Hanford Cleanup:
The First 20 Years

July 2009
May 15, 2009 marked the twentieth anniversary of the signing of the Hanford Federal Facility Agreement and Consent Order, most often referred to as the Tri-Party Agreement. The signing of the Tri-Party Agreement marked the formal beginning of cleanup of the Hanford nuclear site in Washington state. The agreement, signed by the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency, and the Washington Department of Ecology, established a 30-year timetable for cleaning up Hanford’s toxic wastes.

The 586 square mile Hanford Site was home to the world’s first plutonium production facilities. The processes used at Hanford to create plutonium generated tremendous amounts of radioactive and chemically hazardous waste. Plutonium production ended at Hanford in 1988. Since 1989, the focus has been on environmental cleanup.

By most estimates, the Hanford cleanup is just a third of the way complete. Amendments to the Tri-Party Agreement have so far extended the end of cleanup by another decade and may yet extend it by two additional decades. Cleanup will likely continue well into the 2040s and possibly beyond.

This continuing extension perhaps best illustrates the massive extent of contamination resulting from 45 years of plutonium production for America’s nuclear weapons program. It is also a reflection on the waste management practices used during much of that time.

There is no doubt there has been considerable progress at Hanford. The threat to the public and the environment has been dramatically reduced since those days when Hanford began the awkward transition from production to cleanup. Along the way, those involved overcame some tremendously difficult and unique technical challenges.

But the cleanup is also not nearly as far along as any of us expected or would like to have seen. The Hanford cleanup has been more difficult, more costly (about $30 billion so far), and has taken much longer than anyone envisioned at the start. The remaining challenges will require significant funds, technical ingenuity, and dogged determination to see the cleanup through to completion.

The pages that follow detail both the progress made so far and the remaining challenges.

Since the extent of Hanford’s contamination problems first became public knowledge in 1986, the State of Oregon — through its Department of Energy — has consistently, forcefully, and effectively worked for cleanup of the site. Despite the risks it faces from Hanford, Oregon is not a party to the Tri-Party Agreement and Oregon has no regulatory authority over cleanup decisions. Yet Oregon has a tremendous stake in ensuring the safe and timely cleanup of Hanford.

The Columbia River flows through the Hanford Site then continues downstream past prime Oregon farmlands, fisheries and recreation areas. The Hanford Site includes the Hanford Reach, a major spawning area for Chinook salmon and steelhead. Radioactive wastes transported to and from Hanford travel on at least 200 miles of Oregon highways. Portions of two Oregon counties are within the 50 mile nuclear emergency planning radius of Hanford. People in these areas could be at risk in the event of a major Hanford accident. A quality cleanup at Hanford is vital to protect Oregon’s citizens and our natural resources.
This summary of the first 20 years of Hanford cleanup is intended to chronicle many of the key issues and decisions that have shaped the Hanford cleanup. This is not the full story of Hanford cleanup. But it is a big part of the story.

This report was not intended as ‘the Oregon view’ on the cleanup, and we made no attempt to ‘spin’ this report so as to be overly critical or overly complimentary of the work that has been done. We’ve attempted merely to provide information on what happened and when — the good and the bad; the breakthroughs and the breakdowns; and much in between.

We believe the history of Hanford cleanup offers us lessons for the present and for the future and is well worth documenting. We have already seen that assumptions made during the operating years about the finality of waste disposal have in many cases proven to be very wrong. Considerable effort has gone into digging up many old burial grounds and disposal areas that were thought at the time to be safe and permanent disposal places. We hope that decisions and actions that have been made during these past 20 years are protective and durable.

The biggest lesson may be one that has been verbalized many times, yet often ignored — by Congress, by DOE, by regulators, by many of us. That lesson is that there are few quick and inexpensive solutions at Hanford. The extent of the contamination or the complexity of the solutions — or both — generally prevent speedy or cheap resolution.

Cleanup in 2020 and beyond will be much different than the cleanup of today. By 2020, DOE should be long-finished with cleanup along the Columbia River corridor and the area of cleanup should have been reduced to perhaps as few as 20 square miles or less on Hanford’s Central Plateau. The Waste Treatment Plant will also hopefully be coming on-line and beginning to immobilize some of Hanford’s tank waste.

As we progress through the years that are covered by this report, it is encouraging to see the progress of cleanup and the culture change that has embraced cleanup as a worthy and important mission. The early years were focused in large part on resolving immediate safety issues as well as readying ourselves for the start of cleanup — identifying the hazards, developing plans, and designing and building some of the facilities — including disposal facilities — that would be needed for the cleanup work. With most of those short-term and immediate hazards resolved several years ago, the focus in later years could more fully turn towards cleanup.

In writing this report we have relied upon official correspondence, news releases, and various reports from a variety of agencies and organizations. We have also drawn heavily from coverage by the news media — the Tri-City Herald in particular, but also the Associated Press and other media sources.

We have found that the words of so many of those involved with cleanup have great resonance. You will find many thoughtful quotes throughout this report. These few words often best sum up the successes and the struggles.

So, 20 years are behind us, and the landscape, the culture, and the challenges at Hanford are mostly very different from what they were when cleanup began. We’re not yet at the halfway point and have not yet reached the point where everything seems doable and achievable. There are several major challenges yet to overcome — tank waste retrieval and treatment; cleanup of groundwater and deep vadose zone contamination; and the need for continued funding, to name a few of those challenges — before we can be assured that the cleanup will ultimately be a success.
The 586 square mile Hanford Nuclear Site is located in south central Washington near the Tri-Cities of Richland, Pasco and Kennewick. The Columbia River flows through the Hanford Site. Much of the land is arid, gently-rolling sagebrush desert.

Numbers are used to designate specific areas at Hanford. At the north end of Hanford, along the Columbia River, are the 100 Areas where nine nuclear production reactors were built. All of these reactors are shut down. Hanford’s chemical separations plants are situated in the 200 Areas, near the middle of the site. A series of chemical processes were conducted in these huge plants to separate plutonium from irradiated nuclear fuel. The 200 Areas are also where Hanford’s 177 underground waste storage tanks are located.

Laboratory, research and manufacturing facilities were in the 300 Area, near the southeast corner of the site. A shut-down research and test nuclear reactor, called the Fast Flux Test Facility, is located in the 400 Area, just northwest of the 300 Area.

Warehouses and vehicle maintenance and transportation operations were located in the 1100 Area, on the site’s extreme southern border.
In the spring and early summer of 2009, the Oregon Department of Energy contacted a number of people who were involved at the beginning of Hanford cleanup. We asked them to reflect back on some of their most vivid memories of that period and their expectations at that time for the cleanup to come.

Through telephone calls and e-mails, we heard from the following:

- **Mike Lawrence**, Hanford Site Manager for the U.S. Department of Energy, 1984-1990.
- **Dan Silver**, former Deputy Director for the Washington Department of Ecology.
- **Randy Smith**, former Lead Tri-Party Agreement Negotiator for the U.S. Environmental Protection Agency (EPA).
- **Gerald Pollet**, Executive Director of Heart of America Northwest.
- **Paige Knight**, President of Hanford Watch.

Although the comments are presented in a format that reads like a dialogue, comments were made independently in one-on-one interviews or e-mail exchanges. Participants were not privy to comments of others when they offered their remarks.

Here is what they had to say (some of the quotes were slightly edited for clarity).

**Dan Silver:** “Roger Stanley was a senior hazardous waste inspector for Ecology. Out of curiosity, he stopped at the gates of Hanford one day in the early eighties and asked the guards what was going on with the...industrial facilities. He was turned away and told not to return. But he persisted and eventually gained access to the site. Roger’s commitment ultimately led to the State asserting regulatory oversight of chemical wastes at Hanford. This was a huge benefit to the citizens.”

**Roger Stanley:** “I spent a lot of time tilting at windmills. I distinctly remember driving across the desert and thinking, ‘They must have some hazardous waste out here.’ The state had had virtually no presence on-site and just asking to look around brought a phalanx of attorneys out, which was a bit of a hint...For over a year they never mentioned the word ‘crib’ in front of me, and never dreamed that the state might have regulatory authority over its radioactive tank wastes. It was an article in a newspaper that tipped me off to (litigation against DOE) in Tennessee, and, after a phone call or two back east, I began taking a closer look, and the state began demanding compliance to the same extent as the private sector. The regulatory authority battles prior to the Tri-Party Agreement were hard fought, and gave me the opportunity to testify in front of a number of Congressional committees as they took up the fight.”

**Dan Silver:** “Mike Lawrence was the manager of the Hanford Site in the mid-1980s. When people started raising questions about the nuclear processing facilities and dangerous waste, Mike responded by establishing a citizen committee. This committee ultimately oversaw development of the first Environmental Impact Statement dealing with Hanford’s wastes. This took real leadership on Mike’s part. My opinion is that Mike’s willingness to deal with the state and federal regulators ultimately cost him his job (although he never saw it that way).”

**Bill Dixon:** “(Resistance to cleanup) began to change in about 1986 when a new, young DOE Manager at Hanford, Mike Lawrence, opened dialogue on the issue. It soon became evident to many more people that this was one of the most significant risks in the Northwest that must be faced soon. Otherwise, future generations would curse

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1 A crib was a liquid waste disposal site.
us for allowing the lifeblood of the Northwest — the Columbia River — to become contaminated with Hanford’s wastes. These concerns spread like wildfire throughout the Northwest, and largely due to political pressure on DOE from Washington and Oregon, the DOE leaders in Washington, D.C. agreed to face the issue.”

James Watkins: “When the President asked me to take over the Department of Energy, he said ‘Jim, I want you to come and clean it up.’ We’d just had a spill at Savannah River — tritium — and we didn’t know about it in Washington D.C. until after it got in the newspapers. And we were tired of it. Tired of seeing how a system that could be ecologically clean go to rot, go to ruin, because of cutting corners and not doing the things that you had to do.”

W. Henson Moore: “When I came to the Department of Energy…it became our obligation to make all of these (facilities) operate like any industrial facility would in terms of occupational safety and environmental laws. Likewise to clean them up. We inherited 20, 30, 40 years of defense first and worrying about the environment and health and safety second. We inherited essentially a nuclear weapons complex that had all kinds of very serious environmental operation and cleanup issues. And Hanford was certainly at the top of the list.”

James Watkins: “People were trying to cut costs where they shouldn’t have been and it was a design failure in the system of government that we had to correct and that was no mean task.”

W. Henson Moore: “It was a culture change and we were pounded by people within the Defense department. We were pounded by people within the Department of Energy. We were pounded by contractors, who were essentially resisting this change from production to cleanup. We were being pushed on all fronts. Because quite frankly, a culture had been developed in building the nuclear weapons for the nation’s defense. And that came first. It came first before everything else. The environment wasn’t even a consideration. Health and safety was less of a consideration. The consideration was succeed at all cost. The nation’s defense depended upon it.”

Russell Jim: “It was difficult to convince the proud people that had produced the bomb to switch to something else, like the cleanup of the site.”

W. Henson Moore: “(Secretary Watkins) came down hard on the fact that, ‘Listen, the cat’s out of the bag, we’ve got to shape these places up, we’ve got to change the culture, we’ve got to become concerned about environment, safety and health, we’ve got to become concerned about cleaning up all the waste and all the materials from the past.’ It became the number one objective of our Administration. And, he told me from day one it was going to take probably four or five years to successfully change that culture from production to cleanup.”

James Watkins: “I was getting pressure from the Department of Defense, ‘Oh, you could always claim sovereign immunity, we don’t have to do all these things, we want to keep building these warheads, we need the tritium, so let’s keep the plant going at Savannah River.’ I said ‘not on my watch.’ It was unsafe. We were not operating it safely.”

W. Henson Moore: “And we were viewed as being wimps. We were viewed as being soft on defense. We were viewed as having gone native in terms of being taken over by the environmental movement. We received a lot of indirect, behind-the-scenes backstabbing and criticism, within DOE, within the Defense Department and within our contracting force. It went on for a long time. And that was the funny part. Here he (Admiral Watkins) was, a Masters degree in Nuclear Engineering, he had come up in the nuclear Navy, he was Chief of Naval Operations when he retired and people were calling him soft on national defense.”

Gerald Pollet: “In 1988, when Heart of America Northwest held our first ‘Hanford Clean-Up Task Force’ meeting in the Tri-Cities, sponsored by the Governors of both Oregon and Washington and many members of the two states’ Congressional Delegations in order to build unity to support a major federal investment in cleanup on an enforceable timeline, we were met with unbridled hostility. One prominent local elected official said that talking about cleanup ‘was like dragging a dead skunk through town.’ The vision supported by Senator (Brock) Adams, Representatives (Mike) Lowry and (Ron) Wyden that cleanup jobs would be an
unprecedented stable boon to the Tri-Cities was met with derision.”

**Reflections**

**Paige Knight:** “I remember the polarity that I felt between citizen groups and the people of the Tri-City area and wondering how we could find common ground.”

**Bill Dixon:** “There were many concerned and knowledgeable people on both sides of the Columbia River that recognized the risks to humans, the environment, the economy, and our Northwest way of life from the massive accumulation of radioactive and hazardous waste at Hanford from 45 years of unregulated plutonium production. Unfortunately, there were few such people within the United States Department of Energy at the time. Most of them were either unaware or in denial of the problem, and some were openly hostile to those who raised these concerns.

**Roger Stanley:** “I remember one time driving across the Hanford reservation listening to a DOE representative expound as to how contaminants wouldn’t migrate through the soils while, at the same time, a hard rain was literally hammering off the hood. Another time (one winter) I was out at the US Ecology site when the ground and accompanying moisture/snowfall had frozen, followed by a deluge over a couple days, and seeing nearly a foot of standing water around burial grounds.”

**Barbara Roberts:** “(As Oregon Secretary of State), I was appointed by Governor (Neil) Goldschmidt to serve as his representative on the Oregon Hanford Waste Board. And I agreed to do it, obviously with some minimal knowledge about how desperate and awful the problem was and not really understanding it in any kind of technical way at all. And what happened over a period of time was I began to learn about what was really there; the condition of what was there; what they knew; what they didn’t know; and how poorly the federal government had taken care of its obligation to keep the Columbia River safe and the residents of Oregon and Washington safe. That is the first concrete image I have when I think of Hanford.”

**Russell Jim:** “I and (former Washington Governor) Dixy Lee Ray were luncheon speakers (at a conference). During my presentation the new Assistant Secretary of Energy (Leo Duffy) was in the audience. Afterwards he came and asked me what I meant by treaty rights. We spent time in the hallway talking and I said if you do embark on a cleanup project, the Yakama Nation should be involved because we do have treaty rights there. Within a month, Admiral Watkins wrote the Yakama Nation a letter...(requesting we) assist in the cleanup and he wanted to make Hanford the flagship of environmental quality.”

**Roger Stanley:** “Some of my early memories of those times include running for the pay phones in various hotels when we hit a hard spot and the (policy) balance and wisdom that I saw time and again from Chris Gregoire (then Director of Ecology, now Governor) and the staff at the Attorney General’s Office. I was truly blessed with a lot of great help...Until Chris Gregoire and folks like Kathy Mix and Jay Manning to name a few (from the Washington Attorney General’s Office) came on the scene, I felt like I had my shoulder against a huge granite ball and it hadn’t moved much.”

**Randy Smith:** “It took about a year to negotiate the draft Tri-Party Agreement, from January 1988 to January 1989 (followed by public meetings and comment, further negotiations to revise the agreement, and final signing in May 1989). At the first public meetings, there was a great deal of skepticism about Hanford cleanup. At one meeting, someone challenged me: ‘Can you guarantee me that the Hanford Site will be completely clean in thirty years?’ ‘No,’ I said, ‘I can’t guarantee you that it will be completely clean. But I’m sure we can make it a lot cleaner than it is today.’”

**Roger Stanley:** “Memories of the negotiation of the Tri-Party Agreement are viewed through a veil of a heck of a lot of conference rooms over a 14 month period. Difficult negotiations for all parties, but negotiations that forged a lot of friendships and bonds as well, as our differing perspectives and responsibilities were hammered against the technical complexities presented by the site, its wastes, and in many instances a far from complete understanding of conditions on the ground.”

**Randy Smith:** “The initial workplan for the Tri-Party Agreement tried to set priorities for cleanup
projects based on risk. That was a good idea in theory, but it didn’t lead to a coherent vision for the site.”

**Reflections**

**Gerald Pollet:** “We were excited, in 1989, to have a thirty year agreement for Hanford cleanup. Thirty years looked far enough into the future to get the job done while being realistic about how long it would take just to know what we were tackling. We were very concerned that the lesson from the Ohio agreement (Fernald), which did precede the Hanford Agreement, was that it wasn’t the panacea claimed without an enforceable requirement to request the funding and an enforcement mechanism.”

**Roger Stanley:** “One of the last minute issues was the ‘form of agreement,’ that is, whether or not the Tri-Party Agreement would stand as a Consent Order, or as an ‘enforceable’ regulatory agreement. I was more than leery of an ‘Agreement’ whose enforceability was subject to overly lengthy dispute resolution processes. I’m still unsure if we picked the right one, but there is no doubt that in a number of instances the complexities of the issues have demanded an innovative approach to compliance. In others, a ‘tougher’ regulatory structure would no doubt have forced far earlier (and still sound) resolution of issues.”

**Mike Lawrence:** “A meeting in the office of Washington Governor Booth Gardner on a Friday afternoon in December 1988 (clearly comes to mind). The meeting consisted of Governor Gardner, Department of Ecology Director Chris Gregoire, and myself. All of the details of the Tri-Party Agreement had been agreed to, however the State wanted to submit the Tri-Party Agreement to a court in the form of a friendly lawsuit, while I argued that the Justice Department never enters into ‘friendly lawsuits’ and would fight the Tri-Party Agreement in court. Even though the State would ultimately prevail, years would be lost as the case worked its way through the courts and cleanup would come to a standstill until resolved. After a long and difficult discussion, Governor Gardner and Director Gregoire had the political courage to give the agreement a chance without the lawsuit. Their decision proved to be a good one and the Tri-Party Agreement proceeded without a lawsuit for 19 years. Without their agreement, cleanup would have been delayed.”

**Gerald Pollet:** “At the hearings on the proposed clean-up agreement, the Hanford Education Action League, Physicians for Social Responsibility, the Nuclear Safety Campaign and Heart of America Northwest praised the thirty year scope, but we organized public turnout and media calling for renegotiation to end the nuclear weapons production activities that were creating more wastes; end the dumping of massive amounts of untreated liquid wastes; and, make the schedule enforceable in court.”

**Roger Stanley:** “When the Tri-Party Agreement was out for public comment (including a lengthy series of public meeting), a hue and cry went up regarding Hanford’s liquid effluents. Though negotiations had been based on hazardous waste law the public took a broader view. If the parties were going to agree on Hanford cleanup, liquid effluents had better be part of the picture. They were right, we were wrong, and the parties subsequently negotiated a Liquid Effluent Consent Order as an adjunct to the TPA.”

**Randy Smith:** “Egregious waste management practices were stopped as a result of Tri-Party Agreement commitments. The best example is the treatment of all liquid wastes, ending the practice of dumping radioactive liquids into the soil via cribs. Credit should go to the public for pushing that milestone into the final Tri-Party Agreement (it was not in the January 1989 draft).”

**Gerald Pollet:** “Some lessons take decades to learn...The most significant step yet taken for Hanford cleanup has been the ending of those (liquid waste) discharges. Today, twenty years into a cleanup that was supposed to take an unprecedented thirty years, we are still fighting to get agencies to follow the lesson that most of us learned in kindergarten: that you can’t clean up while dumping more waste.”

**Randy Smith:** “I think that if the Tri-Party Agreement had simply been implemented in the usual ways of DOE and the two regulators, without the subsequent breakthroughs in public oversight and consensus advice, that the Hanford cleanup would have been far less successful.”
Roger Stanley: “I feel I should give credit to the design of the Tri-Party Agreement as a network of requirements and provisions specifically designed for the complexities of the Hanford Site. It has stood the test of time.”

Dan Silver: “I have always marveled at how the Tri-Party Agreement integrated the application of CERCLA and RCRA. In doing so, it committed to a course of action rather than strict compliance to the processes of both laws. The National Resource Defense Council sent the State a letter just prior to the signing of the Tri-Party Agreement that it had considered suing to block the Tri-Party Agreement on this basis alone. But it decided that moving forward with cleanup was more important than strict compliance. Integration of RCRA and CERCLA was a terrific and bold move by the three parties and it reflects the uniqueness of the Tri-Party Agreement. (I should say that managing this integration continues to be a challenge for the three parties).”

Randy Smith: “The initial work under Superfund was a flurry of projects (‘operable units’) in all parts of the site, with no guiding overall plan. The breakthrough came in 1992 with the Future Site Uses Working Group, a group of stakeholders that produced a plan for the site that pushed for priority cleanup along the river (in the 100 and 300 Areas), so that those areas could be available for wider public purposes, while acknowledging that the central part of the site (the 200 Area) would remain a restricted industrial site for many years to come. The Future Site Uses Working Group was…the first time that stakeholders from many points of view sat down together and worked together. That built communication and a certain amount of trust among these disparate groups (not unlimited, I would note). It was also the first time that these stakeholders saw DOE, EPA, and Ecology demonstrate their collective willingness to listen, take serious advice, and follow it. The whole dynamic was quite different from the usual public comment process.”

Randy Smith: “At the time the Tri-Party Agreement was initially negotiated, the toughest negotiations were over what could be done and would be done about the tank wastes. The uncertainties about what was in the tanks, how to sample them to better understand their contents, and how to develop feasible processes to remove and treat the wastes were enormous. The initial Tri-Party Agreement was quite sketchy about the details of what ought to be done. It was clear to all of us, and to any observer, that the tank wastes and the associated 200 Area problems would be the thorniest problem. I remember thinking that there was no way that these problems would be dealt with within the careers of those then working at Hanford or for Ecology or EPA. Our children, or maybe our grandchildren’s generation would still be working on this remediation. I didn’t think of that as pessimism, just realism.”

Bill Dixon: “A cleanup mission this large, complex, expensive and long had never been done. Therefore those involved in setting these milestones ‘guesstimated’ many, hoped for others, and quite frankly made up some.”

Randy Smith: “Probably the biggest surprise for me in dealing with Hanford cleanup was how expensive everything at the site was. That was true for the somewhat more manageable cleanup projects along the river, and it was even more true for the tank wastes and the entire 200 Area cleanup.”

Roger Stanley: “We were unaware of the extent of contamination from tank leaks; that DOE’s tanks would continue to fail; or of the volumes of tank waste and contaminants associated with the many miles of pipelines and sumps that run between the tanks themselves. Though I was never one to press for anything close to pristine conditions upon closure, it was always somewhat of a disappointment that despite the fact that a teacup’s worth of tank waste will remain extremely hazardous virtually
forever, the sheer magnitude and cost of the project causes people to lower their sights.”

W. Henson Moore: “There was a toxic mixture of materials in those tanks at Hanford that was new to mankind. The only time you would have something like that — us and probably the Soviets had it — is because of the nuclear weapons program. And you would have this leftover stuff — toxic waste — you’d be mixing and putting in these tanks. And I just remember that nobody could answer satisfactorily — for me as a neophyte and for a non-scientist — what was really going on in the tanks and what we’re going to have to do with them. We just knew that, Lord help us, if one of those things ever blew up, or if it ever collapsed for some reason and allowed what was contained in the tanks to run free. Because it was just a real toxic mix of stuff.”

Bill Dixon: “When we got into the job, we found that it was much harder than any of us had imagined. We didn’t know how much waste and contamination existed, where it all was, or what was in it. Most technologies and work practices needed to clean up the waste did not exist. We had not addressed how workers could perform this work safely. Original cost estimates were only a small fraction of what was needed. And, the existing environmental laws, regulations and processes were nearly unworkable for a cleanup this massive. As we struggled with these complications, and many more, schedules began to stretch and costs began to skyrocket.”

Mike Lawrence: “Looking back over the past twenty years, I feel the Tri-Party Agreement has demonstrated its value many times over. All of us knew that the milestones in the Tri-Party Agreement were only estimates, subject to conditions as they were discovered and subject to the annual budgets from Congress. Fortunately, the Tri-Party Agreement provided for amendments and changes. With hard work and transparency most, but not all, milestones have either been met or adjusted under the overall framework of the Tri-Party Agreement. While I am disappointed that the vitrification plant for the high-level tank waste at Hanford has taken far longer and cost far more than any of us first imagined, it is one of the most technically challenging projects in the world. In reality, I am glad we didn’t know in 1989 that it would eventually have a price tag of over $12 billion or we may have never reached agreement to sign up!”

Bill Dixon: “Many Oregonians devoted countless hours and expense to educate themselves and participate in public forums to begin setting the course and schedule for Hanford cleanup. Although not a signatory, Oregon was intimately involved in developing the Tri-Party Agreement and helped push the three parties to reach agreement on key aspects, such as treatment of tank waste. It was a proud day in May 1989 when the TPA was finally signed.”

Mike Lawrence: “With over two hundred guests in attendance and Governor (Booth) Gardner looking on, Director Gregoire, EPA Regional Administrator (Robey) Russell and myself signed the Tri-Party Agreement to great applause. We even celebrated the signing with cake and champagne! Can you imagine an environmental cleanup agreement being such a festive event?”

W. Henson Moore: “We knew it wasn’t going to be done over night. We had to develop the technology. You had to go about this stuff systematically. There were obviously funding limits. And so we knew it was going to be a long process. And so we just focused on let’s get it organized, let’s get it started, let’s get it off the ground, let’s work on changing the culture. We didn’t know where the end point was and didn’t spend as much time focusing on that end point as the more critical issues, which was getting it up and going.”

Russell Jim: “I had no clear idea of what it would take...we had hopes of course that some clear picture would start to emerge and it did not for quite some time. The main issue at that time was what the releases (of contaminants) had done to the land and the environment, and how that was going to figure into the cleanup, and the health and welfare of the Yakama Nation.”

Barbara Roberts: “We in the Northwest had a sense that that issue had been ignored by the federal government forever, and to have (Energy Secretary Hazel O’Leary) there listening to people of the
Northwest (at Hanford Summit 2 in 1994) was incredible. I remember her not being defensive, not fighting back but listening, and I think taking in all the information and the frustration and the fears that we all had about the situation...She listened. She paid attention. And to see Oregon and Washington sort of standing shoulder to shoulder and saying to the federal government, ‘you must help us, you must do this cleanup and it must be now and it must be done at a greater magnitude than it’s ever been done before.’ I think that was a real significant meeting for all of us who were there.”

Gerald Pollet: “With cleanup along the river progressing, we can see that we will achieve our vision of safe public and Tribal use of the land, river and resources. Around 1991, I testified that I hoped to be able to safely walk along the shoreline of the Columbia River with my daughter while she was still a child and able to play in those pools where salmon spawn. She’s now about to leave for college, but those shorelines and the groundwater entering the pools are still not safe for our children. Perhaps they will be for hers.”

James Watkins: “Hanford waste is the example of what goes sour when you don’t pay attention to all of these other things that get into the ecology, health, safety of human beings, safety of operations, the top level people from Washington on down knowing what is going on out there in the labs and in the burial grounds and so forth...We had to get control of these things, it was not under control. And that was one of the things that I found and I told the President, ‘You want me to clean this place up, you better help me.’ Because a lot of people aren’t going to like it, see us putting money into things we haven’t put it before.”

W. Henson Moore: “We were dedicated, we were determined that we were going to tackle this thing, and that we were going to go about doing something that needed to be done. At the same time we were certainly dismayed and we were certainly challenged by the technology of what we were going to be doing and how we were going to do it. Because there was just no known technology. It was novel and new in many respects.”

Paige Knight: “I hoped that we would have the first glass already pumping out of the vit plant (by now). I felt that Congressional will to see cleanup would be the biggest challenge, that more common ground between Washington and Oregon as well as between ‘interest groups’ and the Hanford local interests would be a challenge.

Bill Dixon: “In my younger, naïve days I dreamed that Hanford cleanup would be two-thirds done by 2009. The Columbia River shore would be clean, most of the plutonium-contaminated waste would have been disposed, and tank waste treatment would have been ongoing for over 10 years. Now older and wiser, I look back on 20 years of struggles and feel proud of the progress that has been made and optimistic that our nation will complete this vital cleanup mission. I commend the workers, contractors, federal and state employees, stakeholders, Native Americans, political leaders, and others who have struggled to bring us to this point. I am confident that if we re dedicate ourselves to working together for the common good, we will successfully achieve the goal. If we bicker over what should have been, cleanup will fail. When Hanford cleanup is done is less important than it is done.”

Roger Stanley: “I would be remiss if I didn’t mention the fact that the extent of involvement of the Tribes, the state of Oregon, the Hanford Advisory Board, and activist groups have (thankfully) proved far greater than initially envisioned. They have time and again proved critically important to the regulatory agencies in maintaining a balanced cleanup effort and the inertia that is needed year to year.”

Barbara Roberts: “I’m surprised if (cleanup is) even a third (complete), to tell you the truth...The problem was just massive. Maybe we (finally) know where everything is now, and what its condition is at Hanford, but I suspect...we may discover other issues we do not yet know exist...I suspect a third may be wishful thinking.”

Paige Knight: “I believe I knew from the start that I would not see ‘cleanup’ of the Hanford Site in my lifetime, but knew that I was committed to working on it. I remember being amazed at the number and quality of public citizens who were commit-
Reflections

Bill Dixon: “What was most amazing to me was that those dedicated to Hanford cleanup never gave up. They worked long and hard to mitigate the impacts as best they could and kept moving forward.”

Randy Smith: “The progress along the river is enormous. Compared to the situation in 1989, there has been great progress in cleanup of soils and facilities. As one major example, take the K-Basins. In 1989, spent fuel sat in liquid storage in K-Basins in the 100 area, a source of leaks and a threat to the river. That fuel is now in far safer storage in new facilities in the central part of the site, miles away from the Columbia River. There has been similar dramatic progress for many other sources of contamination along the river (although the K-Basins were the most serious problem). While the cleanup is not yet complete along the river, it’s quite far along.”

Mike Lawrence: “A tour around the Hanford Site today will clearly show the progress that has been made. Old reactors are cocooned, over half of the 300 area is demolished, the K-Basin fuel has been removed and the basins are being torn down. The Waste Vitrification Plant is making steady progress and the underground waste tanks are being emptied. Everyone in the Northwest involved with the clean up of Hanford from the States, the Federal Government, contractors and the public has played an important and necessary role. While we have a long way to go, we should step back and celebrate the progress that has been made. Maybe even cake and champagne are called for again!”
“This agreement means that, at long last, we can begin a massive effort to clean up the 45 years of accumulated chemical and nuclear wastes at Hanford.”


The Cleanup

The May 15, 1989 signing of the Tri-Party Agreement did not immediately shift Hanford into clean-up mode. While most of Hanford’s plutonium production facilities were shut down, few anticipated that Hanford was out of the plutonium production business. N Reactor and PUREX were both in standby, and there was a full expectation that at some point in the not too distant future, Hanford would resume production of plutonium.

So it was understandable that other production-type missions were under active consideration as cleanup began. U.S. Department of Energy (DOE) officials were looking at a Hanford test reactor, the Fast Flux Test Facility, as a potential producer of plutonium 238 to power spacecraft. Washington Senator Slade Gorton meanwhile, wrote Energy Secretary James Watkins in support of completing an unfinished commercial nuclear reactor at Hanford to make tritium for the nation’s nuclear weapons program. Oregon Senator Mark Hatfield and Idaho Senator James McClure had earlier written opposing the plan to complete Washington Nuclear Plant #1.

This search for new missions at Hanford is but one of several issues that never seemed to quite go away over the last 20 years. Another was the import of waste to Hanford for storage or disposal. In October, Washington Governor Booth Gardner wrote to Secretary Watkins opposing the import of transuranic waste from Rocky Flats to Hanford for indefinite storage. Because of continued delays in opening the Waste Isolation Pilot Plant in New Mexico, and refusals by Idaho to allow more waste to be stored at the Idaho National Engineering Laboratory, DOE was looking for alternative sites for waste from the Rocky Flats site in Colorado.

Meanwhile, the business of cleanup began — albeit slowly. The first site proposed for cleanup under the Tri-Party Agreement was Hanford’s vehicle maintenance area, near the Richland city water wells. Battery acid, solvents, paints and other chemicals were the concern.

The U.S. Environmental Protection Agency (EPA) added four Hanford areas to its Superfund National Priorities list — the 100, 200, 300 and 1100 areas.

“The important thing is to get it begun. Committing ‘X’ billion for the cleanup is probably impossible. You can’t bind a future Congress to future spending.”


“It is time that the Energy Department came clean with the American public about its plans for what is really one of the nation’s largest and most dangerous industrial operations.”

— Dan Reicher, Natural Resources Defense Council (NRDC) attorney, after the NRDC and other environmental groups filed suit to force DOE to conduct a comprehensive analysis of its safety and environmental problems. (Tri-City Herald, June 28, 1989).
The General Accounting Office (GAO) — the investigative arm of Congress — has been a frequent critic of DOE’s performance at Hanford throughout the 20 years of cleanup. The GAO performs audits and evaluations of Government programs and activities. From 1989 on, the GAO conducted dozens of audits related to DOE’s nuclear weapons cleanup program and many specifically related to Hanford cleanup. A report issued in July challenged DOE’s conclusion that there was little or no environmental impact from Hanford’s leaking waste storage tanks. The report urged DOE to pump waste out of the tanks without delay.

The complexity and the enormity of the cleanup challenge ahead was not fully understood nor appreciated. But there were signs early on that the job was going to be bigger, tougher, and more expensive than anyone had predicted.

A big concern by regulators was the discharge of liquid wastes to the soil. Even though most plutonium production activities had ended at the time the Tri-Party Agreement was signed, as much as 22,000 gallons of contaminated water a minute was still being dumped into the ground at Hanford. More than 400 different liquid waste streams were identified at Hanford. DOE, EPA and the Washington Department of Ecology agreed that the 33 worst waste streams were to be stopped or sent to treatment facilities by June 30, 1995, with the remainder stopped or treated by October 31, 1997. In the first of what would be numerous occasions of the same refrain, DOE officials said it would cost more than they anticipated to stop these liquid waste discharges.

Seemingly, one of the most important steps taken in support of cleanup was DOE’s award of a $550 million construction contract to begin building a high-level waste vitrification plant. The vitrification plant would be used to immobilize the waste in Hanford’s underground waste storage tanks. Construction work was scheduled to begin in 1991 with plant operations beginning in 1999. Final project costs were expected to reach nearly $1 billion.

DOE’s plan was to remove the waste from the tanks, separate the waste into its high and low-activity constituents, and immobilize the waste using two different processes. The high activity waste would be mixed with materials to form a molten glass. The glass would be poured into steel canisters where it would harden. This process is called vitrification. The plant was expected to produce about 300 canisters a year. At that rate, it would take more than 10 years to vitrify all the high-level waste at Hanford.

The low activity waste — which generally contained lower levels of radioactivity in large amounts of material — would be mixed with cement, fly ash and other materials. It would then be poured into huge 1.4 million gallon underground cement vaults, where it would harden into a cement-like substance called grout. It was expected that about 50 grout vaults would be needed at Hanford.

There was an expectation that Hanford cleanup would eventually create some new jobs — but not enough to offset plutonium production

“It will turn millions of gallons of low-level radioactive wastes at Hanford into a block of solidified grout that will protect the environment for the next 10,000 years or more.”

— John Van Beek, Westinghouse Hanford Company, following the announcement by DOE that it would begin construction in November on four new grout vaults (a program later abandoned). (Tri-City Herald, October 21, 1989).

“The Congressional delegations of both our states have fought hard for realistic funding levels to get the cleanup underway...the fight will be won or lost in the federal budget trenches.”

— Michael Grainey, Deputy Director of the Oregon Department of Energy, providing comments on the draft Tri-Party Agreement. (March 29, 1989).
jobs. Hanford Site Manager Mike Lawrence predicted cleanup would create 1,400 new jobs between 1993 and 1999, but was still expecting an overall reduction in Hanford jobs, due to cutbacks in production.

At year’s end, the Plutonium Uranium Extraction facility, or PUREX, resumed limited operation. The unexpected shutdown of the facility had left chemicals and radioactive materials in miles of pipes and a “cleanout” run was necessary. PUREX was the largest chemical processing facility at Hanford. It is 1,005 feet long, 104 feet tall and 61 feet high. Through a series of different chemical processes, the PUREX facility separated uranium and plutonium from nuclear fuel irradiated in Hanford’s reactors. “Hot” operations began in January 1956 and by 1967, PUREX was the lone operating processing facility at Hanford. In 1972, the PUREX plant began a planned 18 month shutdown period that ultimately lasted 11 years. Extensive modifications, along with the construction of new double-shell waste storage tanks occurred during this time. The plant re-opened in 1983 then closed again for a year beginning in December 1988. PUREX accounted for about 80 percent of the 53 tons of plutonium produced at Hanford. DOE was still planning a full restart of PUREX in the fall of 1990 to process 2,100 tons of spent nuclear fuel stored in water-filled basins near the K Reactors.

A detailed inspection of the process tubes in Hanford’s N Reactor showed the tubes to be in excellent condition. The process tubes held the fuel assemblies and allowed cooling water to circulate around the fuel. The reactor was being prepared for “dry standby” status – preserved as a contingency should it be needed to produce tritium for the nation’s defense program.

“Based on the information we have, we know the internal components of the N Reactor are strong and healthy.”

In the previous few years the Navy had sent six submarine reactor vessels for disposal at Hanford. It was discovered that the six contained PCB’s — a known carcinogen. Washington Governor Gardner and Oregon Governor Neil Goldschmidt wrote the Navy and asked them to analyze risks posed by the PCBs before more reactor vessels were shipped to Hanford. The Navy eventually agreed to remove the PCBs from the six submarine reactor compartments already disposed at Hanford.

In December, Energy Secretary Watkins agreed to declassify all Hanford documents from 1944-1960 which described radioactive releases to the environment. His action came in response to a request from a scientific panel directing a study into public exposures from past radioactive material releases from Hanford to the environment.

**Tank Safety**

As cleanup activities begin to get underway, considerable attention began to focus on the safety of Hanford’s underground waste storage tanks. During its 45 years of plutonium production, Hanford generated enormous amounts of radioactive and chemically hazardous wastes. Beginning in 1944, Hanford workers began to store the most hazardous of these wastes in large underground tanks. The first tanks had just a single shell of carbon steel for containment. Eventually, 149 of these single-shell tanks were built at Hanford. These tanks ranged

“*The underlying operating philosophy and culture of DOE was that adequate production of defense nuclear materials and a healthy, safe environment were not compatible objectives. I strongly disagree with this thinking.*”

in size from 55,000 gallons to one million gallons, with most of the tanks at least half a million gallons in size. After many of these tanks began to leak, tanks with double shells of carbon steel were built beginning in the late 1960s. Twenty eight double-shell tanks, all a million gallons or larger in size, were built at Hanford. Some of these tanks were also nearing the limits of their design life. Hanford’s 177 waste storage tanks held about 60 million gallons of highly radioactive and chemically hazardous waste. Sixty seven of these tanks had leaked an estimated one million gallons of waste into the soil.

In October, Battelle Pacific Northwest Laboratory released a five year old report on the risk of an explosion in some of Hanford’s waste storage tanks. Ferrocyanide was added to about two dozen tanks in the early 1950s to separate cesium from the waste. The report concluded that adding ferrocyanide increased the risk of an explosion. Under high temperatures and at certain concentrations, ferrocyanide could explode. Hanford managers did not dispute the report’s conclusions but said temperatures in the tanks were too low to cause an explosion. Nevertheless, the report created a flurry of activity to understand the level of hazard posed by Hanford’s underground waste storage tanks.

Hanford Manager Lawrence said DOE made a “mistake in judgment” by not releasing the Battelle report earlier. Lawrence agreed the report raised issues that needed further research. Governor Gardner appointed a special team to conduct an in-depth investigation of the explosive risk posed by ferrocyanide, while DOE’s Advisory Committee on Nuclear Facility Safety began to examine the risk of a Hanford tank explosion.

Lawrence also revealed that the bottom of a Hanford tank ruptured in 1965 and released radioactive steam into the air. The incident was caused when moisture trapped between the floor of the tank and the concrete liner turned to steam. The steam caused an eight foot bulge in the steel liner.

**Around the DOE Complex**

Hanford was part of a very large complex of sites scattered throughout the country that were involved in the production of materials for nuclear weapons. Each of those sites as well was also beginning the transition from production to cleanup — some less successfully than others. In Colorado, DOE’s Rocky Flats plant was raided in June by the FBI and EPA, which were investigating numerous environmental violations.

A new Congressional study showed DOE continued to emphasize production while giving little attention to public health and safety issues. The report cited 14 examples — including nine at Hanford — of a lack of, or disregard for safety.

In June, Energy Secretary Watkins announced a ten point plan to strengthen environmental protection and waste management activities at DOE’s defense nuclear facilities.

**“The risk of explosions in waste tanks has not received the attention it deserves.”**

— Ohio Senator John Glenn, urging nominees to the Defense Nuclear Facilities Safety Board to examine conflicting reports about tank safety at Hanford. (Tri-City Herald, October 18, 1989).

**“I don’t believe an explosion is credible.”**

— Hanford Manager Mike Lawrence, as DOE’s Advisory Committee on Nuclear Facility Safety began to examine the risk of a Hanford tank explosion. (Seattle Post-Intelligencer, November 5, 1989).

**“The way we’ve operated these plants in the past, was: ‘This is our business, it’s national security, everybody else butt out.’ They’re not going to be operated that way any more.”**

— Energy Deputy Secretary W. Henson Moore. (Tri-City Herald, June 17, 1989).

**“I have personally spoken with the governors or their representatives and assured them that our goal is to provide them with a more substantive role in overseeing DOE’s compliance with the law, and helping them assure their citizens that DOE operations do not constitute a health hazard.”**

— Energy Deputy Secretary W. Henson Moore. (DOE News Release, August 21, 1989).
DOE invited governors of 11 states, including Washington, to negotiate formal, comprehensive agreements which would allow direct access and environmental monitoring by the states at DOE facilities.

In August, Energy Secretary Watkins announced a five year cleanup plan for DOE sites. Fully implementing the plan would require $19.5 billion. The plan committed DOE to a 30-year goal for environmental restoration, including a national prioritization system for cleanup (in consultation with states, tribes and the public), and compliance with environmental laws and regulations. Washington Senator Brock Adams and Congressman Norm Dicks, concerned about funding cleanup activities in the future, reintroduced legislation to establish a special trust to pay for long-term cleanup of DOE nuclear sites. The legislation never passed.

Energy Secretary Watkins established a new position of Assistant Secretary for Environmental Restoration and Waste Management. The new Assistant Secretary would implement DOE’s five year plan and provide central management for cleanup at DOE sites.

A National Research Council panel recommended DOE not build a new $1.35 billion plutonium processing facility, and should instead focus on cleaning up its nuclear production sites. The panel said the nation’s nuclear arsenal could be sufficiently maintained without new processing capacity. The panel also determined a significant quantity of plutonium had accumulated in the ventilator ducts at Hanford’s Plutonium Finishing Plant — some beyond the filter systems.

“Unfortunately we don’t have a five year problem. We have a 30 year problem.”


“Only through this difficult process will DOE, as an institution, finally begin to assume its proper role as a protector of the environment.”


“The chickens have come home to roost and years of inattention to changing standards and demands regarding the environment, safety and health are vividly exposed to public examination, almost daily. I am certainly not proud or pleased with what I have seen over my first few months in office.”

– Energy Secretary James Watkins, who said environmental health and safety was now DOE’s number one priority. (Tri-City Herald, June 28, 1989).

“I’d like to see Hanford become the flagship for waste management research.”

– Energy Secretary James Watkins, upon his first visit to Hanford. (Spokesman Review, August 29, 1989).
“We no longer have a future in the defense business and we should quit wasting everybody’s time and money pretending we do.”


The Cleanup

Even though Hanford’s cleanup budget would eventually grow to more than $2 billion a year, lack of money has been a hindrance throughout most of the Hanford cleanup. In January, the Bush Administration proposed a budget which would increase Hanford’s cleanup funding to more than $800 million for fiscal year 1991. Within two months, Washington state officials said the U.S. Department of Energy (DOE) 1991 budget request to Congress was still $245 million short of what was needed for work to continue on schedule at Hanford.

Hanford workers got both a pat on the back and a kick in the pants from the editor of the Tri-City Herald and the President of Westinghouse Hanford Company. In February, Tri-City Herald Editor Kelso Gillenwater challenged residents of the Tri-Cities to “advocate and lead a bold new strategy for Hanford that finally and fully acknowledges the harsh lessons of both the past decade and the past month.” Gillenwater urged the Tri-Cities to clean up the site while developing and exporting new technologies; build regional unity in favor of the cleanup mission; and work to reduce DOE’s role at Hanford and in the Tri-Cities. In September, Westinghouse Hanford President Roger Nichols told nearly 9,000 Westinghouse employees it was time to stop thinking of Hanford cleanup as “suck, muck and truck.” He encouraged workers to take pride in their past accomplishments in the nation’s defense, but also to acknowledge those days were over.

The fight over whether to save or dismantle the Fast Flux Test Facility (FFTF) continued. FFTF was a nuclear test reactor, cooled by liquid sodium. It was built to support liquid metal reactor technology, conduct reactor safety research, and demonstrate technology for breeder reactors. DOE abandoned the liquid metal reactor program and the reactor lost its primary mission before it began operations in 1982. During the next decade the FFTF tested advanced nuclear fuels, materials, and safety designs. It also produced a large number of different medical isotopes. A team looking at new missions for FFTF presented its report to Washington Governor Booth Gardner in June. The conclusion was that FFTF needed a combination of missions to be financially viable.

“You put me and other governors in an untenable position. We have supported — strongly — needed appropriations for waste cleanup...But when the sum of your actions is to submit a budget that is less than what you say the job will cost...what is it we are to believe or support?”


“What other business do you know of that comes with a 30 year guarantee and a minimum $25 billion investment?”

— Energy Assistant Secretary Leo Duffy, during a visit to Hanford. (Tri-City Herald, September 12, 1990).

“We can’t make headway in restoring the physical environment unless we restore the mental environment first.”

— Westinghouse Hanford President Roger Nichols, who told Westinghouse employees to accept that plutonium production days were over. (Tri-City Herald, September 25, 1990).
A processing run at PUREX was completed early in 1990 and preparations began for a shutdown. A one year outage was planned to prepare for processing 2,100 metric tons of N Reactor spent nuclear fuel stored in basins at the K Reactors for more than 25 years. That plan quickly came under attack. First, a General Accounting Office (GAO) report said DOE’s plans to restart PUREX were inadequate and provided no assurances the facility could be operated safely. The report also said DOE had not demonstrated a need for weapons-grade plutonium from PUREX. In July, the Hanford Education Action League released a study urging that PUREX remain shut down. The report said restart of the plant was unsafe, environmentally dangerous, and expensive.

In August, the State of Oregon, in testimony before Oregon Senator Mark Hatfield at a hearing in Pendleton, formally opposed restart of PUREX. In October, Energy Secretary James Watkins, in a joint announcement with Senator Hatfield, said PUREX would not reopen for further production of weapons-grade or fuel-grade plutonium. Watkins said the plant would be placed on standby for at least two years while DOE studied whether the facility should be restarted to process the N Reactor fuel. Other options for treating and disposing of the fuel would also be examined in an Environmental Impact Statement.

The GAO said nearly two-thirds of 294 health and safety problems cited at Hanford since 1986 remained unresolved. The report said DOE and its contractors had been slow to correct health and safety problems at most DOE sites.

Energy Secretary Watkins sent a “Tiger Team” of investigators to Hanford. The Tiger Team spent two months beginning in May

“Saying that plutonium production at PUREX is needed for environmental cleanup is like saying we need crack houses to fight drug addiction.”


“USDOE admits that the Department of Defense might want as much as one-seventh of N Reactor’s remaining nuclear fuel to be processed for weapons grade plutonium. To that extent, running PUREX is weapons production, not cleanup or waste management. If we are to believe the Secretary, weapons production now is contrary to Hanford’s new strategic mission.”

examining Hanford’s operations, including its environmental, safety and management practices. The investigation found low morale and a lack of management oversight. The Tiger Team report concluded that while management and safety practices were improving, numerous problems still existed.

In July, Mike Lawrence resigned as Hanford Manager, saying he had peaked in government service. Many speculated he was forced out as a result of Secretary Watkins’ unhappiness with Lawrence’s blunt discussion of risks from Hanford’s tanks. John Wagoner, Deputy Manager at DOE’s Savannah River Site, was appointed interim Hanford Site manager (a position he held for 17 months, until his permanent appointment in December 1991). DOE also announced the creation of three new deputy manager positions at Hanford and said Wagoner would report directly to Leo Duffy, director of DOE’s waste management and environmental restoration programs. The changes made Hanford management less autonomous and more accountable to DOE Headquarters.

While considerable attention focused on the possible immediate threat of a tank explosion or fire, there was also a new focus on the problem caused by waste leaks from a number of the tanks. Hanford’s first underground waste storage tanks were built in 1944 and were expected to last from 10-20 years. Within that time period — in 1956 — the first tank leak was suspected and then confirmed in 1959. Despite other confirmed tank leaks in subsequent years, it was not until November 1980 that a ban on adding new waste to the single-shell tanks was put in place. In all, 67 single-shell tanks had been declared or suspected of leaking. Some tanks had

“…the Hanford Site is on a positive improvement slope, but far from achieving expectations or excellence. Improvements are being made, but slowly...The Tiger Team found many deficiencies that need management’s attention; attention not only to correct the noted deficiencies, but to identify why the deficiencies exist and to correct the root cause.”


“Mike’s willingness to open some of the old closets and let the skeletons out got him in trouble with some folks.”

– Washington Congressman Sid Morrison, on the resignation of Hanford Manager Mike Lawrence. (Tri-City Herald, July 7, 1990).

“The loss of Mike Lawrence is a substantial one....most important, he was and is trusted...The errors of the past...came to light at least in part because of his work within government to make them available.”


“Today we still have a management regime that is largely based on production of special nuclear materials. That is not our goal out there anymore.”

– Energy Secretary James Watkins, explaining management changes at Hanford and within DOE Headquarters. (Tri-City Herald, July 12, 1990).
leaked more than once. The total amount of waste leaked was estimated at just over 1,000,000 gallons of high-level waste.

In October, DOE officials said tank A-105 may have leaked more than 1,000,000 gallons of contaminated water into the ground over a nine or ten year period starting about 1968. DOE contractors added hundreds of thousands of gallons of water to the tank to cool hot radioactive sludge in the bottom. That water leaked out of a ruptured tank seam. Previous leak estimates for the tank had been about 5,000 gallons. Westinghouse officials also said at least 780,000 gallons of waste were added to tank SX-108 in 1963 and 1964 and another 150,000 gallons of cooling water added to the tank between 1963 and 1967, even though the tank had leaked in 1962. All remaining liquids were pumped out of the tank in 1980.

Plans for Hanford’s vitrification plant — to immobilize Hanford’s high-level tank waste — started off the year in good shape. By the end of the year, however, the project was showing serious signs of trouble. In March, Westinghouse Hanford officials said detailed design was underway and construction of the vitrification plant was on schedule to start in July 1991. The facility was to be built in the 200 East Area near B Plant. By August, Energy Assistant Secretary Duffy told a Senate Committee that DOE was re-evaluating its schedule for a high-level waste vitrification plant at Hanford. Duffy followed those comments by telling state officials in September that tank safety issues might delay construction and operation of the vitrification plant. That became official in December, when Hanford Manager Wagoner notified the Washington Department of Ecology in writing that technical and programmatic concerns might delay the start of construction of the vitrification plant.

During a visit to Hanford, Energy Secretary Watkins said Hanford employment would increase from 14,000 to 15,000 in the coming two years as cleanup work increased. He also met with Washington Governor Gardner and announced plans for accelerated clean-up of three sites.

The independent scientific panel directing studies into past releases of radioactive materials from Hanford issued results from the first phase of its study. The results showed thousands of Northwest residents may have been exposed to radioactive materials released from Hanford between 1944 and 1971. The panel supported a thyroid epidemiological study.

Westinghouse Hanford suspended two employees for disabling a safety alarm at T Plant.

**Tank Safety**

Tank safety issues continued to draw considerable attention throughout the year. In January, Washington state officials concluded that ferrocyanide in Hanford’s tanks did not pose a serious risk of
explosion. The Defense Nuclear Facilities Safety Board (DNFSB) came to the same conclusion in March and a DOE team reached the same conclusion by July — that there was little, if any, near-term likelihood of an explosion. The team recommended Westinghouse conduct additional temperature monitoring of the affected tanks. In October, the GAO agreed that the risk of an explosion was low but also concluded that the consequences of such an explosion would be considerably more severe than DOE estimated. The report concluded that not enough was known about the waste in the tanks to rule out the possibility of a spontaneous explosion.

A new potential risk was identified in March — a buildup of hydrogen. Hanford officials initially characterized the risk as low but admitted they needed more information. The DNFSB, an independent, federal advisory board with external oversight responsibilities at DOE’s nuclear weapons facilities, recommended DOE develop a program for continuous monitoring of conditions in those double-shell tanks.

In April, the first team of outside experts arrived at Hanford to study tank safety issues. They were followed by a 16 member DOE Advisory Committee on Nuclear Facilities Safety, which arrived at Hanford in June to review tank safety issues.

In April, hydrogen vented from tank SY-101, located in Hanford’s 200 West Area. Samples collected during the venting showed the hydrogen concentration at 3.4 percent, below the 5 percent needed for flammability. Chemical reactions in the tank’s waste created hydrogen, which was trapped in the solids at the bottom of the tank.

“That was Lawrence’s statement, that’s not our statement. I’m sorry it was said that way.”

– Energy Secretary James Watkins, chastising Hanford Manager Mike Lawrence for his statements about the risk of a tank explosion. (Tri-City Herald, March 29, 1990).

“‘The worst case is any explosion that could cause the dome to collapse and send the contents up to the air. I can’t sit here and say it’s not going to happen.’”

– Hanford Site Manager Mike Lawrence, commenting on a concern about hydrogen building up in some of Hanford’s waste storage tanks. (Tri-City Herald, March 24, 1990).

“There is good evidence the tank system could withstand what could occur in there. The consequences are far less than we thought.”

– Hanford Manager Mike Lawrence. (Tri-City Herald, April 17, 1990).
When enough hydrogen gas was generated, it forced its way up and into the open space of the tank. The concern was that during these hydrogen “ventings,” which came to be known as tank “burps,” the hydrogen concentration would be high enough to burn or explode if there was a spark inside the tank. These ventings occurred every 100 days or so. Hydrogen concentrations during an August venting were even lower, at 1.1 percent.

A team of technical experts organized by DOE Headquarters concluded that the probability of combustion inside tank SY-101 was low but agreed that additional study was needed.

A DOE report issued in July showed Hanford contractors had known about hydrogen in the tanks for 13 years, but had done nothing to resolve the problem. The report concluded that management actions necessary to ensure an adequate level of safety were lacking.

Energy Secretary Watkins directed that additional safety measures and operational restrictions be taken to reduce the risk associated with gas generation and accumulation within the tank. He also said DOE would prepare a supplemental Environmental Impact Statement to determine potential environmental impacts from Hanford’s tanks. Watkins said the action should not be misconstrued as an indication of increased risk to the public — but a confirmation of DOE’s commitment to protect the environment.

By year’s end, samples were taken from the crust inside tank SY-101. The crust was found to be damper, softer and less radioactive than expected. Further analysis showed the crust contained up to 25 percent water and might be too wet to burn.

Nevertheless, the DNFSB said DOE and its contractors were not moving fast enough to address tank safety issues. The DNFSB said DOE’s actions did not reflect the urgency the circumstances merited. The Board recommended DOE take immediate steps to add instruments to the single-shell tanks containing ferrocyanide to establish whether hot spots existed or may develop. DOE was also advised to determine if flammable gas was present in the tanks and to greatly accelerate sampling of the tanks.

The State of Oregon weighed in on the issue in October. In a letter to Energy Secretary Watkins, Oregon Hanford Waste Board Chair William Schroeder and Vice Chair and Secretary of State Barbara Roberts requested that DOE immediately begin a thorough study of any environmental or public health and safety impacts to Oregon from a tank explosion.

Safety concerns caused DOE Headquarters to order a stop to coring work inside Hanford’s tanks. Experiments indicated drill bit temperatures could reach 475 degrees Celsius, well above the temperature needed to create a fire in the tanks under certain conditions.
Around the DOE Complex

Energy Secretary Watkins announced a proposed DOE rule to protect whistleblowers working for DOE contractors. DOE employees already had legal protection against retaliation but their contractor employees were not previously protected from retaliation for reporting unsafe, wasteful or illegal practices.

Watkins also announced his master plan for producing nuclear weapons into the middle of the next century. Hanford was not initially considered to be a favorite to host any facilities as part of “Complex 21.”

“We must protect these people so they will feel free to come forward with their good-faith concerns.”


Construction of Hanford’s BC Cribs in 1955.
DOE and the Western Governors’ Association signed a cooperative agreement in which DOE would provide funding to 10 Western states to address transportation issues related to the shipment of radioactive wastes from DOE sites — including Hanford — to the Waste Isolation Pilot Plant in New Mexico. The states would work with DOE over the coming years to develop a comprehensive transportation safety plan addressing accident prevention, emergency preparedness, and public information.

In October, DOE announced it would conduct a Programmatic Environmental Impact Statement to examine planned environmental restoration and waste management operations throughout DOE’s nuclear weapons production complex. The environmental analysis would specifically address long-term goals and issues summarized in DOE’s five year plan.

“The western governors agree that continued reliance on temporary storage facilities for these wastes is unacceptable, but these shipments must be accomplished in the safest manner possible and in partnership with the impacted states.”


“We believe USDOE must not be allowed to play one state or one region off against another in the ranking of cleanup sites and for priority claims on cleanup dollars. Hanford should not have to compete against Savannah River. Oak Ridge should not have to compete against Rocky Flats. None of these and other contaminated sites should be sacrificed so that USDOE can continue (to spend money on) weapons production.”


“This mulberry jam is a token of the future hazard of unidentified, uncontained and unmanaged radioactivity at Hanford.”

– Letter from Norm Buske, who picked mulberries containing strontium 90 near Hanford’s N Reactor, made jam, and then sent jars of the jam to Washington Governor Booth Gardner and Energy Secretary James Watkins. (Tri-City Herald, August 8, 1990).

“They’re no longer cute little dogs, they’re just a radioactive waste problem.”

– Bern Shanks, University of California at Davis, referring to the carcasses of 828 dead beagles shipped to Hanford for burial. They were part of a study on radiation exposure effects at the University of California at Davis. (Tri-City Herald, October 16, 1990).
1991

“We are not trying to drag our feet… But we have to wean ourselves of the notion that we can clean it up by throwing money at it.”

– Energy Secretary James Watkins at a House subcommittee hearing, saying continued disputes with the State of Washington are likely over cleanup schedules. (Tri-City Herald March 7, 1991).

The Cleanup

As 1991 rolled around, it had been just 14 months since the U.S. Department of Energy (DOE) had awarded a construction contract to build Hanford’s high-level waste vitrification plant and construction was scheduled to begin within a few months. But it was not to be. In January, Energy Secretary James Watkins announced delays of two years or more for Hanford’s vitrification plant and pre-treatment plant. By March, a Westinghouse Hanford official said the delay might be significantly longer than two years. Technical, safety and budget issues were blamed. DOE also wanted to learn some lessons from the vitrification plant being built at the Savannah River Site. After repeated delays, that facility was now expected to be operational in December 1993.

The regulators were not initially willing to accept major delays. Washington Governor Booth Gardner threatened legal action. Washington Department of Ecology and U.S. Environmental Protection Agency (EPA) officials wrote to Hanford Manager John Wagoner, rejecting DOE plans to delay construction of the vitrification plant. The regulators did agree to delays in pumping liquids from the single-shell tanks because of safety issues.

Negotiations among the three parties led to agreement on revisions to the Tri-Party Agreement in May. They were the first changes since the agreement was signed two years earlier. The start of construction of the vitrification plant would be delayed by 10 months to April 1992, but the operational date of December 1999 remained the same. Up to four new double-shell tanks could be constructed to allow more flexibility in handling high-level waste. Ecology and EPA would be allowed increased involvement in preparing Hanford’s annual funding estimates. The parties also agreed to a delay in pumping liquids from the single-shell tanks. A strategy to streamline cleanup was also agreed to in which the schedule for investigating and developing alternatives for old waste sites was reduced to three to four years (from the previous seven to nine years).

By November, an internal DOE study suggested further delays in Hanford’s high-level waste vitrification plant might be unavoidable.

“It’s astonishing that Energy would unilaterally let such a major milestone slip. The (Tri-Party) agreement is very clear: changes are to be proposed and discussed out in the open, and not pulled like a rabbit out of a hat.”


“This is not an issue that can be decided unilaterally. Every unjustified delay and every cut in the cleanup budget puts the Columbia River and the people of Oregon and Washington at greater risk. That simply is not acceptable.”

Those further delays did not bode well for the continued integrity of Hanford’s waste storage tanks. In July, a DOE report indicated that Hanford’s double-shell tanks could start leaking before DOE was able to remove wastes from the tanks for treatment and vitrification. The report said the oldest of the double-shell tanks were fast approaching the limit of their expected operating life.

Throughout the year, Ecology opposed DOE’s plans to use the World War II-era B Plant for pre-treatment of tank waste. In March, Ecology Director Christine Gregoire asked for help from the state’s Congressional delegation to get DOE to come up with a new solution for pre-treatment. Gregoire said B Plant could never comply with hazardous waste laws. That summer, a General Accounting Office report agreed with Washington, saying DOE should cancel $609 million in projects designed to make B Plant a waste treatment facility. The report said B Plant did not meet current regulatory standards and the state was unlikely to waive these standards. In December, DOE agreed to drop plans to use B Plant for pre-treatment of Hanford’s tank waste.

The first Superfund cleanup work began at Hanford in February. The project was to recover about 100 steel drums containing toxic chemicals and uranium from a 300 Area burial site, less than one mile from the Columbia River.

EPA officials meanwhile, urged DOE to accelerate efforts to stop seven liquid waste streams. They were joined by Ecology officials in demanding severe restrictions on liquid discharges to Hanford’s soil.

Attempts to identify the scope of the cleanup ahead began to uncover the magnitude of the contamination at Hanford. In March, DOE announced plans to publish a report explaining the history behind all of Hanford’s 1,400 waste sites.

In April, DOE announced that 444 billion gallons of contaminated liquids were dumped into the soil at Hanford since operations began in 1944. It was the first attempt to estimate the total volume of radioactive materials and chemicals dumped or buried at Hanford. The waste...
discharges were estimated to have contained about 678,000 curies of radioactivity and 93,000 tons of chemicals. About 121 million gallons of tank waste were dumped to the soil. In May, a Westinghouse Hanford report showed 75 containers of spent fuel rods were placed in a low-level burial site in the mid-1970s.

DOE awarded a two year contract extension to Westinghouse Hanford Company in June and announced changes in site management, including the addition of a separate contractor to manage environmental restoration work.

In July, Westinghouse announced it had successfully demonstrated the ability to extract carbon tetrachloride from the soil. The demonstration was part of an expedited cleanup action but would be expanded to a full-scale project. More than two million pounds of carbon tetrachloride were discharged to the ground near the Plutonium Finishing Plant between 1955 and 1973. The chemical had since spread over a seven square mile area of the soil and groundwater. The vapor extraction process was designed to intercept the chemical before more of it reached the groundwater.

A survey conducted for the Tri-Party agencies showed Washington and Oregon residents were interested in cleanup work at Hanford, but many doubted whether they actually had any input in the cleanup decisions. Sixty three percent of the poll respondents said they did not believe Hanford officials were interested in public participation in Hanford cleanup decisions. About 51 percent said they were very, or somewhat interested in helping make decisions about Hanford.

Meanwhile, a survey done for the Oregon Department of Energy found that most Oregonians worried about the effects of nuclear waste transport, but more than half believed the job could be done safely. More than half of those surveyed also believed nuclear weapons waste transport posed a greater risk than continuing to store the waste at Hanford. As part of the Hanford cleanup and other DOE site cleanups, large volumes of waste were expected to be transported both to and from the Hanford Site.

The end of Hanford's plutonium production days seemed assured in August, when Energy Secretary Watkins announced N Reactor would be permanently shut down.

“The report re-emphasizes that the contamination at Hanford far exceeds what anyone thought it was, and that cleanup is going to be a lot bigger.”

– Lynn Stembridge, Hanford Education Action League, commenting on a report that 444 billion gallons of contaminated liquids were dumped into Hanford’s soils. (Seattle Post-Intelligencer, April 13, 1991).

“The volume of carbon tetrachloride disposed to the ground is unprecedented in the environmental cleanup industry… nobody has ever attempted to use (the technology) to clean up a vapor plume this big.”


“Our intent is not to change people’s minds about nuclear waste shipments, although that might happen. (Our) task is to provide accurate, timely, and credible information about safe transport. Then Oregonians can make informed judgments about the Hanford nuclear weapons waste cleanup and radioactive waste transport.”


* A technician wires the N Reactor Control Room in 1963.
In October, empty barrels marked “radioactive” and some also marked “Hanford” were discovered in the Columbia and Willamette Rivers. The ten barrels were found near downtown Portland and near Rainier, 45 miles downriver. The barrels were empty and were apparently some type of protest. No one claimed responsibility.

The Advisory Committee on Nuclear Facilities Safety (known as the Ahearne Commission, after its chair, John Ahearne), issued its final report in October. The report said worker safety at the tank farms remained an issue and DOE should not create new environmental restoration management contractors at Hanford or at other DOE sites. It also said DOE’s goal to clean up the nuclear weapons complex by 2019 was “unattainable.”

In December, John Wagoner was named Manager of the Hanford Site, removing the “acting” tag that had been part of his title for the previous 17 months.

**Tank Safety**

Concerns about the safety of many of Hanford’s underground storage tanks prompted Oregon Congressman (now Senator) Ron Wyden to propose legislation to create a “Watch List” of tanks. Tanks on the Watch List were subject to special safety precautions because of the

“I have determined that it is no longer necessary to continue preservation of N Reactor as a contingency for the production of defense nuclear materials.”

potential for a fire or explosion. There were four issues of concern: hydrogen, ferrocyanide, organics and high heat:

- hydrogen was generated through chemical reactions in the tank waste. At certain concentrations, hydrogen was flammable. At higher concentrations it was explosive.
- about 350 tons of ferrocyanide was added to two dozen tanks in the early 1950s to separate cesium from the waste. Under high temperatures and at certain concentrations, ferrocyanide could explode.
- more than five million pounds of organic chemicals was added to the tanks, mainly as a result of efforts to remove strontium from the wastes. At certain concentrations and at certain temperatures, organics could ignite.
- radioactive decay in the waste could create temperatures great enough to cause the waste to boil. If the tank was to leak, adding cooling water could increase leakage to the soil. If cooling water was not added, the waste could heat enough to cause structural damage to the tank, possibly leading to a large release to the environment.

In all, 52 of Hanford’s 177 underground waste storage tanks (47 single-shell and five double-shell) were placed on the initial Watch List. Some tanks were on more than one list. A few additional tanks were added to the Watch List later in 1991, in 1992, 1993 and 1994. No tanks were added to the Watch List after May 1994.

A Westinghouse Hanford Company report concluded that Hanford’s waste storage tanks did not contain “red oil,” an organic-based material that could potentially detonate at relatively low temperatures.

In March, DOE and Westinghouse released a list of 27 tank safety problems, including the four issues which resulted in creation of the Watch List. Other problems included a lack of available tank space, a lack of accurate information about the tank contents and aging leak detection and alarm systems.

New core samples were taken from tank SY-101 after a venting of hydrogen in May. A video camera and light were installed to monitor activity inside the tank and a radar device was also installed to track the level of waste in the tank.

DOE officials in June announced that the amount of plutonium in tank C-104 exceeded safety limits. The concentration of plutonium was still low enough that a criticality was not likely.

The following month, DOE officials announced they could not pump the contents of tank C-106 if it began to leak. Their only option was to add water to keep the temperature of the waste from getting too high. Adding water to the tank, if it was leaking, would drive the waste towards the groundwater.

Hanford’s updated Five-Year Plan, released in September, listed the threat of a fire or explosion in the underground waste tanks as the Site’s top concern. Resolution of all tank safety issues was listed as DOE’s highest priority at Hanford.

“I don’t know why the tank farms had a low priority. But they did not get the attention or the budgeting the rest of the site did.”

— Phil Hamric, Hanford Deputy Manager, in announcing that DOE planned to spend $25 million over the next four to five years to replace outdated safety monitoring instruments and alarms at most of the tanks. (Tri-City Herald, January 31, 1991).
After a year’s delay because of tank safety issues, Westinghouse started taking samples from the single-shell tanks to gain a better understanding of the waste contents.

**Around the DOE Complex**

In February, DOE released the results of a study to define the nation’s nuclear weapons production needs well into the next century. Energy Secretary Watkins said the new complex would be smaller and less expensive to operate. Production activities at Rocky Flats, Colorado would end. Costs of the new complex were estimated at $6.7 to $15.2 billion. Hanford was one of five sites listed as a potential new production site, although DOE officials said Hanford was not their first choice. During the summer, more than one hundred protesters demonstrated against consolidating nuclear weapon production facilities at Hanford as part of DOE’s Complex 21 plans. It was the largest anti-nuclear protest at Hanford in years.

DOE released a draft Environmental Impact Statement in April for a new reactor for tritium production. Hanford was one of three sites under consideration.

A study by the Congressional Office of Technology Assessment showed cleanup of DOE’s nuclear sites might take much longer than 30 years.

DOE sought public comments on a formal system designed to help establish priorities for environmental cleanup at its sites and facilities. The intent was to help determine which cleanup activities to conduct first and how much money to budget.

In November, Energy Secretary Watkins announced a seven point American Indian policy. Among the commitments was a pledge for prior consultation with tribes where their interests or treaty rights might be affected by DOE activities. Three Northwest tribes were recognized by Congress as being affected by Hanford operations. The Nez Perce Tribe, the Confederated Tribes of the Umatilla Indian Reservation, and the Yakama Indian Nation all had rights recognized and guaranteed in the Treaties of 1855. The Wanapum, who still lived adjacent to the site, were a non-federally recognized tribe that also had strong cultural ties to the site and were consulted on cultural resource issues. Tribal people routinely accessed portions of Hanford for traditional religious practices, including the gathering of foods and medicines.

“Oregon is not prepared or even willing to think about new production facilities. And we will not contemplate that fool’s lottery until USDOE has earned at least a measure of credibility and public trust. When USDOE pursues environmental restoration with the same will and commitment with which it always has pursued weapons production, half the battle will be won."


“USDOE should construct its budget based upon the regulatory requirements and agreements it has reached with the states and Indian tribes, and with other requirements of federal, state and tribal law. These agreements reflect the value judgments of socio-economics, public health and safety, and other concerns that USDOE is trying to arbitrarily quantify.”

– Letter from Michael Grainey, Deputy Director, Oregon Department of Energy, to Energy Assistant Secretary Leo Duffy. (November 5, 1991).

“The methodology appears to be scientific and unbiased, but in fact it is not...There is only the illusion of scientific certainty and objectivity.”

The Cleanup

The Bush Administration requested a $1.7 billion Hanford budget for fiscal year 1993. It represented a 17 percent increase over the current budget and allowed the vitrification plant to remain on schedule for a 1999 startup. For a short time, at least, there appeared to be progress toward meeting that startup, as groundbreaking ceremonies were held in May to mark the beginning of construction of the vitrification plant.

The U.S. Department of Energy (DOE) released a report detailing 127 significant accidents at Hanford that occurred over the previous four decades, many of which had previously been made public. They included fires, explosions, fuel melting, safety system failures, and various incidents that exposed workers to radiation and dangerous chemicals. Fourteen of the 127 accidents were considered Category 1, the most serious. These involved serious injury, radiation release or exposure above limits, substantial damage or more than $1 million in damage. Four of the Category 1 accidents involved reactor operations, seven were related to chemical processing, and three to laboratory or experimental operations. Chronic or repetitive radioactive material releases were generally not included in the report.

A survey by the Hanford Reach newspaper showed many workers were still afraid to raise safety concerns. About 20 percent of the respondents said they did not believe they could raise safety concerns without suffering some retaliation.

Washington Department of Ecology officials in February rejected DOE’s plans to use commercial laboratories for low-level mixed waste sampling instead of building their own facilities at Hanford. Ecology officials cited delays in getting results — sometimes as long as five to seven months past deadlines. The sampling was needed to support cleanup work. Later in the year, construction began to expand Hanford’s hot cell capabilities. Five analytical hot cells were being added, which were needed to keep up with cleanup.

DOE made some important decisions about two of its major facilities. In March, DOE ordered the Fast Flux Test Facility into a standby mode, effective April 1. The reactor was already scheduled for shutdown for routine maintenance and refueling. In December,

“The budget request for environmental restoration projects, waste operations and research and technology development reflects a deep concern for the environment, as well as a tangible sign of the immense job that lies before us.”

“No way is the government going to keep spending billions and billions at Hanford over so many years just to clean up some desert land. The government doesn’t have a history of sticking with something that long.”
— Tom Anderson, Westinghouse Hanford President, in a speech to employees. Anderson challenged workers to demonstrate and apply advanced technologies in their cleanup work as he said cleanup was not enough to maintain continued funding. (February 9, 1992).

“Our fellow citizens must know the stakes involved in a successful Hanford cleanup, as well as the perils of mistakes.”
— Oregon Secretary of State Phil Keisling, reading Governor Roberts’ charge to the Oregon Hanford Waste Board. (February 18, 1992).
Energy Secretary James Watkins announced the permanent closure of the PUREX facility.

Tragedy struck in April and again in June. First, Hanford worker Miles Fisher was killed when he plunged through the roof of F Reactor and fell 50 feet to a concrete floor. A June plane crash near the Yakima Firing Range killed Battelle scientists Richard Fitzner and Lester Eberhardt and their pilot.

B Reactor was listed on the National Register of Historic Places. B Reactor was the first of nine plutonium production reactors built at Hanford and one of three that began operation during World War II. DOE planned to eventually dismantle all of the reactors with the exception of B Reactor, which would potentially be preserved as a historic site and museum.

A DOE audit identified numerous hazards at Hanford’s surplus buildings. Hazards included improperly marked radiation zones, unmarked drums of hazardous chemicals and rattlesnakes.

In April, DOE released a request for proposal for an environmental restoration management contractor, despite strong opposition from local governments, labor unions and the state’s congressional delegation. The proposal included $185 million for environmental restoration work at Hanford in 1993.

Westinghouse announced five new projects for accelerated cleanup. Accelerated cleanup projects could bypass some studies required by federal environmental cleanup laws. Two earlier accelerated cleanup projects had been completed while a third was underway at that point.

“That option is not viable because the plant does not meet current environmental requirements for operation and the cost of bringing it into compliance is, at nearly one billion dollars, simply too expensive.”

— John Hunter, DOE Assistant Manager for Operations at Hanford, stating that PUREX would not be restarted to process N Reactor fuel stored at the K-Basins. (DOE News Release, December 4, 1992).

“PUREX has been an important cog in a nuclear weapons machine that has no appropriate place in today’s world. Oregon applauds this decision. It underscores the U.S. Department of Energy’s intent to keep Hanford out of the weapons production business.”


“Existing programs receive limited funding, operate with out-of-date and un-calibrated equipment, and are not comprehensive enough to assess the migration of contaminants from tanks or in the ground.”

— A General Accounting Office Report, which criticized existing soil monitoring programs at Hanford and said DOE needed to improve and integrate these programs. (GAO/RCED-92-149, July 1992).
DOE announced in July it was stepping up internal oversight of Hanford. The action was in response to a DOE Headquarters audit which showed Hanford management had not met Tiger Team recommendations that DOE officials spend more time on the site.

A 7,000 gallon leak from tank T-101 went unreported for four months because tank farm workers did not trust a malfunctioning leak detection device. Tank T-101 was declared Hanford’s 67th leaking tank in October.

In what would later become the model for stakeholder involvement at Hanford, the Hanford Future Site Uses Working group conducted its first meeting in April. The group was charged with identifying a range of possible future uses for the site and to help advise cleanup activities to make those potential uses possible. The nine month planning effort involved 28 parties, including DOE, its regulators, the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation, the State of Oregon, environmental groups, agriculture, labor, economic development and others. The Working Group members agreed they would not seek consensus on a single vision for future site use and cleanup strategies. Instead, they suggested several potential uses for each of six geographic areas of the site. The Working Group also agreed on a common set of values to guide cleanup.

“How clean is clean? What gets cleaned first? What is the land going to be used for? When you tackle the big problems like this, you’ve got to answer these questions.”


“We used every aspect of the Hanford Reservation. We depended on the foods and the medicines, not only from the land, but from the river.”

– Russell Jim, Yakama Indian Nation, saying that the needs of Native Americans should be considered first in deciding future uses of Hanford’s land. (Associated Press, November 18, 1992).

The Hanford Site includes a large area of sand dunes.
In December the Working Group released its report to the public. It included nine major recommendations related to Hanford cleanup, including: protect the Columbia River; do not cause additional harm through cleanup work or future development; restrict access to the 200 Area for at least 100 years after cleanup is complete; and place a priority on cleaning up those parts of the site which have high value for future use. The Working Group suggested that a range of future use options existed for most areas of the site. The process resulted in greater public participation in Hanford decision making.

**Tank Safety**

While it appeared that the likelihood of a fire or explosion within one of Hanford’s tanks was much less likely than earlier feared —
with the possible exception of tank SY-101 — it had become very clear that the condition of the tank farms was poor and continued to deteriorate. That was the finding in July of a DOE review of Hanford’s tank farm operations. It also concluded that Hanford workers did not have equipment readily available to quickly respond to a tank leak.

Ecology officials announced that major monitoring systems at SY-101 did not work or were not reliable. The state wrote a notice of violation which said a leak from the tank could go or may have gone undetected for an extended period of time. Ecology inspectors found one leak detection device to be virtually useless, a second that had been malfunctioning for at least a month, and a third with radiation detectors that did not work.

In September, there was a large venting of hydrogen at tank SY-101, one of the largest in the tank’s history. Waste levels in the tank dropped 10 inches in 10 minutes, and a pipe which held instruments to measure temperatures in the tank was severely bent. Westinghouse workers successfully removed the bent pipe in October.

A Los Alamos National Laboratory study concluded “red oil” did not likely exist in Hanford’s waste storage tanks and therefore did not pose a hazard. Red oil is an organic-based material that could potentially detonate at relatively low temperatures. The report recommended further study to better understand the behavior of red oil in complex chemical environments such as Hanford’s waste tanks.

**Around the DOE Complex**

After more than four years of debate and negotiation, Congress passed the Federal Facilities Compliance Act. President Bush signed it into law in October. Passage of this act had been a longstanding priority for Washington and Oregon. The Federal Facilities Compliance Act in effect subjected DOE (and other federal agencies) and its contractors to nearly the same enforcement sanctions under federal and state hazardous waste laws as any other private party or non-federal government entity. Previously, Washington state’s efforts to ensure compliance with the Resource Conservation and Recovery Act (RCRA) were often frustrated at Hanford, as DOE claimed sovereign immunity and successfully blocked state enforcement action. RCRA, passed by Congress in 1976, regulated the safe and proper handling, storage, treatment and disposal of hazardous wastes. RCRA allowed states to assume responsibility for the administration and application of RCRA within state borders. The new law made it clear that federal sovereign immunity was not a bar to enforcement and civil penalty action by state and federal regulators. While there were some exceptions, the law strengthened the ability of the

“The existing tank farm operator training program consists of little more than the passing of ‘tribal knowledge,’ both good and bad, from senior operators to junior operators.”

— A Defense Nuclear Facilities Safety Board report, which said many safety problems remained at Hanford’s tank farms. *(Tri-City Herald, July 25, 1992).*

“There was substantial movement. You could see waves bouncing off sides.”

— Melissa Rodewalk, Westinghouse spokeswoman, referring to the view inside tank SY-101 via video camera of a large venting of hydrogen. *(Tri-City Herald, September 4, 1992).*
states and the U.S. Environmental Protection Agency to enforce compliance agreements.

Leo Duffy, Energy Assistant Secretary for Environmental Restoration and Waste Management, announced his resignation in August, effective at the end of the year.

DOE officials concluded they could not have a facility ready to store nuclear waste from the nation’s commercial nuclear power plants by a 1998 deadline, and announced they would search military bases and nuclear weapons production sites for temporary storage sites.

“*Our protective scheme is such that no one’s ever going to get off of this site — and I’m saying ‘ever’ get off of this site — with special nuclear materials.*”

— Robert Rosselli, DOE Assistant Manager for Administration, commenting on an *Oregonian* story that cited a 1979 internal report acquired through the Freedom of Information Act that some sites at Hanford were vulnerable to sabotage, attack, and potential theft of plutonium. (*The Oregonian*, November 16, 1992).
“What I fear is that this $20 billion has not even begun to scratch the surface of cleaning up this nation’s atomic energy defense wastes. I fear that we are staring into a toxic abyss of unimagined depth and unknown characteristics.”


The Cleanup

The arrival of Bill Clinton’s Administration brought major changes to the U.S. Department of Energy (DOE). Hazel O’Leary, an executive with Northern States Power Company of Minneapolis, became Energy Secretary. Tom Grumbly was selected to head up the DOE cleanup program. Before he was even confirmed by the Senate, Grumbly said one of his first priorities after he was confirmed would be to work with state and federal regulators to renegotiate cleanup agreements to make them more realistic. Secretary O’Leary also told Congressional members that she had doubts about DOE’s ability to meet cleanup deadlines. She suggested some Tri-Party Agreement deadlines should be deleted and replaced with a new agreement without commitments.

DOE began to move forward with plans for major facilities to move the Hanford cleanup along. A number of cleanup plans were also finalized. DOE intended for Bechtel Group Inc. to lead much of that work as the company was awarded a five year, $800 million environmental restoration and management contract in January — taking that work over from Westinghouse. However, a protest of the contract prevented it from taking effect for more than a year.

A key to cleanup of Hanford’s contaminated soil and contaminated buildings was a new engineered disposal site. DOE proposed to build a massive landfill to dispose of up to 30 million cubic yards of waste. The landfill would be ready for operations in mid-1996.

Groundbreaking ceremonies were held in June for a new $18 million liquid waste treatment plant. The plant would treat liquids from 300 Area facilities which had been discharging untreated liquids into the ground. The plant would be operational in early 1995.

In October, DOE announced plans for cleanup of the 1100 area and the former Nike missile headquarters at the base of Rattlesnake Mountain.

In November, DOE announced its final plan for disposal of eight former plutonium production reactors at Hanford. The reactors would remain where they were for 75 years to let radioactive materials decay. The reactor cores would then be moved away from the

Workers at one of Hanford's plutonium production reactors.
Columbia River and buried on site. Earlier, DOE had indicated the reactors would be moved away from the river within 30 years.

Energy Assistant Secretary Grumbly gave approval for construction at Hanford of an $89 million Waste Receiving and Processing (WRAP) facility. WRAP would analyze, package and sort waste, much of which would eventually go to the Waste Isolation Pilot Plant in New Mexico. The facility would begin limited operations in early 1997.

DOE, the U.S. Environmental Protection Agency (EPA), and the Washington Department of Ecology reached agreement on a plan to pump liquids from tank T-101, declared a leaker in October 1992, to a double-shell tank. Leak detection systems at the tank would also be upgraded. By April, the pumping of 25,300 gallons of liquids from tank T-101 was completed. More than 100,000 gallons of sludge remained in the tank. Three million gallons of liquid waste remained to be pumped from 43 single-shell tanks.

While plans for various cleanup moved forward, there were a number of reminders of the multitude of hazards on the site.

In February, a possible leak was discovered in the K-East basin, where spent fuel from the N Reactor was stored. Measurements indicated the basin was losing about 50 gallons of water an hour. The basin leaked for several years in the 1970s and was repaired in 1980.

Later, Hanford officials detected a buildup of plutonium in a filtering system at the K-East basin. The plutonium was estimated at 775 to 1,800 grams, well in excess of the DOE limit of 225 grams. DOE officials said the plutonium was diluted and not likely to cause a criticality accident.

The Oregon Department of Energy asked DOE for information about what damage a serious earthquake could cause to Hanford’s K-Basins and the potential that would result in a release of radioactive material to the environment.

All work at Hanford’s Plutonium Finishing Plant (PFP) involving plutonium was halted in March after two contamination accidents within five days. PFP had the second largest plutonium inventory in the United States with an estimated four metric tons of plutonium in its vaults, and more than 13 metric tons of plutonium-bearing materials. These included scrap materials, liquids, metals and oxides.

An internal report from DOE’s Office of Nuclear Safety said worker contamination incidents were common and that radioactive materials were frequently being released to the environment. DOE officials said the incidents raised in the report from Steven Blush, the Office’s Director, were not as serious as the report indicated.

DOE and Westinghouse were fined $100,000 for violating hazardous waste regulations at the tank farms.

In June, Energy Assistant Secretary Grumbly came to Hanford to investigate an accident that fatally injured a Hanford worker. Lou Beatty received second and third degree burns from steam escaping from a valve. Energy Secretary O’Leary had previously announced that any worker death or serious injury would be investigated by a top Headquarters official. Beatty died a week later.

“There is no doubt DOE’s contractors are not performing as they should. People are being injured and contaminated and hazardous materials are being spilled or released into the environment almost every day.”

– Conclusions from DOE’s Office of Nuclear Safety. (Seattle Post-Intelligencer, April 17, 1993).

“The accident rate is unacceptable to us. Unless we change the way we do things...we’re going to have another death.”

– Hanford Deputy Manager Phil Hamric. (Tri-City Herald, August 13, 1993).
A General Accounting Office (GAO) report said aging and inactive DOE facilities posed a serious threat to workers’ health and safety. The report said some facilities at Hanford did not receive routine maintenance and inspection as required by DOE regulations.

In August, a Hanford worker taped a rock to a rope and dropped it into a waste tank to see if a pipe was plugged. He was slightly contaminated. DOE officials shut down tank farm work except for monitoring and essential maintenance and ordered 350 workers to undergo remedial safety training. The incident followed 17 lost time accidents at the tank farms in the previous 12 months.

The Nuclear Regulatory Commission (NRC) denied a request by Oregon and Washington for the NRC to oversee the handling and disposal of millions of gallons of Hanford’s radioactive and hazardous waste. The decision came three years after the states asked the NRC to change its rules and assume jurisdiction over the waste storage tanks.

In September, a two day “Hanford Summit” was held in the Tri-Cities. The summit focused on public involvement, regulations review, worker training and technology transfer. Energy Secretary O’Leary pledged to streamline Hanford’s cleanup; to declassify large amounts of DOE documents within 30 days; to push to transfer Hanford’s lands to public use as soon as possible; and to pay attention to employee’s concerns about whistleblower issues. She also announced the end of a hiring freeze to help deal with tank safety issues; said she would meet with Tribal representatives within three months; would explore funding for public involvement activities and would work with the state to explore the creation of a Hanford advisory panel.

Shutdown of the Fast Flux Test Facility (FFTF) was delayed while yet another review was conducted of its potential use. By October,
“Hanford will remain in the limelight and work there is likely to remain under a microscope to see how efficiently we use those dollars.”
— John Lindsay, President of Tri-City Industrial Development Council. (Tri-City Herald, October 15, 1993).

“Continued adherence to the current Tri-Party Agreement schedule may result not in timely completion of the program but in the construction of facilities that are not cost-effective or do not work...The desire to hold to deadlines needs to be balanced against the very real possibility that billions of dollars could be spent on a vitrification plant that simply cannot do the job.”

“We need to take a very hard look...and determine whether we are in a position to truly deliver on all the commitments.”
— Energy Secretary Hazel O’Leary to a House Committee hearing, talking about DOE’s ability to meet cleanup deadlines. (Tri-City Herald, May 19, 1993).

that committee recommended to Energy Secretary O’Leary that the reactor be shut down. In December, Secretary O’Leary ordered the permanent shutdown of the FFTF.

A House-Senate Conference committee approved a spending bill that included $2 billion for Hanford, including $1.6 billion for cleanup.

A GAO report said DOE wasted hundreds of millions of dollars in the way it drilled monitoring wells at Hanford. The report said efforts should be taken to use more efficient drilling methods.

DOE said it would not pay Westinghouse Hanford a $2 million performance bonus the contractor had expected to receive. Westinghouse got the lowest rating in its seven years as Hanford’s primary contractor, following numerous safety problems and the death of a worker.

A proposal was made to complete two unfinished Washington Public Power Supply System (WPPSS) nuclear reactors to destroy the nation’s surplus plutonium and create electricity. The “Isaiah Project” would have completed WPPSS #1 at Hanford and WPPSS #3 at Satsop in Western Washington.

Tank Waste Treatment

Plans for Hanford’s high-level waste vitrification project began to stall.

In January, DOE issued its newest five year cleanup plan, the final from the Bush Administration. It suggested it might be necessary to delay vitrification of Hanford’s tank wastes. DOE officials the following month said they were considering several possible changes to the schedule to begin high-level waste vitrification at Hanford. One possible scenario would delay the process until 2020.

A GAO report in March endorsed delays in construction of the vitrification plant and renegotiation of the Tri-Party Agreement. The report said major technical problems existed in all parts of the tank waste cleanup program and unrealistic Tri-Party Agreement deadlines might result in DOE spending billions of dollars on a plant that could sit idle for years. The GAO recommended that construction be postponed until a final decision was made on how high-level waste would be immobilized and design was complete on the facility. Two days later, Energy Secretary O’Leary met with Washington Governor Mike Lowry and assured him DOE would uphold cleanup agreements.

Later that month, Ecology, DOE and EPA agreed to at least a six month delay in the start of construction on the vitrification plant and asked for public input to help guide the renegotiations.

In May, the Hanford Tank Waste Task Force met for the first time — convened by DOE, EPA and Ecology. The Task Force included representatives of Tribal, state and local governments, business, economic development, agriculture, environmental groups, interest groups, labor and public health. The group met four times from May through September. The Task Force expanded on and reinforced the principles relating to overall Hanford cleanup that were initially rec-
ommended by the Future Site Uses Working Group. The Task Force also identified values specific to the tank waste treatment program. The process provided new opportunities for public input to influence Hanford decision-making and was the springboard for formation of the Hanford Advisory Board. The Tank Waste Task Force issued its final report in September. It concluded the need for cleanup was compelling and urgent and encouraged the Tri-Parties to “get on” with cleanup. The Task Force also recommended the Tri-Party Agreement be strengthened.

In October, the Tri-Parties completed renegotiation of the Tri-Party Agreement. The renegotiation allowed for a delay in constructing the vitrification plant, the addition of a vitrification plant for low-level waste, and extended overall cleanup by ten years. It set a new target date of 2028 to complete all vitrification of tank waste. The revisions also escalated actions to treat contaminated groundwater. DOE abandoned the grout program, despite costs so far of $200 million. Ecology, the Yakama Indian Nation and others had raised concerns about the effectiveness of grout for entombing low-level radioactive waste. The concerns included how well the grout would hold up over time and the amount of long-lived radioactive materials that would be in the grout. Early tests showed more heat generated within the grout than had been expected.

In December, a Massachusetts-based consortium proposed to DOE to construct a privately funded high-level waste vitrification plant at Hanford. The plant would be a replica of plants used in France. The consortium said it would spend more than $1 billion and DOE would pay only after waste was glassified. DOE officials said the proposal was worth considering.

“‘Get on with the cleanup’ to achieve substantive progress in a timely manner. Get on with it reflects a sense of urgency and purpose and a desire to see the cleanup move forward productively as quickly as possible.”


“We don’t want to put over four million curies in a less-than ideal waste form in the ground at Hanford.”

— Todd Martin, Hanford Education Action League, commenting on concerns about the use of grout to entomb tank waste at Hanford. (Tri-City Herald, February 1, 1993).

“It reflects a higher priority on dealing with urgent safety problems and will allow us to get the majority of the waste out of old, deteriorating tanks on a faster schedule.”

— Energy Assistant Secretary Tom Grumbly, commenting on negotiated changes to the Tri-Party Agreement. (DOE News Release, October 1, 1993).

“We now believe the delay in the high-level waste treatment project is a reasonable trade for commitments that will prevent radioactive and chemical wastes from reaching the Columbia River in the future.”

Tank Safety

Considerable attention continued on tank SY-101 and its periodic venting of hydrogen gas. A 64-foot tall, 19,000 pound circulation pump was installed in the tank in July — several months later than planned. The pump was designed to constantly mix the waste, releasing small amounts of hydrogen on a continuous basis rather than allowing a large buildup of hydrogen to occur. A series of tests were conducted on the mixer over the following weeks. In September, the tank vented 26 minutes after the mixer pump was started. The second test phase of the circulation pump began in October, when the pump was run at increased speeds for longer periods of time.

In April, a waste storage tank at the Tomsk-7 complex in Russia exploded and caused a fire. The tank contained a uranium solution. DOE officials said the contents of Hanford tanks were different and a similar incident was unlikely at Hanford.

“\textit{The reason the report is old is that they worked so hard at making it old. Delay and deny, that's their game plan.}”

— Oregon Congressman Ron Wyden, commenting on a Department of Energy report from July 1992 that he made public and which Westinghouse officials said was outdated. The report found the condition of Hanford’s tank farms was poor and continued to deteriorate further and that one third of the tank monitoring instruments did not work. (\textit{New York Times,} February 29, 1993).
The Defense Nuclear Facilities Safety Board (DNFSB) urged DOE in July to expand and accelerate its tank waste characterization program at Hanford. The DNFSB concluded additional characterization was essential for ensuring safety in the near term and necessary for permanent treatment of the waste. The DNFSB recommended DOE complete safety-related sampling and analysis of all Watch List tanks within two years.

In July, Energy Assistant Secretary Grumbly testified before a Senate Committee on Hanford’s tank problems. He said DOE would design a plan to resolve safety and health problems related to the tanks. In September, Grumbly announced details of the plan, which included additional training and recertification of tank farm operators. Grumbly also said installation of gas monitoring equipment in 23 tanks would be accelerated and leak detection systems in the tanks would be upgraded.

**Around the DOE Complex**

In May, Secretary O’Leary announced major new health and safety procedures for DOE. The new procedures allowed surprise safety audits at the sites and provided for a three to five year transition to the Occupational Safety and Health Administration for regulating health and safety issues.

Energy Assistant Secretary Grumbly predicted cleanup of the weapons complex could exceed one trillion dollars in cost. At a conference on environmental restoration and waste management in Kennewick, Grumbly said estimates of $50 billion for Hanford cleanup were not realistic. William Wiley, director of Battelle, said Hanford cleanup could top $250 billion.

A DOE report said tons of spent nuclear fuel were stored unsafely in storage pools at Hanford, the Savannah River Site and the Idaho National Engineering Laboratory. In addition, spent fuel buried in trenches at Hanford and at the Oak Ridge Site also posed hazards. The report concluded fuel storage facilities and three burial grounds warranted priority action. The sites at Hanford were the PUREX canyon, the K-East basin, and a burial ground in the 200 West area.

Hopes that scientific advancements in transmutation could drastically shorten and simplify the DOE cleanup appeared unlikely. A GAO report said technology to transmute (or change) radioactive waste into a less radioactive form was decades and billions of dollars away from practical application.

DOE announced it was looking at seven sites, including Hanford, for permanent storage of spent nuclear fuel from Navy vessels and DOE reactors. The action was the result of a federal court ruling that DOE examine alternatives to storing spent fuel at the Idaho National Engineering Laboratory.
“The objective of these people may have been to protect the country, but they made some decisions at the expense of an unsuspecting public. The idea of releasing these amounts of radiation on people in an area in secret is a little hard to swallow.”


“The public record is very clear that the United States Government engaged in deliberate acts of deception against the American public in the 1940s and 1950s in order to prosecute the nuclear arms race.”


In December, Energy Secretary O’Leary revealed that during the Cold War the government conducted more than 800 radiation tests on 600 people. O’Leary said she was “appalled, shocked and deeply saddened” to learn 18 people were injected with plutonium without their knowledge. O’Leary also said the U.S. Government conducted 204 unannounced underground nuclear tests between 1963 and 1990, several of which resulted in radioactive material released to the environment. O’Leary also released information on the nation’s plutonium stockpile. Hanford had over 12 tons of plutonium on site — most of it reactor-grade fuel, but also about 441 pounds of weapons-grade plutonium. Hanford produced about 60 percent of the nation’s plutonium.

Battelle Pacific Northwest laboratory soon after released a summary of secret radiation experiments conducted by Hanford and Hanford-funded scientists during the Cold War. Tests included the injection of five people with phosphorus 32, irradiation of inmate sex organs at both the Washington and Oregon State Penitentiaries, and exposure of 15 people to tritium.

“To put it bluntly, we need to get the tanks out at Hanford under control… The frightening thing is nothing has been cleaned up. There is paper pushing, there are clouds of dust out there, but nothing is being accomplished. We don’t intend to shove billions of dollars into this without results.”

— Senator Bennett Johnston of Louisiana. (Tri-City Herald, July 30, 1993).
“We inherited a mindset that said, ‘Folks, whatever this costs, it’s in the national interest and we do it.’ You do it behind closed doors and you just do it. That mindset carried over into the earlier days of cleanup.”


The Cleanup

A continuation of increased citizen involvement in the Hanford cleanup occurred with the first meeting of the Hanford Advisory Board (HAB). HAB members spent much of the first meeting discussing how they would function and what issues they should tackle. The HAB was formed based on stakeholders’ and the U.S. Department of Energy’s (DOE) experience with two previous advisory groups — the Tank Waste Task Force and the Future Site Uses Working Group. HAB membership was broadly representative of the diverse interests affected by Hanford cleanup issues. Members included Native American tribes, local governments, the State of Oregon, workers, environmental groups, public health, local business, and other public interest groups. The HAB met under authority of the Federal Advisory Committee Act. Its primary mission was to provide informed recommendations and advice to DOE, the U.S. Environmental Protection Agency (EPA) and Washington Department of Ecology on major policy issues related to the cleanup of Hanford.

“We have an enormous agenda over the next few years of what you could grapple with. Whatever you pick, stick with it.”

– Energy Assistant Secretary Tom Grumbly to members of the newly-formed Hanford Advisory Board. (Tri-City Herald, January 26, 1994).

“I’ve been skeptical of these committees working twice in the past. And I’ve been wrong twice. I’m prepared to be proven wrong again.”

– Dan Silver, Washington Department of Ecology, on hopes for the Hanford Advisory Board. (Tri-City Herald, January 26, 1994).

The first meeting of the Hanford Advisory Board.
In February, DOE again awarded Bechtel Hanford Company an $800 million, five year environmental restoration and management contract. An earlier award of the contract resulted in a challenge by the losing bidders. Bechtel took over environmental restoration duties from Westinghouse in July.

Groundbreaking ceremonies were held in April for Hanford's Waste Receiving and Packaging (WRAP) facility and for Hanford's $228 million Environmental and Molecular Sciences Laboratory. WRAP would be used to package transuranic waste for shipment to the Waste Isolation Pilot Plant in New Mexico. The laboratory would be used to help develop new methods for cleanup.

Work also began on a prototype earthen barricade, the “Hanford Protective Barrier.” The barrier was intended to isolate waste areas and would use layers of rock, soil, gravel, sand and asphalt to form a barrier to help control how moisture migrated through the soil.

Hanford officials said a major earthquake could cause a catastrophic accident at the K-Basins. An earthquake could cause a construction seam to fail, resulting in water leaching from the basins and exposing the spent nuclear fuel stored there. The fuel could then spontaneously catch fire, releasing a plume of radioactive materials into the environment. The Defense Nuclear Facilities Safety Board said there was an urgent need for DOE to treat and stabilize spent nuclear fuel and plutonium-bearing materials at Hanford and other DOE sites. By October, Westinghouse recommended to DOE that instead of restarting the PUREX facility to process the fuel, K-Basin fuel instead be packed in water-filled canisters, moved to some other location on site, then chemically dried and processed so it could be stored safely in a dry environment. Westinghouse predicted the spent fuel rods and sludge could be removed from the basins by 2000.

The independent scientific panel directing a study into past radioactive material releases from Hanford announced new findings in April. Among the major results: radioactive iodine 131 released to the air from Hanford in the 1940s and 1950s traveled over a larger area of the Pacific Northwest than scientists previously assumed. The wider dispersion resulted in generally lower radiation doses to people near Hanford than previous estimates made in 1990. At some more distant locations, estimated doses were up to ten times higher than previously announced, although these doses were still far lower than doses near the site.

DOE began in May to ship 309 capsules of cesium 137 from an irradiation facility in Colorado back to Hanford for storage. Western states worked with DOE to develop a transportation safety plan for the shipments. The transportation plan would later be used on shipments of transuranic waste from Hanford to the Waste Isolation Pilot Plant.

Hanford Summit II was conducted in Pasco in June. The Summit focused on compliance with federal and state standards and on economic development opportunities in the Hanford cleanup. Energy Secretary Hazel O'Leary said she would support an aggressive eco-

“As we begin this Hanford Summit, there is a great deal of excitement and anticipation about the economic potential of this cleanup operation. It means large dollar infusions and significant job creation for this area of the Northwest...But we must not lose sight of the fact that our highest priority for Hanford must go to making this environmental danger zone safe and clean for our citizens and our future.”

– Oregon Governor Barbara Roberts, in remarks at Hanford Summit II. (June 16, 1994).
nomic development plan for the region to help the transition from Hanford and federal funding. She also said DOE had not made as much progress as she had hoped when she made several promises at the first Hanford summit nine months previous.

By August, several new laboratory hot cells were completed at Hanford, doubling the space to examine Hanford wastes. The hot cell expansion began in 1992.

EPA and Ecology issued a hazardous waste cleanup permit to DOE in September that covered all cleanup at five non-radioactive work sites. Additional permits were expected to eventually include another 55 waste sites. Ecology and EPA officials said the permit established clear regulatory authority over DOE cleanup efforts at these sites.

DOE said designs of six new double-shell underground waste storage tanks were nearly complete and construction should begin within a few months.

In September, Hanford officials marked the 50 year anniversary of B Reactor going critical.

Changes in the Tri-Party Agreement were agreed to in October by DOE, EPA and Ecology, which would shift the environmental management program’s top priority to cleanup along the Columbia River shoreline. This was a significant change and would guide major cleanup decisions and priorities through at least the next 15 years.

Representatives from four Indian nations asked DOE to involve them early in cleanup planning so they could help ensure sacred tribal sites were not disturbed. Tribal members said several sacred sites had already been disturbed at Hanford. The construction site for the Environmental and Molecular Sciences Laboratory was moved earlier in the year after human remains were found.

DOE announced in September that the Fitzner-Eberhardt Arid Lands Ecology (ALE) Reserve and the North Slope area of the Columbia River were completely cleaned up. The two areas contained 260 square
miles of land and represented 40 percent of the Hanford Site. There were 32 waste sites on the ALE and 39 on the North Slope. They included small motor pools and missile and anti-aircraft sites. Cleanup costs totaled $6.8 million.

Energy Secretary O’Leary said she favored allowing the Yakama Indian Nation to manage the ALE Reserve. DOE was examining whether to have the Yakama Nation or the Bureau of Land Management manage the area.

DOE announced the Nature Conservancy of Washington had discovered four new species at Hanford in the past year. The discoveries included three insects belonging to the leafhopper group and one new plant species.

Budget woes become evident by September. Hanford officials said the fiscal year 1995 budget was $63 million short of money needed to meet the cleanup schedule for environmental restoration work. The announcement came at a news conference to announce a shift at Hanford from investigation and analysis to cleanup. DOE officials later said they were preparing to cut Hanford’s fiscal year 1995 budget by $194 million to offset shortages at other sites. Westinghouse and other contractors offered early retirement to 1,291 employees in an effort to reduce the Hanford workforce by 1,000 by the end of the calendar year. By December, Hanford contractors announced they expected to lay off 500-1,000 workers early in 1995.

The Spokesman Review newspaper printed an in-depth report on spending at Hanford and concluded that billions of dollars had been wasted. The report referred to Hanford funding as a “river of public money” which “waters the south-central Washington economy.” The report said Energy Assistant Secretary Tom Grumbly suspected one in three dollars was wasted and that after five years and $7.5 billion, “Not a single major radioactive mess has been cleaned.”

DOE acknowledged that it would ask Congress in 1995 to amend the Superfund statute and other cleanup laws to allow it to focus on cleanup of the riskiest sites and hopefully save billions of dollars. Energy Secretary O’Leary said the DOE cleanup program was not focused on the biggest risks and that existing cleanup agreements with the states were a problem.

Secretary O’Leary, in a letter to Congress, said DOE would no longer pay to maintain mothballed commercial nuclear reactors at Hanford or Satsop in Western Washington. The action ended any chance of finishing the reactors and using them to destroy surplus plutonium (the “Isaiah Project”).

International Atomic Energy Agency representatives conducted their first inspection of surplus plutonium at Hanford. The plutonium was placed under international control.

“My personal preference is that rather than turning it over to another government agency, we should turn it over to real, live people.”

– Energy Secretary Hazel O’Leary, who said she would favor the Yakama Indian Nation to manage the Arid Lands Ecology Reserve. (Tri-City Herald, December 22, 1994).

“The way the laws currently work, the states and regulatory agencies really have all the power, and the DOE really has no power.”

– Assistant Energy Secretary Tom Grumbly, on DOE plans to ask Congress to scrap dozens of existing cleanup agreements with the states to try to save billions of dollars. (New York Times, December 21, 1994).

“To abandon the provisions of (recent amendments to the Tri-Party Agreement) in the name of budget reductions self-imposed by the Administration will destroy USDOE’s credibility with the people of the Pacific Northwest to whom the successful cleanup of Hanford is of critical importance.”

– Letter from Michael Grainey, Assistant Director, Oregon Department of Energy, to Energy Assistant Secretary Tom Grumbly. (December 29, 1994).
Tank Waste Treatment

In August, DOE officials said that an unsolicited private bid to vitrify Hanford’s tank wastes was not acceptable. However, DOE did announce it was seeking bids from corporations interested in managing, processing and disposing of Hanford’s tank waste. Westinghouse officials, who conducted these activities, said they were surprised at the announcement. DOE officials said they were simply trying to determine what level of interest there might be. At a technical briefing for interested companies held the following month, DOE officials said they wouldn’t completely rule out using Hanford treatment facilities for treatment of wastes from other sites. Energy Assistant Secretary Grumblay said the plants would be dedicated primarily for waste from Hanford.

Tank Safety

One Hanford tank safety issue was put to rest while new concerns were raised. In April, a DOE study concluded that an uncontrolled nuclear reaction, or a “criticality” could not occur in Hanford’s tanks. The issue was raised in April 1992.

Ten tanks were added to the Watch List in May because of concerns about the presence of organics, which could ignite under certain conditions. Five of the ten tanks were already on the Watch List because of other concerns. Safety controls were ordered for two of the tanks, BY-107 and BY-108, after vapor samples showed higher than expected concentrations of organics. Additional sampling and analysis would be done at the tanks.

In July, there was concern that temperatures were rising in tank C-106. Westinghouse began to add water to the tank to control the temperature rise. Westinghouse had stopped adding water to the tank in March to try and reduce the risk of a leak. Restrictive work status was instituted at the tank. By August, DOE concluded C-106 was not heating up and was operating safely.

The mixer pump in tank SY-101 was working routinely by April. Final tests were completed on a second mixer pump in late summer. The pump was a backup to the one being used in the tank. Hanford workers installed two new video cameras in tank SY-101 in November. Several more Hanford tanks were scheduled for similar monitoring systems.

By December, work was underway at Hanford to move liquid waste out of eight single-shell tanks, the most at one time since the early 1980s.

The General Accounting Office (GAO) reported in December that the backlog on maintenance of Hanford’s tank farms was about 1,500 projects — including 19 malfunctioning leak detectors. Despite huge investments of time and money, DOE had not been able to

“The department is saying, ‘Here are the opportunities we have at Hanford, here are the problems we are facing. Are you interested?’”
– Hanford Manager John Wagoner, announcing that DOE was seeking bids from corporations interested in managing, processing and disposing of Hanford’s tank waste. (Tri-City Herald, August 25, 1994).
dramatically lower the backlog. Westinghouse managers said that in order for work to be done in a relatively timely manner, the maintenance backlog should not exceed 300 projects.

**Around the DOE Complex**

Energy Assistant Secretary Grumbly said DOE could not follow budget recommendations from the Congressional Budget Office to cut cleanup funding 10 percent annually through 1999. He said further cuts would prevent DOE from resolving urgent risk issues and meeting cleanup agreements.

In June, Energy Secretary O’Leary revealed additional details about more Cold War human radiation experiments. More than 1,000 people had been involved in the 48 experiments.

A DOE report said Hanford’s Plutonium Finishing Plant was DOE’s fifth most hazardous problem related to plutonium storage. The report looked at plutonium storage at 35 facilities in 12 states. Rocky Flats in Colorado was rated the number one risk to workers and the public, with Savannah River Site second.

A GAO report said little cleanup had been accomplished by DOE in the past five years, despite expenditures of $23 billion. The report said DOE was resistant to new technologies.

President Clinton proposed more than $4 billion in cuts in nuclear waste cleanup funding during the next five years and both the Clinton Administration and incoming House Speaker Newt Gingrich suggested that perhaps DOE should be eliminated. Energy Secretary O’Leary said DOE was working on plans for a major reorganization of the agency.

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“If an airline had this sort of miserable service record, you can bet that airline would be grounded.”

— Ohio Senator John Glenn, on the maintenance backlog in Hanford’s tank farms. *(New York Times, December 19, 1994).*

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“If putting a man on the moon had been opened up to a stakeholder process that included EPA, the state Department of Ecology, the downwinders, the upwinders, the press, the Native Americans…would we ever have got a man on the moon in that time frame.”

— Adrian Roberts, Battelle Vice President, voicing frustrations of trying to move forward with new cleanup technologies. *(Spokesman Review, November 13, 1994).*
“We have given him an impossible job. We have ordered him to meet standards he cannot attain, to use technologies that do not exist, to meet deadlines he cannot achieve, to employ workers he does not need, and to do it all with less money than that for which he has asked. If he fails, we have threatened to put him in jail.”

— Louisiana Senator J. Bennett Johnston, speaking about the challenge of cleanup faced by Energy Assistant Secretary Tom Grumbly. (Minutes of the Committee on Energy and Natural Resources, March 22, 1995).

The Cleanup

The Tri-Party Agreement and Hanford funding came under sharp criticism and threats that the Agreement should be pre-empted by Congress.

In January, the U.S Department of Energy (DOE) proposed a $1.29 billion Hanford budget for fiscal year 1996, which it was feared could result in an additional 2,700 job cuts beyond the 2,500 already expected by the end of the calendar year. Energy Assistant Secretary Tom Grumbly visited Hanford in February to explain the impact of the budget cuts. He said Hanford's workforce should stabilize in fiscal year 1997 at between 12,000 and 13,000 workers (it was 17,312 at the end of December 1994). In April, Westinghouse Hanford Co. issued 500 layoff notices. By year's end, the Hanford workforce stood at about 13,200. Hanford's fiscal year 1996 budget ended up at about $1.35 million for cleanup activities — less than DOE said was needed, but not as significant a cut as initially feared.

In March, a report to the Senate Committee on Energy and Natural Resources said Congress must act decisively to salvage the Hanford cleanup program and prevent further waste of taxpayer money. “Train Wreck Along the River of Money, an Evaluation of the Hanford Cleanup,” concluded that Hanford management could not achieve a cleanup that was cost-effective and protective of human health and the environment without major changes. The report, also called the ‘Blush Report’ after one of its authors, said the Tri-Party Agreement hindered cleanup and “Hanford is floundering in a legal and regulatory morass.”

“The proposal for some sort of “risk-based” centralized priority system…is unnecessary and unworkable. It is unnecessary because the agreements negotiated under the existing system already consider risk as a major factor in setting priorities.”

— Letter from 23 Attorneys General, including Christine Gregoire of Washington and Ted Kulongoski of Oregon, to Energy Secretary Hazel O'Leary. (January 17, 1995).

“Congress will be able to fund the TPA only if it is willing to forgo appropriating money for other needs that almost certainly have a higher national priority. This would be true even if all of the money Congress sent to Hanford were spent wisely and judiciously, which, as this report makes clear, is not the case.”

— From the Executive Summary of “Train Wreck Along the River of Money.” (March 1995).
“Many of the schedules in the TPA are unworkable, disjunctive, lack scientific and technical merit, undermine any sense of accountability for taxpayer dollars, and most importantly, are having an overall negative effect on worker and public health and safety...significant cuts in the Hanford budget are necessary in order to regain control of the program...”

— From the Executive Summary of “Train Wreck Along the River of Money” (March 1995).

“The report downplays the substantial cleanup progress that has been made at Hanford... It suggests simplistic solutions to problems that... are extraordinarily complex.”

— Energy Secretary Hazel O'Leary, in response to the “Blush Report.”

(DOE News Release, March 14, 1995).

“Anytime you talk about breaking a tripartite agreement negotiated in good faith by sincere people all trying to do the right thing...it sends people up the wall. But it simply must be done. We cannot get there from here.”

— Louisiana Senator J. Bennett Johnston. (Minutes of the Committee on Energy and Natural Resources, March 22, 1995).

“I categorically reject the notion the overall cleanup is fatally flawed and that we should scrap the entire effort.”


Construction of a burial ground near the K-East reactor in 1954.

The report sparked Congressional hearings in which the ranking members of the Senate Energy Committee suggested that the Tri-Party Agreement was impossible to carry out and that Congress should rewrite the laws concerning such projects. They said the program to clean up Hanford could not achieve its goals under any conceivable budget or timetable and should be scrapped.

State of Washington officials, including Washington Senators Patty Murray and Slade Gorton, defended the Tri-Party Agreement and said the DOE management problems were more of a factor in the lack of cleanup progress.

The Blush report recommended that Congress set a specific limit on how much money would be spent at Hanford every five years. Senator J. Bennett Johnston of Louisiana, who initially opposed a spending cap, prepared legislation to cap Hanford’s budget at $800 million annually, roughly half of current levels. At the last minute, he did not introduce the bill.

In May, Washington Attorney General Christine Gregoire and attorneys general from more than a dozen other states met to discuss drafting proposed legislation to protect the Tri-Party Agreement and similar agreements. The attorneys general said they were looking for ways to speed cleanup, but not at the loss of the states’ rights to oversee the work.
Senators Frank Murkowski and Johnston introduced a bill in May that would pre-empt the Tri-Party Agreement and certain federal laws in Hanford cleanup. The bill did not cap cleanup funding.

Senator Murkowski said he would also propose an amendment to the Nuclear Waste Policy Act to allow storage of commercial spent fuel at Hanford and the Savannah River Site.

The Hanford Advisory Board (HAB) weighed in on the budget issue. The Board released a news release in January which challenged DOE to honor environmental laws and Hanford cleanup agreements. The HAB said DOE budget announcements anticipating major cutbacks in the cleanup budget showed a “disturbing disregard” for DOE’s legal commitments. At its February meeting, the HAB elected Merilyn Reeves as Chair. She had been acting Chair since December and represented the Oregon League of Women Voters on the HAB. The HAB also adopted an 11-point advisory that said the Washington Department of Ecology and the U.S. Environmental Protection Agency (EPA) should impose strict controls on mixed waste transfers from other DOE sites to Hanford. Among the points: Hanford must have storage capacity, processing ability and funding to handle any new waste; new waste must comply with Washington State’s Dangerous Waste law and the terms of permits and other consent orders and agreements; and Ecology and EPA should not permit long-term storage of other DOE sites’ mixed wastes at Hanford.

DOE completed the 300 Area Treated Effluent Disposal Facility ahead of schedule. The facility would treat waste water from nearby laboratories and other buildings in the area and was part of the strategy to end discharge of untreated waste water anywhere on site. Ecology also issued DOE a permit for a Hanford liquid waste disposal facility located in the 200 area. It was the first permit issued by the state to Hanford to control a major liquid waste discharge.

By June, DOE and its contractors met a major Tri-Party Agreement milestone related to stopping liquid waste discharges into the ground. The 33 worst liquid waste streams at Hanford had all been stopped, treated, or re-routed away from hazardous waste disposal sites.

Work was suspended on an underground barrier at the N Springs. The soil was so dense the barrier could not be installed as designed. The barrier was intended to slow the movement of groundwater to the Columbia River until strontium 90 in the groundwater could be pumped and treated. Bechtel later recommended against installing the underground barrier. Bechtel officials said the flow of strontium 90 to the river was only one fifth the previous estimates. Bechtel also said contaminants would likely seep beneath the barrier. Regulators reviewed Bechtel’s data before ultimately supporting their position and the barrier was eventually scrapped.

“Maintaining independent state oversight is absolutely essential to a credible cleanup effort. Threats to the public and the environment at federal facilities are due in large part to decades of self-regulation.”

– Letter to President Bill Clinton from 11 Governors and 37 Attorneys General, including Washington Governor Mike Lowry and Attorney General Christine Gregoire and Oregon Governor John Kitzhaber and Attorney General Ted Kulongoski. (July 12, 1995).

“It is an arrogant, naive and dangerous policy for the people of Washington.”

– Washington Attorney General Christine Gregoire regarding a Congressional effort to pre-empt the Tri-Party Agreement. (Tri-City Herald, June 3, 1995).

“I believe Hanford and Savannah River offer excellent sites for the temporary, dry-cask storage of civilian nuclear fuel until a permanent geologic repository is available.”

– Alaska Senator Frank Murkowski. (Tri-City Herald, May 27, 1995).

“The bottom line is that imported waste must not make Hanford cleanup problems worse.”

– Merilyn Reeves, Hanford Advisory Board Chair, summarizing the Board’s advice on receiving waste from other DOE sites. (HAB News Release, February 3, 1995).

“From today forward, the problem gets better. We’re not making the groundwater contamination worse. This is one of Hanford’s greatest cleanup successes since 1989.”

Energy Secretary Hazel O’Leary endorsed 26 initiatives related to Hanford cleanup. The initiatives were intended to speed up cleanup, declassify more documents, and increase stakeholder participation in Hanford decision-making.

The Tri-Parties reached agreement on schedules for cleanup and deactivation of four major Hanford facilities — PUREX, the Uranium Trioxide Plant, the Fast Flux Test Facility (FFTF) and parts of the Plutonium Finishing Plant. Meanwhile, deactivation of the Uranium Trioxide Plant was completed four months ahead of schedule. The facility formerly converted liquid uranium to a powder form.

In March, Westinghouse officials announced they had cleaned up more than three million square feet of surface radiation contamination during the past year.

In May, Hanford began shipping 183,000 gallons of slightly contaminated nitric acid to Great Britain as part of the cleanup of PUREX.

Workers completed the installation of steel barriers in the K-Basins in April. Spent fuel stored in the basins was therefore isolated from areas of the basins most vulnerable to earthquake damage. In July, DOE said it was looking to accelerate K-Basin cleanup to December 1999. DOE officials hoped to finalize a plan for fuel removal by December 1995. To meet a 1999 date for removal of all the fuel, fuel removal would need to begin by November 1997. By October, DOE and its contractors admitted plans to accelerate spent fuel removal from the K-Basins had been too ambitious. A draft Environmental Impact Statement had been delayed which impacted the accelerated schedule.

A groundbreaking ceremony was held in July for the HAMMER training facility. The facility was designed to provide training and education programs to enhance the skills, knowledge and abilities of Hanford workers and emergency responders.

In August, more than 430,000 gallons of high-level radioactive waste was moved from a double-shell tank in the 200 West Area to a double-shell tank in the 200 East Area. It was the first time waste...
had moved through the transfer line in six years, and freed up much-needed double-shell tank space in the 200 West Area to allow pumping of liquids from older, single-shell tanks.

The Oregon Department of Energy conducted an extensive statewide public involvement effort to gather input on DOE’s Programmatic Environmental Impact Statement on the storage and disposition of surplus plutonium. Oregon also asked for public opinion on what role, if any, Hanford should play in these activities. More than 800 Oregonians in 18 cities participated in the process. The League of Women Voters of Washington, the Washington Physicians for Social Responsibility and 10 other organizations meanwhile conducted the “Plutonium Roundtable,” a public forum to begin discussions on policy choices related to the transport, storage and disposal of surplus plutonium.

Defueling of FFTF was completed four and a half months ahead of schedule, although that did not prevent new efforts to try and save the reactor. Energy Secretary Hazel O’Leary agreed to a delay in draining the reactor’s sodium coolant, a step which many believed would shut the reactor down for good.

DOE awarded a $24 million 15 year contract to Allied Technology Group (ATG) to treat Hanford’s low-level mixed waste. ATG would receive no payments until facilities were built and operating and waste was treated. That was expected to take about five years.

**Tank Waste Treatment**

Energy Secretary O’Leary announced a major change for Hanford’s vitrification program — DOE would pursue privatization in the hopes of lowering costs. Under the plan, DOE would offer a fixed price contract and would only pay for treated waste that met DOE

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“*The entire premise of privatization is the competitive dimension... We want to make sure that it’s head-to-head competition throughout.*”

— Jackson Kinzer, DOE, on plans to proceed with privatization for treating Hanford’s tank waste. (Tri-City Herald, September 30, 1995).

“This project will take the burden off the taxpayer’s backs and provides tremendous business opportunities to environmental and engineering firms.”

— Energy Assistant Secretary Tom Grumbly on DOE’s draft request for proposal to privatize treatment of Hanford’s tank waste. (DOE News Release, November 20, 1995).
“Issues of particular concern include: lack of substantial evaluation of promising privatization alternatives; continued focus on two pilot plants developed concurrently…the fact that DOE at this point is reserving its right to unilaterally determine whether and/or when the privatization initiative has failed and it is time to fall back to a management and operations contractual arrangement to deal with the high-level wastes in Hanford’s tanks.”

– From Hanford Advisory Board Advice #32. (October 1995).

“A modern, safe and reliable cross-site waste transfer capability is needed to expedite cleanup and minimize the risk associated with management of the tank waste. This is especially true in the 200 West Area where there is far less useable double-shell tank capacity than there is waste in single-shell tanks.”

– Final EIS on Safe Interim Storage of Hanford Tank Wastes. (October 1995).

“Issues of particular concern include: lack of substantial evaluation of promising privatization alternatives; continued focus on two pilot plants developed concurrently…the fact that DOE at this point is reserving its right to unilaterally determine whether and/or when the privatization initiative has failed and it is time to fall back to a management and operations contractual arrangement to deal with the high-level wastes in Hanford’s tanks.”

– From Hanford Advisory Board Advice #32. (October 1995).

Tank Safety

DOE studied whether to add 22 tanks to the Watch List. The tanks would be added because of concerns about flammable gasses. As a safety precaution, DOE ordered tank farm workers to follow the same work procedures required for Watch List tanks for all Hanford tanks until each had been reviewed.

DOE released a final Environmental Impact Statement (EIS) on safe interim storage of Hanford tank wastes. The preferred alternative included construction and operation of a replacement cross-site transfer system; continued operation of the tank mixer pump in SY-101; and transfer of liquids from single-shell tanks in the 200 West Area to double-shell tanks in the 200 East Area. This was to maintain safe storage until decisions could be made and implemented from an upcoming EIS.

Around the DOE Complex

In April, DOE estimated Hanford cleanup would cost $48.7 billion over the next 75 years. “Estimating the Cold War Mortgage” said cleanup at all 132 defense production sites would cost $230 billion. The study was the first analytical review based on estimates provided by each site. Cleanup costs at the Savannah River Site were estimated to be about the same as at Hanford. Each site was estimated at roughly 21 percent of the total cost.

A DOE report said DOE ignored technology developed by national laboratories that could speed cleanup and cut costs. It suggested one national lab be designated as the lead in coordinating cleanup research and technology development. The report said many sites had simply stopped looking for new, innovative solutions and were only
interested in avoiding risk.

Energy Assistant Secretary Grumbly told Congress in March that further cuts in DOE’s cleanup budget would likely lead to lawsuits, which could then result in federal courts directing cleanup activities. He said further cutbacks would also endanger workers and hurt DOE’s relationship with states and stakeholders.

DOE announced in April that it was preparing a Programmatic EIS on the disposition of surplus plutonium. Hanford was one of the sites to be studied for long term storage and also for methods of either “burning” the plutonium in a reactor or immobilizing it with other waste.

In May, Energy Secretary O’Leary announced a major reorganization of DOE. The number of employees would be cut by 27 percent — a large percentage from Headquarters — and 12 small field offices would be closed. By August, O’Leary said DOE would cut 3,788 jobs over five years to save $1.7 billion.

A study by a private group estimated the United States had spent $3.9 trillion on its nuclear weapons program. That is the total estimated cost associated with research and development, weapons delivery systems, security, communications and control systems, dismantlement costs and environmental cleanup.

In August, President Clinton proposed a permanent ban on nuclear weapons tests.

“The cost of dealing with these problems can be considered a ‘Cold War Mortgage.’ Much of these costs were deferred during the nuclear arms race. Paying the mortgage will take decades and substantial resources.”

– From the Executive Summary of ‘Estimating the Cold War Mortgage.’ (March 1995).

“It has a name: ‘the Hanford syndrome.’ It has become widespread and severe in the (DOE cleanup) program. Its symptoms are an unwillingness to alter familiar behavior patterns, to stick with unproductive or failing procedures… and to oppose innovation.”

– From a DOE report on technology development. (Tri-City Herald, February 2, 1995).

“It would put me wildly out of compliance with the agreements. The states would sue us and they would win, according to my lawyers. And we could have things run by the courts. That would be the absolute worst outcome.”

– Energy Assistant Secretary Tom Grumbly, to Congress in response to a suggestion of a further $1 billion cut in DOE’s cleanup budget. (Tri-City Herald, March 9, 1995).
DOE issued its final report on radiation testing. Nearly 16,000 men, women and children were subjected to radiation experiments during the Cold War.

Idaho reached agreement with the Navy and DOE in October over radioactive waste storage at the Idaho National Engineering and Environmental Laboratory. In return for allowing the Navy and DOE to ship spent fuel to Idaho for storage, the federal government agreed to schedules to begin moving waste out of Idaho, with all spent nuclear fuel and transuranic waste removed by 2035.

“The Tri-Party Agreement must not be scrapped. The TPA was inspired by the threat of litigation on several fronts, and it offers a way to work through the legal challenges facing this very toxic hazardous waste site...

People in our region deserve a voice in their future. The TPA is their voice.”

— Washington Senator Patty Murray.

(Minutes of the Committee on Energy and Natural Resources. March 22, 1995).
1996

“We have been assured for many years that contaminants from the tanks were trapped in the soils beneath the tanks and were not traveling downward to the groundwater. This new information concerns us...(The) long-term risk has escalated. The data shows that time is not on our side.”

– Washington Department of Ecology Director Mary Riveland, about cesium being detected much deeper than previously thought. (Tri-City Herald, February 21, 1996).

The Cleanup

The U.S. Department of Energy (DOE) confirmed what many had suspected for some time — contamination in Hanford’s soils was much deeper than previously known. In February, new tests detected cesium from Hanford tanks in dry wells 125 feet below the surface, 85 feet above groundwater. Those readings were confirmed with additional sampling conducted throughout the year. Data also showed a plume of technetium 99 and chromium in the groundwater beneath the 200 West Area and cobalt 60 was found 100 to 125 feet deep in boreholes.

Energy Assistant Secretary Al Alm visited Hanford and explained his 10-year cleanup plan to accelerate cleanup at many of DOE’s nuclear weapons sites. The intent was to demonstrate success by completing cleanup activities at most DOE sites within 10 years, by 2006. Rocky Flats in Colorado and Fernald in Ohio were among the sites targeted for accelerated closure. While it was recognized that cleanup activities at DOE’s largest sites, including Hanford, would continue well beyond 2006, certain activities at these sites could also be accelerated. To succeed, the plan required additional funding during this 10-year period, but was expected to result in overall savings to the cleanup program.

Hanford lost $10.1 million in funding to the early closure sites. It was part of $35 million needed for “urgent requirements” elsewhere, including $20 million at Rocky Flats. DOE officials said Hanford’s cut would come mostly from planned environmental restoration work. Four million dollars of the $10.1 million was supposedly a loan to be repaid in the next fiscal year. DOE officials had previously said the Hanford budget was not sufficient to meet cleanup needs.

Two specially equipped helicopters conducted a radiological survey of the entire Hanford Site. The survey plotted radiological contamination

“I think when this is all in place, that instead of accelerated cleanup being a budding idea, it will be a reality. And yes, there are all kinds of perils, but I believe this will happen.”

– Hanford Site Manager John Wagoner, who said DOE was reassessing how Hanford could be cleaned up faster and cheaper. (Tri-City Herald, January 13, 1996).

“For years, the level of progress here seemed to inch up slowly. Now, there has been a stride and that makes a 10-year cleanup possible.”

– Energy Assistant Secretary Al Alm, explaining his 10-year cleanup plan. (Tri-City Herald, July 25, 1996).
at Hanford and served as a baseline to track any movement of the contamination since the last survey in 1988.

DOE announced that the TY Tank farm was the first to be “Controlled, Clean and Stable.” This classification required removal of all pumpable liquids from any single-shell tanks, installation of remote computer monitoring equipment, removal of surplus contaminated equipment from around the tanks, decontamination of above-ground equipment surfaces, and covering the tank farm with clean gravel to shield against contaminated soil. The tank farm contained six single-shell tanks, five of which were known or suspected leakers.

DOE announced plans to begin pump-and-treat operations to remove chromium from groundwater in several locations along the Columbia River. The chromium — used in cooling water in Hanford reactors to inhibit corrosion — was entering the Columbia River in the Hanford Reach, a prime salmon spawning area. The pump-and-treat systems were expected to be operating in the D and H Areas by March 1997 and in the K Area about three months later.

Hanford’s waste evaporators completed the boiling off of one million gallons of liquid. It reduced the volume of liquid wastes in the tanks to 54 million gallons. Since 1994, the evaporators had eliminated eight million gallons of liquid from the tank farms.

“Every time we reduce waste volume by one million gallons we avoid spending about $75 million to build a new tank.”


Hanford’s K Area, with a liquid waste disposal trench at the top of the photo.
As part of the “cocooning” of C Reactor, the two water towers at the reactor were leveled by explosives. The 175 foot tall towers stored 300,000 gallons of cooling water. They were built in 1952 and used until the reactor was shut down in 1969.

In June, DOE completed removal of all plutonium from PUREX and shut off its criticality alarm.

Hanford Manager John Wagoner sent a memo to Benton County planners in July, saying agriculture should not be considered on the Hanford Site for the “foreseeable future.” Benton County had sought comments on a preliminary plan on what Hanford lands should be set aside for habitat. Wagoner said current and future waste sites and the contaminated groundwater should rule out agricultural use, and that irrigation would speed migration of contaminants into groundwater and the Columbia River.

Westinghouse workers completed deactivation of the Fuels Development Laboratory (the 308 Laboratory). Annual upkeep costs dropped from $12 million to $160,000. The 308 Laboratory was used in 1960 to make fuel for a nearby test reactor.

The Environmental Restoration Disposal Facility was dedicated in July. The $45 million disposal pit was 1,000 feet long, 500 feet wide and 70 feet deep. It eventually could be expanded to hold up to 12 billion yards of contaminated soils.

Construction began on a new cross-site waste transfer line. It was expected to be complete in August 1997 and move wastes in February 1998. It would replace a barely-functional 40-year old system.

Energy Secretary Hazel O’Leary made two visits to Hanford — one in April, the other in October. During her first visit, she provided $5.5 million for economic diversification efforts, met with whistleblowers, and dedicated the Canister Storage Building. In October, she participated in the dedication of the Environmental and Molecular Sciences Laboratory.

Fluor-Daniel Hanford Company was awarded a five year, $4.88 billion contract in August to manage the Hanford Site. Fluor was one of three companies that submitted bids. Options for a five year extension could make the contract worth $9.56 billion. Westinghouse Hanford had been the primary Hanford contractor since 1987. Fluor

“For a lot of the old-timers who were here when PUREX was a big cog in the production effort, it was kind of a sad day. To turn off the criticality alarm means an era really has come to an end.”


“Before contract reform, the Department of Energy paid for simply showing up. Not anymore. If the contractors don’t deliver on their commitments, we don’t deliver on their dollars.”

— Energy Secretary Hazel O’Leary on the award of a five year $4.88 billion contract to Fluor-Daniel Hanford Company to manage the Hanford Site. (DOE News Release, August 6, 1996).
took over October 1. Most Westinghouse workers accepted jobs with Fluor or its contractor team. Nearly 600 Hanford workers chose early retirement. Shortly after taking over Fluor announced 750 Hanford Site layoffs were expected during 1997. Ironically, Westinghouse received their highest rating since 1989 for the six month period which ended September 30, 1996.

DOE said it would retain control of the Arid Lands Ecology Reserve to use as a buffer zone. DOE said it would negotiate an agreement with the U.S. Fish and Wildlife Service to manage the area while allowing greater public access. The Bureau of Land Management and the Yakama Indian Nation had proposed to assume control of the reserve.

The Environmental Protection Agency said in August that the 1100 area was cleaned up and should be removed from its Superfund list. Meanwhile, 71 acres of the 3000 Area was transferred to the Port of Benton.

President Clinton signed the Defense Authorization Bill, which included authority for DOE site managers to negotiate changes in consent agreements such as the Tri-Party Agreement. The legislation also designated Hanford as a “National Environmental Cleanup Demonstration Area.”

The fate of the Fast Flux Test Facility (FFTF) remained a subject of considerable lobbying. In March, the Washington State Legislature passed a resolution which supported restart of FFTF. Washington Senator Slade Gorton and Representative Doc Hastings later sent Energy Secretary O’Leary a letter in support of restarting the reactor. Oregon’s seven member Congressional delegation and Oregon Governor John Kitzhaber responded with their own letters, asking O’Leary not to produce tritium at FFTF. Fourteen environmental groups had earlier sent a letter to O’Leary, saying restarting FFTF would hurt Hanford cleanup. DOE officials meanwhile, could not agree on whether FFTF could produce a sufficient amount of tritium for the nation’s nuclear weapons program.

After eight years of negotiation, Benton County and DOE reached agreement on payment in lieu of taxes for Hanford land taken off the local tax rolls. DOE would pay the county $11.2 million. Grant and Franklin counties had reached agreements earlier and received their first payments at the beginning of the year.

**Tank Waste Treatment**

A National Academy of Sciences study released in February suggested many Hanford tanks should be studied to see if wastes could be permanently stored in them. Barriers would be installed to protect the surrounding environment. The Academy did not recommend this as an action but suggested it was deserving of further study.
In August, DOE issued its final Tank Waste Remediation System Environmental Impact (EIS). The EIS assessed how to manage and dispose of Hanford’s tank waste and 1,930 cesium and strontium capsules that were by-products of tank waste. The EIS was necessary because major assumptions made in a 1988 EIS had changed considerably or had not been considered at all. The 1988 Hanford Defense Waste EIS envisioned the use of grout for low-activity waste and B Plant for pre-treatment. Both of those plans had since been changed. The 1988 EIS also had not predicted the tank safety issues which had to be resolved through much of the early 1990s and also did not account for the signing of the Tri-Party Agreement and its associated milestones. The preferred alternative for tank waste treatment was a phased approach, which would include a demonstration of the separations and immobilization process for selected tank waste and then scaling up and constructing larger treatment facilities to treat the remaining tank waste. For cesium and strontium capsules the preferred alternative was continued storage for at least the next 10 years.

DOE moved forward with its plans to “privatize” the tank waste treatment project. In February, DOE solicited bids for the program in which private companies would pay all up-front design, construction and operating costs without federal appropriations. They would get paid only when they had turned waste into glass. DOE’s intent was for private industry to take on a large share of the risks of this incredibly complex and expensive project.

Two firms submitted proposals in May for the tank waste vitrification privatization project. The two teams were led by BNFL Inc. and Lockheed Martin. They were each awarded $27 million fixed price contracts in September to begin defining the technical, regulatory, and business and financial elements needed for privatized tank treatment facilities.

Tank Safety

In June, DOE removed four tanks from the ferrocyanide Watch List. All remaining tanks were removed from the ferrocyanide Watch List in September. DOE closed this out as a safety issue after determining the concentrations of ferrocyanide were too low for a credible accident to occur. DOE also determined it would not add 25 tanks to the Watch List for flammable gasses. DOE scientists concluded the sludges in the tanks did not generate enough gases to require extra safety measures.

“In the past, the Department has been long on promises and short on results in its efforts to solve the Hanford tank waste problem…we expect at least a 30 percent savings over the traditional ways of doing business.”

– Energy Secretary Hazel O’Leary on DOE’s plans to vitrify Hanford’s tank wastes under a privatization contract. (DOE News Release, February 20, 1996).

“This is a major step toward bringing the innovation and efficiency of the private sector to bear on DOE’s environmental cleanup mission.”

Around the DOE Complex

The high-level waste vitrification plant at Savannah River began operation in March, several years behind schedule. Operating problems would persist for some time.

A number of leadership changes occurred at the U.S. Department of Energy. In May, the U.S. Senate confirmed Tom Grumbly as DOE Under Secretary and Al Alm as Assistant Secretary for Environmental Restoration and Waste Management. Late in the year, Energy Secretary O’Leary submitted her resignation. U.S. Transportation Secretary Federico Peña was nominated by President Clinton to replace O’Leary.

In December, DOE announced a dual approach to dispose of surplus plutonium. Some of the plutonium would be converted to a fuel and used in reactors, the remainder would be vitrified. Hanford was considered a potential site for these activities.

“For these alternatives (that leave waste in the tank), the risk analyses in the EIS show massive plumes of radioactive material slowly moving across the Hanford Site and into the Columbia River for hundreds to thousands of years.”

— Testimony of Michael Grainey, Assistant Director, Oregon Department of Energy, on Oregon’s strong support of DOE’s preferred alternative to retrieve Hanford’s tank waste and vitrify it. (May 7, 1996).
“Either they really don’t know what they have out there or they are being evasive. Neither of these options is very pretty.”

– Lynn Stembridge, Hanford Education Action League, after a chemical storage tank exploded at Hanford’s Plutonium Reclamation Facility. (Tri-City Herald, May 16, 1997).

The Cleanup

The U.S. Department of Energy (DOE) said it would need $12.5 billion over the next 10 years to speed up Hanford’s cleanup. The conclusion was part of the first draft of DOE’s proposed 10 year master cleanup plan for DOE sites. The plan was designed to complete all work at smaller sites and accelerate some work at major sites.

DOE conducted a strategy meeting in Salt Lake City in July with regulators, tribal representatives and others to determine ways to close anticipated funding gaps in fiscal years 1998 and 1999. The group agreed on goals of finding $75 million in work performance efficiencies in fiscal year 1998 and $160 million in efficiencies in fiscal year 1999. By August, DOE budget projections showed Hanford’s budget dropping by $318 million over the coming two years. The report said the cleanup budget for fiscal year 1998 would fall $98 million short of costs to comply with the Tri-Party Agreement. The gap could reach $150 to $220 million in fiscal year 1999.

New facilities continued to come on-line at Hanford. In March, the Waste Receiving and Processing Facility began limited operations. It was Hanford’s first major solid waste processing facility.
“This is no ordinary pipeline. This has to deal with some of the most hazardous stuff on the earth.”

– Hanford Site Manager John Wagoner, on the completion of a new 6.2 mile cross-site waste transfer pipeline. (Tri-City Herald, September 19, 1997).

“We control the environment but get (rescue workers’) heart rates up. They can make mistakes here, but they’re not fatal.”

– June Ollero, DOE HAMMER program director. (Tri-City Herald, September 25, 1997).

“PUREX was the greatest producer of special nuclear defense material in the United States. ...That’s why the closing of PUREX symbolizes the end of the Cold War.”

– Lloyd Piper, Acting Hanford Manager. (Tri-City Herald, June 21, 1997).

In September, a ceremony was held to celebrate completion of a new cross-site transfer line — slightly ahead of schedule and under budget. The 6.2 mile transfer line replaced pipes built in the 1940s and last used in 1995.

The HAMMER Training Center was also dedicated in September. The 120 acre facility was the most advanced hands-on safety training complex in the nation. It had 20 training props and would train workers and emergency responders.

Cleanup progress could also be seen with the completion of several key projects.

Hanford workers successfully decontaminated and removed about 10,000 gallons of radioactive solvents from B Plant, four months ahead of the Tri-Party Agreement schedule. Removing the solvents was a major obstacle in meeting an accelerated cleanup schedule for B Plant.

A ceremony was conducted to celebrate the deactivation of PUREX, 15 months ahead of schedule and $75.5 million under budget. Deactivation began in 1993 and ended in May. It cost $147 million and cut annual maintenance costs from $34 million to $1 million.
DOE announced that Hanford’s last untreated waste stream had been diverted to a disposal facility. It ended a ten year effort to stop the unpermitted dumping of liquids to the ground at Hanford.

Other projects, however, continued to struggle.

Plans to move sludge from the K-Basins into Hanford’s high-level waste tanks ran into a snag with the discovery of PCBs in the sludge. Because PCBs fall under more stringent regulatory requirements, major changes in the tank waste treatment program could be needed if the sludge was added to the tanks.

In September, DOE announced an additional 14 month delay for the K-Basins spent fuel project. DOE said more design and safety work were needed. Fluor-Daniel sent Duke Engineering a “cure” letter in December, which outlined several concerns with their handling of the K-Basins project and implied they could lose their contract. DOE approved a new cost estimate for the project in December. The new estimate was $1.08 billion, an increase of $274 million over the previous estimate. The project was now also expected to take until 2003 instead of 2001.

Hanford officials said a five-fold increase in tritium levels in groundwater was not the result of a leak from the K-Basins. The increased tritium levels were found in a monitoring well about 50 feet north of the K-East basin, near the Columbia River. Examination of the basin had found no leaks.

An expert panel studying the vadose zone concluded in a report that the method by which contaminants moved through this area was poorly understood.

DOE confirmed that leaked tank waste had reached groundwater. Two draft Pacific Northwest National Laboratory reports concluded leaked waste from five tank farms in the 200 West Area had reached groundwater.

DOE declared an Unreviewed Safety Question, based on concerns about whether a waste storage tank in the Plutonium Finishing Plant (PFP) complex had leaked and on how much plutonium it contained. The Z-361 tank held about 20,000 gallons of sludge and 200 gallons of liquid.

A chemical storage tank exploded in May at the Plutonium Reclamation Facility, located in the PFP complex. Eight workers were given conflicting instructions and were exposed to a chemical plume. DOE officials said they did not know what similar types of risks might exist on the site and began a complete inventory of chemicals on the site to ensure a similar explosion could not occur. DOE also acknowledged major problems with the response to the explosion. Among the problems — workers received conflicting directions, which resulted in their exposure to a chemical plume; it took too long to declare an emergency; and it took too long to make off-site notifications.

The incident in part prompted Washington Senator Patty Murray to ask Energy Secretary Federico Peña to have DOE review the Fluor-Daniel contract. Murray praised the completion of several projects ahead of

“We have entered into a new era of waste management where past liquid waste disposal practices are replaced by state-of-the-art permitted facilities.”


“Fluor-Daniel tried to put some reality into a schedule that in some sense was unrealistic.”

— Charlie Hansen, DOE, on the announcement of an additional 14 month delay for the K-Basins project. (Tri-City Herald, September 6, 1997).

“Our tank waste is now in the groundwater and is moving into the river.”


“I look at it as slow-motion fallout. Once it’s in the groundwater, it’ll be almost impossible to retrieve it.”


“It’s nice to know we’re now on the same playing field.”

— Suzanne Dahl, Washington Department of Ecology, referring to Ecology’s past contentions that leaked tank waste had reached groundwater and DOE’s confirmation of that fact. (Tri-City Herald, November 26, 1997).
“I don’t want to go back to work on Monday…If they don’t know what happened and why, there’s still a damn good possibility it could happen again.”

– Hanford worker Winston McCulley, following an explosion at Hanford’s Plutonium Reclamation Facility.

(Tri-City Herald, May 15, 1997).

The results of a chemical tank explosion inside the Plutonium Reclamation Facility.

I don’t want to go back to work on Monday…If they don’t know what happened and why, there’s still a damn good possibility it could happen again.”

Hanford worker Winston McCulley, following an explosion at Hanford’s Plutonium Reclamation Facility.

(Tri-City Herald, May 15, 1997).

The results of a chemical tank explosion inside the Plutonium Reclamation Facility.

Schedule but wanted DOE to examine safety issues related to the explosion and other accidents, problems in getting a safety management plan approved, and the ability to meet cleanup deadlines. Washington State later fined DOE $110,000 for violations that caused the explosion and for DOE’s poor emergency response to the incident.

In September, the Chair of the Defense Nuclear Facilities Safety Board (DNFSB) said corrective actions by DOE at the PFP had been ineffective and might have contributed to the explosion. In a letter to Energy Assistant Secretary Al Alm, DNFSB Chair John Conway said DOE had not yet clearly identified the risks of handling fissile material at PFP and its contractors had yet to formally define which specific activities were necessary before these activities could be safely resumed.

A DOE audit showed Westinghouse was overpaid several million dollars in performance fees. The audit said some work was incomplete or substandard, DOE oversight was weak, or performance goals were too easy and that DOE should try to recover the overpayments. Westinghouse officials did not agree with all the conclusions.

DOE announced Hanford Manager John Wagoner would be “loaned” to Brookhaven National Laboratory on a temporary basis. Brookhaven had recently come under intense scrutiny after a tritium leak forced shutdown of the laboratory’s main research nuclear reactor.

Public meetings were conducted to explain the results of the Columbia River Comprehensive Impact Assessment. The effort began in 1993 to assess the effects of Hanford-origin materials and contaminants on the Columbia River environment, river-dependent life, and users of river resources. Additional study was recommended to better understand Hanford’s impacts to the Columbia River and to help guide decision making on Hanford waste management, environmental restoration, and remediation.

Energy Secretary Peña made his first visit to Hanford in August. He announced Fluor-Daniel would conduct a review of their effective-
ness and DOE would assess that review. He also expressed concerns about funding and said he would evaluate the Fast Flux Test Facility objectively. While at Hanford, Peña signed an agreement with the U.S. Fish and Wildlife Service for management of the Fitzner-Eberhardt Arid Lands Ecology Reserve. DOE would maintain ownership. Earlier in the year, DOE had disagreed with the conclusions of a General Accounting Office (GAO) report that DOE should get rid of its non-essential lands, including the Fitzner-Eberhardt Arid Lands Ecology Reserve and the Wahluke Slope. The GAO concluded DOE had no use for this land.

Workshops were conducted in Washington and Oregon as part of a pilot for a “National Dialogue.” The idea of a National Dialogue on nuclear waste issues was proposed in October 1995 by Washington Governor Mike Lowry to DOE Assistant Secretary Tom Grumbly. Lowry and many others believed important DOE decisions about the management of nuclear materials and waste were being made on a piecemeal basis and their overlapping impacts were not being considered. The National League of Women Voters asked for bids to pilot various workshop and meeting formats. A joint proposal submitted by the Washington League of Women Voters and the Oregon Department of Energy was accepted. Small discussion groups were conducted in Oregon in September and four regional workshops were conducted in October.

Fluor-Daniel’s first year at Hanford was a rocky one in many respects. In April, regulators complained that communications with Hanford contractors was not good and had gotten worse since Fluor took over. Reviews by both DOE and Fluor of Fluor’s first year at Hanford showed Fluor leadership had not been as strong as DOE had hoped. The reviews showed Fluor was three percent over budget on cleanup projects and 28 percent of 1997’s legal cleanup milestones were completed late or were undone.

Hanford was identified as a potential storage site for six metric tons of plutonium from Rocky Flats. DOE wanted to move the plutonium as part of the accelerated cleanup at Rocky Flats.

Tank Waste Treatment

DOE released a record of decision favoring privatization as the process to treat Hanford’s tank waste.

Washington’s Congressional delegation requested Congress approve sufficient set-aside for the tank waste privatization program. DOE’s plans to pay the contractor after waste was vitrified would result in obligations of up to several billion dollars. However, the federal Anti-Deficiency Act forbids a federal agency from promising to spend money which had not been authorized by Congress. Therefore, DOE needed Congress to authorize funds through a

“We were an accident of history that preserved the (Arid Lands Ecology) Reserve since we needed it as a buffer to ensure secrecy…
It’s ironic that amidst all of this environmental damage, the Reserve survived and remains today a unique and precious natural resource.”


“They didn’t realize the magnitude of scale going up from Fernald to this.”

– Todd Martin, Hanford Education Action League, referring to Fluor-Daniel’s problems during its first year at Hanford. (Tri-City Herald, October 5, 1997).

“I was surprised that they talk and operate more like an oversight body than an advisory board.”

– Hank Hatch, Fluor-Daniel President, referring to a contentious relationship with the Hanford Advisory Board. (Tri-City Herald, October 5, 1997).

“There have been a number of frustrations, and they’ve now been identified… And now we need to require Fluor to put corrective actions in place.”

– Washington Senator Patty Murray, who requested reviews of Fluor-Daniel’s first year at Hanford. (Tri-City Herald, November 6, 1997).
“set-aside” for the tank waste vitrification program. These dollars did not actually exist — the set-aside instead was an authorization for a future appropriation of funds. DOE requested a set-aside of $427 million for fiscal year 1998.

**Around the DOE Complex**

More changes in the DOE leadership occurred throughout the year. In March, the U.S. Senate confirmed Peña as Secretary of Energy. Under Secretary Grumbly submitted his resignation in March. Grumbly then predicted large cutbacks and more layoffs at DOE’s former nuclear weapon production sites. He said the biggest challenge facing cleanup was to keep funding coming from Congress.

Energy Assistant Secretary Alm announced his resignation in October, effective at the end of January. He said the 2006 cleanup plan was now official policy.

> “My vision of this approach derived not from political expediency or change for change’s sake, but from a deep-rooted belief that we owe future generations a legacy of cleanup and completion, not generations of more cost and continued contamination.”

— Energy Assistant Secretary Al Alm, as he announced his resignation. *(Tri-City Herald, November 1, 1997)*.

> “It’s a hellish job and we liked Al. Hanford was a high priority for him…and he paid us a lot of attention. I liked the 2006 initiative. It was a sound, strategic concept, designed to strike for success early and show people we can make progress. But Al and I might be the only two people who feel that way.”

— Dan Silver, Washington Department of Ecology, on Alm’s resignation. *(Tri-City Herald, November 1, 1997).*
1998

“We are in trouble. We’ve missed milestones.”

– Hanford Deputy Manager Lloyd Piper, about funding projections for fiscal year 2000 that were $80 million short of what was needed to meet legal obligations. (Tri-City Herald, February 27, 1998).

The Cleanup

The State of Washington resorted to the threat of legal action to get the U.S. Department of Energy (DOE) to agree to an enforceable schedule for the removal of free liquids from Hanford’s single-shell tanks. In February, Washington Governor Gary Locke told Energy Secretary Federico Peña that Washington was prepared to sue DOE for missing Tri-Party Agreement milestones to begin pumping liquids from some single-shell tanks and DOE faced a key deadline July 30 to award a contract to build a high-level waste vitrification plant.

Washington Department of Ecology officials denied a DOE request in March to delay pumping eight tanks. Ecology had previously denied a request to delay pumping six other tanks. DOE said tank safety issues made the delays necessary and they were working on a detailed tank pumping plan.

In May, DOE proposed a four-year delay to complete its program to pump liquids from all single-shell tanks. Washington state officials announced in June they would sue DOE in 60 days for missing two deadlines for pumping radioactive wastes from Hanford’s tanks. To that point, 119 tanks had been pumped — leaving 29 of the most difficult with free liquids still remaining inside.

Energy Secretary Bill Richardson and Governor Locke worked out an agreement in principle in October to avoid a lawsuit. DOE agreed

“We are going to hold their feet to the fire…We don’t want their money or their fines. We want Hanford cleaned up.”

– Washington Governor Gary Locke, who said the state was prepared to sue DOE for missing key Tri-Party Agreement milestones. (Tri-City Herald, February 24, 1998).

“I think the state has made it very clear it intends to put pressure on us under the Tri-Party Agreement. We don’t need this kind of encompassing pressure to do the right thing. We’re already committed to doing it.”

– Hanford Manager John Wagoner in response to Ecology’s denial of a DOE request to delay pumping eight tanks. (Tri-City Herald, March 13, 1998).

“Our patience has run out and the Department of Energy’s credibility is wearing thin. We need them to meet milestones, and no more excuses.”

– Ecology Director Tom Fitzsimmons, after state officials announced they would sue DOE in 60 days. (State of Washington News Release, June 8, 1998).

Washington Attorney General Christine Gregoire announces a tentative agreement with DOE over single-shell tank stabilization. Energy Secretary Bill Richardson, Washington Senator Patty Murray and Washington Governor Gary Locke look on.
to a consent decree filed in federal court so that yet-to-be-determined schedules would be enforceable by a judge. DOE would pump the most dangerous tanks first.

A DOE review of tank farm operations showed problems with morale, trust and communications. The review focused on DOE management issues and found staff members believed protesting safety concerns to upper management would hurt their career.

Hanford Site Manager John Wagoner announced that leaked tank waste from the B, BX and BY tank farms in the 200 East Area had reached groundwater. That meant leaked waste from at least eight of Hanford’s 18 tank farms was believed to have reached the groundwater and could reach the Columbia River within 20 years.

DOE soon after announced it would develop a plan to address groundwater and vadose zone contamination. Bechtel was assigned the responsibility to integrate all work being done on current cleanup activities. That included sampling, data collection and modeling of soil and groundwater; pumping and treating contaminated groundwater; and research and technology development related to movement and containment of contamination.

A General Accounting Office (GAO) report said DOE’s understanding of how waste moved through the vadose zone to the groundwater was inadequate to make key technical decisions on how to clean up wastes in an environmentally sound and cost-effective manner.

A small amount of plutonium was found in the aquifer just north of the K-Basins, several hundred feet from the river. Hanford officials said the plutonium was most likely from Hanford’s production days, when waste water was poured into the ground. It was uncertain whether the plutonium had been there for years or was increasing.

In August, a Los Alamos study increased the estimates of leaks from four tanks in the SX tank farm. The revised leak estimate was 200,000 to 400,000 gallons of waste, about six times more than previous estimates. The report also estimated an additional one million curies of cesium from the four tanks entered the vadose zone. Previous estimates were that all leaked tanks had accounted for about one million curies of cesium.

Hanford’s five pump-and-treat systems treated over 270 million gallons of groundwater during the 12 months which ended in September. The systems were designed to intercept and contain plumes of contaminated groundwater before they reached the Columbia River. They had been successful in removing carbon tetrachloride and chromium from the groundwater and keeping some strontium 90 from entering the river.

Hanford’s floundering K-Basin spent fuel project received considerable scrutiny — including that of a Congressional oversight committee. In March, the House Commerce Committee’s Oversight
and Investigations Subcommittee launched an investigation after project costs jumped and the completion date slipped.

A DOE letter to Fluor-Daniel and Duke Engineering expressed strong concerns about problems at the K-Basins. The list of problems included the inability to identify and correct problems, keep to a budget, and to lock-in schedules and cost estimates.

Fluor-Daniel Hanford President Hank Hatch said in April that the K-Basins project could be delayed up to three additional years and cost even more. Hatch said Fluor was disappointed with how Duke Engineering — their subcontractor on the project — had responded so far to its “cure” letter. By May, Fluor said Duke had made enough progress to cancel the cure letter and in June, DOE approved a one year extension on Duke Engineering’s Hanford contract to manage the K-Basins project — despite the difficulties.

During a House Subcommittee hearing in May, Wagoner said K-Basin costs might go up an additional $276 million to almost $1.4 billion, and completion might be delayed by two more years to 2005. In 1995, DOE estimated the cost at $814 million and completion at 2001.

By September, DOE, the U.S. Environmental Protection Agency (EPA) and Ecology agreed on a new cleanup timetable for the K-Basins. Workers would begin removing spent fuel from the basins by November 30, 2000 (this Milestone was eventually missed by

“Not only is mitigation of an urgent risk to the Columbia River not being realized, but also other Hanford cleanup work is having to be deferred to cover cost increases for the (spent fuel program)… The project should be perceived as having a strong sense of urgency, but it does not. Delays occur, commitments are missed, but accountability does not appear to drive the management response.”


“An 84 percent cost overrun and a 19 percent probability of meeting the schedule… I do believe the wheels fell off.”


“I am willing to put every dollar, every bit of profit on that schedule. We are willing to live by it.”

“It would be an abandonment of every commitment the United States government has made to the people of the state. It would be wholly unacceptable to us. There would be no other course but to seek relief from the courts.”

– Dan Silver, Washington Department of Ecology, on a proposal to cut funding to DOE’s environmental cleanup program by $500 million. (Tri-City Herald, April 23, 1998).

“We’re putting at risk the Columbia River. The vitrification plant is not some hypothetical it-would-be-nice. It is, in fact, a necessity for us to move forward…hopefully in a timely way.”

– Washington Attorney General Christine Gregoire, about proposed Hanford funding cuts. (Tri-City Herald, April 24, 1998).

“Setting the budget for Hanford without consideration of the goals for cleanup is a short-run solution that will make future cleanup measures more complicated and more expensive. Ultimately, there will be no budget gain from sacrificing progress on the cleanup at Hanford.”

– Letter from Oregon Governor John Kitzhaber to Energy Secretary Federico Peña and Office of Management and Budget Director Franklin Raines. (May 19, 1998).

only one week). All fuel would be removed from the basins by December 31, 2003 (this Milestone was eventually completed in October 2004, 10 months late) and cleanup of the basins, including removal of sludge, debris and water, would be completed by July 31, 2007 (some of this work is still underway). Estimates to clean up the K-Basins rose to $1.59 billion.

Excavation of a disposal site in the 300 Area was halted in April when several hundred barrels were found that were believed to contain uranium metal shavings. The disposal site operated from 1955 to 1961.

DOE officials said funding projections for fiscal year 2000 were $80 million short of what they needed to meet legal obligations.

Representative Duncan Hunter of California, chair of the House National Security Committee’s defense procurement committee, considered cutting DOE’s environmental management budget by $500 million. Such a cut could have resulted in 1,250 layoffs at Hanford and slow or stop most cleanup work. Hunter was a critic of DOE’s cleanup efforts and believed defense programs had been cut too severely.

After meeting with members of Washington’s Congressional delegation, Representative Hunter said he would not make large cuts in DOE’s budget, but that DOE was unlikely to receive the full amount it requested for the privatization set-aside.
The Defense Nuclear Facilities Safety Board accused DOE of dragging its feet in cleaning up some of the most contaminated facilities at Hanford and other defense production sites. DOE officials reluctantly admitted part of the problem was a lack of funding.

A team of 30 federal and state inspectors began a “multi-media” investigation at Hanford to check for compliance with federal and state environmental laws. The investigation — by EPA and the Washington Departments of Ecology and Health — was the first to be conducted at Hanford.

EPA declared the 90,000-acre Wahluke Slope had no more significant environmental problems and should be removed from the national priority cleanup list for Superfund sites. It contained former antiaircraft and missile sites used to protect Hanford during the Cold War.

Hanford contractors began filling two waste trenches just north of the 300 Area with clean dirt. From 1975 to 1994, Hanford pumped one to 1.5 million gallons of contaminated liquids a day from the 300 Area’s laboratory and nuclear fuel fabrication operations into the trenches. The water and other liquids contained uranium, cobalt, arsenic and PCBs. The trenches were 12 feet deep, 10 feet wide, 1,535 feet long and just under one-quarter mile from the Columbia River.

Fluor-Daniel Hanford’s second year at Hanford continued with a number of struggles. DOE proposed a $140,625 fine for Fluor-Daniel in March, the largest fine ever levied against a Hanford contractor. Most of the fine was for poor handling of plutonium within the Plutonium Finishing Plant. The remainder of the fine covered emergency response problems during the May 1997 explosion in a chemical tank.

In contrast, Bechtel Hanford, which earned its seventh consecutive “outstanding” grade and its best-ever rating, was awarded a three year contract extension. The contract’s fee structure was changed so it would be based 100 percent on performance.

DOE released its “Accelerating Cleanup: Paths to Closure” plan for Hanford in July. The plan estimated Hanford’s cleanup costs through 2046 at $50.8 billion in 1998 dollars or $85.3 billion after factoring in inflation.

The one millionth ton of waste was removed from a site near the Columbia River and deposited in the Environmental Restoration Disposal Facility in July.

While a number of Hanford production facilities were being successfully shut down, new facilities needed for the cleanup were ramping up.

Hanford’s Waste Receiving and Processing facility received start-up approval from DOE in September. It was the first operating facility in the DOE complex designed specifically to prepare transuranic waste for shipment to the Waste Isolation Pilot Plant in New Mexico.

“It would not be forthright to sit here and tell you there are not funding challenges at Hanford.”
– James Owendoff, Acting Energy Assistant Secretary. (Tri-City Herald, June 3, 1998).

“We’ve cleaned up all of the outlying areas of the site. I would not pretend these are the most significant or important portions.”

“I absolutely expected better. I know Fluor expected better.”
– Hanford Manager John Wagoner, after Fluor earned only 55 percent of its fee for its first year of managing Hanford. (Tri-City Herald, June 25, 1998).

“...Radioactive waste seeping through the soil or being discharged into the air recognizes no state boundary.”
– Oregon Senator Gordon Smith, in remarks to the U.S. Senate before they approved a “Sense of the Senate” Amendment as part of the U.S. Senate’s Defense Authorization Bill. It gave Senate backing that Oregon should remain strongly involved in Hanford issues. (June 24, 1998).
Deactivation of the last of Hanford’s nine plutonium reactors — N Reactor — was finished eight days ahead of its revised schedule. Ecology had earlier approved a four-month extension to a Tri-Party Agreement milestone after more contamination was found than expected in the spent fuel basin. Entrances to the contaminated areas and buildings were closed off and most of the contaminated water and equipment removed.

B Plant was deactivated four years ahead of schedule and $100 million under budget. The 800 foot long facility was built during World War II, closed in 1952, then reopened in the 1960s to separate cesium and strontium from tank wastes. The facility closed again in 1984. Nearly 2,000 cesium and strontium capsules would continue to be stored in an adjacent building. Annual maintenance costs for the facility dropped from about $20 million to $750,000.

“We’ve indicated to DOE that where (DOE) can make a good case for a delay, when we do see progress occurring, we are willing to consider a new schedule. Our concerns mostly focus on projects where nothing is getting done without a good reason.”


Removing radioactive fuel spacers from a storage silo was part of the deactivation of N Reactor.
Energy Secretary Richardson visited C Reactor in October to celebrate completion of the reactor cocooning project. The cocooning involved removal of 23 of 24 reactor site buildings and construction of a new high-strength corrosion-resistant galvanized steel roof. Workers removed 70 tons of lead, 1,000 tons of steel, 12,000 tons of concrete and 1,700 tons of soil. More than 15,000 tons of low-level waste was sent to the Environmental Restoration Disposal Facility. The reactor would now sit for 75 years to allow the radioactivity to decay.

The 1100 Area was shifted from federal control to the Port of Benton. The site included two large buildings, 24 smaller buildings, Stevens Drive and the southern portion of the Hanford railroad. DOE no longer needed the 768 acre area, which had been cleaned of contamination.

Public meetings were held in January to consider whether to remove milestones related to the Fast Flux Test Facility (FFTF) from the Tri-Party Agreement until after DOE decided the fate of the reactor. More than 8,000 comments were received, most opposing removal of FFTF milestones from the Tri-Party Agreement.

Meanwhile, new production missions continued to be explored for the FFTF. About 200 people showed up at a DOE hearing in November both to support and oppose the idea of creating plutonium 238 for the United States’ space program. Hanford was one of several potential sites being considered to manufacture plutonium 238 to power spacecraft, as well as a potential site to assemble the plutonium 238 batteries.

In December Energy Secretary Richardson announced FFTF would not be used for tritium production. A new federal study had concluded earlier in the year that FFTF could not meet the nation’s current demand for tritium. Potential other missions for the reactor would be decided in the spring of 1999.
Beginning in October, people who lived downwind of Hanford were able to provide personal information about their diet and where they lived and request an estimate of how much radiation they likely were exposed to from radioactive iodine 131 released to the air from Hanford between 1944 and 1957. The Hanford Individual Dose Assessment Project provided a free estimate of how much radiation dose people’s thyroid gland received.

Fruit flies spread contamination around offices and shops at Hanford. The fruit flies were apparently attracted to a sugary substance used to seal areas that may have radioactive contamination. At least 13 contaminated spots were found.

Energy Secretary Richardson announced Hanford Manager Wagoner would retire in January. James Hall, the Manager of Oak Ridge, was named acting manager.
Tank Waste Treatment

A provision was inserted into the Defense Authorization Bill by Representative Doc Hastings which created a new Office of River Protection at Hanford to oversee and direct cleanup of Hanford’s waste tanks. BNFL and Lockheed submitted their proposals in January for constructing and operating tank waste treatment and immobilization facilities. In a blow to the idea of competition, DOE rejected Lockheed’s bid in May, saying its technical risk was unacceptably high. DOE continued to negotiate with BNFL.

DOE sent a report to Congress on its proposed contract with BNFL to begin vitrification of Hanford’s tank waste. The proposal increased the cost and delayed start-up, but the facilities would have much longer lives — 30 years instead of five to nine years — with more flexibility to expand over time. The estimated target price to build and operate high and low-activity waste plants was $6.9 billion in 1997 dollars. The plants would begin glassifying wastes in 2006 or 2007. Waste from 11 of Hanford’s 177 tanks would be vitrified by 2018.

Ecology officials announced that despite numerous concerns, they supported the proposed Hanford tank waste glassification contract with BNFL Inc. Ecology wanted guarantees in the Tri-Party Agreement that addressed their concerns.

DOE signed a contract in August with BNFL Inc. to convert Hanford’s tank waste into glass. During the initial 24-33 month period BNFL would complete 30 percent of the facility design, obtain regulatory permits, and obtain financing.

A GAO report said the BNFL contract carried substantial financial risk for DOE. The GAO report also raised concerns about whether the vitrification technology BNFL developed would work at Hanford.

Tank Safety

DOE declared an Unreviewed Safety Question in March for tank SY-101 because of rising waste levels inside the tank. The tank contained 1.12 million gallons of waste and the level in the tank had risen nearly five inches during the past year. By December, the level in the tank had risen several more inches.

A decade-long, $48 million project to improve ventilation in four tanks was completed.

DOE began waste removal tests at tank C-106 but suspended work after about two hours because of higher than expected exhaust emissions. Eleven workers were examined after potential exposure to the emissions.

DOE removed 18 tanks from the organic complexant Watch List in December (eight of these were also on the hydrogen Watch List) and closed the safety issue related to organic complexants. The action left 28 tanks on the Watch List.
Around the DOE Complex

DOE released its draft 2006 plan, re-titled “Accelerating Cleanup: Paths to Closure.” The plan requested Congress appropriate $5.75 billion a year plus additional money for the privatization set-aside. This amount was $3.5 billion short of funds needed through 2006 to meet all DOE cleanup obligations.

In April Energy Secretary Peña announced his resignation, effective June 30.

President Clinton nominated Bill Richardson, U.S. Ambassador to the United Nations and a former Congressman from New Mexico, as Energy Secretary. The Senate confirmed Richardson’s appointment in July.

The League of Women Voters conducted workshops in San Diego and Chicago in June to bring together stakeholders from many DOE sites to discuss nuclear waste disposal and other related issues. The two workshops were considerably less than earlier proposals for a “National Dialogue” on nuclear waste. More than 70 citizen and environmental groups boycotted the two workshops. A number of Hanford stakeholders participated in both workshops.

A GAO audit criticized DOE for spending $2.5 billion over the last decade on new technology development for cleaning up its nuclear weapons sites but using less than one-fifth of the new technologies.

A DOE draft Environmental Impact Statement recommended against Hanford playing a role in disposing of the nation’s weapons-grade plutonium. The study instead favored the Savannah River Site or the Pantex plant near Amarillo, Texas.

DOE reached a settlement with environmentalists to end a nine year old lawsuit filed by the Natural Resources Defense Council and 38 other environmental groups. DOE would provide $6.25 million for citizen groups to monitor and finance independent technical studies of DOE’s waste management programs.

“I am frustrated. Who do you call?”
– Washington Senator Patty Murray, referring to the numerous vacancies and acting positions at DOE. (Tri-City Herald, April 7, 1998).

“It seemed like DOE has been a political backwater for the second part of the Clinton administration. It’s nice to see someone with a relatively high profile and knowledge of energy issues, considering he has (DOE) sites in his own back yard.”
– Todd Martin, Hanford Education Action League, on the nomination of Bill Richardson as Energy Secretary. (Tri-City Herald, June 18, 1998).

“The Energy Department determined that Hanford’s cleanup mission is critical and should remain its top priority.”
– DOE News Release announcing Hanford would not play a role in disposal of the nation’s weapons-grade plutonium. (June 23, 1998).

“When you’re out on the site, you feel an overwhelming sense of the grandeur of the land, and when you’re at the river, you feel the power of the river…The scale of the environmental damage that we have done at the Hanford Site is just amazing. And the challenge to try to remediate that is huge.”
– Randy Smith, U.S. Environmental Protection Agency, at a meeting of the Hanford Advisory Board. (December 5, 1998).


**1999**

“I don’t make any claims about this tank. I’m not convinced anyone understands the chemistry and physics involved in this crust.”

– Donald Oakley, a U.S. Department of Energy consultant, referring to the growth of the crust in tank SY-101.


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The Cleanup

John Wagoner retired as Hanford Manager in January. Jim Hall, the Manager at Oak Ridge, became acting manager until Keith Klein was named the U.S. Department of Energy’s (DOE) new Hanford Site Manager in March and took over in May. Klein had been the Acting Manager for DOE’s Carlsbad, New Mexico office since October and prior to that spent four years as Deputy Manager at Rocky Flats. Energy Secretary Bill Richardson also appointed Dick French as Manager of the Office of River Protection. French had run his own engineering and construction management company since 1994 and prior to that was General Manager and President of Kaiser Engineers Hanford.

After a two year suspension, DOE resumed stabilizing plutonium at the Plutonium Finishing Plant (PFP). Fifteen corrective actions were resolved during that time. The stabilization process converted various forms of plutonium to a safer form for long-term storage.

The Hanford Advisory Board (HAB) urged DOE and its regulators to agree to clean-up milestones that comprehensively regulated cleanup at PFP. The HAB said PFP’s plutonium represented one of Hanford’s greatest risks to Hanford workers, the public and the environment.

DOE took core samples of sludge from tank 241-Z-361, a small tank next to PFP. The tank’s 20,000 gallons of sludge was believed to contain about 66 pounds of plutonium. No new waste had been added to the tank for about 20 years and it was nearly forgotten about until a 1997 chemical explosion at PFP forced DOE to assess all potential risks at the complex. Tests had shown flammable gases were not building up inside the tank and DOE believed the chances of a criticality were low. The tank was also not believed to be leaking.

DOE submitted to Congress its fiscal year 2000 cleanup budget request for Hanford. The $1.17 billion request was an increase of $70 million over Hanford’s 1999 cleanup budget but still $23 million short of meeting all Tri-Party Agreement obligations. DOE also requested $106 million in set-aside for Hanford’s tank waste vitrification program.

DOE projected that level funding in fiscal year 2001 would leave

“You’ve successfully led Hanford through the difficult transition from production to cleanup… At the same time, you’ve invited and encouraged those most at risk from Hanford to have a direct say in the decisions and activities at the site.”


“Keith (Klein)…is the right person for one of the Department’s most challenging jobs… Dick (French) knows Hanford and is ready to meet the challenges of cleaning up Hanford’s tank waste and protecting the Columbia River.”

“Unfortunately, I think 2001 is the year that the train wreck is actually happening [to clean up].”
– Mike Wilson, Ecology, referring to projected funding cuts. (Tri-City Herald, Feb 26, 1999).

“It’s always important to get the top guy’s name on the line...but the proof will be in the pudding. We’ve had a long relationship with Energy that hasn’t always been fruitful and we hope these meetings bear fruit.”
– Sheryl Hutchinson, Ecology spokeswoman, on a pledge by Energy Secretary Bill Richardson for “substantial” progress in immobilizing Hanford’s tank wastes. (Seattle Post-Intelligencer, September 11, 1999).

“This new schedule sets strict, realistic deadlines for dealing with the most volatile and dangerous threats to the Columbia River without further delay.”
– Washington Attorney General Christine Gregoire on a court-enforceable schedule for pumping liquid waste out of 29 single-shell tanks. The agreement came eight months after Washington announced its intent to sue DOE. Following a public comment period, language in the Tri-Party Agreement was replaced with a consent decree filed in federal court. Under the new schedule, 98 percent of the remaining six million gallons of liquid waste would be pumped by September 30, 2003. The remainder would be pumped within an additional year.

Operation of the new cross-site waste transfer line began in March. About 750,000 gallons of waste was moved from a tank in the 200 West Area to the 200 East Area. That freed up double-shell tank space in the 200 West Area needed to pump waste from single-shell tanks. It also freed up space for the planned transfer of waste from tank SY-101 later in the year.

The Spokane-based Hanford Education Action League (HEAL) closed its doors in March. HEAL was one of the most influential citizen groups on Hanford issues since it was founded in 1984, but in recent years had seen its membership fall and had difficulty raising funds.

Energy Secretary Richardson announced that DOE would conduct an Environmental Impact Statement (EIS) to review impacts associated with operating the Fast Flux Test Facility. The EIS would evaluate the environmental effects associated with a range of possible uses of the reactor, including medical isotope production and producing plutonium 238 to power spacecraft. Scoping meetings for the EIS drew more than 1,000 people in Seattle, Portland, Hood River and Richland.

Environmental cleanup work began at H Reactor. Contaminated soil and other materials was being removed from old liquid waste disposal sites and hauled to the Environmental Restoration Disposal
Facility. Meanwhile, cocooning of other reactors continued on a steady pace. The 200 foot-tall stacks at D and DR reactors were dynamited as part of the cocooning of the two reactors.

Energy Secretary Richardson, during a brief Hanford visit, said DOE would retain ownership of the 140 square mile Wahluke Slope and the U.S. Fish and Wildlife Service would manage the slope as part of the Saddle Mountain Wildlife Refuge. The action would help protect the Hanford Reach, the last free-flowing stretch of the Columbia River.

EPA fined DOE $367,078 in civil penalties, primarily for storing dangerous waste without a permit. Seventeen drums containing solvents were stored outdoors — some for as long as three years — without a permit. DOE was also cited for failing to identify two containers of waste as hazardous.

DOE added the K-Basin spent fuel project to a special “watch list” of troubled DOE projects in July, meaning DOE officials would enact tighter management controls and adopt a harder line in dealing with both contractors and its own staff. Three other DOE projects — two at Los Alamos and one at Savannah River — were also placed on the list.

By September, there was some optimism that the project was finally on track.

Both a DOE Headquarters inspection team and a GAO report said Hanford was doing a better job of managing the K-Basins project. However, past problems used up nearly all of the extra time available in the project schedule and additional delays would likely result in missing Tri-Party Agreement milestones. The GAO report expressed concerns about whether Hanford would be able to meet the schedule to begin moving spent fuel out of the K-West basin by November 2000. The report praised the work of Fluor-Daniel Hanford at resolving outstanding technical issues but cautioned that little planning had been done to continue and eventually complete the work after fuel removal began.

“We’re giving back to the people of this community and state a legacy for the future. By protecting the Wahluke Slope, we’re protecting the river. I am convinced my proposal is the correct one. If we do not act to protect it now, it will change for all time.”

— Energy Secretary Bill Richardson.

(Tri-City Herald, April 11, 1999).

“Some days, (the river) speaks to me. Some days, it whispers to me. Some days, it cries out in pain. Today, it sings to me.”

— Rich Laeumont, Lower Columbia Basin Audubon Society on the DOE decision to have the Wahluke Slope managed as a wildlife reserve. (Tri-City Herald, April 11, 1999).

“Compared with conditions that we reported on in May of last year, the amount of progress is substantial, with considerable construction completed and equipment installation under way. Nonetheless...operational readiness issues have become major challenges.”


(GAO/RCED-99-267, September 1999).

“As far as GAO reports go, this is the most positive I’ve ever seen.”

— Phil Loscoe, DOE’s acting director for the K-Basins project. (Tri-City Herald, October 21, 1999.).
New Hanford Manager Keith Klein announced an effort to try and get some of that schedule back. Klein proposed to accelerate the spent fuel retrieval schedule, anticipating the completion of key facilities needed for the project by the end of the year. DOE completed construction of the Cold Vacuum Drying Facility in November and began testing of the fuel retrieval system soon after that.

While most attention was focused on the spent fuel, Hanford officials were also looking at methods to dispose of the K-Basin sludge and especially hoping to develop an alternative to adding the sludge to Hanford’s high-level waste tanks. One alternative being considered was to put the sludge in drums, remove all the liquids, solidify it with cement, and ship it to the Waste Isolation Pilot Plant in New Mexico for disposal.

DOE issued a civil penalty of $330,000 to Fluor-Daniel Hanford for violating nuclear safety requirements. Energy Secretary Richardson also issued a compliance order — the first by DOE — with specific milestones to ensure corrective actions were taken. DOE investigators found contractors at Hanford’s spent fuel project repeatedly failed to follow the procedures in their own safety plans. Fluor-Daniel paid the fine to DOE out of its corporate funds.

DOE’s Inspector General said DOE was wasting $12 million in its work along the Columbia River. The report said cleanup to unrestricted use standards was unnecessary as land use plans called for limited recreation, hunting and fishing by Native Americans, a museum at B Reactor and wildlife preservation. The report drew sharp criticism.

DOE released its final environmental impact statement on proposed land uses for Hanford following cleanup. DOE’s preferred option was to limit industrial development to southeastern Hanford and the 200 Areas. Following extensive public comments, DOE recommend expanded

“Continuing to support cleanup objectives that are inconsistent with projected land uses unnecessarily increases restoration costs.”


“This is an indication of the arrogance from the Department of Energy in blowing off state standards and local, tribal and community-based input. From the state’s point of view, the standard ought to be strict. When you limit cleanup, you limit future land use.”

— Max Power, Washington Department of Ecology, on a DOE Inspector General report critical of clean up along the Columbia River to unrestricted use standards. (Tri-City Herald, July 9, 1999).
protection for some areas — making national wildlife refuges of the Wahluke Slope, the Fitzner Eberhardt Arid Lands Ecology Reserve, and Hanford’s northwestern corner. Industrial development would be limited primarily to the 200 Areas and to southeastern Hanford. Some mining and recreational uses would also be allowed. DOE examined six proposed scenarios, some of which differed greatly. Benton, Franklin and Grant counties favored extensive agriculture and grazing on parts of the Hanford Site while the Nez Perce Tribe recommended making almost the entire site a wildlife preserve.

A robot inspected the inside of Hanford’s U plant. The robot traveled through a ventilation tunnel, collected radiation samples and shot video. Less contamination and more dust than expected was found during the robot’s five hour trek through the 800 foot-long facility.

An experiment designed to dilute chromium seeping into salmon beds appeared to be successful. Sodium dithionite was pumped into the contaminated groundwater once a month. The chemical converted the chromium into a less mobile and benign form. After six months of this experiment, tests showed the chromium levels dropped considerably once they passed through the test area. Plans were made to expand the project to address a large chromium plume coming from the D Reactor area.

High concentrations of technetium were found in a 200 West Area aquifer. The readings came from a well about 220 feet deep and less than 20 feet from tank SX-115, a single-shell tank built in the mid-1950s and found to be leaking in 1965. The level of technetium 99 found in the well was about 38 times the federal drinking water standards. A Washington Department of Ecology engineer said the worst-case scenario would have the technetium reach the Columbia River within 20 years.

DOE announced that Hanford and the Nevada Test Site were its preferred choices for disposal of mixed low-level and low-level wastes from other DOE sites. A final announcement was expected in January. How much waste could come to Hanford was not clear. State officials said they opposed the plan unless they could get some assurances that Hanford’s cleanup — especially tank waste treatment — moved forward, perhaps on an expedited schedule.

“We’re going to be protesting this vigorously... I don’t know how the federal government can place a new mission on Hanford unless it has really addressed the current one.”

— Washington Governor Gary Locke on DOE’s preferred choice of Hanford for disposal of waste from other DOE sites. (Associated Press, December 11, 1999).
The first few hundred individual radiation dose estimates were mailed to people who lived downwind of Hanford between 1944 and 1957. About 10,000 people had provided information about where they lived and what they ate to the Hanford Individual Dose Assessment Project, the first step in calculating estimated radiation doses from iodine 131 released to the air during Hanford’s early years of operations.

Researchers from the Fred Hutchinson Cancer Research Center and the Centers for Disease Control and Prevention released draft results from the Hanford Thyroid Disease Study. The study found no evidence that any kind of thyroid disease was increased as a result of exposure to radioactive iodine released into the air from Hanford from 1944 to 1957. The study results were sharply criticized by downwinders and others. Later, CDC officials said the study results also did not prove that a link did not exist and a National Research Council Review of the study found it was basically sound but that the conclusiveness of the findings were overstated.

ATG began processing mixed waste from Hanford at its new non-thermal mixed waste processing facility in Richland. ATG was using supercompaction and macroencapsulation technologies. After treatment, the waste was returned to DOE for disposal.

Tank Waste Treatment

Former Hanford Manager Mike Lawrence was named to head up BNFL’s tank waste glassification program. BNFL continued to develop cost estimates and design plans to construct facilities to treat Hanford’s tank waste.

DOE announced in April that low-activity vitrified waste produced during the first stage of the tank waste treatment program would be disposed in four empty grout vaults in Hanford’s 200 East Area. The vaults were constructed in 1990 and 1991 for disposal of low-activity waste mixed with grout. The grout program had since been discontinued. Additional low-activity waste would be disposed either in new vaults or new waste trenches.

CH2M Hill announced it was buying Lockheed Martin Hanford Corporation. Lockheed Martin’s 1,158 employees were in charge of maintaining Hanford’s tanks plus conducting work to prepare the waste for treatment by BNFL. No major changes were immediately planned for Lockheed’s operations.
Tank Safety

Hanford workers had significant breakthroughs in greatly reducing risks from two troublesome Hanford tanks — C-106 and SY-101.

Wastes in tank C-106 generated heat and required the addition of water to cool the waste and keep it from damaging the tank structure. Because of leaks from other Hanford tanks there was considerable concern about adding water to the tank.

In March, about 22,000 gallons of waste was pumped from C-106 to an adjacent tank, A-102. The ventilation system in A-102 could cool the waste without adding water. After a few months of study to determine the affect of the pumping on both tanks, Hanford workers in June successfully pumped out more than 55 vertical inches of waste from the tank. By October, most liquids and sludges were removed from the tank and in December, C-106 was removed from the tank Watch List.

Although the periodic “burping” of hydrogen in tank SY-101 had been alleviated with the installation of a mixer pump in 1993, tiny gas bubbles created by the mixer had since resulted in increased growth of the crust — which was threatening to overflow the tank. The crust began to rise in December 1997 and by May had grown about 30 inches to nearly 90 inches thick. Workers successfully released some of the hydrogen gas trapped beneath the crust by using a mechanical arm to open holes in the crust.

In December, tank farm workers moved 90,000 gallons of waste from the tank to an adjacent tank. About 90,000 gallons of water was added to replace the waste and to dilute the approximately 1.1 million gallons of waste that remained in the tank. Levels in the tank dropped about two feet as gas trapped in the crust was released. More waste would be pumped from the tank at a later date.

DOE also declared the criticality issue in the tank farms as resolved. Uncertainties in the quantity and distribution of fissile materials in the tank waste prompted the safety issue to be declared in 1992.

DOE and Ecology reached a settlement concerning leak detection systems in the double-shell tanks. DOE agreed that all 28 double-shell tanks would be equipped with a complete leak detection system by December 31, 1999. That system would include three leak detector probes between the walls of each tank and at least one surface level monitor in each tank.

Ultrasonic testing showed signs of corrosion on the inner wall of one of Hanford’s double-shell tanks. The corrosion consisted of tiny pits, about 0.1 inch deep within the half-inch thick wall. The corrosion was found in tank AN-105, which contained 1.16 million gallons of waste.

“This tank has been an on-going source of concern for a long time and it’s a big relief for all of us to finally have it emptied.”
— Suzanne Dahl, Washington Department of Ecology, after most liquids and sludges were removed from tank C-106. (DOE ORP News Release, October 5, 1999).

“This alleviates one of the most hazardous problems in the tank farm and proves we can retrieve waste to send to a (treatment) plant...It’s the single most complicated technological piece of work (we have) done, and we’ve done it practically flawlessly.”
— Fran DeLozier, president of Lockheed Martin Hanford Corp. on the removal of 90,000 gallons of waste from tank SY-101. (Tri-City Herald, December 22, 1999).

“The burping issue has been put to rest, and the crust issue has been put to rest.”

Hanford Cleanup: The First 20 Years | Page 77
Around the DOE Complex

President Clinton nominated Carolyn Huntoon in January as DOE Assistant Secretary for Environmental Management. She was a former director of the Lyndon B. Johnson Space Center. Because of a dispute with the Senate, Huntoon was not confirmed until July.

Nuclear Regulatory Commission (NRC) officials said no major obstacles had been uncovered that would prevent the NRC from regulating DOE nuclear facilities. The NRC disputed conclusions made in 1999 by the Defense Nuclear Facilities Safety Board that external regulation of DOE facilities would be too costly or would undermine national security.

After more than a decade of legal, political and regulatory delays, the Waste Isolation Pilot Plant received its first shipment of transuranic waste in March. The waste came from Los Alamos National Laboratory.

The GAO said DOE’s organization was too complicated to effectively manage all its programs, including environmental cleanup. The report said changes were needed to clear up a complex and jumbled chain of command and some of DOE’s missions should be shifted to other agencies. The report said that of DOE’s 80 biggest projects from 1980 through 1996, 31 were terminated before completion at a cost of $10 billion.

“I hope the state would use anything within its arsenal to gain some leverage, before any additional wastes hit this site, to get the necessary support for what we need out here.”

– Ken Bracken, Hanford Advisory Board co-vice Chair, on DOE’s preferred choice of Hanford for disposal of waste from other DOE sites. (Tri-City Herald, December 11, 1999).
“Washington residents are hostages. Fifty-four million gallons of nasty stuff is in 177 tanks in our back yard. We get the rhetoric and the excuses. We get the song and the dance. Hanford is supposed to be cleaned up by 2046 at a grand total of $56 billion…We are hostages, but Congress writes the checks and increasingly has every reason not to be amused…Progress, on an admittedly difficult and obviously lucrative job, has been zip. What if Congress refuses to write more checks?”


The Cleanup

High concentrations of tritium — 400 times higher than drinking water standards — were discovered in a monitoring well next to a Hanford burial ground adjacent to the Energy Northwest WNP-2 nuclear reactor complex. The burial ground — called 618-11 — was used from 1962 to 1967 to dispose of radioactive waste, some of which was so radioactive that it could only be handled with remote-controlled equipment. Samples taken on January 27, 2000 showed tritium levels in excess of 8 million picocuries per liter (pCi/L). Additional sampling of groundwater from 21 other wells in the area found no elevated tritium levels beyond what was found in the one well. While tritium was detected in many of the other wells, it was at levels previously documented at being below 55,000 picocuries per liter. High readings were noted
in January 1999 but not immediately recognized as being of concern.

Two Hanford workers were slightly contaminated after tank waste leaked during the pumping of tank S-103 in the 200 West Area. About five gallons of highly radioactive tank waste came up through an electrical conduit and spilled onto the ground.

As expected, Hanford and the Nevada Test Site were chosen by the U.S. Department of Energy (DOE) as disposal sites for low-level and mixed low-level waste from throughout the DOE complex. DOE later agreed not to ship new waste to Hanford from other than its traditional shipping sources until after Hanford’s Solid Waste Environmental Impact Statement (EIS) was issued.

The Tri-Parties agreed in June to eleven new Tri-Party Agreement milestones for the K-Basins project. Under the new schedule, sludge removal would begin in 2002 and end in 2004, about the same time that fuel removal was also scheduled to be complete. The overall completion date moved up by one year.

Hanford workers successfully removed the first spent fuel from Hanford’s K-West basin in December. The nearly 300 fuel elements were taken to the Cold Vacuum Drying Facility. After about a week of drying, the fuel was then moved to the Canister Storage Building in the 200 East Area, where it would remain indefinitely.

Unless additional money was allocated for Hanford, the fiscal year 2002 cleanup budget was expected to fall $357 million short of meeting legal obligations. Hanford officials said they would fight for increased funding before the budget was officially proposed the following February.

DOE released a draft EIS in July related to the restart of the Fast Flux Test Facility (FFTF). The draft EIS indicated the FFTF could perform the missions under consideration — production of medical isotopes and plutonium 238 for space missions. However, in November, DOE announced its intent to permanently shut down FFTF and use other existing facilities.

In March, the Defense Nuclear Facilities Safety Board (DNFSB) said bulging plutonium canisters stored at Hanford’s Plutonium Finishing Plant (PFP) might rupture and leak. Such an incident could contaminate workers and the storage vault, tremendously slowing efforts to convert more than four tons of scrap plutonium into a more stable form for long-term storage. Extensive cleanup was required in 1969 and 1970 after two cans leaked plutonium into the storage vault. The DNFSB said Hanford had been negligent in checking the stored cans. By July, Hanford workers had repaired 15 plutonium containers that showed potential to rupture and leak. Plutonium in the containers was either repackaged or baked into a more benign powder.

A DOE report said no hazards were imminent at the PFP that could lead to a criticality accident. Other plutonium facilities at Rocky Flats, Savannah River, Oak Ridge and Los Alamos received similar critiques. DOE had reviewed criticality safety at five of its sites following a September 1999 criticality accident in Japan which eventually killed two workers. DOE’s report suggested some training and procedural changes

“**We have been working toward this day for years. I want to express my sincere appreciation to the Department of Energy and the contractors for working so hard to make this day a reality.**”


“**This may be the most significant accomplishment we’ve seen in 11 years of Hanford cleanup.**”


“**Some people around here still want to beat a dead horse. The horse is dead... We’ve breathed life into it a few times, but I think it’s dead, and I don’t give up on things easily.**”

— Sam Volpentest, executive vice president of the Tri-Cities Industrial Development Council, after DOE announced its intent to permanently shut down the Fast Flux Test Facility (Seattle Post-Intelligencer, November 21, 2000).
to further reduce the risk of a criticality accident from occurring.

By September, major new work was underway at PFP. Hanford workers began packaging plutonium-contaminated ash from Rocky Flats. Plans were to eventually ship the ash — which did not need to be stabilized and was currently stored in 411 cans — to the Waste Isolation Pilot Plant for disposal. PFP workers also began a new process to convert plutonium nitrate acid solutions to a stable form. Solids removed from the liquids would be thermally treated for final stabilization. And, workers began putting plutonium metals and powders into long-term storage canisters. The newer canisters were designed to prevent bulging and leaking.

Energy Secretary Bill Richardson said DOE would demand the right in future contracts to fire the contractors’ top managers and control the managers’ bonuses. In addition, the Energy Secretary would review decisions on what goals to set for contractors and whether the contracting companies had met those goals and should earn bonuses. DOE administered more than 30 management contracts worth more than $50 billion in the next decade.

President Bill Clinton named the Hanford Reach as a National Monument area. The Reach Monument formed a giant “C” shape around central Hanford. The monument included the Arid Lands...
Ecology Reserve, the Saddle Mountain National Wildlife Refuge and areas along the Columbia River north of Richland. Clinton also directed that “objects of scientific and historic interest” on the rest of the Hanford Site be protected. This could result in eventually adding lands to the monument as Hanford was cleaned up.

DOE notified the Washington Department of Ecology and the Environmental Protection Agency (EPA) in June that it was in substantial danger of failing to meet 21 Tri-Party Agreement milestones. Many of the milestones were not due for several years. One of the milestones was not due to be completed until September 2018.

A huge range fire burned 192,000 acres on and near the Hanford Site. The fire scorched one crib and two dried up waste ponds, threatened nuclear facilities in the 200 West Area, and also threatened FFTF and the HAMMER training facility. About 45 percent of the Hanford Site burned, including nearly all of the Arid Lands Ecology Reserve. About 20 homes were destroyed in Benton City. Seven thousand people were evacuated at one time from Benton City and West Richland. High winds and nearly 100 degree temperatures hampered firefighting efforts. More than 800 firefighters from throughout the Northwest battled the fire.

Initial surveys found no radioactive contamination spread from the fire, but within a few weeks, air samples taken in Richland and Pasco detected plutonium 100 to 1,000 times higher than normal background, but still well below state and federal safety standards. EPA officials said the readings were similar to those when nuclear weapons tests were routinely conducted in the atmosphere and posed no risk to human health.

“If the fire had gone beyond where it did, there was the potential for more serious consequences.”
– Keith Klein, DOE-Richland Manager. (Tri-City Herald, July 3, 2000).

“I’m very confident there are not going to be health problems. Even if we missed something so far, it’ll be below the limits for health risks.”
– Debra McBaugh, Washington Department of Health, after it was discovered that some radioactive materials were released to the air during the Hanford fire. (Tri-City Herald, July 13, 2000).
An EPA audit said delays in cleaning up Hanford’s underground storage tanks greatly increased environmental risks. The internal audit, by EPA’s Regional Inspector General, said cleanup delays significantly increased the risk of leaks from the tanks into groundwater or air. The report criticized cleanup regulators — the EPA and Ecology — for failing to enforce cleanup deadlines.

Hanford finally made its first shipment of transuranic waste to the Waste Isolation Pilot Plant in New Mexico. Because of continuing unresolved issues with the State of New Mexico related to properly documenting the origins and contents of the waste, the shipment contained just seven drums of waste. A full load was 42 drums.

DOE shipped 667 metric tons of surplus uranium from Hanford to its Portsmouth Site in Ohio. The uranium had been stored in the 200 Area and was declared surplus.

DOE and Bechtel began a soil cleanup project at N Reactor. The cleanup would involve removing nearly 150,000 tons of contaminated soil and debris from cribs and trenches.

DOE, EPA and Ecology signed an agreement for the clean up of contaminated soil, structures and debris from 45 burial grounds in Hanford’s 100 Area. The estimated $400 million cleanup would take about 10 years to complete. Materials excavated from the burial grounds would be disposed in Hanford’s Environmental Restoration Disposal Facility.

EPA reduced the largest fine in Hanford’s history. A $367,078 fine levied in February 1999 against DOE and its contractors was reduced to $25,000 and about $90,000 in extra cleanup work. The fine originally related to violations with Hanford’s chemical storage practices.

The Hanford Advisory Board selected Todd Martin to replace Merilyn Reeves as Chair. Martin, an environmental consultant, was a former researcher for the Hanford Education Action League.

Fluor Hanford’s contract to manage a major part of Hanford cleanup was extended for six years and $3.8 billion. The contract included incentives for Fluor to earn up to $168 million in profits. Fluor had been the primary contractor at Hanford since October 1996.

“It has only been 13 years since the N Reactor was permanently shut down. This short period of inactivity resulted in radioactivity levels up to 50 times higher than at other soil cleanup sites.”

– Rick Donahoe, project lead for Bechtel Hanford, as soil cleanup began at N Reactor. (DOE News Release, August 8, 2000).
Tank Waste Treatment

Enforcement action by the State of Washington to set a schedule to construct and operate Hanford’s tank waste treatment facilities was ultimately overcome by the collapse of DOE’s privatization efforts.

Ecology Director Tom Fitzsimmons issued a “final determination” — setting milestones and enforcement policies for the construction and operation of tank waste treatment facilities. Fitzsimmons’ action came after more than 18 months of negotiations failed to reach a cleanup schedule that both the state and DOE could agree on. The biggest disagreement was related to enforcement of the Tri-Party Agreement. The state wanted to be able to take enforcement action as soon as it became clear a milestone could not be met, rather than having to wait for the milestone to actually be missed. This was especially important in the tank waste project when milestones for construction were several years apart. Both sides agreed on the basic schedule: DOE would sign a contract with BNFL by August 31, 2000; construction would begin by July 31, 2001; operational testing of the pre-treatment and vitrification facilities would begin by December 2007; commercial production of the facilities would begin by December 2009; and 10 per cent of the tank waste would be treated by December 2018. Fitzsimmons also issued a final determination related to inventorying Hanford’s hazardous and mixed wastes and development of a plan for treating and disposing all wastes not currently covered under the Tri-Party Agreement.

A DOE Inspector General’s Office report said Hanford’s tank waste treatment program needed better long-range planning and coordination. Hanford officials said they identified those problems some time ago and were working to address them. The report showed significant improvements since a previous review in 1993 but did list several concerns. Among those were BNFL’s ability to complete 30 per cent design of the treatment facilities by August; what it called an “unrealistic” deadline of 2028 to treat all of Hanford’s tank waste; and a lack of available tank space.
The Washington Legislature passed a bill to exempt Hanford's tank waste treatment facilities from local property taxes. The bill was expected to save about $1 billion from the cost of the project. The property tax exemption would not take effect until 2006, allowing local jurisdictions to collect taxes in 2003, 2004 and 2005. Those taxes would be used to help pay for increased services the project would demand. Washington Governor Gary Locke signed the bill into law.

In April, BNFL submitted its formal cost estimate to begin treatment and vitrification of Hanford's tank waste — an estimate they had been working on since 1998. BNFL admitted the price of $15.2 billion — based on 100 per cent private financing — was likely not affordable. BNFL officials said they were confident the construction and operating costs would be about $6 billion but the cost of financing would greatly increase the overall cost.

Energy Secretary Richardson immediately said the price was unacceptably high and not fundable and that DOE would not approve BNFL's proposal. In May, after further evaluation by DOE on available options, Secretary Richardson announced he would terminate the BNFL privatization contract. DOE would seek new bidders and award a new contract by the end of the year to complete the design work and construct the facilities.

DOE Deputy Secretary T. J. Glaauthier said BNFL's design work appeared sound and BNFL's partner, Bechtel, would continue design work through mid-December. Dick French, Manager of DOE's Office of River Protection (DOE-ORP), said the new company could submit its own design or continue with BNFL and Bechtel's design. Glaauthier said the privatization approach — under which BNFL was to pay all upfront costs and be repaid only when glass was produced — would be totally or partly eliminated.

Secretary Richardson met with Washington Governor Gary Locke and Attorney General Christine Gregoire in an attempt to keep Hanford's tank waste vitrification program moving forward. Richardson agreed to immediately amend the consent decree to require DOE to meet milestones to replace BNFL. Under the agreement DOE agreed to award a new contract by January 15, 2001.

By June, DOE-ORP issued a notice to terminate its privatization contract with BNFL Inc. At the same time, DOE-ORP modified its contract with CH2M Hill Hanford Group to add vitrification plant design work and operations to its current scope of work. DOE-ORP decided against issuing a "bridge" contract to Bechtel to continue the design until the new contract was awarded, after other potential bidders complained that Bechtel would have an unfair advantage in bidding.

DOE-ORP made its "Government Fair Cost Estimate" for tank waste treatment publicly available. The government estimate to design, construct and operate tank waste treatment facilities totaled $9.512 billion, as opposed to BNFL's estimate of $15.2 billion. The "hard-cost" estimates for design, construction and operation of the treatment facilities (along with a contingency), was $3.653 billion. Private financing was

“We seriously underestimated the costs. It was the best (estimate) we had, but we were wrong...We've got enough information now to know that this is a price that DOE cannot afford.”

– Mike Lawrence, General Manager, BNFL Hanford, on the doubling of BNFL's cost estimates for treating Hanford's tank wastes. (Tri-City Herald, April 12, 2000).

“Doing it at the (original) numbers we have now is pretty heavy lifting. Doing it at these new numbers is impossible.”

– Dick French, Manager of DOE's Office of River Protection. (Seattle Post-Intelligencer, April 13, 2000).

“Few people now believe this is the right way to finance this job. Under the present scheme, the cost of private capital is contributing about half of this total. The biggest opportunity (to reduce costs) is to reexamine how we can reduce the financing burden, while retaining the benefits of the privatization approach.”

– Paul Miskimin, President and Chief Executive Officer of BNFL Inc. (BNFL Inc. News Release, April 24, 2000).

“BNFL's proposal was outrageously expensive and inadequate in many ways. We will start competition for a new contract right away...and conduct business so we should be able to meet our long term schedules for operating a waste treatment plant.”

estimated to add another $5.859 billion. The estimate was for treating about 10 per cent of Hanford’s tank waste by 2018.

In July, DOE paid BNFL $100 million as partial payment for its design work. DOE paid BNFL another $100 million at the end of August. The amount of a third payment was negotiated later.

French was removed as Manager of DOE-ORP over disagreements with DOE Headquarters on issues related to authority over the program. Harry Boston, DOE Richland's Deputy Manager for Site Transition, was named Acting Manager of DOE-ORP.

In August, DOE released its final request for proposals to design, build and test tank waste treatment facilities. The proposal would delay the scheduled start of construction by about a year — to mid-2002 — but maintain the “hot start” date of 2007.

Two corporate teams submitted bids in October. One team was led by Bechtel National and Washington Group International, which had absorbed two major construction corporations in recent years — Morrison Knudsen Corp. and Raytheon Engineers and Constructors. The other included Fluor Corp., Cogema and Foster Wheeler Corp.

In December, DOE awarded a ten year, $4 billion contract to the consortium of Bechtel National and Washington Group International. The contract called for facilities to be constructed and tested by 2007 with full operations by 2011. Bechtel-Washington expected to fully take over the design work from CH2M-Hill Hanford Group by April.

**Tank Safety**

Ecology notified DOE-ORP that it was not satisfied with the pace of the single-shell tank waste retrieval program. Ecology said the program was under-funded and DOE had not pursued retrieval technology development with sufficient vigor.

Hanford workers completed the final waste transfer from tank SY-101 in March. About 286,000 gallons of waste was pumped from the tank in the transfer and more than half a million gallons overall. The pumping was done to resolve flammable gas hazards and growth of the tank’s crust.

Hanford workers also completed pumping of liquids from tanks T-104 and T-110. All liquid waste in the 40 tanks in the T, TY and TX tank farms in the northern 200 West Area had been pumped. Half of the tanks were suspected leakers.

Ecology levied a $200,000 fine against DOE for failing to complete assessments of Hanford’s double-shell tanks. The Tri-Party Agreement required DOE to complete an integrity assessment by September 30, 1999 to determine the structural condition of the tanks. Ecology determined that DOE did not perform all the planned assessments. Ecology officials said while there was no indication that any double-shell tank currently was leaking, a full integrity assessment was vital to ensure successful cleanup of tank wastes. DOE officials said some
of the assessments were deferred to focus resources on resolving safety issues associated with tanks C-106 and SY-101. In addition to the fine, DOE was ordered to completely examine the entire double-shell tank system by March 2006.

Hanford workers took samples from beneath tank SX-108, following the drilling of a slant well beneath the tank. The tank was assumed to leak in 1962. The samples would help determine risks caused by contaminants in the vadose zone.

DOE removed two Hanford tanks from the Wyden Watch List. Tanks C-102 and C-103 were placed on the Watch List in 1990 because of concerns that a floating layer of organic material similar to kerosene could ignite and release radioactivity into the environment. Subsequent sampling and analysis determined the likelihood for that to occur was extremely unlikely. Twenty five tanks remained on the Watch List.

Around the DOE Complex

A new DNFSB report said work at Hanford and other DOE sites did “not reflect the urgency that the circumstances merit.” The report addressed recommendations made in 1994 for cleaning up plutonium. The DNFSB acknowledged some progress, but said severe problems — especially funding — continued to impede cleanup. The report to Energy Secretary Richardson suggested he advise Congress and the President of the funding problems, then prioritize tasks according to potential safety risks. The Savannah River Site was listed as having the three most urgent problems, followed by concerns over converting plutonium solutions into stable forms both at Savannah River and at Hanford’s Plutonium Finishing Plant.

Updated costs to clean up DOE’s nuclear weapons complex rose 44 percent since an estimate two years earlier. DOE estimated it would need $151 billion to $195 billion through 2070. Seventeen of the 113 sites nationwide would take as much as a decade longer to clean up while DOE hoped to finish work at five sites more quickly than earlier forecast. Cost estimates for the Hanford cleanup rose slightly from a 1998 estimate of $54.8 billion to a new estimate of $55.6 billion. The estimated end of the cleanup in 2046 was unchanged.

DOE officials met with British investigators to explore BNFL’s problems associated with falsifying documents related to the production of plutonium fuel. In addition to its work at Hanford, BNFL was also involved with nuclear waste cleanup at several other DOE sites. A coalition of watchdog groups asked Secretary Richardson to bar BNFL from any government contracts, including a contract to vitrify Hanford’s tank wastes.

A June General Accounting Office (GAO) report said DOE had so far been unsuccessful with its attempts at privatizing some of its clean-up work. The GAO reviewed three DOE privatization projects — the tank waste treatment program at Hanford and two projects at the Idaho

“Considering the importance of the double-shell tank system, we were particularly disappointed with the poor effort by the DOE to ensure the system will remain fit for use.”


“…no samples have ever been taken from a region most impacted by a tank leak…We want to know where the contaminants are now, where they are going, and how fast they are moving.”

— Rick Raymond, Acting Project Manager for the single-shell tank interim closure project. (Hanford Reach, June 26, 2000).

“The issue is they’d like to see us do it faster. We concur. We’d like to see it done faster, too.”

— Harry Boston, DOE’s deputy manager for site transition at Hanford, commenting on a critical DNFSB report. (Tri-City Herald, January 25, 2000).

“We are now placing BNFL under extra scrutiny because of these problems... Business as usual is over with BNFL and with all our contractors, but especially with BNFL.”


“The fear is that this is a company that only cares about dollars and doesn’t care about how it gets there. I think it is a character issue and an ethics issue.”

— Tom Carpenter, Government Accountability Project, on BNFL. (Tri-City Herald, March 23, 2000).
“If (these additional reviews) help ease DOE’s concerns as to our technical and operational capabilities, and move us beyond the misinformation campaigns of the special interest groups, it will be a positive step in finally moving these major projects to actually cleaning up the legacy wastes of the Cold War.”


“The government is done fighting workers, and now we’re going to help them. We’re reversing the decades-old practice of opposing worker claims and moving forward to do the right thing.”


“No amount of compensation will bring my dad back. But this may be able to help some other people who are sick — who are going through what we went through.”

– Jim Williamson of Kennewick, whose father, Jack — a Hanford worker — died about six months earlier. (Tri-City Herald, April 12, 2000).

“We haven’t made thousands and thousands of people sick. But there are hundreds, and we are opening the door wider to make sure we get everyone.”

– David Michaels, DOE Assistant Secretary for Environment, Safety and Health. (Tri-City Herald, April 13, 2000).

National Engineering and Environmental Laboratory. The GAO found common problems at all three projects, including unrealistic schedules and wastes not thoroughly studied.

For the fourth consecutive year, Energy Secretary Richardson and Secretary of Defense William Cohen certified to the President that the nation did not need to resume nuclear tests to maintain the safety, security and reliability of America’s nuclear weapons stockpile. It had been almost eight years since the last U.S. underground nuclear test.

A National Academy of Sciences study said more than two thirds of the DOE nuclear weapon production sites — including Hanford — would never be completely cleaned of contamination and would require long-term monitoring.

After decades of denials, the federal government conceded that workers in America’s nuclear weapons production facilities were exposed to radiation and chemicals that caused cancer and early death. A report prepared by DOE and the White House concluded radiation exposure led to higher-than-normal rates of a wide range of cancers among workers at 14 nuclear weapons plants, including Hanford. President Clinton signed legislation in October to provide the first widespread compensation to nuclear workers harmed by exposure to radiation and hazardous chemicals.

A House Commerce Committee report said DOE had wasted much of the $3.4 billion it had spent on developing new technology to clean up Hanford and other nuclear weapon production sites. The report said hundreds of millions of dollars had been “squandered” on technologies that had not proved useful. The report further stated that of the nearly 1,000 new technologies developed, only a few had been put to use.

“…it is simply beyond reason to ask EPA and Ecology to accept an arrangement under which the regulatory agencies will be forced to watch and wait, with no real ability to assess real-time progress, until some distant milestone is missed before they can take action…”

– Letter from Chuck Clarke, U.S. Environmental Protection Agency Regional Administrator, to Ecology Director Tom Fitzsimmons, indicating EPA’s willingness to join Ecology in issuing a final dispute determination on Tri-Party Agreement milestones for the tank waste project. (February 3, 2000).
“We are skeptical that management reforms, innovative technologies, and streamlined regulation are a panacea that will make up for substantial budget cuts and keep DOE’s cleanup program on track… Requesting extensions to milestones in cleanup agreements to accommodate spending priorities does not constitute management reform, and we oppose such requests.”

– Letter from 10 Attorneys General – including Christine Gregoire of Washington and Hardy Myers of Oregon – to Energy Secretary Spencer Abraham regarding proposed budget cuts from the Bush Administration. (June 12, 2001).

The Cleanup

A battle was waged through much of the year to force the new Bush Administration to provide sufficient funding to Hanford for the U.S. Department of Energy (DOE) to meet cleanup schedules.

Early indications had been that the proposed Bush budget for fiscal year 2002 would be inadequate yet it was still a shock when the proposed budget came in at about $400 million less than Hanford officials had requested. Funding for DOE’s Office of River Protection (DOE-ORP) was slated to increase slightly — but not nearly as much as had been requested. The budget for DOE’s Richland Operations Office would be cut by more than $100 million — when Richland managers were hoping for a slight increase from fiscal year 2001 funding levels. Washington state officials said if the funding levels remained as proposed they would have no choice but to go to court.

“We respectfully request that you demonstrate your unequivocal support for cleaning up Hanford within the agreed to timelines by requesting and advocating the appropriate level of funding that is needed.”


“This budget sets a sensible course by clearly fulfilling commitments and establishing key priorities, but at the same time signals our intention to rethink a host of programs while we craft the Bush Administration’s policy.”


“If approved, this budget could leave the state with no choice but to engage in lengthy and expensive litigation over DOE’s missed cleanup deadlines.”

“In my judgment, a billion more dollars isn’t going to do much more because... most of the (DOE cleanup) sites don’t have a short-term game plan. They’ve got some milestones in some places but not ones that are going to bring about cleanup in a short time frame.”


“The new Energy Secretary, former Michigan Senator Spencer Abraham, refused to endorse additional funding for DOE or other sites. Despite questioning from two Northwest senators — Maria Cantwell from Washington and Larry Craig from Idaho, Abraham told a Senate Committee that DOE did not need additional funding for fiscal year 2002.

In a letter to DOE, Washington Department of Ecology officials said Hanford’s proposed fiscal year 2002 budget was unacceptable. Ecology officials said they could not accept delays in the single-shell tank waste retrieval program or delays in the construction and hot commissioning of tank waste treatment facilities. The letter also raised concerns about cutbacks in tank farm upgrades, vadose zone characterization and groundwater monitoring programs, and cleanup work along the Columbia River.

President George Bush’s nominee to head DOE’s environmental cleanup program told a Senate committee that hard decisions needed to be made and she was not satisfied with “70 year schedules and mind-boggling budgets.” Jesse Roberson, the former manager of the Rocky Flats Site in Colorado, was confirmed by the Senate in July.

Over the course of the summer and fall Congress restored funding to the budget — giving Hanford cleanup about $1.8 billion for fiscal year 2002.

Before leaving office, Energy Secretary Bill Richardson signed a Record of Decision ordering the permanent closure of the Fast Flux Test Facility (FFTF). Before that action could be implemented, Washington Congressman Doc Hastings succeeded in getting new Energy Secretary Abraham to suspend the order while DOE looked one more time at potential missions for the reactor. The review explored potential partnerships to cover the costs of operating the reactor. During that period Advanced Nuclear and Medical Systems of Richland proposed to lease the reactor for 35 years for the production of medical isotopes. Organized labor would provide the financing. DOE would be asked to pay for stand-by costs for the coming three years. DOE determined that proposal failed to specifically identify markets and failed to demonstrate adequate financing. In December, Energy Secretary Abraham ordered the permanent shutdown of FFTF.

DOE shipped 258 tons of surplus uranium billets from the 300 Area to a DOE facility in Portsmouth, Ohio. Billets were heavy 20-inch-long cylinders that held uranium. Smaller amounts of uranium pellets were also shipped to Portsmouth and some uranium shipped to Sandia National Laboratory for research. Additional uranium — nearly 150 tons — was buried in Hanford’s disposal trenches. The uranium was originally intended for use in Hanford’s plutonium production reactors. It had been stored at Hanford since the reactors were closed.

Washington’s Pollution Control Board said the Department of Ecology could enforce Tri-Party Agreement milestones as soon as they appeared to be in jeopardy — rather than having to wait until a milestone was actually missed. DOE and Ecology strongly disagreed in recent years over when Ecology could take enforcement action. After...
unsuccessful negotiations on new milestones for tank waste treatment
Ecology Director Tom Fitzsimmons imposed milestones and the en-
forcement issue in March 2000 as the Tri-Party Agreement allowed.
DOE appealed and the issue was heard by the Pollution Control
Hearings Board.

Ecology levied a $57,800 fine against DOE and Fluor Hanford
for failing to properly identify and manage a reactive chemical waste
stored at a Hanford laboratory. A container of the chemical Collodion
was detonated by the Richland bomb squad after it was discovered
at a Hanford laboratory in January. A subsequent search found ad-
ditional quantities of the chemical which were not properly labeled.

Fluor-Hanford added a second shift at the K-West basin to con-
tinue the progress of removing spent nuclear fuel from the basin to be
dried, packaged, and moved to the central part of the site for long-
term storage. Fluor also decided that once the K-West basin was empty
of fuel, corroding fuel from the K-East basin would be moved into the
K-West basin before it too was removed for drying and packaging.

“We’ve been here before,
and we’re disappointed
to keep seeing the same
problems.”
– Bob Wilson, Ecology inspector, on prob-
lems with properly labeling chemicals.
(Department of Ecology News Release,
March 26, 2001).

A canister containing spent nuclear
fuel is moved in one of the K-Basins.
would avoid having to duplicate the elaborate fuel-loading and sorting equipment already in the K-West basin. Fluor officials hoped that process would help them meet schedules for removing fuel from both basins.

A DOE Inspector General Report said DOE was not making good use of its available low-level waste disposal facilities at Hanford and the Nevada Test Site. The audit showed that during the past two years the Nevada and Hanford disposal facilities operated at less than 50 percent of capacity, yet DOE continued to store large amounts of waste at generator sites and disposed of some low-level waste at commercial facilities.

Improperly calibrated equipment apparently resulted in some transuranic waste being buried in Hanford’s Environmental Restoration Disposal Facility. Transuranic waste was supposed to be disposed in the Waste Isolation Pilot Plant — a deep geologic repository in New Mexico. The problem went unnoticed for two years.

Hanford workers completed removal of contaminated debris and equipment from B Cell, which contained nearly three million curies of radioactivity. Because of the high radiation levels in the area, remote-control devices were used in the cleanup. B Cell was located in Hanford’s 300 area.

DOE, the U.S. Environmental Protection Agency (EPA) and Ecology signed the final Record of Decision (ROD) for the 300 Area at Hanford. The ROD outlined how DOE and its contractors would remove contaminated soil, structures, and associated debris from 47 waste sites and nine burial grounds — including the 618-10 and 618-11 burial grounds north of the 300 Area.

“How we can go for two years and not detect this analytical problem? The analytical work is sloppy at best.”

The 100th naval nuclear reactor compartment was sent from Puget Sound Naval Shipyard to Hanford for disposal.

A National Academy of Sciences Committee concluded that the “knowledge and technology to address the most difficult problems (at Hanford) do not yet exist.” The Committee had some praise for work underway or completed at Hanford, including the science and technology work of the Groundwater/Vadose Zone Integration Project. The Committee’s report said cleanup timelines were driven by government regulations rather than by scientific needs. The Committee was also sharply critical of the lack of funding dedicated to science and technology development.

Security at Hanford was increased following the terrorist attacks on the World Trade Center and Pentagon.

DOE Headquarters ordered a reduction in the number of DOE employees. That resulted in the loss of about 10 percent of federal employees at both DOE’s Richland Field Office and DOE-ORP. The Richland office’s target was 339 positions. It had 366 federal employees. DOE-ORP was supposed to cut from 130 employees to 109, even though it had been in the process of expanding its federal workforce to 150, to help manage the tank waste vitrification program.

Energy Secretary Abraham made his first visit to Hanford in November. During a brief, few hours in the Tri-Cities, he met with federal employees, toured FFTF, announced an extension of Battelle’s contract to manage Pacific Northwest National Laboratory, and briefly visited a tank farm.

Tank Waste Treatment

DOE extended CH2M Hill Hanford Group’s contract at Hanford. CH2M Hill managed Hanford’s tank farms and was responsible for ensuring waste was ready for retrieval from the tanks once vitrification facilities were operational. The five year contract extension was worth $2.2 billion.
Washington Group International — a subcontractor for Hanford’s tank waste treatment facilities — filed for Chapter 11 bankruptcy. Washington Group was the primary subcontractor for Bechtel National, which was responsible for the design, construction, and initial operation of Hanford’s tank waste vitrification facilities. DOE and Bechtel officials said the financial problems faced by Washington Group should not impact the Hanford project.

Ecology officials rejected DOE’s request to delay some Tri-Party Agreement milestones related to the construction and operation of vitrification facilities and announced its intent to levy a weekly fine against DOE if it missed a July 31 deadline to begin construction on tank waste treatment facilities. Fines would be assessed beginning August 1 and would continue until construction began or until DOE submitted an acceptable plan demonstrating how the treatment facilities would be operational beginning in 2007. Under the Tri-Party Agreement, the state could fine DOE up to $5,000 for the first week after a missed deadline and up to $10,000 for each subsequent week until the problem was fixed. DOE-ORP formally appealed Ecology’s action.

DOE-ORP meanwhile began work on a “recovery plan” to explain how it would begin operation of waste treatment facilities by 2007 even though the start of construction had been delayed by more than a year. Ecology Director Fitzsimmons said that unless Congress and the Administration provided sufficient funding to move forward with construction, any recovery plan was meaningless.

DOE-ORP Manager Harry Boston said in November that DOE was exploring alternatives to vitrifying all of Hanford’s tank waste in hopes of saving tens of billions of dollars and completing the cleanup decades ahead of schedule. Boston said the initial vitrification plant
would likely be able to treat much more waste than was originally envisioned, possibly eliminating the need for an additional, larger plant to complete the work. Boston said increasing ORP’s annual budget from about $1 billion to the $3 to $4 billion needed to construct and operate a second vitrification facility was simply not doable. Boston said many of Hanford’s tanks held very little liquid waste and perhaps could be left in place.

A November 19 memo from Energy Assistant Secretary Roberson to DOE’s budget office outlined nine priorities to reduce the time and cut the cost of cleanup, including not vitrifying 75 percent of DOE’s high-level liquid waste. The memo suggested DOE needed to develop at least two proven cost-effective solutions to vitrification.

Congress approved extending the Office of River Protection as a separate entity to 2010.

Tank Safety

Tank SY-101 was removed from the Wyden Watch List in February. Once the top safety problem in the DOE complex because of periodic releases of hydrogen gas, the tank was returned to service in September and available to take waste from other tanks. More than half a million gallons of waste was pumped out of the tank in 1999 and 2000 and water was added to dilute the remaining waste. This dissolved nearly all the gas-retaining solids in the tank.

In August, DOE removed the final 24 tanks from the Wyden Watch List — nearly eleven years after its creation. Sixty of Hanford’s 177 underground tanks were on the list at one time or another — many

“We would really like to see what the technology can do, before we say what it can’t do.”
— Suzanne Dahl, Ecology, on DOE-ORP suggestions that some of Hanford’s tank wastes might not be vitrified. (Seattle Post-Intelligencer, November 7, 2001).

“That memo is one of the most troubling things we’ve seen in a long time.”

“For nearly two decades, the federal government has promised the residents of Oregon and Washington a treatment plant that would convert the high-level waste into a more stable glass form. Twice during the Clinton Administration, the project failed to even begin. Like my constituents, I am hopeful that the new team (at DOE) will be able to live up to this promise.”

A Hanford tank farm.
“A decade ago, I responded to the dangerous threat posed by certain nuclear waste storage tanks at Hanford by passing a law to protect the people of the Northwest from possible radioactive tank explosions. Today, I’m proud to see the watch list become extinct.”


“Our employees have worked hard to improve the conditions in these tanks, not only to remove them from the watch list, but also to make them available for normal operations.”

– Fran DeLozier, President and General Manager of CH2M Hill Hanford Group, (DOE-ORP News Release, August 17, 2001).

for more than one safety-related issue. The removal of all tanks from the Watch List beat a Tri-Party Agreement milestone which required that to happen by September 30.

Around the DOE Complex

A watchdog group said DOE sites were vulnerable to terrorist attacks. The Project on Government Oversight said mock terrorist attacks on DOE facilities over the past several years had succeeded more than half the time. The eight month study was based on unclassified documents and information from more than a dozen whistleblowers. Although DOE officials said security at all DOE sites had been tightened since the September 11 terrorist attacks, a spokesman for the Project said the sites were still vulnerable. According to the report, mock terrorists, including Navy SEAL commandos, were successful in stealing plutonium and other nuclear materials from Rocky Flats in Colorado and at Los Alamos in New Mexico. The study made no specific reference to Hanford. The study recommended consolidating all nuclear materials at a few sites and creating an independent agency outside of DOE to handle security.

The Energy Employees Occupational Illness Compensation Program Act took effect, providing money to nuclear workers who may have gotten cancer or other diseases as a result of on-the-job exposure to radiation or hazardous chemicals. An office opened in Kennewick to handle claims by Hanford workers, retired workers and their survivors.

A General Accounting Office report recommended DOE look at restructuring itself and shift some missions to other agencies or farm out more responsibilities to private companies. The report said DOE had trouble handling its unrelated missions and that its managerial shortcomings resulted in cost overruns and delays.

“The challenge of this program is great, but it does not mean taking three generations to see results. I do not want to leave this for my daughter’s children to figure out. We can and we must do better.”

“We will do everything necessary to protect Washington state’s interests. We sued the Clinton administration. We will sue the Bush administration. It’s not partisan. We’ve seen too many delays.”

— Washington Governor Gary Locke, on concerns about inadequate Hanford cleanup funding. (Tri-City Herald, February 27, 2002).

The Cleanup

The Bush Administration again proposed significant cuts in the Hanford cleanup budget — about $260 million less than the fiscal year 2002 budget. But this time there was a twist. Hanford, along with other U.S. Department of Energy (DOE) sites, could apply for additional funds from an $800 million set-aside for expedited cleanup activities.

DOE Richland Manager Keith Klein and Office of River Protection (DOE-ORP) Manager Harry Boston said Hanford was well positioned to compete for funds from the $800 million dollar expedited cleanup account. They suggested a number of Hanford projects could be accelerated, including work at the Plutonium Finishing Plant, moving spent fuel from the K-Basins, and studying whether some waste tanks might be closed sooner than the current plans.

Washington Governor Gary Locke met with Energy Secretary Spencer Abraham and told him he expected DOE to meet its cleanup obligations at Hanford. Locke told Abraham he endorsed the idea of

“Without more details, I don’t know if this is scary or a good opportunity. Initially, it looks daunting…leaning toward scary.”

— Todd Martin, Hanford Advisory Board Chair, on $800 million available for expedited cleanup activities. (Tri-City Herald, February 5, 2002).

“We’re not taking money away. But we’re reinvesting money to do more work.”

— DOE Assistant Secretary Jesse Roberson. (Tri-City Herald, February 5, 2002).

“These (accelerated plans) are things we’ve already been doing. We just have to tie it up, wrap it in a ribbon and present it to the powers-that-be back there (in Washington, D.C.).”

— DOE Richland Manager Keith Klein. (Tri-City Herald, February 9, 2002).

Demolition work at Hanford.
“(DOE) and the Office of Management and Budget are promising that the days of fighting over nuclear cleanup budgets are behind us. I sincerely hope they are.”

– Washington Senator Patty Murray.

(In-Tri City Herald, March 7, 2002).

“In 13 years since signing the Tri-Party Agreement, we’ve had (three) presidents and six Secretaries of Energy. Each administration has spent time and money rethinking the Hanford cleanup. Each ultimately came to the same conclusions: there is no quick fix...Let me be clear. Washington State will not sit back and allow the Federal government to declare the Hanford cleanup a success by simply moving the goal line. That is not accelerated cleanup by our standards.”

– Statement of Washington Attorney General Christine Gregoire to the Senate Committee on Energy and Natural Resources. (July 11, 2002).

“We believe there can be smarter, more cost-effective cleanup and accelerated cleanup within terms of our agreement. What there cannot be, and what we cannot accept, is less cleanup. Less cleanup is not accelerated cleanup. It’s just less cleanup.”

– Mike Wilson, Washington Department of Ecology, to the House Energy and Commerce Committee’s oversight and investigation subcommittee.

(Tri-City Herald, July 20, 2002).

Retrieving drums of waste from a Hanford burial ground.

accelerated cleanup by providing incentives to contractors but that could not come at the expense of providing full funding for cleanup.

DOE, the State of Washington and the U.S. Environmental Protection Agency signed a Letter of Intent to accelerate cleanup at Hanford. The intent was to complete cleanup by 2025 or 2035, instead of DOE’s current estimate of 2070. DOE agreed to seek an additional $433 million in funding for Hanford for fiscal year 2003 from DOE’s proposed expedited cleanup account. DOE also pledged to fund the accelerated cleanup at Hanford through at least 2006. State and federal officials had been working on acceleration plans for more than a year.

In May, DOE released a draft cleanup plan to accelerate Hanford cleanup. The plan included earlier operation of the vitrification facilities; using some alternative technology for much of the lower activity waste from the tanks; beginning to close tanks within the next few years; and accelerated removal of spent fuel from the K-Basins.

Washington Attorney General Christine Gregoire told a Senate committee there were too many unanswered questions for her to support an accelerated cleanup schedule proposed for Hanford, in return for additional cleanup funds. Gregoire said a faster schedule was welcome but that the state would remain resolute in its insistence on a full and complete cleanup of dangerous wastes at the site.

In February, DOE announced that 40 percent of the 70 Senior Executives in the Environmental Management program were being reassigned. A total of 27 senior staff were involved, including DOE-ORP Manager Harry Boston and Richland Deputy Manager Bob Roselli. Both were assigned to Headquarters. Roy Schepens would move from...
the Savannah River Site in South Carolina to replace Boston as the DOE-ORP Manager.

Construction of the Cold Test Facility — a mock-up of a Hanford tank — was completed. The large open-top tank was the same width as one of Hanford’s million gallon tanks. The facility would be used to demonstrate tank cleanup equipment and train workers on waste retrieval and other techniques. The mock tank, located near the HAMMER training facility, would hold about 600,000 gallons of fake sludge and waste.

Allied Technology Group’s (ATG) Richland facility resumed limited operation while the company remained in bankruptcy. The company treated chemical and low-level radioactive wastes to reduce the volume and convert the waste to a safer form. DOE was counting on ATG treating large volumes of Hanford’s waste.

DOE concluded a tritium plume less than four miles from the Columbia River would not reach the river in concentrations large enough to pose harm. The tritium came from the 618-11 burial ground, adjacent to Energy Northwest’s commercial nuclear power plant at the southern edge of the Hanford Site. DOE concluded it would take 70 to 80 years for the plume to reach the river.

DOE auditors said the K-Basin project was behind schedule and Tri-Party Agreement milestones might need to be renegotiated. DOE Richland Manager Klein disagreed and said changes made in the project — including the start of 24-hour, seven day a week operation — should allow them to eventually get back on schedule.

In August, DOE removed the 100th canister of spent fuel from the K-Basins and by year’s end, DOE and its contractors had successfully removed about one third of the 2,100 tons of spent fuel in the two basins. In December, DOE began moving spent nuclear fuel from the K-East basin to the nearby K-West basin, where the fuel would be

“The purpose of these re-assignments is to better leverage the unique talents of these executives, force better integration between the field and headquarters…and to stimulate new thinking and creative solutions to our cleanup challenges.”

— DOE Assistant Secretary Jesse Roberson. (DOE News Release, February 13, 2002).

“Given that we don’t know the source of the tritium, other assumptions about the contents of the burial ground are just that — assumptions. We do not, for example, know whether we will have other releases from the burial ground, perhaps involving even higher levels of tritium or some other longer-lived radionuclides.”

— Letter from Ken Niles, Oregon Office of Energy to Dave Einan, U.S. Environmental Protection Agency, suggesting more characterization and more frequent groundwater sampling was necessary at the 618-11 burial ground. (April 9, 2002).
“This milestone marks a definite turning point in this very important project, as now most of the fuel in the K-West basin has already been removed and we can squarely focus on our next major cleanup task...safely processing and storing the K-East basin fuel.”

– Keith Thomson, President of Fluor Hanford. (The Hanford Reach, December 2, 2002).

“We used the best scientific methods available, and we did not find an increased risk of thyroid disease in study participants from exposure to Hanford's iodine 131. If there is an increased risk of thyroid disease, it is too small to observe.”


“This does not prove that Hanford radiation has no effect. It doesn’t prove it didn’t happen to me, just that it cannot be graphed.”

– Jay Mullen, who grew up in Spirit Lake, Idaho and had thyroid disease. (Tri-City Herald, June 22, 2002).

Workers at the 618-4 burial ground.

sorted, repackaged, and then moved to an underground storage vault in Hanford's central plateau.

DOE and its regulators estimated that about 40 percent of the contaminated soil around Hanford’s nine reactors had been cleaned up. About three million tons of contaminated soil and debris had been removed from Hanford’s 100 Area.

The Hanford Thyroid Disease Study concluded that Hanford downwinders were no more likely to have thyroid disease than people who lived elsewhere. The 13 year-long study, conducted by the Fred Hutchinson Cancer Research Center, looked at the thyroid health of 3,440 people, most of them children who lived downwind from Hanford during the years of its largest releases of radioactive materials to the environment. Draft results had been released in 1999.

In June, Hanford workers successfully completed the conversion of 1,126 gallons of plutonium-laced liquids at Hanford’s Plutonium Finishing Plant to a much safer powder. The powder was then baked to an even safer form.

Two environmental organizations and the Yakama Indian Nation filed a federal lawsuit against DOE in an effort to prevent them from leaving radioactive waste in underground storage tanks at Hanford and two other DOE sites. DOE was hoping to reclassify some of the waste in the tanks as “incidental to processing” — using a 1999 DOE Order to do so. The States of Washington and Oregon later filed “friend of the court” petitions to participate in the lawsuit.

Work began in January and continued through much of the year to move hundreds of barrels containing uranium chips and oil out of a burial ground just north of the 300 Area. The barrels were discovered during excavation work in 1998. The Hanford fire in 2000 came within a few hundred feet of the 618-4 burial ground, threatening 300 of the barrels which had been uncovered in 1998. The work fell behind schedule because of more severe soil contamination than
predicted. The barrels were moved to a concrete pad in the 200 Area until final disposal was determined. Only about 800 barrels turned out to be in the burial ground — far fewer than the 1,500 expected. The last of the barrels was moved from the burial ground in October.

DOE committed to shipping out the equivalent of two barrels of transuranic waste for every barrel the site took for temporary storage. In a letter to regulators and stakeholders DOE-Richland Manager Klein said this would occur within 18 months after receipt of waste from other sites. DOE wanted to ship some transuranic waste to Hanford so it could move forward with closing a few smaller sites. Klein also said Hanford would eventually refrain from burying low-level waste in unlined trenches and instead would use lined trenches with leachate collection systems. He also asked the public to accept that Hanford would have to take some waste from other sites as part of the nationwide cleanup effort.

In December, the State of Washington agreed to allow limited amounts of transuranic waste from two DOE sites to be sent to Hanford for interim storage. In return, DOE pledged to reach agreement with the state by March 1 on new Tri-Party Agreement milestones for characterizing and retrieving Hanford’s buried mixed wastes. Washington was ready to go to court before the agreement was struck.

Three trucks carrying remote-handled transuranic waste arrived at Hanford in mid-December from DOE facilities in Ohio and California.

After DOE issued a directive to no longer maintain the Fast Flux Test Facility in a condition for a possible restart, DOE and its regulators agreed to a tentative schedule to shut down the reactor. Just before liquid sodium was to be drained from the reactor, Benton County filed suit in federal court to stop the work. DOE initially agreed to stop decommissioning work for two weeks and then extended that delay until at least March 2003. The delay provided supporters of the reactor additional time to try and convince the federal government to turn the reactor over to private industry for the production of medical isotopes.

Spent fuel assemblies from the Shippingport reactor in Pennsylvania — stored in Hanford’s T Plant for more than 20 years — were moved to Hanford’s canister storage building.

Bechtel Hanford workers completed the cocooning of DR Reactor. The DR Reactor became the second Hanford reactor to complete the cocooning process.

“I ask you to consider that we are moving past old approaches to a new collaborative approach to cleanup, working in close partnership with our regulators and others. I ask that you recognize there are many sides to every issue and that rarely are people (or even agencies) acting in bad faith.”

– Hanford Manager Keith Klein. (Letter to Regulators, Tribal Nations, and Members of the Public, August 22, 2002).

“While USDOE may be able to justify temporarily bringing small amounts of waste to Hanford from other small sites, I am concerned that other USDOE sites will attempt to unload their wastes by shipping large amounts of wastes to Hanford. Hanford must not be made a dumping ground to make progress on other sites.”

– Letter from Oregon Governor John Kitzhaber to Energy Secretary Spencer Abraham. (November 12, 2002).

“This is the Department of Energy’s last chance to get on with the retrieval, processing and permanent disposal of what has been a skeleton in the Hanford closet.”

– Washington Attorney General Christine Gregoire, on an agreement to move forward with characterizing and retrieving Hanford’s buried mixed wastes. (Governor’s Office News Release, December 16, 2002).

Before and after photos show the changes at DR Reactor following successful cocooning of the former plutonium reactor.
In December, Hanford workers began pumping liquid waste from tank C-103, the last of Hanford’s single-shell tanks which had not had liquids previously pumped. The pumping beat a Tri-Party Agreement milestone by five months. Pumping was underway on 13 single-shell tanks to remove the remaining 460,000 gallons of free liquids. More than 2½ million gallons of liquids had been pumped from the single-shell tanks since 1998.

Ecology agreed to a DOE plan to accelerate closure of seven underground high-level radioactive waste storage tanks. Under the proposed revision to the Tri-Party Agreement, DOE would begin closing its first tank in 2004 — 10 years ahead of schedule. Seven tanks in all were to be closed by 2011.

DOE and CH2M Hill Hanford Group agreed to contract incentives to try and close up to 40 of Hanford’s single-shell tanks by 2006. The plan was contingent upon – among other things – DOE’s ability to certify about one million gallons of waste in the tanks as transuranic waste and ship it off to a disposal site in New Mexico. State regulators said many details still needed to be worked out – including an agreement on what “closing” a tank meant.

An exhibit on Hanford opened at Portland’s Oregon Museum of Science and Industry. Titled “Hanford at the Half Life,” the exhibit explained Hanford’s history as the world’s first site to manufacture plutonium for nuclear weapons and its current mission to clean up the enormous amounts of waste generated during more than 40 years of plutonium production. Visitors to the exhibit could measure radiation, discover how radioactive waste had seeped into the soil, undergo a radiation exposure screening, and learn about the efforts to control the contamination and protect the Columbia River.
About 150,000 gallons of high-level waste was pumped into tank SY-101 in November — the first time that waste had been transferred to that tank in many years. Wastes in SY-101 previously had generated potentially explosive hydrogen — preventing the addition of any wastes.

Hanford workers entered the cocooned C Reactor for the first time in five years. They found only a small oil drip inside the structure and made a minor repair to the roof. Otherwise, the reactor structure was just as it was left when workers sealed the reactor in 1998.

Oregon’s Hanford Waste Board issued a report which recommended additional work to help protect the Columbia River from Hanford contaminants. The 28 recommendations included actions to protect salmon in the Hanford Reach; stop further vadose zone and groundwater contamination; clean up vadose zone and groundwater contamination by 2012; address science and technology needs; and develop and implement a comprehensive groundwater monitoring program.

“There is uncertainty about what will happen if Hanford’s wastes continue to migrate towards and into the Columbia River. However, the Board believes that the Columbia River is too important a resource to the people of the Pacific Northwest and the nation to fail to act now because of that uncertainty.”

— From ‘River Without Waste: Recommendations for Protecting the Columbia River from Hanford Site Nuclear Waste’ (Oregon Hanford Cleanup Board, December 2002).

Columbia River as it flows through the Hanford Site.
Tank Waste Treatment

Bechtel National estimated that construction and operation of the Hanford tank waste vitrification facilities could occur sooner than existing schedules but at a higher cost. Bechtel estimated that construction and testing could be complete a year early, by 2010. The company estimated that vitrifying ten per cent of Hanford’s tank waste could be completed almost five years early, by 2013. Overall cost estimates rose from $3.965 billion to $4.447 billion.

Ecology agreed to stop assessing a $10,000 per week fine against DOE after signing off on DOE’s recovery plan to keep the vitrification project on schedule. The fine was levied after DOE missed a 2001 milestone to begin construction of the vitrification facilities. The fines totaled $305,000 and were waived once construction of Hanford’s high-level waste vitrification facilities began in July. Structural concrete was poured as part of the 5-foot thick, steel-reinforced foundations and basement walls for one of two waste processing buildings. The project would require 58,000 tons of steel, 160 miles of piping and 1,260 miles of electrical cable. Two cement processing plants had been installed to produce the concrete that would be needed over the next five years.

“The regulators have given us the green light, our construction force is geared up, and our subcontractors are ready.”

— Ron Naventi, Bechtel’s vitrification project manager. (Tri-City Herald, July 10, 2002).
Around the DOE Complex

DOE announced its plans to move forward with the disposal of 34 metric tons of surplus weapons-grade plutonium by turning it into mixed oxide (MOX) fuel for use in nuclear reactors. Previously, DOE endorsed a dual-track approach to dispose of the plutonium, including turning some of the material into MOX reactor fuel and immobilizing the remaining plutonium in radioactive glass logs for long-term storage. Eliminating immobilization saved nearly $2 billion. In September 2000 the United States and Russia signed an agreement committing each country to dispose of 34 metric tons of surplus plutonium. The MOX conversion process was expected to cost $3.8 billion over 20 years, including the construction of two new conversion facilities at DOE’s Savannah River Site in South Carolina.

In December, President Bush signed into law a provision that would award South Carolina up to $100 million a year if the federal government failed to remove surplus weapons-grade plutonium from the state on schedule. If the MOX program did not meet schedules or was not successfully operating, DOE must remove all the plutonium from Savannah River or pay the fines.

The federal government continued with its efforts to site a high-level waste disposal site at Yucca Mountain in Nevada. In February, Energy Secretary Abraham formally recommended to President Bush that the Yucca Mountain site be developed as the nation’s first long-term geologic repository for high-level radioactive waste.

That action set in motion a process whereby President Bush notified Congress that he considered Yucca Mountain qualified for a construction permit application; a veto by Nevada Governor Kenny Guinn; a 306-117 vote in the U.S. House of Representatives to override “I have considered whether sound science supports the determination that the Yucca Mountain site is scientifically and technically suitable for the development of a repository. I am convinced that it does.”


“Nevada’s state slogan is ‘Battle Born.’ We came into this union fighting for our preservation, and we will continue to show the country we are united in our fight against Yucca Mountain.”

– Nevada Governor Kenny Guinn. (Las Vegas Sun, April 8, 2002).

“I look at their record (in court). And the scoreboard says state of Nevada: zero.”

– Idaho Senator Larry Craig – who voted in favor of Yucca Mountain – about Nevada’s chances to prevail in court. (Las Vegas Sun, July 10, 2002).

“Our best chance in defeating Yucca Mountain is in the federal courts, where impartial judges will hear the factual and scientific arguments as to why Yucca Mountain is not a safe place to store this nation’s high-level nuclear waste.”

Nevada’s veto; a 60-39 vote in the U.S. Senate to override Nevada’s veto; and formal approval by President Bush as the site of the nation’s high-level nuclear waste repository. Nevada vowed to continue to pursue five lawsuits pending in federal court.

The U.S. Health and Human Services Department said at least 15,000 cancer deaths in the United States were probably caused by radioactive fallout from Cold War nuclear weapons tests. The new study also suggested 20,000 non-fatal cancers among U.S. residents could also be linked to fallout from above-ground tests.

DOE Headquarters released a ‘Top-to-Bottom’ review of its Environmental Management program. The report identified a number of weaknesses in the program and recommended improving DOE’s contract management; moving the cleanup program to an accelerated, risk-based cleanup strategy; and aligning DOE’s internal processes and its scope to support those changes.

A General Accounting Office (GAO) report said despite massive changes in DOE’s contracting, it did not appear that its contractors were accomplishing nuclear waste cleanup any better than under the old contracts. DOE had moved from mostly cost-reimbursement contracts to performance based contracts. However, the GAO found that DOE’s focus was on changing its contract process, rather than improving cleanup results.

“There do have concerns about the wisdom of trying to run the Environmental Management cleanup program like a business. We agree that DOE must be efficient in its spending. But, a commercial model is not appropriate for an environmental cleanup. The primary motivation for a commercial enterprise is profit... The primary motivation for cleaning up toxic and radioactive waste should be worker, public and environmental safety and a vision of restoring and healing a damaged land.”

— Letter from Oregon Office of Energy Acting Director Michael Grainey to Energy Assistant Secretary Jesse Roberson on DOE’s Top-to-Bottom Plan. (February 28, 2002).
2003

“You can’t just call a monkey a turkey and say it doesn’t need to be in a cage. They can’t do cleanup on the cheap — they’ve got to deal with the high-level waste.”


The Cleanup

The State of Washington filed suit in March in federal court to stop the U.S. Department of Energy (DOE) from shipping additional transuranic waste to Hanford. DOE and Washington had been unable to reach agreement on enforceable milestones for the retrieval of buried transuranic waste at Hanford. DOE agreed to halt further shipments until oral arguments were heard in mid-April. Four activist groups also sued DOE in an attempt to halt the shipments. Heart of America Northwest, Columbia Riverkeeper, the Sierra Club and the Washington Physicians for Social Responsibility said the Bush Administration had failed to consider the potential for a terrorist attack on transuranic waste being shipped by truck on public highways.

The dispute soon grew well beyond the issue of small amounts of transuranic waste coming to Hanford.

Washington Ecology Director Tom Fitzsimmons issued a Director’s Determination which required DOE to submit a detailed plan and schedule by August 31 for developing storage and treatment facilities

“We received assurances that the federal government would prepare to ship approximately 78,000 barrels of radioactive waste out of Hanford, if we let another 170 barrels in. But the Department of Energy has not lived up to its end of the bargain.”


“The issue isn’t whether we’re going to get the work done. It’s whether we need the state to force us to do the work. We have demonstrated we know what our obligations are and we’re committed to carrying them out.”

– Energy Assistant Secretary Jesse Roberson. (Seattle Post Intelligencer, March 5, 2003).

A truck carrying transuranic waste from a DOE facility in California is inspected near Ashland, Oregon, before proceeding to Hanford.
needed to handle buried solid wastes and gave DOE until mid-2012 to actually have those facilities in operation.

DOE responded by filing suit against the State of Washington. In May, Federal District Court Judge Alan McDonald granted a temporary injunction, prohibiting shipments of transuranic waste to Hanford until litigation over the waste was resolved.

Ecology issued an Administrative Order against DOE for violating the state’s hazardous waste laws for failing to manage radioactive hazardous wastes buried in unlined trenches at Hanford. The state sued the Order independently of the Tri-Party Agreement, contending the waste posed an “imminent and substantial endangerment to public health and the environment.” The Order required DOE to retrieve the wastes by certain deadlines.

In May, DOE ordered its contractors to halt some cleanup work at Hanford, saying Ecology’s Administrative Order left them no alternative. The Order said DOE should stop activities that would add to the backlog of untreated mixed waste. DOE said this impacted cleanup work at the Plutonium Finishing Plant, work in the tank farms, and removal of sludge from the K-Basins.

Ecology temporarily suspended that part of its Administrative Order which DOE interpreted as forcing a shutdown of some cleanup work and DOE ordered all cleanup work at Hanford to resume.

In June, a coalition of citizens groups announced the filing of a ballot measure in Washington state for the November 2004 election that would ban new imports of hazardous and radioactive wastes to Hanford. The initiative would also ban the use of unlined soil trenches for waste disposal and required cleanup of contaminated groundwater.

“Recent actions by the state of Washington could have a chilling effect on cleanup operations at Hanford and elsewhere.”
– Energy Assistant Secretary Jesse Roberson. (Tri-City Herald, April 10, 2003).

“The only chilling effect on Hanford’s cleanup was (DOE’s) decision to walk away from a negotiated settlement to dispose of (84,000) barrels of transuranic wastes at Hanford.”

“The unraveling of the relationship between the state and the Department of Energy is bad for this community... The trust necessary to hammer out cleanup particulars will be lost, and the estrangement will invite the rise of fringe groups to bog down the discussion.”

“We have tried exhaustively to establish a cooperative relationship with the Department of Energy to improve the pace of cleanup at Hanford, but we have been thwarted by shifting policies and broken promises.”

“This is completely ludicrous — to think that what we’re calling for is for cleanup activities to stop. This is one sentence in a many-page Order they’re quibbling about.”
In October, DOE and Ecology reached agreement on a schedule for retrieving, storing and processing certain buried waste at Hanford. Questions about who had jurisdiction of the waste prior to its characterization would continue through the legal process. Under the agreement DOE would begin retrieving suspect contact-handled transuranic waste by November 15 and complete retrieval of this waste by 2010. The waste was buried between 1970 and 1988 — mostly in barrels — and was intended to be dug up at some point. Retrieval of remote-handled transuranic waste would begin by 2011 and DOE would have the capability to treat such waste by 2012. The agreement also specified annual volume requirements to assure that adequate progress was being made on retrieval, characterization and treatment of the waste.

Within a week, Fluor-Hanford began digging up barrels of suspect transuranic waste from Hanford’s low-level burial grounds, easily beating the deadline.

There was considerable progress with the plutonium stabilization program at the Plutonium Finishing Plant (PFP). Hanford workers completed stabilization of several hundred plutonium polycubes. The polycubes were impregnated with pure plutonium oxide and presented many technical challenges that needed to be resolved before they...

“Long-term insidious dangers to public health exist at Hanford due to the massive amounts of uncontrolled radioactive and chemically-hazardous wastes there. Importation of additional wastes before Hanford is safely and legally cleaned up defies logic.”

“Fourteen years after the Tri-Party Agreement was first signed, we finally have clean-up milestones for the largest remaining block of waste at Hanford. This is a tremendous win for Hanford and the people of Washington.”

“This agreement signals a return to a more cooperative and collaborative approach to the challenges presented by the cleanup of this complex site.”
– Hanford Manager Keith Klein, on the agreement to a new schedule for dealing with certain buried waste at Hanford. (DOE News Release, October 24, 2003).

“We’re acting now before these drums can further degrade, become harder to retrieve, and affect the environment.”
– Hanford Manager Keith Klein, on the retrieval of barrels of suspect transuranic waste. (DOE News Release, October 27, 2003).

could be stabilized to allow long-term storage. Workers at PFP also completed the processing of plutonium-laced residues. That left just the conversion of plutonium-laced solids into safer forms to complete the stabilization of Hanford’s stored plutonium.

There was progress as well with the removal of spent nuclear fuel from the K-Basins. By January, Hanford workers completed the removal of 1,055 tons of spent fuel — the equivalent of emptying one of the two basins. By March, the 200th canister of spent nuclear fuel was sent from the K-Basins to the Canister Storage Building. However, similar progress was not made in the removal of sludge from the K-Basins. In April, the U.S. Environmental Protection Agency (EPA) levied a $76,000 fine against DOE for failing to begin the removal of nearly 50 cubic meters of sludge from Hanford’s K-East basin. Under the Tri-Party Agreement, that work was to have begun by December 31, 2002.

DOE submitted a more than two billion dollar request for Hanford’s fiscal year 2004 funding. The amount represented an increase of between $37 and $63 million, depending on the accounting process. It allowed an increase in funding for cleanup along the Columbia River, maintained funding for construction of the vitrification plant facilities, and allowed for completion, or near-completion of the spent fuel and plutonium stabilization projects.

The Ninth U.S. Circuit Court of Appeals refused to stop decommissioning of the Fast Flux Test Facility (FFTF). Benton County had sought an injunction to prevent DOE from draining the sodium from the reactor or doing other, irreversible work on the reactor. Soon after, workers began draining hot liquid sodium from a secondary cooling loop of the FFTF, effectively beginning the permanent shutdown of the reactor. In May, the Tri-Parties agreed to new milestones for decommissioning the FFTF.

“This is what we wanted to see. Clearly, we’ll have to dig into it to see if there are any bugaboos.”

— Sheryl Hutchison, Department of Ecology spokeswoman, on DOE’s budget request. (Tri-City Herald, February 4, 2003).

“I don’t know if they knew they were sentencing (the Fast Flux Test Facility) to death. The scenario before us tonight is lose-lose.”

— Benton County Commissioner Claude Oliver. (Tri-City Herald, April 4, 2003).

Sludge stirred up in one of the K-Basins.
DOE awarded a $1.05 billion contract for work on the Columbia River Corridor to the Washington Closure Company, headquartered in Boise. The contract included cocooning of three reactors, cleaning up 269 waste sites and 46 burial grounds, and demolishing surplus buildings. The contract included an option for additional work. The contract award was protested by Bechtel, which had been doing the river corridor cleanup work for the past nine years.

The Yakama Nation announced its intent to sue the federal government for its failure to protect the Columbia River from Hanford contaminants. The tribe contended that damages to the natural resources — particularly salmon — had occurred because of chemicals and radioactive materials released into the Columbia River.

A draft Environmental Impact Statement for cleanup of the West Valley Demonstration Project in New York proposed — among other options — to send its high-level and transuranic waste to Hanford for indefinite storage.

The states of Washington and Oregon, the Yakama Nation, the Nez Perce Tribe, the Confederated Tribes of the Umatilla Indian Reservation, the Hanford Advisory Board, the Oregon Hanford Cleanup Board, and others concluded that the latest version of the draft Hanford Solid Waste Environmental Impact Statement was still deficient.

A July range fire burned about 2,000 acres on the edge of Rattlesnake Mountain, including about 300 acres of the Arid Lands Ecology Reserve.

“We have to do whatever is necessary to see that our river is fully healed and the salmon runs restored.”

The Government Accountability Project (GAP) said Hanford’s tank farm workers were repeatedly being exposed to hazardous chemical fumes. A GAP report said workers’ protective breathing equipment and equipment to monitor vapor releases was inadequate to protect workers from chemicals leaking from Hanford’s waste storage tanks. GAP said from January 2002 to August 2003, 67 tank farm workers required medical attention for problems including headaches, skin irritation and breathing difficulties, a sharp increase from 15 years ago. DOE and CH2M Hill officials declined to comment on the specifics of the report but said reported incidents had increased because of more stringent reporting requirements.

Successful retrieval of waste from tank C-106 was proceeding. The bottom of the tank was seen during modified sluicing operations. The addition of oxalic acid appeared successful in breaking up the solids in the tank. This tank was the first to reach a possible interim closure state.

“Hanford tank workers are like canaries in a coal mine.”

– Tom Carpenter, Government Accountability Project attorney. (Tri-City Herald, September 16, 2003.)
Hanford workers began to tear down the 233-S facility, the site’s first large plutonium-contaminated structure to be dismantled. The 3,500 square foot, three story facility was expected to be demolished in about four months. It was the first large plutonium-contaminated facility that would be demolished at a DOE site without being covered by a tent.

The cocooning of F Reactor was completed ten months ahead of schedule. It was the third Hanford reactor to be sealed up. Bechtel finished cocooning C Reactor in 1998 and DR Reactor in 2002. F Reactor was the third Hanford reactor to produce plutonium, starting up in February 1945 and shutting down in June 1965.

Following the discovery of elevated chromium levels in groundwater in the 100-D area, Ecology asked DOE to cut and cap water lines that were potentially leaking, extend a chemical barrier, and take additional samples to find the source of the contamination.

**Tank Waste Treatment**

DOE announced in January that construction of Hanford’s high-level waste vitrification facilities would be delayed by up to 10 months because of poor engineering. As a result, DOE withheld $3 million in payments to Bechtel National, the lead design and construction contractor. Bechtel officials said they had been working on corrective measures since the problems were discovered in September. DOE said the planned 2007 hot-start of the facilities might need to be delayed.

DOE officials said hundreds of millions of dollars could be saved if the pre-treatment process for Hanford’s tank wastes did not include

“Without Tc-99 removal, and only two low-activity melters, finding an acceptable, low-cost supplemental technology that is capable of meeting the required standards is nearly impossible...Further, Ecology has grave concerns with what appears to be a trend to minimize the capabilities of the (waste treatment facilities) as it relates to pre-treatment and low-activity waste vitrification throughput.”

removing technetium 99. That would result in much of the technetium being buried at Hanford. Ecology officials and others voiced strong concerns about the proposal.

DOE adopted a new schedule in May for the start up of the vitrification plant. By July, they had reached agreement with the State of Washington on basically the same schedule.

The operational date of 2011 remained the same. Under the proposed new schedule, construction would mostly end by 2008. Operational testing with surrogate waste would begin by February 2009 and “hot” testing would begin in 2010. DOE also had a January 2005 deadline to report to the state on proposed technologies to supplement vitrification.

The Waste Treatment Plant Project’s first structural steel was placed in the low-activity waste treatment facility in July, beating a Tri-Party Agreement milestone by three months.

A General Accounting Office report said DOE faced significant legal and technical challenges to successfully reduce the costs and time required for cleanup of its high-level wastes, including the 53 million gallons of waste stored in Hanford’s underground tanks. A key legal
challenge cited involved DOE’s authority to decide that some waste with relatively low concentrations of radioactivity could be disposed on site. A key technical challenge cited was that DOE’s approach relied on laboratory testing to confirm separation of the waste into high-level and low-activity portions.

In July, Federal Judge Lynn Winmill overturned a DOE Order that would have allowed DOE to reclassify high-level radioactive waste and leave it at Hanford and two other DOE sites. Judge Winmill ruled that DOE Order 435.1 directly conflicted with provisions of the 1982 Nuclear Waste Policy Act.

In response, Energy Secretary Spencer Abraham wrote to House Speaker Dennis Hastert and said the federal court decision could cause decades of delay in cleanup and substantially increase costs. He asked Congress to re-open the Nuclear Waste Policy Act to clarify that DOE had the authority to define high-level waste.

The Attorneys General from Oregon, Washington, Idaho and South Carolina responded with a letter to Congress, which opposed DOE’s attempts to reclassify high-level radioactive waste.

The U.S. House of Representatives went on record in October as being opposed to the effort by DOE to reclassify high-level radioactive waste at Hanford and two other DOE sites. By unanimous voice vote the House approved a motion instructing House conferees negotiating energy legislation with the Senate not to amend the Nuclear Waste Policy Act to give DOE the authority it was seeking to reclassify high-level waste.

The State of New Mexico opposed DOE’s plans to send some tank waste DOE said was transuranic to the Waste Isolation Pilot Plant (WIPP). Hanford officials said about one million gallons of waste in eight tanks was transuranic waste, even though it had been managed for many years as high-level waste. New Mexico Governor Bill Richardson ordered his state environment department to change WIPP’s New Mexico permit to specifically forbid it from accepting any reclassified high-level wastes.

DOE announced a decision to pursue development of just one supplemental technology for use in immobilizing low-activity waste from Hanford’s tanks. DOE said bulk vitrification showed the most promise among three technologies being evaluated.

Around the DOE Complex

DOE spent much of the year refining its draft “Risk-Based End States” policy, which tied cleanup levels to future land use by considering the associated risks to human health and the environment consistent with that use. State regulators from throughout the nation generally objected and said the current compliance agreements were already based on reducing risk.

“DOE does not have discretion to dispose of defense (high-level waste) somewhere other than a repository established under (the Nuclear Waste Policy Act).”

– From the decision by Federal Judge Lynn Winmill. (July 3, 2003).

“In our view, amendment of federal law is wholly unnecessary to remedy the defects the court identified in the Department’s internal policies. Moreover, enactment of the proposed legislation would merely serve to do what the states objected to in the first instance by giving the Department unbounded discretion to reclassify high-level radioactive waste.”

For the first time in 14 years, the United States regained the ability to make nuclear weapons pits. Scientists at Los Alamos National Laboratory built a plutonium pit for a W-88 warhead for a Trident nuclear missile. Plutonium pits were previously made at Rocky Flats in Colorado, which was shut down in 1989 after the FBI and EPA raided the plant because of violations of environmental laws. Los Alamos began limited production of pits and other components for the existing stockpile of nuclear weapons.

“As it stands, the past 2 ½ years have left plenty of room for doubt about your administration’s intentions for cleaning up the nation’s worst nuclear mess that sits in our back yard...Our congressman, Doc Hastings of Pasco, tells us we should applaud your administration’s strategy to speed up cleanup. We do, in theory...But it’s the reality that concerns us. If doing cleanup faster means cutting corners, that will betray this community. While your Department of Energy seems at times to say all the right things, its actions don’t always back up those words.”

— Tri-City Herald Editorial, following a visit by President George Bush to the Tri-Cities. (August 22, 2003).
“The Department has worked hard to ensure that only the waste most suited for disposal at Hanford will be sent there. We have set strict limits for the amount of waste Hanford can accept, and we will ensure that disposal activities are protective of the environment and meet regulatory requirements.”

– Energy Assistant Secretary Jesse Roberson after the U.S. Department of Energy issued a Record of Decision that designated Hanford to dispose of 82,000 cubic meters of waste from other DOE sites. (DOE News Release, June 23, 2004).

The Cleanup

Congress and the courts played significant roles in several major issues which dominated much of the focus during the year. As a result, several major cleanup accomplishments were somewhat overshadowed: the last of the spent fuel was removed from the K-Basins; plutonium stabilization was completed; and pumping liquid waste from the single-shell tanks was also completed. As the year ended, the significance of a slowdown at the vitrification plant construction project because of the need to reassess seismic standards was not immediately evident.

The U.S. Department of Energy (DOE) released the final Hanford Solid Waste Environmental Impact Statement (SW EIS) in February. The document ratified a previous DOE decision to send low-level and mixed low-level radioactive waste from throughout the DOE complex to Hanford for disposal. Hanford proposed to build a large, lined trench to handle much of this waste.

The State of Oregon expressed concern over DOE plans in the final SW EIS to “irreversibly and irretrievably” commit groundwater underneath much of the Hanford Site, even though DOE’s analysis said there should be little to no impacts on groundwater from proposed new waste disposal activities. The U.S. Environmental Protection Agency (EPA) joined in challenging that commitment of groundwater.

Washington Department of Ecology Director Linda Hoffman, in a letter to Energy Assistant Secretary Jesse Roberson, questioned whether it was appropriate to ship more waste to Hanford when large portions of the site did not comply with federal hazardous waste requirements. In comments tied mostly to the Hanford final SW EIS, Hoffman agreed that Hanford might have an appropriate role in disposing of the nation’s Cold War waste, but stated most Washington

“DOE’s analysis indicates that the groundwater resource beneath the proposed facility remains free from impact and therefore may be appropriated for future beneficial uses. Selecting the preferred alternative gives no relief from responsibility for cleaning up already-existing groundwater contamination.”

– Letter from Oregon Department of Energy Director Michael Grainey to Hanford Manager Keith Klein. (February 27, 2004).

“…we have continuing concerns that Hanford could become a national dumping ground for large volumes of radioactive and hazardous wastes, offsetting the progress on cleanup.”

– Letter from Ecology Director Linda Hoffman to Energy Assistant Secretary Jesse Roberson. (March 9, 2004).
“We want to do our part in helping solve the national problem of nuclear waste disposal, but not if it means compounding the already massive contamination at Hanford. Washington should not bear a disproportionate burden for nuclear waste disposal.”


“The Department of Energy’s commitment to cleaning up Hanford seems to change with the seasons. Under this latest EIS, they want to walk away from the contamination in the groundwater, and there’s nothing to keep them from tripling the amount of waste shipments they want to bring to Hanford.”


“This recent action will further delay and frighten the public and prolong the nation’s efforts to responsibly manage these (nuclear) materials. It puts Americans on notice that Washington state is not a very good contributor to the common good, when we have the facilities — paid for by the same taxpayers — to do so.”

– Mike Fox, Washington Section of the American Nuclear Society, on litigation filed by the State of Washington. (Tri-City Herald, July 17, 2004).

DOE agreed to stop using unlined burial trenches. Shown here is a 300 Area burial ground in 1955. Residents opposed accepting newly generated waste from ongoing nuclear weapons and research operations. She requested an opportunity for “thoughtful conversation” about how to proceed.

DOE released its Record of Decision (ROD) on the Hanford SW EIS in June. DOE agreed to limit the amount of low-level and mixed low-level waste it would bring to Hanford from other sites to 82,000 cubic meters. That was one-sixth the high-end amount analyzed in the SW EIS. A second ROD confirmed DOE’s intent to ship about 100 drums of transuranic waste from Battelle Columbus in Ohio to Hanford for storage. The Battelle waste could not come immediately to Hanford because of a federal court injunction. Also included in the ROD was a commitment to immediately end the use of unlined disposal trenches. DOE also clarified its intent related to the declaration of groundwater as irreversibly and irretrievably committed.

In July, Washington announced its intent to expand existing litigation in an effort to stop further shipments of waste to Hanford. The original lawsuit, filed in 2003, sought to prevent transuranic waste from coming to Hanford. The expanded litigation included low-level and mixed low-level radioactive waste. Washington contended DOE had not conducted an adequate environmental analysis of the impacts of disposing of waste at Hanford. The state sought an injunction halting further waste shipments to Hanford until DOE adequately addressed the environmental effects of shipping and storing more radioactive waste at Hanford.

DOE agreed to temporarily stop most waste shipments to Hanford until a legal ruling was made. Some shipments — such as Navy submarine reactor compartments and laboratory waste — were not affected by the agreement.

Supporters of an initiative to ban off-site radioactive waste from coming to Hanford submitted 282,000 signatures to the Washington Secretary of State’s Office in January. The Secretary of State certified they had the necessary 197,734 valid signatures to take the initiative to the Legislature. Initiative 297 also banned the use of unlined soil trenches for waste disposal and required clean-up of contaminated groundwater.
Some Tri-City area-legislators and others were concerned the initiative could end up harming clean-up efforts. Senator Pat Hale of Kennewick asked the Attorney General’s office to rule on several questions pertaining to whether Initiative 297 conflicted with the U.S. Constitution, federal laws, and the Tri-Party Agreement.

Once the initiative was certified, the Washington Legislature had to enact the initiative or send it to the voters on the November ballot. The Legislature also had the option of proposing its own measure – both versions would then go to the voters. Eventually, the Legislature decided to put the initiative on the ballot.

Washington Congressman Doc Hastings said efforts to keep waste out of Hanford through Initiative 297 could result in much more waste staying at Hanford. Hastings — who normally did not comment on initiatives — said other states could follow Washington’s lead and prevent waste from entering their states — ending plans to dispose of some of Hanford’s most radioactive waste off-site.

In November, with 69 percent of the voters in favor, Washington voters approved Initiative 297.

Before the initiative could take effect, the federal government requested a temporary restraining order to block it from becoming law. The federal government contended the initiative violated federal laws governing nuclear waste and interstate commerce.

Federal District Judge Alan McDonald granted a temporary restraining order. Washington state agreed to allow the injunction to carry into 2005 while issues of the initiative’s constitutionality were resolved in court.

The Bush administration proposed a $2.07 billion budget for Hanford cleanup in fiscal year 2005. The budget was a $48 million increase over the budget estimate for fiscal year 2004. However, $64 million of that money could be used only on tank waste work when

“The only hope is to try to fight the initiative head on. Who has the resources to put up that kind of education program? I don’t know. The burden falls on the Tri-Cities.”


“The fundamental failure of I-297 is that while it tries to keep waste from coming into Washington state, it gambles all of Hanford’s massive volumes of nuclear waste that other states won’t do the same thing...It is deeply flawed and should be defeated.”


“We had hoped that the Department of Energy would try to work with the state instead of wasting money and effort fighting in court.”


“The court finds the public interest favors the issuance of a temporary restraining order because of the need to continue current onsite clean-up activities at Hanford, unimpeded by an initiative, the scope and breadth of which is not fully ascertained at this juncture.”

– From the Order Granting Motion for a Temporary Restraining Order. (December 2, 2004).
legal issues concerning DOE’s ability to reclassify high-level waste were resolved to DOE’s satisfaction.

In March, Washington, Oregon, Idaho and three other states filed a friend-of-the-court brief which asked an appellate court to uphold a federal judge’s ruling that DOE’s internal processes for reclassifying high-level radioactive waste violated the Nuclear Waste Policy Act (NWPA). DOE had appealed the earlier ruling and said it would cause delays in cleaning up tank wastes at Hanford, Savannah River and the Idaho National Engineering and Environmental Laboratory.

The Senate Armed Services Committee added a rider to the $422 billion fiscal year 2005 Department of Defense authorization bill that allowed DOE to reclassify high-level waste at South Carolina’s Savannah River Site and leave it on-site. The language was added at the request of DOE, which had been seeking a legislative fix after a 2003 federal court ruling went against the agency. DOE had been aiming to get the waste reclassification authority for all of its sites including Hanford, but opposition by Washington’s Senators and Governor resulted in the rider focusing only on Savannah River. Washington Senator Maria Cantwell proposed an amendment to strip the language from the bill but it failed on a 48-48 vote after more than three hours of intense debate.

Former President Jimmy Carter weighed in on the issue and urged Congress to reject the plan to allow high-level waste to be left at the Savannah River Site.

Energy Assistant Secretary Roberson told a Senate hearing that DOE was not pursuing the authority to reclassify waste with the intent to leave large amounts of waste behind. She said DOE was committed to removing 99 percent of the nuclear waste in underground
tanks at Hanford and other DOE sites, and that anything less was “off the table.” Under questioning by members of the Senate Energy and Natural Resources Committee, including Oregon Senator Ron Wyden and Washington Senator Cantwell, Roberson said DOE would not go forward with draft plans to leave as much as 10 percent of the waste in the tanks.

In October, Congress approved language in the defense authorization bill to allow DOE to reclassify high-level waste both at the Savannah River Site and at the Idaho National Engineering and Environmental Laboratory. The provision did not cover the 53 million gallons of waste stored in tanks at Hanford.

In November, a federal appellate court reversed a federal district court ruling that a DOE Order to reclassify high-level radioactive waste violated the NWPA. A three judge panel of the Ninth U.S. Circuit Court of Appeals did not rule on the merits of the case but said it was too early to presume DOE would take actions in conflict with the NWPA. The court sent the case back to the lower court with directions to dismiss.

Worker safety issues — especially related to vapors from Hanford’s underground waste storage tanks — were the focus of considerable attention. A September 2003 report issued by the Government Accountability Project (GAP) prompted an investigation by Washington Attorney General Christine Gregoire and other state agency representatives. Officials for CH2M Hill, which maintained the tank farms for DOE, said they had taken a number of steps to reduce the hazards since the GAP report was released.

“99 percent is what we’re living by... I don’t see any chance that we’re going to go to (retrieving only) 90 percent.”

— Energy Assistant Secretary Jesse Roberson, on how much waste DOE intends to try and retrieve from each of Hanford’s waste storage tanks. (Associated Press, June 17, 2004).

“We are pleased that the conferees have adopted language that will allow the Department of Energy to move forward with safe and sensible environmental cleanup of nuclear waste storage tanks in South Carolina and Idaho.”


“This back-room legislative fix would leave a legacy of radioactive contamination that could endanger drinking water for millions of Americans.”


“There might be some danger in waiting, but that is not a greater hardship for (the plaintiffs in the case) and the rest of our society than the one already imposed by our high-level waste Frankenstein.”

— From the ruling of a three judge panel of the Ninth U.S. Circuit Court of Appeals. (Associated Press, November 6, 2004).
In late March, most work at Hanford’s tank farms was halted after a number of workers reported exposures to vapors from the tanks.

Only essential workers were allowed in the tank farms and they were required to wear self-contained air tanks. CH2M Hill had previously banned the use of the devices as not necessary. There was also concern that the restricted visibility would cause workers to trip and fall. CH2M Hill expanded its monitoring of tank vapors. Air monitors were also installed at the vitrification plant construction site, about a quarter mile from the nearest tank farm, although no problems had been reported at that specific farm.

A preliminary investigation by the State of Washington concluded that because much was still not known about the vapors, existing monitoring done for worker protection might not be adequate. The investigation, conducted by several state agencies, also identified isolated problems with worker compensation claims.

DOE’s Inspector General said Hanford contractors were underreporting the number of injuries and illnesses. Records maintained by Hanford’s three largest contractors had large discrepancies when compared with the information provided to DOE. The Inspector General said that created a false image of safety and possibly masked threats to workers. Problems were also found at other DOE sites.

A report by the federal Office of Independent Oversight and Assessment found that not enough was known about the chemicals
in Hanford’s underground tanks to conclude that tank farm workers had not been exposed to harmful vapors.

In October, 52 different chemicals were identified as posing potential risks to Hanford tank farm workers. CH2M Hill officials said safety measures required in the tank farms, including the use of air respirators, were sufficient to protect workers. The 52 chemicals were among more than 1,800 that either had been detected in vapors from the tanks or were suspected of being generated by the waste. Various chemicals were vented through filters into the air above the tanks.

Worker safety was emphasized at the waste treatment plant construction site when Bechtel National stopped work in June on both day and night shifts to emphasize its goal of zero accidents. The day was used to gather information from workers to improve the project’s safety performance, which was well below the industry averages. The stop-work followed a series of near-miss accidents, including a 100-pound piece of steel falling 40 to 45 feet and landing about eight feet from a worker.

A Government Accountability Office (新 name for the GAO as of July 2004), report said delays would likely continue in DOE’s program to compensate workers who were harmed by exposures to chemical hazards at Hanford and other DOE sites. Since the program began accepting applications in July 2001 only one worker had been paid compensation. The GAO found some improvements in the program but predicted many workers would still have to wait years to receive compensation. DOE said it needed an additional $33 million in 2004 and $43 million in 2005 to speed processing of the severe backlog of these cases.

Workers at the Plutonium Finishing Plant (PFP) successfully completed the stabilization of all plutonium at the facility. About 2,250 triple-packed, stainless steel containers of plutonium would remain in PFP’s vaults indefinitely. DOE hoped to eventually ship the plutonium to the Savannah River Site. Work began to transition to clean up and tear down the 61 buildings that made up the PFP complex.

DOE said waste retrieval efforts on tank C-106 were virtually complete. The tank was being used to demonstrate retrieval and closure. Less than an inch of granular solids remained in the bottom of the tank. Workers used a mild acid six times to dissolve sludge and sluiced the tank four times, aiming water nozzles at piles of sludge at the bottom of the tank.

Workers also completed the pumping of liquids from Hanford’s single-shell tanks, meeting a federal court deadline to have all pumpable liquids removed from the tanks by September 30, 2004.

A new DOE Office of Science became the third DOE operation at Hanford. The Office of Science was in charge of Pacific Northwest National Laboratory and shared responsibility for the HAMMER training complex. Paul Kruger was selected as the manager.
“(The K-East) basin has leaked twice before. Moving the approximately two million pounds of fuel is the first step in emptying the basin altogether so that it no longer presents a risk to the environment.”

— Keith Klein, DOE Richland Manager. (DOE News Release, July 1, 2004).

“Getting the fuel out of K-East was difficult work. Most of the fuel was badly corroded, and some of the fuel was literally falling apart as we retrieved it.”

— Ron Gallagher, President and CEO of Fluor Hanford. (DOE News Release, July 1, 2004).

“This is in some respects a monumental achievement that we’re talking about. This material, in the condition it was in, was available potentially to leak into the groundwater, into the soil under the basins.”

— Nick Ceto, U.S. Environmental Protection Agency Hanford Project Manager, on getting all spent fuel out of the K-Basins. (The Oregonian, October 24, 2004).

“I believe EPA has been extremely patient...however, continued delay of remediation of the K-Basins is unacceptable to EPA...We believe DOE’s proposed actions to delay completion of sludge removal from the K-Basins by nearly two years...demands that we set a firm deadline...”

— Letter from the U.S. Environmental Protection Agency’s Michael Gearheard to DOE Richland Manager Keith Klein. (March 22, 2004).

The Hanford Advisory Board celebrated its tenth year of existence. The Board had issued 155 pieces of consensus advice to DOE, Ecology and EPA on policy issues related to Hanford cleanup.

The removal of spent nuclear fuel from the K-Basins was completed — eliminating a significant risk to workers and the public. The K-East basin was emptied by the first of July. The last canister of spent fuel was removed from the K-West basin in late October, completing the movement of 105,000 nuclear fuel rods to long-term storage at the Canister Storage Building in Hanford’s 200 Area. Workers still needed to remove and treat about 50 cubic meters of radioactive sludge, drain the pools of water, and eventually remove the basins.

Progress on the sludge in the K-Basins was more difficult.

The Defense Nuclear Facilities Safety Board (DNFSB) said a DOE plan to begin removal of the sludge was not adequate. DOE contractors had planned to begin removal of the least contaminated sludge but the DNFSB said plans were still lacking for removal of the remaining sludge — which was much more contaminated. The start of the project was already 14 months behind schedule. DNFSB asked for a revised plan that included the disposition path for each sludge type and for any irradiated fuel or fuel fragments found in the sludge. DNFSB also wanted revised milestones for the completion of sludge removal from both basins.

After EPA warned that DOE would face additional fines up to $500,000 if it did not have an acceptable plan by May 1 to remove contaminated sludge from the K-Basins, EPA and DOE reached tentative agreement in April on a new schedule. Under the new plan, the sludge would be containerized beginning by October 2004. Complete removal of the K-Basins and their contents was required by March 31, 2009.

In June, work began to remove sludge from the K-East basin.

Sludge stirred up in one of the K-Basins.
In a letter to Flour Hanford, DOE-Richland Manager Keith Klein expressed concerns about the safety environment at the K-Basins, after a hoist rolled off the end of an overhead track system and crashed onto the steel grating above the spent fuel pool. Although no one was injured in the incident, Klein said the incident was just one of many issues that caused concern. Other events of concern during the past year included delayed notification to DOE, inadequate engineering processes, physical altercations between workers and misplaced equipment.

Fluor Hanford paid a $935,000 fine later in the year for multiple safety violations at the K-Basins. It was the largest penalty assessed by DOE against a Hanford contractor.

In October, Fluor Hanford notified DOE that it would not be able to meet a DOE commitment to the DNFSB to containerize the sludge in the K-East basin by the end of December.

In June, Hanford shipped its 100th truck of transuranic waste to the Waste Isolation Pilot Plant (WIPP) in New Mexico. Nearly 3,000 drums of waste had been hauled away from Hanford in those 100 shipments. However, plans to eventually ship some of Hanford’s other wastes to WIPP were opposed by the State of New Mexico.

The Director of New Mexico’s Environment Department threatened to shut down WIPP if DOE persisted with its attempts to bring radioactive sludge to the site. The state also threatened to block a planned 2006 expansion of WIPP. New Mexico was opposed to bringing waste from Hanford’s underground storage tanks that had previously been managed as high-level waste. DOE said a million gallons or more of Hanford’s tank waste did fit the disposal criteria for WIPP and was no more hazardous than other waste that had been disposed there. Within days, New Mexico Governor Bill Richardson said he remained opposed to reclassification of high-level waste so that it could be sent to WIPP but said WIPP would not be closed down over this issue. In November, the State of New Mexico approved the permit modification, which banned any waste from WIPP that had ever been managed as high-level waste. If DOE could prove waste was never high-level waste, then New Mexico might be willing to modify the permit again to allow its disposal.

“(DOE) believes that these events may indicate a recurring breakdown of formality and discipline required to safely perform operations at K Basin.”

– Letter from DOE Richland Manager Keith Klein to Fluor Hanford President Ron Gallagher. (March 12, 2004).

“This action gives New Mexico the clear authority to prevent any high-level sludge from coming to WIPP.”

– Ron Curry, New Mexico Environment Department. (Tri-City Herald, November 4, 2004).

“This is about so much more than a fight over labels on drums. It is about promises that were made to the people of New Mexico when WIPP opened, and making sure those promises are kept.”

– New Mexico Governor Bill Richardson. (Tri-City Herald, November 4, 2004).
EPA determined that 602 drums of transuranic waste sent from Hanford’s PFP to WIPP before all the approvals were in place could stay there. No additional waste of that type could be sent until EPA approved procedures for determining the contents of the waste.

The States of Oregon and Washington announced their intent to sue DOE over its failure to assess natural resource injury at Hanford. The States’ action came after DOE denied them access to a mediation between DOE and the Yakama Indian Nation, which filed suit in 2002 seeking restoration of natural resources harmed by Hanford’s activities. The States’ sought to force DOE to determine the extent of natural resource injury caused by decades of plutonium production for America’s nuclear weapons program. The Confederated Tribes of the Umatilla Indian Reservation announced the same intent in September.

A federal appeals court rejected Nevada’s arguments against building a high-level nuclear waste repository at Yucca Mountain. The court also rejected the government standard that the public would have to be protected from radiation leaks for only 10,000 years.

A Benton City man died after apparently falling while moving a surplus mobile office from Hanford’s 200 Area.

DOE’s Office of Inspector General said groundwater cleanup programs at Hanford were largely ineffective yet the program remained in place. DOE operated pump-and-treat systems in Hanford’s 100, 200 and 300 areas at a cost of about $8 million each year. The report suggested shutting down ineffective treatments and devoting more attention on developing more effective technologies. In a letter to the Office of Inspector General, the State of Oregon agreed that DOE had not met expectations or goals for remediating Hanford’s groundwater but disagreed that the pump-and-treat systems had been largely ineffective.

In August, workers began draining sodium from the primary cooling loop of Hanford’s Fast Flux Test Facility.

Ecology fined DOE $270,000 for violating the state’s dangerous waste regulations. Ecology said DOE had been sending waste to Hanford from the Savannah River Site that should not have been brought to Hanford. Ecology also said the waste shipments were not properly documented and untrained personnel signed waste verification documents. Ecology’s concerns centered on 83 drums of radioactive and hazardous waste that had been shipped to Hanford since 1997. DOE said Ecology was overreacting and trying to regulate activities for which they did not have authority.

Cocooning of the D Reactor was completed in September, three months ahead of a Tri-Party Agreement milestone.

President George Bush signed legislation requiring the National Park Service to study preserving Hanford’s B Reactor as a museum. No funding had been authorized for the study.
There were two significant rulings on the Hanford downwinder litigation. A federal judge ruled that former Hanford contractors would not necessarily be able to avoid liability for possibly exposing downwinders to radioactive emissions. U.S. District Judge William Nielsen ruled that the five companies could not simply claim they were following government orders when they operated Hanford.

Judge Nielsen later ruled that making plutonium at Hanford in the mid-1940s was an “abnormally dangerous” activity which put thousands of Eastern Washington residents at risk. The ruling meant that downwinders would not have to prove that Hanford contractors acted recklessly to cause airborne releases of radioactive materials. The ruling affected a scheduled trial of 11 “bellwether” cases that could possibly determine an outcome for thousands of others who sued, alleging harm from radioactive material released from Hanford. The lawsuits were initially filed in 1990.

The final transfer of waste from the PFP complex to the tank farms was made. The transfer line was then capped — severing the final tie between Hanford’s processing facilities and its tank farms.

“If the activity is abnormally dangerous, then the defendants may be held strictly liable for plaintiffs’ damages, regardless of whether defendants exercised the utmost care in the conduct of their activities at Hanford.”


“We believe this decision is fundamentally wrong and merits appeal. We still have years of litigation ahead of us.”

Congress directed the U.S. Army Corps of Engineers to review escalating costs for constructing Hanford’s vitrification facilities, called the Waste Treatment Plant (WTP). Construction costs were estimated at $4.35 billion before the contract was awarded in 2000. The current estimate was about $5.7 billion — a more than 30 per cent increase but still slightly under the amount allocated by Congress.

The Corps of Engineers study concluded there was a considerable risk that construction costs for Hanford’s WTP would significantly increase. The report found that overall, cost estimates for the Hanford project were good but said not enough money had been set aside for construction contingencies or problems that might arise getting the plant up and running.

A GAO report said DOE had adopted a “high-risk” strategy as it moved forward with constructing its WTP complex. GAO staff said delays and cost overruns could more than quadruple the cost of the project.

In June, DOE awarded a $61 million contract to AMEC Earth
and Environmental Inc., of London to build and operate a pilot facility to conduct full-scale tests of bulk vitrification using Hanford tank waste. Ecology approved a permit to allow DOE to treat up to 300,000 gallons of tank waste as a demonstration of the bulk vitrification technology. The waste would come from tank S-109.

By the end of summer, costs to demonstrate the viability of bulk vitrification rose to about $102 million.

DOE proposed to construct a new lined disposal facility in Hanford’s 200 East Area, primarily to dispose of vitrified low activity waste from the WTP and the demonstration bulk vitrification system. The Integrated Disposal Facility could also be used to dispose of waste from other DOE sites.

DOE challenged an independent study which said there was a 50 percent chance of a major radiation or chemical accident during the 28 years that Hanford’s WTP facilities would be operating. The study, by the Institute for Policy Studies, was published in a Princeton University peer review journal. According to the study, the worst hazard was from a steam explosion at one of the melters. The study cited a three year old Nuclear Regulatory Commission (NRC) study. But DOE officials said design changes made since the NRC study was conducted had dramatically reduced the risk of an accident and eliminated any possibility of a steam explosion.

In December, construction on Hanford’s WTP facilities was slowed to ensure the design was adequate to withstand seismic forces. Recent studies indicated that sound waves caused by an earthquake could move much faster in Hanford’s soils than was previously believed. Engineers were trying to determine if that would require the design standard to be raised.

**Around the DOE Complex**

There was strong criticism of DOE’s nuclear security from two fronts. A “60 Minutes” report said security at DOE’s nuclear weapons factories and research labs was inadequate. 60 Minutes quoted a DOE nuclear security specialist who said mock attacks on nuclear facilities were successful 50 per cent of the time. DOE officials said nuclear materials were secure but that they were working to improve security. Hanford was not mentioned in the report, which detailed security lapses at several sites such as Rocky Flats and Oak Ridge.

A General Accounting Office report said that while DOE had made significant improvements in physical security at its nuclear facilities since the September 11, 2001 terrorist attacks, they were not sufficient to ensure all DOE sites were adequately prepared to defend themselves against the higher terrorist threat now present. The report criticized DOE for taking two years to develop a design basis threat—a classified document that analyzed the potential capabilities of

“DOE’s experience with glass melters does not inspire confidence. Since 1991 there have been at least eight melter-related accidents and failures at DOE sites, including two steam explosions.”


“There have been three years of designing and analyzing (to remedy) modes of failure. We have been able to design preventive systems to prevent an accident from occurring.”


“In the past we had determined that someone would have to get in and out (of a nuclear facility to do damage), and now we’ve determined that all they have to do is get in.”


“The people looking for soft spots would be ill-advised to come to the facilities for which I am responsible.”

terrorist forces that might attack nuclear sites. The report also said some DOE nuclear sites would not be able to meet the new security standards for up to several years.

Energy Assistant Secretary Jesse Roberson submitted her resignation, effective July 15. Roberson said she wanted to spend more time with her family. Roberson’s top deputy, Paul Golan, was appointed Acting Assistant Secretary.

Energy Secretary Spencer Abraham tendered his resignation to President Bush in November. President Bush nominated Samuel Bodman, who had served as Deputy Secretary of the Treasury, as Energy Secretary.

“I have been deeply disappointed in the lack of a cooperative approach the department has taken over the past several years on issues related to Hanford cleanup. It’s unclear whether this unilateral approach was Ms. Roberson’s design or those higher up in the administration.”


“Few have brought such an energy to the office, or worked so hard to make something happen… Roberson can rightfully claim that she leaves Hanford and other sites better off than she found them. And that’s more than some assistant energy secretaries have been able to say.”

— Tri-City Herald Editorial. (July 14, 2004).

“It fails to recognize that existing (and currently planned) Hanford cleanup decisions and goals are the result of 15 years of work, debate and compromise on the part of DOE, regulators, tribes, stakeholders and the public to achieve the most effective and protective cleanup within the limits of what is achievable and affordable.”

The Cleanup

The slowdown of construction work at Hanford’s Waste Treatment Plant (WTP) complex (page 137), coupled with rapidly escalating cost projections, generated serious concerns about the continued viability of the project. Otherwise, it was in many ways a typical year of Hanford cleanup – significant progress in some areas; litigation, funding shortages, and challenges in other areas.

The U.S. Department of Energy (DOE) spent a good portion of the year attempting to bring additional transuranic waste to Hanford from its Battelle Columbus site in Ohio. After resolving some legal hurdles, errors in an environmental study ultimately ended that effort.

DOE told Federal District Judge Alan McDonald in April that it had completed necessary environmental studies and should be allowed to resume waste shipments to Hanford. The State of Washington countered that the studies were inadequate and the shipments should continue to be banned. In May, Washington said it was willing to accept 37 cubic meters of transuranic waste from Battelle Columbus,

“Our overall reaction to this is it is not a bad outcome for the state. The largest volumes of waste out there are still under injunction and cannot be shipped here.”


Ironworkers at Hanford’s Waste Treatment Plant.
so long as there were specific deadlines on getting the waste out of Hanford and a ban on importing other wastes to Hanford would be broadened. Judge McDonald ruled that Washington must allow some radioactive waste to come to Hanford from Battelle Columbus, but kept in place an injunction against importing a certain category of wastes. Judge McDonald also granted for 90 days Washington’s motion to extend a preliminary injunction against bringing low-level and mixed low-level waste to Hanford.

In July, Battelle Pacific Northwest National Laboratory discovered errors in the final Hanford Solid Waste Environmental Impact Statement that could impact conclusions about possible effects on Hanford groundwater from past and future waste disposal activities at the site. The errors were discovered while information was being gathered to respond to document requests by the State of Washington as part of their litigation against DOE. DOE notified the federal court of the error and told the judge that as a result, a ban on sending low-level radioactive waste to Hanford should remain in place for the time being. DOE also postponed planned shipments of transuranic waste from Ohio to Hanford, even though the analysis problems did not directly impact the planned storage of the transuranic waste.

By October, DOE announced the Battelle Columbus waste would be taken at least temporarily to the Savannah River Site in South Carolina instead of to Hanford.

DOE’s Inspector General said hundreds of unused groundwater monitoring wells at Hanford were not being properly decommissioned. That could result in additional spread of contaminants to the groundwater. Hanford officials said they did meet targets for decommissioning wells in 2004 but admitted there was room for improvement. An estimated 7,000 monitoring wells had been drilled at Hanford.

The Bush Administration proposed a $267 million cut in Hanford funding for fiscal year 2006 — a cut of about 12 percent. An additional $30 million would go to increased security costs. Proposed cuts included a 10 percent cut in funding for construction of Hanford’s WTP facilities.

In April, all 14 Washington and Oregon U.S. House Members requested nearly $240 million be restored to the Hanford budget in fiscal year 2006. In a letter to the chair and ranking member of the House Subcommittee on Energy and Water Development Committee on Appropriations, the House Members noted that proposed budget cuts would severely impact progress at Hanford.

The Washington and Oregon delegations were not successful and the fiscal year 2006 budget was signed by President Bush at year’s end, cutting Hanford funding by about $315 million when compared to the previous year’s budget. Funding for the WTP was cut by $164 million.

An attempt to further reduce the WTP construction budget by $100 million to help pay for hurricane Katrina relief was eventually unsuccessful. The White House proposed $2.3 billion in cuts from a variety

“The Department is very disappointed that Battelle’s lack of appropriate quality assurance would allow such discrepancies to exist in the first place…the Department is immediately initiating an aggressive review of both the data in question and Battelle’s quality assurance process.”


“I recently learned that there is some concern within DOE about ‘regulatory uncertainty’ over the Hanford cleanup due to various pending lawsuits, and that this may be a factor in the proposed budget cuts. I urge you to question this line of thinking…litigation has never stood in the way of continual progress at the site.”

— Letter from Washington Governor Christine Gregoire to Energy Secretary Samuel Bodman. (April 20, 2005).

“We believe the proposed reductions go too far and will unnecessarily and unjustifiably delay cleanup progress…We urge you to reject the level of reductions proposed by DOE.”

— Letter from Oregon and Washington House Members, on the proposed Hanford budget. (April 21, 2005).
The Defense Nuclear Facilities Safety Board (DNFSB) said a lack of trained personnel and inadequate criticality safety procedures was a concern in Hanford’s Plutonium Finishing Plant (PFP). Work to stabilize more than 19 tons of plutonium bearing materials was completed in 2004, but cleanup work continued with plutonium contaminated glove boxes and other equipment. Failure to follow proper criticality safety procedures could result in dangerous radiation exposure to workers.

In July, PFP workers beat a Tri-Party Agreement milestone by more than a year to remove plutonium from processing systems and equipment. The plutonium was cleaned from glove boxes, equipment, and processing ventilation systems.

Technetium 99 was detected beneath the T Tank farm in Hanford’s 200 West Area. Preliminary samples from a new groundwater monitoring well showed fairly high readings.

DOE submitted to the DNFSB a revised schedule for vacuuming sludge from the K-Basins after Fluor Hanford missed a related Tri-Party Agreement milestone. The plan had few technical changes but allowed far more time to complete the work. DOE proposed to have the sludge in the K-East basin vacuumed into containers by October 2006. DOE had previously committed to having that work completed by the end of 2004. Sludge in the K-West basin would be vacuumed into containers by July 2007. All the sludge would be removed from the underwater containers and packaged for disposal by November 2009.

There was concern that the K-East basin had a new leak when two large cracks were discovered. The K-East basin had two major leaks in the past — leaking several million gallons of radioactively contaminated water on each occasion. It was later determined that the cracks did not extend all the way through the 27-inch thick concrete wall.

The National Academy of Sciences released two reports dealing with waste cleanup at DOE sites. One report recommended that some transuranic and high-level wastes could be left at Hanford and other DOE sites rather than sent to deep underground geologic repositories. The report recommended a six-step decision-making process based on risk and other factors before a decision was made to exempt waste from deep geologic disposal. The report also recommended the process be subject to independent outside technical review and approval or denial be in the hands of a separate federal agency such as the Environmental Protection Agency (EPA) or Nuclear Regulatory Commission. The second report suggested DOE should consider extending the life of waste treatment facilities at Hanford and other DOE sites. The report said they could potentially be used to treat waste from other sites.

DOE awarded a seven year, $1.9 billion contract to complete cleanup along Hanford’s Columbia River corridor. The winning bid was submitted by a group that included Washington Group International, Bechtel National, and CH2M Hill. A previous bid award for similar work was successfully protested. The contract...
included incentives to complete the cleanup work by 2012 — three years earlier than the schedule. The contract award was protested again but later withdrawn.

DOE and EPA signed a Record of Decision for Hanford’s U Plant and surrounding waste sites. U Plant was the first of Hanford’s “canyon” facilities to have a cleanup plan in place. It was also the first formal agreement at Hanford that included leaving some waste in place. U Plant was 800 feet long, 70 feet wide and 80 feet high, with more than 30 feet underground. While some waste would be removed from the canyon and disposed in both on-site and off-site disposal facilities, contaminated equipment would be consolidated into the below-ground cells. Grout would be used to fill the empty spaces and hold the contamination in place. The U Plant roof and wall sections would be collapsed and an engineered barrier would be constructed over the top of the canyon building — rising as much as 40 feet high.

Hanford workers made progress in retrieving waste from several underground storage tanks. In March, Hanford workers completed work to empty their second tank. They demonstrated a vacuum system to remove about 3,000 gallons of sludge from tank C-203, a 55,000 gallon tank. Less than 100 gallons of waste remained in the bottom of the tank and stuck to its walls, well within the amount allowed by the Tri-Party Agreement.

By August, work was complete in emptying a third Hanford tank.

“Ultimately, we arrived at a remedy compliant with regulations, protective of human health and the environment, and that makes sense from a technical implementation standpoint.”

– Nick Ceto, U.S. Environmental Protection Agency’s Hanford Project Manager, on plans to demolish U Plant. (DOE News Release, October 4, 2005).

“We’ll be watching the work at Hanford and using the lessons learned to inform our decisions on the other canyons across the country.”

Workers again used a vacuum hose to suck sludge and saltcake out of tank C-202, which was a suspected leaker. A high-pressure spray of water was also used to break up clumps of waste that could not be vacuumed. The process took about six weeks, far quicker than the nine months it took to empty the previous tank. About 20 cubic feet of waste was still in the tank — under the limit allowed by the Tri-Party Agreement.

Despite that progress, DOE’s Office of Inspector General said DOE might have difficulty meeting a 2018 Tri-Party Agreement milestone to remove waste from all 149 single-shell tanks. An audit found that DOE would not meet a September 2006 Tri-Party Agreement milestone to retrieve waste from the 16 tanks in the C Tank farm. That delay, along with escalating costs to conduct the work, would likely put the 2018 milestone in jeopardy.

In November, workers began to remove 71,000 gallons of sludge from tank C-103, the seventh Hanford tank to undergo waste retrieval efforts. Since the tank was not believed to have leaked, workers used a hydraulic spray to dissolve the sludge so it could be pumped from the tank. Rather than adding new water to the tank system, Hanford workers used liquid waste from the double-shell tanks in the hydraulic spray.

The first verdict in Hanford “downwinder” litigation was split. Two people who claimed radiation releases in the 1940s from Hanford caused their thyroid cancer won their cases in federal court; but a jury ruled against three others and hung on a sixth case. After more than a decade since litigation was initially filed against companies that built and operated Hanford in its early years, the results of the three-week long trial led both sides to claim victory. Attorneys for the companies said the six people represented the strongest cases the plaintiffs had and they were able to win just two and gain awards of less than what it cost to bring the case to trial ($227,508 and $317,251). Plaintiff’s attorneys said it was a historic ruling because the jury was convinced that Hanford operations caused harm to some people. Several thousand other people had similar claims.

Questions regarding implementation of nuclear waste Initiative 297 were referred to the Washington Supreme Court. The questions included whether the initiative, passed by voters in November 2004 but not enforced due to a Federal District Court ruling, banned movement of waste already at Hanford.

Oral arguments were heard in May. DOE claimed the initiative dramatically expanded the state’s authority to regulate nuclear waste, beyond what was allowed by federal law. The State of Washington contended the initiative did not attempt to expand the state’s authority, it merely instructed the state to more vigorously use its existing authority to block waste shipments from coming to Hanford until the site met environmental standards.

The Washington Supreme Court ruled in July that Initiative 297 would not necessarily be invalidated if portions of the law were ruled unconstitutional. The court did not determine — and was not asked...
to determine — whether portions of the law were unconstitutional.

The U.S. Department of Justice asked Judge McDonald to strike down the entire initiative as unconstitutional. The Department of Justice contended the initiative interfered with national plans for nuclear waste cleanup; disrupted national security research; and undermined the Navy’s ability to maintain and decommission nuclear submarines.

Workers drilled through the core of Hanford’s Fast Flux Test Facility in May to remove the last of the liquid sodium from the reactor.

A committee report on a U.S. House appropriations bill suggested Hanford and other DOE sites be considered to store spent nuclear fuel from commercial nuclear power plants. Given continuing delays with the Yucca Mountain project, the report urged DOE to aggressively move to take title to commercial spent fuel and consolidate it for storage at DOE facilities such as Hanford. Closed military bases could also be considered.

Energy Secretary Samuel Bodman visited Hanford in June. Bodman met with Washington Governor Christine Gregoire, addressed DOE employees, and toured much of the site.

A health study of Hanford workers indicated that older workers exposed to low levels of radiation may have had an increased chance of dying from cancer. The increase was not evident in workers under the age of 55 who were exposed to similar amounts of radiation. The study found that cancer death rates for workers 55 or older increased an average of three per cent for each additional rem of radiation they received. Incidences of lung cancer increased at a greater rate. The study included more than 26,000 Hanford workers hired between 1944 and 1978. Study authors speculated that older workers might be more sensitive to radiation because age brought declines in immune function and the ability to repair genetic damage. They also said more research was needed.

An independent council was established to address employee health concerns in Hanford’s tank farms. CH2M Hill Hanford Group agreed to implement consensus recommendations from the Hanford Concerns Council, so long as they did not violate legal or contractual obligations. The ten member council included three advocates for worker concerns, three CH2M Hill representatives, and three neutral members. It was led by Jonathan Brock, a University of Washington professor.

The Government Accountability Office (GAO) said Hanford cleanup could be threatened by DOE’s inability to consolidate plutonium at the Savannah River Site. Accelerated cleanup plans at Hanford called for excess plutonium to be shipped to Savannah River by September 2006. But Savannah River did not have facilities available to store Hanford’s plutonium. Demolition of Hanford’s PFP could also not move forward until the plutonium had been moved out of the facility.
DOE announced completion of two major Tri-Party Agreement milestones, one more than five months early. Workers completed the retrieval of more than 13,500 drums of suspect transuranic waste from Hanford’s burial grounds and completed an 11-year effort to upgrade infrastructure of the double-shell tank system. Among the upgrades was the installation of 14 miles of new transfer lines between the 200 East and West areas and 6,600 feet of new transfer lines to deliver waste to the WTP complex.

An “Alert” level emergency was declared in August after a waste drum ruptured and suspected contamination leaked out. Areas in the vicinity of the waste disposal trench were evacuated for a few hours. There was no radioactive material leak and no one was contaminated. DOE also declared an Alert level emergency in November after a small chemical explosion at a building near the Fast Flux Test Facility. There were no injuries.

Cocooning of H Reactor was completed in October.

Tank Waste Treatment

Major construction work at Hanford’s WTP complex was dramatically reduced after it was determined that seismic design standards needed to be increased by 38 percent. Construction work was slowed in December 2004 when new studies indicated that the upper levels of the buildings would sway more in an earthquake than originally predicted.

DOE officials indicated that they did not anticipate that major changes would need to be made to work that was already completed. Overall, construction of the facilities was about 35 percent complete.

By the end of the year, DOE determined it would be necessary to stop construction work on key parts of Hanford’s WTP until design work could be completed. Construction on the pre-treatment plant and the high-level vitrification plant was suspended, although work on the low-activity waste treatment plant, the analytical laboratory, and the balance of facilities continued. DOE officials said they were committed to completing the facilities.

DOE Headquarters and Congress took actions to more actively oversee the project. Charles Anderson, DOE’s principal deputy assistant secretary for environmental management, directed that all current and future project work authorizations related to the WTP must receive his approval in writing. Congress added a requirement to Hanford’s 2006 budget that required DOE to regularly report on the status of the WTP. Quarterly reports to the House and Senate Committee on Appropriations were due beginning January 1. The new requirements were added after Energy Secretary Bodman told Congress to expects costs associated with the WTP to rise more than 25 percent above the $5.8 billion budget. The conference committee

“I will take whatever steps are necessary now — call it an investment — to ensure this plant does everything we need it to do when we begin radioactive operations.”


“What we are not going to do is to do anything hasty. We are going to do things deliberately and with common sense.”

— Bruce Carnes, DOE Associate Deputy Secretary. (Tri-City Herald, June 29, 2005).

“While the department’s announcement today is discouraging, I am pleased that the Department of Energy plans to continue construction on the low-level waste facility and the laboratory. That indicates they are committed to the treatment complex over the long-term and are not attempting to abandon it.”

— Washington Governor Christine Gregoire. (Tri-City Herald, June 29, 2005).
DOE was also required to report on “actions taken to rectify the management failures” at the WTP.

In September, DOE officials advised the State of Washington that it might miss the 2011 Tri-Party Agreement milestone to begin full operation of Hanford’s WTP facilities. DOE said it would not commit to a new schedule or budget until it could make certain it was valid.

The DNFSB said DOE was successfully resolving safety issues at Hanford’s WTP and there was no reason not to move forward with design and construction work. In a status report to Energy Secretary Bodman, the Board said DOE was responding to safety issues and was proposing technically sound solutions to identified concerns.

Washington State officials vowed to do whatever was necessary to ensure continued progress on Hanford cleanup and completion of the vitrification facilities. Governor Gregoire called on President Bush and Energy Secretary Bodman to get Hanford cleanup “back on track.”

A House appropriations subcommittee requested the GAO review the cost and schedule of building Hanford’s WTP facilities. The request implied that new cost estimates could approach $10 billion and result in delays of four years. The Corps of Engineers, at DOE’s request, was already reviewing the cost and schedule estimates.

“The White House and Energy Department say they support this project, but the Vit Plant was the only Energy Department project targeted for cuts in the President’s supplemental (budget) two weeks ago. Actions speak louder than words.”

– Washington Senator Patty Murray,


“Over half a billion dollars still represents a sizable investment and interest in the construction of the waste treatment plant.”

– DOE spokesman Mike Waldron,
(Associated Press, November 14, 2005).

report also referenced an Army Corps of Engineer study on the project — which DOE had not yet released — and indicated the costs could escalate to as much as $9.3 billion. DOE was also required to report on “actions taken to rectify the management failures” at the WTP.

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In December, DOE released an edited version of the Army Corps
of Engineers study of Hanford's WTP construction project. The
Seattle Times earlier reported that it might take four additional years
and an extra $4 billion to complete Hanford's vitrification facilities.
The report was leaked to the Times, which had sought to obtain the
report for months through public records laws. The cost increases
and delays meant the facilities might not be operational until 2015,
at a cost of $9.65 billion. DOE resisted releasing the report, saying
that the information the Corps used in developing the report was not
complete enough to fully verify cost and schedule implications. DOE
did not want to commit to new cost and schedule estimates until it
had more confidence they could meet them.

The latest full-scale test of bulk vitrification was terminated after
completing the addition of only five of the planned eight loads of
simulated waste. The test was stopped after there were indications
that corrective maintenance would be required before all eight loads
of waste simulant were added. Small puffs of smoke were also seen
near the melter seals when the vacuum within the melter was lost.

Cost estimates for the bulk vitrification demonstration project at
Hanford meanwhile grew to $160 million — nearly four times the
original estimate from three years earlier. Construction was halted as
the increased costs and concerns by the DNFSB were assessed.

DOE's Inspector General said DOE should have gotten approval by the State of New Mexico before beginning a project to
send Hanford tank waste to an underground waste repository in
that state. The Inspector General report said the project had the
potential to save taxpayers nearly half a billion dollars but that DOE
should not have spent money preparing the waste until New Mexico
approved a permit.

Construction of the Integrated Disposal Facility — which was
intended for disposal of vitrified low activity tank waste and other
waste — was mostly completed. The disposal trench was 1,500 feet
wide by 765 long by 42 feet deep, with the possibility of future expan-

Around the DOE Complex

The GAO said DOE's goal of saving $50 billion by accelerated clean-
up at DOE sites was likely not attainable. DOE announced the plan in
2002 — hoping to shorten cleanup by 35 years. While the GAO had
found progress and some cleanup programs were ahead of schedule,
plans to treat and dispose of high-level waste in tanks at Hanford and
other sites had fallen behind schedule. These projects were among
the most expensive and where DOE announced the biggest poten-
tial cost reductions. The GAO also questioned whether it was realis-
tic to expect almost 30 percent less costs because of new technology
Continued delays in opening a national high-level waste repository at Yucca Mountain also resulted in significant extra costs at Hanford and other sites.

The GAO also said security of weapons-grade plutonium at Hanford and other DOE sites was generally good, but questioned whether DOE would meet a 2008 deadline to incorporate additional security improvements based on increased threats. Additional security at DOE sites would cost up to $584 million extra during the next several years. The GAO recommended that DOE consolidate the material at fewer sites and also turn its security force into an elite force, comparable to the U.S. military’s Special Forces.

The U.S. Senate confirmed Samuel Bodman as Secretary of Energy in February and James Rispoli as the Assistant Secretary of Energy for Environmental Management in August.

The $7 billion cleanup at the Rocky Flats Site near Denver was completed. The U.S. Fish and Wildlife Service planned to use a portion of the 6,240-acre site as a refuge that could open by 2008. The spots where contamination was the worst would remain off-limits.

“We will be regarded by those with whom we work and serve, and by the regulatory agencies that represent the public, as an organization of people that meets its commitments, is credible, and has leadership, management, staff and workers who are well prepared to perform the tasks at hand.”

– Message from newly confirmed DOE Assistant Secretary Jim Rispoli to DOE and contractor staff. (August 10, 2005).
“The state and others are not pleased with the selection of Hanford as a disposal facility... The fact is, however, that the federal government is entitled to make the selection... Decisions which need to be made at the national level addressing national concerns cannot be trumped by protectionist regulations enacted by individual states.”

– Opinion of Federal District Judge Alan McDonald, in striking down a Washington state initiative. (June 12, 2006).

The Cleanup

Continuing cost escalations and schedule slips for Hanford’s Waste Treatment Plant (WTP) complex (page 147) prompted new scrutiny of the project. Elsewhere on the site, work on a new massive environmental study began; an initiative that would have prevented waste from coming to the site was ruled unconstitutional; and waste was successfully removed from three of Hanford’s older tanks.

The Defense Nuclear Facilities Safety Board endorsed a new schedule for cleaning up sludge in the K-Basins. All the sludge would be removed from the underwater containers and packaged for disposal by November 2009. The U.S. Environmental Protection Agency (EPA) also agreed to the revised schedule and adjusted milestones in the Tri-Party Agreement.

“The Board remains concerned that difficulties with design, engineering, and project management may continue to delay the (sludge) project. Although a number of corrective actions have been taken in the past year to address these problematic areas, little substantial evidence exists to indicate that the project is now healthy in these areas.”


“We’re not happy with the delay, but this is where we are. This is the reality.”

– Larry Gadbois, U.S. Environmental Protection Agency. (Tri-City Herald, January 12, 2006).

K-Basins sludge continued to challenge Hanford workers.
Hanford workers began pumping sludge from the K-East basin in October. The sludge was being pumped 2,500 feet to the K-West basin to be stored until a treatment system was built. Removal of the sludge was expected to take about five months. Once the sludge had been removed the water would be drained, the basin demolished, and contaminated soil underneath the basin removed.

The U.S. Department of Energy (DOE) and the State of Washington reached a settlement agreement to dismiss litigation filed by Washington challenging the Hanford Solid Waste Environmental Impact Statement (EIS). As part of the settlement agreement DOE agreed to prepare a new expanded EIS with Washington as a cooperating agency. The new EIS would include an updated site-wide groundwater analysis. Washington had initially filed the litigation in 2003 to block shipments of transuranic waste from being brought to Hanford. The state amended the suit in 2004 to cover other waste types, contending that DOE had not done a thorough environmental analysis of the impacts of waste disposal at Hanford, particularly as it would impact groundwater. DOE also promised to hold off on most waste shipments to Hanford until the EIS was completed, which was expected sometime in 2008.

The Bush Administration’s proposed fiscal year 2007 budget increased funding at Hanford and restored construction funding for the WTP to $690 million. Hanford would receive $1.88 billion for cleanup and security costs — a significant increase from the fiscal year 2006 funding of $1.75 billion, but still well below the previous year’s funding of $2.09 billion. Cleanup along the Columbia River corridor would be among the Hanford projects receiving additional funds but funds would be reduced for tank waste retrieval and cleanup work at the Plutonium Finishing Plant. Construction would also be delayed on the bulk vitrification pilot plant.

A Colorado company, S.M. Stoller Corp., was awarded a $22 million subcontract to operate Hanford’s Environmental Restoration Disposal Facility. Stoller operated a similar disposal site for mixed radioactive waste at the Idaho National Laboratory.
The State of Washington and Nez Perce tribe joined a Yakama Indian Nation lawsuit which sought to force DOE to conduct a Natural Resource injury assessment or have DOE compensate the state and tribes for costs they incurred in doing such an assessment. The Yakama Nation filed the lawsuit in 2002 and the case had been in mediation much of the time since the initial filing. The State of Oregon joined the litigation later in the year.

In December, the Yakama Nation informed DOE that it would complete its own natural resource damage assessment at Hanford. DOE’s position was that it was too early in the process to conduct damage assessment and that it should occur after cleanup was mostly complete. The Yakama countered that a damage assessment would provide useful information to improve cleanup.

Hanford workers completed waste retrieval from three single-shell tanks during the year — bringing the total to six tanks emptied — but were unable to meet a Tri-Party Agreement milestone to remove waste from all 16 of the tanks in the C Tank farm. DOE said the process took longer than planned in part because they were forced to develop new technologies as they went along.

Two of the tanks emptied were smaller, 55,000 gallon tanks. C-201 was completed in March and C-204 was completed in December. In October, Hanford workers completed removal of waste from tank C-103, a 530,000 gallon tank. Waste retrieval operations continued at two other tanks and had just begun at a third tank.

Respiratory protection requirements were eased in Hanford’s tank farms. Because some of Hanford’s underground waste storage tanks vented chemical vapors into the atmosphere, workers and the Government Accountability Project raised concerns more than two decades for the federal government to fix our natural resources they injured. Now the Yakama Nation itself has decided to assess the full extent of the injuries caused by the Hanford pollution.”

— Philip “Bing” Olney, chair of the Yakama Nation General Council. (Tri-City Herald, December 17, 2006).

“We’re glad to see another tank emptied. We’re moving in the right direction.”


“Each time we empty a single-shell tank we achieve additional protection of the environment and this should be celebrated. When cleanup began, many doubted that waste retrieval was possible due to the scores of obstacles we faced.”

— CH2M Hill President and CEO Mark Spears. (DOE News Release, December 19, 2006).
years prior about possible long-term health effects from breathing the tank vapors. Workers had complained of headaches, dizziness and shortness of breath after smelling vapors from the tanks. That led to the identification of about 1,500 chemicals present in the head space of the tanks. Occupational exposure limits were then set for individual chemicals. Some workers had wanted to get rid of the respirators because they were heavy, added to heat stress in the summer, and reduced visibility. Workers still had the option to wear respirators if they chose and about 20 percent were doing that in the tank farms where the restrictions were lifted. Respirators were still required for workers within five feet of the vapor vents or if it was believed they would be exposed to higher levels of chemicals.

Federal District Judge Alan McDonald ruled that a Washington state initiative that would ban most out-of-state waste from coming to Hanford was unconstitutional in its entirety. Initiative 297 was passed by Washington voters in November 2004 but was not allowed to take effect until the legal challenges were addressed. Judge McDonald ruled that federal law preempted the initiative because it “impermissibly regulates” radioactive material subject to the federal Atomic Energy Act. The court also ruled that the initiative’s moratorium on mixed waste shipments to Hanford violated the Commerce Clause of the U.S. Constitution.

Washington state filed an appeal with the Ninth U.S. Circuit Court of Appeals in San Francisco.

Hanford workers completed demolition of an incinerator at the Plutonium Finishing Plant. The incinerator was used from 1963 through 1972 to burn combustible material contaminated with plutonium, allowing recovery of the plutonium for use in nuclear weapons. The incinerator was heavily contaminated when cleanup began.

A new government study showed men who grew up near Hanford in the late 1940s and early 1950s had an increased risk of developing a specific type of thyroid disease. Women did not show a similar increased risk. The study by the Centers for Disease Control’s Agency for Toxic Substances and Disease Registry found an increase in Hashimoto’s thyroiditis, a condition in which the thyroid produces too little thyroid hormone. The study did not link the disease to exposure to radioactive materials spread into the environment from Hanford.

DOE’s Office of Inspector General said Hanford’s disposal plans for 1,935 cesium and strontium capsules was risky and could result in them being orphaned at the site. The capsules contained more than a third of the radioactivity at Hanford and were stored under water in the 200 Area. Until 2002, it was planned that the cesium and strontium would be mixed with Hanford’s tank waste and vitrified, then eventually disposed at the national disposal site at Yucca Mountain. In recent years, Hanford officials had planned to dispose of the capsules directly at Yucca Mountain, without vitrification. The Inspector General audit called that a risky assumption, since Yucca Mountain regulations currently prohibited disposal of the untreated capsules.
The audit called for DOE to further study disposal options and perform a formal cost analysis.

Hanford workers beat a December 31 Tri-Party Agreement deadline to treat and dispose of 24,000 drums containing low-level radioactive waste. The waste included sludge created by the production of fuel elements for a Hanford reactor and some waste dug up from burial trenches. All the waste had been stored at Hanford for more than a decade. The waste was mostly sent to Hanford’s Environmental Restoration Disposal Facility for burial.

The Washington Department of Ecology issued a notice of violation to DOE because one of its contractors caused a spill of highly concentrated sodium dichromate to the ground. Washington Closure Hanford workers caused the spill while digging up an old pipeline near the D Reactor, within a quarter mile of the Columbia River. An estimated 30 gallons of liquid sodium dichromate, a form of chromium, leaked into the soil during one excavation project. Another three gallons leaked into the ground from the same pipeline in another spot a few days later. Ecology said there were a number of violations, including failure to provide required notification to DOE and the State.

EPA fined DOE $120,000 because of the two spills. EPA said DOE did not report the first spill to regulators for 11 days and its

“We are clearing out the backlog of stored drums and getting the waste treated and into final disposal.”

– Mark French, DOE. (Tri-City Herald, September 19, 2006).

“Were it to reach the river, pure sodium dichromate would be a huge threat to salmon in the Columbia River. This situation represents a breakdown of oversight, management, compliance, and just plain common sense.”

contractor, Washington Closure, did not correctly handle the spill. In both cases, contaminated soil was put back into the ground.

DOE extended two of its major prime contracts at Hanford while moving forward with a process to replace the contracts with three new contracts in 2008. Fluor Hanford’s contract was extended for up to two years and $1.3 billion, while the contract for CH2M Hill Hanford Group was also extended up to two years for $500 million.

DOE’s Office of Inspector General said costs to retrieve and dispose of waste from two Hanford burial grounds could cost as much as $324 million, more than double the current estimated cost. The 618-10 and 618-11 burial grounds, located at the south end of the Hanford Site, included trenches and vertical pipes made from welding 55 gallon drums end-to-end. The two burial grounds contained some of the most radioactive waste that was buried at Hanford. The current $136 million budgeted for the work only included retrieval of the waste, storage at Hanford’s Central Waste Complex, and burial on the Hanford Site. It did not include costs to treat and repackage some of the waste for disposal at the Waste Isolation Pilot Plant or Yucca Mountain — waste sites that would likely have to take the most radioactive portion of the waste in the burial grounds.

The Hanford Advisory Board selected Susan Leckband as the Board’s new chair. She replaced Todd Martin, who would finish his third two-year term in February and could not run again according to the Board’s charter. Leckband had been serving as the Board’s Vice Chair.

DOE completed its five year review of cleanup actions taken at Hanford, a process required by federal environmental laws. In general, DOE said the actions they had taken so far had been protective of people and the environment. The report acknowledged that in many cases final cleanup actions had yet to be decided.

Hanford workers beat a Tri-Party Agreement milestone to retrieve waste from a large trench used to store plutonium-contaminated waste. “Trench 4” held nearly 2,000 cubic meters of plutonium-contaminated waste in 9,960 containers. All the containers had been removed and the waste taken to compliant treatment, storage, or disposal facilities. The waste containers, mostly drums and boxes, were stacked on asphalt pads, covered with plywood and tarps, then buried under dirt. About half of the waste removed from the trench would be buried in a lined disposal facility at Hanford. The remainder would eventually be shipped to the Waste Isolation Pilot Plant in New Mexico. Hanford workers also beat a December 31 Tri-Party Agreement milestone to retrieve more than 22,600 drums worth of waste from burial trenches in the 200 West Area.

Two Hanford-area groups were among 11 organizations to receive siting grants through DOE’s Global Nuclear Energy Partnership. Columbia Basin Consulting Group and Tri-City Industrial Development Council received a joint award to conduct detailed site characterization studies for integrated spent fuel recycling facilities.

DOE expanded Fluor Hanford’s duties to integrate all contractor

“We don’t like to levy penalties but there was so much wrong (in this case).”
– Dennis Faulk, U.S. Environmental Protection Agency. (Tri-City Herald, October 17, 2006).

“We have removed nearly one third of the waste from these burial trenches. When we started the work in October 2003, we anticipated the majority of the waste containers would be in good shape…we’re encountering more and more badly corroded drums that require special handling.”
activities involving contamination of the soil, groundwater and the deep vadose zone.

Washington Governor Chris Gregoire’s proposed state budget for the 2007-09 biennium included $1.3 million in additional funding for legal action involving Hanford. Some of the money would be used to support two ongoing lawsuits, while some would be used to address “unacceptable delays which pose an increasing risk to the environment and human health,” a reference to delays in getting Hanford’s vitrification facilities built and operating.

“’I’m worried, candidly. I’m not a big believer in suing. But legal work needs to be done.’”
– Washington Governor Chris Gregoire. (Tri-City Herald, December 22, 2006.)

Tank Waste Treatment

Heart of America Northwest proposed that funding be suspended for construction of key parts of the WTP complex until there were assurances the facilities would work as planned and that cost escalations were under control. The citizen group report said no more construction should be done on the pre-treatment facility or the high-level waste vitrification facility until the design was validated and costs were estimated with reliability; that management and contract reforms were instituted; and that supplemental technologies were fully examined.

Cost estimates to construct Hanford’s WTP facilities had escalated dramatically in large part because the initial estimate was unrealistic and never validated, according to a report commissioned by Energy Secretary Samuel Bodman. Subsequent cost estimates continued to be based on the flawed initial estimate. The report also said contractor Bechtel underestimated how complicated some of the technical problems would be and that DOE wrongly assured Bechtel that several technical problems had been worked out by the previous design team. The report added Bechtel did not understand how difficult and expensive it would be to find nuclear facility-quality materials and equipment; underestimated the availability and productivity of qualified labor; and underestimated the cost of regulatory compliance. The report concluded it was likely the total project cost estimate would continue to increase beyond the current $8.35 billion estimate.

Another report indicated the cost of building Hanford’s WTP complex could easily top $10 billion by the time the plant was ready to begin treating radioactive waste in 2017. The 44,000 page Bechtel report – which included new cost and schedule estimates — was provided to Washington state and Congressional leaders. DOE would not endorse the estimates until they were validated by the Army Corps of Engineers. More than two years of the delay and $700 to $900 million of the cost increase were attributed to revised earthquake design standards.

The Chair of the House Energy and Water Appropriations subcommittee said DOE had “screwed up” construction of Hanford’s WTP and should not be rewarded for their mismanagement. Ohio Representative David Hobson told Energy Secretary Bodman that a

“Continuing to provide U.S. DOE and Hanford contractors with $690 million per year for the vitrification plant is enabling stupidity.”

“’It’s a huge mistake to be advocating a slowdown. The technology at issue here is the right technology. It is the right plant. We just need the guts to finish it.’”

“…other factors (also) impact the project: DOE constrained the annual funding and the Tri-Party Agreement constrained the schedule…(DOE) and (Bechtel) managers were caught in the middle – attempting to complete the project according to an unrealistic, mandated schedule and an inefficient, mandated funding profile.”
previous agreement for Congress to provide $690 million each year for WTP construction was no longer valid, although he hadn’t decided what level of funding would be provided. Bodman acknowledged management problems with the project but said he believed they were being resolved. Other members of the committee suggested that perhaps the Nuclear Regulatory Commission should be given broad authority over the plant.

An independent panel identified 28 technical issues that could cause problems with constructing and operating Hanford’s WTP. The panel of scientists, engineers and chemical and nuclear industry professionals also concluded that the problems could be fixed and that the WTP was essential. The most serious problem identified was potential clogging of pipes by the waste — which could happen within days to a few weeks of operation under the current design. Sixteen other issues were identified that would prevent the plant from running efficiently and 11 were identified that might cause operating inefficiencies. Resolving all the problems should add no more than three percent to the cost of building the plant. The report recommended purchasing replacement melters and an extensive dry run of equipment in areas that would be too contaminated for workers to enter once operations begin.

The estimated cost of building Hanford’s WTP complex climbed another billion dollars by April, according to a new review presented to Congress by an independent team of experts. The project was estimated to cost $11.3 billion and the start of operations was expected to be delayed until July 2018. The study reviewed the most recent cost and schedule estimates prepared by Bechtel National, which was building the facilities for DOE.

The news magazine show 60 Minutes focused on Hanford’s WTP project and said that billions of dollars of taxpayers’ money had been
“squandered.” The report questioned whether DOE was capable of overseeing successful construction and operation of the facilities.

The Government Accountability Office (GAO) recommended ending the “fast track” approach to constructing Hanford’s WTP. The GAO said waiting to resume construction on the pre-treatment and high-level waste vitrification facilities until the design was at least 90 percent completed could save money by reducing false starts and delays when the plant began operating.

By June, the cost to build Hanford’s WTP facilities was estimated at $11.55 billion, with completion delayed until August 2019. The new estimates, prepared by Bechtel National, assumed continued level funding of $690 million per year. Increased funding to around $800 million a year from 2008 through 2010 would allow the facilities to be completed about a year and a half sooner.

Drilling of the first of four new test holes began during the summer to determine seismic vulnerability for Hanford’s WTP. The new study was intended to augment a smaller study in 2004 which showed that

“For the Energy Department, which runs the project, it’s been a case of easier said than done. In the nearly 16 years 60 Minutes has been covering this story, it’s been one foul up after the next.”

– 60 Minutes Correspondent Lesley Stahl. (60 Minutes, April 30, 2006).

“Skeptical members of Congress were the best possible audience for the grim update provided by ‘60 Minutes’ on the soaring expenses and repeated delays of cleanup at Washington’s Hanford Nuclear Reservation. The broadcast…was a potent reminder of the lethal threat tens of millions of gallons of radioactive waste in underground tanks pose for this region.”

– Seattle Times Editorial. (May 2, 2006).

“DOE is continuing with the fast-track approach to try and stay as close as possible to milestone dates agreed to in the Tri-Party Agreement and to keep costs down. However, the technical, safety, and management problems on the project make it clear that a fast-track approach is not appropriate.”


“Years of revolving-door DOE officials, continual promises to improve management controls and oversight, and sky-rocketing costs have led the committee to the point where it no longer has confidence in the department’s estimates in the (WTP project) nor in the department’s ability to manage its way back on this project.”

– House Appropriations Subcommittee report. (Tri-City Herald, May 12, 2006).

Borehole drilling on the Waste Treatment Plant site for seismic analysis.
the design for the vitrification facilities was likely not robust enough to withstand a severe earthquake. The new tests would provide a more complete look at how an earthquake might affect the WTP facilities and could result in the need for less robust designs. The analysis of the new results was expected to be completed by June 2007.

DOE Assistant Secretary Jim Rispoli said construction of major portions of Hanford’s WTP complex would remain halted through at least the next year to provide sufficient time to ensure that new earthquake design standards were sufficient. Construction would continue on those portions of the WTP complex that would not handle high-level radioactive waste. During a visit to Hanford, Rispoli said DOE remained committed to completing the WTP facilities and immobilizing Hanford’s tank waste and that Bechtel National would remain as the lead contractor on the project.

In September, DOE released the Army Corps of Engineers validation report on Bechtel’s estimated schedule and cost for completing Hanford’s WTP. The Corps recommended adding $650 million to Bechtel’s estimated cost to account for potential fluctuations in labor rates and additional project contingency. That brought the total cost to complete and test the WTP to $12.2 billion. The Corps added an additional three months to the schedule, pushing the completion date to November 2019. Both the cost and schedule estimates assumed consistent federal appropriations of $690 million from fiscal year 2007 through completion of the project. More than $3 billion had already been spent.

DOE Office of River Protection Manager Roy Schepens was re-assigned to Headquarters. Schepens had been in the position since June 2002 and would stay on as interim manager until a replacement was found.

An independent technical review identified 19 technical issues to resolve for the demonstration bulk vitrification tests to move forward. The demonstration tests were necessary to determine if the technology was viable to immobilize Hanford tank waste. The review also identified 26 areas of concern and offered 13 suggested improvements. A cost and schedule review of the project was also planned.
Around the DOE Complex

Energy Secretary Bodman announced new regulations intended to improve worker safety across the DOE complex. The rule established a uniform set of standards that would require department-wide compliance and monetary fines for contractors who failed to apply those regulations.

The National Academies’ National Research Council recommended that DOE should not be in a hurry to close underground high-level waste storage tanks. The Research Council report, directed by Congress in 2004, encouraged DOE not to close individual tanks where existing technology could not remove hard heels of waste that remained in the tank bottoms. The report said good planning should allow tanks with difficult waste heels to remain open to see if new technology could be developed and still allow cleanup deadlines to be met. The report criticized efforts at DOE’s Savannah River Site as a “milestone-driven rush to grout a tank essentially permanently and irrevocably even if much more radioactive material remains than is expected.” The report agreed that grout appeared to be the best material for filling the tanks, but said DOE needed to understand more about the long-term ability of grout to inhibit water flow and immobilize waste in the closed tanks. The report also raised concerns about whether enough was known about bulk vitrification to move forward with that technology at Hanford.

“There are a lot of pressures to do things in the near-term at Savannah River and to a lesser extent at Hanford. The committee is concerned the schedule-oriented approach can sometimes lead to decisions that you wouldn’t make under more ideal circumstances.”

– Study Director Micah Lowenthal. (Associated Press, April 5, 2006.)

“Rather than putting closures on hold for years awaiting new technologies to be developed, new technologies should be matured and integrated in the closure program as they become available.”

– Megan Barnett, DOE Headquarters spokesperson. (Tri-City Herald, April 5, 2006.)
New Mexico granted DOE a permit to dispose of “remote-handled” transuranic waste at the Waste Isolation Pilot Plant (WIPP). Since WIPP opened in 1999, more than 5,000 shipments of “contact-handled” transuranic waste — which did not contain much penetrating radiation — had been disposed at the site. Hanford was not on the schedule to begin shipment of remote-handled waste in the near future.

“We’ve got an area that is contaminated in the groundwater and is migrating towards the Columbia River. And if it gets there...we have an absolute disaster on our hands...I can understand the frustration in Congress. Frankly, they are no more frustrated than me. But the last thing we need is to send a message to this country that it’s ok to walk away. It is not. The chances of a catastrophic event over there are real. Time is not on our side.”

— Washington Governor Chris Gregoire on 60 Minutes. (April 30, 2006).
The Cleanup

The Hanford cleanup took some major steps forward, and a few steps back. Overall, it was an event-filled year at Hanford.

A routine audit showed that a worker at Hanford’s Environmental Restoration Disposal Facility (ERDF) falsified records related to the compaction of waste within the disposal site. Bulldozers were used to compact the contaminated soil and building debris dumped in the

Two new state-of-the-art compactors were purchased for Hanford’s Environmental Restoration Disposal Facility after problems with compaction were discovered. ▼
“This has everyone’s attention. All the focus is on getting to the bottom of it.”
– Pat Pettiette, President of Washington Closure Hanford, on problems at ERDF.
(Tri-City Herald, January 13, 2007).

“The operational problems identified in this penalty action point to deficiencies in both contractor conduct of operations and DOE oversight. These failures have raised public concerns about ERDF’s integrity as a safe and secure waste management facility and slowed cleanup across the site.”
– Letter from Daniel Opalski, U.S. Environmental Protection Agency, to Keith Klein, DOE Richland Manager. (March 27, 2007).

“(Washington Closure Hanford) and the Department of Energy have been very responsive to issues. They did not take a Band-Aid or shortcut approach.”
– Nick Ceto, Hanford Program Manager for the U.S. Environmental Protection Agency. (Tri-City Herald, October 2, 2007).

“Todd’s service to Hanford’s cleanup is hard to measure but impossible to ignore. He has truly made a difference, and is a tremendous asset to citizens of Washington.”

“These years at Hanford have been the toughest and most rewarding of my life. Running this place is an awesome responsibility; an awesome trust. But I have accomplished what I intended and it’s time to move on.”

landfill. The intent was to ensure the ground would not settle sometime in the future and damage the “cap” that would eventually be placed over the landfill to prevent water infiltration. During the past year, the worker had at times not performed the compaction tests but did enter false data.

The U.S. Environmental Protection Agency (EPA), which regulated ERDF, issued the U.S. Department of Energy (DOE) a $1.14 million penalty — its largest fine ever at Hanford. The fine included $835,000 for failure to correctly perform compaction testing. The penalty covered both the falsification of testing records and what EPA believed was the improper use of equipment to test compaction. An additional $305,000 in penalties was assessed because of problems monitoring a system to pump collected water from the landfill. EPA said both DOE and its contractor were at fault. EPA said the problems did not appear to have affected the landfill’s integrity. Soil contaminated with mercury was also mistakenly disposed of at ERDF in the spring.

By mid-May, after it had made several changes to its operating procedures, Washington Closure Hanford was cleared to resume nearly full operations at ERDF. The company also purchased two new 120,000 pound compactors. The compactors would be equipped with Global Positioning Systems to allow drivers to see precisely which dirt had been compacted and measure the vertical height of the landfill as each pass was made.

EPA agreed to allow much of the money from the fines to be used on two supplemental environmental projects. DOE and Washington Closure would purchase two emergency response boats for the Benton County Sheriff’s Office to provide quick response to any hazardous materials spills in the Columbia River. That project cost $253,000. Another $602,000 would be used to construct a greenhouse and nursery facility at the Washington State University Tri-Cities campus to grow native vegetation for habitat rehabilitation.

Outgoing Hanford Advisory Board Chair Todd Martin received the Washington Department of Ecology’s highest award for environmental stewardship, the ‘Environmental Excellence Award.’ Martin served as the Board’s chair for six years and had supported the cleanup of Hanford for more than 20 years.

Two Tri-Cities organizations were awarded $1.02 million to jointly study whether Hanford’s Fast Flux Test Facility and nearby buildings could be used as part of DOE’s Global Nuclear Energy Partnership — a program designed to revitalize nuclear power and minimize waste generation through the reprocessing of nuclear fuel. Ten other sites around the country were also being studied.

Hanford’s two top managers retired. Roy Schepens, manager of the Office of River Protection (ORP), retired February 28 after five years at Hanford. Keith Klein, manager of the Richland Operations Office, retired May 31 after eight years at Hanford and 34 years with DOE and its predecessor.

DOE initiated a nationwide search to fill both positions but even-
tually hired from Hanford. In July, DOE named Dave Brockman as the Richland Office Manager. He had most recently served as the federal project director for the K-Basins closure project. In November, ORP Acting Manager and former ORP Deputy Manager Shirley Olinger was promoted to serve as ORP Manager.

Hanford workers located a major source of chromium near the D and DR reactors, which was a major contributor to groundwater contamination in the area. The area was near a transfer station where chromium was emptied from railroad tanker cars. A well drilled in that area found chromium at more than 10,000 parts per billion, considerably over the 100 parts per billion drinking water standard and the 10 parts per billion regulatory limit for water in the river gravel beds.

Hanford workers completed waste retrieval from the seventh of Hanford’s 149 underground single shell tanks. S-112 was a 758,000 gallon capacity tank and held 614,000 gallons of waste when retrieval work began in 2003. Waste retrieval operations continued at several other tanks.

DOE agreed to begin assessing damage to natural resources at Hanford — a reversal of a previous position that resulted in litigation filed by the Yakama Nation and joined by the states of Washington and Oregon and the Nez Perce Tribe and Confederated Tribes of the Umatilla Indian Reservation. DOE had previously stated it would conduct injury assessment only after cleanup was complete.

High-level negotiations began in late May and continued periodically through the year to address major Tri-Party Agreement milestones that DOE was certain to miss. Washington Attorney General Rob McKenna, Ecology Director Jay Manning and DOE Assistant Secretary Jim Rispoli participated in the negotiations at various times. The state's primary concerns were an eight year delay in beginning operations of the Waste Treatment Plant (WTP) and delays in retrieving waste from Hanford's single-shell tanks. The state had indicated it was not likely to agree to extend those existing Tri-Party Agreement milestones unless DOE agreed to accomplish some additional work in the meantime.

“These past five years have been an incredible journey and I’m extremely proud to have had the opportunity to be the manager and to have served with the dedicated and capable team at ORP.”


“We’re willing to do more, sooner, now, because we believe we’ve found ways to do it that won’t impact our cleanup obligations and schedules or add unduly to the taxpayer cost.”

— DOE Richland Manager Keith Klein, on DOE’s agreement to begin assessing natural resource damage at Hanford. (Associated Press, April 3, 2007).

“It doesn’t mean we’ve ruled out going to court but before we do that we will see if we can negotiate an agreement.”

— Andy Fitz, Washington state assistant attorney general. (Tri-City Herald, April 6, 2007).

“Current deadlines for construction of the waste treatment plant and retrieval of waste from single-shell tanks have been missed and shared concerns about contaminated groundwater and recent technological breakthroughs make it the right time to take action...Discussions will cover the entire clean-up and will focus on ways to protect the Columbia River, the air, soil and groundwater.”

“Pretty shocking.”

– Gerald Pollet, Heart of America Northwest, on proposed delays in Hanford’s Waste Treatment Plant. (Tri-City Herald, September 7, 2007).

“The proposed new and accelerated work related to groundwater and the deep vadose zone does not sufficiently offset the added risks caused by delays in the tank program. More accelerated work is needed elsewhere.”

– Letter from Oregon Department of Energy Director Michael Graney to the Tri-Party Agencies. (October 12, 2007).

“Congress may view such agreements for lengthy delays as a tacit admission that the urgency claimed for these efforts was false. Stretching out the timelines for action will create a disincentive for providing funding to get the job done.”

– Hanford Advisory Board Consensus Advice #203, on proposed delays to the Tri-Party Agreement. (November 2007).

“If you look ahead to the budget targets for the next five years, they fall way short of what is needed.”

– Nick Ceto, U.S. Environmental Protection Agency Hanford Project Manager. (Tri-City Herald, May 10, 2007).

“Hanford’s budget will buy a lot of work, but the cleanup is not on schedule.”


“Turning things around took ingenuity, commitment and teamwork. With the spent fuel, debris and sludge out of K-East, we can turn our attention to removing the water and ensuring this basin will never again be a risk to the Columbia River.”


By September, although no agreement had been reached, regulators indicated they might be willing to accept long delays in the start of the WTP and emptying single-shell tanks in return for increased focus on cleaning up Hanford’s contaminated groundwater. Start of operations at the WTP would be delayed eight years to 2019, with all waste treated by 2047 instead of the current deadline of 2028. The deadline for emptying Hanford’s 149 single-shell tanks would be extended from the current deadline of 2018 to 2040. Work to contain several of Hanford’s groundwater plumes would be accelerated by as much as eight to 12 years from current plans. DOE would also commit to developing technologies to clean waste deep in the soil and would be required to produce an annual report that estimated the total cost of remaining cleanup and a schedule for getting it done if Congressional funding was not restricted.

DOE released requests for bids for three contracts to oversee major work at Hanford. One contractor would manage tank farm operations, one would continue cleanup of Hanford’s Central Plateau, and the third would handle site support services, including security and maintenance of roads and utilities.

A five year funding profile from the Bush Administration for Hanford indicated increased budgets of about 21 percent from fiscal year 2007 to fiscal year 2012. However, that would still leave the budget about $2 billion short of funds needed to meet Tri-Party Agreement cleanup milestones. For fiscal year 2009 alone, Hanford’s Richland Office was directed to receive only $935 million of the $1.5 billion needed to comply with Tri-Party Agreement requirements. The current Hanford budget of about $1.88 billion was projected to steadily increase to $2.28 billion in fiscal year 2012.

Hanford workers completed removal of sludge from the K-East basin by the end of May. Work began in October 2004 to vacuum the radioactive sludge into underwater containers. It was expected to take only a few months to complete but turned out to be far more complicated and time-consuming. Workers removed more than 170 tons of debris from the basin floor and developed various new tools to finally complete the work.

By the end of July, most of the sludge in the K-West basin had also been vacuumed into underwater containers. The work took seven months to complete compared to more than two years for the K-East basin, but there was far less sludge — about 10 cubic meters in the K-West basin and 37 cubic meters in the K-East basin.

By late October, a 14-inch layer of grout had been poured over the floor of the K-East basin to act as a radiation shield, allowing demolition of the basin with less radioactive exposure to the workers.

DOE and its contractors continued to struggle with final treatment plans for the sludge, which was all consolidated into underwater containers in the K-West basin. They were not optimistic about meeting a Tri-Party Agreement deadline of March 31, 2009, to have all the sludge out of the K-West basin and both basins demolished.
A Government Accountability Office (GAO) report concluded that DOE might have dramatically underestimated the cost to clean up buried radioactive wastes at Hanford and other DOE sites. It also questioned whether there was sufficient disposal room in the Waste Isolation Pilot Plant in New Mexico for the large amounts of buried transuranic wastes that might yet be dug up. The report acknowledged that DOE’s plans to leave much of the waste in the ground would likely be opposed by regulators and stakeholders.

Hanford was one of about 10 sites identified as a potential location in which to dispose of commercial and government waste called ‘greater than Class C waste.’ If brought to Hanford the waste, which contained the highest concentration of radioactivity of the four classes of low-level waste, would be buried in either ‘enhanced’ near-surface disposal or buried in boreholes about 100 feet under the surface. The waste would come from the decommissioning of nuclear power plants, nuclear research and various commercial activities.

About 85 gallons of high-level radioactive waste spilled onto the ground in Hanford’s S Tank farm during the early morning hours of July 27. The spill occurred after a pump clogged during the retrieval of the 40,000 gallons of waste remaining in tank S-102. During efforts to unclog the pump, a water line was pressurized and waste was forced out of the line. The spill was estimated to last just under two minutes.

“The estimates reflect the costs of leaving most waste under earthen barriers — typically the least expensive approach. If DOE is required to retrieve substantial portions of these wastes, costs would increase dramatically...DOE’s lifecycle cost estimate to remove transuranic wastes buried near the Columbia River at the Hanford Site could triple.”


“It’s like you’ve got a huge target on your back when you’re living in the Northwest.”

– Gerald Pollet, Heart of America Northwest. (The Oregonian, August 24, 2007).

Workers near tank S-102, four months after a spill of tank waste onto the ground.
“The material in this tank is some of the most difficult we’ve had to deal with in retrieval at Hanford. It flows but it doesn’t flow very quickly. It’s particularly rough on pumps.”

— Richard Raymond, CH2M Hill Hanford, who described the waste in tank S-102 as having a consistency similar to chunky peanut butter. (Tri-City Herald, August 1, 2007).

“The consequences could have been much worse. A few minutes earlier there would have been five people within a few feet of the pump.”

— John Fulton, President of CH2M Hill Hanford Group, on a spill of high-level tank waste during waste retrieval. (Tri-City Herald, September 9, 2007).

“(The potential for this type of accident) was raised and it was analyzed and it was deemed not credible. The potential for it was so low, it was deemed to be an incredible event and not possible, which was obviously incorrect.”

— John Britton, CH2M Hill Hanford Group, on a spill of high-level tank waste from tank S-102. (The Oregonian, September 21, 2007).

No workers were in the immediate area at the time of the spill and the spill was not confirmed for about eight hours, at which time workers in the area were ordered to take cover. A fixative was sprayed over the spill area to try and prevent any waste from becoming airborne and all tank retrieval activities were halted.

A DOE Accident Investigation Board concluded the accident was avoidable and identified a number of corrective actions. The report said radiation exposures were monitored and were well below any regulatory or corporate administrative control limits. Radiological surveys confirmed no spread of contamination outside the tank farm boundary. However, at least eleven workers reported health symptoms or other concerns. The Washington Department of Ecology issued a $500,000 fine to DOE as a result of the accident.

DOE extended Pacific Northwest National Laboratory’s management and operating contract in August for as long as two more years. DOE said in February it planned to seek competitive bids for the contract to manage the national science laboratory, which had been managed and operated since its start in 1965 by Battelle Memorial Institute, a nonprofit group based in Columbus, Ohio.

A minor radiation leak at a Hanford building in June posed no threat to workers or their families, but Battelle spent about $28,000 to replace three employee cars and other personal items to get rid of any residual contamination. A small amount of plutonium 238 leaked from a sealed disc that was used in a series of experiments. Workers in the building who were contaminated moved to another building and drove their vehicles before the problem was discovered.

The Ninth Circuit Court of Appeals overturned four of six jury verdicts from 2005 involving people who had claimed health impacts from past releases of radioactive materials during Hanford’s operating years. The Court found procedural errors in three cases, where people with non-cancerous thyroid disease had all lost their verdicts. The Court ruled they deserved new trials. A fourth case, found in favor of a woman who developed thyroid cancer after growing up down wind of Hanford, was found to have exceeded the statute of limitations.
Rattlesnake Mountain and most of the Arid Lands Ecology Reserve were blackened by a mid-August fire that burned 67,000 acres. The fire was driven by strong winds but firefighters were able to hold it to less than half of the area of the 2000 fire. This time, no radiological areas of the site were burned and there were no injuries, although the damage to the environment was severe.

DOE and fire officials credited new firefighting tactics, long used by the Forest Service, and the purchase of two all-terrain vehicles which were equipped with drip torches to start back fires and burn vegetation to starve the fire. About one million sage brush, planted after the 2000 fire, were destroyed.

DOE announced in September that it would consolidate surplus, non-pit plutonium at the Savannah River Site in South Carolina. The decision cleared the way for about 2,300 plutonium storage containers at Hanford to be sent to the Savannah River Site. The classified shipments began later in the year. Removing the plutonium from Hanford would also allow for the demolition of the Plutonium Finishing Plant and save tens of millions of dollars in security costs.

Seepage from a proposed reservoir west of Hanford could raise the water table and potentially mobilize contaminants in the soil, spreading them into groundwater or the Columbia River. The analysis by the U.S. Bureau of Reclamation of the proposed Black Rock Reservoir raised concerns about the project, which was intended to

“They did a fantastic job to catch it in the conditions we had. The weather was hot, windy and dry.”
– Greg Hughes, U.S. Fish and Wildlife Department. (Tri-City Herald, August 18, 2007).

“You can’t fight the fire coming toward you, so you get in front of it and burn the fuel out.”
increase water storage for agriculture in Central Washington and improve stream flows for fish. Columbia River water would be pumped to the reservoir from behind Priest Rapids Dam. The seepage was projected to raise the water table between 20 and 40 feet beneath Hanford’s 200 Areas.

Hanford workers injected chemicals into the ground near the N Reactor to form a 300-foot long chemical barrier and help stop the flow of strontium in the groundwater getting into the Columbia River. Initial results were more promising than a test in 2006. Strontium levels in some groundwater monitoring wells were lowered by as much as 90 percent. The chemicals formed calcium phosphate, also called apatite. When strontium came in contact with the apatite, it bound to the soil. More concentrated amounts of the chemicals would be injected in 2008 to help ensure the barrier would last.

Hanford workers began building a temporary “cap” over a portion of the T Tank farm, in an effort to stop rain and other water from soaking into the soil and moving contamination into the groundwater. The cap would cover T-106, which was believed to have leaked about 115,000 gallons of waste — the most of any of Hanford’s tanks. Parts or all of nine other tanks would also be covered by the cap. A synthetic fabric was placed over the soil, then sprayed with a plastic which was somewhat similar to the liner in a pickup truck, but more chemically resistant and longer lasting.

**Tank Waste Treatment**

Full construction resumed at Hanford’s WTP complex in mid-September. Thirty-five truckloads of concrete were poured at the high-level vitrification facility, which marked the first major structural construction completed on the facility since late 2005. Construction had been halted for about 20 months while DOE confirmed seismic
standards for the facilities. Major structural construction on the Pretreatment Facility was expected to begin in January. Workers would continue to focus on completing the laboratory, the low-activity waste vitrification facility and support facilities by 2012. The number of workers would gradually increase to about 1,400 over the next year as the contractor, Bechtel National, resumed full-scale construction.

DOE's official cost estimate for Hanford's WTP complex went up to $12.26 billion, more than double the official estimate in 2003. The estimate was contingent upon funding of at least $690 million annually until completion. Full operation of the WTP would begin in November 2019. DOE approved the new estimate after adding $57 million to cover a portion of the contractor's fee and cover additional technical project review and oversight. Congress had so far authorized $3.64 billion.

In addition to the $12.26 billion it would take to construct the treatment facilities, the estimated cost to treat Hanford’s tank waste and close the 177 underground storage tanks increased by $18 billion to $44 billion. Contingency costs of as much as $18 billion could raise the total cost to $62 billion. Under the revised DOE schedule the work would be completed in 2042, well beyond the current 2028 Tri-Party Agreement milestone.

Starting up Hanford’s low-activity waste (LAW) vitrification facility five years before the entire WTP complex was operational could result in early treatment of more than seven million gallons of radioactive waste in Hanford's tanks. However, it would cost nearly $1

“*We’re being very methodical about resumption of construction. You can’t go from zero to 60 in two seconds. You want to make sure the guys coming on are appropriately trained.***”


“*We’re stretching the overall project out. Every year you operate, the more it costs.*”

– Zack Smith, DOE-ORP acting deputy manager. (Tri-City Herald, June 8, 2007).
“Originally, DOE justified the bulk vitrification project as a relatively low-cost, rapidly deployable supplemental technology to assist the department to complete the tank waste treatment at Hanford by 2028. However, none of the key components to this justification remains today...It is now apparent that completing tank waste treatment at Hanford by 2028 is not possible under any reasonable scenario and that the waste treatment plant must operate far longer than DOE previously planned.”

“Around the DOE Complex

The GAO reported that DOE had not fully implemented new security improvements at several DOE sites to protect against terrorist attacks. At least five of 11 DOE sites were expected to miss deadlines for security upgrades, some by several years. DOE had delayed implementing some security improvements, such as at Hanford, because of plans to consolidate its plutonium elsewhere.

“Before the spill was discovered, a series of poor decisions put workers in grave danger from exposure to the tank waste and vapors. This accident calls into question the adequacy of the safety culture which is so critical at the tank farms.”
– Jane Hedges, Manager of Ecology’s Nuclear Waste Program, in announcing a $500,000 fine following a July leak in Hanford’s S Tank farm.
“Since the spring of 2007, we have attempted to negotiate a resolution to this matter... The State has now concluded that (the U.S. Department of ) Energy will only treat and retrieve tank waste in a timely manner if a court intervenes, establishes a schedule, and maintains oversight of the work until it is completed. We are filing suit to achieve this result.”

– Letter from Washington Governor Chris Gregoire and Attorney General Rob McKenna to Energy Secretary Samuel Bodman. (November 24, 2008).

The Cleanup

U.S. Department of Energy (DOE) and State of Washington officials met periodically throughout the spring and summer to try to reach agreement on new milestones related to construction and operation of Hanford’s Waste Treatment Plant (WTP); schedules to remove waste from Hanford’s single-shell tanks; and accelerated work to clean up Hanford’s contaminated groundwater. Washington Governor Chris Gregoire traveled twice to Washington D.C. and met with Energy Secretary Samuel Bodman in an effort to try and reach an agreement. Some progress was noted in the negotiations, and in April, Governor Gregoire said litigation was unlikely. Attorney General Rob McKenna said in late September the State of Washington would go to court to enforce Hanford cleanup requirements only if it was the best way to serve the state’s interests.

“It appears Governor Chris Gregoire is rapidly nearing the stage where she has no other viable option left to get the federal government’s attention on cleaning up the Hanford nuclear reservation. And to that we say: ‘Sue their socks off, Governor, if that’s what it takes.’”


“Our community clearly understands that collateral damage from legal action on the Tri-Party Agreement will primarily be felt here. In the larger sense, we also cannot see how litigation will help clean up the Hanford site.”

– Letter from the Tri-Cities Industrial Development Council and the Hanford Communities to Washington Governor Chris Gregoire and Energy Secretary Samuel Bodman. (Tri-City Herald, September 17, 2008).

Structural work in the Waste Treatment Plant’s High-Level Vitrification Facility.
“The cleanup schedule that we were prepared to agree to is realistic and technically achievable. It was the federal government’s insistence on unacceptable legal terms that made an out-of-court settlement impossible.”


“With a new administration comes the possibility for a settlement, rather than a drawn-out legal battle. But after so many broken promises, the state would be foolish to rely on hope. It must insist on enforcement.”


“The motives driving Gregoire and McKenna to the courthouse are easy to grasp. It’s the timing that’s questionable…Yes, talks with the current administration are at an impasse, but it’s likely the Obama administration will be more receptive to the state’s point of view than Bush’s team. At least it should have the chance to prove otherwise.”

— Tri-City Herald Editorial. (November 30, 2008).

Negotiations had begun in early 2007 to address the fact that DOE would not be able to meet a 2011 Tri-Party Agreement milestone to have the WTP operational. Nor would DOE be able to meet numerous milestones related to the retrieval of waste from Hanford’s underground single-shell waste storage tanks. The State of Washington was willing to negotiate later milestones but wanted an increased focus on cleaning up Hanford’s contaminated groundwater and other concessions in return.

DOE and the state reached agreement in principle on new cleanup deadlines which were substantially the same as made public in mid-2007. The start of operations at the WTP would be delayed eight years to 2019, with all waste treated by 2047 instead of the current deadline of 2028. The deadline for emptying Hanford’s 149 single-shell tanks would be extended from 2018 to 2040. Work to contain several of Hanford’s groundwater plumes would be accelerated by as much as eight to 12 years from current plans. DOE would also commit to developing technologies to clean waste deep in the soil and would be required to produce an annual report that estimated the total cost of remaining cleanup and a schedule for getting it done if Congressional funding was not restricted.

However, the state and the U.S. Department of Justice could not agree on language that the state believed would make revised deadlines enforceable and in late November the State of Washington filed suit in federal district court in Eastern Washington. The lawsuit asked a judge to set new enforceable deadlines for cleanup.

Governor Gregoire said she welcomed the January arrival of President-elect Barack Obama in the White House and was ready to work with his new Energy Secretary to find a solution to the stalled negotiations.
Significant progress was made at Hanford’s K-Basins — once among the highest cleanup priorities in the entire DOE nuclear weapons complex.

In January, Hanford workers completed vacuuming up the remaining sludge from the floor of the K-West basin. That completed work begun in October 2004 to vacuum up about 47 cubic meters of highly radioactive sludge from the floors of the K-West and K-East basins. Later in the year, the remaining scraps of spent nuclear fuel were removed from the basin, dried, and sent to Hanford’s Canister Storage Building for indefinite storage.

While the K-West basin would have to remain in place as long as the sludge remained in underwater containers on the floor of the basin, there were no longer any such restrictions for the K-East basin.

Water in the basin — about one million gallons — was drained during February and March and taken in 5,000 gallon tanker trucks to the Effluent Treatment Facility. Because the basin had leaked at least twice in the past, removing the water had been a priority.

The basin was then filled with a sand and grout mixture to provide radiation shielding for the workers and to provide a platform for heavy machinery for tearing down the building above the basin. By the end of September, the building had been demolished and work began to remove soil just outside the basin to get at the concrete basin itself. Because of the past water leaks from the K-East basin, contaminated soil beneath the concrete basin would also be removed.

“Every victory we’ve had at the K-Basins has been hard fought, and this one is certainly no different.”

— Matt McCormick, DOE Assistant Manager for the Central Plateau, on the last of the sludge being vacuumed into containers. (DOE News Release, January 7, 2008).

“We know the K-East basin has leaked contaminated water several times, primarily in the 1970s. We want to eliminate the potential for any future leaks and get to the contaminated ground beneath as soon as possible.”

— Tom Teynor, DOE. (DOE News Release, February 7, 2008).
Work was also underway to accelerate groundwater cleanup efforts near the K-East reactor. Additional funds provided by Congress were being used to expand an existing groundwater pump-and-treat system. A large plume of hexavalent chromium was the concern.

DOE, the U.S. Environmental Protection Agency (EPA), and the State of Washington moved forward with plans to construct the largest groundwater treatment system at Hanford to clean up contaminated groundwater in the northern part of Hanford’s 200 West Area. The contaminant of most concern was the solvent carbon tetrachloride, which covered a four to five square mile area. The agencies proposed to drill 50 new wells for a pump-and-treat system to treat more than 1,600 gallons of groundwater per minute. Initial estimates called for bringing the new treatment system on line in two to three years to replace a smaller treatment system installed in the 1990s. The new treatment system was expected to remove 95 percent of the contaminants from groundwater in the area within 25 years.

Washington State University and three national laboratories received a three-year $1 million grant to continue research on the fate of radioactive waste that had leaked from Hanford’s underground tanks. The project focused on developing a computer model that could predict how wastes moved in Hanford’s soil.

A five-year $13 million research project began to examine the behavior of uranium in Hanford’s soil and groundwater. Thirty-five new monitoring wells were drilled around an old disposal pond in which uranium-contaminated waste water had been dumped.

Excavation of one of Hanford’s more high-risk burial grounds began in January and continued through much of the year. The 618-7 burial ground was used from 1960 through 1973 to dispose of waste from Hanford’s 300 Area. It was expected that some of the waste might ignite when exposed to the air, so special procedures were put in place. Intact drums were opened inside a specially equipped enclosure, with a hopper of sand ready to fill the enclosure if the contents caught fire. Only five drums within the excavation were exposed at any time and only one drum removed from the excavated area until its contents had been identified and stabilized. Workers were suited...
in protective clothing and breathed supplied air. The ten acre burial ground contained three burial trenches and was located just one mile north of the city of Richland.

Excavation work began in late summer on one of Hanford’s original burial grounds. The 618-1 burial ground was the first burial ground in the 300 Area and was used from 1945 through 1951.

The Bush Administration proposed cutting Hanford cleanup funding for fiscal year 2009 by $58 million, which sparked a concerted effort by the Washington and Oregon Congressional delegations to increase the funding. Congress eventually failed to pass a new budget and DOE’s funding levels from 2008 were continued with the expectation that some supplemental funding would be approved early in 2009.

In early November, DOE’s Richland Office notified the State of Washington and EPA that 23 Tri-Party Agreement milestones were at risk due to anticipated funding shortages. DOE asked that its regulators work with them to make the “necessary adjustments” to the milestones, all of which related to projects in Hanford’s Central Plateau. DOE also directed its contractor to suspend all work to meet the milestones. EPA sent a letter to DOE reminding it that the milestones remained in place until DOE’s regulators — EPA and the Department of Ecology — agreed to the changes.

Hanford workers completed installation of a temporary “cap” over a portion of the T Tank farm, in an effort to stop rain and other water from soaking into the soil and moving contamination into the groundwater. The 70,000 square foot cap covered T-106, which was believed to have leaked about 115,000 gallons of waste — the most of any of Hanford’s tanks. Parts or all of nine other tanks were also covered by the cap. A synthetic fabric was placed over the soil then sprayed with a plastic which was somewhat similar to the liner in a pickup truck, but more chemically resistant and longer lasting.

The Ninth Circuit Court of Appeals ruled that the statute of limitations had not expired for individuals suing for health impacts they contended were caused by radioactive material releases to the environment from Hanford during its operating years. The ruling also restored a $317,000 judgment for an individual that had been overturned in 2007. The Court also ruled that past Hanford contractors were not entitled to blanket legal immunity just because they operated Hanford under contract to the federal government. An appeal to the U.S. Supreme Court was denied.

The Ninth Circuit Court of Appeals upheld a Federal District Court ruling in 2006 that Initiative 297 — passed by Washington voters in 2004 — was unconstitutional. The initiative would have stopped most waste from coming to Hanford from other DOE sites. The initiative was challenged before it could ever be implemented. The State of Washington chose not to appeal the ruling to the U.S. Supreme Court.

A number of new fines were levied as a result of the July 2007 spill of high-level tank waste during waste retrieval operations.

In April, Ecology fined DOE $500,000, with half the fine waived if certain performance and safety measures were met. DOE would pay

“Buried in President Bush’s proposed budget for next year is a story of broken promises. It’s a story that puts our nation’s honor — and our environment, economy and families — on the line. The president wants to increase spending on every major category of our government’s nuclear program except one: cleaning up the toxic legacy that lurks at nuclear reservations and facilities around the nation.”


“Telling the story of the nuclear cleanup budget during the Bush Administration is almost like a soap opera or television miniseries…tonight, watch the tragic story of a jilted bride lured by promises of accelerated cleanup funding, only to be left at the altar, forgotten and neglected.”


“Are you proud of this budget?”

– Washington Senator Patty Murray’s question of Energy Assistant Secretary Jim Rispoli at a Senate subcommittee hearing. (Tri-City Herald, April 10, 2008).

“DOE has chosen to unilaterally suspend work on a number of milestones…without making any prior attempt to reach agreement on appropriate adjustments in work scope or milestones…The listed Tri-Party Agreement milestones remain in effect and subject to enforcement action until modified.”

– Letter from Larry Gadbois, Acting U.S. Environmental Protection Agency Hanford Program Manager, to DOE Richland Manager Dave Brockman. (December 3, 2008).
a penalty of $50,000 and perform two supplemental environmental projects. DOE’s tank farm contractor, CH2M Hill Hanford Group, would replace twelve large air filters in the TY single-shell tank farm. CH2M Hill would also provide $100,000 worth of emergency equipment to the Tri-County Hazardous Materials Response Team.

In June, DOE fined CH2M Hill $302,500 for safety violations related to the spill. DOE said it was concerned about the delays in detecting the spill and issues that led to the spill occurring.

Also in June, CH2M Hill agreed to spend another $30,800 to resolve a fine issued by EPA against DOE and the contractor for delays in reporting the spill to the National Response Center. CH2M Hill paid a cash penalty of $6,800 and bought $24,000 of equipment for the Tri-County Hazardous Materials Response Team.

Nearly a year after the waste spill, limited work resumed on retrieving waste from Hanford’s single-shell tanks. Work resumed in June inside tank C-109, where about 9,500 gallons of sludge and other solids remained. The effort was slowed when a remote-controlled miniature bulldozer that had been lowered in the tank lost one of its treads.

Retrieval efforts in tank C-110 began in September. About 177,000 gallons of sludge remained inside the 530,000 gallon tank. Retrieval would be accomplished using a technique known as modified sluicing.
which used nozzles to spray the waste with liquid to mobilize it or otherwise break it up and move it to a pump for removal.

Hanford briefly surfaced as at least a regional issue in the Presidential campaign. During a campaign stop in Pendleton, Democratic candidate Barack Obama was asked about some of the problems at Hanford and Obama admitted he didn’t know much about Hanford. During a visit to Washington state the previous week Republican candidate John McCain had promised to speed cleanup efforts at Hanford and push for technological advances in disposing of nuclear waste.

DOE selected new contractors to manage its tank farms and continue cleanup of Hanford’s Central Plateau. Washington River Protection Solutions, LLC was selected as the tank operations contractor to store, retrieve and treat Hanford tank waste and close the tank farms. The contract was valued at $7.1 billion over ten years (a five-year base period with options to extend for up to five years). The company replaced CH2M-Hill Hanford, a subsidiary of which was awarded the contract for cleanup in Hanford’s Central Plateau. CH2M Hill Plateau Remediation Company received a contract valued at $4.5 billion over ten years (a five-year base period with options to extend for up to five years). The company replaced Fluor Hanford.

DOE also awarded a contract to handle site support services, including security and maintenance of roads and utilities. A team led by Lockheed Martin Integrated Technologies called Mission Support Alliance, LLC won the contract valued at $3 billion over ten years (a five-year base period with options to extend for up to another five years). That award was protested and not officially awarded at year’s end.

Workers broke open welds and entered the cocooned F Reactor for the first time in five years. No degradation was found in the reactor and there was no evidence of animal intrusion.

For the fifth year in a row, Hanford workers beat Tri-Party Agreement milestones to retrieve certain amounts of suspect transuranic waste that was temporarily buried in trenches in the 1970s and 1980s. About half of the waste would eventually be shipped to the Waste Isolation Pilot Plant (WIPP) in New Mexico for permanent disposal. The remainder of the waste would be disposed at Hanford.

DOE proposed to close its Waste Receiving and Packaging facility in early 2009 for an indefinite period and send transuranic waste to the Idaho National Laboratory for processing prior to shipment to WIPP. About 1,000 drums of waste were planned to be sent to Idaho in late 2008. Concern by Hanford unions about a potential loss of Hanford jobs led DOE to rescind the decision to ship the waste to Idaho — at least for the time being. DOE said Idaho could process and package transuranic waste faster and less expensively than Hanford. DOE did indicate that with cleanup work focused primarily along the Columbia River, shipping transuranic waste to WIPP was less of a priority. As a result, Hanford shipments of transuranic waste to

“Here’s something that you will rarely hear from a politician, and that is that I’m not familiar with the Hanford site, so I don’t know exactly what’s going on there. Now, having said that, I promise you I’ll learn about it by the time I leave here on the ride back to the airport.”


“This project has been very challenging, with difficult field conditions due to heat and wind and degraded waste containers.”

– Dale McKenney, Fluor Hanford. (Tri City Herald, September 12, 2008).
WIPP could be suspended for as long as five years. Hanford workers would continue to retrieve some suspect transuranic waste that was temporarily buried after 1970, but at a reduced pace from recent years.

The Government Accountability Office (GAO) said DOE continued to be plagued by cost increases and project delays on its 10 largest projects — five of them at Hanford. The largest increases had occurred in Hanford’s tank waste treatment program, which had caused additional delays and cost increases in the program to empty waste from Hanford’s tanks.

The U.S. Department of the Interior designated Hanford’s B Reactor as a National Historic Landmark. DOE also announced plans to greatly increase public access to Hanford’s first operating reactor beginning in early 2009. Earlier in the year, DOE had issued a policy directive that required the reactor to be maintained in a state that preserved its historical significance.

Up to 100 miles of hiking trails were proposed for the Hanford National Monument as part of a long range management plan released by the U.S. Fish and Wildlife Service. About 26,000 more acres of Hanford land would be opened to the public as cleanup moved forward. The White Bluffs boat launch would remain open to motorized boats but access to Columbia River islands would continue to be restricted above the high water mark.

A major effort began to sample Columbia River water, sediment and fish along 120 miles of the river to determine potential risks from Hanford contaminants to people, animals and plants. About 1,200 samples would be collected over an 11 month period to help determine whether additional studies or cleanup measures were needed to reduce impacts to the Columbia River and its users.
**Tank Waste Treatment**

The GAO said DOE lacked comprehensive information about the condition, contents, and long-term safety of Hanford’s waste tanks. The GAO recommended that DOE prioritize assessing single-shell tank integrity; quantify specific risks in light of continued tank use; and work with state and federal regulators on realistic cleanup milestones.

The Nuclear Regulatory Commission (NRC) concluded that DOE’s regulatory processes for Hanford’s WTP were adequate to ensure public health and safety. An NRC report identified several technical issues and offered suggestions for DOE in areas including transparency of its processes and radiation safety.

A DOE-commissioned expert panel said adding a second low-activity waste vitrification facility to Hanford’s WTP would provide extensive flexibility and help assure that all of Hanford’s tank waste could be treated in a reasonable amount of time. The WTP as currently designed could treat only about half of Hanford’s low-activity tank waste and the panel was tasked with examining several different alternatives. Since the amount of supplemental treatment capacity needed was still highly uncertain, the panel said a final decision could be made as late as 2017. The panel urged DOE to focus its attention now on getting the WTP completed and operational. The panel said that bulk vitrification offered fewer advantages than originally thought and further testing should not receive a high priority.

Through December, design of the WTP complex was 69 percent completed and construction was 41 percent completed.

**Around the DOE Complex**

DOE recommended that rather than seek a second location for disposing of high-level nuclear waste, the statutory capacity limit at the Yucca Mountain repository be raised. The Nuclear Waste Policy Act (NWPA) required DOE to report to the President and Congress on the need for a second repository for the nation’s spent nuclear fuel and high-level radioactive waste. The NWPA set a statutory capacity limit of 77,000 metric tons of heavy metal for Yucca Mountain until a second repository was in operation. The inventories of commercial and federal government waste were projected to exceed that amount by 2010.

A new DOE estimate for the cost of opening and operating Yucca Mountain grew to $90 billion. That estimate was a $32 billion increase over DOE’s previous official estimate in 2001. Some of the increase was due to inflation. DOE said it also was based on expectations that Congress would allow Yucca Mountain to be expanded. Nine billion dollars had already been spent on the Yucca Mountain project.

“DOE’s tank management strategy involves continuing to use Hanford’s tanks to store waste until the waste is removed and disposed of and the tanks are permanently closed, a period measured in decades...The lingering uncertainties over tank condition and contents, combined with the tanks’ advancing age...raise serious questions about the tanks’ long-term viability.”


“Completing WTP construction and initiating waste processing operations by 2019 should be the program’s highest priority. Waste retrieval and transfer limitations may potentially extend mission duration. We believe that infrastructure upgrades and waste retrieval system improvements essential for providing feed to the WTP have too low visibility and priority.”


“The statutory limit is not based on any technical considerations, and the repository layout at Yucca Mountain can be expanded to accommodate three times the amount of fuel allowed under the current arbitrary cap.”

DOE gave final approval to a consolidation of the nation’s nuclear weapons complex. The program limited plutonium, highly enriched uranium and production of tritium to just five sites, compared with the current seven.

With the change from the Bush Administration to the Obama Administration, major changes also came to DOE. Energy Assistant Secretary Jim Rispoli announced his resignation effective in late November, and President Obama nominated Steven Chu, a Nobel Prize-winning physicist and director of the Lawrence Berkeley National Laboratory in California, as Energy Secretary.

“He demonstrated and set the example that technical and sometimes dangerous projects can be well managed while at the same time adhering to the highest safety standards.”

– Energy Secretary Samuel Bodman, on Energy Assistant Secretary Jim Rispoli. (DOE News Release, November 5, 2008).

“Dear President-elect Obama. Your expression of ignorance regarding the Hanford nuclear site during last spring’s campaign swing through Oregon has us worried…We can’t afford backsliding while your administration figures out what’s going on at the nuclear site…We know you face a daunting list of issues and approaching crises – the economy, two wars, education, health care, energy and a deteriorating national infrastructure. But Hanford is a crisis waiting to happen.”

– Tri-City Herald Editorial. (November 18, 2008).
2009

“The size and speed of the stimulus feels a bit like the movie, ‘Brewster’s Millions,’ in which actor Richard Pryor has to spend $30 million in 30 days. In Brewster’s, however, the goal is to spend the money and have nothing to show for it. The Mid-Columbia’s goal is quite the opposite. We want to spend the money and have plenty to show for it.”


The Cleanup

Hanford was one of the biggest winners as far as the national economic stimulus package. Washington Senator Patty Murray proposed in mid-January that the U.S. Department of Energy’s (DOE) environmental cleanup program receive $6 to $7 billion as part of any economic stimulus. DOE had also proposed that level of funding. The money would be primarily intended to reduce the footprint of DOE’s larger sites such as Hanford and complete the cleanup at some of DOE’s smaller sites. DOE projected it would save and create thousands of jobs almost immediately. Hanford managers said they had no shortage of “shovel-ready” projects that would qualify for federal stimulus funds helped pay for cleanup work near Hanford’s U Plant.

“We could put more money to really good work. We’re ready to roll. We’d just have to hire the people.”

money and enough flexibility in their new contracts to move quickly.

Congress did not immediately agree to the idea. While a U.S. Senate stimulus package did initially include $6 billion for DOE’s cleanup program, the U.S. House stimulus bill included just $500 million. By early February, the differences had been reconciled and Congress passed the $790 billion economic stimulus bill. It included about $6 billion for DOE’s environmental cleanup program.

By the end of March, Hanford’s share of the stimulus money was set — $1.961 billion. DOE said the money should create and save about 4,400 jobs.

DOE’s Richland Office received $1.635 billion. The money would be used to demolish nuclear facilities and support facilities, clean up waste sites, and retrieve solid waste from burial grounds. Major emphasis would be on cleanup and demolition work at the Plutonium Finishing Plant and expansion of groundwater treatment systems. Two new cells would also be built at the Environmental Restoration Disposal Facility. With increased money for work along the Columbia River corridor it was hoped that DOE could shrink the active area of cleanup at the 586-square-mile site to 75 square miles or less by 2015.

DOE’s Office of River Protection received $326 million. That money would be used to upgrade equipment and facilities, including the 222-S analytical laboratory, the effluent treatment facility and the evaporator. Work would also be done to upgrade the tank farms to ensure they were able to support operation of the Waste Treatment Plant (WTP) when it became operational around 2019. DOE would also conduct structural integrity analysis of its single-shell tanks.

In early April Hanford received the first $1.5 billion of its stimulus funds. Job fairs were held and Hanford contractors began to hire and train new workers and also retained more than 250 workers who had been scheduled to be laid off. DOE was required to obligate the stimulus money by the end of September and spend it all before September 2011.

On top of the stimulus funding, DOE also got a boost in its regular funding. Congress passed an omnibus funding bill in March which replaced a continuing resolution that had maintained funding for DOE at fiscal year 2008 levels. The omnibus bill gave Hanford about $140 million more than the President’s proposed budget and increased Hanford’s budget for fiscal year 2009 to just under $2 billion.

With work focused along the River Corridor, DOE offered initial plans for its strategy to clean up the Central Plateau. Under its 2015 vision, the plan was to reduce active cleanup on the site to no more than 75 square miles around the 200 Areas and surrounding land. DOE divided that area into inner and outer zones. The outer zone — about 55 square miles in size — was much less contaminated and DOE believed cleanup could be done to the same standards as land along the Columbia River, with unrestricted surface use. The outer zone included about 180 waste sites — most of which were believed

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“It would be extremely unfair and harmful if increased stimulus funding for cleanup was later used as an excuse to reduce budget requests and annual appropriations.”


“With this great opportunity comes great responsibility.”

— Doug Shoop, DOE Richland Deputy Manager, on extensive reporting requirements for the stimulus funds. (Tri-City Herald, March 19, 2009).

“These investments will put Americans to work while cleaning up contamination from the cold war era. It reflects our commitment to future generations as well as to help local economies get moving again.”

— Energy Secretary Steven Chu, in announcing $6 billion in stimulus funding for DOE’s cleanup projects. (DOE News Release, March 31, 2009).

“Theres an urgency to get work started and people employed.”

— Dave Brockman, DOE Richland Manager. (Tri-City Herald, April 2, 2009).
to have only shallow contamination. The remaining 20 square miles or less of the inner zone would be considered an industrial-only zone. Some of that area would be required for permanent waste disposal as it would include two large landfills — the Environmental Restoration Disposal Facility and the Integrated Disposal Facility. That area would also include Hanford’s tank farms and processing canyon facilities.

Hanford’s new tank farm contractor began work to retrieve waste from one of Hanford’s aging single-shell tanks. Washington River Protection Solutions began retrieval work at tank C-110, which had 126,000 gallons of sludge remaining inside.

DOE, the Washington Department of Ecology and the U.S. Environmental Protection Agency reached tentative agreement on new cleanup milestones for portions of the Hanford cleanup. Some of the proposed new milestones would accelerate cleanup of contaminated groundwater and other cleanup activities — especially along the Columbia River. Some work in Hanford’s Central Plateau would be delayed. The proposed changes drew mixed comments from the public.

Hanford workers completed clean-up of the 618-7 burial ground and completed excavation of the 618-1 burial ground. Both jobs presented fewer challenges than initially feared, as it was expected that some of the waste in both burial grounds might ignite when exposed to the air. There was a small flash of fire in one of the 618-7 trenches but it caused no injuries or spread of contamination. Workers dug up and removed from the 618-7 burial ground more than 180,000 tons of soil and contaminated materials, and more than 800 barrels which contained a variety of hazardous and radioactive materials. Work in the 618-1 burial ground turned out to be even less eventful.

“It’s hard to believe that Hanford could be known only as the Central Plateau in a few years. This is really what we’ve been working toward and it’s really starting to crystallize.”

— Dennis Faulk, U.S. Environmental Protection Agency. (Tri-City Herald, March 29, 2009).

“Removing the waste from the single-shell tanks and upgrading the aging infrastructure in the tank farms is...key to providing tank waste feed to the Hanford vitrification plant in 2019.”


“We believe these changes reflect shared vision and priorities.”

— Matt McCormick, DOE Assistant Manager of Central Plateau Cleanup, on proposed changes to the Tri-Party Agreement. (Associated Press, February 6, 2009).

“This was really the first time we had pretty serious budget repercussions we had to deal with. If we wanted to get that work along the river corridor done, we had to give relief somewhere else.”

— Dennis Faulk, U.S. Environmental Protection Agency Hanford Project Manager. (Associated Press, February 6, 2009).

Some buried waste drums at Hanford are badly corroded.
The State of Oregon joined litigation filed in November by Washington because DOE would not be able to meet a 2011 Tri-Party Agreement milestone to have the WTP operational. DOE would also not be able to meet numerous milestones related to the retrieval of waste from Hanford’s single-shell storage tanks. Although an agreement in principle was reached, negotiations broke down after Washington and the U.S. Department of Justice could not agree on language that the state believed would make revised deadlines enforceable and Washington filed suit seeking enforceable deadlines for cleanup. Oregon’s motion to intervene was approved by Federal District Judge Fred Van Sickle in April.

The Ninth Circuit Court of Appeals affirmed the State of Washington’s authority over mixed hazardous and radioactive transuranic waste buried at Hanford. The ruling affirmed a 2005 federal District County ruling which had upheld a state regulatory order issued in 2003. That order required DOE to remove and process the equivalent of approximately 75,000 drums of buried waste at Hanford, which had been stored in unlined trenches since the 1970s.

EPA promoted Dennis Faulk as its Hanford Program Manager. He replaced Nick Ceto, who had taken a job with DOE.

Construction of two new waste disposal cells at the Environmental Restoration Disposal Facility was completed. That raised capacity of the disposal facility to about 11 million tons, with more than 8 million tons having already been disposed. Each pair of cells was 500 feet wide by 1,000 feet long and 70 feet deep. Work was expected to begin soon on the next expansion so there was capacity available when the new cells were filled in two to three years.

“**This suit is about compelling the federal government to uphold its commitment to protect fully our environment and our citizens.**”

“We welcome Oregon’s support in this necessary litigation.”

“We are very pleased that this ruling confirms the enforceability of an important element of the Hanford cleanup schedule.”

“We dispose of an average of 250 containers of waste a day. Each container holds about 20 tons. Our target this year is to dispose of nearly one million tons, and we’ll drive about a million miles doing so.”
Work to ‘cocoon’ the N Reactor began. Cocooning involved demolishing each facility down to the four-foot-thick shield walls that surrounded the radioactive steam generators and the reactor core. All support buildings would be demolished and a new roof installed. The intent was to allow radioactivity in the reactor core to decay for up to 75 years. Five Hanford reactors had already been cocooned.

Rather than doing the same to the K-East and K-West reactors, DOE began to explore the possibility of tearing both reactors down. DOE said that its contractor was examining the technical and worker safety issues associated with going forward with demolishing both reactors.

Attorneys for former Hanford contractors said they were willing to offer cash settlements to some of the Hanford downwinders who blamed their health problems on past radioactive material releases from Hanford. The settlement offers would be made only to those downwinders who had received among the highest radiation doses. The offer came a few days after the judge overseeing the case admonished attorneys for not having yet reached some settlement.

DOE again awarded its Mission Support contract for site support services, including security, fire protection and maintenance of roads and utilities. A team led by Lockheed Martin Integrated Technologies called Mission Support Alliance, LLC was awarded the contract in September, but the award was protested by the losing contractor. The contract was valued at $3 billion over ten years (a five-year base period with options to extend for up to another five years).

DOE decided not to demolish an underground concrete structure near Hanford’s F Reactor, as it was home to the largest known colony of bats in Eastern Washington. The structure, previously used to hold water for the reactor, had no chemical or radioactive contamination and was determined to be structurally sound. About 2,000 Yuma myotis bats used the structure primarily from March through October, although some year-round use also occurred.

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“It’s a concept — one we’re very seriously looking at. It has merit.”
– DOE Richland Manager Dave Brockman, on the potential for demolishing the K Reactors. (Tri-City Herald, May 12, 2009).

“This case has been caught on dead center for too long. Let’s come up with something so we can proceed.”

“We do believe that some claims are more meritorious than others and should be settled. We will make individual offers. We will see if the plaintiffs find them appealing.”
– Attorney Kevin Van Wart, who represents former Hanford contractors DuPont and General Electric. (Spokesman Review, April 22, 2009).
Tank Waste Treatment

Two massive shield doors were installed in January in the WTP’s Pre-treatment facility as construction continued on the WTP complex. The 22-ton steel doors were each 10 feet high, 11 feet wide and approximately eight inches thick. The shield doors would provide radiological protection to workers in the Pre-treatment facility when the WTP was operational.

Initial tests at DOE’s Pre-treatment Engineering Platform — a quarter-scale mock-up of a portion of the WTP’s pre-treatment facility — confirmed that the facility should operate as expected. Phase one testing of the facility began in late January and was completed in April.

Around the DOE Complex

The U.S. Senate confirmed Steven Chu’s nomination as Secretary of Energy. Ines Triay was later confirmed as Assistant Secretary for Environmental Management.

The Government Accountability Office (GAO) said DOE had taken steps to resolve weaknesses in its contract and project management. DOE’s contract management had originally been designated as high-risk in 1990. The GAO said DOE had since met three of five criteria to be removed from the high-risk list, but would remain there due to concerns about DOE’s ability to monitor and prove the effectiveness of measures it took to correct problems.

President Obama and Energy Secretary Chu said that new alternatives for dealing with the nation’s high-level nuclear waste would be evaluated and that the Yucca Mountain site would not be used as a waste repository.

“The Department has legal and moral obligations to clean up the wastes left over from 50 years of nuclear weapons production...Cleanup of these materials is a complicated, expensive long-term project, but I pledge to you to do my best to accelerate these efforts in order to protect human health and the environment, and to return contaminated lands to beneficial use.”

— Secretary of Energy Designate Steven Chu, during his confirmation hearing. (January 13, 2009).