I think that at the time I came in, it had, oh, 260 or -70 people aboard, something like that. And the workload estimates indicated workloads in the 400 FTE [full-time equivalent] class. But when the question was presented with only 260 or -70 people on board what we weren't

getting done, we were unable to identify anything. So we obviously had some significant discontinuities in our workload estimates as compared to what the real workload was. That was another thing.

And we started to take on these issues: in *my* sense, it was a matter of kind of finding out what they were and get a handle on them. Also, my observation when I came in was is that the organizations that had existed prior to ACRM, that were sort of brought in to *make* ACRM the planning, technical services, the O&M technical services, the policy offices in Washington had *all* been fairly loosely run, and probably appropriately. But we were into a much, much bigger organization now, and there needed to be considerably more organization to our operations. I think the managers, many of them were not really prepared to do that. They were struggling with those kind of issues.

Storey: Well, after Bill Martin left and you were acting for several months, as I recall, did you feel that there were any particular issues that you needed to bring to the surface, as it were, as the acting assistant commissioner?

Willms: Well, of course on acting there is a kind of a difference–it's not the same as being assistant commissioner. (Storey: No, it isn't.) You certainly don't feel . . . oh, I guess the *freedom* to set your own style. I know I felt that we should not make any particular changes. That doesn't mean you stay static, but any particular changes until a permanent person was in place. The one issue that I thought that we just couldn't wait on was the issue of control, that we really had to, if we were going to operate as a service organization, *we* had to face up to our preoccupation with control. And we needed to talk about it. One of the things I did do was, we took all of the managers, went over to the Sheraton for a day, and we just talked about this issue. And I think it was helpful, because at least we got out on the table what the views of the various managers were. And they varied all the way from that we should only have control over very significant items to a point where some of our managers felt that the regions were incompetent to make much of any decisions themselves, and all technical things needed to be reviewed. We did reach what I thought was a fairly broad agreement with most people subscribing to significantly cut down on the things of which we would try to exercise control over. And we did put those down on paper during the meeting on flip charts, and sort of gave us the start towards resolving that.

". . . we struggled immensely with the new commissioner. When Underwood came in, he didn't seem to be happy with much of anything that anybody did–particularly in terms of written documents. . . . he tended to rewrite everything himself. . . . We tried . . . to improve the quality of the products, but we really weren't successful because we never did know really what the expectation was."

Other than that, we struggled immensely with the new commissioner. When Underwood came in, he didn't seem to be happy with much of anything that anybody did–particularly in terms of written documents. I don't know how much you dealt with the commissioner, but he tended to rewrite everything himself. We

had a period there where we really were not able to give the commissioner the products that he wanted. And from *my* perspective, I never could figure out what he wanted. The communications were such that he would see our products, I think he would give the feedback to Don Glaser, and they would never really come back to us. We tried a number of different things to attempt to improve the quality of the products, but we really weren't successful because we never did know really what the expectation was.

Storey: Was Underwood generally difficult to work with?

". . . I can contrast Dennis [Underwood] to somebody, say, like Bill Martin, where you *always* knew what Bill wanted–you *never* knew what Dennis wanted. Dennis talked a lot, but he didn't communicate very well. He was so broad in his views that you couldn't really take what he told you and assimilate it into something very meaningful. And I can remember I had, during the period I was acting, a number of meetings with him. And generally speaking, I came away from these meetings perplexed, not really knowing what I had heard. . . ."

Willms: I would say, in my judgement, yes, that he was difficult. And I can contrast Dennis to somebody, say, like Bill Martin, where you *always* knew what Bill wanted–you *never* knew what Dennis wanted. Dennis talked a lot, but he didn't communicate very well. He was so broad in his views that you couldn't really take what he told you and assimilate it into something very meaningful. And I can remember I had, during the period I was acting, a number of meetings with him. And generally speaking, I came away from these meetings perplexed, not really knowing what I had heard. Either he was not able to focus to the point that satisfied my needs, or I was not able to take what he said and reduce it down to something that I could convey to the staff and go produce.

Storey: With Martin, for instance, you mentioned that you always understood what he wanted. Was that because he communicated well, or because you thought so much alike?

Willms: Well, I think it was partly the latter, and partly that . . . I would never go so far as to say he communicated well, but what he did communicate was clear and concise and to the point. If he wanted us to transfer West Slope facilities to Northern, one sentence would explain where he wanted to go.

Storey: Do you suppose part of the communication might have been the fact that Bill Martin was a long-time Reclamation employee, you and he shared a lot of similar background; yet with Underwood, he came in from outside and didn't share the same background?

"My sense of Dennis was–and I liked him personally–I thought he was a terrible commissioner . . . he came from . . . the background of the Colorado River Board of California, where their role was one of negotiating . . . participating with the other states to protect California's interest in the

Colorado River . . . it tended to be, in my mind, a quasi-political-legal context they operated in. And they tended to write everything with great precision. And that's what they did. They didn't really produce something. And Reclamation is a producing organization. And a lot of what we produce, we produce, I think, by making the significant decisions right, promptly, and getting on with it and not getting bogged down in lots of details that are not going to be significant in the context of things. . . . Dennis never managed a large organization, never in a position to produce in *that* context . . . He could not give clear, concise policies that were implementable. . . ."

Willms: Yeah, I think that's part of it. My sense of Dennis was–and I liked him personally–I thought he was a terrible commissioner, but I liked him personally. And I think that he came from a background–well, he *did* come from the background of the Colorado River Board of California, where their role was one of negotiating with the other states, or participating with the other states to protect California's interest in the Colorado River, and to further California's interests. And it tended to be, in my mind, a quasi-political-legal context they operated in. And they tended to write everything with great precision. And that's what they did. They didn't really produce something. And Reclamation is a producing organization. And a lot of what we produce, we produce, I think, by making the significant decisions right, promptly, and getting on with it and not getting bogged down in lots of details that are not going to be significant in the context of things. And I got the sense that Dennis never managed a large organization, never in a position to produce in *that* context, and that he was just sort of a fish out of water, from an administration point of view, from administrating the agency, that he hadn't experienced big agency management styles. He could not give clear, concise policies that were implementable. He tended to not make decisions, as I understood it, that EMC meetings would be sort of free-for-alls, maybe with the commissioner participating, maybe with the commissioner running in and out, taking other phone calls, or maybe him just sitting there, and never conclusions reached on anything. And my sense is, he just came from a background that really didn't facilitate his being able to manage a large organization.

"I think his *Strategic Plan* sort of personified a lot of that in that the *Strategic Plan* was so broad and covered so many things that it was never particularly useful in terms of focusing the organization. And I think this message was given to him by numerous people, but I think he either never grasped it, or didn't agree with it. . . ."

I think his *Strategic Plan*[7] sort of personified a lot of that in that the *Strategic Plan* was so broad and covered so many things that it was never particularly useful in terms of focusing the organization. And I think this message was given to him by numerous people, but I think he either never grasped it, or didn't agree with it.

Storey: How did he work with people? You mentioned for instance Bill Martin would never chew people out, or seldom would chew people out. He tended to sit in his

7. U.S. Department of the Interior, Bureau of Reclamation, *Strategic Plan for Natural and Human Resources Development, Protection, and Management* (Washington, D.C., 1990).

office, expected people to come to him and so on. How would you characterize Dennis Underwood in those kinds of things?

"I did note that the several EMC meetings that I attended, that he tended to open meetings with sort of a general castigation of the performance of the organization, and often started the meetings on a pretty negative note. . . ."

Willms: Well, I'm not really sure that he was inclined . . . I don't think he chewed people out in one-to-one situations, let's put it that way. I did note that the several EMC meetings that I attended, that he tended to open meetings with sort of a general castigation of the performance of the organization, and often started the meetings on a pretty negative note. I don't know if he continued to do that or not–I know he did in some cases.

". . . my sense of his dealings were that he tended to talk too much. And the conversations that *I* had with him, tended to be him talking at me. And there wasn't really a good two-way conversation that I would have expected . . . the other characterization I'd have is that I never saw him arrive at decisions. . . ."

Other than that, my sense of his dealings were that he tended to talk too much. And the conversations that *I* had with him, tended to be him talking at me. And there wasn't really a good two-way conversation that I would have expected from most of the other executives that I'd worked for over the years. I don't know whether that was typical or not. Of course the other characterization I'd have is that I never saw him arrive at decisions.

". . . one somewhat frustrating period when we were talking about conservation centers . . . he [Commissioner Dennis Underwood] was making his speech tours and talking about all these conservation centers that we were going to set up. . . . Well, as assistant commissioner for resources management, or as acting, I felt that we ought to be picking that issue up, and trying to formulate what these conservation centers really were . . . trying to figure out *specifically* what we could do to promote conservation . . ."

I can remember one somewhat frustrating period when we were talking about conservation centers, and this was right after he had been in office and he was making his speech tours and talking about all these conservation centers that we were going to set up. And I think this idea had actually been a Bill Martin idea–I don't know if it was Bill's himself, but I think he had first broached that in a speech some months before. The commissioner then had picked up on this and made it a key part of his program. Well, as assistant commissioner for resources management, or as acting, I felt that we ought to be picking that issue up, and trying to formulate what these conservation centers really were, because he was talking about them in a very broad context, generally just using the name and saying that we're going to have these conservation centers and they're going to do great things for you, but not really ever saying what the great things were. And from my perspective of having spent a lot of time out on projects, I was having some trouble figuring out what all these great things were that we were going to

do. So we were trying to figure out *specifically* what we could do to promote conservation, and do in a logical, economic sense, and something that was a role for the Feds. to be doing. So anyway, I put together, we put together some thoughts on this, and then I made a trip back in the spring of '90, back to Washington, and had specifically requested an audience with the commissioner to bounce these things off him, and the commissioner and Joe Hall and myself and maybe Don Glaser was there too, met in a–we were at an NWRA convention, and we met in the hotel there. And I really expected to lay these things out, to have the commissioner say, "Yeah, I like it," or "No, I don't like it," or "I'd like you to modify it, add this or that," or something like that, but essentially what we got out of this was a little bit of very . . .

END SIDE 2, TAPE 1. JUNE 28, 1994.
BEGIN SIDE 1, TAPE 2. JUNE 28, 1994.

Storey: [This is tape two of] an interview by Brit Storey with Raymond Willms on June the 28th, 1994.

Storey: So he said, "Send me some paper."

Willms: So we did. They'd go in there and we'd never hear anything more from them, or we'd get some feedback second- or third-hand from Don Glaser to Joe Hall or something like that, that sort of, "Well, it's not quite what the commissioner is looking for," but nothing to give any indication of *what* he's looking for. And we fiddled around with that thing, and we wrote two or three different papers that we'd just kind of toss up as trial balloons, and keep sending in to him, none of which ever came back with any meaningful comment. And eventually I finally went in to Joe Hall and didn't really feel *free* to go off on my own, because it had been something he had talked about in all of his speeches that the commissioner talked about, and asked Joe what the heck to do, that I felt that we were not serving the commissioner well, that he had made all these speeches and we ought to be moving ahead with this thing, yet we couldn't seem to get anything through the commissioner's office or any feedback about what he wanted. Well, Joe said, "Well, he advised us we write up one final piece of paper," and Joe would just take it to the commissioner and say, "This is what we're going to implement." I don't remember now what happened there. We did that and Joe had it and he either didn't, or it got sidetracked by the commissioner. We in fact never did anything. It just sort of died on the vine. And I think each region set up their conservation centers individually, doing what they thought was best. And we in effect, didn't ever set one up in Denver. But it was frustrating. You had the feeling that we ought to be getting a well-organized program going, and just couldn't seem to produce what the commissioner wanted.

Storey: How long were you acting, actually?

Willms: Well, I think it was in October that Bill Martin announced that he was going to retire. And in a practical sense at that point I became acting. And Bill still did a *few* things, but I pretty much ran the organization. And then he retired at the end

of December.

Storey: This would have been ‘89?

Willms: In ‘89, yeah. And so I was formally acting then, and acting until about the early part of August. However, sometime in, I believe, June or July, I knew who was going to be, that Bill McDonald would be the permanent one. And that also tends to change somewhat my role as acting. So I really was fairly well in control, and with all of the freedoms that an acting has, probably for about six months, I would guess, or seven months maybe.

Storey: Do you have any sense of what it was that Commissioner Underwood was looking for and why he selected Bill McDonald?

Bill McDonald Selected for the ACRM Job

Willms: I think that he was looking for somebody who could produce the written documents and the issue analysis that he wanted, that he had a lot of confidence in.

“. . . Bill had worked with Dennis as Colorado’s representative to the Colorado River Board . . . and also had been on the Salinity Forum with Dennis. I think that Bill and Dennis thought a lot alike in terms of the great precision in writing styles and stuff like this, and put very high emphasis on written documentation. . . .”

And Bill had worked with Dennis as Colorado’s representative to the Colorado River Board, or whatever it is, whatever their group was of the seven states, and also had been on the Salinity Forum with Dennis. I think that Bill and Dennis thought a lot alike in terms of the great precision in writing styles and stuff like this, and put very high emphasis on written documentation.

“. . . I see this as a real difference . . . I think that Dennis looked at the written documentation as being the end product. . . .”

And I see this as a real difference, Dennis and the rest of Reclamation, and to a certain extent *Bill* and the rest of Reclamation–not near to the extent that Dennis had, but most of us in Reclamation looked at a successful endeavor in terms of getting a dam built correctly, or a piece of a dam built on time, on budget, getting the water to run through the facilities and delivered to the people, to negotiating a good contract–whatever the task is that we’re charged with–and that the written documentation is only a tool or a piece of that thing, where I think that Dennis looked at the written documentation as being the end product. This is the kind of sense I got out of it. And of course Bill McDonald fit that well because I think a lot of times the work that they did with Colorado River, that the end product was a piece of written documentation, a written agreement or something that laid out the positions of the states. So I think that was the attractiveness.

“. . . Bill had a very analytical mind, policy and legal matters of water

development matters, and Dennis knew that, he had a lot of confidence in it, and Bill was *his* person. . . ."

And Bill [had] a very analytical mind, policy and legal matters of water development matters, and Dennis knew that, he had a lot of confidence in it, and Bill was *his* person.

Storey: What kind of issues did Bill come to Reclamation interested in? What did he perceive to be ACRM's issues?

"I think the commissioner had asked [Bill McDonald], as he came on, to see if he could make ACRM produce what the commissioner wanted it to produce: make ACRM work better. But I think it was non-specific. . . ."

Willms: I think Bill came in probably with only one set of marching orders or preconceived–I don't know if preconceived would be right. I think the commissioner had asked Bill, as he came on, to see if he could make ACRM produce what the commissioner wanted it to produce: make ACRM work better. But I think it was non-specific. I don't think he came in with any particular agendas–I don't think he had *any* agendas, as far as that was concerned, to the best of my knowledge. He came in with a very *open* mind.

Storey: And what *did* the issues then become for him, as he became familiar with the organization?

"Bill tended to be an issue person. And it was the issue of the day–whether it was organizational, whether it was policy, a particular policy, whether it was a project-specific thing such as the Glen Canyon EIS. Whatever the issue was, he tended to get involved in it"

Willms: Well, I think with Bill, Bill tended to be an issue person. And it was the issue of the day–whether it was organizational, whether it was policy, *a* particular policy, whether it was a project-specific thing such as the Glen Canyon EIS. Whatever the issue was, he tended to get involved in it, if the issue was high, it was elevated to the point where he felt a personal commitment.

". . . organizationally, he saw the need to resolve the role of ACRM vis-a-vis the regions as being very important. And he put a lot of effort into trying to resolve that. . . ."

I think that organizationally, he saw the need to resolve the role of ACRM vis-a-vis the regions as being very important. And he put a lot of effort into trying to resolve that. I think that probably was his first initial, or his biggest initial one. Unfortunately, he tended to get sidetracked.

"He was relied upon, anytime anything had to be rewritten, that was important to Reclamation, he tended to get wrapped into it . . . he was the member of the EMC that would always volunteer to write something if it needed to be written.

Consequently, he got wrapped up in writing pieces of the *Strategic Plan* and all sorts of things . . . And I think a lot of these things sort of tended to sidetrack him from something like the ACRM roles . . ."

He was relied upon, anytime anything had to be rewritten, that was important to Reclamation, he tended to get wrapped into it–I think both because he liked to write, and he volunteered when he saw the written word that was being produced maybe not being all that great, whether it was by ACRM or by the organization, he was the member of the EMC that would always volunteer to write something if it needed to be written. Consequently, he got wrapped up in writing pieces of the *Strategic Plan* and all sorts of things that got produced, he got wrapped into. And I think a lot of these things sort of tended to sidetrack him from something like the ACRM roles which we fiddled around with for a long time. They would ebb and flow, and it would sort of ebb and flow in a line with the issues of which Bill got distracted.

Reorganization of ACRM by Bill McDonald, Terry Lynott, and Willms

We of course got into the ACRM reorganization. *That* issue was, oh, I think one that Terry Lynott and myself sort of spurred. I don't remember now just what the setting was, but Terry and I got to talking about generally his part of the organization and the fact that the program managers had become pass-through people that were becoming little more than traffic cops, you know. Work would come in, they would divert the work to one of the technical divisions. The technical divisions would work on it, it would come back up to them and they would sign it and it would go out. They weren't producing the in-depth thought that most of us viewed as their positions should, for various reasons. Terry and I concluded that we really needed to look at some organizational fixes. So we met out in Sacramento in the Hilton, met Bill out there. We had gone out on common business, and we sat down and talked about it and sort of reached an agreement that we needed to do some organizational changes, and that sort of spurred that whole thing that then tended to preoccupy ACRM for the next probably year-and-a-half. We didn't anticipate it being quite that much of a deal, but it turned out to be, yeah.

Storey: Of course that reorganization was, what, about two years ago now in July. And it split into the technical side and the policy side. When did that distinction begin to be apparent to you as management?

Concern about Policy Being Developed by Inexperienced Staff Without Sufficient Background

Willms: Well, I think that that seed was really planted in the first discussions that Terry and I had–not formulated that distinctly or anything–but the issue that we really were trying to get at, was trying to get a more in-depth thought process on the policy side. And our sense of the way things were working was that these tasks were coming through the program manager being assigned to a technical division, getting redirected to a working level individual *in* the technical division. You

might get a major policy question, say, involving some ecological issue being worked on by a staff-level person that did not have the breadth of background to deal with the issue. And they would be producing it, then it would be working its way back up, and it would often come all the way to Terry or to Bill or myself before anybody really raised questions about the substance of what was being dealt with, and whether or not the issue had been dealt with from a broad perspective. And you'd end up getting the individual who'd worked on it, up, and you'd start talking about it. What you'd finally come to play is the person's just background was not broad enough and deep enough to be able to deal with a lot of these kind of issues. And so what we were trying to do was to get these kind of issues dealt with [by] people who *had* the background to deal with them. And in order to do that, we thought in terms of getting some of our senior people with the broader backgrounds so positioned that they could do this sort of analysis. And of course it went through many iterations to end up with the shape of the organization.

Storey: Yeah. So was this mostly you and Terry and Bill working together? Or what was the process you went through?

Willms: That was the start, as I recall, that we were interested in doing some restructuring. And I don't really remember who-all and how people got involved at various stages. That was in the spring, and during the summer, about the first of June I had my hip replaced and was off for about a month. During that period of time, the reorganization, the first pieces of it, started to take shape, and I can remember coming in during that month I was off and spending a Saturday with Bill and Terry going over various issues and laying out some organizational structures. But I think at that point the division chiefs had also been brought in. And as I recall, we went ahead and set up what I think we called a straw man organization, of which we then put out to the staff–let's see, that would have been in the summer of '91–that we put out to the staff for comment and discussion. Then during the remainder of the summer and the fall, we went through many meetings and iterations with both some teams and divisions chiefs and branch chiefs and comments by individuals. Comments, I used to pile them up on my credenza, and I think all told, the documentation made up a pile about that tall.

Storey: Maybe a foot and three-quarters tall.

Willms: Yeah. And not all of them were written comments by people, but various documents. And as I recall then, towards the end of '91 we did finally settle on an organization.

Storey: And basically that split is still in the *new* reorganization.

Willms: It's even more formal now, because it's separated now by directors.

Storey: ACRM of course then was . . . Well, we've functioned now for maybe a year-and-a-half or so under that organization, but right in the middle of it, of course Dan Beard became commissioner, and then we went into a *new* reorganization. Do you

have any sense of what prompted that?

The ACER "Future Study"

Willms: Well, I think the reorganization . . . I can only really speak to part of it, because I really don't have a sense of what's running around in Commissioner Beard's mind on this, but two things really took place: one was the National Performance Review, and the election, of course, of Bill Clinton as President and his statements about cutting back on Federal employment by 200,000 plus or whatever it was. We had that need to flatten the organization and to cut back on layers of management, that all coming out of the National Performance Review. Concurrent with that, we have the issue of ACER's [Assistant Commissioner–Engineering and Research] size. The design workload for Reclamation, at least at the Denver office, was on a declining mode, had been for some time, and had been recognized as declining, clear back in '87. In *Assessment '87*,[8] they identified that the workload was going to decline. Commissioner Underwood had had Darrell Webber undertake that "ACER future study"[9] that was supposed to identify the future for that design organization, where I think we had an unfortunate unwillingness, maybe, by Commissioner Underwood, possibly by Deputy Commissioner Hall, to bite the bullet and say, "Well, gee, we've got to cut our staff back here." And I think the "ACER future study" tended to try to find ways to keep the staff aboard, maybe ways not warranted really, and that Commissioner Beard, when he came aboard, came out with some fairly strong statements that we were going to *not* pursue doing the hazardous waste work for other agencies, and that we were going to focus on Reclamation's work, which sort of pulled the rug out from under the type of things that the "ACER future study" had identified as work that would prop up the ACER staff.

Storey: And the "future study" is the one where Darrell Webber was detailed for a period of months to work on it, is that right?

Willms: That's correct.

Storey: Okay, just wanted to make sure.

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8. See footnote on page 183.

9. This elusive study was located for me by Director Lowell D. Pimley, of the Technical Service Center in Denver–a successor organization to ACER. It is difficult to locate largely because it was known popularly and in transmittal memos as the "future study" for the ACER organization. However, the titles used on the four volumes of documents vary considerably from that. In addition, several of these documents came out in two or more versions as the "future study" proceeded. The final ACER documents appear to be:

- January 1993–"Charting the Future for Reclamation's Engineering and Research Organization–EXECUTIVE SUMMARY."
- January 1993–"Charting the Future for Reclamation's Engineering and Research Organization." This appears to be the final version of the report.
- August 1992–"Charting the Future for Reclamation's Engineering and Research Organization. Volume 2." This was marked "preliminary."
- June 1992–"Capabilities" listing ACER's various divisions and their work and capabilities–the third volume in the full "future study." It was marked "working document."

Commissioner Dan Beard's Appointment of the Commissioner's Program and Organization Review Team and the *Blueprint for Reform*

Willms: In any case, those two things clearly showed a need for significant staff cuts and probably dictated reorganization in the Denver office. And of course the commissioner appointed that CPORT team [Commissioner's Program and Organization Review Team] to also look at Reclamation's direction, and the CPORT team also recommended some of these things. As a result of these forces, then, the EMC met towards the end of August, or during August, and reviewed the CPORT report and other documents that had been submitted and agreed among themselves pretty much on a reorganization, and a reorganization that more or less followed what we're doing. And I think that really kind of grew out of the EMC itself. I don't think the commissioner dictated that. I think the EMC, it was sort of a negotiated sort of a thing. They came back and in fact Bill McDonald wrote a good part of the documentation on that, wrote it up as a recommendation of the EMC to the commissioner for a new organization. I think the commissioner maybe did some fine tuning of it and added some text to parts of it, but adopted it more or less as it was written in his *Blueprint for Reform*.[10]

Storey: I'd like to sort of regress: The deputy commissioner was a position created during the reorganization, I believe, in '87-'88. Sort of a two-part question: What was the *intention* for what the deputy commissioner would be, and what was the reality that developed? And how did it relate to ACRM?

"In *my* view, the deputy commissioner *was* intended to be the chief operating officer–that was what it was called and I think was intended to be–and to generally run the organization, with the commissioner being the person who would deal with the political side, deal with Congress, and of course have the very broad direction issues. . . ."

Willms: In *my* view, the deputy commissioner *was* intended to be the chief operating officer–that was what it was called and I think was intended to be–and to generally run the organization, with the commissioner being the person who would deal with the political side, deal with Congress, and of course have the very broad direction issues. It wasn't to take the commissioner *out* of Reclamation, but to allow a career person–the deputy commissioner was intended to be a career person–to run the day-to-day organization. I think that never really materialized. And I think again, the biggest thing that probably kept that from materializing was the fact that the commissioner didn't move to Denver, which then separated the commissioner from the deputy commissioner by a couple thousand miles, and left a staff around the commissioner of the eighty people. That, I think in effect took the deputy commissioner out of the necessary loop. Again, maybe personalities enter into it somewhat. I think that Joe Hall maybe wasn't quite of the management style to *do* that, because again he did not *aggressively*, in my mind, take over the day-to-day

10. CPORT refers to the team which wrote the *Report of the Commissioner's Program and Organization Review Team* in 1993. This report included over 100 pages of suggestions and recommendations. Subsequently in 1993 Commissioner Daniel Beard published the *Blueprint for Reform: The Commissioner's Plan for Reinventing Reclamaiton.*

operations, and there may have been many good reasons for this, but I never did, in *my* observation, observe him as being a strong day-to-day administrator of the agency. And it could be that nobody could have assumed that role. I don't know that I'm saying that as critical of Joe. But then of course the reorganization was put in place right in the middle of a presidential election. Very shortly after it was put in place, we had a change of administrations, and all of the uncertainty that goes through the months and months and months without a political leadership. And then as soon as the commissioner came aboard, Commissioner Underwood sort of announced the headquarters office was in Washington, and although I don't know that anything was ever put in writing, I think the effect of that was to dilute the deputy commissioner's position to being something less than a chief operating officer.

"It wasn't *too* long after the commissioner had been aboard . . . I don't remember what year it was, but he appointed a second deputy commissioner in Washington, and put Larry Hancock in that position, and those two then were sort of dual deputies. . . . And then shortly after that he . . . [designated the deputy in Washington as the *principal* deputy commissioner.] . . ."

It wasn't *too* long after the commissioner had been aboard, maybe, I don't know if he even went a full year, I don't remember what year it was, but he appointed a second deputy [commissioner] in Washington, and put Larry Hancock in that position, and those two then were sort of dual deputies. And then shortly after that he . . .

END SIDE 1, TAPE 2. JUNE 28, 1994.
BEGIN SIDE 2, TAPE 2. JUNE 28, 1994.

Storey: . . . designated the deputy in Washington as the *principal* deputy commissioner.

Willms: Which had the effect then, of really leaving the deputy commissioner in Denver as only head of the Denver office. So you really did see a steady erosion, I think, of that position.

Storey: And what did that mean for ACRM?

Distance from the Commissioner Eroded Bill McDonald's Influence with the Commissioner

Willms: Well, I think that as more authority and responsibility was concentrated in Washington, it continued to dilute the involvement in ACRM in lots of the policy program areas. My sense of Bill McDonald and his tenure there, that when he first came into ACRM he was probably the most influential of the EMC members, or one of the most influential, with Underwood. But I saw that, in *my* mind, anyway, that eroded somewhat during Underwood's tenure. I think a lot of that was, again, the 2,000 miles distance, the not being right there at his side to participate in the many things that he dealt with.

Storey: Okay. Well, changing tracks completely now, you mentioned flying down to meet with Ray Kogosek who had been, I believe, a U.S. congressman. Did you have a lot of contacts with political figures, either over the phone or in person? And if you did, why did they want to meet with you?

Occasionally Worked with Members of Congress, but Generally Contacts Were with Aides

Willms: I did not have a lot of contact. I did deal from time-to-time mostly with aides. I did, over a course of time, meet a number of congressmen, but most of the dealing was with their staff. Generally the dealings with congressmen or their staffs were with specific issues where they would contact us looking for information. I can *only* recall one time–that's not true either–two or three times we worked with congressional staffs in problem-solving modes. I did work with then-Congressman Brown's staff on Narrows. I think it was when he was still a congressman, in a problem-solving mode, and we did work with Congressman Ullman's staff and Senator Hatfield's staff on acreage limitation issues in a problem-solving mode.

Storey: That was when you were with ACRM?

Willms: No, that was when I was at Klamath. Klamath Falls. And in those cases, it was mostly one of producing information and debating how certain problems could be solved or how the proposed rules and regulations that Secretary [Cecil D.] Andrus had put out in '77 would affect people on the Klamath Project.

Storey: Did you ever get second-hand information? Let me put this differently: Did you ever get direction from a region, for instance, because of political activity there that you were aware of?

"There's *no* situation I can recall where interaction by a congressman back through the channels to the region changed our direction on something. . . ."

Willms: There's *no* situation I can recall where interaction by a congressman back through the channels to the region changed our direction on something.

Storey: Uh-huh. Okay. Another totally new and different direction: Did you ever participate in the Departmental Management Program, or anything like that?

Willms: I did not.

Storey: You didn't. Okay. Tell me about the SES process and how you became a member of the SES–the Senior Executive Service.

Becoming a Member of the Senior Executive Service

Willms: Well, that was a fairly straightforward process. In my case, I was asked to apply for the deputy assistant commissioner of resource management. At the time I was

project manager of the Eastern Colorado Projects Office. I did apply, I was selected. Then my name was submitted for approval. The approval process involved going, of course, first to the commissioner and then to the assistant secretary. At the time that it went through, Duvall, I *believe*, was still aboard, but I'm not sure, but the assistant secretary was not, and there was an acting in there, a career employee acting. It then went into the assistant secretary for policy management and budget, and the Executive Resource Board, which is a board in the Department that approves all SES movement, all changes in SESs. And I think the board actually recommends it to the assistant secretary for policy management and budget, but it got in there and stayed for months and months as the new administration did have an assistant secretary for policy management and budget that had been confirmed, but there was so much turmoil in there, that personnel actions were not moving. But once that was moved, it went through and was approved the same time, I believe, that Roger Patterson was approved for the regional director in Billings, and Larry Hancock was approved the regional director in Sacramento. Then from that point, the names were submitted over to the Office of Personnel Management, and I think *their* review of it also had some board that looked at it that met weekly or bi-weekly, or every two weeks, something like that. Their look at it was strictly to make sure that the applicants for *new* selections–this was just new selections into SES ranks–were qualified. And I think that qualification is both technically qualified and qualified in terms of not being political appointees put into career SES positions. That one went through with no delay at all.

Storey: Did you have to fill out any paperwork or anything to apply for SES status?

Willms: No, I applied for the job.

Storey: You applied for the job, and the status came with the job, once they'd gone through the process.

Willms: Right, I'm sure that in filling out an application for an SES position, there are certain, oh, similar to KSAs [Knowledge, Skills, and Abilities], that have to be filled out that talk about a person's background and qualifications to *be* a senior executive. I assume that all went through in the approval process, but that was *part* of the application for the job.

Storey: What about training? Was there any training that you had to take as a result of being appointed?

Took Some Training as a Result of His Approval for Entry into the SES

Willms: Well, once a person is appointed, the first year is a probationary year, and then there's supposed to be a development program and a certain amount of training attended during that probationary year–well, and on through, there's supposed to be some training connected with the SES positions. And in *my* case, I worked with the Training Office down here, and they put together a package of training that I was going to attend. I think I actually only went to one . . . Well, actually

there's more than one, there was an SES orientation that I went to that was a two-day session in Washington that basically was just exposure to certain of the Washington activities–received some briefings and talks by Office of Management and Budget and OPM [Office of Personnel Management] in a number of different areas; had a session on strategic planning and that sort of thing. And then I attended the Senior Managers in Government Program at Harvard. It was a three-week seminar open to senior executives, flag officers in the military, congressional aides, and equivalent positions of foreign countries.

Storey: Were there other things in the training program that you didn't get to do?

Willms: I had some, I think, another week scheduled, maybe at the Brookings Institute.

Storey: In Washington?

Willms: In Washington. I think maybe I was not scheduled for one in Washington, because they do teach them in some other places. And I never did attend that, and I don't remember just why right now. I think I neglected [it or] ~~to~~ put it off, and just never got to it. There is also a four-week Senior Executive Training given by OPM at their training center in Charlottesville, North Carolina. I had originally been scheduled to do that, and I don't remember just why now I shifted to the Harvard–it may have been timing as much as anything.

"The Harvard session, however, was an excellent session. . . . it was when the [Persian] Gulf Crisis started. . . . there were eighteen flag officers of various branches of the military. . . . I did become very impressed with the level of education and the knowledge of the flag officers of the United States military. . . ."

The Harvard session, however, was an excellent session. I certainly would recommend it. The time I attended it was when the [Persian] Gulf Crisis started. At, I think at the session we were in, there were eighteen flag officers of various branches of the military. The university there then gobbled these people up and put on some impromptu panel sessions of what this meant. It was a pretty interesting time. I did become very impressed with the level of education and the knowledge of the flag officers of the United States military. I have a renewed confidence in our defense. (chuckles)

Storey: Well, let's see, I have two last questions, but before I ask them, is there anything *you* want to talk about that I haven't mentioned?

Willms: No, I think we've hit the world pretty well.

Storey: Well, I've tried! (laughter) You've been with Reclamation now, I think over thirty years. (Willms: Thirty-two years.) Thirty-two years, and a very active career. What is it that you liked best about your career so far?

". . . the best part of my career, I think, was in the period when I was a

manager in Pueblo and in Loveland. And the parts I *liked* best were dealing with the constituency on those projects, and advancing the Reclamation program for the benefits of the public. . . ."

Willms: Well, the best part of my career, I think, was in the period when I was a manager in Pueblo and in Loveland. And the parts I *liked* best were dealing with the constituency on those projects, and advancing the Reclamation program for the benefits of the public.

Storey: Well, the opposite of the question is, if you could change it, what is it you *didn't* like about Reclamation, that you'd rather not have had happened or have done?

". . . the move into ACRM really was, you know, I left a career at the peak, and the career has been downhill ever since. . . . I probably had less responsibility and less feeling of accomplishment in ACRM than I had in any of my other managerial jobs. . . ."

Willms: I don't know that there's any particular part that I really regret. I think the move into ACRM really was, you know, I left a career at the peak, and the career has been downhill ever since. That was a risk that I took, a knowing risk that I took, because I have never functioned as well in organizations that were, oh, maybe less hierarchical, and certainly ACRM's role was *less* defined and less hierarchical, and I understood that when I went in, and never pictured myself as being a real good second-in-command. So I came in realizing those risks, and I guess that to a certain extent there's some disappointment in the fact that ACRM certainly wasn't a resounding success, and I probably had less responsibility and less feeling of accomplishment in ACRM than I had in any of my other managerial jobs.

". . . my experiences in ACRM have left me with a feeling that Reclamation is and probably has been for a long time, weak in its top leadership, that we have an awfully hard time getting a common direction, arriving at policies, our systems don't work very well, and I don't see any particular encouragement that that's going to improve. . . . difficulty in getting *any* decisions made where there would be controversy connected with it . . ."

I think the other thing, which really doesn't have anything to do with my career itself, by my experiences in ACRM have left me with a feeling that Reclamation is and probably has been for a long time, weak in its top leadership, that we have an awfully hard time getting a common direction, arriving at policies, our systems don't work very well, and I don't see any particular encouragement that that's going to improve. One of the things that I worked on, worked *at* maybe, was trying to improve our business practices in terms of recovering our costs, and found that to be just an uphill battle from the standpoint of ~~not~~ an unwillingness to make hard decisions by our hierarchy, and a difficulty in getting *any* decisions made where there would be controversy connected with it, in a broad perspective. Job-specific, we could make a decision on how to operate Glen Canyon, but we seem to have a hard time getting our broad policies in place, and sticking with them, getting our operating systems to where they work very well.

Storey: Okay. Well, I certainly appreciate all the time you have spent with me over the last few weeks. And once again I'd like to ask you whether or not the material in these cassette tapes and in any resulting transcripts can be used by researchers from within and from outside Reclamation.

Willms: They may.

Storey: Thank you, very much. I appreciate it.

END SIDE 2, TAPE 2. JUNE 28, 1994.
END OF INTERVIEWS.