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Cleaning it Up and Closing it Down: Land Use Issues at Rocky Flats

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Summary

Rocky Flats Environmental Technology Site, a former nuclear weapons production plant near Denver, Colorado, is scheduled for complete closure within the next decade. A number of important land use issues remain unresolved. High levels of uncertainty about future uses and dependence on decisions from DOE Headquarters regarding the fate of Plutonium make it difficult to produce a land use plan to guide cleanup and reuse decisions, and threaten the site's ability to achieve the accelerated cleanup milestone set for 2006. We recommend a scenario-based participative land use planning process where competing interests, costs, risks and benefits of alternate future uses are made apparent to all on-site and off-site stakeholders.

Biographical Sketch

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“Ten years from now—when the last building is taken down and the day the last waste truck has left the site—we will mark a magnificent new beginning for land that once was a no-man’s land.”

Energy Secretary Federico Pena, August 7, 1997

When U.S. Energy Secretary Pena traveled to Denver a little over a year ago to officially announce the selection of the Rocky Flats Environmental Technology Site as an accelerated pilot closure site, he presented a vision that the site will be cleaned up and ready for reuse by 2006 (Scott, 1997). U.S. Department of Energy (DOE) planning documents state that Rocky Flats “IS closing and is headed toward a state of minimal DOE activity.” Plans call for an end-state where most waste is shipped offsite, almost all buildings are demolished and annual budgets of only \$25 million are required for monitoring and caretaker costs (DOE-RF, 1997). This proposed end-state is a radical change for the 6,500-acre site that operated as a nuclear weapons production plant for four decades before shifting to an environmental management mission in 1992. The path toward cleaning up, closing and converting the site has begun, but large obstacles stand in the way, some practical and some philosophical, and nearly all related to land use.

Local citizens and organizations have weighed in with opinions about current and future land use at Rocky Flats in forms including professional analyses, position statements and letters to editors. Despite much analysis and public dialogue in recent years, however, several critical land use issues remain unresolved and thus threaten the site’s ability to achieve the accelerated cleanup milestone set for 2006.

This paper presents a discussion of the key land use issues at Rocky Flats and offers suggestions about how to conduct the future land use planning process. The issues are, not necessarily in order of importance, disposition of Special Nuclear Materials (SNM), the meaning of future use designations, the status of mining and ecology, stewardship concerns, and integration with plans of adjacent communities. The sections below describe why these issues are important, where key stakeholders stand, and prospects for resolution. Information is drawn from numerous written reports and plans issued by DOE, site contractors, local organizations and local governments. Some of the recently issued key documents with land use implications are listed in Table 1. The discussion also includes information from half a dozen interviews conducted in 1997 with site planners, local officials and representatives of the most active citizens groups.

The Rocky Flats Site and Environs

The Rocky Flats site is located 16 miles northwest of Denver in northern Jefferson County. (See Figure 1a). More than 2 million people live within 50 miles of the site. In this fast-growing metropolitan area, industrial, commercial and residential land uses are creeping closer to the once rural site's boundaries. The major populations and growth come from the towns of Broomfield and Westminster to the east and Arvada and Golden to the south. Boulder County lies directly north of Highway 128 at the northern boundary of the site. To the west of Highway 93 at the site's western edge rises the Front Range of the Rocky Mountains, rugged in landscape and sparsely populated.

From 1952 until 1989, Rocky Flats produced plutonium triggers or "pits" for atomic weapons. Production ceased abruptly after a 1989 FBI raid, leaving plutonium and other

dangerous materials literally in the “pipeline” of production and susceptible to potential leaks, spills or explosions. Radioactive and hazardous materials and most of the present contamination is concentrated in the 350-acre industrial area where all of the site’s structures are located. (See Figure 1b). The protected area in the north half of the industrial zone contains some of the most dangerous buildings in the entire nuclear weapons complex and is where 14 tons of plutonium are stored.

The 6,100 acre buffer zone is primarily open grassland with little or no contamination. It is ecologically rich because its location at the foot of the Front Range puts it at the intersection of the Great Plains and Rocky Mountain ecosystems. It is a home to or on the migration route of about 75 percent of Colorado’s wildlife species and has rare features like remnants of tall-grass prairie and “upland” wetlands created from water storage ponds constructed during plant operations (Gerhardt, 1997). Three creeks also flow through the site.

Table 1
Major Documents with Implications for Rocky Flats Future Land Use

Document	Year	Source/Signatories
Recommendations for RFETS	1995	RF Future Site Uses Working Group
Rocky Flats Vision	1996	DOE, State of CO, EPA
Rocky Flats Cleanup Agreement	1996	DOE, State of CO, EPA
Rocky Flats Ten Year Plan (and Accelerated Cleanup updates)	1997-8	DOE – RF Field Office
Rocky Flats Closure Project Reports	1996-8	Kaiser-Hill Company
From Swords to Plowshares: Industrial Area Use Plan	1998	Rocky Flats Industrial Area Transition Task Force

Land Use Issues

Disposition of Special Nuclear Materials (SNM)

An interviewee for this study said that for a time people around the DOE-Rocky Flats Office wore a button: “It’s the Plutonium, stupid.” Clearly, the presence of large volumes of Plutonium (Pu) and other SNM at Rocky Flats presents a security threat, the potential for criticality, and a threat for contamination of soil, groundwater or surface water. It consistently appears as the most important concern for all local stakeholders and organizations. The Pu is a critical land use issue in at least two ways. First, to the extent that it may already be present in the local environment, it limits what can be done or planned for certain areas both on and off-site. Second, if it is stored on-site for the foreseeable future, it may preclude any type of near-term reuse or public access to the site whatsoever.

Pu has already been found in sediments of nearby Standley Lake and Great Western Reservoir, located within several miles of the site’s eastern boundary. To protect drinking water supplies, DOE has already spent \$100 million to construct an alternate supply for several towns who were dependent on the Great Western. Lawsuits have also been settled involving damages to adjacent landowners for Pu contamination of soils, though no adverse health threats were proven.

It is a goal of the RF Field Office that all highly radioactive waste and materials be ultimately removed and transported to other sites in the weapons complex. The report of the Future Site Uses Working Group (FSUWG), a community-based committee charged with developing long-term future use options, and the site’s Citizen Advisory Board (CAB) have both called for complete removal of Pu and rejected any permanent disposal of radioactive waste on-site. Some pits have already been transported to the Pantex site in Texas. However, some vocal

peace groups have concerns about the risks of accelerated shipment and would prefer a temporary storage vault on-site until safe transport to a receiving site is assured. The major obstacle to removal of Pu and Transuranic Wastes (TRU) is the delay in the ability of other sites, like the Waste Isolation Pilot Plant (WIPP) in New Mexico, to accept the material and the development of safe methods for transport.

Because of the contingencies to the removal of Pu, no enforceable Pu cleanup milestones have been set by the site. A decision from DOE Headquarters about the disposition of Plutonium is due to be made next year. The ultimate form and fate of the material has such an immense impact on possible future use that it is almost impossible to start to develop a realistic vision or land use plan until some of the uncertainties disappear.

Mining and Ecology

Two important aspects of the Buffer Zone (BZ) will have a large effect on land use. One is that mining rights are privately owned in parts of the BZ and mining operations currently occur at the western edge of the site. A second is that the 6,100 acres of open grassland are home to unique species of tallgrasses that are rare elsewhere in Colorado and to the Prebles Jumping Mouse, a Federally declared threatened species. This means that current remediation and decommissioning activities have to result in minimal disruption to both the mineral extraction operations and to the biological integrity and habitat value of the land.

The FSUWG report did not support mining and suggested that DOE purchase the mining rights to provide the current owners an economic benefit. The site's Citizen Advisory Board (CAB) also supports this idea. If budgets continue to be constrained, however, DOE is unlikely to

foot the bill to purchase the rights. Strangely, the Rocky Flats Cleanup Agreement (RFCA), cosigned by DOE, EPA and the State of Colorado in 1996, is completely silent on the mining issue. The county and state authorities that must decide on expansion of existing mining permits in the buffer area will need to know the future status of the mining rights and the risks involved with extraction. Likewise, Habitat Conservation Plans and protection plans for the endangered grasses will need to be an important layer in a plan for future use of the site.

Future Use Designations

The name of the site was changed in 1994 from Rocky Flats Nuclear Weapons Plant to Rocky Flats Environmental Technology Site, signaling the end of production and beginning of a new era. But what will this land become in the new era? Pasqualetti and Pijawka, in a 1996 study of the decommissioning of nuclear power plants, found that the value of land will always be limited by public perceptions of risk and that therefore planning authorities ought to consider the land permanently set outside general public use. Long-term concerns about contamination and disposal, they say, make the implications of future land use more difficult during “un-siting” than during siting.

There is general agreement among adjacent communities and other organized groups that the site’s BZ should be “open space” and that the Industrial Area (IA) could be reused in some capacity for economic development. Missing, however, are working definitions of what these vague terms mean. For example, one interviewed planner said that open space could include a golf course while a site official said that any future recreational use of the land is not a good idea. Neither had the benefit of a risk analysis in hand. Designations for future use, if they are to be

useful to planning coordination with surrounding communities and informative to risk assessment processes, must be more clearly defined.

With regard to the BZ, although most local stakeholders agree that open space is the ultimate use, when *specific* uses are proposed, opposition always springs up from somewhere. For instance, the FSUWG recommended retaining the current buffer “primarily” as managed open space, including possible interpretive use. Some environmentalists have opposed opening the buffer zone to public ecological tours, fearing that dangers to visitors would outweigh any educational benefit (Gerhardt, 1997). There is also disagreement about how large the buffer zone ultimately needs to be, and whether private industrial development in the northeast corner of the site or a new parkway cutting across the northwest corner of the site are uses that should be allowed.

Neighboring jurisdictions are not in complete agreement about how the site should be used, and even if they agree that “open space” is the desired goal, it may be for different reasons. Both Jefferson and Boulder counties adopted resolutions in 1994 that the buffer zone should remain undeveloped open space. However, the town of Superior located just north of the site passed a resolution in 1995 that it desires annexation of a portion of the buffer zone for industrial use. For the town of Westminster, retaining the open character of the land will serve a stated goal to protect their viewshed of the mountains (Westminster, 1998). It may, if ultimately annexed by an adjacent town or county, help to meet open space preservation goals, thus allowing more development elsewhere.

If the meaning of open space in the BZ is unclear, the designated use of the IA is even hazier. For instance, visitors to the DOE offices at RFETS are greeted at the front entrance with a poster-size aerial photograph of the site that has been altered to show an open grassland free of any buildings or structures. This image, though, does not appear to be based in reality, and is even at odds with the DOE's own ten year plan for the site. The plan says that up to 12 buildings may remain for their economic development potential and that part of the reuse of the site will be for industrial or commercial use (RF Ten-Year Plan, 1997). The "Vision" document that was co-signed by DOE, EPA and the State of Colorado in 1996 says that "cleanup and closure activities will support a *wide range* of appropriate future uses," suggesting that more intensive uses than open space are possible. Which vision is guiding current cleanup efforts?

To more clearly lay out a vision for the future of the IA, the site's Community Reuse Organization, Rocky Flats Local Impacts Initiative (RFLII), recently convened a task force with broad local participation to develop a plan for reuse. The report outlines six possible reuse scenarios ranging from industrial redevelopment to open space, but concludes that "specific decisions for future use of this land cannot be made at this time." It recommends the removal of all existing structures, but suggests that the land be rendered able to support a "future employment center" (RF Industrial Area..., 1998). According to RF's Ten Year Plan, however, the site cannot commit to large scale projects for privatization until much more is known about hazards and liability.

Stewardship Concerns

The DOE's Accelerated Cleanup Plan for the site acknowledges that when remediation is complete, some waste will remain buried under caps, covering about 100 acres. This area, the plan says, will be "restricted" open space. Again, if one is to believe the picture of the structure-free grassland described in the previous section is to be the ultimate appearance of the site, one must also wonder where this "restricted" area is located and how it is set apart from the rest of the site. Even if this picture is not accurate and some buildings remain, questions arise as to ownership of the land, marking off of contaminated areas, ongoing monitoring and roles and responsibilities for educating potential users about risks and enforcing restrictions.

The FSUWG report and the site's CAB have called for eventual cleanup of the soil to Colorado background levels. However, the site's stated goal is not to achieve background levels, but to clean up enough to allow open space use in the Buffer Zone, and restricted or industrial use in the Industrial Area. The Tri-partate Vision statement is non-committal and contains very vague language about cleanup goals. For example, it states that "where possible, the site will be cleaned up to the maximum extent feasible" (Rocky Flats Vision, 1996).

If soil is not cleaned to background levels and the site, or parts of it, are eventually turned over to Jefferson County or to another entity, public health risks will remain. Again, a goal of the Vision statement is that the site does not pose "unacceptable" risks, begging the question of, acceptable to whom? The same statement says that some wastes may be stored on-site. If wastes will remain and some level of contamination remains, strict institutional controls to prohibit public access will have to part of the stewardship program.

Land Use Planning Integration

About 15 local government jurisdictions are associated in some way with land use at Rocky Flats. The city and county of Boulder own land immediately north of the site and would like to retain it as open space. Several growing communities to the east are most concerned with migration of air or water contaminants that might affect future growth. Westminster to the east purchased land for open space on its western edge and has zoned this area for low density residential usage to form a buffer between the growing community and the former nuclear plant. Golden and Arvada, to the south and southeast, are the most affected by employment reductions and are anxious to expand industrial and commercial uses in the vicinity of the site. The town of Arvada has proposed a major industrial center to be located just south of the site.

Plans from adjacent cities show future development in all directions from the site. To the south, north and west, planned uses are mostly industrial, office and limited residential. To the east, recreation areas already exist and more parks and schools are planned. A recent survey of residents living near Rocky Flats found that they are concerned about land development adjacent to the site, perceived risks and fear about property value effects (RF CAB, 1997).

When a major facility and occupier of land like Rocky Flats enters a process toward closure, integrating the process within the regional context to which it will eventually be assimilated is essential. However, there is no specific mandate or incentive for DOE sites to interact directly with local governments. Despite the lack of a mandate, a positive statement is made in the preamble to the RFCA when it states that the three parties “recognize the legal authority of local government to regulate future land use at and near RFETS” (RFCA, Preamble, 1996, p.5). It goes on to say, though, that any specific land uses will be developed “in

consultation with” local officials, RFLII, CAB and others. This sentence appears to put other organizations with no legal authority on equal footing with local officials, a condition that will not be acceptable to officials who desire a direct “government to government relationship” (ICMA, 1996). Furthermore, officials in adjacent towns, in particular Broomfield and Westminster, put significant staff time into following RF issues and even then, do not have enough time to review all documents and attend every public meeting. One interviewed local official called Rocky Flats a “black hole” for staff time.

Twelve local governments signed the agreement in 1991 to establish RFLII, later designated as the Community Reuse Organization to speak as the one voice for the communities. However, some local officials commented in a 1996 case study that RFLII does not replace the need for direct interaction between the site and local governments. The closest thing to a combined planning effort was the Future Site Uses Working Group (FSUWG), directed by RFLII. In the case study, though, some officials called the process a “waste of time” because the ultimate plan presented the lower common denominator (ICMA, 1996). Officials also expressed concern that local governments were not consulted during the “vision” process between DOE, EPA and the state in 1996.

Conclusion: Planning with Uncertainty

A site planner said that the “window” is now to take actions toward closure because the goal has now been set, the area does not need the jobs and the public is concerned about the risks of Pu on-site. In other words, most people in the area see a much greater economic benefit to the region in cleanup and closure than in maintaining jobs at the site. This analysis of the key land use

issues affecting cleanup and closure suggests that site managers need to initiate two important actions if the site is to be integrated successfully into the regional land use arena.

First, we feel that it is impossible to develop a single comprehensive land use plan for Rocky Flats at this time. But, uncertainties about the fate of the Plutonium and ultimate level of cleanup need not stop the process from going forward. Rather, we suggest that an integrated team of site officials and qualified experts should be formed and charged with developing a set of detailed Land Use Plans reflecting a range of possible future scenarios. The team would consist of officials or scientists knowledgeable about land use, soils, hydrology, ecology, and risk assessment, and land use stakeholders like the DOE, contractor, current site occupants and mining companies. (The results of the currently ongoing independent review of soil action levels, actinide migration panel, and the completed industrial area reuse task force report would inform this process).

An image for one plan would assume high risk and the unwillingness of the federal government to allow anything more than very limited access. This could be viewed as the “pessimist” land use scenario. A second plan should assume opening of WIPP, complete removal of Pu and other radioactive materials and aggressive DOE actions to clean up contaminated land. This “optimistic” scenario would allow each jurisdiction to stake out the land it hopes to use for the uses it wants. Between these two extremes, the team can work on several more plausible land use scenarios where the need for caution is balanced against the desire for greater access.

The point of this proposed exercise is not to produce pretty pictures but to get the parties to lay their land use preferences on the table to arrive at some shared meanings about terms like “open space” and understandings about the differential impacts of the use designations on

affected communities. The federal government can begin risk analyses and economic simulations that will inform all the interested parties, including the taxpayers of the United States, about the risks and costs that are associated with giving the surrounding communities what they want. Of course, information will change and the specific future land use scenarios may never be selected. But such a transparent land use planning exercise is better than one in which a limited set of officials have the opportunity to secretly steer a so-called “comprehensive” land use plan that is approved before the full set of interested parties have an opportunity to see the implications of their values and preferences evaluated by risk analysts and economists. In fact, an advantage of not knowing the full extent of contamination and therefore having high uncertainty now is that it offers the chance for considerable public involvement in the future use process and the associated stewardship process.

In short, we see the current situation at Rocky Flats as an opportunity that few regions have—that is, to have time to seriously contemplate and evaluate a wide variety of land use options at the expense of the U.S. taxpayers. In comparison, it is highly unlikely that the municipalities surrounding contaminated refineries, steel plants, or abandoned landfills will have such a luxury. Brownfield sites in many U.S. cities are being held by businesses who do not want to pay for remediation, forcing cities to sue them. Or, the property is being sold to private developers who are not necessarily interested in what the local community wants.

Second, at the same time, a comprehensive Stewardship Management Plan should be created. Since stewardship activities will require long-term institutional actors, the site must reach out directly to each local and county government that is affected to be a part of the team to

develop the Plan. Each local government would designate a Rocky Flats planning liaison and, with financial and technical support from the site, the designee would keep abreast of the internal Land Use planning effort and play an active role in determining future ownership, stewardship roles and processes. An open discussion between planning officials from all immediately adjacent jurisdictions would provide a forum to put all of these ideas and interests on the table.

It is important for participants to have realistic time frames. Although steps could be taken now to begin the formation of these teams, too many uncertainties currently exist to allow a final product in the foreseeable future. The realm of possibilities for the site has changed drastically within this decade. There is no reason to think that it will not continue to change.

For example, in 1991, a reporter for the *Denver Post* wrote that parts of the Rocky Flats site are so contaminated that they may become a “national sacrifice zone” that would never be safe for human use (Obmascik, 1991, p.A13). As recently as three years ago, when Kaiser-Hill took over as the managing contractor for the site from EG &G, closure was expected in the year 2065. This meant that most, if not all, of the site would be essentially be a sacrifice zone for the next three generations. Shortly after Kaiser-Hill arrived, though, the closure goal was pushed up by almost 60 years to 2008. Is it possible to squeeze 70 years of planned remediation activities into ten? If even one contingency occurs, such as continued delays in removal of Pu, insufficient funding or technological glitches, the date for “closure” could easily be pushed back again by a decade or more.

Given the interdependency of the entire nuclear weapons complex in waste consolidation and disposition, and given that funding levels are decided by Congress, critical factors affecting the

ability to plan future land use are beyond the control of Rocky Flats site management. However, *unlike the other major sites in the complex*, a decision has been made to close the site, and a date (albeit somewhat arbitrary) has been attached to that goal. What happens here will therefore serve as a model for other major sites that will be slated for closure in years to come. It is important to set into place now *all* the elements that are needed to make the transition from production to cleanup to closure to reuse as smooth, safe and acceptable as possible.

AUTHORS' NOTE

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