MEMORANDUM

To: Dan Gravatt and Bradley Vann – EPA Region VII

From: Paul Rosasco

Subject: Additional Present Value Cost Estimates

Date: October 31, 2014

This memorandum summarizes additional present value cost estimates for the remedial alternatives presented in the December 2011 Supplemental Feasibility Study, West Lake Landfill Operable Unit-1 (OU-1). These estimates were prepared in accordance with the procedures set forth in the Revised Work Plan for Additional Present Value Cost Estimates dated October 28, 2013 (the Work Plan) that was approved by EPA in a September 19, 2014 e-mail.

Present value analysis is a method used to evaluate expenditures, either capital or operations and maintenance (O&M), which are spent over different time periods. Use of a present value analysis allows the comparison of costs of different remedial alternatives with different durations of performance on the basis of a single cost figure for each alternative. This single number, referred to as the present value, is the amount of money which, if set aside at the initial point in time (the base year), will assure that funds will be available in the future as they are needed, assuming certain economic conditions occur. Present value analysis requires use of a discount rate, which is similar to an interest rate but in the reverse, and is used to account for the time value of money. A dollar is worth more today than a year from today because, if invested instead of spent today, the dollar could earn a return (i.e., interest) at the end of the year. Thus, discounting reflects the productivity of money. The choice of a discount rate is important because the selected rate directly impacts the present value of a cost estimate, and the cost estimate is then used in making a remedy selection decision. The higher the discount rate, the lower the present value of a cost estimate.

In accordance with the circumstances associated with the West Lake Landfill Superfund Site, and as specified in the EPA-approved Work Plan, two sets of present value cost estimates have been developed: one based on a 7% discount rate set by EPA's 2000 "Guide to Developing and Documenting Cost Estimates During the Feasibility Study" (OSWER Directive 9355.0-75); and the other based on the actual year-by-year discount rates found in Appendix C of the Office of Management and Budget Circular A-94.

EPA's 2000 "Guide to Developing and Documenting Cost Estimates During the Feasibility Study" states

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> USEPA policy on the use of discount rates for RI/FS cost analyses is stated in the preamble to the NCP (55 FR 8722) and in Office of Solid Waste and Emergency Response (OSWER) Directive 9355.3-20 entitled "*Revisions to OMB Circular A-94 on Guidelines and Discount Rates for Benefit-Cost Analysis*" (USEPA 1993). Based on the NCP and this directive, a discount rate of 7% should be used in developing present value cost estimates for remedial action alternatives during the FS. This specified rate of 7% represents a "real" discount rate in that it approximates the marginal pretax rate of return on an average investment in the private sector in recent years and has been adjusted to eliminate the effect of expected inflation.

This guidance requires use of a 7% discount rate when evaluating remedial alternatives for non-federally financed CERCLA projects.

In contrast, the guidance states that for Federal facility sites being cleaned up using Superfund authority and federal funding, it is generally appropriate to apply the actual year-by-year discount rates found in the Office of Management and Budget Circular A-94 (2.3% for 2011 as presented in the original SFS, and 1.9% for 2013). The OSWER Directive says that because the Federal government has a different "cost of capital" than the private sector, these rates are appropriate to use for adjusting future year expenditures in a present value calculation for Federal facility remediation projects.

Although the West Lake Landfill is not a Federal facility, the Department of Energy is a Respondent for OU-1 and therefore federal funds will be used to pay for a portion of any remedial action that may be implemented at the site. Furthermore, EPA previously requested that the cost of the remedial alternatives be evaluated using a fiscally-constrained approach in the event that the remedial action is implemented by EPA with only federal funds (see EPA January 24, 2011 letter to the Respondents).

Finally, the OSWER guidance indicates that there may be circumstances in which it is appropriate to use a lower or higher discount rate than 7% for a present value analysis, although the guidance does not specify those circumstances. The primary costs associated with the remedial alternatives evaluated in the West Lake Landfill SFS are construction costs, which will be spent over several years because of the magnitude of the construction activities required for any excavation-based alternative, as opposed to O&M costs, which will be spent for multiple tens of years. It is unlikely that any entity would be able to obtain a 7% pre-tax return over the anticipated near-term period between remedy selection and completion of remedy construction. This is supported by the OMB rates for investment maturities of less than 10 years (-0.7% to 0.5%), which indicate that little return can be expected over such a short period of time. Therefore, consideration of an alternative discount rate is appropriate even if no Federal participation is assumed. Accordingly, it is appropriate to evaluate the present value cost of the remedial alternatives using the lower, actual year-by-year OMB rates.

Attached to this memorandum is a revised version of SFS Table 9 presenting the results of the additional present value analyses, including the present value estimates presented in the 2011 SFS (based on the then-in-effect OMB discount rate of 2.3%), revised estimates based on the current

(2013) OMB discount rate of 1.9%, and estimates based on a 7% discount rate. Present value estimates are provided for both the unconstrained and fiscally constrained approaches to remedy implementation. Please note that during preparation of the Supplemental SFS report these numbers will be revised to reflect the then-in-effect OMB discount rate.

ATTACHMENT: Table 9: Summary of Estimated costs (revised 10-31-14)

Table 9: Summary of Estimated Costs (revised 10-31-14)

Estimated Cost	Alternative: ROD-Selected Remedy			"Complete Rad Removal" with Off-site Disposal (low)			"Complete Rad Removal" with Off-site Disposal (high)			"Complete Rad Removal" with On-site Disposal			Alternative (Fiscally-Constrained to $10 million/year): ROD-Selected Remedy			"Complete Rad Removal" with Off-site Disposal (low)			"Complete Rad Removal" with Off-site Disposal (high)			"Complete Rad Removal" with On-site Disposal		
Capital ($M)	41.4			259			415			116.6			46.2			286			*NE*			137		
Operation, Maintenance, and Monitoring ($1,000)	42 - 414			40 - 412						52 - 604			42 - 433			412						52 - 707		
Interest Rate	*i=1.9%*	*i=2.3%*	*i=7%*	*i=1.9%*	*i=2.3%*	*i=7%*	*i=1.9%*	*i=2.3%*	*i=7%*	*i=1.9%*	*i=2.3%*	*i=7%*	*i=1.9%*	*i=2.3%*	*i=7%*	*i=1.9%*	*i=2.3%*	*i=7%*		*i=1.9%*	*i=2.3%*	*i=7%*		
30 year:																								
Present Worth ($M)	43	43	39	252	250	229	404	401	367	113	112	95	46	46	40	222	211	127	*NE*	124	121	92		
Non-discounted Total ($M)		45			262			419			121			49			286		*NE*		141			
200 year:																								
Present Worth ($M)	46	45	40	255	252	229		*NE*		117	114	96	49	48	40	225	213	127	*NE*	128	124	92		
Non-discounted Total ($M)		61			278			*NE*			143			65			303		*NE*		162			
1,000 year:																								
Present Worth ($M)	46	45	40	255	252	229		*NE*		117	114	96	49	48	40	225	213	127	*NE*	128	124	92		
Non-discounted Total ($M)		137			352			*NE*			245			141			377		*NE*		264			

NE - not estimated
2.3% is the OMB Real Treasury 30 year interest rate as of December 2011 per Appendix C of OMB Circular A-94 as used in preparation of the December 2011 Supplemental Feasibility Study.
1.9% is the OMB Real Treasury 30 year interest rate as of December 2013 per Appendix C of OMB Circular A-94.
7% is the interest rate to be used in FS Present Worth calculations per OSWER Directives 9355.0-20 and 9355.0-75.