Economic Impact Assessment of the Phase IV Land Disposal Restriction Final Rule on Newly Identified Wood Preserving Hazardous Wastes Contaminated Media at Inactive and Abandoned Wood Preserving Sites

U.S. Environmental Protection Agency
Office of Solid Waste and Emergency Response

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Introduction

This analysis estimates the incremental cost of the Phase IV Land Disposal Restrictions final rule for newly identified mineral processing wastes on hazardous waste clean ups of contaminated media (i.e., soil and groundwater) at inactive and abandoned wood preserving sites. This analysis focuses primarily on wood preserving contaminated soils rather than groundwater contamination. This analysis has been placed in the public docket for today's rule to respond to concerns raised by public commenters that EPA has not adequately accounted for costs from today's rule on contaminated media at inactive and abandoned wood preserving sites. For the reasons discussed below, EPA believes that affected sites will incur nominal administrative costs associated with recordkeeping and reporting requirements from today's rule. EPA does believe that these sites will incur any incremental treatment costs resulting from today's rule.

Summary of Phase IV LDR Final Rule

The Phase IV Land Disposal Restriction final rule for newly identified wood preserving hazardous wastes sets treatment standards for prohibited wastes: F032 (wood preserving hazardous wastes from spent pentachlorophenol formulations), F034 (wood preserving hazardous wastes from spent creosote formulations), and F035 (wood preserving hazardous wastes from spent chromated copper arsenate formulations).

The Phase IV rule sets performance treatment standards resulting in the destruction or immobilization of organic and inorganic hazardous constituents in these wastes. These standards are based on the best demonstrated available technology (BDAT) in order to achieve these levels. These standards must be met before these restricted wastes may be placed on the land. Land disposal is defined under the Resource Conservation and Recovery Act (RCRA) broadly to include virtually all types of land-based solid waste management units such as landfills, waste piles, and surface impoundments.

The Phase IV final rule also sets an alternative technology treatment standard of combustion (CMBST) for F032 wastes. The CMBST standard allows the burning of contaminated soil into boilers and industrial furnaces such as cement kilns in addition to incinerators. This standard is provided to set an alternative treatment standard to the 1 ppb standard for dioxin and furan constituents that public commenters have said is technology-forcing (e.g., would require a special type of incinerator at considerable expense.) The Phase IV final rule establishes a two-year capacity variance for the treatment of contaminated wood preserving media for F032, F034 and F035.

The Phase IV 2nd Supplemental proposed rule clarifies the circumstances for obtaining a treatability variance from treatment standards when treatment is technically feasible but inappropriate. For example, the rule clarifies that it is appropriate for EPA to grant a treatability variance when the treatment standard would result in the incineration of large quantities of mildly contaminated soils.

Methodology

This analysis estimates the incremental cost of the Phase IV final rule on the clean ups of contaminated media at inactive and abandoned wood preserving sites. The economic impact of the Phase IV final rule on these clean ups is the incremental cost for affected sites between the cost of clean up in the absence of the Phase IV rule (the baseline clean up scenario) and the cost of clean up after promulgation of the Phase IV final rule (the post-rule clean up scenario). Although conceptually, this incremental cost could be the result of more expensive treatment remedies selected to comply with the LDR Phase IV treatment standards, EPA believes, for the reasons discussed below, that the true incremental cost associated with the Phase IV final rule (with few exceptions) is limited to the administrative cost necessary to apply for and obtain a treatability variance at 40 CFR §268.44 from the appropriate regulatory authority.

To estimate the economic impact of the Phase IV final rule on the clean up of contaminated media at inactive and abandoned wood preserving sites, EPA reviewed available literature and Agency study to determine the total number of potentially affected sites. Although the predominant contaminants (i.e., those contaminants driving the expense of remedial action), volume of soil excavated per site and remedies selected for these sites is unknown, the Agency has identified predominant contaminants, volume of soil excavated per site and remedies selected for 54 wood preserving Superfund sites on the National Priorities List. Based on the assumption that the universe of wood preserving Superfund sites is representative of the potentially affected universe of total inactive and abandoned wood preserving sites, EPA extrapolated the proportion of principal contaminants and remedies selected for wood preserving Superfund sites to the larger universe of inactive and abandoned wood preserving sites in order to model what this universe might look like.

Because not all inactive or abandoned wood preserving sites with contaminated media will be affected by the Phase IV final rule, EPA next examined which sites being modeled would be potentially affected by the Phase IV final rule. For example, sites which are likely to be cleaned up in-situ (i.e., without excavation) will not trigger the Land Disposal Restriction treatment standards and so are unaffected by the Phase IV final rule. Similarly, sites which are likely to incinerate contaminated soils are unlikely to incur any change in their treatment cost, although they may incur recordkeeping and reporting costs as required under the Phase IV final rule. EPA then classified these sites by the type of administrative (e.g., recordkeeping and reporting cost) costs that they would incur. After determining the number of inactive or abandoned sites affected by the Phase IV final rule, EPA assigned administrative costs per affected site over the life of the clean up. EPA then discounted these compliance costs and annualized them over the life of the clean up.

Methodological and Analytical Limitations and Uncertainties

The proposed methodology has the following limitations and uncertainties. First, as mentioned above, the absolute number of inactive or abandoned wood preserving sites, their predominant contaminants, the average volume of soil excavated per site and the remedies selected to clean them up are unknown. An estimate of the total number as well as an extrapolation from known principal contaminants and remedies selected for wood preserving Superfund sites has been used to model the potentially affected universe for this analysis. Second, an site-specific economic impact analysis is not possible for this cost estimate because the identity of current owner/operators of these sites is not known. Third, future rulemakings such as the Hazardous Waste Identification Final Rule for Contaminated Media (HWIR-Media) the Agency is currently working on may reduce the volume of soil and/or number sites requiring remediation.

Estimated Number of Inactive or Abandoned Wood Preserving Sites With Contaminated Media

EPA estimates that there are between 700 and 1000 total inactive or abandoned wood preserving sites in the United States.[1] To err on the conservative side, EPA is basing the following analysis on the 1000 upper bound estimate of inactive and abandoned wood preserving sites. Although the current types of firms that own the inactive and abandoned sites are unknown, based on examination of wood preserving Superfund sites and best professional judgement, it is likely that firms or individuals owning these sites currently include former owner/operators of wood preserving firms, railroads (creosote their own rail ties), utilities (treating their own poles), and lending institutions (banks, savings and loans, mortgage companies). According to wood preserving industry officials, existing active wood preserving sites are unlikely to have contaminated media in need of remediation.[2] These sites have already excavated contaminated media previously in order to construct and place drip pads in compliance with RCRA Subpart W regulations. For this reason, only inactive or abandoned wood preserving sites were included in this analysis.

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[1] The lower bound estimate of 700 inactive or abandoned sites is reported in Contaminants and Remedial Options at Wood Preserving Sites, U.S.E.P.A., Office of Research and Development, EPA/600/R-92/182, October 1992. The upper bound estimate of 1000 inactive or abandoned sites is estimated by subtracting 469 existing active sites from 1500 estimated active, inactive and abandoned sites. The 469 active sites are reported in Wood Preserving Statistics, 1993: A Report to the Wood Preserving Industry in the United States prepared by James T. Micklewright for the American Wood Preservers' Association, May 1994. The 1500 total estimated number of active, inactive and abandoned wood preserving sites an informal USEPA/OERR survey discussed in a personal communication between Paul A. Borst, USEPA/Office of Solid Waste and Frank Avvisato, USEPA/Office of Emergency and Remedial Response, March 27, 1997.

[2] Personal communication between Paul A. Borst, USEPA/Office of Solid Waste and George E. Parris, Ph. D, Director of Environmental and Regulatory Affairs, American Wood Preservers Institute, March 27, 1997.

Estimated Quantity of Soil Excavated During Ex-situ Remediation Per Wood Preserving Site

The average quantity of contaminated soils requiring excavation for ex-situ remediation at inactive and abandoned wood preserving sites is unknown. The average quantity of these soils for wood preserving Superfund sites is approximately 37,000 cubic yards (or 44,400 tons assuming 1.2 tons per cubic yard of contaminated soil).[3] This analysis assumes that this volume is representative of the average quantity of contaminated soil per inactive or abandoned wood preserving site. This volume would be used in estimating incremental treatment costs of treating contaminated soils for the Phase IV final rule.

Predominant Contaminants at Inactive and Abandoned at Wood Preserving Sites

Contaminated media at inactive or abandoned wood preserving sites may be contaminated with one or more types of wood preserving solutions including pentachlorophenol, creosote and/or chromated copper arsenate. The type of contamination will affect the remedy in the baseline clean up scenario and will trigger specific regulatory clean up limits for hazardous constituents in the post-rule clean up scenario. Although more than one type of contamination can and has been present at wood preserving Superfund sites, this analysis makes a simplifying assumption that the predominant contaminant (i.e., the contaminant that drives the expense of the remedy) will be used to classify sites regardless of whether multiple contaminants exist at a single site.

Based on review of remedies selected at the 54 wood preserving Superfund sites and the treatment requirements for F032, F034 and F035 wastes in the Phase IV final rule, for this analysis EPA has classified inactive and abandoned wood preserving sites from the most to least predominant contaminant as: 1) pentachlorophenol (most predominant because of dioxin & furans with associated treatment standards and prevalence of incineration at NPL wood preserving sites), 2) creosote (intermediate predominant because of hazardous organic constituents possibly requiring combustion), and 3) copper chromium arsenate (least predominant because no hazardous organic constituents requiring combustion and no incremental stabilization costs are expected).

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[3] One public commenter, Beazer East has reported much higher average number of cubic yards per site. In commenting on the Phase IV proposed rule for wood preserving, Beazer provided an estimate of 83,877 cubic yards per Superfund site based on 31 records of decision (ROD) for Superfund sites. See comments of Beazer East, Inc. Regarding the August 22, 1995 Notice of Proposed Rulemaking and Request for Comment on Land Disposal Restrictions- Phase IV November 17, 1995. The firm Beazer retained to complete this estimate, the National Environmental Technology Application Corporation (NETAC), however, appears to have overestimated the average volume of contaminated soil by assuming that the entire quantity of soils identified at the site as contaminated was removed when the ROD did not specify the quantity removed instead of allowing for "hot spot" removal. December 2, 1991 letter from Val J. Kelmeckis, Director Technology Evaluations, NETAC to James Werling, Project Manager, Beazer East. The actual average quantity of contaminated soils for 40 RODs for wood preserving sites is much lower, 36,856 cubic yards. Shreekant Gupta, George Van Houtven, and Maureen L. Cropper, "Do Benefits and Costs Matter in Environmental Regulation?", in Analyzing Superfund, Economics, Science and Law, ed. Richard L. Revesz and Richard B. Stewart (Washington D.C.: Resources for the Future, 1996), p.97.

Of 54 wood preserving Superfund sites with RODs signed before 1993, approximately 39 sites or 72 percent have pentachlorophenol as the predominant contaminant, 8 sites or 15 percent have creosote as the predominant contaminant and 7 sites or 13 percent have metal contamination as the principal contaminants.[4] These results are included in Table 2 below.

Remedies for Contaminated Media Clean ups At Inactive or Abandoned Wood Preserving Sites

This section summarizes a set of remedies that have been used to clean up contaminated media at wood preserving Superfund sites. Although other remedies may be available, this analysis focuses on remedies which either have been used previously or are currently designated as presumptive remedies for clean up at wood preserving Superfund sites.[5] According to EPA's Office of Research and Development (ORD), soil-based remediation options may be classified into3 major categories.[6] Since in-situ remediation does not trigger the land disposal restrictions, this section emphasizes ex-situ remediation alternatives where excavation of soils occurs.

Immobilization technologies contain contaminants through physical barriers, chemical reaction or physical/chemical means. Examples of immobilization technologies include containment (capping systems, vertical barriers, and horizontal barriers) to restrict migration, stabilization/solidification technologies to reduce mobility of contaminants, usually metals, and vitrification where contaminated media is turned into a glass matrix. Containment is usually done in-situ without excavation of soil. Stabilization/solidification and vitrification may be done either in-situ or ex-situ where soil is excavated.

The second type of ORD classification for remedies are destruction technologies to reduce the toxicity of hazardous constituents from contaminated media. Destruction technologies may include thermal, chemical and biological technologies. Thermal destruction includes incineration (thermal treatment or combustion in the presence of oxygen) and pyrolysis (thermal treatment in the absence of oxygen). Incineration is the principal thermal destruction technology used at wood preserving Superfund clean ups. Chemical destruction technologies available for contaminated media include chemical dehalogenation (removing chlorine atoms from chlorinated molecules) and chemical oxidation (oxidizes organic contaminants). Chemical dehalogenation has been used at a few wood preserving Superfund sites. Biological destruction uses microorganisms to destroy organic contaminants. Ex-situ bioremediation includes slurry-phase bioremediation (agitation of contaminated media in water to produce a slurry) and solid-phase bioremediation (remediation occurs in a lined bed). Bioremediation may also be done in-situ.

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[4] March 10, 1997 Memorandum from Scott Breffle & Jim Laurenson, ICF Inc to Bill Kline, EPA/OSW.

[5] For a more thorough review of remedies that may used to clean up wood preserving Superfund sites, see Contaminants and Remedial Options at Wood Preserving Sites, as cited in Note 1.

[6] Supra, Note 1 at 1-2, and Chapter 3.

The third type of ORD classification for remedies are separation/concentration technologies which remove hazardous constituents from contaminated media without affecting their toxicity. Examples of separation/concentration technologies include soil washing (mechanically scrubbing soil with water to remove hazardous constituents), solvent extraction (organic solvents used to concentrate contaminants in the extract phase) and thermal desorption (heating contaminated media to low temperatures to drive off and concentrate organic contaminants for further treatment and disposal). These type of media are beyond the scope of this analysis. Reported units costs of clean up using these technologies are reported in Table 1.

Table 1, Reported Units Costs per Cubic Yard for Applicable Remedies

Remedy/Cost (unless otherwise indicated cost information is in 1992 $ and reported from Contaminants and Remedial Options at Wood Preserving Sites, supra, note 1)	Containment	Stabilization/Solidification	Vitrification	Incineration	Pyrolysis	In-situ Soil Flushing
	Capping: $1 to $16 yd^3 (11/95 OERR Presumptive Remedies); Vertical Barrier: $3 to $15 ft^2	$88 ton (Nov 1994, EI Digest)	In-situ $350-$400 yd^3	$150-400 per ton (excluding cost for excavation, handling & disposal of residuals)	?	$50-$120 yd^3
	In-situ Bioremediation	Slurry Phase Bioremediation	Solid Phase Bioremediation	Soil Washing	Solvent Extraction	Thermal Desorption
	$50-$100 yd^3	$50-$150 yd^3 (11/95 OERR Presumptive Remedies)	$50-$150 yd^3 (11/95 OERR Presumptive Remedies)	$50-$205 per ton	$100-$700 per ton	$150-$400 per ton (excluding cost for excavation, handling & disposal of residuals)(11/95 OERR Presumptive Remedies)

Extrapolation of Wood Preserving NPL Superfund Sites To Affected Inactive & Abandoned Wood Preserving Sites

Since the predominant contaminants and remedies selected for clean ups at inactive and abandoned wood preserving facilities is unknown, this analysis uses known values for these parameters at wood preserving Superfund sites to extrapolate the Superfund results to the estimated number of inactive and abandoned sites. The procedure is based on the assumption that the 54 wood preserving Superfund sites are representative of the distribution of inactive and abandoned wood preserving sites requiring remediation in the United States. Table 2 shows the distribution of predominant contaminants and remedies selected for the 54 wood preserving sites on the NPL from 1986 through 1993.

Table 2, Predominant Contaminants and Remedies Selected for Wood Preserving Superfund Sites 1986-1993

Principal Contaminant / Remedy	C Disposal	In Situ Treatment	Soil Washing	Bioremediation	Thermal Desorption	Incineration	Solvent Extraction	D Disposal	Stabilization	Misc	Total
F032 Pentachlorophenol (dioxin, pah's)	2	9	3	8	3	8	2	1	2	1	39
F034 Creosote (pah's)	1	1	2	3		1					8
F035 CCA (Cr, As)		1	1	1					4		7
Total	3	11	6	12	3	9	2	1	6		54

Table 2 indicates that 39 of 54 or 72 percent of wood preserving Superfund sites have pentachlorophenol as the predominant contaminant. 8 sites or 15 percent have creosote as the principal contaminant; 7 sites or 13 percent have copper chromium arsenate as the predominant contaminant. EPA has incorporated these percentages into its extrapolation below in Table 3 of potentially affected inactive or abandoned wood preserving sites. With respect to remedies, bioremediation, in-situ treatment, incineration account for 22 percent, 20 percent, and 17 percent respectively of remedies selected at wood preserving Superfund sites. Currently, bioremediation, thermal desorption and incineration are presumptive remedies at wood preserving Superfund sites.

These percentages of remedies selected for wood preserving Superfund sites are used in the extrapolation for Table 3 below with the exception of untreated disposal of wood preserving contaminated soils into Subtitle C hazardous landfills and Subtitle D nonhazardous landfills. EPA believes that since the listed hazardous waste K001 (bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol) became subject to treatment standards in 1988, that soils at inactive and abandoned wood preserving facilities with F032 and F034 contamination are likely to be cross contaminated with K001 residuals. As such, these soils are not able to be legally disposed of untreated in a Subtitle C hazardous waste landfill (or Subtitle D landfill prior to the treatment standard). As such the proportion of sites in Table 2 designated for Subtitle C landfill and Subtitle D disposal are distributed evenly over bioremediation, thermal desorption and incineration in Table 3 as the likely remedy selected for these sites.

Table 3, Projected Universe of Potentially Affected Inactive and Abandoned Wood Preserving Sites

Principal Contaminant / Remedy	In Situ Treat-ment	Soil Wash-ing	Biorem-ediation	Therma l Desorp-tion	Incineration	Solvent Extraction	Stabilization	Misc	Total
F-032 Pentachloro-phenol (dioxin, pah's)	166	56	166	74	167	37	37	18	721
F-034 Creosote (pah's)	18	37	56		18	18			147
F-035 CCA (Cr, As)	18	18	18				74		128
Total	202	111	240	74	185	55	111	18	996

Shading for sites managed for in-situ treatment indicates that these sites do not incur costs under the Phase IV LDR final rule since in-situ treatment does not constitute land placement. Italics indicates inactive or abandoned wood preserving sites expected to incur administrative incremental costs for obtaining a §268.44 treatability variance and modifying the §268.7 waste analysis plan. Unshaded and unitalicized sites are expected to incurr only administrative incremental costs of modifying the existing 268.7 waste analysis plan. For reasons stated below, no sites are believed to incur incremental treatment costs resulting from the Phase IV LDR final rule.

Of the 996 total potentially affected universe of inactive or abandoned wood preserving sites, EPA believes that 499 of these sites will incur administrative incremental costs in order to obtain a treatability variance under 40 CFR §268.44 (including modifications to §268.7 waste analysis plans). An additional 295 sites will incur administrative incremental costs in order to modify existing §268.7 waste analysis plans for the newly listed wood preserving wastes. Approximately 202 inactive or abandoned wood preserving facilities are projected or modeled to use in-situ remedies that do not trigger Phase IV LDR requirements and therefore do not incur any incremental costs under the rule. For reasons discussed below, no inactive or abandoned wood preserving facility is modeled to incur incremental treatment costs from the Phase IV rule.

No Incremental Treatment Cost For Contaminated Wood Preserving Soil and Debris at Inactive and Abandoned Wood Preserving Sites

This section lays out the basis in this analysis that remediations at inactive and abandoned wood preserving sites will incur no incremental treatment costs from the Phase IV final rule.

Treatability Variance

Under current RCRA regulations, a waste generator managing a prohibited hazardous waste (i.e., a hazardous waste subject to LDR treatment standards) may apply for a variance

from a promulgated standard in order to obtain a treatment standard. 40 CFR §268.44. Thus, if a remedial site manager for an inactive or abandoned wood preserving site wishes to select a remedy that might be different from a remedy that would be required to meet a promulgated treatment standard, that manager would be able to apply to the appropriate regulatory authority for an alternative standard. This variance is available either when the promulgated standard is either not feasible or is considered by the Agency to be not appropriate for the waste being treated. EPA has stated that it is not appropriate to treat prohibited wastes when: 1) imposition of a treatment standard would creates disincentives to engage in remediation, (61 FR at 55720-22; 54 FR 15566, 15568, 55 FR at 8760-62; 61 FR at 18812) 2) imposition of a treatment standard would result in combustion of large amounts of soil or wastewater (55 FR at 8760, 8761).

EPA believes that for an inactive or abandoned wood preserving site, that the treatability variance provides an appropriate regulatory mechanism to avoid the combustion of large volumes of contaminated soils that might otherwise be cleaned up through other remedies such as bioremediation, thermal desorption and soil washing. For this reason, EPA does not believe that any inactive or abandoned wood preserving site would be required under the Phase IV LDR final rule to use a remedy more expensive that the remedy that would be selected under the baseline clean up scenario.

Capacity Variance/ HWIR Contaminated Media Rule

The Phase IV final rule provides for a two year capacity variance for the proposed LDR standards for contaminated soil and debris. During this time, EPA believes that many of the sites projected in Table 3 will complete remediation before the end of the variance period. Finally, other EPA rulemakings such as HWIR contaminated media final rule are scheduled for promulgation prior to the end of the capacity variance period. The HWIR contaminated media final rule will set exit levels for contaminated soil and debris and set an alternative clean up level that will decrease the volume of contaminated soil and possibly the number of inactive and abandoned wood preserving sites subject to RCRA jurisdiction.

No Incremental Treatment Cost At Wood Preserving Sites Contaminated Primarily With Inorganic Contaminants

EPA believes that inactive and abandoned wood preserving facilities that are contaminated primarily with inorganic contaminants will incur no additional cost as a result of today's rule. These sites are modeled to be cleaned primarily through stabilization. Sites of this type in the baseline clean up scenario are already subject to treatment standards for characteristic wastes (e.g., D004 arsenic, D007 chromium) in lieu of a promulgated treatment standard for the F035 listing. 40 CFR §268.9 Specifically, chromium is the only constituent

in the Phase IV LDR final rule for which a change in the treatment level has been specified.[7] Based on data from a commercial hazardous waste treater, EPA believes that the change from 5 mg/kg. to 0.86 mg./kg. will not result incremental treatment cost to the clean up of these sites.[8]

Unit Administrative Costs Associated Obtaining A Treatability Variance and Waste Analysis Requirements

Table 3 above models two types of inactive and abandoned wood preserving facilities that incur of administrative costs. The first type of sites those sites where obtaining a §268.44(h) site-specific treatability variance is likely because the remedy in the baseline clean up is likely to be different in the post-rule clean up scenario without the variance (e.g., soil washing, bioremediation, thermal desorption). These types of sites are designated in italics in Table 3 above. In addition to costs of reading the regulations and preparing a demonstration for a site-specific variance, these sites will incur §268.7 waste analysis costs as required by the §268.44(h) treatability provisions. These unit costs, derived from Exhibits 3 and 5 of the Information Collection Request[9] for this rule are summarized in Table 4 below. The second type of sites are those where a treatability variance is not required because the remedy in the baseline clean up scenario is likely not to change in the post-rule clean up scenario (e.g., incineration, stabilization of wood preserving contaminated soils with inorganic contaminants). This second type of site does not incur the treatability variance costs but rather the same waste analysis costs as the first type of site and additional costs associated with generator notification and recordkeeping for 268.7. These unit costs, derived from Exhibit 3 of the Information Collection Request[10] for this rule are summarized in Table 4 below.

Finally, land disposal facilities receiving treatment residuals from sites using such remedies as thermal desorption and incineration will incur recordkeeping and waste analysis costs for each shipment of treated residuals received by the facility for disposal. These unit costs are derived from Exhibit 3 of the Information Collection Request for this rule and are summarized in Table 4 below.

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[7] The other inorganic constituent, arsenic, has a final treatment standard of 5 mg/kg at the characteristic level. Soils contaminated above this level would be considered characteristically hazardous and already be subject to the 5 mg/kg standard in the baseline clean up scenario. 40 CFR §268.9.

[8] December 19, 1996 letter to Anita Cummings, USEPA, Office of Solid Waste from Michael G. Fusco, Director of Regulatory Analysis, Rollins Environmental Inc., p.4 of edited draft EPA trip report letter to Rollins Highway 36 facility in Colorado.

[9] Supporting statement for EPA Information Collection Request 1442.14 Land Disposal Restrictions -- Phase Iv Mini-Rule: Treatment Standards for Wastes From Wood Preserving.

[10] Ibid.

Table 4, Total & Unit Administrative Costs for Inactive and Abandoned Wood Preserving Sites Requiring Remediation

Type of Site/Facility Incurring Administrative Costs	Number of Sites/ Shipments	Type of Costs	Unit Administrative Cost	Total Cost
Inactive and Abandoned Wood Preserving Sites Requiring a Treatability Variance	499	Reading regulations for 268.7 waste analysis requirements and 268.44(h) treatability variance requirements, gen. waste analysis/. testing waste (268.7(a) (1)), gen waste analysis plan, modify & maintain waste analysis plan (268.7(a)(5)), gen. recordkeeping.	$1122	$560,000
Inactive and Abandoned Wood Preserving Sites Not Requiring a Treatability Variance	295	Reading regulations for 268.7 waste analysis requirements and gen. waste analysis/. testing waste (268.7(a) (1)), gen waste analysis plan, modify & maintain waste analysis plan (268.7(a)(5)), gen. recordkeeping.	$525	$155,000
Land Disposal Facilities Receiving Treatment Residuals from Inactive and Abandoned Wood Preserving Sites	425 (assumes one shipment of residuals per site for all soil washing, thermal des., incineration, and solvent extraction.	Land disposal facility recordkeeping and waste analysis (268.7(c) copies of notices & certification	$68	$28,900
Total Phase IV LDR Final Rule Cost For Inactive & Abandoned Wood Preserving Sites				$743,900

Results

The nominal total incremental cost estimated for inactive and abandoned wood preserving sites is $743,000. When this is discounted from the third year (following the capacity variance) to present value, these costs are $650,000. And when this amount is annualized over the 4 year period (2 year period for capacity variance plus two additional years for the estimated average time for a remediation of a contaminated site) from the effective date of the rule to the end of all remediations (assuming all sites are cleaned up two years after the end of the capacity variance), the annualized cost is $191,841 per year annualized at 7 percent over 4 years. These costs represent administrative costs for recordkeeping and reporting requirements associated with today's rule. As stated above, no incremental treatment costs are expected to result from this rulemaking.