# OPTIONS AVAILABLE FOR LAND DISPOSAL RESTRICTED WASTE MANAGEMENT AT FEDERAL SITES A CASE STUDY OF ROCKY FLATS PLANT

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## ABSTRACT

There are several vehicles for the parties to establish a framework to manage land disposal restricted (LDR) wastes. Among these are an agreement such as a Federal Facilities Agreement (FFCA), a permit modification, or a consent decree. The experience at the Department of Energy (DOE) Rocky Flats Plant (RFP) is illustrative of legal challenges faced by many federal facilities in LDR management programs. Management of LDR programs at RFP has been governed by a FFCA between DOE and The Environmental Protection Agency (EPA). This agreement will soon expire when the Colorado Department of Health (CDH) assumes authority for enforcing "Thirds" waste under the Colorado Hazardous Waste Act. A follow-on agreement to FFCA II is in negotiations. This paper examines some of the issues negotiators should consider before selecting an alternatives. All of these activities must be negotiated to maintain consistency with the Defense Program (DP) mission, transition plans, and the future transfer of RFP facilities to the Office of Environmental Restoration and Waste Management (EM).

## BACKGROUND

The Hazardous and Solid Waste Amendments (HSWA) to RCRA of 1984 established self-enacting rules for land disposal of untreated hazardous waste. The HSWA required the Environmental Protection Agency (EPA) to evaluate five groups of untreated waste. The amendments listed schedules for EPA to specify levels and methods of treatment to diminish the toxicity of a waste or diminish the likelihood that the hazardous constituents would migrate from a land disposal facility.

In response to the HSWA, EPA established Land Disposal Restrictions (LDR) for hazardous wastes in 40 CFR 268. The LDR rule established specified levels of toxicity and methods for treatments of LDR wastes that must be met before acceptance for land disposal.

The EPA LDR rule established a schedule for different waste forms. The effective date for the first group, solvents and dioxins, was November 1986. The "California Listed" wastes effective date was July 1987. The remainder of the LDR listed wastes were divided into three categories, often called "Thirds". The effective date for the first two "Thirds" was August 1988, June 1989 respectively. The third group of "Thirds", radioactive mixed waste (RMW) containing listed wastes, was initially May 8, 1990.

Historically, it was not clear if LDR regulations applied to DOE activities. This was true for two reasons. The first reason is that DOE interpreted the Atomic Energy Act (AEA) as the statute that defined its mission. The second reason is that within RCRA there is an AEA exemption from the definition of solid waste. Consequently, RCRA and the LDR restrictions were not considered as the controlling law for DOE waste management. However, on May 1, 1987 DOE issued an interpretive ruling that conceded jurisdiction of RCRA and LDR over hazardous components of mixed wastes. This ruling applied to all DOE facilities.

It is now clear that mixed waste stored at DOE facilities on-site and wastes expected to be generated in the decommissioning and decontamination (D&D) of DOE facilities are under the jurisdiction of RCRA and must be managed as LDR materials. A National Capacity Variance for all DOE facilities was granted from EPA and extended the effective date for "Thirds" to May 8, 1992. Currently, low level mixed waste (LLM) at all DOE facilities must be stored on-site, pending approval of radioactive waste disposal facilities that can accept hazardous waste.

There are about 54 waste forms at RFP that are radioactive hazardous mixed wastes that are suspected of being land disposal restricted. These waste forms are generated from 2,000 to 3,000 locations at RFP. The breakout of these LDR wastes is as follows: 11,269 cubic yards plus 28,965 gallons of low level mixed (LLM) waste (below 100nCi/g activity) and approximately 1,119 cubic yards of Transuranic mixed (TRM) waste (above 100 nCi/g). Furthermore, additional mixed wastes are expected to be generated at RFP through the activities related to the environmental monitoring and restoration, residue processing, analytical characterization, and D&D activities.

In addition to establishing standards for LDR waste treatment, RCRA specifically prohibits storage of waste containing untreated hazardous constituents for longer than one year. However, RFP does not have a in place treatment and disposal systems that would allow for compliance with LDR provisions. Consequently, most "Thirds" wastes stored at RFP have been in storage for longer than 1 year. This would be a violation of RCRA. However, an existing LDR Federal Facilities Agreement (LDR FFCA) allows for storage of mixed waste while DOE develops and implements a management approach to come into compliance with RCRA.

The LDR management problem is compounded at RFP as new wastes are generated during ongoing and future activities. For example, the time and sequence and identity of wastes to be generated in the future cannot be identified at this point. Another problem is that stored LDR wastes not only have been stored too long but also the maximum permitted storage space may soon be reached. Radioactive wastes are currently stored in 16 RCRA permitted storage areas located at Rocky Flats. The current permitted storage capacity is limited to 1,601 cubic yards. The problem is exasperated due to the fact that analytical data is available for only a fraction of the 54 waste forms. Therefore, most of the wastes in storage are characterized as hazardous by process knowledge only. In addition, data may not be available to verify the presence of RCRA hazardous waste constituents Consequently, RFP has developed a conservative approach that

assumes the presence of hazardous constituents if adequate data is not available.

## LDR WASTE MANAGEMENT OPTIONS

There are several vehicles to manage LDR issues available to federal facilities such as RFP. The most attractive option for RFP is to negotiate a Federal Facilities Compliance Agreement (FFCA).

The original RFP FFCA of September 19, 1989 was with EPA Region 8, and the state of Colorado. This agreement allowed RFP to continue to operate the facility while bringing certain waste management practices into compliance with RCRA regulations. On May 10, 1991 DOE and EPA agreed to a 2 year extension of the 1989 FFCA, often referred to as FFCA II. Colorado was not a party to this agreement. FFCA II addressed only prohibited wastes subject to LDR as of September, 1991. Thus, the LDR "Third" wastes were not explicitly covered in FFCA II. More importantly, EPA Region 8 did not consider "Third" waste included in FFCA II. The rational behind the EPA view was that a FFCA is, by its definition, an agreement that allows a federal facility to come into compliance with a federal law. Since the National Capacity Variance applied to all DOE facilities, RFP was not technically out of compliance at the time FFCA II was signed. Therefore, FFCA II could not have been intended to cover "Thirds" waste as a subject matter.

On May 7, 1992 the DOE and EPA reached an agreement to extend the May 8 expiration date on a case by case (site by site) basis. DOE and EPA Region 8 later reached agreement to amend FFCA II to include "Thirds" mixed wastes. However, the EPA agreement will terminates when Colorado is delegated regulatory authority to enforce the Hazardous and Solid Waste Act. Since Colorado is not a party to FFCA II, the agreement is being renegotiated to include CDH as well as EPA. The current negotiations may also include the RFP operating contractor as a party to the agreement.

The parties to the FFCA II follow-on agreement attempted to build on the language of the existing agreement. The DOE view is that the FFCA II follow-on will deal with all LDR waste, including newly generated waste resulting from the required treatment of mixed residues per the Compliance Order discussed below. The Comprehensive Treatment Management Plan (CTMP), a document required by FFCA II, is the overall plan to bring RFP into compliance with RCRA. The CTMP identifies and discusses a sampling and analytical plan for characterizing the mixed waste forms, and for verifying the technologies needed to achieve compliance. Although "Thirds" Waste were not explicitly covered as one of the requirements of FFCA II, the CTMP describes the RFP framework for compliance with all LDR wastes. One of the planning assumptions is that all "Thirds" will be included in the plan. The CTMP was delivered to EPA on June 10, 1992.

The management plan for LDR waste at RFP depends on the nature of the waste material. The CTMP presents six different strategies for RFP to achieve LDR compliance. There are four pathways planed for the management of LLM and two pathways for management of TRM. Depending on the nature of the waste material, a different management option will be selected.

The CTMP plan for treatment of LLM follows four pathways. The first option is to determine whether a waste form is non-hazardous or meets LDR treatment standards through process knowledge, screening methods, and sampling and analysis. In this case LDR treatment will not be required. Waste will be processed to meet U.S. Department of Transportation (DOT) requirements and repository waste acceptance criteria (WAC) and sent to the Nevada Test Site.

The second alternative will be to treat LDR waste at existing or planned DOE or commercial treatment facilities. Current planning is for most LLM to be treated at DOE facilities with some treatment at commercial facilities with eventual disposal at DOE facilities. However, this alternative presents several difficult political and technical challenges such identifying suitable DOE and commercial sites and obtaining the permits from states to transport and dispose of the LLM.

The third pathway for treatment will be the baseline treatment path to which DOE will commit to developing. This path is actually six systems which DOE will develop. These systems are 1) LLM solvent contamination waste treatment system, 2) LLM solar pond cleanup treatment system, 3) LLM solidification bypass sludge treatment system, 4) LLM miscellaneous waste treatment form treatment system, 5) LLM surface organics removal leaded gloves and bulk lead treatment system, and 6) LLM building 374/774 treatment system. This approach will require new facilities. It is not certain where these systems will be constructed.

The forth path that DOE may follow is a national program that focuses on producing an enhanced final waste form. This program will be designed to accept a large variety of waste forms from all DOE sites. There are several features which make this alternative very attractive. These include potential for significant cost savings in characterization, less waste volume, and a final waste form with reduced environmental risk. The forth and final path is interrelated with the third. The CTMP proposes that as the fourth path matures one or more of the baseline systems could be replaced.

The assumption made for management of all TRM is that Waste Isolation Pilot Project (WIPP) will retain its "no migration" capability to dispose of mixed TRU without RCRA treatment. If this assumption is allowed, the LDR standards would not be applicable under the provisions of the no-migration exemption. However, site specific Waste Acceptance Criteria (WIPP WAC) requirements and restrictions for transportation and shipment of material are significant legal concerns. Two pathways are planned for TRM waste management. The first is disposal without further treatment if a material meets WIPP WAC and DOT requirements. This decision will be made based on process knowledge of the waste. If the results are inconclusive, then additional analysis will be done. If this examination indicates that WIPP WAC is met, then no further treatment will be required and the waste will be shipped for disposal at WIPP. The second pathway is to bring the TRM into compliance with the applicable WAC then ship to WIPP.

The CTMP is also the management tool for future waste streams generated from activities being planned or that will take place at RFP. However, it is unknown what the quantity or whether these will be TRM or LLM waste. For example, it is almost certain that residue processing will produce some LDR wastes as will the ongoing environmental restoration efforts. Other sources of newly generated LDR waste will be activities that will take place during the planed transition and decontamination and decommissioning at the site.

## INTERRELATIONSHIP OF WASTE MANAGEMENT ISSUES

The negotiations to the follow-on LDR FFCA II are closely linked to several ongoing and overlapping activities at RFP dealing with the management, treatment, and storage of wastes. These include settlement of pending litigation concerning residue, the changing mission of RFP from a production facility to an environmental restoration site, and the DOE moratorium on off-site shipment of waste. Overlap of similar issues is not unique to RFP. Most DOE sites have plutonium inventory subject to RCRA LDR regulations. In addition, DOE is going through significant changes and several sites' missions may change to environmental restoration.

Court ordered residue management at RFP is closely linked to the issues of LDR management at RFP. The pending litigation concerning residues has put the issue of LDR management within several legal parameters. It should be noted that perhaps 95% of the mixed residues that are subject of negotiations for settlement of the pending litigation are LDR type of wastes and could be managed through a LDR agreement such as the FFCA II follow-on.

The two primary cases that impact LDR management at RFP are the negotiations surrounding the proposed settlement of Colorado Department of Health vs. DOE (Civil Action No. 91-B-1326), and the court order from Sierra Club v. DOE No. 89-B-181 (D. Colo. 1990).

The history of Colorado Department of Health vs. DOE is as follows. On August 1989, CDH issued a notice of violation (NOV) under the Colorado Hazardous Waste Act (CHWA) and the RCRA. In response to this NOV, DOE and CDH entered into Settlement Agreement and Compliance Order on Consent on November 3, 1989 (the November 1989 Order) establishing an approach for the identification, classification, and management of mixed residue in storage. This Compliance Order was modified in July 1991. The modified July 1991 Order established (a) schedules for DOE to apply for a RCRA permit from the state of Colorado for the storage of mixed residues, (b) required DOE to submit a report by February 28, 1992 that would describe a program to reduce the inventory of mixed residue at the plant, (c) required the removal of all mixed residual waste by January 1, 1999, or if not feasible, provision of a detailed description of why not and a provide a schedule for removal and (d) implementation of the mixed residue reduction plan.

The DOE and the State continued to negotiate a settlement of the case. However, several issues brought the negotiations to an impasse. The first and most fundamental issue was based on constitutional law. At issue was the legitimacy of a State agency ordering a department within the federal government to take an action (remove wastes from its site) which is not a requirement under state law. This should be contrasted with requiring a federal facility such as RFP to come into physical compliance with a permit issued through CHWA. Notwithstanding the constitutional element above, a second, and more practical issue, was argued by DOE; the January 1, 1999 date for removal for all mixed residue from RFP was technically unfeasible. Finally, a procedural issue centered on the insistence of the State to be able to impose civil penalties through the July 1991 administrative order.

Following passage of the Federal Facilities Act of 1992, Pub. L.No. 102-386 ("the Act") the state of Colorado withdrew its offer of settlement. The State considered the judicial consent decree as overly cumbersome and proposed resolving the matter through a compliance order on consent.

The most significant change in the Administrative Order is that the State dropped it's insistence on a removal 1999 date. Many other provisions from the former Consent Decree were included in the Administrative Consent Order. These were funding, force majeure, dispute resolution and a release for past violations. The Administrative Consent Order lists events which DOE has identified that must occur precedent to the removal of mixed residues. These include: construction of any facility or method required for the processing and/or packaging of mixed residues, means of processing be developed, conclusion of required NEPA documentation and any related litigation, all related final permits issued, sufficient space for the storage of mixed residues once processed until removal from the Plant in place, transportation technologies developed, mixed residues permitted to be transported from the Plant, WIPP, NTS and other storage or disposal facilities available. The order also lists the past accomplishments of DOE under the draft Amended Compliance Order to ensure that a record would be made that would credit DOE for those areas for which it has come into compliance.

In a related case, Sierra Club v. DOE No. 89-B-181 (D. Colo. 1990), the district court found that certain mixed residues at Rocky Flats were within the definition of hazardous wastes according to RCRA. The holding of this case was that DOE was storing various materials speculatively in violation of RCRA. Read broadly, this could have far reaching implications for waste management at RFP. For example, inventory with particularly high levels of plutonium could be considered a asset to the nation and desirable to store. This may be true for several reasons to include production costs, strategic value in national defense, possible applications in medicine, and future power source.

During the negotiations for the Consent Decree and the FFCA, residues at RFP were identified as newly generated and backlog mixed residues. Backlog residues, the residues identified in the Backlog Residue Hazardous Waste Determination Status Report submitted to CDH February 1992, are the residues in issue in the pending suit Colorado Department of Health vs. DOE. Management of these materials is covered in the Mixed Residue Reduction Report (MRRR), a document required by the proposed Consent Decree. The MRRR would cover the engineering, facilities planning and management of backlog mixed residues.

The residue elimination philosophy at RFP has changed due to two major historical events. The first of these is the end of the cold war and the recent international nuclear arms reduction agreements between the United States and the former Soviet Union. These events set the stage for the announcement by President Bush to cancel nuclear weapons production at the site. The second closely related event is the recent decision by the Secretary of the DOE to transition RFP mission from a production facility to environmental restoration and ultimate dispositioning of the buildings.

Residue elimination is an important element in the overall program of environmental restoration and waste management at the site. As contemplated by the negotiators, the MRRR contains flexible decision points which allow the for the selection of preferable treatment paths in the future. This will allow the plan to be flexible and adapted to changing circumstances, evolving regulatory requirements, and improvements in technologies. Consequently, the MRRR was revised and now has

three paths to manage residues at RFP. These included (a) repackaging the residues and ship to a repository for ultimate disposal, (b) repackage residues and ship to another DOE site for further processing, and (c) treat and dispose of liquid residues currently stored in tanks and bottles by a combination of precipitation, neutralization, and immobilization.

The management of LDR backlog mixed residues would itself create newly generated LDR mixed waste. Management of these waste streams will be enforced through an annual LDR progress report, a document required by FFCA II.

The management plans developed during the negotiations for settlement of the Colorado Department of Health vs. DOE case remain the main thrust of the RFP LDR residue planning. Now that the State has withdrawn its offer for settlement it has become less clear which document, the MRRR or the CTMP, should govern LDR wastes at RFP. In addition, the State at one point proposed to integrate the management and removal of residues with other TRU wastes. The legal effect of such an approach could have expanded the scope of the subject matter compared to the proposed Consent Decree. The Administrative Order could subject DOE's management of TRU waste formerly managed through the FFCA II's CTMP document, could come under the administrative order from the regulator.

## DOE WIDE MORATORIUM ON SHIPMENT OR OFF-SITE DISPOSAL

The DOE has imposed a moratorium on shipment for off-site disposal of LLW materials. Many LLW are LDR waste and therefore any waste management plan at a DOE facility must include a plan for LLW waste management. The philosophy of DOE is reflected in the "Performance Objectives for Certification of Non-Radioactive Hazardous Waste." The objective is to assure that hazardous wastes/toxic waste shipped from DOE facilities to commercial treatment, storage, or disposal facilities have no bulk or volume radioactive contamination added as a result of DOE operations.

The RFP approach is conservative and defines Radioactive Materials Management Area (RMMAs) as any area in which the potential exists for contamination. Consequently, suspect mixed waste must be stored on site until it can be demonstrated through process knowledge, radiological survey, or sampling and analysis that there is no measurable increase in radioactivity above background from RFP operations. The net effect is that limited permitted storage space is being used that could otherwise be available for LDR storage.

The Non-Radioactive Hazardous Waste Certificate and Disposal Plan is the means RFO plans to address the DOE wide moratorium on shipment for off-site disposal. The position of CDH on the status of the Non-Radioactive Hazardous Waste Certification and Disposal Plan, is that this is not a LDR issue and should not be included in the new FFCA. Furthermore, CDH has stated that a plan would be unacceptable because the duration of the proposed schedules put RFP in violation of waste storage restrictions.

## ENFORCEMENT OF AGREEMENTS SUCH AS FFCA II FOLLOW-ON

The recent passage of the Federal Facilities Compliance Act (the Act) of 1992 had a major impact on the LDR negotiations at RFP as well as other federal facilities. It is worth a few paragraphs to examine these impacts and their implications. The Act was passed partially as response to cases such as Mitzelfelt v. Department of the Air Force, 903 F. 2d 1293 (10th Cir. 1990) where federal government was able to successfully argue that Congress did not explicitly waive sovereign immunity in RCRA.

Prior to the signing of the Act, CDH felt that it would be difficult to obtain direct enforcement of an agreement such as a FFCA and preferred to enforceme sanctions for LDR violations through permit modifications. This was based on the States interpretation of RCRA §6000.1. The language in this section makes federal facilities subject to all "state requirements." Explicitly included in the definition of "requirements" are permits. However, absent from this explicit enumeration were "agreements." The statute waives sovereign immunity of the federal government for violations of "requirements" of the statute by giving any person (to include state agencies) standing to bring suit. The Act now makes it clear that sovereign immunity will be waived for federal facilities and states will be able to enforce agreements as well as permits. Under the Act, it is implied that all penalties will be prospective only and not retrospective.

The main DOE concern with a permit modification was that there would be much less flexibility for project managers from RFP and the State to work out problems under a permit modification compared to the dispute resolution in the FFCA II follow-on agreement. The second concern was that due to inclusion of schedules and the material involved, the permit modification would have been be a type III modification which would have required public comment. On the other hand, the FFCA-II follow-on agreement would not.

A third concern DOE had with the proposed permit modification was in the form the State presented it as proposed by CDH. The DOE would agree to an order on consent decree. The order would require DOE to sign a memorandum of understanding (MOU) for RFP to submit an application for a permit modification. The concern the federal government had was that, since there is no provision in RCRA that gives the State the authority to order DOE to sign a MOU, the consent decree/order aspect of the permit modification would be as unenforceable as the FFCA if the State's initial premise was consistently applied.

In an effort to alleviate the State's concerns a suggestion was made that the Department of Justice (DOJ) could issue a letter, as it did on behalf of the Hanford site, stating the FFCA agreements are "requirements" per section 6000.1 of RCRA and, therefore, enforceable. CDH made a persuasive argument that such a letter would be meaningless because only Congress can waive the federal government's sovereign immunity.

Several ambiguities appear in the Act, two of which are discussed below. In most cases, the waiver of sovereign immunity is effective upon the enactment of the act. However, there is a three year delay for the waiver of sovereign immunity for violations of §3004(j) of the Solid Waste Disposal Act involving storage of mixed wastes that are not subject to an existing agreement and are in compliance with all "other regulations." It is not clear what the effect of the statute is if a site obtains a permit within the three year period. It would seem that sovereign immunity for fines and penalties is also waived. Equally unclear what "other regulations" Congress had in mind. It is not certain if "other regulations" would include agreements with specific milestones incorporated in an agreement via a document such as the CTMP.

In the end, DOE found the permit modification an unacceptable alternative and the entire issue was made moot with the passage of the Act. The negotiations again focused on a FFCA agreement as the vehicle to address the management of LDR waste at RFP.

## SUMMARY

The legal aspects of the LDR waste management program are extremely complex and technical. In the case of RFP, as with most other federal facilities, negotiators from the state and the federal facility have to deal with a dynamic negotiating scenario that rapidly changes the backdrop of the negotiations. These dynamics include historic international events such as major weapons reduction initiatives, a changing role for many federal facility, as well as domestic legislative initiatives, such as the Federal Facilities Compliance Act of 1992. The result of this is an interdependence between various ongoing activities at the sites. Several vehicles exist for the parties to establish a framework to manage waste. The parties must be careful to identify appropriate plans that clearly establish goals and objectives which do not conflict with each other. Furthermore, all of these activities must be negotiated to maintain consistency with the mission of the facility. It is in the best interest of all parties to find a solution that will be manageable, enforceable, and environmentally responsible.