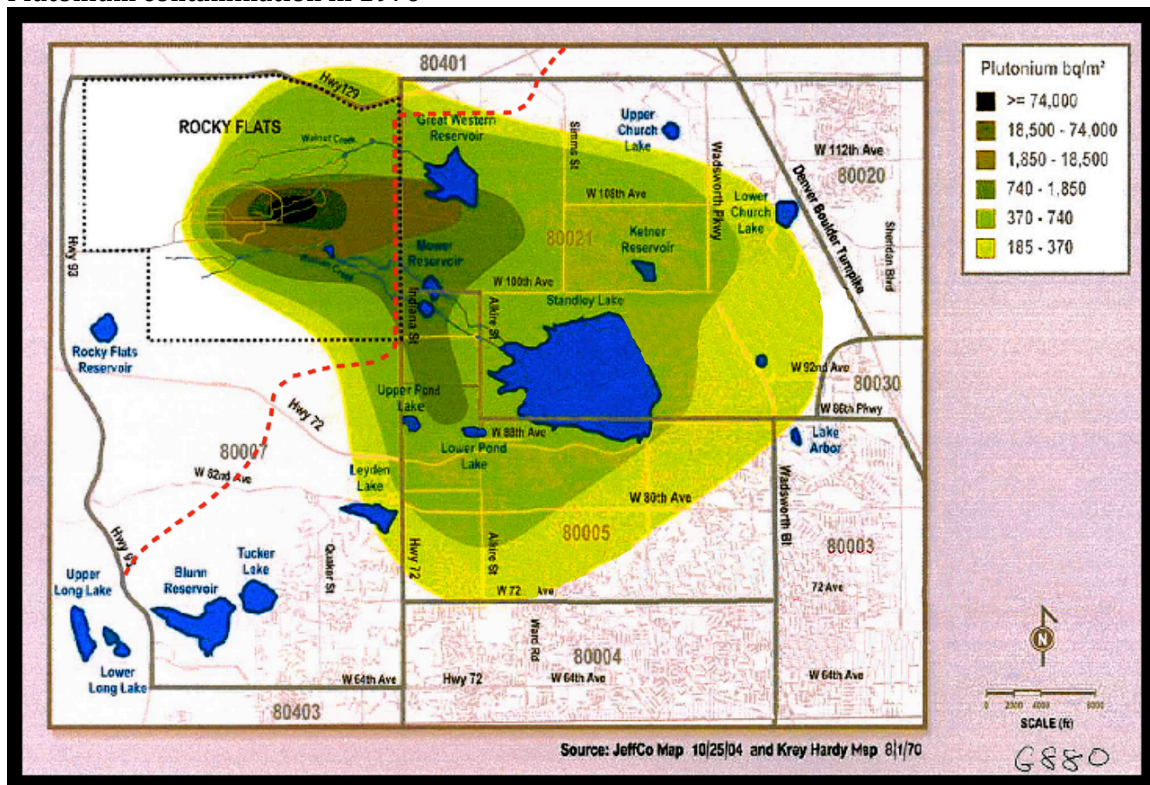


**Questions about the Jefferson Parkway: An update**  
LeRoy Moore, February 4, 2016

**Plutonium contamination in 1970**



This map showing plutonium contamination in soil on and near the Rocky Flats site was made in 1970 by P. W. Krey and E. P. Hardy of the Atomic Energy Commission. They had collected and analyzed soil samples throughout the area. The original map was black and white.

**Area still contaminated in 2011**

In September 2011 Marco Kaltofen of the Boston Chemical Data Corporation, under contract with the Rocky Mountain Peace and Justice Center, collected samples along Indiana Street, in the area proposed for the Jefferson Parkway. He found plutonium in amounts about equal to what Krey and Hardy had found in the same area in 1970.

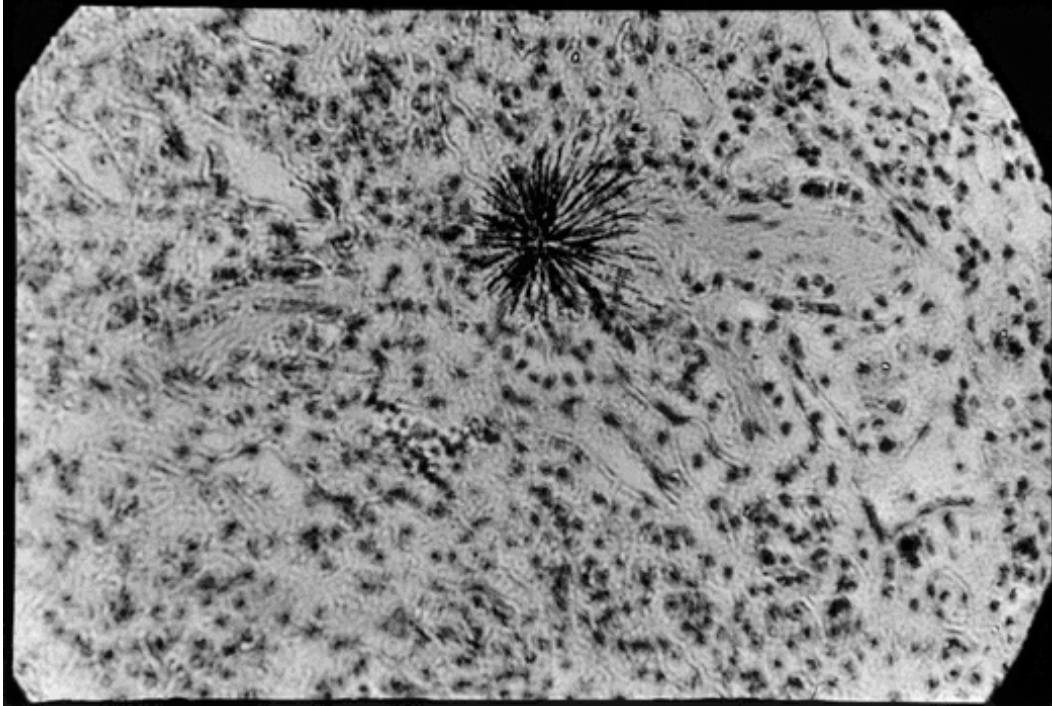
**Route proposed for the Jefferson Parkway**

The dotted red line shows the route of the proposed Jefferson Parkway. Note that it passes through the most contaminated area along the eastern edge of the Rocky Flats site. Construction of a highway in this area would stir up plutonium-bearing dust.

**Krey-Hardy map used in a contamination lawsuit**

The map was produced in color as above for use in the Cook v. Dow and Rockwell class-action lawsuit brought against the corporations that had operated the plant. The off-site colored area is the location of the class that brought the suit claiming harm from plutonium contamination. The suit was filed after the 1989 FBI raid on the plant to collect evidence of violation of federal environmental law at the plant. In 2006 the jury in the trial found the corporations guilty. Since then the case has gone back and forth between the appellate court in Denver and the U.S. Supreme Court, which so far has refused to hear an appeal. Appeals have been based not on evidence but on procedure. The jury's decision was based on evidence. If, as expected, the Supreme Court decides not to hear the latest appeal, the jury verdict will stand.

**Plutonium harmful if internalized:** Unlike uranium and many other radioactive materials, the radiation released by the plutonium-239 used at Rocky Flats cannot penetrate skin. It is harmful only if inhaled or otherwise taken into the body. Once internalized, the plutonium lodges at a specific location in the body and thereafter irradiates nearby cells, typically for the rest of one's life. The result may be cancer, a compromised immune system, or genetic harm passed on to offspring.



**Plutonium particle in lung tissue:** "The black star in the middle of this picture shows the tracks made by alpha rays emitted from a particle of plutonium-239 in the lung tissue of an ape. The alpha rays do not travel very far, but once inside the body, they can penetrate more than 10,000 cells within their range. This set of alpha tracks (magnified 500 times) occurred over a 48-hour period." Robert Del Tredici, *At Work in the Fields of the Bomb* (1987), plate 39.

**Harm from a single particle:** Tom K. Hei and colleagues at Columbia University demonstrated that a single plutonium alpha particle induces mutations in mammal cells. Cells receiving very low doses were more likely to be damaged than destroyed. Replication of these damaged cells constitutes genetic harm, and more such harm per unit dose occurs at very low doses than would occur with higher dose exposures. "These data provide direct evidence that a single alpha particle traversing a nucleus will have a high probability of resulting in a mutation and highlight the need for radiation protection at low doses." In a follow-up study, they found that "a single alpha particle can induce mutations and chromosome aberrations in [adjacent] cells that received no direct radiation exposure to their DNA" (*Proceedings of the National Academy of Sciences*, vol. 94 [Apr. 1997], pp. 3765-3770; and vol. 98 [4 Dec. 2001], pp. 14410-14415).

**No safe dose:** The BEIR (Biological Effects of Ionizing Radiation) VII study, *Health Risks from Exposure to Low Levels of Ionizing Radiation* (National Academy of Sciences, 2006), the most comprehensive study of low dose exposure to date, concluded that any exposure to ionizing radiation is potentially harmful.

**Official standards for permissible exposure are not safe:** Government officials mislead the public when they say that the official radiation exposure standards make Rocky Flats and nearby areas "safe." In fact, such standards allow some exposure and therefore some harm. The exposure may be small, but those who experience harm from such exposure will not call the standards "safe."

**Unpredictable floods:** In September 2013 a severe rainstorm flooded a large part of Colorado along the base of the Front Range of the Rockies. No one knows how much plutonium remaining in the environment at Rocky Flats was washed off the site into areas like that proposed for the Jefferson Parkway, because the water monitoring equipment on the DOE site was so overwhelmed with the vast amount of rushing water that it broke down, collected no samples and produced no record for two days at the height of the storm. The only place at Rocky Flats where water monitoring still occurs is on the DOE land, and this monitoring did not occur at the peak of the storm. No monitoring is done at the Rocky Flats National Wildlife Refuge that surrounds the DOE land and is managed by U.S. Fish & Wildlife Service.

The monitors mentioned above sample water in the streambeds of the two creeks that drain the site, Walnut Creek to the north and Woman Creek to the south. Both leave the site in tunnels under Indiana Street, that eastern boundary of the site. During the flow massive amounts of water that left the site flowed not in these two streambeds but over land as sheet flooding several inches deep. This water exited the site and moved onto Indiana Street and areas below. Sheet flooding is rare, but it happens when rain falls quickly in great quantities, as happened in September 2013. The extreme weather that is happening with global warming is likely to happen more often in the future. There is no equipment at Rocky Flats to monitor sheet flooding or the amount of water or plutonium and other toxins this water may carry.

The only other time of sheet flooding at Rocky Flats of which I am aware was May 1995, when engineer M. Iggy Litaor, with instruments set up in soil on the site, detected rapid migration of plutonium at Rocky Flats his empirical data and assumed, in setting exposure standards for plutonium left in soil at the site, that the plutonium would not migrate but would remain in place. Isn't it likely that in the future floods will happen at Rocky Flats and plutonium in soil will move?



Damage from September 2013 flood where Walnut Creek leaves the Rocky Flats site and passes beneath Indian Street. Photo taken on July 4, 2014, by Robert Del Tredici.

### **Finances and barriers for the Jefferson Parkway**

Whether there will be funds to build Jefferson Parkway is questionable. Will Toor, former mayor of Boulder, former Commissioner of Boulder County and now a non-government specialist on transportation, told me that the Denver Regional Council of Governments (DRCOG) agreed to add the proposed Jefferson Parkway to its transportation master plan for the Denver region only on the condition that no federal or state tax money can be spent to build the road. The Jefferson Parkway Public Highway Authority, the non-government entity sponsoring the road, just raise money elsewhere.

Dick Suggs, in an article in the October 4, 2015, online *Golden Newsletter*, reports, "The Jefferson Parkway Public Highway Authority (HPPHA) proposed building the JP toll road and for over seven years has spent millions of taxpayers' dollars from Authority members – Jeffco, Arvada and Broomfield – trying to implement the project modeled after the E-470 toll road. The reason that the proposed Public-Private Partnership (PPP) has been unable to get an investor, foreign or domestic, is that toll revenue for the new four-lane highway will not come close to paying for designing, building, operating, and maintaining the highway. The shortfall is so great that even with a grant from CDOT, additional money will be required to complete the project. Jeffco authorities have admitted that the project cannot be completed without raising taxes on residents and businesses in North Jeffco, Jeffco formed the WestConnect Corridor Coalition to tie the JP toll road in with the lane additions being done by the C-470 Corridor Coalition in the hopes of getting some funding help for the JP from that relationship. The Steering Committee decision, however, has eliminated that possibility." Suggs' final sentence refers to the fact that in August 2015 the WestConnect Coalition Steering Committee ended its support for the Jefferson Parkway.

However, Dan Hartman, in an informative article in the October 26, 2015, *Golden Newsletter*, reports that "the Jefferson Parkway Public Highway Authority is still seeking private and public funds to construct the Jefferson Parkway." From what Toor told me, I assume the denial of public funds for construction of the parkway is legally binding and that changing this provision would be difficult to accomplish.

Hartman's article is mainly about the WestConnect Coalition, a regional transportation forum working to improve transportation through Golden and the entire northwest region of the Denver metropolitan area. Cities and counties that would be affected by the Jefferson Parkway are represented in WestConnect. Originally, WestConnect supported construction of the Jefferson Parkway. But, as noted above, in August 2015 West Connect dropped its support for the Jefferson Parkway

What follows in this paragraph is drawn from or quotes Hartman's article. The primary decision on whether or not to proceed with the highway will be made by the Jefferson Parkway Public Highway Authority. However, the Authority cannot proceed without approval of the Colorado Department of Transportation (CDOT) of connections from the Parkway to SH 93, SH 72 and SH 128. This can happen only after CDOT analyses the environmental impact of these highway connections and the Authority has formally applied for permission to construct these connections. "CDOT has assured that the public will have an opportunity to comment on the Authority application and the CDOT environmental analysis." This is encouraging, in that to date there has been very little opportunity for public comment on the proposed Jefferson Parkway. U.S. Fish & Wildlife Service, which transferred to the Jefferson Public Highway Authority land for the road, never did an environmental impact analysis for the proposed highway.

Funding for the Jefferson Parkway does not look very promising, especially in the context of declining use of automobiles, more reliance on public transit of various kinds, and increasing opposition to the urban sprawl triggered by highways.