

Regulatory Review of Closure, Post-Closure and Perpetual Care Funds at the  
Energysolutions, LLC Mixed Waste Facility

O.H. Willoughby III, G.C. Lukes  
Utah Department of Environmental Quality  
Division of Solid and Hazardous Waste  
288 North 1460 West  
Salt Lake City, UT 84114-4880, USA

**ABSTRACT**

EnergySolutions, LLC operates its Mixed Waste Facility at Clive, Utah under the provisions of its State-issued Part B Permit. The facility accepts waste that contains both hazardous and radioactive contaminants. Utah is an EPA Agreement State and therefore the Utah Division of Solid and Hazardous Waste (DSHW) is authorized to regulate the hazardous waste operations at the facility. The radioactive portion of the waste is regulated by the Utah Division of Radiation Control.

40 CFR 264.142 outlines the facility requirements for Closure Costs. The owner or operator must have a detailed written estimate of the cost of closing the facility in accordance with the rules. For many years the State of Utah had relied on the facility's estimate of closure costs as the amount that needed to be funded. This amount is reviewed annually and adjusted for inflation and for changes at the facility. In 2004 the agency and the facility requested bids from independent contractors to provide their estimate for closure costs. Three engineering firms bid on the project. The facility funded the project and both the agency and the facility chose one of the firms to provide an independent estimate.

The engineering firms met with both parties and toured the facility. They were also provided with the current closure cost line items. Each firm provided an estimated cost for closure of the facility at the point in the facility's active life that would make the closure most expensive. Included with the direct costs were indirect line items such as overhead, profit, mobilization, hazardous working conditions and regulatory oversight. The agency and the facility reviewed the independent estimates and negotiated a final Closure and Post-Closure Cost Estimate for the Mixed Waste Facility.

There are several mechanisms allowed under the rules to fund the Closure and Post-Closure Care Funds. EnergySolutions has chosen to fund their costs through the use of an insurance policy. Changing mechanisms from an irrevocable trust to an insurance policy required extensive review by the DSHW and the Utah Attorney General's Office.

The duration of the Post-Closure Care Period is generally designated as 30 years under the hazardous waste rules. The Legislature of the State of Utah commissioned a review of the need for Perpetual Care Funds for hazardous waste facilities. This fund would provide funds for maintenance and monitoring of facilities following termination of the Post-Closure Permit. The DSHW has recommended to the legislature that a perpetual

care fund be created. The legislature will study the recommendation and take appropriate action.

## **INTRODUCTION**

EnergySolutions, LLC (formerly Envirocare of Utah, LLC) operates its Mixed Waste Facility at Clive, Utah under the provisions of its State-issued Part B Permit. The permit was originally issued by the state in November 1990. The State of Utah's hazardous waste rules closely follow the federal rules found in 40 CFR. State laws require that the local rules must be as stringent as the federal and only in certain cases can they be more stringent. Thus, most of the state's rules make direct reference to the CFR.

In order to protect the state from the financial liability of having a hazardous waste treatment, storage or disposal facility in its jurisdiction, the rules require that the facility make funds available to the state equal to the amount that would be required to close the facility and maintain the facility for a 30-year post closure period. The fund is designed to provide the state with sufficient resources should a company drop from existence and leave the state with the job of properly closing the facility.

There are several financial mechanisms that are allowed to be used to fund the closure and post-closure plans. These mechanisms include: a closure trust fund, a surety bond guaranteeing payment into a closure trust fund, a surety bond guaranteeing performance of closure, a closure letter of credit, closure insurance, or a financial test and corporate guarantee for closure. A combination of these mechanisms may also be used.

## **CLOSURE PLAN DEVELOPMENT**

The initial closure plan at the EnergySolutions facility was a simple document based on the very limited mixed waste management activities that were going on at the time. At the time of permit issuance, the company chose to finance the closure plan through cash deposits to fund a closure trust fund.

As the operations at the facility increased, so too did the complexity of the Closure Plan. The plan is divided into two main sections. The first is a line-by-line calculation of the volume and area of contaminated materials at the facility. Attachment II-7-1, *Calculations* of the Permit outlines dimensions of buildings, storage tanks, roads, rail lines, waste treatment equipment and all other material that may be contaminated during the operation of the facility. The calculations also include a determination of the cell space that needs to be kept in reserve for the contaminated material at the time of closure. This volume is conservatively estimated using the assumption that a maximum amount of stored and undisposed waste is present at the site at the time of closure.

The second section of the Closure Plan is Attachment II-7-1.1, *Cost Estimates*, takes the line items from Attachment II-7-1 and gives an estimate of the monies needed to fund that operation. The majority of the cost estimates are based on R.S. Means reports. The R.S. Means reports provide a basis for the cost of industrial construction operations and

can be modified for environmental operations. This portion of the Closure Plan also estimates indirect costs that might be associated with closure of the facility such as mobilization, engineering, contingency, legal expenses and regulatory oversight of closure activities.

Both sections of the Closure Plan are evaluated annually to determine if changes have occurred at the facility. Also, annual inflation factors and R.S. Means estimates are reviewed to determine how the fund balance must be increased from year to year. The appropriate changes are made to the Permit through a Class 1 Permit Modification Request that is due to the agency by December 31 of each year.

As the amount of the surety fund increased, the company desired to move away from the closure trust funded by cash. EnergySolutions submitted a permit modification request to have an irrevocable letter of credit that guaranteed payment into a closure trust fund. This mechanism still requires that a company place assets as collateral against the closure trust fund.

While each of the mechanisms listed above are allowed by the rules, there is a hierarchy of comfort for the regulatory agency. An account funded with cash deposits is ultimately easier for a regulator to buy into. Several meetings were held between the state agencies, the facility and their financial institutions in order for an understanding to be developed as to the validity and guarantee of the irrevocable letter of credit.

In 2004, the agency raised a series of questions as to the accuracy of some of the line items in the closure plan. Among the major points of disagreement between the agency and the facility was whether or not R.S. Means was an accurate method of determining costs and if “environmental factors” should be added to the cost estimate. These environmental factors take into account the added dangers and time involved in working with radioactive and hazardous waste. The agency thought that these factors should be added to the surety costs and the facility argued that the majority of the closure activities at the site did not fall under the more expensive calculations.

At this time, the facility proposed that the closure costs move away from the generic R.S. Means calculations and base the fund amount on costs derived from the actual cost that the facility paid to its employees and contractors to carry out waste management activities at the site. The agency shied away from this approach because it couldn't guarantee that similar rates could be negotiated with contractors if the state was tasked with closure. Also, it would have required that the facility open up their arrangements with contractors to public scrutiny for the cost comparison to be done. As with most companies, EnergySolutions desired to keep their negotiated costs in-house.

At an impasse as to how the accurate closure cost estimate could be achieved, both entities agreed that a third-party review of the costs was needed. A request for proposals (RFP) was prepared in order to solicit bids from engineering firms. Both the agency and the facility personnel worked together on the RFP. There were three respondents to the RFP.

After reviewing the bid proposals, it was clear that the top two respondents both had merit for being chosen for the task. This, however, did not cure the discrepancy between agency and facility as to approach. Intrepid Engineering out of Idaho proposed to look at the study using the same approach as the current Closure Plan. They chose to look at the line items and use R.S. Means as the basis for their cost evaluations. This was the preferred approach for the agency as it was the same as the current system. Montgomery Watson was the second qualified bidder. Their approach was similar to EnergySolutions' in that they chose to use actual current costs to base their estimates.

When it became clear that neither the agency nor EnergySolutions was willing to completely forgo their chosen approach, a compromise was reached. Both engineering firms were chosen to carry out the task. This decision was easier for the agency to make because EnergySolutions was funding the study and their costs did not factor in on our part.

A plan was developed outlining timeframes, deliverables and meetings. Also, the agency and the facility agreed on a code of conduct between us so that neither group would steer one of the firms in favor of one side or the other. It was agreed that none of the groups would contact the other individually. Any information shared between one of the groups and the other would be shared with all. It was also agreed that upon deliverance of the final reports, the agency and the facility would meet with the engineering firms to discuss questions that might arise in the review.

There were some glitches in the early going of the process. At one point information was provided to the firms by EnergySolutions without review by the agency. At this time all parties agreed to strictly adhere to the ground rules. All parties toured the Clive facility and made an on-the-ground assessment of the items that would need to be addressed during closure. Copies of the current Closure Plan were also provided so that those line items could be addressed.

Upon delivery of the final reports, the agency and the facility began a review of the findings. It was interesting to see that using the different approaches each firm had very similar numbers for many of the line items. Where there was parity in the numbers, quick agreement could be achieved. There were other items in the reports that were many times different from each other. These would prove to cause discord between entities.

It was during this review period that the agency made an error in judgment. Seeing that there would continue to be discrepancies, the agency began to average the disputed costs between the current permit, the Intrepid report and the Montgomery Watson report. It was determined by the agency that this would be the only way to come to agreement and these numbers were proposed. The problem was that this varied from the agreed upon approach and took away the facility's ability to question the firms on their numbers as we had agreed upon in the beginning. It was unfortunate that the agency skipped these agreed upon steps because it brought discord into a process that was making good progress.

Ultimately, the averaging process was used for the contested closure numbers and EnergySolutions funded the closure and post-closure funds to the agreed upon amounts. The current closure plans require \$28 million for the Low-level Radioactive Waste Facility (LLRW), \$13.6 million for the Mixed Waste Facility (MWF) and \$4.5 million for the 11e.(2) Facility. The post-closure amounts are \$5.1 million and \$2.7 million for the LLRW and the MWF respectively. The 11e.(2) Facility is covered under the US DOE Long-Term Stewardship Program for post-closure care.

In 2005, the facility also chose to move away from the irrevocable letter of credit and obtain an insurance policy as the mechanism to fund the closure and post-closure costs. This was a new step for the agency because there was little experience with the use of this mechanism. The major point of discrepancy was the topic of “cure.” An insurance company desires to be in control of the dispersion of funds from a policy whereas the agency is required by law to have unfettered access to the funds to carry out closure activities to its satisfaction. After detailed review by the agency and the Utah Attorneys General office, a policy was accepted to cover the projected costs of closure and post-closure.

In recent months, EnergySolutions has chosen to change insurance carriers. This has opened a new lengthy round of meetings and phone calls. Again, the majority of the meetings center on the issue of cure. It is anticipated that a policy can be written that allows the insurance provider comfort that the agency will not squander the funds and will provide the agency with the surety that it will have control of the closure process. In the interim, the current policy will remain in place which guarantees that the state is covered and the facility is in compliance with permit and license conditions.

### **PERPETUAL CARE FUND**

In 2001, the Utah Legislature enacted rules requiring that a fund be in place to provide perpetual care beyond the 100 year post-closure or institutional control period for the facility. This fund known as the Radioactive Waste Perpetual Care and Maintenance Fund receives \$400,000 per year from the company. The combined principle that is deposited during the active life of the facility and the interest income earned during the 100 year institutional control period have been calculated to provide \$93 million, enough money to care for the facility in perpetuity.

Each entity within the Utah Department of Environmental Quality is governed by a quasi-legislative board made up of members representing many constituents, from industry to environmental groups. During the 2005 session, the Utah legislature tasked the Solid and Hazardous Control Board and the Radiation Control Board to conduct a review of the current closure, post-closure and perpetual care funds at commercial hazardous and radioactive waste disposal facilities. The report was presented to the legislature on October 1, 2006. The Boards determined that the closure and post-closure cost estimates for these facilities were adequate. This means that the calculations and

cost estimates that are currently in the license and permit should adequately cover closure of the facility if the state was suddenly tasked with that effort.

The Board determined that there were only two facilities within the state that were affected by the results of the study. These two facilities include the Clean Harbors' Grassy Mountain (GMF) hazardous waste facility near Knolls, UT, and EnergySolutions radioactive and mixed waste facilities at Clive, UT.

Federal rules do not contemplate the need for perpetual care at a hazardous waste disposal facility beyond termination of the post-closure permit. This post-closure period is generally considered to be a 30 year timeframe. The GMF receives waste from in and out-of-state generators. The facility has been in operation since the mid-80s and has waste embankments covering approximately ½ sq. mile. It was determined that \$2.6 million would be required to care for the GMF in perpetuity. If the facility remains in operation for the coming 24 years as the company estimates capacity and market to sustain, it would require a \$45,000 deposit each year by the facility into the perpetual care fund to have the principal and interest income to build \$26 million.

The Board concluded two items with respect to perpetual care at the EnergySolutions site. First, the mixed waste operations at the EnergySolutions facility fall under the Radioactive Waste Perpetual Care and Maintenance Fund. Therefore, no additional monies need be deposited for perpetual care at that facility with regards to the hazardous portion of the waste. Second, with uncertain markets and therefore longevity of operations may be in doubt, it may be necessary for the facility to seed the fund with a large up-front amount so that principal and interest will meet the \$93 million goal regardless of the length of facility operation.

One major concern of the Boards that was presented in the report was that future legislatures might divert funds destined for perpetual care into other state General Fund needs in times of economic down turn. This raiding of the funds has occurred in other states and could leave the perpetual care fund lacking when the need for it arises.

The report and recommendations were presented to the legislative interim committee on October 1, 2006 and will be presented to the committee that oversees environmental issues on November 15, 2006. At that meeting it will be determined whether the findings warrant legislation and enactment during the February 2007 session.

## **CONCLUSION**

The financial assurance for Closure, Post-closure and Perpetual Care at the EnergySolutions Radioactive and Mixed Waste Disposal Facilities are complex issues. Though contentious at times, the state agencies and the facility have come to agreement as to the proper amount needed to fund closure, post-closure and perpetual care at the site. Through extensive research, it has been determined that adequate funds are in place to cover closure and post-closure activities at the site. This amount is reviewed annually and changes are made to cover inflation and any new waste management units at the site.

It is proposed by the Utah Radiation Control Board that a one-time influx of cash should be made to the Radioactive Waste Perpetual Care and Maintenance Fund to jump-start its account. Whether or not the Utah State Legislature adopts this suggestion will be seen in the coming months. It has also been determined that the Radioactive Waste Perpetual Care and Maintenance Fund covers the activities at the Mixed Waste Facility and therefore secondary funding for that facility is unnecessary.

## **REFERENCES**

Envirocare of Utah LLC *Mixed Waste Storage, Treatment and Disposal Permit*, 2003, Utah Solid and Hazardous Waste Control Board.

Envirocare of Utah LLC *Radioactive Materials License*, 1998, Utah Radiation Control Board.

*Evaluation of Closure, Post-closure, and Perpetual Care and Maintenance for Commercial Hazardous Waste and Commercial Radioactive Waste Treatment Storage and Disposal Facilities*, 2006, Baird, R.D., Berta, L., Jones, A., and Nielson, K.K., URS Corporation.