



INSTRUCTIONS FOR USE - BUDGETARY COST ESTIMATE **EXIDE FRISCO SITE CLOSURE SCENARIOS**

This document briefly describes the two closure scenarios for the former Exide facility that have been modeled for the City of Frisco. It also provides instructions for the use of the budgetary cost estimates that have been developed for those closure scenarios.

TARGETED REMEDIATION AND ON-SITE CONTAINMENT

This is the closure approach recommended by Cook-Joyce, Inc. (CJI) for the former Exide facility. As described in more detail in Attachment A of this document, it entails:

- 1) Targeted remediation of shallow soil contamination in peripheral areas of the Exide property;
- 2) Consolidation of those excavated soils in areas that are highly contaminated (Exide's Former Operating Plant/FOP) or have already been used for waste disposal (Exide's Class 2 Landfill); and
- 3) Installation of engineered surface and vertical barriers (clay caps and slurry walls) over and around the waste consolidation and disposal areas to isolate and contain the wastes therein.

Attachment A to these instructions includes a projected work sequence and budgetary cost estimate details for this closure scenario. The estimated costs are preliminary estimates based on incomplete information regarding environmental conditions in and around the former Exide facility and potential work activities that may be required for closure of the facility. They should only be used or evaluated in their context as budgetary estimates derived from the information and associated scoping assumptions identified in the work sequence/budget spreadsheets and subject to the disclaimers set forth below.

REMEDICATION AND REMOVAL

This is the alternate closure approach for the former Exide facility modeled by CJI for the City. As described in more detail in Attachment B of this document, it entails:

- 1) Excavation of waste and contaminated soil from the Exide property; and
- 2) Transportation and off-site disposal of the excavated materials.

Attachment B to these instructions includes a projected work sequence and budgetary cost estimate details for this closure scenario. The estimated costs are preliminary estimates based on incomplete information regarding environmental conditions in and around the former Exide facility and potential work activities that may be required for closure of the facility. They should only be used or evaluated in their context as budgetary estimates derived from the information and associated scoping assumptions identified in the work sequence/budget spreadsheets and subject to the disclaimers set forth below.



ESTIMATED CLOSURE QUANTITIES

Estimated quantities for both closure scenarios, including estimated waste volumes, are derived in the tables provided in Attachment C to this document. Those tables were based on Affected Property Assessment data that were available for Exide's Former Operating Plant (FOP) and the adjacent J-Parcel in June 2013.

GENERAL COMMENTS AND DISCLAIMERS

CJI has developed the recommended approach for closure of the former Exide facility, the projected work sequences for closure in place and for closure by removal, and the associated budgetary cost estimates with the degree of care used by professionals of ordinary prudence concurrently practicing the same or similar profession under the same or similar circumstances. As indicated above, the estimated costs are preliminary estimates based on incomplete information regarding environmental conditions in and around the former Exide facility and potential work activities that may be required for closure of the facility. Numerous uncertainties are inherent in these estimates, including uncertainties associated with the associated scoping assumptions identified in the work sequence/budget spreadsheets and the following general disclaimers.

- 1) Anticipated work items for each closure scenario are based on CJI's review of available information and applicable regulations. Actual work items are subject to change based on future developments, such as TCEQ or EPA regulatory actions, bankruptcy court actions, public input, etc.
- 2) Budgetary cost estimates are based on quantities of wastes and other materials estimated by CJI. These estimated quantities were derived from information that was readily available in June 2013 regarding the nature and quantity of materials to be managed during closure activities. The actual nature and quantity of materials that will be managed during closure will be determined as work progresses towards and during closure.
- 3) Unit costs used in budgetary cost estimates were not based on firm contractor quotes because the closure approach to be employed has not yet been determined. Current unit costs are estimates based on CJI experience, informal discussions with contractors, and publically available information. Firm contractor quotes will be generated through a bidding process after the closure approach has been selected and bid documents have been produced.
- 4) Labor estimates represent best judgment based on project details known in June 2013.
- 5) Assumptions used to generate budgetary cost estimates may be violated by:
 - a. Differing site conditions subsequently identified, including conditions that may be discovered during closure activities;
 - b. Adverse weather or other *force majeure* events; and/or
 - c. Changing regulatory requirements for closure.

SOUTHWEST GEOSCIENCE BUDGETARY COST ESTIMATE

Cost estimates developed by Southwest Geoscience (SWG) for the remediation of Stewart Creek are provided in Attachment D to these instructions. Please refer to Attachment D for an explanation of the assumptions used to develop those costs. SWG's estimate should only be used or evaluated as a budgetary estimate derived from the information and associated scoping assumptions identified in Attachment D and subject to the disclaimers therein.



**BUDGETARY ESTIMATE OF COSTS - SUMMARY
 FORMER EXIDE FACILITY REMEDIATION OPTIONS**

Area/Item	Close in Place Estimate	Haul-Off Estimate
Permitting/Authorization	\$200,148	\$0
J-Parcel Remediation	\$1,350,223	\$3,013,801
Pond Removal	\$425,568	\$425,568
Class 2 Landfill ¹	\$2,863,581	\$54,481,004
South Disposal Area ¹	\$618,446	\$7,440,613
Bowtie ²	\$7,225,973	\$79,070,683
Exide Reporting	\$128,661	\$106,605
Post Closure Care & Reporting	\$2,778,415	\$71,400
Total	\$15,591,016	\$144,609,674

Notes: Please see the qualifications listed in the accompanying Cost Estimate Detail Sheets and Excavation Area Tables.
 Cost estimate based on incomplete data.
 For Budget Estimating Purposes Only.
 Sedimentation basin capital costs are not included in either estimate.
 1 = Cost for "Haul-Off Estimate" assumes excavated material will be hazardous waste.
 2 = Cost for "Haul-Off Estimate" assumes some excavated material class 2 waste, and some will be hazardous waste.

STEWART CREEK REMEDIATION OPTIONS

Scenario	Estimate (Disposal On Exide Property)	Estimate (Off-Site Disposal of Hazardous Waste)
Scenario 1 - Excavate Stewart Creek from BNSF Railroad Track (essentially Exide property line) to southern edge of Grand Park.	\$3,359,181	\$4,690,288
Scenario 2 - Excavate 0.75 mile segment of Stewart Creek (BNSF Railroad to Tollway) + hot spots outside of that zone.	\$2,046,638	\$2,790,412
Scenario 3 - Remove hot spots from Stewart Creek.	\$1,832,655	\$2,431,721
Fields Property and South - Excavate Stewart Creek in	\$3,017,539	\$4,169,651
Scenario 1 plus Fields South	\$6,376,720	\$8,859,939

Notes: Scenario 1 volume based on 1.87 mile length, by 40' nominal width, by 2.5' nominal depth. These figures are based on Google Earth Calculations and notes from site reconnaissance (soundings).
 Scenario 2 volume based on 0.75 creek mile length of planned park area, plus the distances of the 7 "hot Spots" outside of the park area, 40' width and 2.5' nominal depth, from site reconnaissance.
 Scenario 3 volume based on the measured areas as defined by the site reconnaissance team for 13 hotspots.
 Fields Property and South estimate assumes worst-case scenario to remove possible chips and slag by removal and disposal of all sediments in Exide Class 2 On-Site landfill.
 Estimate obtained from Southwest Geoscience. Refer to their cost estimate spreadsheet for qualifications and footnotes.



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Summary of Anticipated Work Items
Exide Property – Targeted Remediation / Close In Place Scenario
(Items presented in anticipated project sequence)

- 1) Permitting/Authorization: Performed prior to remediation & site capping/containment. Anticipated to be Post Closure Care order for Class 2 Landfill and Corrective Action Management Unit (CAMU) designation for the former Exide industrial area. NOTE: This estimate assumes that there will not be a contested case hearing associated with this permitting effort.
- 2) J-Parcel Remediation
 - a. Complete Class 2 Landfill (line existing excavation; do not extend excavation).
 - i. Remove berm.
 - ii. Install Clay liner, HDPE liner, and leachate collection.
 - iii. Completion of Class 2 Landfill should provide approximately 29,500 cubic yards (cy) of capacity for on-site waste generated¹.
 - b. Excavate contaminated soil.
 - i. Based on currently known conditions, excavated soil volume is estimated at approximately 32,000 cubic yards². This activity includes collection of soil samples from open excavations to verify waste removal.
 - ii. For cost estimating purposes, CJI has assumed that approximately 41,500 cubic yards will be excavated (a 30% increase over 32,000 cy). Soil volume increases could occur if remedial excavations need to be deepened, extended laterally, or if newly identified areas require excavation. Woody vegetation in some of these areas will be mulched.
 - iii. NOTE: For this cost estimate it is assumed that there will not be significant weather related delays and that disposal of contaminated rain water that has ponded in open excavations will not be necessary.
 - c. Place up to 29,500 cubic yards of J-Parcel Remediation soil in the remaining open space of the Class 2 Landfill.

¹ Based on February 2013 calculations performed by Pastor, Behling, & Wheeler LLC.

² Value is based on surface areas provided by Pastor, Behling & Wheeler, LLC (PBW) in draft soil concentration figures dated April 2013 (provided to CJI on May 30, 2013). After conversion to cubic yards, the volume estimate was based on the surface area multiplied by the estimated depth of each excavation multiplied by a 20 percent “fluff factor”.



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- d. Use remainder of waste soil on-site to contour surface of former Exide facility (will be placed under cap).
 - e. Prepare RAP³ (for plume management zone [PMZ] for arsenic in groundwater at VCP-MP-9 and selenium in groundwater at LMW-9) and RACR⁴ for J Parcel; participate in community review of the RAP and RACR in accordance with community relations plan.⁵
 - f. Deeper excavations will be backfilled using fill from nearby City owned soil stockpile or similar free source and reseeded. However, the maximum depth of the vast majority of the excavated area is anticipated to be 1-foot deep. These areas will be graded for drainage and reseeded.
 - g. Obtain VCP certificate for site.
 - h. Conduct quarterly PMZ monitoring until stable conditions can be documented at VCP-MP-9 and LMW-9 (assumed to be two years).
- 3) Remove Exide Structures Outside of Capped/Contained Areas
- a. Items potentially included in this activity include the crystallizer plant (with overhead piping), the stormwater pond (underground piping), and the leachate pond (no known piping).⁶ NOTE: Some of these activities may be conducted by Exide as part of current plant closure activities.
 - b. The decontamination and demolition plan⁷ for the facility called for the crystallizer plant to be removed. Based on currently available information, most of the Exide buildings have been removed. Therefore it is assumed that the crystallizer plant will be removed by others, leaving only surface pavement that will remain in place.
 - c. It is assumed that the 2 ponds will be removed as part of this remedial effort.
 - i. The synthetic liners from both ponds will be removed, sized as necessary, and disposed of as Class 2 waste.

³ Response Action Plan

⁴ Response Action Completion Report

⁵ Community review of planned remedial action is anticipated to occur during the community review of the Affected Property Assessment Report (APAR).

⁶ Leachate transfer from tank to pond via flex hose and portable pump.

⁷ *Decontamination and Demolition Work Plan For the Exide Frisco Recycling Center, Frisco, Texas, Revision 1*, by Pastor, Behling & Wheeler, LLC and Remediation Services Inc., dated January 25, 2013



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- ii. Subgrade piping connecting the stormwater pond to the Exide facility will be removed between the pond and Stewart Creek.
- iii. Soil samples will be collected along the stormwater pipe excavation and in both of the pond excavations to confirm that no releases have occurred.
- iv. The pond excavations will be backfilled using clean fill obtained from a nearby city stockpile (same one used as a fill source to backfill the former pond on the Stewart Creek WWTP). After they are backfilled the former pond areas will be seeded.
- v. NOTES: For this cost estimate it is assumed that no releases have occurred from either unit (including piping). This estimate also assumes that no water disposal from the ponds will be required.

4) Cap & Contain Class 2 Landfill

- a. Install geotechnical borings to shale at 100 foot intervals along planned path of slurry wall.
- b. Install 3,000 linear feet of slurry wall surrounding the Class 2 Landfill. Slurry wall will be “keyed” into underlying shale formation. A 3 foot thick clay cap will be installed over the slurry wall. This cap will be tied into the overlying clay cap that will cover the entire landfill. Shaping fill will be placed as necessary to achieve appropriate final contours. Piping connecting landfill to leachate collection tank will be replumbed as necessary to avoid slurry wall penetration.
- c. Cap area inside slurry wall with 3 feet of compacted clay + flexible membrane liner.
- d. Import topsoil and seed area.

5) Cap & Contain South Disposal Area

- a. Install geotechnical borings to shale at 100 foot intervals along planned path of slurry wall.
- b. Install 1,200 linear feet of slurry wall surrounding the South Disposal Area. Slurry wall will be “keyed” into underlying shale formation. A 3 foot thick clay cap will be installed over the slurry wall. This cap will be tied into the overlying clay cap that will cover the entire landfill. Shaping fill will be placed as necessary to achieve appropriate final contours.



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- c. Cap area inside slurry wall with 3 feet of compacted clay + flexible membrane liner.
 - d. Import topsoil and seed area.
- 6) Perform targeted remediation of areas at Former Exide Industrial Facility that will be outside of the area that will be capped and contained.
- a. As applicable to the scope of this project (see below), obtain Section 404 Permit from US Corps of Engineers to excavate in Stewart Creek.
 - b. Excavate areas in “South Field” and “Wooded Strip” (located between the Class 2 Landfill and the Former Exide Facility) that have lead concentrations that exceed 275 mg/Kg⁸. Excavate areas in “Lake Parcel” and along Stewart Creek that have lead concentrations that exceed 250 mg/Kg⁹ (City of Frisco may integrate Lake Parcel with J Parcel). Soil excavated from those areas will be used as contouring fill under cap at former Exide facility.
 - i. Based on currently known conditions, excavated soil volume is estimated at approximately 13,700 cubic yards. This activity includes collection of soil samples from open excavations to verify waste removal.
 - ii. For cost estimating purposes, CJI has assumed that approximately 20,500 cubic yards will be excavated (a 50% increase over 13,400 cy). Soil volume increases could occur if remedial excavations need to be deepened, extended laterally, or if newly identified areas require excavation. Woody vegetation in some of these areas will be mulched.
 - iii. NOTE: For this cost estimate it is assumed that there will not be significant weather related delays and that disposal of contaminated rain water that has ponded in open excavations will not be necessary.
 - c. Deeper excavations will be backfilled using fill from nearby City owned soil stockpile or a similar free source and reseeded. However, the maximum depth of the vast majority of the excavated area is anticipated to be 1-foot deep. These areas will be graded for drainage and reseeded.

⁸ According to Eric Pastor, of Pastor, Behling & Wheeler, LLC (PBW), the tier 2 PCL for lead that has been calculated for the Exide site is 275 mg/Kg if Class 2 groundwater is present. Mr. Pastor provided this information during a 6/6/2012 meeting held at Baker Botts LLP in Austin, Texas.

⁹ A residential cleanup level of 250 mg/Kg is contractually agreed upon residential cleanup value on the J Parcel.



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- 7) Cap & Contain Former Exide Industrial Facility
 - a. Install geotechnical borings to shale at 50 foot intervals along planned path of slurry wall.
 - b. Plug and Abandon 11 monitoring wells located inside area that will be capped and contained.
 - c. Install 5,000 linear feet of slurry wall surrounding the Former Exide Facility. Slurry wall will be “keyed” into underlying shale formation. A 3 foot thick clay cap will be installed over the slurry wall. This cap will be tied into the overlying clay cap that will cover the entire landfill. Slurry wall will be installed north of Stewart Creek, south of the northern tributary, and west of Eagan Way.
 - d. Place materials from J Parcel and Exide remedial excavations, and additional clean fill as necessary inside slurry wall to achieve contours that will drain and eliminate any “stick-up” of concrete foundations or pavement. Place final cover consisting of 3 feet of compacted clay + flexible membrane liner over entire area within slurry wall.
 - e. Import topsoil and seed area.
 - f. Document remedial actions & their completion for closure of the former Exide facility in one or more RAPs and RACRs. Participate in community review of the plan in conjunction with community relations plan; revise/submit to TCEQ accordingly. NOTE: Assumes that Exide APAR is submitted by others and is approved by the TCEQ.
- 8) Initiate Post Closure Care at facility.
 - a. Install 9 additional monitoring wells at the facility. These wells will be used along with the existing monitoring well network to perform groundwater monitoring. One of the new wells will be positioned to monitor the Class 2 landfill, one will monitor the south disposal area, and the remainder will monitor the former Exide facility.
 - b. Designate three areas of the creek system as sampling locations. One location will be on Stewart Creek upgradient of the facility; one location on the northern tributary upgradient of the facility, and one location will be on Stewart Creek downgradient of the facility and the confluence of the two creeks.



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- c. Off-site disposal of investigation derived waste (IDW) generated during well installation.
- d. Quarterly off-site disposal of leachate and purge water.
- e. Perform 30-year post closure monitoring and maintenance, to include quarterly groundwater/surface water/sediment monitoring for the first 2 years and semi-annual monitoring thereafter.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Permitting - Exide Property and J-Parcel, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT	
				UNIT COST	UNITS		
2	POST CLOSURE ORDER FOR CLASS 2 LANDFILL						
	CJI Professional Services⁵						
	Project Staff IV						
	Document Development/Preparation		120	\$105.00	hour	\$12,600.00	
	Senior Staff						
	Document Development		80	\$145.00	hour	\$11,600.00	
	Meetings, etc.		40	\$145.00	hour	\$5,800.00	
	Draftsperson II- Prepare Figures		40	\$65.00	hour	\$2,600.00	
	Admin- Copies, document prep, etc.		40	\$55.00	hour	\$2,200.00	
	Principal						
	Technical Planning		20	\$185.00	hour	\$3,700.00	
	Report Preparation		60	\$185.00	hour	\$11,100.00	
	Client Communication, Technical Oversight, meetings, etc.		60	\$185.00	hour	\$11,100.00	
	Subtotal						\$60,700.00
	CJI Reimbursable Expenses						
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	2	500	\$0.56	mile	\$555.00	
	Per diem		4	\$185.00	day	\$740.00	
	Various office expenses		1	\$2,000.00	task	\$2,000.00	
	Subtotal						\$3,295.00
	TASK SUBTOTAL						\$63,995.00
3	CONTINGENCY						
	20 % CONTINGENCY			20%	project	\$166,790.00	
	Subtotal						\$33,358.00
	PROJECT TOTAL						\$200,148.00

LEGEND:

FQCY = Frequency, includes ratios (as in 1 duplicate per 20 samples) and numbers of new units (as in new monitoring wells).
 SAMPLING EVENTS = Number of events in a year, or number of years in a monitoring period (such as a 30 year post closure care period).
 Depth = The depth of borings/monitoring wells.
 QTY = Quantity



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Permitting - Exide Property and J-Parcel, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	

NOTES:

The following notes are identical for each of the separate Cost Estimate Detail sheets associated with the budgetary estimate of potential remediation costs for proper closure of the former Exide Frisco Recycling Center. Keyed notes pertinent to each particular Cost Estimate Detail Sheet are identified as footnotes within the line items on that Cost Estimate Detail sheet. General notes A and C are applicable only to field activities that could encounter the materials identified in each note. General Note B is applicable to any activity that could be impacted by additional information obtained to supplement the 7/10/2013 APAR for that property. General note D applies to all activities identified in the Summary Description.

General Notes:

- A** Cost estimate assumes that material from shooting range berm has been removed from site and disposed of.
- B** There is outstanding data and other information for the "Bowtie" property that has been obtained since the 7/10/2013 APAR was submitted for the FOP. These estimates could change somewhat based on a complete review of that information.
- C** Cost estimate assumes that water disposal - either stormwater or groundwater - will not be necessary during this project.
- D** All work items specifically identified in the associated Summary Description are included in this cost estimate; work items without an associated line item in the cost estimate detail are insignificant given the magnitude of the overall estimate and the associated uncertainties.

Keyed Notes:

- 1 Cost based on 5/10/2013 budget estimate provided by Effective Environmental and followup conversations.
- 2 Cost based on budget estimates provided by Sunbelt Industrial Services on 9/27/2012, 6/14/2013, 6/19/2013, and followup conversations.
- 3 Cost based on budget estimate provided by DHL Analytical, DHL Analytical Fee Schedule, and CJI experience.
- 4 Cost based on budget estimates provided by Strata Core Services on 6/13/2013 and followup conversations.
- 5 Cost based on CJI experience. Specific to the completion of the Class 2 Landfill: rough costs of \$50,000 per acre of landfill liner, \$12 per cubic yard of clay liner installed, and \$0.75 per square foot of FML were used to generate this cost.
- 6 Cost based on recent estimate by Dunnaway and Associates.
- 7 Cost based on recent costs submitted for reimbursement by Remediation Services, Inc.
- 8 Refer to "Excavation Volumes and Areas" workbook for the basis of the quantity estimates.
- 9 Assumed to be (16 samples/acre)(#acres)(30% resample rate), based on the areas in the "Excavation Volumes and Areas" workbook.
- 10 Number of loads = total estimated volume from areas excavated over 1 foot deep as shown on "Excavation Volumes and Areas" workbook, divided by 20 cy/load.
- 11 Depth is assumed.
- 12 Tons of excavated material = (# of cubic yards)(1.1)
- 13 Waste Characterization sampling rate = 1 sample/500 cy for material assumed to be Class 2 waste; 1/3000 cy for material assumed to be hazardous waste; and 1/250 cy for waste that could be either.
- 14 Estimate assumes that backfill originates from City owned stockpile adjacent to public works building or other nearby, free source. In the event that nearby, free source of backfill is not available, then the estimate to backfill excavations may increase.
- 15 Amount lost due to erosion was estimated from Universal Soil Loss Equation = 0.35 CY/acre-yr x 42 acres = 14.7 CY/yr
- 16 Cost for replacement of soil estimated from RS Means for a recent project.
- 17 Assumes 5% of soil will be re-seeded annually (5% x 42 acres = 2.1 acres). Cost for seed, equipment, labor obtained from RS Means for recent project.
- 18 Assumes fertilizing will be required 6 times over 30-year period. Cost for fertilizer, equipment, labor obtained from RS Means for recent project.
- 19 Assumes entire fence (9,200 linear feet) and all signs (every 100 ft = 92 signs) are replaced once over 30 years.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Permitting - Exide Property and J-Parcel, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	

Keyed Notes (continued):

- 20 Cost for survey crew estimated from RS Means for recent project.
- 21 Assumes all wells are redeveloped every 10 years. Costs for labor, equipment and materials estimated from recent project.
- 22 Assumes 10% of wells are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 23 Assumes 50% of pads, tubing, etc. are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 24 Assumes soil loss = 3X annual loss from erosion, and 3 severe storm events occur over 30-yr period.
- 25 Assumes 30% of area will require revegetation.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

J Parcel Remediation & On-site Disposal, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT	
				UNIT COST	UNITS		
1	LANDFILL LINER CONSTRUCTION (OPEN AREA BEYOND LINED CELLS IN CLASS 2 LANDFILL)						
	Subcontractor Costs						
	Landfill Construction						
	Mobilization/Demobilization		1	\$23,000.00	task	\$23,000.00	
	Clay Liner Installation ⁵		6480	\$13.80	cu yard	\$89,424.00	
	HDPE Liner and Leachate Collection Installation ⁵		58320	\$1.15	sq foot	\$67,068.00	
	Surveying ⁵		5	\$3,450.00	day	\$17,250.00	
	Geotechnical Subcontractor ⁵						
	Mobilization Charge		1	\$1,500.00	task	\$1,500.00	
	Compaction Testing		60	\$75.00	hour	\$4,500.00	
	Subtotal						\$202,742.00
	CJI Professional Services⁵						
	Project Staff IV						
	Planning, Other		10	\$105.00	hour	\$1,050.00	
	Field Prep., Field Work, & Travel		150	\$105.00	hour	\$15,750.00	
	Construction Documentation		80	\$105.00	hour	\$8,400.00	
	Senior Staff						
	Planning, Other		40	\$145.00	hour	\$5,800.00	
	Field Prep., Field Work, & Travel		40	\$145.00	hour	\$5,800.00	
	Construction Documentation		40	\$145.00	hour	\$5,800.00	
	Draftsperson II- Prepare Figures		40	\$65.00	hour	\$2,600.00	
	Principal						
	Planning, Other		20	\$185.00	hour	\$3,700.00	
	Field Prep., Field Work, & Travel		20	\$185.00	hour	\$3,700.00	
	Client Communication, Technical Oversight, etc.		60	\$185.00	hour	\$11,100.00	
	Subtotal						\$63,700.00
	CJI Reimbursable Expenses						
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	8	500	\$0.56	mile	\$2,220.00	
	Per diem		21	\$185.00	day	\$3,885.00	
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		5	\$50.00	week	\$250.00	
	Equipment Rental (GPS, etc.)		25	\$100.00	day	\$2,500.00	
	Subtotal						\$8,855.00
	TASK SUBTOTAL						\$275,297.00



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

J Parcel Remediation & On-site Disposal, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	
2	CONTAMINATED SOIL EXCAVATION & CONFIRMATION SAMPLING					
	Subcontractor Costs					
	Soil Excavation					
	Mobilization Charge ¹		1	\$11,500.00	task	\$11,500.00
	Mulching Woody Vegetation ⁸		1	\$2,000.00	task	\$2,000.00
	Excavation of Contaminated Soil ^{1,8}		38000	\$5.75	cu yard	\$218,500.00
	Air Monitoring ⁷		3	\$9,110.01	week	\$27,330.04
	Subtotal					\$259,330.04
	CJI Professional Services⁵					
	Project Staff IV					
	Planning, Other		10	\$105.00	hour	\$1,050.00
	Field Prep., Field Work, & Travel - Note: It is assumed that approximately 5,000 cubic yards of material will be excavated during each 10 hour work day.		100	\$105.00	hour	\$10,500.00
	Senior Staff					
	Planning, Other		40	\$145.00	hour	\$5,800.00
	Field Prep., Field Work, & Travel		40	\$145.00	hour	\$5,800.00
	Data Evaluation		80	\$145.00	hour	\$11,600.00
	Draftsperson II- Prepare Figures		20	\$65.00	hour	\$1,300.00
	Principal					
	Planning, Other		20	\$185.00	hour	\$3,700.00
	Field Prep., Field Work, & Travel		10	\$185.00	hour	\$1,850.00
	Client Communication, Technical Oversight, etc.		60	\$185.00	hour	\$11,100.00
	Subtotal					\$52,700.00
	Analytical Expenses³					
	Confirmation Samples (14.22 acre area) ^{8,9}					
	Duplicate Samples (1 duplicate per 20 samples)	1:20	15			
	Soil - Lead or Copper Analyses ³		311	\$46.00	sample	\$14,285.98
	Subtotal					\$14,285.98
	CJI Reimbursable Expenses					
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	6	500	\$0.56	mile	\$1,665.00
	Per diem		15	\$185.00	day	\$2,775.00
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		3	\$50.00	week	\$150.00
	Equipment Rental (GPS, etc.)		18	\$100.00	day	\$1,800.00
	Subtotal					\$6,390.00
	TASK SUBTOTAL					
						\$332,706.02



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

J Parcel Remediation & On-site Disposal, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT	
				UNIT COST	UNITS		
4	BACKFILLING EXCAVATIONS						
	Subcontractor Costs						
	Backfill Contractor ²						
	Mobilization Charge		1	\$1,725.00	task	\$1,725.00	
	Equipment & Labor		1	\$35,339.50	task	\$35,339.50	
	Transportation Cost ¹⁴ (assumes 20 cy of soil per load)						
	Backfill excavations that are deeper than 1' below grade; slope those that are 1' deep or less for drainage. ^{8, 10}		656	\$74.75	load	\$49,036.00	
	Other						
	Seed & Water ²		1	\$74,750.00	task	\$74,750.00	
	Grading source area ²		1	\$1,840.00	task	\$1,840.00	
	Subtotal					\$162,690.50	
	CJI Professional Services⁵						
	Project Staff IV						
	Occasional On-Site Monitoring & Travel - Note: Assumes 10 haul trucks making 45 minute turns. Also assumes that CJI will monitor 10% of the backfilling activities.		10	\$105.00	hour	\$1,050.00	
	Senior Staff						
	Planning, Other		20	\$145.00	hour	\$2,900.00	
	Occasional On-Site Monitoring & Travel (Assumed at 1/2 of the monitoring frequency for Staff IV)		5	\$145.00	hour	\$725.00	
	Backfill Documentation		16	\$145.00	hour	\$2,320.00	
	Principal						
	Planning, Other		10	\$185.00	hour	\$1,850.00	
	Client Communication, Technical Oversight, etc.		24	\$185.00	hour	\$4,440.00	
	Subtotal					\$13,285.00	
	CJI Reimbursable Expenses						
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)		1	500	\$0.56	mile	\$277.50
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		1	\$50.00	week	\$50.00	
	Equipment Rental (GPS, etc.)		5	\$100.00	day	\$500.00	
	Per diem		2	\$185.00	day	\$370.00	
	Subtotal					\$1,197.50	
	TASK SUBTOTAL					\$177,173.00	



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

J Parcel Remediation & On-site Disposal, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT	
				UNIT COST	UNITS		
5	RAP AND RACR PREPARATION						
	Subcontractor Costs						
	Surveying ⁶		1	\$3,450.00	day	\$3,450.00	
							Subtotal
							\$3,450.00
	CJI Professional Services⁵						
	Project Staff IV- Document Preparation		40	\$105.00	hour	\$4,200.00	
	Senior Staff - Document Preparation		180	\$145.00	hour	\$26,100.00	
	Draftsperson II- Prepare Figures		40	\$65.00	hour	\$2,600.00	
	Administrative - Copies, Document Prep, etc.		24	\$55.00	hour	\$1,320.00	
	Principal- Client Communication, Technical Oversight, meeting participation, etc.		60	\$185.00	hour	\$11,100.00	
							Subtotal
							\$45,320.00
	CJI Reimbursable Expenses						
	Report Preparation Expenses		1	\$1,500.00	task	\$1,500.00	
							Subtotal
							\$1,500.00
							TASK SUBTOTAL
							\$50,270.00
6	PUBLIC MEETING FOR RAP AND RACR						
	CJI Professional Services⁵						
	Project Staff IV- Set up meeting, meeting prep., meeting participation		24	\$105.00	hour	\$2,520.00	
	Senior Staff - Meeting Participation		12	\$145.00	hour	\$1,740.00	
	Principal- Meeting Participation		12	\$185.00	hour	\$2,220.00	
							Subtotal
							\$6,480.00
	CJI Reimbursable Expenses						
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	1	500	\$0.56	mile	\$277.50	
	Per diem		3	\$200.00	day	\$600.00	
	Various Office Expenses		1	\$200.00	task	\$200.00	
							Subtotal
							\$1,077.50
							TASK SUBTOTAL
							\$7,557.50



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

J Parcel Remediation & On-site Disposal, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT	
				UNIT COST	UNITS		
7	RAP AND RACR REVISION BASED ON PUBLIC COMMENT						
	CJI Professional Services⁵						
	Project Staff IV- Document Preparation		36	\$105.00	hour	\$3,780.00	
	Senior Staff - Document Preparation		24	\$145.00	hour	\$3,480.00	
	Draftsperson II- Prepare Figures		8	\$65.00	hour	\$520.00	
	Administrative - Copies, Document Prep, etc.		16	\$55.00	hour	\$880.00	
	Principal- Client Communication, Technical Oversight, meeting participation, etc.		16	\$185.00	hour	\$2,960.00	
							Subtotal
							\$11,620.00
	CJI Reimbursable Expenses						
	Report Preparation Expenses		1	\$250.00	task	\$250.00	
							Subtotal
							\$250.00
							TASK SUBTOTAL
							\$11,870.00
8	FINAL VCP COC						
	CJI Professional Services⁵						
	Senior Staff - Document Review & Other Tasks		16	\$105.00	hour	\$1,680.00	
	Project Staff IV- Document Review & Other Tasks		12	\$65.00	hour	\$780.00	
	Principal- Client Communication, Technical Oversight, final document submittal, meetings, etc.		16	\$145.00	hour	\$2,320.00	
							Subtotal
							\$4,780.00
	CJI Reimbursable Expenses						
	Various Office Expenses		1	\$500.00	task	\$500.00	
							Subtotal
							\$500.00
							TASK SUBTOTAL
							\$5,280.00



CJL Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

J Parcel Remediation & On-site Disposal, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT	
				UNIT COST	UNITS		
9	CONTINGENCY						
	20 % CONTINGENCY			20%	project	\$1,125,186.04	
	Subtotal						\$225,037.21
	PROJECT TOTAL						\$1,350,223.25

LEGEND:

FQCY = Frequency, includes ratios (as in 1 duplicate per 20 samples) and numbers of new units (as in new monitoring wells).
 SAMPLING EVENTS = Number of events in a year, or number of years in a monitoring period (such as a 30 year post closure care period).
 Depth = The depth of borings/monitoring wells.
 QTY = Quantity

NOTES:

The following notes are identical for each of the separate Cost Estimate Detail sheets associated with the budgetary estimate of potential remediation costs for proper closure of the former Exide Frisco Recycling Center. Keyed notes pertinent to each particular Cost Estimate Detail Sheet are identified as footnotes within the line items on that Cost Estimate Detail sheet. General notes A and C are applicable only to field activities that could encounter the materials identified in each note. General Note B is applicable to any activity that could be impacted by additional information obtained to supplement the 7/10/2013 APAR for that property. General note D applies to all activities identified in the Summary Description.

General Notes:

- A** Cost estimate assumes that material from shooting range berm has been removed from site and disposed of.
- B** There is outstanding data and other information for the "Bowtie" property that has been obtained since the 7/10/2013 APAR was submitted for the FOP. These estimates could change somewhat based on a complete review of that information.
- C** Cost estimate assumes that water disposal - either stormwater or groundwater - will not be necessary during this project.
- D** All work items specifically identified in the associated Summary Description are included in this cost estimate; work items without an associated line item in the cost estimate detail are insignificant given the magnitude of the overall estimate and the associated uncertainties.

Keyed Notes:

- 1 Cost based on 5/10/2013 budget estimate provided by Effective Environmental and followup conversations.
- 2 Cost based on budget estimates provided by Sunbelt Industrial Services on 9/27/2012, 6/14/2013, 6/19/2013, and followup conversations.
- 3 Cost based on budget estimate provided by DHL Analytical, DHL Analytical Fee Schedule, and CJL experience.
- 4 Cost based on budget estimates provided by Strata Core Services on 6/13/2013 and followup conversations.
- 5 Cost based on CJL experience. Specific to the completion of the Class 2 Landfill: rough costs of \$50,000 per acre of landfill liner, \$12 per cubic yard of clay liner installed, and \$0.75 per square foot of FML were used to generate this cost.
- 6 Cost based on recent estimate by Dunnaway and Associates.
- 7 Cost based on recent costs submitted for reimbursement by Remediation Services, Inc.
- 8 Refer to "Excavation Volumes and Areas" workbook for the basis of the quantity estimates.
- 9 Assumed to be (16 samples/acre)(#acres)(30% resample rate), based on the areas in the "Excavation Volumes and Areas" workbook.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

J Parcel Remediation & On-site Disposal, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	

Keyed Notes (continued):

- 10 Number of loads = total estimated volume from areas excavated over 1 foot deep as shown on "Excavation Volumes and Areas" workbook, divided by 20 cy/load.
- 11 Depth is assumed.
- 12 Tons of excavated material = (# of cubic yards)(1.1)
- 13 Waste Characterization sampling rate = 1 sample/500 cy for material assumed to be Class 2 waste; 1/3000 cy for material assumed to be hazardous waste; and 1/250 cy for waste that could be either.
- 14 Estimate assumes that backfill originates from City owned stockpile adjacent to public works building or other nearby, free source. In the event that nearby, free source of backfill is not available, then the estimate to backfill excavations may increase.
- 15 Amount lost due to erosion was estimated from Universal Soil Loss Equation = 0.35 CY/acre-yr x 42 acres = 14.7 CY/yr
- 16 Cost for replacement of soil estimated from RS Means for a recent project.
- 17 Assumes 5% of soil will be re-seeded annually (5% x 42 acres = 2.1 acres). Cost for seed, equipment, labor obtained from RS Means for recent project.
- 18 Assumes fertilizing will be required 6 times over 30-year period. Cost for fertilizer, equipment, labor obtained from RS Means for recent project.
- 19 Assumes entire fence (9,200 linear feet) and all signs (every 100 ft = 92 signs) are replaced once over 30 years.
- 20 Cost for survey crew estimated from RS Means for recent project.
- 21 Assumes all wells are redeveloped every 10 years. Costs for labor, equipment and materials estimated from recent project.
- 22 Assumes 10% of wells are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 23 Assumes 50% of pads, tubing, etc. are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 24 Assumes soil loss = 3X annual loss from erosion, and 3 severe storm events occur over 30-yr period.
- 25 Assumes 30% of area will require revegetation.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Both Closure Scenarios

Pond Removal - Exide Property, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT	
				UNIT COST	UNITS		
1	POND EXCAVATION/REMOVAL (CONTINUED)						
	CJI Reimbursable Expenses						
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	3	500	\$0.56	mile	\$832.50	
	Per diem		12	\$185.00	day	\$2,220.00	
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		3	\$50.00	week	\$150.00	
	Equipment Rental (GPS, etc.)		15	\$100.00	day	\$1,500.00	
	Subtotal					\$4,702.50	
	TASK SUBTOTAL					\$116,488.20	



CJI Cost Estimate Detail - For Budget Estimating Purposes - Both Closure Scenarios

Pond Removal - Exide Property, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	
2	BACKFILL					
	Subcontractor Costs					
	Backfill Contractor ²					
	Mobilization Charge		1	\$862.50	task	\$862.50
	Equipment & Labor		1	\$70,679.00	task	\$70,679.00
	Transportation Cost ¹⁴ (assumes 20 cy of soil per load)					
	Stormwater Pond ((120000 square foot surface area x 6 feet deep)-sloped sidewalls)		1200	\$74.75	load	\$89,700.00
	Wastewater Pond ((60000 square foot surface area x 5 feet deep)-sloped sidewalls)		500	\$74.75	load	\$37,375.00
	Other					
	Seed & Water ²		1	\$22,425.00	task	\$22,425.00
	Grading source area ²		1	\$1,840.00	task	\$1,840.00
	Subtotal					\$222,881.50
	CJI Professional Services⁵					
	Project Staff IV					
	Occasional On-Site Monitoring & Travel - Note: Assumes 10 haul trucks making 45 minute turns. Also assumes that CJI will monitor 10% of the backfilling activities.		20	\$105.00	hour	\$2,100.00
	Senior Staff					
	Planning, Other		10	\$145.00	hour	\$1,450.00
	Occasional On-Site Monitoring & Travel (Assumed at 1/2 of the monitoring frequency for Staff IV)		10	\$145.00	hour	\$1,450.00
	Backfill Documentation		16	\$145.00	hour	\$2,320.00
	Principal					
	Planning, Other		10	\$185.00	hour	\$1,850.00
	Client Communication, Technical Oversight, etc.		24	\$185.00	hour	\$4,440.00
	Subtotal					\$13,610.00
	CJI Reimbursable Expenses					
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	2	500	\$0.56	mile	\$555.00
	Per diem		3	\$185.00	day	\$555.00
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		1	\$50.00	week	\$50.00
	Equipment Rental (GPS, etc.)		5	\$100.00	day	\$500.00
	Subtotal					\$1,660.00
	TASK SUBTOTAL					\$238,151.50



CJI Cost Estimate Detail - For Budget Estimating Purposes - Both Closure Scenarios

Pond Removal - Exide Property, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	

Keyed Notes (continued):

- 10 Number of loads = total estimated volume from areas excavated over 1 foot deep as shown on "Excavation Volumes and Areas" workbook, divided by 20 cy/load.
- 11 Depth is assumed.
- 12 Tons of excavated material = (# of cubic yards)(1.1)
- 13 Waste Characterization sampling rate = 1 sample/500 cy for material assumed to be Class 2 waste; 1/3000 cy for material assumed to be hazardous waste; and 1/250 cy for waste that could be either.
- 14 Estimate assumes that backfill originates from City owned stockpile adjacent to public works building or other nearby, free source. In the event that nearby, free source of backfill is not available, then the estimate to backfill excavations may increase.
- 15 Amount lost due to erosion was estimated from Universal Soil Loss Equation = 0.35 CY/acre-yr x 42 acres = 14.7 CY/yr
- 16 Cost for replacement of soil estimated from RS Means for a recent project.
- 17 Assumes 5% of soil will be re-seeded annually (5% x 42 acres = 2.1 acres). Cost for seed, equipment, labor obtained from RS Means for recent project.
- 18 Assumes fertilizing will be required 6 times over 30-year period. Cost for fertilizer, equipment, labor obtained from RS Means for recent project.
- 19 Assumes entire fence (9,200 linear feet) and all signs (every 100 ft = 92 signs) are replaced once over 30 years.
- 20 Cost for survey crew estimated from RS Means for recent project.
- 21 Assumes all wells are redeveloped every 10 years. Costs for labor, equipment and materials estimated from recent project.
- 22 Assumes 10% of wells are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 23 Assumes 50% of pads, tubing, etc. are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 24 Assumes soil loss = 3X annual loss from erosion, and 3 severe storm events occur over 30-yr period.
- 25 Assumes 30% of area will require revegetation.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - Exide Class 2 Landfill, Frisco, Texas

TASK	ESTIMATED COSTS							AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE			
					UNIT COST	UNITS		
1	GEOTECHNICAL WORK ASSOCIATED WITH SLURRY WALL INSTALLATION							
	Subcontractor Costs							
	Drilling Subcontractor ^{2,4}							
	Mobilization Charge (5 borings per day assumed for estimate)			5	\$345.00	day	\$1,725.00	
	1 Boring to shale every 100 feet (3000 ft of slurry wall w/ 5 pre-existing data points) w/ average depth of 20'	25	20	500	\$11.50	foot	\$5,750.00	
	Steam Cleaner/Decon			6	\$172.50	day	\$1,035.00	
	Waste cuttings stockpiled in Class 2 Landfill or on Bowtie property.				\$0.00	N/A	\$0.00	
							Subtotal	\$8,510.00
	CJI Professional Services⁵							
	Project Staff IV							
	Planning, Other			10	\$105.00	hour	\$1,050.00	
	Field Prep., Field Work, & Travel			60	\$105.00	hour	\$6,300.00	
	Senior Staff							
	Planning, Other			40	\$145.00	hour	\$5,800.00	
	Field Prep., Field Work, & Travel			20	\$145.00	hour	\$2,900.00	
	Data Evaluation			40	\$145.00	hour	\$5,800.00	
	Draftsperson II- Prepare Figures			40	\$65.00	hour	\$2,600.00	
	Principal							
	Planning, Other			20	\$185.00	hour	\$3,700.00	
	Client Communication, Technical Oversight, etc.			60	\$185.00	hour	\$11,100.00	
							Subtotal	\$39,250.00
	Analytical Expenses³							
	No analytical costs.							
				0	\$57.50	sample	\$0.00	
							Subtotal	\$0.00
	CJI Reimbursable Expenses							
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	3		500	\$0.56	mile	\$832.50	
	Per diem			8	\$185.00	day	\$1,480.00	
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)			2	\$50.00	week	\$100.00	
	Equipment Rental (GPS, etc.)			11	\$100.00	day	\$1,100.00	
							Subtotal	\$3,512.50
	TASK SUBTOTAL							\$51,272.50



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - Exide Class 2 Landfill, Frisco, Texas

TASK	ESTIMATED COSTS							AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE			
					UNIT COST	UNITS		
2	SLURRY WALL INSTALLATION							
	Subcontractor Costs							
	Excavation/Installation Subcontractor ¹							
	Mobilization Charge (assumes combined mob fee with Bowtie)			1	\$0.00	task	\$0.00	
	Slurry Wall Installation (includes platform construction)		25	3000	\$12	foot	\$862,500.00	
	Surplus excavated material stockpiled on Bowtie property.				\$0.00	N/A	\$0.00	
							Subtotal	\$862,500.00
	CJI Professional Services⁵							
	Project Staff IV							
	Planning, Other			10	\$105.00	hour	\$1,050.00	
	Field Prep., Field Work, & Travel (200' of Slurry Wall/Day * 10 hr/day)			165	\$105.00	hour	\$17,325.00	
	Senior Staff							
	Planning, Other			40	\$145.00	hour	\$5,800.00	
	Field Prep., Field Work, & Travel			30	\$145.00	hour	\$4,350.00	
	Construction Documentation			24	\$145.00	hour	\$3,480.00	
	Draftsperson II- Prepare Figures			40	\$65.00	hour	\$2,600.00	
	Principal							
	Planning, Other			20	\$185.00	hour	\$3,700.00	
	Field Prep., Field Work, & Travel			30	\$185.00	hour	\$5,550.00	
	Client Communication, Technical Oversight, etc.			60	\$185.00	hour	\$11,100.00	
							Subtotal	\$54,955.00
	CJI Reimbursable Expenses							
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	8		500	\$0.56	mile	\$2,220.00	
	Per diem			23	\$185.00	day	\$4,255.00	
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)			5	\$50.00	week	\$250.00	
	Equipment Rental (GPS, etc.)			26	\$100.00	day	\$2,600.00	
							Subtotal	\$9,325.00
	TASK SUBTOTAL							\$926,780.00



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - Exide Class 2 Landfill, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE		AMOUNT
					UNIT COST	UNITS	
3	CAP INSTALLATION						
	Subcontractor Costs						
	Capping Subcontractor ¹						
	Mobilization Charge (assumes combined mob fee with Bowtie)			1	\$0.00	task	\$0.00
	Capping Cost ¹			11.14	\$84,122.50	acre	\$936,884.60
	FML Installation ⁵			485134.1	\$0.75	sq foot	\$363,850.58
	Geotechnical Subcontractor ⁵						
	Mobilization Charge			1	\$1,500.00	task	\$1,500.00
	Compaction Testing			160	\$75.00	hour	\$12,000.00
	Surveying ⁶			5	\$3,450.00	day	\$17,250.00
	Site Restoration						
	Seed & Water ²			1	\$14,950.00	project	\$14,950.00
	Subtotal						\$1,346,435.18
	CJI Professional Services⁵						
	Project Staff IV						
	Planning, Other			40	\$105.00	hour	\$4,200.00
	Field Prep., Field Work, & Travel			150	\$105.00	hour	\$15,750.00
	Senior Staff						
	Planning, Other			40	\$145.00	hour	\$5,800.00
	Field Prep., Field Work, & Travel			20	\$145.00	hour	\$2,900.00
	Construction Documentation			40	\$145.00	hour	\$5,800.00
	Draftsperson II- Prepare Figures			20	\$65.00	hour	\$1,300.00
	Principal						
	Planning, Other			20	\$185.00	hour	\$3,700.00
	Field Prep., Field Work, & Travel			20	\$185.00	hour	\$3,700.00
	Client Communication, Technical Oversight, etc.			60	\$185.00	hour	\$11,100.00
	Subtotal						\$54,250.00
	CJI Reimbursable Expenses						
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	6		500	\$0.56	mile	\$1,665.00
	Per diem			19	\$185.00	day	\$3,515.00
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)			4	\$50.00	week	\$200.00
	Equipment Rental (GPS, etc.)			22	\$100.00	day	\$2,200.00
	Subtotal						\$7,580.00
	TASK SUBTOTAL						\$1,408,265.18



CJL Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - Exide Class 2 Landfill, Frisco, Texas

TASK	ESTIMATED COSTS							
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE		AMOUNT	
					UNIT COST	UNITS		
4	CONTINGENCY							
	20 % CONTINGENCY				20%	project	\$2,386,317.68	
								\$477,263.54
	PROJECT TOTAL							\$2,863,581.21

LEGEND:

- FQCY = Frequency, includes ratios (as in 1 duplicate per 20 samples) and numbers of new units (as in new monitoring wells).
- SAMPLING EVENTS = Number of events in a year, or number of years in a monitoring period (such as a 30 year post closure care period).
- Depth = The depth of borings/monitoring wells.
- QTY = Quantity

NOTES:

The following notes are identical for each of the separate Cost Estimate Detail sheets associated with the budgetary estimate of potential remediation costs for proper closure of the former Exide Frisco Recycling Center. Keyed notes pertinent to each particular Cost Estimate Detail Sheet are identified as footnotes within the line items on that Cost Estimate Detail sheet. General notes A and C are applicable only to field activities that could encounter the materials identified in each note. General Note B is applicable to any activity that could be impacted by additional information obtained to supplement the 7/10/2013 APAR for that property. General note D applies to all activities identified in the Summary Description

General Notes:

- A** Cost estimate assumes that material from shooting range berm has been removed from site and disposed of.
- B** There is outstanding data and other information for the "Bowtie" property that has been obtained since the 7/10/2013 APAR was submitted for the FOP. These estimates could change somewhat based on a complete review of that information.
- C** Cost estimate assumes that water disposal - either stormwater or groundwater - will not be necessary during this project.
- D** All work items specifically identified in the associated Summary Description are included in this cost estimate; work items without an associated line item in the cost estimate detail are insignificant given the magnitude of the overall estimate and the associated uncertainties.

Keyed Notes:

- 1 Cost based on 5/10/2013 budget estimate provided by Effective Environmental and followup conversations.
- 2 Cost based on budget estimates provided by Sunbelt Industrial Services on 9/27/2012, 6/14/2013, 6/19/2013, and followup conversations.
- 3 Cost based on budget estimate provided by DHL Analytical, DHL Analytical Fee Schedule, and CJL experience.
- 4 Cost based on budget estimates provided by Strata Core Services on 6/13/2013 and followup conversations.
- 5 Cost based on CJL experience. Specific to the completion of the Class 2 Landfill: rough costs of \$50,000 per acre of landfill liner, \$12 per cubic yard of clay liner installed, and \$0.75 per square foot of FML were used to generate this cost.
- 6 Cost based on recent estimate by Dunnaway and Associates.
- 7 Cost based on recent costs submitted for reimbursement by Remediation Services, Inc.
- 8 Refer to "Excavation Volumes and Areas" workbook for the basis of the quantity estimates.
- 9 Assumed to be (16 samples/acre)(#acres)(30% resample rate), based on the areas in the "Excavation Volumes and Areas" workbook.
- 10 Number of loads = total estimated volume from areas excavated over 1 foot deep as shown on "Excavation Volumes and Areas" workbook, divided by 20 cy/load.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - Exide Class 2 Landfill, Frisco, Texas

TASK	ESTIMATED COSTS						AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE		
					UNIT COST	UNITS	

Keyed Notes (continued):

- 11 Depth is assumed.
- 12 Tons of excavated material = (# of cubic yards)(1.1)
- 13 Waste Characterization sampling rate = 1 sample/500 cy for material assumed to be Class 2 waste; 1/3000 cy for material assumed to be hazardous waste; and 1/250 cy for waste that could be either.
- 14 Estimate assumes that backfill originates from City owned stockpile adjacent to public works building or other nearby, free source. In the event that nearby, free source of backfill is not available, then the estimate to backfill excavations may increase.
- 15 Amount lost due to erosion was estimated from Universal Soil Loss Equation = 0.35 CY/acre-yr x 42 acres = 14.7 CY/yr
- 16 Cost for replacement of soil estimated from RS Means for a recent project.
- 17 Assumes 5% of soil will be re-seeded annually (5% x 42 acres = 2.1 acres). Cost for seed, equipment, labor obtained from RS Means for recent project.
- 18 Assumes fertilizing will be required 6 times over 30-year period. Cost for fertilizer, equipment, labor obtained from RS Means for recent project.
- 19 Assumes entire fence (9,200 linear feet) and all signs (every 100 ft = 92 signs) are replaced once over 30 years.
- 20 Cost for survey crew estimated from RS Means for recent project.
- 21 Assumes all wells are redeveloped every 10 years. Costs for labor, equipment and materials estimated from recent project.
- 22 Assumes 10% of wells are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 23 Assumes 50% of pads, tubing, etc. are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 24 Assumes soil loss = 3X annual loss from erosion, and 3 severe storm events occur over 30-yr period.
- 25 Assumes 30% of area will require revegetation.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - South Disposal Area, Frisco, Texas

TASK	ESTIMATED COSTS							AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE			
					UNIT COST	UNITS		
1	GEOTECHNICAL WORK ASSOCIATED WITH SLURRY WALL INSTALLATION							
	Subcontractor Costs							
	Drilling Subcontractor ^{2,4}							
	Mobilization Charge (5 borings per day assumed for estimate)			3	\$345.00	day	\$1,035.00	
	1 Boring to shale every 100 feet (1200 ft of slurry wall) w/ average depth of 15'	12	15	180	\$11.50	foot	\$2,070.00	
	Steam Cleaner/Decon			3	\$172.50	day	\$517.50	
	Waste cuttings stockpiled on Bowtie property.				\$0.00	N/A	\$0.00	
	Subtotal							\$3,622.50
	CJI Professional Services⁵							
	Project Staff IV							
	Planning, Other			5	\$105.00	hour	\$525.00	
	Field Prep., Field Work, & Travel			30	\$105.00	hour	\$3,150.00	
	Senior Staff							
	Planning, Other			10	\$145.00	hour	\$1,450.00	
	Field Prep., Field Work, & Travel			0	\$145.00	hour	\$0.00	
	Data Evaluation			20	\$145.00	hour	\$2,900.00	
	Draftsperson II- Prepare Figures			20	\$65.00	hour	\$1,300.00	
	Principal							
	Planning, Other			10	\$185.00	hour	\$1,850.00	
	Client Communication, Technical Oversight, etc.			30	\$185.00	hour	\$5,550.00	
	Subtotal							\$16,725.00
	Analytical Expenses³							
	No analytical costs.							
				0	\$57.50	sample	\$0.00	
	Subtotal							\$0.00
	CJI Reimbursable Expenses							
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	1		500	\$0.56	mile	\$277.50	
	Per diem			3	\$185.00	day	\$555.00	
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)			1	\$50.00	week	\$50.00	
	Equipment Rental (GPS, etc.)			5	\$100.00	day	\$500.00	
	Subtotal							\$1,382.50
	TASK SUBTOTAL							\$21,730.00



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - South Disposal Area, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE		AMOUNT
					UNIT COST	UNITS	
2	SLURRY WALL INSTALLATION						
	Subcontractor Costs						
	Excavation/Installation Subcontractor ¹						
	Mobilization Charge (assumes combined mob fee with Bowtie)			1	\$0.00	task	\$0.00
	Slurry Wall Installation (includes platform construction)		15	1198	\$12	foot	\$206,637.75
	Surplus excavated material stockpiled on Bowtie property.				\$0.00	N/A	\$0.00
	Subtotal						\$206,637.75
	CJI Professional Services⁵						
	Project Staff IV						
	Planning, Other			10	\$105.00	hour	\$1,050.00
	Field Prep., Field Work, & Travel (200' of Slurry Wall/Day * 10 hr/day)			70	\$105.00	hour	\$7,350.00
	Senior Staff						
	Planning, Other			20	\$145.00	hour	\$2,900.00
	Field Prep., Field Work, & Travel			20	\$145.00	hour	\$2,900.00
	Construction Documentation			20	\$145.00	hour	\$2,900.00
	Draftsperson II- Prepare Figures			20	\$65.00	hour	\$1,300.00
	Principal						
	Planning, Other			10	\$185.00	hour	\$1,850.00
	Field Prep., Field Work, & Travel			10	\$185.00	hour	\$1,850.00
	Client Communication, Technical Oversight, etc.			40	\$185.00	hour	\$7,400.00
	Subtotal						\$29,500.00
	CJI Reimbursable Expenses						
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from	4		500	\$0.56	mile	\$1,110.00
	Per diem			10	\$185.00	day	\$1,850.00
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)			2	\$50.00	week	\$100.00
	Equipment Rental (GPS, etc.)			12	\$100.00	day	\$1,200.00
	Subtotal						\$4,260.00
	TASK SUBTOTAL						\$240,397.75



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - South Disposal Area, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE		AMOUNT
					UNIT COST	UNITS	
3	CAP INSTALLATION						
	Subcontractor Costs						
	Capping Subcontractor ¹						
	Mobilization Charge (assumes combined mob fee with Bowtie)			1	\$0.00	task	\$0.00
	Capping Cost ¹			1.742	\$84,122.50	acre	\$146,513.86
	FML Installation ⁵			75867.264	\$0.75	sq foot	\$56,900.45
	Geotechnical Subcontractor ⁵						
	Mobilization Charge			1	\$1,500.00	task	\$1,500.00
	Compaction Testing			40	\$75.00	hour	\$3,000.00
	Surveying ⁶			3	\$3,450.00	day	\$10,350.00
	Site Restoration						
	Seed & Water ²			1	\$7,475.00	task	\$7,475.00
	Subtotal						\$225,739.31
	CJI Professional Services⁵						
	Project Staff IV						
	Planning, Other			10	\$105.00	hour	\$1,050.00
	Field Prep., Field Work, & Travel			50	\$105.00	hour	\$5,250.00
	Senior Staff						
	Planning, Other			20	\$145.00	hour	\$2,900.00
	Field Prep., Field Work, & Travel			10	\$145.00	hour	\$1,450.00
	Construction Documentation			20	\$145.00	hour	\$2,900.00
	Draftsperson II- Prepare Figures			20	\$65.00	hour	\$1,300.00
	Principal						
	Planning, Other			10	\$185.00	hour	\$1,850.00
	Field Prep., Field Work, & Travel			10	\$185.00	hour	\$1,850.00
	Client Communication, Technical Oversight, etc.			30	\$185.00	hour	\$5,550.00
	Subtotal						\$24,100.00
	CJI Reimbursable Expenses						
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	4		500	\$0.56	mile	\$1,110.00
	Per diem			7	\$185.00	day	\$1,295.00
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)			2	\$50.00	week	\$100.00
	Equipment Rental (GPS, etc.)			9	\$100.00	day	\$900.00
	Subtotal						\$3,405.00
	TASK SUBTOTAL						\$253,244.31



CJL Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - South Disposal Area, Frisco, Texas

TASK	ESTIMATED COSTS							
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE		AMOUNT	
					UNIT COST	UNITS		
4	CONTINGENCY							
	20 % CONTINGENCY				20%	project	\$515,372.06	
								\$103,074.41
	PROJECT TOTAL							\$618,446.47

LEGEND:

- FQCY = Frequency, includes ratios (as in 1 duplicate per 20 samples) and numbers of new units (as in new monitoring wells).
- SAMPLING EVENTS = Number of events in a year, or number of years in a monitoring period (such as a 30 year post closure care period).
- Depth = The depth of borings/monitoring wells.
- QTY = Quantity

NOTES:

The following notes are identical for each of the separate Cost Estimate Detail sheets associated with the budgetary estimate of potential remediation costs for proper closure of the former Exide Frisco Recycling Center. Keyed notes pertinent to each particular Cost Estimate Detail Sheet are identified as footnotes within the line items on that Cost Estimate Detail sheet. General notes A and C are applicable only to field activities that could encounter the materials identified in each note. General Note B is applicable to any activity that could be impacted by additional information obtained to supplement the 7/10/2013 APAR for that property. General note D applies to all activities identified in the Summary Description

General Notes:

- A** Cost estimate assumes that material from shooting range berm has been removed from site and disposed of.
- B** There is outstanding data and other information for the "Bowtie" property that has been obtained since the 7/10/2013 APAR was submitted for the FOP. These estimates could change somewhat based on a complete review of that information.
- C** Cost estimate assumes that water disposal - either stormwater or groundwater - will not be necessary during this project.
- D** All work items specifically identified in the associated Summary Description are included in this cost estimate; work items without an associated line item in the cost estimate detail are insignificant given the magnitude of the overall estimate and the associated uncertainties.

Keyed Notes:

- 1 Cost based on 5/10/2013 budget estimate provided by Effective Environmental and followup conversations.
- 2 Cost based on budget estimates provided by Sunbelt Industrial Services on 9/27/2012, 6/14/2013, 6/19/2013, and followup conversations.
- 3 Cost based on budget estimate provided by DHL Analytical, DHL Analytical Fee Schedule, and CJL experience.
- 4 Cost based on budget estimates provided by Strata Core Services on 6/13/2013 and followup conversations.
- 5 Cost based on CJL experience. Specific to the completion of the Class 2 Landfill: rough costs of \$50,000 per acre of landfill liner, \$12 per cubic yard of clay liner installed, and \$0.75 per square foot of FML were used to generate this cost.
- 6 Cost based on recent estimate by Dunnaway and Associates.
- 7 Cost based on recent costs submitted for reimbursement by Remediation Services, Inc.
- 8 Refer to "Excavation Volumes and Areas" workbook for the basis of the quantity estimates.
- 9 Assumed to be (16 samples/acre)(#acres)(30% resample rate), based on the areas in the "Excavation Volumes and Areas" workbook.
- 10 Number of loads = total estimated volume from areas excavated over 1 foot deep as shown on "Excavation Volumes and Areas" workbook, divided by 20 cy/load.



CJL Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - South Disposal Area, Frisco, Texas

TASK	ESTIMATED COSTS						AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE		
					UNIT COST	UNITS	

Keyed Notes (continued):

- 11 Depth is assumed.
- 12 Tons of excavated material = (# of cubic yards)(1.1)
- 13 Waste Characterization sampling rate = 1 sample/500 cy for material assumed to be Class 2 waste; 1/3000 cy for material assumed to be hazardous waste; and 1/250 cy for waste that could be either.
- 14 Estimate assumes that backfill originates from City owned stockpile adjacent to public works building or other nearby, free source. In the event that nearby, free source of backfill is not available, then the estimate to backfill excavations may increase.
- 15 Amount lost due to erosion was estimated from Universal Soil Loss Equation = 0.35 CY/acre-yr x 42 acres = 14.7 CY/yr
- 16 Cost for replacement of soil estimated from RS Means for a recent project.
- 17 Assumes 5% of soil will be re-seeded annually (5% x 42 acres = 2.1 acres). Cost for seed, equipment, labor obtained from RS Means for recent project.
- 18 Assumes fertilizing will be required 6 times over 30-year period. Cost for fertilizer, equipment, labor obtained from RS Means for recent project.
- 19 Assumes entire fence (9,200 linear feet) and all signs (every 100 ft = 92 signs) are replaced once over 30 years.
- 20 Cost for survey crew estimated from RS Means for recent project.
- 21 Assumes all wells are redeveloped every 10 years. Costs for labor, equipment and materials estimated from recent project.
- 22 Assumes 10% of wells are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 23 Assumes 50% of pads, tubing, etc. are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 24 Assumes soil loss = 3X annual loss from erosion, and 3 severe storm events occur over 30-yr period.
- 25 Assumes 30% of area will require revegetation.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - Exide Bowtie Property, Frisco, Texas

TASK	ESTIMATED COSTS							AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE			
					UNIT COST	UNITS		
1	GEOTECHNICAL WORK ASSOCIATED WITH SLURRY WALL INSTALLATION							
	Subcontractor Costs							
	Drilling Subcontractor ^{2,4}							
	Mobilization Charge (5 borings per day assumed for estimate)			20	\$345.00	day	\$6,900.00	
	1 Boring to shale every 50 feet (5000 ft of slurry wall w/ 6 pre-existing data points) w/ average depth of 20'	94	20	1880	\$11.50	foot	\$21,620.00	
	Steam Cleaner/Decon			20	\$172.50	day	\$3,450.00	
	Waste cuttings stockpiled on Bowtie property.				\$0.00	N/A	\$0.00	
	Subtotal							\$31,970.00
	CJI Professional Services⁵							
	Project Staff IV							
	Planning, Other			20	\$105.00	hour	\$2,100.00	
	Field Prep., Field Work, & Travel			230	\$105.00	hour	\$24,150.00	
	Senior Staff							
	Planning, Other			60	\$145.00	hour	\$8,700.00	
	Field Prep., Field Work, & Travel			40	\$145.00	hour	\$5,800.00	
	Data Evaluation			80	\$145.00	hour	\$11,600.00	
	Draftsperson II- Prepare Figures			60	\$65.00	hour	\$3,900.00	
	Principal							
	Planning, Other			20	\$185.00	hour	\$3,700.00	
	Client Communication, Technical Oversight, etc.			90	\$185.00	hour	\$16,650.00	
	Subtotal							\$76,600.00
	Analytical Expenses³							
	No analytical costs.			0	\$57.50	sample	\$0.00	
	Subtotal							\$0.00
	CJI Reimbursable Expenses							
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	8		500	\$0.56	mile	\$2,220.00	
	Per diem			27	\$185.00	day	\$4,995.00	
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)			6	\$50.00	week	\$300.00	
	Equipment Rental (GPS, etc.)			30	\$100.00	day	\$3,000.00	
	Subtotal							\$10,515.00
	TASK SUBTOTAL							\$119,085.00



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - Exide Bowtie Property, Frisco, Texas

TASK	ESTIMATED COSTS							AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE			
					UNIT COST	UNITS		
2	MONITORING WELL PLUGGING							
	Subcontractor Costs							
	Drilling Subcontractor ^{2,4}							
	Mobilization Charge			1	\$345.00	day	\$345.00	
	Plug & Abandon Monitoring Wells (MW-16, MW-24, B5N, MW-30, MW-31, MW-10, MW-23, B7N, MW-21, MW-22, 10 wells, average depth 25 feet)	10	25	250	\$11.50	foot	\$2,875.00	
	Subtotal							\$3,220.00
	CJI Professional Services⁵							
	Project Staff IV							
	Planning, Other			4	\$105.00	hour	\$420.00	
	Field Prep., Field Work, & Travel			20	\$105.00	hour	\$2,100.00	
	Senior Staff							
	Planning, Other			4	\$145.00	hour	\$580.00	
	Data Evaluation			4	\$145.00	hour	\$580.00	
	Principal							
	Client Communication, Technical Oversight, etc.			16	\$185.00	hour	\$2,960.00	
	Subtotal							\$6,640.00
	CJI Reimbursable Expenses							
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	1		500	\$0.56	mile	\$277.50	
	Per diem			2	\$185.00	day	\$370.00	
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)			1	\$50.00	week	\$50.00	
	Equipment Rental (GPS, etc.)			5	\$100.00	day	\$500.00	
	Subtotal							\$1,197.50
	TASK SUBTOTAL							\$11,057.50



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - Exide Bowtie Property, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE		AMOUNT
					UNIT COST	UNITS	
3	STEWART CREEK, WOODED STRIP, LAKE PARCEL, CRYSTALLIZER AREA & SOUTH FIELD EXCAVATION, CONTAMINATED SOIL DISPOSAL AND EXCAVATION BACKFILLING						
	Subcontractor Costs						
	Excavation Subcontractor ¹						
	Mobilization Charge (assumes combined mob fee with Slurry Wall Installation below)			1	\$0.00	task	\$0.00
	Mulching Woody Vegetation ⁸			1	\$2,000.00	task	\$2,000.00
	Excavation of Contaminated Soil/Sediment ⁸			29000	\$5.75	cu yard	\$166,750.00
	Disposal of excavated material on Bowtie property - used for contouring under cap.			29000	\$5.75	cu yard	\$166,750.00
	Backfill Contractor ²						
	Mobilization Charge			1	\$862.50	task	\$862.50
	Equipment & Labor			1	\$35,339.50	task	\$35,339.50
	Air Monitoring ⁷						
	Transportation Cost ¹⁴ (assumes 20 cy of soil per load)			1	\$9,110.01	week	\$9,110.01
	Backfill excavations that are deeper than 1' below grade; slope those that are 1' deep or less for drainage. ^{8, 10}			487	\$74.75	load	\$36,403.25
	Other						
	Seed & Water			1	\$14,950.00	N/A	\$14,950.00
	Grading source area			1	\$1,840.00	N/A	\$1,840.00
	Subtotal						
							\$434,005.26
	CJI Professional Services⁵						
	Project Staff IV						
	Planning, Other			10	\$105.00	hour	\$1,050.00
	Field Prep., Field Work, & Travel - Note: It is assumed that approximately 5,000 cubic yards of material will be excavated during each 10 hour work day.			80	\$105.00	hour	\$8,400.00
	Occasional On-Site Monitoring & Travel to Monitor Backfilling Activities - Note: Assumes 10 haul trucks making 45 minute turns. Also assumes that CJI will monitor 10% of the backfilling activities.			10	\$105.00	hour	\$1,050.00
	Subtotal						
							\$10,500.00



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - Exide Bowtie Property, Frisco, Texas

TASK	ESTIMATED COSTS							AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE			
					UNIT COST	UNITS		
3	STEWART CREEK, WOODED STRIP, LAKE PARCEL, CRYSTALLIZER AREA & SOUTH FIELD EXCAVATION, CONTAMINATED SOIL DISPOSAL AND EXCAVATION BACKFILLING (CONTINUED)							
	CJI Professional Services (continued)⁵							
	Senior Staff							
	Planning, Other			20	\$145.00	hour	\$2,900.00	
	Field Prep., Field Work, & Travel			20	\$145.00	hour	\$2,900.00	
	Occasional On-Site Monitoring & Travel to Monitor Backfilling Activities (Assumed at 1/2 of the monitoring frequency for Staff IV)			0	\$145.00	hour	\$0.00	
	Section 404 Permit to Excavate in Creek			40	\$145.00	hour	\$5,800.00	
	Data Evaluation			40	\$145.00	hour	\$5,800.00	
	Principal							
	Planning, Other			20	\$185.00	hour	\$3,700.00	
	Client Communication, Technical Oversight, etc.			60	\$185.00	hour	\$11,100.00	
								Subtotal
								\$32,200.00
	Analytical Expenses³							
	Confirmation Samples (10 acre area) ⁹			208				
	Duplicate Samples (1 duplicate per 20 samples)	1:20		11				
	Soil - Lead Analyses ³			219	\$46.00	sample	\$10,074.00	
								Subtotal
								\$10,074.00
	CJI Reimbursable Expenses							
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	4		500	\$0.56	mile	\$1,110.00	
	Per diem			10	\$185.00	day	\$1,850.00	
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)			2	\$50.00	week	\$100.00	
	Equipment Rental (GPS, etc.)			12	\$100.00	day	\$1,200.00	
								Subtotal
								\$4,260.00
	TASK SUBTOTAL							
								\$491,039.26



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - Exide Bowtie Property, Frisco, Texas

TASK	ESTIMATED COSTS							AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE			
					UNIT COST	UNITS		
4	SLURRY WALL INSTALLATION							
	Subcontractor Costs							
	Excavation/Installation Subcontractor ¹							
	Mobilization Charge			1	\$115,000.00	task	\$115,000.00	
	Slurry Wall Installation (includes platform construction)		25	5000	\$12	foot	\$1,437,500.00	
	Surplus excavated material stockpiled on Bowtie property.				\$0.00	N/A	\$0.00	
	Subtotal							\$1,552,500.00
	CJI Professional Services⁵							
	Project Staff IV							
	Planning, Other			10	\$105.00	hour	\$1,050.00	
	Field Prep., Field Work, & Travel (200' of Slurry Wall/Day * 10 hr/day)			275	\$105.00	hour	\$28,875.00	
	Senior Staff							
	Planning, Other			60	\$145.00	hour	\$8,700.00	
	Field Prep., Field Work, & Travel			60	\$145.00	hour	\$8,700.00	
	Construction Documentation			40	\$145.00	hour	\$5,800.00	
	Draftsperson II- Prepare Figures			60	\$65.00	hour	\$3,900.00	
	Principal							
	Planning, Other			24	\$185.00	hour	\$4,440.00	
	Field Prep., Field Work, & Travel			40	\$185.00	hour	\$7,400.00	
	Client Communication, Technical Oversight, etc.			80	\$185.00	hour	\$14,800.00	
	Subtotal							\$83,665.00
	CJI Reimbursable Expenses							
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	11		500	\$0.56	mile	\$3,052.50	
	Per diem			38	\$185.00	day	\$7,030.00	
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)			8	\$50.00	week	\$400.00	
	Equipment Rental (GPS, etc.)			40	\$100.00	day	\$4,000.00	
	Subtotal							\$14,482.50
	TASK SUBTOTAL							\$1,650,647.50



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - Exide Bowtie Property, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE		AMOUNT
					UNIT COST	UNITS	
5	CAP INSTALLATION						
	Subcontractor Costs						
	Capping Subcontractor ¹						
	Mobilization Charge			1	\$50,000.00	task	\$50,000.00
	Capping Cost ¹			29	\$84,122.50	acre	\$2,439,552.50
	FML Installation ⁵			1394313	\$0.75	sq foot	\$1,045,734.75
	Geotechnical Subcontractor						
	Mobilization Charge			1	\$1,500.00	task	\$1,500.00
	Compaction Testing			240	\$75.00	hour	\$18,000.00
	Surveying ⁶			10	\$3,450.00	day	\$34,500.00
	Site Restoration ²						
	Seed & Water			1	\$37,375.00	task	\$37,375.00
	Subtotal						\$3,626,662.25
	CJI Professional Services⁵						
	Project Staff IV						
	Planning, Other			40	\$105.00	hour	\$4,200.00
	Field Prep., Field Work, & Travel			400	\$105.00	hour	\$42,000.00
	Senior Staff						
	Planning, Other			80	\$145.00	hour	\$11,600.00
	Field Prep., Field Work, & Travel			40	\$145.00	hour	\$5,800.00
	Construction Documentation			80	\$145.00	hour	\$11,600.00
	Draftsperson II- Prepare Figures			40	\$65.00	hour	\$2,600.00
	Principal						
	Planning, Other			24	\$185.00	hour	\$4,440.00
	Field Prep., Field Work, & Travel			40	\$185.00	hour	\$7,400.00
	Client Communication, Technical Oversight, etc.			80	\$185.00	hour	\$14,800.00
	Subtotal						\$104,440.00
	CJI Reimbursable Expenses						
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	13		500	\$0.56	mile	\$3,607.50
	Per diem			48	\$185.00	day	\$8,880.00
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)			10	\$50.00	week	\$500.00
	Equipment Rental (GPS, etc.)			50	\$100.00	day	\$5,000.00
	Subtotal						\$17,987.50
	TASK SUBTOTAL						\$3,749,089.75



CJL Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - Exide Bowtie Property, Frisco, Texas

TASK	ESTIMATED COSTS							AMOUNT	
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE				
					UNIT COST	UNITS			
6	CONTINGENCY								
	20 % CONTINGENCY				20%	project	\$6,020,919.01		
	Subtotal								\$1,204,183.80
	PROJECT TOTAL								\$7,225,102.82

LEGEND:

- FQCY = Frequency, includes ratios (as in 1 duplicate per 20 samples) and numbers of new units (as in new monitoring wells).
- SAMPLING EVENTS = Number of events in a year, or number of years in a monitoring period (such as a 30 year post closure care period).
- Depth = The depth of borings/monitoring wells.
- QTY = Quantity

NOTES:

The following notes are identical for each of the separate Cost Estimate Detail sheets associated with the budgetary estimate of potential remediation costs for proper closure of the former Exide Frisco Recycling Center. Keyed notes pertinent to each particular Cost Estimate Detail Sheet are identified as footnotes within the line items on that Cost Estimate Detail sheet. General notes A and C are applicable only to field activities that could encounter the materials identified in each note. General Note B is applicable to any activity that could be impacted by additional information obtained to supplement the 7/10/2013 APAR for that property. General note D applies to all activities identified in the Summary Description

General Notes:

- A** Cost estimate assumes that material from shooting range berm has been removed from site and disposed of.
- B** There is outstanding data and other information for the "Bowtie" property that has been obtained since the 7/10/2013 APAR was submitted for the FOP. These estimates could change somewhat based on a complete review of that information.
- C** Cost estimate assumes that water disposal - either stormwater or groundwater - will not be necessary during this project.
- D** All work items specifically identified in the associated Summary Description are included in this cost estimate; work items without an associated line item in the cost estimate detail are insignificant given the magnitude of the overall estimate and the associated uncertainties.

Keyed Notes:

- 1 Cost based on 5/10/2013 budget estimate provided by Effective Environmental and followup conversations.
- 2 Cost based on budget estimates provided by Sunbelt Industrial Services on 9/27/2012, 6/14/2013, 6/19/2013, and followup conversations.
- 3 Cost based on budget estimate provided by DHL Analytical, DHL Analytical Fee Schedule, and CJL experience.
- 4 Cost based on budget estimates provided by Strata Core Services on 6/13/2013 and followup conversations.
- 5 Cost based on CJL experience. Specific to the completion of the Class 2 Landfill: rough costs of \$50,000 per acre of landfill liner, \$12 per cubic yard of clay liner installed, and \$0.75 per square foot of FML were used to generate this cost.
- 6 Cost based on recent estimate by Dunnaway and Associates.
- 7 Cost based on recent costs submitted for reimbursement by Remediation Services, Inc.
- 8 Refer to "Excavation Volumes and Areas" workbook for the basis of the quantity estimates.
- 9 Assumed to be (16 samples/acre)(#acres)(30% resample rate), based on the areas in the "Excavation Volumes and Areas" workbook.



CJL Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Cap and Contain - Exide Bowtie Property, Frisco, Texas

TASK	ESTIMATED COSTS						AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	DEPTH	QTY	RATE		
					UNIT COST	UNITS	

Keyed Notes (continued):

- 10 Number of loads = total estimated volume from areas excavated over 1 foot deep as shown on "Excavation Volumes and Areas" workbook, divided by 20 cy/load.
- 11 Depth is assumed.
- 12 Tons of excavated material = (# of cubic yards)(1.1)
- 13 Waste Characterization sampling rate = 1 sample/500 cy for material assumed to be Class 2 waste; 1/3000 cy for material assumed to be hazardous waste; and 1/250 cy for waste that could be either.
- 14 Estimate assumes that backfill originates from City owned stockpile adjacent to public works building or other nearby, free source. In the event that nearby, free source of backfill is not available, then the estimate to backfill excavations may increase.
- 15 Amount lost due to erosion was estimated from Universal Soil Loss Equation = 0.35 CY/acre-yr x 42 acres = 14.7 CY/yr
- 16 Cost for replacement of soil estimated from RS Means for a recent project.
- 17 Assumes 5% of soil will be re-seeded annually (5% x 42 acres = 2.1 acres). Cost for seed, equipment, labor obtained from RS Means for recent project.
- 18 Assumes fertilizing will be required 6 times over 30-year period. Cost for fertilizer, equipment, labor obtained from RS Means for recent project.
- 19 Assumes entire fence (9,200 linear feet) and all signs (every 100 ft = 92 signs) are replaced once over 30 years.
- 20 Cost for survey crew estimated from RS Means for recent project.
- 21 Assumes all wells are redeveloped every 10 years. Costs for labor, equipment and materials estimated from recent project.
- 22 Assumes 10% of wells are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 23 Assumes 50% of pads, tubing, etc. are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 24 Assumes soil loss = 3X annual loss from erosion, and 3 severe storm events occur over 30-yr period.
- 25 Assumes 30% of area will require revegetation.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Exide TRRP Reporting, Frisco, Texas - Containment/Control of Wastes and Contaminated Soil

TASK	ESTIMATED COSTS				
	TASK / ITEM DESCRIPTION	QTY	RATE		AMOUNT
			UNIT COST	UNITS	
1	RACR PREPARATION				
	CJI Professional Services⁵				
	Project Staff IV- Document Preparation	80	\$105.00	hour	\$8,400.00
	Senior Staff - Document Preparation	180	\$145.00	hour	\$26,100.00
	Draftsperson II- Prepare Figures	80	\$65.00	hour	\$5,200.00
	Administrative - Copies, Document Prep, etc.	40	\$55.00	hour	\$2,200.00
	Principal- Client Communication, Technical Oversight, meeting participation, etc.	100	\$185.00	hour	\$18,500.00
					Subtotal
					\$60,400.00
	CJI Reimbursable Expenses				
	Report Preparation Expenses	1	\$2,000.00	task	\$2,000.00
					Subtotal
					\$2,000.00
					TASK SUBTOTAL
					\$62,400.00
2	PUBLIC MEETING FOR RACR				
	CJI Professional Services⁵				
	Project Staff IV- Set up meeting, meeting prep., meeting participation/Followup	40	\$105.00	hour	\$4,200.00
	Senior Staff - Meeting Participation/Followup	40	\$145.00	hour	\$5,800.00
	Principal- Meeting Participation/Followup	40	\$185.00	hour	\$7,400.00
					Subtotal
					\$17,400.00
	CJI Reimbursable Expenses				
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	500	\$0.56	mile	\$277.50
	Per diem	3	\$200.00	day	\$600.00
	Various Office Expenses	1	\$200.00	task	\$200.00
					Subtotal
					\$1,077.50
					TASK SUBTOTAL
					\$18,477.50



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Exide TRRP Reporting, Frisco, Texas - Containment/Control of Wastes and Contaminated Soil

TASK	ESTIMATED COSTS				
	TASK / ITEM DESCRIPTION	QTY	RATE		AMOUNT
			UNIT COST	UNITS	
3	RACR REVISION BASED ON PUBLIC COMMENT				
	CJI Professional Services⁵				
	Project Staff IV- Document Preparation	80	\$105.00	hour	\$8,400.00
	Senior Staff - Document Preparation	40	\$145.00	hour	\$5,800.00
	Draftsperson II- Prepare Figures	16	\$65.00	hour	\$1,040.00
	Administrative - Copies, Document Prep, etc.	16	\$55.00	hour	\$880.00
	Principal- Client Communication, Technical Oversight, meeting participation, etc.	24	\$185.00	hour	\$4,440.00
					Subtotal
					\$20,560.00
	CJI Reimbursable Expenses				
	Report Preparation Expenses	1	\$500.00	task	\$500.00
					Subtotal
					\$500.00
					TASK SUBTOTAL
					\$21,060.00
4	FINAL VCP COC				
	CJI Professional Services⁵				
	Senior Staff - Document Review & Other Tasks	16	\$105.00	hour	\$1,680.00
	Project Staff IV- Document Review & Other Tasks	12	\$65.00	hour	\$780.00
	Principal- Client Communication, Technical Oversight, final document submittal, meetings, etc.	16	\$145.00	hour	\$2,320.00
					Subtotal
					\$4,780.00
	CJI Reimbursable Expenses				
	Various Office Expenses	1	\$500.00	task	\$500.00
					Subtotal
					\$500.00
					TASK SUBTOTAL
					\$5,280.00
5	CONTINGENCY				
	20 % CONTINGENCY				
			20%	project	\$107,217.50
					Subtotal
					\$21,443.50
					PROJECT TOTAL
					\$128,661.00

LEGEND:

FQCY = Frequency, includes ratios (as in 1 duplicate per 20 samples) and numbers of new units (as in new monitoring wells).
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 Depth = The depth of borings/monitoring wells.
 QTY = Quantity



CJL Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Exide TRRP Reporting, Frisco, Texas - Containment/Control of Wastes and Contaminated Soil

TASK	ESTIMATED COSTS				AMOUNT
	TASK / ITEM DESCRIPTION	QTY	RATE		
			UNIT COST	UNITS	

NOTES:

The following notes are identical for each of the separate Cost Estimate Detail sheets associated with the budgetary estimate of potential remediation costs for proper closure of the former Exide Frisco Recycling Center. Keyed notes pertinent to each particular Cost Estimate Detail Sheet are identified as footnotes within the line items on that Cost Estimate Detail sheet. General notes A and C are applicable only to field activities that could encounter the materials identified in each note. General Note B is applicable to any activity that could be impacted by additional information obtained to supplement the 7/10/2013 APAR for that property. General note D applies to all activities identified in the Summary Description

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- 9 Assumed to be (16 samples/acre)(#acres)(30% resample rate), based on the areas in the "Excavation Volumes and Areas" workbook.
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- 11 Depth is assumed.
- 12 Tons of excavated material = (# of cubic yards)(1.1)
- 13 Waste Characterization sampling rate = 1 sample/500 cy for material assumed to be Class 2 waste; 1/3000 cy for material assumed to be hazardous waste; and 1/250 cy for waste that could be either.
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- 15 Amount lost due to erosion was estimated from Universal Soil Loss Equation = 0.35 CY/acre-yr x 42 acres = 14.7 CY/yr
- 16 Cost for replacement of soil estimated from RS Means for a recent project.
- 17 Assumes 5% of soil will be re-seeded annually (5% x 42 acres = 2.1 acres). Cost for seed, equipment, labor obtained from RS Means for recent project.
- 18 Assumes fertilizing will be required 6 times over 30-year period. Cost for fertilizer, equipment, labor obtained from RS Means for recent project.
- 19 Assumes entire fence (9,200 linear feet) and all signs (every 100 ft = 92 signs) are replaced once over 30 years.
- 20 Cost for survey crew estimated from RS Means for recent project.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Close in Place Scenario

Exide TRRP Reporting, Frisco, Texas - Containment/Control of Wastes and Contaminated Soil

TASK	ESTIMATED COSTS				
	TASK / ITEM DESCRIPTION	QTY	RATE		AMOUNT
			UNIT COST	UNITS	

Keyed Notes (continued):

- 21 Assumes all wells are redeveloped every 10 years. Costs for labor, equipment and materials estimated from recent project.
- 22 Assumes 10% of wells are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 23 Assumes 50% of pads, tubing, etc. are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 24 Assumes soil loss = 3X annual loss from erosion, and 3 severe storm events occur over 30-yr period.
- 25 Assumes 30% of area will require revegetation.



CJI Cost Estimate Detail - For Budget Estimating Purposes

Cap and Contain - 30-yr Post Closure Care, Former Exide Facility - Frisco, Texas

TASK	ESTIMATED COSTS							AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	SAMPLING EVENTS	QTY	RATE			
					UNIT COST	UNITS		
1	MONITORING WELL INSTALLATION (1 PER 300 FEET)							
	Subcontractor Costs							
	Drilling Subcontractor ^{2,4}							
	Mobilization Charge			3	\$345.00	day	\$1,035.00	
	Nine 2" monitoring wells w/ average depth of 20' (9x20=180')			180	\$32.20	foot	\$5,796.00	
	Well Pads/Completion Costs			9	\$143.80	well	\$1,294.20	
	Steam Cleaner/Decon			3	\$150.00	day	\$450.00	
	Per diem			1	\$200.00	day	\$200.00	
	Drums			9	\$46.00	day	\$414.00	
	Waste Transportation & Disposal			9	\$287.50	day	\$2,587.50	
								\$11,776.70
	CJI Professional Services⁵							
	Project Staff IV							
	Planning, Other			5	\$105.00	hour	\$525.00	
	Field Prep., Field Work, & Travel			40	\$105.00	hour	\$4,200.00	
	Senior Staff							
	Planning, Other			10	\$145.00	hour	\$1,450.00	
	Data Evaluation			16	\$145.00	hour	\$2,320.00	
	Draftsperson II- Prepare Figures			8	\$65.00	hour	\$520.00	
	Principal							
	Planning, Other			10	\$185.00	hour	\$1,850.00	
	Client Communication, Technical Oversight, etc.			20	\$185.00	hour	\$3,700.00	
								\$14,565.00
	Analytical Expenses³							
	1 sample per well			9				
	Duplicate Samples (1 duplicate per 20 samples)	1:20		1				
	Soil - RCRA 8 Metals, TPH, & VOC Analyses ³			10	\$327.75	sample	\$3,277.50	
								\$3,277.50
	CJI Reimbursable Expenses							
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	1		500	\$0.56	mile	\$277.50	
	Per diem			3	\$185.00	day	\$555.00	
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)			1	\$50.00	task	\$50.00	
	GPS Unit			5	\$100.00	day	\$500.00	
								\$1,382.50
								\$31,001.70



CJI Cost Estimate Detail - For Budget Estimating Purposes

Cap and Contain - 30-yr Post Closure Care, Former Exide Facility - Frisco, Texas

TASK	ESTIMATED COSTS							AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	SAMPLING EVENTS	QTY	RATE			
					UNIT COST	UNITS		
2	MONITORING AND ROUTINE REPORTING EXPENSES (30 YEARS)							
	CJI Professional Services⁵							
	Project Staff IV							
	Planning, Other	30		10	\$105.00	hour	\$31,500.00	
	Field Prep., Field Work, & Travel (1 week quarterly first 2 years)	2	4	50	\$105.00	hour	\$10,500.00	
	Field Prep., Field Work, & Travel (1 week biannually last 28 years)	28	2	50	\$105.00	hour	\$147,000.00	
	Senior Staff							
	Planning, Other	30		10	\$145.00	hour	\$43,500.00	
	Data Evaluation	30		24	\$145.00	hour	\$104,400.00	
	Report Preparation	30		24	\$145.00	hour	\$104,400.00	
	Draftsperson II- Prepare Figures	30		16	\$65.00	hour	\$31,200.00	
	Principal							
	Planning, Other	30		12	\$185.00	hour	\$66,600.00	
	Report Preparation/Review	30		12	\$185.00	hour	\$66,600.00	
	Client Communication, Technical Oversight, etc.	30		24	\$185.00	hour	\$133,200.00	
								\$738,900.00
	Analytical Expenses³							
	1 sample per well (MW-20, MW-17, MW-29, MW-27, MW-18, B9N, VCP-MW-6, MW-28, LMW-5, LMW-17, LMW-8, LMW-9, VCP-MW-9, PMW-19R, PMW-20R, MW-32 (New), MW-33 (New), MW-34 (New), MW-35 (New), MW-36 (New), MW-37 (New), MW-38 (New), and LMW-23 (New).			23				
	Duplicate Samples (1 duplicate per 20 samples)	1:20		3				
	Groundwater - Quarterly Sampling First 2 Years - Cadmium & Lead Analyses ³	2	4	26	\$46.00	sample	\$9,568.00	
	Groundwater - Bi-Annual Sampling Last 28 Years - Cadmium & Lead Analyses ³	28	2	26	\$46.00	sample	\$66,976.00	
	Surface Water - Quarterly Sampling First 2 Years from 3 locations - Cadmium & Lead Analyses ³	2	4	3	\$46.00	sample	\$1,104.00	
	Surface Water - Bi-Annual Sampling Last 28 Years from 3 locations - Cadmium & Lead Analyses ³	28	2	3	\$46.00	sample	\$7,728.00	
	Sediment - Quarterly Sampling First 2 Years from 3 locations - Cadmium & Lead Analyses ³	2	4	3	\$46.00	sample	\$1,104.00	
	Sediment - Bi-Annual Sampling Last 28 Years from 3 locations - Cadmium & Lead Analyses ³	28	2	3	\$46.00	sample	\$7,728.00	
								\$94,208.00



CJI Cost Estimate Detail - For Budget Estimating Purposes

Cap and Contain - 30-yr Post Closure Care, Former Exide Facility - Frisco, Texas

TASK	ESTIMATED COSTS							AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	SAMPLING EVENTS	QTY	RATE			
					UNIT COST	UNITS		
	MONITORING & ROUTINE REPORTING EXPENSES (CONTINUED)							
	CJI Reimbursable Expenses							
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	2	4	500	\$0.56	mile	\$2,220.00	
	Per diem	2	4	4	\$185.00	day	\$5,920.00	
	Pump & Other Sampling Equipment	2	4	4	\$200.00	day	\$6,400.00	
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	28	2	500	\$0.56	mile	\$15,540.00	
	Per diem	28	2	4	\$185.00	day	\$41,440.00	
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)	28	2	4	\$50.00	event	\$11,200.00	
	Pump & Other Sampling Equipment	28	2	4	\$100.00	day	\$22,400.00	
	Report Preparation and Office Expenses	30		1	\$500.00	year	\$15,000.00	
	Waste Transportation & Disposal (Class 2 Landfill Leachate + Purge water)	30	4	1	\$750.00	quarter	\$90,000.00	
	Subtotal						\$210,120.00	
	TASK SUBTOTAL						\$1,043,228.00	
3	ROUTINE INSPECTIONS (SEMIANNUAL)							
	CJI Professional Services⁵							
	Project Staff IV							
	Planning, Other	30	2	4	\$105.00	hour	\$25,200.00	
	Field Work & Travel	30	2	20	\$105.00	hour	\$126,000.00	
	Principal							
	Planning, Other	30	2	2	\$185.00	hour	\$22,200.00	
	Client Communication, Technical Oversight, etc.	30	2	8	\$185.00	hour	\$88,800.00	
	Subtotal						\$262,200.00	
	CJI Reimbursable Expenses							
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	30	2	500	\$0.56	mile	\$16,650.00	
	Per diem	30	2	2	\$185.00	day	\$22,200.00	
	Subtotal						\$38,850.00	
	TASK SUBTOTAL						\$301,050.00	
4	ROUTINE MAINTENANCE							
	Cover Maintenance							
	Soil Replacement (due to loss from erosion) ^{15, 16}	30/30 yr	30	14.7	\$6.00	cu yd	\$2,646.00	
	Re-seeding ¹⁶	30/30 yr	30	4.2	\$1,400.00	acre	\$176,400.00	
	Fertilizing ¹⁷	1/5 yr	30	42	\$115.00	acre	\$28,980.00	
	Mowing	4/yr	30	42	\$45.00	acre	\$226,800.00	
	Subtotal						\$434,826.00	



CJI Cost Estimate Detail - For Budget Estimating Purposes

Cap and Contain - 30-yr Post Closure Care, Former Exide Facility - Frisco, Texas

TASK	ESTIMATED COSTS							AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	SAMPLING EVENTS	QTY	RATE			
					UNIT COST	UNITS		
4	ROUTINE MAINTENANCE (CONTINUED)							
	Fence, Sign, and Permanent Benchmark Maintenance							
	Fence Replacement ¹⁹	1/30 yr	30	9200	\$20.00	foot	\$184,000.00	
	Sign Replacement ¹⁹	1/30 yr	30	92	\$20.00	each	\$1,840.00	
	Re-survey benchmark six times over 30 years ²⁰	1/5 yr	30	1	\$700.00	event	\$4,200.00	
	Subtotal						\$190,040.00	
	Monitor Well Maintenance/Replacement							
	Redevelop Monitor Wells ²¹	1/10 yr	30	23	\$50.00	each	\$3,450.00	
	Monitor Well Replacement ²²	0.1/30 yr	30	23	\$4,000.00	each	\$9,200.00	
	Pad, Tubing, Cap, and Lock Replacement (50% over 30 years) ²²	0.5/30 yr	30	23	\$300.00	each	\$3,450.00	
	Subtotal						\$16,100.00	
	Sedimentation Basin Cleanout							
	Excavate sediment and waste	2/1 yr	30	2	\$1,500.00	each	\$180,000.00	
	Analyze sediment removed from traps	2/1 yr	30	2	\$500.00	each	\$60,000.00	
	Consulting	2/1 yr	30	4	\$125.00	cy	\$30,000.00	
	Dispose of sediment as class 2 waste	2/1 yr	30	4	\$37.95	cy	\$9,108.00	
	Transport sediment to landfill	2/1 yr	30	1	\$143.75	cy	\$8,625.00	
	Subtotal						\$287,733.00	
	TASK SUBTOTAL							
							\$928,699.00	
5	RESPONSE TO SEVERE STORMS							
	Soil Replacement ²⁴	1/10 yr	30	44.1	\$6.00	cu yd	\$793.80	
	Re-seeding ²⁵	1/10 yr	30	12.6	\$1,400.00	acre	\$52,920.00	
	Fertilizing	1/10 yr	30	42	\$115.00	acre	\$14,490.00	
	TASK SUBTOTAL							
							\$68,203.80	
6	CONTINGENCY							
	20 % CONTINGENCY				20%	project	\$2,372,182.50	
	Subtotal							
							\$474,436.50	
	PROJECT TOTAL							
							\$2,778,415.20	

LEGEND:

FQCY = Frequency, includes ratios (as in 1 duplicate per 20 samples) and numbers of new units (as in new monitoring wells).
 SAMPLING EVENTS = Number of events in a year, or number of years in a monitoring period (such as a 30 year post closure care period).
 Depth = The depth of borings/monitoring wells.
 QTY = Quantity



CJI Cost Estimate Detail - For Budget Estimating Purposes

Cap and Contain - 30-yr Post Closure Care, Former Exide Facility - Frisco, Texas

TASK	ESTIMATED COSTS					AMOUNT	
	TASK / ITEM DESCRIPTION	FQCY	SAMPLING EVENTS	QTY	RATE		
					UNIT COST		UNITS

NOTES:

The following notes are identical for each of the separate Cost Estimate Detail sheets associated with the budgetary estimate of potential remediation costs for proper closure of the former Exide Frisco Recycling Center. Keyed notes pertinent to each particular Cost Estimate Detail Sheet are identified as footnotes within the line items on that Cost Estimate Detail sheet. General notes A and C are applicable only to field activities that could encounter the materials identified in each note. General Note B is applicable to any activity that could be impacted by additional information obtained to supplement the 7/10/2013 APAR for that property. General note D applies to all activities identified in the Summary Description

General Notes:

- A** Cost estimate assumes that material from shooting range berm has been removed from site and disposed of
- B** There is outstanding data and other information for the "Bowtie" property that has been obtained since the 7/10/2013 APAR was submitted for the FOP. These estimates could change somewhat based on a complete review of that information
- C** Cost estimate assumes that water disposal - either stormwater or groundwater - will not be necessary during this project.
- D** All work items specifically identified in the associated Summary Description are included in this cost estimate; work items without an associated line item in the cost estimate detail are insignificant given the magnitude of the overall estimate and the associated uncertainties.

Keyed Notes:

- 1 Cost based on 5/10/2013 budget estimate provided by Effective Environmental and followup conversations.
- 2 Cost based on budget estimates provided by Sunbelt Industrial Services on 9/27/2012, 6/14/2013, 6/19/2013, and followup conversations.
- 3 Cost based on budget estimate provided by DHL Analytical, DHL Analytical Fee Schedule, and CJI experience.
- 4 Cost based on budget estimates provided by Strata Core Services on 6/13/2013 and followup conversations.
- 5 Cost based on CJI experience. Specific to the completion of the Class 2 Landfill: rough costs of \$50,000 per acre of landfill liner, \$12 per cubic yard of clay liner installed, and \$0.75 per square foot of FML were used to generate this cost.
- 6 Cost based on recent estimate by Dunnaway and Associates.
- 7 Cost based on recent costs submitted for reimbursement by Remediation Services, Inc.
- 8 Refer to "Excavation Volumes and Areas" workbook for the basis of the quantity estimates.
- 9 Assumed to be (16 samples/acre)(#acres)(30% resample rate), based on the areas in the "Excavation Volumes and Areas" workbook.
- 10 Number of loads = total estimated volume from areas excavated over 1 foot deep as shown on "Excavation Volumes and Areas" workbook, divided by 20 cy/load.
- 11 Depth is assumed.
- 12 Tons of excavated material = (# of cubic yards)(1.1)
- 13 Waste Characterization sampling rate = 1 sample/500 cy for material assumed to be Class 2 waste; 1/3000 cy for material assumed to be hazardous waste; and 1/250 cy for waste that could be either.
- 14 Estimate assumes that backfill originates from City owned stockpile adjacent to public works building or other nearby, free source. In the event that nearby, free source of backfill is not available, then the estimate to backfill excavations may increase.
- 15 Amount lost due to erosion was estimated from Universal Soil Loss Equation = 0.35 CY/acre-yr x 42 acres = 14.7 CY/yr
- 16 Cost for replacement of soil estimated from RS Means for a recent project.
- 17 Assumes 5% of soil will be re-seeded annually (5% x 42 acres = 2.1 acres). Cost for seed, equipment, labor obtained from RS Means for recent project.
- 18 Assumes fertilizing will be required 6 times over 30-year period. Cost for fertilizer, equipment, labor obtained from RS Means for recent project.
- 19 Assumes entire fence (9,200 linear feet) and all signs (every 100 ft = 92 signs) are replaced once over 30 years.
- 20 Cost for survey crew estimated from RS Means for recent project.



CJI Cost Estimate Detail - For Budget Estimating Purposes

Cap and Contain - 30-yr Post Closure Care, Former Exide Facility - Frisco, Texas

TASK	ESTIMATED COSTS						AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	SAMPLING EVENTS	QTY	RATE		
					UNIT COST	UNITS	

Keyed Notes (continued):

- 21 Assumes all wells are redeveloped every 10 years. Costs for labor, equipment and materials estimated from recent project.
- 22 Assumes 10% of wells are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 23 Assumes 50% of pads, tubing, etc. are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 24 Assumes soil loss = 3X annual loss from erosion, and 3 severe storm events occur over 30-yr period.
- 25 Assumes 30% of area will require revegetation.



Summary of Anticipated Work Items
Exide Property – Remediation & Removal Scenario
(Items presented in anticipated project sequence)

- 1) J-Parcel Remediation
 - a. Characterize & profile waste
 - i. Collect soil samples of in-place material specifically for waste characterization and profiling purposes. It is assumed that one sample per 250 cubic yards of material will be necessary. However, costs are only estimated for one sample per 500 cubic yards because it is assumed that some existing data will be usable for waste characterization purposes.
 - ii. Profile waste with disposal facility so it can be loaded directly into trucks as it is excavated.
 - b. Excavate contaminated soil.
 - i. Based on currently known conditions, contaminated soil volume is estimated at approximately 32,000 excavated cubic yards (cy)¹. This activity includes collection of soil samples from open excavations to verify waste removal.
 - ii. For cost estimating purposes, CJI has assumed that approximately 41,500 cubic yards will be excavated (a 30% increase over 32,000 cy). Soil volume increases could occur if remedial excavations need to be deepened, extended laterally, or if newly identified areas require excavation. Woody vegetation in some of these areas will be mulched.
 - iii. NOTE: For this cost estimate it is assumed that there will not be significant weather related delays and that disposal of contaminated rain water that has ponded in open excavations will not be necessary.
 - c. Transport and dispose of the J-Parcel Remediation soil as Class 2 waste at the DFW Landfill in Lewisville, Texas.

¹ Value is based on surface areas provided by Pastor, Behling & Wheeler, LLC (PBW) in draft soil concentration figures dated April 2013 (provided to CJI on May 30, 2013). After conversion to cubic yards, the volume estimate was based on the surface area multiplied by the estimated depth of each excavation multiplied by a 20 percent "fluff factor".



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- d. Prepare RAP² (for plume management zone for arsenic in groundwater at VCP-MP-9 and selenium in groundwater at LMW-9) and RACR³ for J Parcel; participate in community review of the RAP and RACR in accordance with community relations plan.⁴
 - e. Deeper excavations will be backfilled using fill from nearby City owned soil stockpile or similar free source and reseeded. However, the maximum depth of the vast majority of the excavated area is anticipated to be 1-foot deep. These areas will be graded for drainage and reseeded.
 - f. Obtain VCP certificate for site.
- 2) Remove Remaining Exide Structures
- a. Items potentially included in this activity include the crystallizer plant (with overhead piping), the stormwater pond (underground piping), and the leachate pond (no known piping).⁵ NOTE: Some of these activities may be conducted by Exide as part of current plant closure activities.
 - b. The decontamination and demolition plan⁶ for the facility called for the crystallizer plant to be removed. Based on currently available information, most of the Exide buildings have been removed. Therefore it is assumed that the crystallizer plant will be removed by others, leaving only surface pavement that will remain in place.
 - c. It is assumed that the 2 ponds will be removed as part of this remedial effort.
 - i. The synthetic liners from both ponds will be removed, sized as necessary, and disposed of as Class 2 waste.
 - ii. Subgrade piping connecting the stormwater pond to the Exide facility will be removed between the pond and Stewart Creek.
 - iii. Soil samples will be collected along the stormwater pipe excavation and in both of the pond excavations to confirm that no releases have occurred.

² Response Action Plan

³ Response Action Completion Report

⁴ Community review of planned remedial action is anticipated to occur during the community review of the Affected Property Assessment Report (APAR).

⁵ Leachate transfer from tank to pond via flex hose and portable pump.

⁶ *Decontamination and Demolition Work Plan For the Exide Frisco Recycling Center, Frisco, Texas, Revision 1*, by Pastor, Behling & Wheeler, LLC and Remediation Services Inc., dated January 25, 2013



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- iv. NOTES: For this cost estimate it is assumed that no releases have occurred from either unit (including piping). This estimate also assumes that no water disposal from the ponds will be required.
 - v. The pond excavations will be backfilled using clean fill obtained from a nearby city stockpile (same one used as a fill source to backfill the former pond on the Stewart Creek WWTP). After they are backfilled the former pond areas will be seeded.
- 3) Excavate and Remove Class 2 Landfill
- a. Characterize & profile waste
 - i. Collect soil samples of in-place material specifically for waste characterization and profiling purposes. It is assumed that 22 test pits will be excavated in the Class 2 landfill, and that 44 total samples (two per pit) will be collected and analyzed for waste characterization. This is roughly one sample per 3,000 cubic yards of waste.
 - ii. Profile waste with disposal facility so it can be loaded directly into trucks as it is excavated.
 - b. Excavate waste, synthetic liner, and adjacent soil from landfill.
 - i. Based on PBW's February 5, 2013 Landfill Capacity Calculations, currently known conditions, excavated soil volume is estimated at approximately 116,500 cubic yards. There are also several thousand cubic yards of soil in 2 soil piles on the active portion of the landfill. This activity includes collection of soil samples from open excavations to verify waste removal.
 - ii. For cost estimating purposes, CJI has assumed that approximately 135,000 cubic yards will be excavated (a 15% increase over 116,500 cy). Waste volume increases could occur if remedial excavations need to be deepened, extended laterally, or if additional waste piles are discovered.
 - iii. NOTE: For this cost estimate it is assumed that no releases have occurred from the class 2 landfill. This estimate also assumes that no water disposal or excessive delays due to inclement weather will occur.



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- c. Transport and dispose of up to 135,000 cubic yards of Class 2 Landfill waste as hazardous waste at Clean Harbor's Lone Mountain Landfill in Waynoka, Oklahoma.
 - d. Backfill open landfill excavation. Fill will be obtained from a nearby city stockpile or a similar free source.
 - e. Seed area.
- 4) Excavate and Remove South Disposal Area
- a. Characterize & profile waste
 - i. Collect soil samples of in-place material specifically for waste characterization and profiling purposes. It is assumed that four test pits will be excavated in the south disposal area, and that eight total samples (two per pit) will be collected and analyzed for waste characterization. This is roughly one sample per 3,000 cubic yards of waste.
 - ii. Profile waste with disposal facility so it can be loaded directly into trucks as it is excavated.
 - b. Excavate waste and contaminated soil from South Disposal Area.
 - i. CJ has estimated the South Disposal Area to be 1 acre in size and 8 feet deep (reported as 0.92 acres in size/waste 8 feet deep in SIR⁷). Therefore, the excavated soil volume is estimated at approximately 15,500 cubic yards. This activity includes collection of soil samples from open excavations to verify waste removal.
 - ii. For cost estimating purposes, CJ has assumed that approximately 20,500 cubic yards will be excavated (a 30% increase over 15,500 cy). Soil volume increases could occur if remedial excavations need to be deepened, extended laterally, or if newly identified areas require excavation.
 - iii. NOTE: This estimate assumes that no water disposal or excessive delays due to inclement weather will occur.

⁷ *Site Investigation Report For the Exide Frisco Recycling Center, Frisco, Texas*, by Pastor, Behling & Wheeler, LLC, dated July 12, 2012.



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- c. Transport and dispose of up to 20,500 cubic yards of waste from the South Disposal Area as hazardous waste at Clean Harbor's Lone Mountain Landfill in Waynoka, Oklahoma.
 - d. Backfill open excavation using fill from nearby City owned soil stockpile or similar free source.
 - e. Seed area.
- 5) Excavate and Remove Contaminated Fill, Soil, and Sediment from the Exide Industrial Facility
- a. Plug and Abandon 11 monitoring wells located inside area that will be excavated.
 - b. As applicable to the scope of this project (see below), obtain Section 404 Permit from US Corps of Engineers to excavate in Stewart Creek.
 - c. Characterize & profile waste
 - i. Collect soil samples of in-place material specifically for waste characterization and profiling purposes. It is assumed that one sample per 250 cubic yards of material will be necessary.
 - 1. Samples will be collected from the former industrial facility using a Geoprobe. It is estimated that approximately 2,160 soil samples will be required to achieve a 1 sample:250 cubic yard ratio in this area. Therefore, the geoprobe will be used to delineate and characterize the material that will be excavated.
 - 2. Surface samples will be collected from peripheral areas (such as Stewart Creek and the Lake Parcel) using hand tools.
 - ii. Profile waste with the respective disposal facilities so it can be loaded directly into trucks as it is excavated.
 - d. Excavate areas in "South Field" and "Wooded Strip" (located between the Class 2 Landfill and the Former Exide Facility) that have lead concentrations that exceed 275 mg/Kg⁸. Excavate areas in "Lake Parcel" and along Stewart Creek

⁸ According to Eric Pastor, of PBW, the tier 2 PCL for lead that has been calculated for the Exide site is 275 mg/Kg if Class 2 groundwater is present. Mr. Pastor provided this information during a 6/6/2012 meeting held at Baker Botts LLP in Austin, Texas.



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that have lead concentrations that exceed 250 mg/Kg⁹ (City of Frisco may integrate the Lake Parcel with the J Parcel).

- i. Based on currently known conditions, excavated soil volume is estimated at approximately 22,100 cubic yards¹⁰. This activity includes collection of soil samples from open excavations to verify waste removal.
 - ii. For cost estimating purposes, CJI has assumed that approximately 29,000 cubic yards will be excavated (a 30% increase over 22,100 cy). Soil volume increases could occur if remedial excavations need to be deepened, extended laterally, or if newly identified areas require excavation. Woody vegetation in some of these areas will be mulched.
- e. Excavate waste and contaminated soils from former Exide Industrial Facility that have lead concentrations that exceed 275 mg/Kg.
- i. Based on currently known conditions¹¹, excavated soil volume is estimated at approximately 413,000 cubic yards. This activity includes collection of soil samples from open excavations to verify waste removal.
 - ii. For cost estimating purposes, CJI has assumed that approximately 540,000 cubic yards will be excavated (a 30% increase over 413,000 cy). Soil volume increases could occur if remedial excavations need to be deepened, extended laterally, or if newly identified areas require excavation.
 - iii. NOTE: This estimate assumes that no water disposal or excessive delays due to inclement weather will occur.
- f. CJI assumes all material removed from South Field, Wooded Area, Stewart Creek, and Lake Parcel is Class 2 waste. CJI also assumes that one quarter ($\frac{1}{4}$) of the material removed from former Exide industrial facility is hazardous waste, and that three-quarters ($\frac{3}{4}$) is Class 2 waste.
- i. Transport and dispose of up to 148,500 tons of waste as hazardous waste at Clean Harbor's Lone Mountain Landfill in Waynoka, Oklahoma.

⁹ A residential cleanup level of 250 mg/Kg is contractually agreed upon residential cleanup value on the J Parcel.

¹⁰ Refer to Excavation Areas Table (T130717_EXCAVATION AREAS.XLS) for more information regarding the estimated size of the excavation areas.

¹¹ CJI has recently received but only partially reviewed the *Affected Property Assessment Report, Former Operating Plant, Frisco Recycling Center, Frisco, Collin County, Texas*, PBW, dated 7/10/2013



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- ii. Transport and dispose of up to 434,000 cubic yards of waste as Class 2 waste at the DFW Landfill in Lewisville, Texas.
 - iii. Above quantity estimates are based on limited information as described above.
 - g. Backfill open excavation using fill from nearby City owned soil stockpile or similar free source.
 - h. Deeper excavations (those greater than 1 foot deep) will be backfilled using fill from nearby City owned soil stockpile or similar free source and reseeded. Excavations that are 1 foot deep or less will be graded for drainage and reseeded.
 - i. Seed area.
- 6) Document remedial actions and their completion for closure of the former Exide facility in one or more RAPs and RACRs. Participate in community review of the documents in conjunction with community relations plan; revise/submit to TCEQ accordingly. NOTE: Assumes that Exide APAR is submitted by others and is approved by the TCEQ.
- 7) Initiate Plume Management Zone at facility.
 - a. Monitor 4 monitoring wells for selenium and arsenic on quarterly basis for 2 years.
 - b. Annual off-site disposal of purge water.
 - c. Prepare and submit report at end of 2 year monitoring period.
 - d. Continue as appropriate based on monitoring results and/or TCEQ directives.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

J Parcel Excavation and Off-Site Disposal, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT	
				UNIT COST	UNITS		
1	J-PARCEL WASTE CHARACTERIZATION SAMPLING						
	CJI Professional Services⁵						
	Project Staff IV						
	Planning, Other		10	\$105.00	hour	\$1,050.00	
	Sample Collection & Travel for J-Parcel. Note: It is assumed that 40 waste characterization surface soil samples can be collected each 10 hour work day.		30	\$105.00	hour	\$3,150.00	
	Senior Staff						
	Planning, Other		20	\$145.00	hour	\$2,900.00	
	Data Evaluation/Waste Profiling		40	\$145.00	hour	\$5,800.00	
	Draftsperson II- Prepare Figures		20	\$65.00	hour	\$1,300.00	
	Principal						
	Planning, Other		10	\$185.00	hour	\$1,850.00	
	Client Communication, Technical Oversight, etc.		30	\$185.00	hour	\$5,550.00	
	Subtotal						\$21,600.00
	Analytical Expenses³						
	Waste Characterization Samples (1 per 500 cubic yards) ¹³	1:500	83				
	Duplicate Samples (1 duplicate per 20 samples)	1:20	4				
	Soil - Lead, cadmium, TPH, & TCLP Analyses ³		87	\$224.25	sample	\$19,543.39	
	Subtotal						\$19,543.39
	CJI Reimbursable Expenses						
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	1	500	\$0.56	mile	\$277.50	
	Per diem		3	\$185.00	day	\$555.00	
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		1	\$50.00	week	\$50.00	
	Equipment Rental (GPS, etc.)		5	\$100.00	day	\$500.00	
	Subtotal						\$1,382.50
	TASK SUBTOTAL						\$42,525.89



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

J Parcel Excavation and Off-Site Disposal, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	
2	CONTAMINATED SOIL EXCAVATION & CONFIRMATION SAMPLING					
	Subcontractor Costs					
	Soil Excavation					
	Mobilization Charge ¹		1	\$11,500.00	task	\$11,500.00
	Mulching Woody Vegetation ⁸		1	\$2,000.00	task	\$2,000.00
	Excavation of Contaminated Soil ^{1,8}		41500	\$5.75	cu yard	\$238,625.00
	Air Monitoring ⁷		2	\$9,110.01	week	\$18,220.03
	Subtotal					\$270,345.03
	CJI Professional Services⁵					
	Project Staff IV					
	Planning, Other		10	\$105.00	hour	\$1,050.00
	Field Prep., Field Work, & Travel - Note: It is assumed that approximately 5,000 cubic yards of material will be excavated during each 10 hour work day.		110	\$105.00	hour	\$11,550.00
	Senior Staff					
	Planning, Other		40	\$145.00	hour	\$5,800.00
	Field Prep., Field Work, & Travel		40	\$145.00	hour	\$5,800.00
	Data Evaluation		80	\$145.00	hour	\$11,600.00
	Draftsperson II- Prepare Figures		20	\$65.00	hour	\$1,300.00
	Principal					
	Planning, Other		20	\$185.00	hour	\$3,700.00
	Field Prep., Field Work, & Travel		10	\$185.00	hour	\$1,850.00
	Client Communication, Technical Oversight, etc.		60	\$185.00	hour	\$11,100.00
	Subtotal					\$53,750.00
	Analytical Expenses³					
	Confirmation Samples (14.22 acre area) ^{8,9}					
	Duplicate Samples (1 duplicate per 20 samples)	1:20	15			
	Soil - Lead or Copper Analyses ³		311	\$46.00	sample	\$14,285.98
	Subtotal					\$14,285.98
	CJI Reimbursable Expenses					
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	7	500	\$0.56	mile	\$1,942.50
	Per diem		16	\$185.00	day	\$2,960.00
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		4	\$50.00	week	\$200.00
	Equipment Rental (GPS, etc.)		20	\$100.00	day	\$2,000.00
	Subtotal					\$7,102.50
	TASK SUBTOTAL					
						\$345,483.51



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

J Parcel Excavation and Off-Site Disposal, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT	
				UNIT COST	UNITS		
3	CONTAMINATED SOIL DISPOSAL						
	Subcontractor Costs						
	Soil Disposal						
			41500	\$37.95	cu yard	\$1,574,925.00	
			2075	\$143.75	trip	\$298,281.25	
	Air Monitoring ⁷ - Assumes most air monitoring costs covered under task 2 as tasks will occur concurrently.		2	\$9,110.01	week	\$18,220.03	
		Subtotal				\$1,891,426.28	
	CJI Professional Services⁵						
	Project Staff IV						
			10	\$105.00	hour	\$1,050.00	
			60	\$105.00	hour	\$6,300.00	
	Senior Staff						
			10	\$145.00	hour	\$1,450.00	
			20	\$145.00	hour	\$2,900.00	
	Principal						
			10	\$185.00	hour	\$1,850.00	
			30	\$185.00	hour	\$5,550.00	
		Subtotal				\$19,100.00	
	CJI Reimbursable Expenses						
			3	500	\$0.56	mile	\$832.50
				8	\$185.00	day	\$1,480.00
				2	\$50.00	week	\$100.00
				10	\$100.00	day	\$1,000.00
		Subtotal				\$3,412.50	
		TASK SUBTOTAL				\$1,913,938.78	



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

J Parcel Excavation and Off-Site Disposal, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	
4	BACKFILLING EXCAVATIONS					
	Subcontractor Costs					
	Backfill Contractor ²					
	Mobilization Charge		1	\$1,725.00	project	\$1,725.00
	Equipment & Labor		1	\$35,339.50	project	\$35,339.50
	Transportation Cost ¹⁴ (assumes 20 cy of soil per load)					
	Backfill excavations that are deeper than 1' below grade; slope those that are 1' deep or less for drainage. ^{8,10}		656	\$74.75	load	\$49,036.00
	Other					
	Seed & Water ²		1	\$74,750.00	task	\$74,750.00
	Grading source area ²		1	\$1,840.00	task	\$1,840.00
	Subtotal					\$162,690.50
	CJI Professional Services⁵					
	Project Staff IV					
	Occasional On-Site Monitoring & Travel - Note: Assumes 10 haul trucks making 45 minute turns. Also assumes that CJI will monitor 10% of the backfilling activities.		10	\$105.00	hour	\$1,050.00
	Senior Staff					
	Planning, Other		20	\$145.00	hour	\$2,900.00
	Occasional On-Site Monitoring & Travel (Assumed at 1/2 of the monitoring frequency for Staff IV)		5	\$145.00	hour	\$725.00
	Backfill Documentation		16	\$145.00	hour	\$2,320.00
	Principal					
	Planning, Other		10	\$185.00	hour	\$1,850.00
	Client Communication, Technical Oversight, etc.		24	\$185.00	hour	\$4,440.00
	Subtotal					\$13,285.00
	CJI Reimbursable Expenses					
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	2	500	\$0.56	mile	\$555.00
	Per diem		2	\$185.00	day	\$370.00
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		1	\$50.00	week	\$50.00
	Equipment Rental (GPS, etc.)		5	\$100.00	day	\$500.00
	Subtotal					\$975.00
	TASK SUBTOTAL					\$176,950.50



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

J Parcel Excavation and Off-Site Disposal, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	
5	RAP AND RACR PREPARATION					
	Subcontractor Costs					
	Surveying		1	\$3,450.00	day	\$3,450.00
						Subtotal
						\$3,450.00
	CJI Professional Services⁵					
	Project Staff IV- Document Preparation		40	\$105.00	hour	\$4,200.00
	Senior Staff - Document Preparation		160	\$145.00	hour	\$23,200.00
	Draftsperson II- Prepare Figures		40	\$65.00	hour	\$2,600.00
	Administrative - Copies, Document Prep, etc.		24	\$55.00	hour	\$1,320.00
	Principal- Client Communication, Technical Oversight, meeting participation, etc.		60	\$185.00	hour	\$11,100.00
						Subtotal
						\$42,420.00
	CJI Reimbursable Expenses					
	Report Preparation Expenses		1	\$1,500.00	task	\$1,500.00
						Subtotal
						\$1,500.00
						TASK SUBTOTAL
						\$47,370.00
6	PUBLIC MEETING FOR RAP AND RACR					
	CJI Professional Services⁵					
	Project Staff IV- Set up meeting, meeting prep., meeting participation		24	\$105.00	hour	\$2,520.00
	Senior Staff - Meeting Participation		12	\$145.00	hour	\$1,740.00
	Principal- Meeting Participation		12	\$185.00	hour	\$2,220.00
						Subtotal
						\$6,480.00
	CJI Reimbursable Expenses					
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)		500	\$0.56	mile	\$277.50
	Per diem		3	\$200.00	day	\$600.00
	Various Office Expenses		1	\$200.00	task	\$200.00
						Subtotal
						\$1,077.50
						TASK SUBTOTAL
						\$7,557.50



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

J Parcel Excavation and Off-Site Disposal, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT	
				UNIT COST	UNITS		
7	RAP AND RACR REVISION BASED ON PUBLIC COMMENT						
	CJI Professional Services⁵						
	Project Staff IV- Document Preparation		36	\$105.00	hour	\$3,780.00	
	Senior Staff - Document Preparation		24	\$145.00	hour	\$3,480.00	
	Draftsperson II- Prepare Figures		8	\$65.00	hour	\$520.00	
	Administrative - Copies, Document Prep, etc.		16	\$55.00	hour	\$880.00	
	Principal- Client Communication, Technical Oversight, meeting participation, etc.		16	\$185.00	hour	\$2,960.00	
							Subtotal
							\$11,620.00
	CJI Reimbursable Expenses						
	Report Preparation Expenses		1	\$250.00	task	\$250.00	
							Subtotal
							\$250.00
							TASK SUBTOTAL
							\$11,870.00
8	FINAL VCP COC						
	CJI Professional Services⁵						
	Senior Staff - Document Review & Other Tasks		16	\$105.00	hour	\$1,680.00	
	Project Staff IV- Document Review & Other Tasks		12	\$65.00	hour	\$780.00	
	Principal- Client Communication, Technical Oversight, final document submittal, meetings, etc.		16	\$145.00	hour	\$2,320.00	
							Subtotal
							\$4,780.00
	CJI Reimbursable Expenses						
	Various Office Expenses		1	\$500.00	task	\$500.00	
							Subtotal
							\$500.00
							TASK SUBTOTAL
							\$5,280.00



CJL Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

J Parcel Excavation and Off-Site Disposal, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT	
				UNIT COST	UNITS		
9	CONTINGENCY						
	20 % CONTINGENCY			20%	project	\$2,550,976.17	
	Subtotal						\$510,195.23
	PROJECT TOTAL						\$3,013,801.40

LEGEND:

FQCY = Frequency, includes ratios (as in 1 duplicate per 20 samples) and numbers of new units (as in new monitoring wells).
 SAMPLING EVENTS = Number of events in a year, or number of years in a monitoring period (such as a 30 year post closure care period).
 Depth = The depth of borings/monitoring wells.
 QTY = Quantity

NOTES:

The following notes are identical for each of the separate Cost Estimate Detail sheets associated with the budgetary estimate of potential remediation costs for proper closure of the former Exide Frisco Recycling Center. Keyed notes pertinent to each particular Cost Estimate Detail Sheet are identified as footnotes within the line items on that Cost Estimate Detail sheet. General notes A and C are applicable only to field activities that could encounter the materials identified in each note. General Note B is applicable to any activity that could be impacted by additional information obtained to supplement the 7/10/2013 APAR for that property. General note D applies to all activities identified in the Summary Description.

General Notes:

- A** Cost estimate assumes that material from shooting range berm has been removed from site and disposed of.
- B** There is outstanding data and other information for the "Bowtie" property that has been obtained since the 7/10/2013 APAR was submitted for the FOP. These estimates could change somewhat based on a complete review of that information.
- C** Cost estimate assumes that water disposal - either stormwater or groundwater - will not be necessary during this project.
- D** All work items specifically identified in the associated Summary Description are included in this cost estimate; work items without an associated line item in the cost estimate detail are insignificant given the magnitude of the overall estimate and the associated uncertainties.

Keyed Notes:

- 1 Cost based on 5/10/2013 budget estimate provided by Effective Environmental and followup conversations.
- 2 Cost based on budget estimates provided by Sunbelt Industrial Services on 9/27/2012, 6/14/2013, 6/19/2013, and followup conversations.
- 3 Cost based on budget estimate provided by DHL Analytical, DHL Analytical Fee Schedule, and CJL experience.
- 4 Cost based on budget estimates provided by Strata Core Services on 6/13/2013 and followup conversations.
- 5 Cost based on CJL experience. Specific to the completion of the Class 2 Landfill: rough costs of \$50,000 per acre of landfill liner, \$12 per cubic yard of clay liner installed, and \$0.75 per square foot of FML were used to generate this cost.
- 6 Cost based on recent estimate by Dunnaway and Associates.
- 7 Cost based on recent costs submitted for reimbursement by Remediation Services, Inc.
- 8 Refer to "Excavation Volumes and Areas" workbook for the basis of the quantity estimates.
- 9 Assumed to be (16 samples/acre)(#acres)(30% resample rate), based on the areas in the "Excavation Volumes and Areas" workbook.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

J Parcel Excavation and Off-Site Disposal, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	

Keyed Notes (continued):

- 10 Number of loads = total estimated volume from areas excavated over 1 foot deep as shown on "Excavation Volumes and Areas" workbook, divided by 20 cy/load.
- 11 Depth is assumed.
- 12 Tons of excavated material = (# of cubic yards)(1.1)
- 13 Waste Characterization sampling rate = 1 sample/500 cy for material assumed to be Class 2 waste; 1/3000 cy for material assumed to be hazardous waste; and 1/250 cy for waste that could be either.
- 14 Estimate assumes that backfill originates from City owned stockpile adjacent to public works building or other nearby, free source. In the event that nearby, free source of backfill is not available, then the estimate to backfill excavations may increase.
- 15 Amount lost due to erosion was estimated from Universal Soil Loss Equation = 0.35 CY/acre-yr x 42 acres = 14.7 CY/yr
- 16 Cost for replacement of soil estimated from RS Means for a recent project.
- 17 Assumes 5% of soil will be re-seeded annually (5% x 42 acres = 2.1 acres). Cost for seed, equipment, labor obtained from RS Means for recent project.
- 18 Assumes fertilizing will be required 6 times over 30-year period. Cost for fertilizer, equipment, labor obtained from RS Means for recent project.
- 19 Assumes entire fence (9,200 linear feet) and all signs (every 100 ft = 92 signs) are replaced once over 30 years.
- 20 Cost for survey crew estimated from RS Means for recent project.
- 21 Assumes all wells are redeveloped every 10 years. Costs for labor, equipment and materials estimated from recent project.
- 22 Assumes 10% of wells are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 23 Assumes 50% of pads, tubing, etc. are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 24 Assumes soil loss = 3X annual loss from erosion, and 3 severe storm events occur over 30-yr period.
- 25 Assumes 30% of area will require revegetation.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Both Closure Scenarios

Pond Removal - Exide Property, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT	
				UNIT COST	UNITS		
1	POND EXCAVATION/REMOVAL (CONTINUED)						
	CJI Reimbursable Expenses						
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	3	500	\$0.56	mile	\$832.50	
	Per diem		12	\$185.00	day	\$2,220.00	
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		3	\$50.00	week	\$150.00	
	Equipment Rental (GPS, etc.)		15	\$100.00	day	\$1,500.00	
	Subtotal					\$4,702.50	
	TASK SUBTOTAL					\$116,488.20	



CJI Cost Estimate Detail - For Budget Estimating Purposes - Both Closure Scenarios

Pond Removal - Exide Property, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	
2	BACKFILL					
	Subcontractor Costs					
	Backfill Contractor ²					
	Mobilization Charge		1	\$862.50	task	\$862.50
	Equipment & Labor		1	\$70,679.00	task	\$70,679.00
	Transportation Cost ¹⁴ (assumes 20 cy of soil per load)					
	Stormwater Pond ((120000 square foot surface area x 6 feet deep)-sloped sidewalls)		1200	\$74.75	load	\$89,700.00
	Wastewater Pond ((60000 square foot surface area x 5 feet deep)-sloped sidewalls)		500	\$74.75	load	\$37,375.00
	Other					
	Seed & Water ²		1	\$22,425.00	task	\$22,425.00
	Grading source area ²		1	\$1,840.00	task	\$1,840.00
	Subtotal					\$222,881.50
	CJI Professional Services⁵					
	Project Staff IV					
	Occasional On-Site Monitoring & Travel - Note: Assumes 10 haul trucks making 45 minute turns. Also assumes that CJI will monitor 10% of the backfilling activities.		20	\$105.00	hour	\$2,100.00
	Senior Staff					
	Planning, Other		10	\$145.00	hour	\$1,450.00
	Occasional On-Site Monitoring & Travel (Assumed at 1/2 of the monitoring frequency for Staff IV)		10	\$145.00	hour	\$1,450.00
	Backfill Documentation		16	\$145.00	hour	\$2,320.00
	Principal					
	Planning, Other		10	\$185.00	hour	\$1,850.00
	Client Communication, Technical Oversight, etc.		24	\$185.00	hour	\$4,440.00
	Subtotal					\$13,610.00
	CJI Reimbursable Expenses					
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	2	500	\$0.56	mile	\$555.00
	Per diem		3	\$185.00	day	\$555.00
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		1	\$50.00	week	\$50.00
	Equipment Rental (GPS, etc.)		5	\$100.00	day	\$500.00
	Subtotal					\$1,660.00
	TASK SUBTOTAL					\$238,151.50



CJI Cost Estimate Detail - For Budget Estimating Purposes - Both Closure Scenarios

Pond Removal - Exide Property, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	

Keyed Notes (continued):

- 10 Number of loads = total estimated volume from areas excavated over 1 foot deep as shown on "Excavation Volumes and Areas" workbook, divided by 20 cy/load.
- 11 Depth is assumed.
- 12 Tons of excavated material = (# of cubic yards)(1.1)
- 13 Waste Characterization sampling rate = 1 sample/500 cy for material assumed to be Class 2 waste; 1/3000 cy for material assumed to be hazardous waste; and 1/250 cy for waste that could be either.
- 14 Estimate assumes that backfill originates from City owned stockpile adjacent to public works building or other nearby, free source. In the event that nearby, free source of backfill is not available, then the estimate to backfill excavations may increase.
- 15 Amount lost due to erosion was estimated from Universal Soil Loss Equation = 0.35 CY/acre-yr x 42 acres = 14.7 CY/yr
- 16 Cost for replacement of soil estimated from RS Means for a recent project.
- 17 Assumes 5% of soil will be re-seeded annually (5% x 42 acres = 2.1 acres). Cost for seed, equipment, labor obtained from RS Means for recent project.
- 18 Assumes fertilizing will be required 6 times over 30-year period. Cost for fertilizer, equipment, labor obtained from RS Means for recent project.
- 19 Assumes entire fence (9,200 linear feet) and all signs (every 100 ft = 92 signs) are replaced once over 30 years.
- 20 Cost for survey crew estimated from RS Means for recent project.
- 21 Assumes all wells are redeveloped every 10 years. Costs for labor, equipment and materials estimated from recent project.
- 22 Assumes 10% of wells are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 23 Assumes 50% of pads, tubing, etc. are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 24 Assumes soil loss = 3X annual loss from erosion, and 3 severe storm events occur over 30-yr period.
- 25 Assumes 30% of area will require revegetation.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - Exide Class 2 Landfill, Frisco, Texas

TASK	ESTIMATED COSTS						AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE			
				UNIT COST	UNITS		
1	WASTE CHARACTERIZATION SAMPLING						
	CJI Professional Services⁵						
	Project Staff IV						
	Planning, Other		10	\$105.00	hour	\$1,050.00	
	Sample Collection & Travel for Class 2 Landfill. Note: It is assumed that 22 test pits will be installed in the landfill and that 2 waste characterization samples will be collected from each test pit.		30	\$105.00	hour	\$3,150.00	
	Senior Staff						
	Planning, Other		20	\$145.00	hour	\$2,900.00	
	Data Evaluation/Waste Profiling		40	\$145.00	hour	\$5,800.00	
	Draftsperson II- Prepare Figures		20	\$65.00	hour	\$1,300.00	
	Principal						
	Planning, Other		10	\$185.00	hour	\$1,850.00	
	Client Communication, Technical Oversight, etc.		30	\$185.00	hour	\$5,550.00	
	Subtotal						\$21,600.00
	Analytical Expenses³						
	Waste Characterization Samples (1 per 3000 cubic yards) ¹³	1:3000	44				
	Duplicate Samples (1 duplicate per 20 samples)	1:20	3				
	Soil - RCRA 8 Metals, TPH, VOCs, & TCLP Analyses ³		47	\$511.75	sample	\$24,052.25	
	Subtotal						\$24,052.25
	CJI Reimbursable Expenses						
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	1	500	\$0.56	mile	\$277.50	
	Per diem		3	\$185.00	day	\$555.00	
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		1	\$50.00	week	\$50.00	
	Equipment Rental (GPS, etc.)		5	\$100.00	day	\$500.00	
	Subtotal						\$1,382.50
	TASK SUBTOTAL						\$47,034.75



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - Exide Class 2 Landfill, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	
2	LANDFILL EXCAVATION & CONFIRMATION SAMPLING					
	Subcontractor Costs					
	Soil Excavation					
	Mobilization Charge (Assumes combined mob fee with Bowtie Excavation) ¹		1	\$0.00	task	\$0.00
	Excavation of Contaminated Slag ^{1,8}		152000	\$5.75	cu yard	\$874,000.00
	Air Monitoring ⁷		6	\$9,110.01	week	\$54,660.08
	Subtotal					\$928,660.08
	CJI Professional Services⁵					
	Project Staff IV					
	Planning, Other		20	\$105.00	hour	\$2,100.00
	Field Prep., Field Work, & Travel - Note: It is assumed that approximately 5,000 cubic yards of material will be excavated during each 10 hour work day.		374	\$105.00	hour	\$39,270.00
	Senior Staff					
	Planning, Other		40	\$145.00	hour	\$5,800.00
	Field Prep., Field Work, & Travel		80	\$145.00	hour	\$11,600.00
	Data Evaluation		40	\$145.00	hour	\$5,800.00
	Draftsperson II- Prepare Figures		40	\$65.00	hour	\$2,600.00
	Principal					
	Planning, Other		20	\$185.00	hour	\$3,700.00
	Field Prep., Field Work, & Travel		20	\$185.00	hour	\$3,700.00
	Client Communication, Technical Oversight, etc.		60	\$185.00	hour	\$11,100.00
	Subtotal					\$85,670.00
	Analytical Expenses³					
	Landfill Confirmation Samples (11.14 acre area) ^{8,9}		290			
	Duplicate Samples (1 duplicate per 20 samples)	1:20	15			
	Soil - RCRA 8 Metal Analyses ³		305	\$126.50	sample	\$38,536.96
	Subtotal					\$38,536.96
	CJI Reimbursable Expenses					
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	13	500	\$0.56	mile	\$3,607.50
	Per diem		48	\$185.00	day	\$8,880.00
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		10	\$50.00	week	\$500.00
	Equipment Rental (GPS, etc.)		51	\$100.00	day	\$5,100.00
	Subtotal					\$18,087.50
	TASK SUBTOTAL					\$1,070,954.54



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - Exide Class 2 Landfill, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	
3	WASTE DISPOSAL					
	Subcontractor Costs					
	Soil Disposal (Assumes all material removed from landfill is disposed as hazardous waste) ²					
	Transportation and Disposal of Excavated Landfill Material as Hazardous Waste ^{8,12}		167200	\$259.95	ton	\$43,462,971.20
	Air Monitoring ⁷ - Assumes most air monitoring costs covered under task 2 as tasks will occur concurrently.		3	\$9,110.01	week	\$27,330.04
	Subtotal					\$43,490,301.24
	CJI Professional Services⁵					
	Project Staff IV					
	Planning, Other		10	\$105.00	hour	\$1,050.00
	Manifests, On-Site Monitoring & Travel		80	\$105.00	hour	\$8,400.00
	Senior Staff					
	Planning, Other		40	\$145.00	hour	\$5,800.00
	Manifests, On-Site Monitoring, & Travel		40	\$145.00	hour	\$5,800.00
	Principal					
	Planning, Other		10	\$185.00	hour	\$1,850.00
	Client Communication, Technical Oversight, etc.		40	\$185.00	hour	\$7,400.00
	Subtotal					\$30,300.00
	CJI Reimbursable Expenses					
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	4	500	\$0.56	mile	\$1,110.00
	Per diem		12	\$185.00	day	\$2,220.00
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		3	\$50.00	week	\$150.00
	Equipment Rental (GPS, etc.)		15	\$100.00	day	\$1,500.00
	Subtotal					\$4,980.00
	TASK SUBTOTAL					\$43,525,581.24



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - Exide Class 2 Landfill, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	
4	BACKFILL LANDFILL EXCAVATION					
	Subcontractor Costs					
	Backfill Contractor ²					
	Mobilization Charge			\$1,725.00	task	\$0.00
	Equipment & Labor		1	\$70,679.00	task	\$70,679.00
	Transportation Cost ¹⁴ (assumes 20 cy of soil per load)		7931	\$74.75	load	\$592,842.25
	Other					
	Seed & Water ²		1	\$37,375.00	task	\$37,375.00
	Grading source area ²		1	\$1,840.00	task	\$1,840.00
	Subtotal					\$702,736.25
	CJI Professional Services⁵					
	Project Staff IV					
	Occasional On-Site Monitoring & Travel - Note: Assumes 10 haul trucks making 45 minute turns. Also assumes that CJI will monitor 10% of the backfilling activities.		180	\$105.00	hour	\$18,900.00
	Senior Staff					
	Planning, Other		20	\$145.00	hour	\$2,900.00
	Occasional On-Site Monitoring & Travel (Assumed at 1/2 of the monitoring frequency for Staff IV)		90	\$145.00	hour	\$13,050.00
	Backfill Documentation		16	\$145.00	hour	\$2,320.00
	Principal					
	Planning, Other		10	\$185.00	hour	\$1,850.00
	Client Communication, Technical Oversight, etc.		30	\$185.00	hour	\$5,550.00
	Subtotal					\$44,570.00
	CJI Reimbursable Expenses					
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	6	500	\$0.56	mile	\$1,665.00
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		6	\$50.00	week	\$300.00
	Equipment Rental (GPS, etc.)		30	\$100.00	day	\$3,000.00
	Per diem		27	\$185.00	day	\$4,995.00
	Subtotal					\$9,960.00
	TASK SUBTOTAL					\$757,266.25



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - Exide Class 2 Landfill, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	

Keyed Notes (continued):

- 11 Depth is assumed.
- 12 Tons of excavated material = (# of cubic yards)(1.1)
- 13 Waste Characterization sampling rate = 1 sample/500 cy for material assumed to be Class 2 waste; 1/3000 cy for material assumed to be hazardous waste; and 1/250 cy for waste that could be either.
- 14 Estimate assumes that backfill originates from City owned stockpile adjacent to public works building or other nearby, free source. In the event that nearby, free source of backfill is not available, then the estimate to backfill excavations may increase.
- 15 Amount lost due to erosion was estimated from Universal Soil Loss Equation = 0.35 CY/acre-yr x 42 acres = 14.7 CY/yr
- 16 Cost for replacement of soil estimated from RS Means for a recent project.
- 17 Assumes 5% of soil will be re-seeded annually (5% x 42 acres = 2.1 acres). Cost for seed, equipment, labor obtained from RS Means for recent project.
- 18 Assumes fertilizing will be required 6 times over 30-year period. Cost for fertilizer, equipment, labor obtained from RS Means for recent project.
- 19 Assumes entire fence (9,200 linear feet) and all signs (every 100 ft = 92 signs) are replaced once over 30 years.
- 20 Cost for survey crew estimated from RS Means for recent project.
- 21 Assumes all wells are redeveloped every 10 years. Costs for labor, equipment and materials estimated from recent project.
- 22 Assumes 10% of wells are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 23 Assumes 50% of pads, tubing, etc. are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 24 Assumes soil loss = 3X annual loss from erosion, and 3 severe storm events occur over 30-yr period.
- 25 Assumes 30% of area will require revegetation.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - South Disposal Area, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	
2	SOUTH DISPOSAL AREA EXCAVATION & CONFIRMATION SAMPLING					
	Subcontractor Costs					
	Soil Excavation					
	Mobilization Charge (Assumes combined mob fee with Bowtie Excavation) ¹		0	\$0.00	task	\$0.00
	Excavation of Material in South Diposal Area (1 acre area with 8 foot deep waste) ^{1,8}		20500	\$5.75	cu yard	\$117,875.00
	Air Monitoring ⁷		1	\$9,110.01	week	\$9,110.01
	Subtotal					\$126,985.01
	CJI Professional Services⁵					
	Project Staff IV					
	Planning, Other		10	\$105.00	hour	\$1,050.00
	Field Prep., Field Work, & Travel - Note: It is assumed that approximately 5,000 cubic yards of material will be excavated during each 10 hour work day.		60	\$105.00	hour	\$6,300.00
	Senior Staff					
	Planning, Other		20	\$145.00	hour	\$2,900.00
	Field Prep., Field Work, & Travel		10	\$145.00	hour	\$1,450.00
	Data Evaluation		20	\$145.00	hour	\$2,900.00
	Draftsperson II- Prepare Figures		20	\$65.00	hour	\$1,300.00
	Principal					
	Planning, Other		10	\$185.00	hour	\$1,850.00
	Field Prep., Field Work, & Travel		10	\$185.00	hour	\$1,850.00
	Client Communication, Technical Oversight, etc.		30	\$185.00	hour	\$5,550.00
	Subtotal					\$25,150.00
	Analytical Expenses³					
	Landfill Confirmation Samples (~1 acre area) ^{8,9}		16			
	Duplicate Samples (1 duplicate per 20 samples)	1:20	2			
	Soil - RCRA 8 Metal Analyses ³		18	\$126.50	sample	\$2,277.00
	Subtotal					\$2,277.00
	CJI Reimbursable Expenses					
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	4	500	\$0.56	mile	\$1,110.00
	Per diem		8	\$185.00	day	\$1,480.00
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		2	\$50.00	week	\$100.00
	Equipment Rental (GPS, etc.)		11	\$100.00	day	\$1,100.00
	Subtotal					\$3,790.00
	TASK SUBTOTAL					\$158,202.01



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - South Disposal Area, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	
3	WASTE DISPOSAL					
	Subcontractor Costs					
	Soil Disposal (Assumes all material removed from landfill is hazardous waste) ²					
	Transportation and Disposal of Excavated Landfill Material as Hazardous Waste ^{7,8,12}		22550	\$259.95	ton	\$5,861,782.30
	Air Monitoring ⁷ - Assumes most air monitoring costs covered under task 2 as tasks will occur concurrently.		1	\$9,110.01	week	\$9,110.01
	Subtotal					\$5,870,892.31
	CJI Professional Services⁵					
	Project Staff IV					
	Planning, Other		10	\$105.00	hour	\$1,050.00
	Manifests, On-Site Monitoring & Travel		40	\$105.00	hour	\$4,200.00
	Senior Staff					
	Planning, Other		20	\$145.00	hour	\$2,900.00
	Manifests, On-Site Monitoring & Travel		10	\$145.00	hour	\$1,450.00
	Principal					
	Planning, Other		10	\$185.00	hour	\$1,850.00
	Client Communication, Technical Oversight, etc.		24	\$185.00	hour	\$4,440.00
	Subtotal					\$15,890.00
	CJI Reimbursable Expenses					
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	2	500	\$0.56	mile	\$555.00
	Per diem		5	\$185.00	day	\$925.00
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		1	\$50.00	week	\$50.00
	Equipment rental & use (GPS, etc.)		8	\$100.00	day	\$800.00
	Subtotal					\$2,330.00
	TASK SUBTOTAL					\$5,889,112.31



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - South Disposal Area, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	
4	BACKFILL SOUTH DISPOSAL AREA EXCAVATION					
	Subcontractor Costs					
	Backfill Contractor ²					
	Mobilization Charge			\$862.50	task	\$0.00
	Equipment & Labor		1	\$35,339.50	task	\$35,339.50
	Transportation Cost ¹⁴ (assumes 20 cy of soil per load)		1025	\$74.75	load	\$76,618.75
	Other					
	Seed & Water ²		1	\$7,475.00	task	\$7,475.00
	Grading source area ²		1	\$1,840.00	task	\$1,840.00
	Subtotal					\$121,273.25
	CJI Professional Services⁵					
	Project Staff IV					
	Occasional On-Site Monitoring & Travel - Note: Assumes 10 haul trucks making 45 minute turns. Also assumes that CJI will monitor 10% of the backfilling activities.		30	\$105.00	hour	\$3,150.00
	Senior Staff					
	Planning, Other		10	\$145.00	hour	\$1,450.00
	Occasional On-Site Monitoring & Travel (Assumed at 1/2 of the monitoring frequency for Staff IV)		15	\$145.00	hour	\$2,175.00
	Backfill Documentation		8	\$145.00	hour	\$1,160.00
	Principal					
	Planning, Other		10	\$185.00	hour	\$1,850.00
	Client Communication, Technical Oversight, etc.		20	\$185.00	hour	\$3,700.00
	Subtotal					\$13,485.00
	CJI Reimbursable Expenses					
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	2	500	\$0.56	mile	\$555.00
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		1	\$50.00	week	\$50.00
	Equipment rental & use (GPS, etc.)		5	\$100.00	day	\$500.00
	Per diem		3	\$185.00	day	\$555.00
	Subtotal					\$1,660.00
	TASK SUBTOTAL					\$136,418.25



CJL Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - South Disposal Area, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT	
				UNIT COST	UNITS		
5	CONTINGENCY						
	20 % CONTINGENCY			20%	project	\$6,200,510.83	
							\$1,240,102.17
	PROJECT TOTAL						\$7,440,612.99

LEGEND:

- FQCY = Frequency, includes ratios (as in 1 duplicate per 20 samples) and numbers of new units (as in new monitoring wells).
- SAMPLING EVENTS = Number of events in a year, or number of years in a monitoring period (such as a 30 year post closure care period).
- Depth = The depth of borings/monitoring wells.
- QTY = Quantity

NOTES:

The following notes are identical for each of the separate Cost Estimate Detail sheets associated with the budgetary estimate of potential remediation costs for proper closure of the former Exide Frisco Recycling Center. Keyed notes pertinent to each particular Cost Estimate Detail Sheet are identified as footnotes within the line items on that Cost Estimate Detail sheet. General notes A and C are applicable only to field activities that could encounter the materials identified in each note. General Note B is applicable to any activity that could be impacted by additional information obtained to supplement the 7/10/2013 APAR for that property. General note D applies to all activities identified in the Summary Description.

General Notes:

- A** Cost estimate assumes that material from shooting range berm has been removed from site and disposed of.
- B** There is outstanding data and other information for the "Bowtie" property that has been obtained since the 7/10/2013 APAR was submitted for the FOP. These estimates could change somewhat based on a complete review of that information.
- C** Cost estimate assumes that water disposal - either stormwater or groundwater - will not be necessary during this project.
- D** All work items specifically identified in the associated Summary Description are included in this cost estimate; work items without an associated line item in the cost estimate detail are insignificant given the magnitude of the overall estimate and the associated uncertainties.

Keyed Notes:

- 1 Cost based on 5/10/2013 budget estimate provided by Effective Environmental and followup conversations.
- 2 Cost based on budget estimates provided by Sunbelt Industrial Services on 9/27/2012, 6/14/2013, 6/19/2013, and followup conversations.
- 3 Cost based on budget estimate provided by DHL Analytical, DHL Analytical Fee Schedule, and CJL experience.
- 4 Cost based on budget estimates provided by Strata Core Services on 6/13/2013 and followup conversations.
- 5 Cost based on CJL experience. Specific to the completion of the Class 2 Landfill: rough costs of \$50,000 per acre of landfill liner, \$12 per cubic yard of clay liner installed, and \$0.75 per square foot of FML were used to generate this cost.
- 6 Cost based on recent estimate by Dunnaway and Associates.
- 7 Cost based on recent costs submitted for reimbursement by Remediation Services, Inc.
- 8 Refer to "Excavation Volumes and Areas" workbook for the basis of the quantity estimates.
- 9 Assumed to be (16 samples/acre)(#acres)(30% resample rate), based on the areas in the "Excavation Volumes and Areas" workbook.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - South Disposal Area, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	

Keyed Notes (continued):

- 10 Number of loads = total estimated volume from areas excavated over 1 foot deep as shown on "Excavation Volumes and Areas" workbook, divided by 20 cy/load.
- 11 Depth is assumed.
- 12 Tons of excavated material = (# of cubic yards)(1.1)
- 13 Waste Characterization sampling rate = 1 sample/500 cy for material assumed to be Class 2 waste; 1/3000 cy for material assumed to be hazardous waste; and 1/250 cy for waste that could be either.
- 14 Estimate assumes that backfill originates from City owned stockpile adjacent to public works building or other nearby, free source. In the event that nearby, free source of backfill is not available, then the estimate to backfill excavations may increase.
- 15 Amount lost due to erosion was estimated from Universal Soil Loss Equation = 0.35 CY/acre-yr x 42 acres = 14.7 CY/yr
- 16 Cost for replacement of soil estimated from RS Means for a recent project.
- 17 Assumes 5% of soil will be re-seeded annually (5% x 42 acres = 2.1 acres). Cost for seed, equipment, labor obtained from RS Means for recent project.
- 18 Assumes fertilizing will be required 6 times over 30-year period. Cost for fertilizer, equipment, labor obtained from RS Means for recent project.
- 19 Assumes entire fence (9,200 linear feet) and all signs (every 100 ft = 92 signs) are replaced once over 30 years.
- 20 Cost for survey crew estimated from RS Means for recent project.
- 21 Assumes all wells are redeveloped every 10 years. Costs for labor, equipment and materials estimated from recent project.
- 22 Assumes 10% of wells are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 23 Assumes 50% of pads, tubing, etc. are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 24 Assumes soil loss = 3X annual loss from erosion, and 3 severe storm events occur over 30-yr period.
- 25 Assumes 30% of area will require revegetation.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - Exide Bowtie Property, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT	
				UNIT COST	UNITS		
1	BOWTIE WASTE CHARACTERIZATION SAMPLING						
	Subcontractor Costs						
	Drilling Subcontractor ^{2,4}						
	Mobilization Charge for Geoprobe or similar (daily rate of 20 borings per day assumed for estimate)		36	\$345.00	day	\$12,420.00	
	1 Boring to shale or refusal / collection of 1 waste characterization sample every five feet of boring. Assumed that ~3 samples will be collected per boring.		36	\$3,335.00	day	\$120,060.00	
	Waste cuttings stockpiled on Bowtie property for later disposal.			\$0.00	N/A	\$0.00	
	Subtotal						\$132,480.00
	Analytical Expenses - Former Exide Facility³						
	Waste Characterization Samples (1 per 250 cubic yards) ¹³	1:250	2160				
	Duplicate Samples (1 duplicate per 20 samples)	1:20	108				
	Soil - RCRA 8 Metals, TPH, VOCs, & TCLP Analyses ³		2268	\$511.75	sample	\$1,160,649.00	
	Subtotal						\$1,160,649.00
	Analytical Expenses - Bowtie Peripheral Areas (such as Lake Parcel)³						
	Waste Characterization Samples (1 per 250 cubic yards) ¹³	1:250	116				
	Duplicate Samples (1 duplicate per 20 samples)	1:20	6				
	Soil - Lead, cadmium, TPH, & TCLP Analyses ³		122	\$235.75	sample	\$28,714.35	
	Subtotal						\$28,714.35



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - Exide Bowtie Property, Frisco, Texas

TASK	ESTIMATED COSTS						AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE			
				UNIT COST	UNITS		
1	BOWTIE WASTE CHARACTERIZATION SAMPLING (CONTINUED)						
	CJI Professional Services⁵						
	Project Staff IV						
	Planning, Other		24	\$105.00	hour	\$2,520.00	
	Sample Collection & Travel for Former Exide Facility. Note: It is assumed that 20 waste characterization borings will be installed per each 10 hour work day.		380	\$105.00	hour	\$39,900.00	
	Sample Collection & Travel for Peripheral Areas. Note: It is assumed that 40 waste characterization surface soil samples can be collected each 10 hour work day.		40	\$105.00	hour	\$4,200.00	
	Senior Staff						
	Planning, Other		60	\$145.00	hour	\$8,700.00	
	Field Prep., Field Work, & Travel		60	\$145.00	hour	\$8,700.00	
	Data Evaluation		160	\$145.00	hour	\$23,200.00	
	Draftsperson II- Prepare Figures		60	\$65.00	hour	\$3,900.00	
	Principal						
	Planning, Other		20	\$185.00	hour	\$3,700.00	
	Field Prep., Field Work, & Travel		20	\$185.00	hour	\$3,700.00	
	Client Communication, Technical Oversight, etc.		80	\$185.00	hour	\$14,800.00	
	Subtotal						\$113,320.00
	CJI Reimbursable Expenses						
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	13	500	\$0.56	mile	\$3,607.50	
	Per diem		50	\$185.00	day	\$9,250.00	
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		10	\$50.00	week	\$500.00	
	Equipment Rental (GPS, etc.)		52	\$100.00	day	\$5,200.00	
	Subtotal						\$18,557.50
	TASK SUBTOTAL						\$1,453,720.85



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - Exide Bowtie Property, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	
2	FORMER EXIDE FACILITY EXCAVATION & CONFIRMATION SAMPLING					
	Subcontractor Costs					
	Soil Excavation					
	Mobilization Charge ¹		1	\$172,500.00	task	\$172,500.00
	Excavation of Contaminated Soil ^{1,8}		540000	\$5.75	cu yard	\$3,105,000.00
	Air Monitoring ⁷		26	\$9,110.01	week	\$236,860.33
	Subtotal					\$3,277,500.00
	CJI Professional Services⁵					
	Project Staff IV					
	Planning, Other		30	\$105.00	hour	\$3,150.00
	Field Prep., Field Work, & Travel - Note: It is assumed that approximately 5,000 cubic yards of material will be excavated during each 10 hour work day.		1180	\$105.00	hour	\$123,900.00
	Senior Staff					
	Planning, Other		60	\$145.00	hour	\$8,700.00
	Field Prep., Field Work, & Travel		80	\$145.00	hour	\$11,600.00
	Data Evaluation		240	\$145.00	hour	\$34,800.00
	Draftsperson II- Prepare Figures		60	\$65.00	hour	\$3,900.00
	Principal					
	Planning, Other		30	\$185.00	hour	\$5,550.00
	Field Prep., Field Work, & Travel		40	\$185.00	hour	\$7,400.00
	Client Communication, Technical Oversight, etc.		80	\$185.00	hour	\$14,800.00
	Subtotal					\$213,800.00
	Analytical Expenses³					
	Confirmation Samples (~24.2 acre area) ^{8,9}		503			
	Duplicate Samples (1 duplicate per 20 samples)	1:20	26			
	Soil - RCRA 8 Metal Analyses ³		529	\$126.50	sample	\$66,964.04
	Subtotal					\$66,964.04
	CJI Reimbursable Expenses					
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	29	500	\$0.56	mile	\$8,047.50
	Per diem		130	\$185.00	day	\$24,050.00
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		26	\$50.00	task	\$1,300.00
	Equipment Rental (GPS, etc.)		133	\$100.00	day	\$13,300.00
	Subtotal					\$46,697.50
	TASK SUBTOTAL					\$3,604,961.54



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - Exide Bowtie Property, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	
3	STEWART CREEK, WOODED STRIP, LAKE PARCEL, CRYSTALLIZER PLANT & SOUTH FIELD EXCAVATION, CONFIRMATION SAMPLING, AND BACKFILLING					
	Subcontractor Costs					
	Excavation Subcontractor ¹					
	Mobilization Charge (assumes combined mob fee with Former Exide Facility Excavation above)		1	\$0.00	task	\$0.00
	Mulching Woody Vegetation ⁸		1	\$2,500.00	task	\$2,500.00
	Estimated Amount of Contaminated Soil ⁸		29000	\$5.75	cu yard	\$166,750.00
	Backfill Contractor ²					
	Mobilization Charge		1	\$862.50	task	\$862.50
	Equipment & Labor		1	\$35,339.50	task	\$35,339.50
	Air Monitoring ⁷		1	\$9,110.01	week	\$9,110.01
	Transportation Cost ¹⁴ (assumes 20 cy of soil per load)					
	Backfill excavations that are deeper than 1' below grade; slope those that are 1' deep or less for drainage. ^{8,10}		487	\$74.75	load	\$36,403.25
	Other					
	Seed & Water		1	\$14,950.00	task	\$14,950.00
	Grading source area		1	\$1,840.00	task	\$1,840.00
	Subtotal					\$267,755.26
	CJI Professional Services⁵					
	Project Staff IV					
	Planning, Other		10	\$105.00	hour	\$1,050.00
	Field Prep., Field Work, & Travel - Note: It is assumed that approximately 5,000 cubic yards of material will be excavated during each 10 hour work day.		80	\$105.00	hour	\$8,400.00
	Senior Staff					
	Planning, Other		20	\$145.00	hour	\$2,900.00
	Field Prep., Field Work, & Travel		40	\$145.00	hour	\$5,800.00
	Section 404 Permit to Excavate in Creek		40	\$145.00	hour	\$5,800.00
	Data Evaluation/Documentation		40	\$145.00	hour	\$5,800.00
	Principal					
	Planning, Other		20	\$185.00	hour	\$3,700.00
	Client Communication, Technical Oversight, etc.		60	\$185.00	hour	\$11,100.00
	Subtotal					\$44,550.00



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - Exide Bowtie Property, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT	
				UNIT COST	UNITS		
3	STEWART CREEK, WOODED STRIP, LAKE PARCEL, CRYSTALLIZER PLANT & SOUTH FIELD EXCAVATION, CONFIRMATION SAMPLING, AND BACKFILLING						
	Analytical Expenses³						
	Confirmation Samples (10 acre area) ⁹		208				
	Duplicate Samples (1 duplicate per 20 samples)	1:20	11				
	Soil - Lead Analyses ³		219	\$46.00	sample	\$10,074.00	
	Subtotal						\$10,074.00
	CJI Reimbursable Expenses						
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	4	500	\$0.56	mile	\$1,110.00	
	Per diem		12	\$185.00	day	\$2,220.00	
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		3	\$50.00	task	\$150.00	
	Equipment Rental (GPS, etc.)		14	\$100.00	day	\$1,400.00	
	Subtotal						\$4,880.00
	TASK SUBTOTAL						\$327,259.26



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - Exide Bowtie Property, Frisco, Texas

TASK	ESTIMATED COSTS					
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT
				UNIT COST	UNITS	
4	MATERIAL DISPOSAL					
	Subcontractor Costs					
	Soil Disposal (Assumes all material removed from South Field, Wooded Area, Crystallizer Plant, Stewart Creek, and Lake Parcel is Class 2 waste. Also assumes that 1/4 of material removed from former Exide industrial facility is hazardous waste, and that 3/4 is class 2 waste.) ²					
	Transportation and Disposal of 1/4 of Excavated Material as Hazardous Waste ^{8,12}		148500	\$259.95	ton	\$38,601,981.00
	Class 2 Waste Disposal cost ²		434000	\$37.95	cu yard	\$16,470,300.00
	Transportation Cost for Class 2 waste. ²		21700	\$143.75	trip	\$3,119,375.00
	Air Monitoring ⁷ - Assumes most air monitoring costs covered under tasks 2 and 3 as tasks will occur concurrently.		4	\$9,110.01	week	\$36,440.05
	Subtotal					\$58,228,096.05
	CJI Professional Services⁵					
	Project Staff IV					
	Planning, Other		10	\$105.00	hour	\$1,050.00
	Manifests, On-Site Monitoring & Travel		120	\$105.00	hour	\$12,600.00
	Senior Staff					
	Planning, Other		40	\$145.00	hour	\$5,800.00
	Field Prep., Field Work, & Travel		40	\$145.00	hour	\$5,800.00
	Principal					
	Planning, Other		10	\$185.00	hour	\$1,850.00
	Client Communication, Technical Oversight, etc.		40	\$185.00	hour	\$7,400.00
	Subtotal					\$34,500.00
	CJI Reimbursable Expenses					
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	5	500	\$0.56	mile	\$1,387.50
	Per diem		16	\$185.00	day	\$2,960.00
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)		4	\$50.00	week	\$200.00
	Equipment rental & use (GPS, etc.)		18	\$100.00	day	\$1,800.00
	Subtotal					\$6,347.50
	TASK SUBTOTAL					\$58,268,943.55



CJL Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - Exide Bowtie Property, Frisco, Texas

TASK	ESTIMATED COSTS						
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		AMOUNT	
				UNIT COST	UNITS		
6	CONTINGENCY						
	20 % CONTINGENCY			20%	project	\$65,892,235.78	
							\$13,178,447.16
	PROJECT TOTAL						\$79,070,682.94

LEGEND:

FQCY = Frequency, includes ratios (as in 1 duplicate per 20 samples) and numbers of new units (as in new monitoring wells).
 SAMPLING EVENTS = Number of events in a year, or number of years in a monitoring period (such as a 30 year post closure care period).
 Depth = The depth of borings/monitoring wells.
 QTY = Quantity

NOTES:

The following notes are identical for each of the separate Cost Estimate Detail sheets associated with the budgetary estimate of potential remediation costs for proper closure of the former Exide Frisco Recycling Center. Keyed notes pertinent to each particular Cost Estimate Detail Sheet are identified as footnotes within the line items on that Cost Estimate Detail sheet. General notes A and C are applicable only to field activities that could encounter the materials identified in each note. General Note B is applicable to any activity that could be impacted by additional information obtained to supplement the 7/10/2013 APAR for that property. General note D applies to all activities identified in the Summary Description.

General Notes:

- A** Cost estimate assumes that material from shooting range berm has been removed from site and disposed of.
- B** There is outstanding data and other information for the "Bowtie" property that has been obtained since the 7/10/2013 APAR was submitted for the FOP. These estimates could change somewhat based on a complete review of that information.
- C** Cost estimate assumes that water disposal - either stormwater or groundwater - will not be necessary during this project.
- D** All work items specifically identified in the associated Summary Description are included in this cost estimate; work items without an associated line item in the cost estimate detail are insignificant given the magnitude of the overall estimate and the associated uncertainties.

Keyed Notes:

- 1 Cost based on 5/10/2013 budget estimate provided by Effective Environmental and followup conversations.
- 2 Cost based on budget estimates provided by Sunbelt Industrial Services on 9/27/2012, 6/14/2013, 6/19/2013, and followup conversations.
- 3 Cost based on budget estimate provided by DHL Analytical, DHL Analytical Fee Schedule, and CJL experience.
- 4 Cost based on budget estimates provided by Strata Core Services on 6/13/2013 and followup conversations.
- 5 Cost based on CJL experience. Specific to the completion of the Class 2 Landfill: rough costs of \$50,000 per acre of landfill liner, \$12 per cubic yard of clay liner installed, and \$0.75 per square foot of FML were used to generate this cost.
- 6 Cost based on recent estimate by Dunnaway and Associates.
- 7 Cost based on recent costs submitted for reimbursement by Remediation Services, Inc.
- 8 Refer to "Excavation Volumes and Areas" workbook for the basis of the quantity estimates.
- 9 Assumed to be (16 samples/acre)(#acres)(30% resample rate), based on the areas in the "Excavation Volumes and Areas" workbook.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

Excavation and Off-Site Disposal - Exide Bowtie Property, Frisco, Texas

TASK	ESTIMATED COSTS					AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	QTY	RATE		
				UNIT COST	UNITS	

Keyed Notes (continued):

- 10 Number of loads = total estimated volume from areas excavated over 1 foot deep as shown on "Excavation Volumes and Areas" workbook, divided by 20 cy/load.
- 11 Depth is assumed.
- 12 Tons of excavated material = (# of cubic yards)(1.1)
- 13 Waste Characterization sampling rate = 1 sample/500 cy for material assumed to be Class 2 waste; 1/3000 cy for material assumed to be hazardous waste; and 1/250 cy for waste that could be either.
- 14 Estimate assumes that backfill originates from City owned stockpile adjacent to public works building or other nearby, free source. In the event that nearby, free source of backfill is not available, then the estimate to backfill excavations may increase.
- 15 Amount lost due to erosion was estimated from Universal Soil Loss Equation = 0.35 CY/acre-yr x 42 acres = 14.7 CY/yr
- 16 Cost for replacement of soil estimated from RS Means for a recent project.
- 17 Assumes 5% of soil will be re-seeded annually (5% x 42 acres = 2.1 acres). Cost for seed, equipment, labor obtained from RS Means for recent project.
- 18 Assumes fertilizing will be required 6 times over 30-year period. Cost for fertilizer, equipment, labor obtained from RS Means for recent project.
- 19 Assumes entire fence (9,200 linear feet) and all signs (every 100 ft = 92 signs) are replaced once over 30 years.
- 20 Cost for survey crew estimated from RS Means for recent project.
- 21 Assumes all wells are redeveloped every 10 years. Costs for labor, equipment and materials estimated from recent project.
- 22 Assumes 10% of wells are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 23 Assumes 50% of pads, tubing, etc. are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 24 Assumes soil loss = 3X annual loss from erosion, and 3 severe storm events occur over 30-yr period.
- 25 Assumes 30% of area will require revegetation.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

TRRP Reporting for Excavation, Removal, and Off-Site Disposal of Waste Remediation Option, Former Exide Facility, Frisco, Texas

TASK	ESTIMATED COSTS				
	TASK / ITEM DESCRIPTION	QTY	RATE		AMOUNT
			UNIT COST	UNITS	
1	RACR PREPARATION				
	CJI Professional Services⁵				
	Project Staff IV- Document Preparation	80	\$105.00	hour	\$8,400.00
	Senior Staff - Document Preparation	160	\$145.00	hour	\$23,200.00
	Draftsperson II- Prepare Figures	40	\$65.00	hour	\$2,600.00
	Administrative - Copies, Document Prep, etc.	40	\$55.00	hour	\$2,200.00
	Principal- Client Communication, Technical Oversight, meeting participation, etc.	80	\$185.00	hour	\$14,800.00
					Subtotal
					\$51,200.00
	CJI Reimbursable Expenses				
	Report Preparation Expenses	1	\$2,000.00	task	\$2,000.00
					Subtotal
					\$2,000.00
					TASK SUBTOTAL
					\$53,200.00
2	PUBLIC MEETING FOR RACR				
	CJI Professional Services⁵				
	Project Staff IV- Set up meeting, meeting prep., meeting participation	24	\$105.00	hour	\$2,520.00
	Senior Staff - Meeting Participation	24	\$145.00	hour	\$3,480.00
	Principal- Meeting Participation	12	\$185.00	hour	\$2,220.00
					Subtotal
					\$8,220.00
	CJI Reimbursable Expenses				
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	500	\$0.56	mile	\$277.50
	Per diem	3	\$200.00	day	\$600.00
	Various Office Expenses	1	\$200.00	task	\$200.00
					Subtotal
					\$1,077.50
					TASK SUBTOTAL
					\$9,297.50



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

TRRP Reporting for Excavation, Removal, and Off-Site Disposal of Waste Remediation Option, Former Exide Facility, Frisco, Texas

TASK	ESTIMATED COSTS				
	TASK / ITEM DESCRIPTION	QTY	RATE		AMOUNT
			UNIT COST	UNITS	
3	RACR REVISION BASED ON PUBLIC COMMENT				
	CJI Professional Services⁵				
	Project Staff IV- Document Preparation	80	\$105.00	hour	\$8,400.00
	Senior Staff - Document Preparation	40	\$145.00	hour	\$5,800.00
	Draftsperson II- Prepare Figures	16	\$65.00	hour	\$1,040.00
	Administrative - Copies, Document Prep, etc.	16	\$55.00	hour	\$880.00
	Principal- Client Communication, Technical Oversight, meeting participation, etc.	24	\$185.00	hour	\$4,440.00
					Subtotal
					\$20,560.00
	CJI Reimbursable Expenses				
	Report Preparation Expenses	1	\$500.00	task	\$500.00
					Subtotal
					\$500.00
					TASK SUBTOTAL
					\$21,060.00
4	FINAL VCP COC				
	CJI Professional Services⁵				
	Senior Staff - Document Review & Other Tasks	16	\$105.00	hour	\$1,680.00
	Project Staff IV- Document Review & Other Tasks	12	\$65.00	hour	\$780.00
	Principal- Client Communication, Technical Oversight, final document submittal, meetings, etc.	16	\$145.00	hour	\$2,320.00
					Subtotal
					\$4,780.00
	CJI Reimbursable Expenses				
	Various Office Expenses	1	\$500.00	task	\$500.00
					Subtotal
					\$500.00
					TASK SUBTOTAL
					\$5,280.00
5	CONTINGENCY				
	20 % CONTINGENCY				
			20%	project	\$88,837.50
					Subtotal
					\$17,767.50
					PROJECT TOTAL
					\$106,605.00

LEGEND:

FQCY = Frequency, includes ratios (as in 1 duplicate per 20 samples) and numbers of new units (as in new monitoring wells).
 SAMPLING EVENTS = Number of events in a year, or number of years in a monitoring period (such as a 30 year post closure care period).
 Depth = The depth of borings/monitoring wells.
 QTY = Quantity



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

TRRP Reporting for Excavation, Removal, and Off-Site Disposal of Waste Remediation Option, Former Exide Facility, Frisco, Texas

TASK	ESTIMATED COSTS				AMOUNT
	TASK / ITEM DESCRIPTION	QTY	RATE		
			UNIT COST	UNITS	

NOTES:

The following notes are identical for each of the separate Cost Estimate Detail sheets associated with the budgetary estimate of potential remediation costs for proper closure of the former Exide Frisco Recycling Center. Keyed notes pertinent to each particular Cost Estimate Detail Sheet are identified as footnotes within the line items on that Cost Estimate Detail sheet. General notes A and C are applicable only to field activities that could encounter the materials identified in each note. General Note B is applicable to any activity that could be impacted by additional information obtained to supplement the 7/10/2013 APAR for that property. General note D applies to all activities identified in the Summary Description

General Notes:

- A Cost estimate assumes that material from shooting range berm has been removed from site and disposed of
- B There is outstanding data and other information for the "Bowtie" property that has been obtained since the 7/10/2013 APAR was submitted for the FOP. These estimates could change somewhat based on a complete review of that information
- C Cost estimate assumes that water disposal - either stormwater or groundwater - will not be necessary during this project.
- D All work items specifically identified in the associated Summary Description are included in this cost estimate; work items without an associated line item in the cost estimate detail are insignificant given the magnitude of the overall estimate and the associated uncertainties.

Keyed Notes:

- 1 Cost based on 5/10/2013 budget estimate provided by Effective Environmental and followup conversations.
- 2 Cost based on budget estimates provided by Sunbelt Industrial Services on 9/27/2012, 6/14/2013, 6/19/2013, and followup conversations.
- 3 Cost based on budget estimate provided by DHL Analytical, DHL Analytical Fee Schedule, and CJI experience.
- 4 Cost based on budget estimates provided by Strata Core Services on 6/13/2013 and followup conversations.
- 5 Cost based on CJI experience. Specific to the completion of the Class 2 Landfill: rough costs of \$50,000 per acre of landfill liner, \$12 per cubic yard of clay liner installed, and \$0.75 per square foot of FML were used to generate this cost.
- 6 Cost based on recent estimate by Dunnaway and Associates.
- 7 Cost based on recent costs submitted for reimbursement by Remediation Services, Inc.
- 8 Refer to "Excavation Volumes and Areas" workbook for the basis of the quantity estimates.
- 9 Assumed to be (16 samples/acre)(#acres)(30% resample rate), based on the areas in the "Excavation Volumes and Areas" workbook.
- 10 Number of loads = total estimated volume from areas excavated over 1 foot deep as shown on "Excavation Volumes and Areas" workbook, divided by 20 cy/load.
- 11 Depth is assumed.
- 12 Tons of excavated material = (# of cubic yards)(1.1)
- 13 Waste Characterization sampling rate = 1 sample/500 cy for material assumed to be Class 2 waste; 1/3000 cy for material assumed to be hazardous waste; and 1/250 cy for waste that could be either.
- 14 Estimate assumes that backfill originates from City owned stockpile adjacent to public works building or other nearby, free source. In the event that nearby, free source of backfill is not available, then the estimate to backfill excavations may increase.
- 15 Amount lost due to erosion was estimated from Universal Soil Loss Equation = 0.35 CY/acre-yr x 42 acres = 14.7 CY/yr
- 16 Cost for replacement of soil estimated from RS Means for a recent project.
- 17 Assumes 5% of soil will be re-seeded annually (5% x 42 acres = 2.1 acres). Cost for seed, equipment, labor obtained from RS Means for recent project.
- 18 Assumes fertilizing will be required 6 times over 30-year period. Cost for fertilizer, equipment, labor obtained from RS Means for recent project.
- 19 Assumes entire fence (9,200 linear feet) and all signs (every 100 ft = 92 signs) are replaced once over 30 years.
- 20 Cost for survey crew estimated from RS Means for recent project.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

TRRP Reporting for Excavation, Removal, and Off-Site Disposal of Waste Remediation Option, Former Exide Facility, Frisco, Texas

TASK	ESTIMATED COSTS				
	TASK / ITEM DESCRIPTION	QTY	RATE		AMOUNT
			UNIT COST	UNITS	

Keyed Notes (continued):

- 21 Assumes all wells are redeveloped every 10 years. Costs for labor, equipment and materials estimated from recent project.
- 22 Assumes 10% of wells are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 23 Assumes 50% of pads, tubing, etc. are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 24 Assumes soil loss = 3X annual loss from erosion, and 3 severe storm events occur over 30-yr period.
- 25 Assumes 30% of area will require revegetation.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

J-Parcel PMZ Monitoring, Frisco, Texas

TASK	ESTIMATED COSTS							AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	SAMPLING EVENTS	QTY	RATE			
					UNIT COST	UNITS		
1	ANNUAL MONITORING EXPENSES							
	CJI Professional Services⁵							
	Project Staff IV							
	Planning, Other	4/yr	2	4	\$105.00	hour	\$3,360.00	
	Field Prep., Field Work, & Travel (2 day quarterly for 2 years)	4/yr	2	20	\$105.00	hour	\$16,800.00	
	Senior Staff							
	Planning, Other	4/yr	2	2	\$145.00	hour	\$2,320.00	
	Data Evaluation	4/yr	2	4	\$145.00	hour	\$4,640.00	
	Report Preparation	1/yr	2	24	\$145.00	hour	\$6,960.00	
	Draftsperson II- Prepare Figures	1/yr	2	8	\$65.00	hour	\$1,040.00	
	Principal							
	Planning, Other	4/yr	2	2	\$185.00	hour	\$2,960.00	
	Report Preparation/Review	1/yr	2	8	\$185.00	hour	\$2,960.00	
	Client Communication, Technical Oversight, etc.	4/yr	2	4	\$185.00	hour	\$5,920.00	
							Subtotal	
							\$46,960.00	
	Analytical Expenses³							
	1 sample from 4 wells							
	Duplicate Samples (1 duplicate per 20 samples)	1:20		1				
	Groundwater - Quarterly Sampling for 2 Years - Arsenic & Selenium Analyses ³	2	4	5	\$46.00	sample	\$1,840.00	
							Subtotal	
							\$1,840.00	
	CJI Reimbursable Expenses							
	Mileage (round trip mileage from CJI-Austin to Frisco obtained from mapquest.com + incidental driving)	2	4	500	\$0.56	mile	\$2,220.00	
	Per diem	2	4	2	\$185.00	day	\$2,960.00	
	Pump & Other Sampling Equipment	2	4	2	\$200.00	day	\$3,200.00	
	Waste Transportation & Disposal (Class 2 Purge water)			2	\$500.00	year	\$1,000.00	
	Report Preparation and Office Expenses	2		1	\$500.00	year	\$1,000.00	
	Various Field Expenses (shipping, mobile phone charges, ice, bailers, etc.)	2	4	2	\$20.00	day	\$320.00	
							Subtotal	
							\$10,700.00	
							TASK SUBTOTAL	
							\$59,500.00	
2	CONTINGENCY							
	20 % CONTINGENCY							
					20%	project	\$59,500.00	
							Subtotal	
							\$11,900.00	
							PROJECT TOTAL	
							\$71,400.00	

LEGEND:

FQCY = Frequency, includes ratios (as in 1 duplicate per 20 samples) and numbers of new units (as in new monitoring wells).

SAMPLING EVENTS = Number of events in a year, or number of years in a monitoring period (such as a 30 year post closure care period).



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

J-Parcel PMZ Monitoring, Frisco, Texas

TASK	TASK / ITEM DESCRIPTION	ESTIMATED COSTS				AMOUNT	
		FQCY	SAMPLING EVENTS	QTY	RATE		
					UNIT COST		UNITS

LEGEND (continued):

Depth = The depth of borings/monitoring wells.
 QTY = Quantity

NOTES:

The following notes are identical for each of the separate Cost Estimate Detail sheets associated with the budgetary estimate of potential remediation costs for proper closure of the former Exide Frisco Recycling Center. Keyed notes pertinent to each particular Cost Estimate Detail Sheet are identified as footnotes within the line items on that Cost Estimate Detail sheet. General notes A and C are applicable only to field activities that could encounter the materials identified in each note. General Note B is applicable to any activity that could be impacted by additional information obtained to supplement the 7/10/2013 APAR for that property. General note D applies to all activities identified in the Summary Description

General Notes:

- A** Cost estimate assumes that material from shooting range berm has been removed from site and disposed of
- B** There is outstanding data and other information for the "Bowtie" property that has been obtained since the 7/10/2013 APAR was submitted for the FOP. These estimates could change somewhat based on a complete review of that information
- C** Cost estimate assumes that water disposal - either stormwater or groundwater - will not be necessary during this project.
- D** All work items specifically identified in the associated Summary Description are included in this cost estimate; work items without an associated line item in the cost estimate detail are insignificant given the magnitude of the overall estimate and the associated uncertainties.

Keyed Notes:

- 1 Cost based on 5/10/2013 budget estimate provided by Effective Environmental and followup conversations.
- 2 Cost based on budget estimates provided by Sunbelt Industrial Services on 9/27/2012, 6/14/2013, 6/19/2013, and followup conversations.
- 3 Cost based on budget estimate provided by DHL Analytical, DHL Analytical Fee Schedule, and CJI experience.
- 4 Cost based on budget estimates provided by Strata Core Services on 6/13/2013 and followup conversations.
- 5 Cost based on CJI experience. Specific to the completion of the Class 2 Landfill: rough costs of \$50,000 per acre of landfill liner, \$12 per cubic yard of clay liner installed, and \$0.75 per square foot of FML were used to generate this cost.
- 6 Cost based on recent estimate by Dunnaway and Associates.
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- 9 Assumed to be (16 samples/acre)(#acres)(30% resample rate), based on the areas in the "Excavation Volumes and Areas" workbook.
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- 11 Depth is assumed.
- 12 Tons of excavated material = (# of cubic yards)(1.1)
- 13 Waste Characterization sampling rate = 1 sample/500 cy for material assumed to be Class 2 waste; 1/3000 cy for material assumed to be hazardous waste; and 1/250 cy for waste that could be either.
- 14 Estimate assumes that backfill originates from City owned stockpile adjacent to public works building or other nearby, free source. In the event that nearby, free source of backfill is not available, then the estimate to backfill excavations may increase.
- 15 Amount lost due to erosion was estimated from Universal Soil Loss Equation = 0.35 CY/acre-yr x 42 acres = 14.7 CY/yr
- 16 Cost for replacement of soil estimated from RS Means for a recent project.
- 17 Assumes 5% of soil will be re-seeded annually (5% x 42 acres = 2.1 acres). Cost for seed, equipment, labor obtained from RS Means for recent project.



CJI Cost Estimate Detail - For Budget Estimating Purposes - Haul Off Scenario

J-Parcel PMZ Monitoring, Frisco, Texas

TASK	ESTIMATED COSTS						AMOUNT
	TASK / ITEM DESCRIPTION	FQCY	SAMPLING EVENTS	QTY	RATE		
					UNIT COST	UNITS	

Keyed Notes (continued):

- 18 Assumes fertilizing will be required 6 times over 30-year period. Cost for fertilizer, equipment, labor obtained from RS Means for recent project.
- 19 Assumes entire fence (9,200 linear feet) and all signs (every 100 ft = 92 signs) are replaced once over 30 years.
- 20 Cost for survey crew estimated from RS Means for recent project.
- 21 Assumes all wells are redeveloped every 10 years. Costs for labor, equipment and materials estimated from recent project.
- 22 Assumes 10% of wells are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 23 Assumes 50% of pads, tubing, etc. are replaced over 30-yr period. Costs for labor, equipment and materials estimated from recent project.
- 24 Assumes soil loss = 3X annual loss from erosion, and 3 severe storm events occur over 30-yr period.
- 25 Assumes 30% of area will require revegetation.



Bases for Estimated Quantities Used in Budgetary Remedial Cost Estimates

The bases for the estimated quantities provided in these spreadsheets are as follows:

AREAS THAT WILL BE EXCAVATED REGARDLESS OF THE PROPOSED CLOSURE OPTION

- J-Parcel:**
- 1) Surface areas were derived from Draft APAR Figures dated April 2013 created by Pastor, Behling & Wheeler, LLC. (PBW)
 - 2) Contaminant depths were derived from Draft APAR Tables dated April 2013 created by PBW.
 - 3) Additional areas were added to the information provided by PBW based on CJI experience and discussions with Client. For example, the "Triangle/Debris" area in the J-Parcel Excavation Table is an area that has been filled with asphalt and concrete debris, but also contains battery chips. Due to the presence of battery chips in the fill CJI has assumed that area must be excavated.
 - 4) Mulching costs are estimated for all contaminated areas that contained woody vegetation in the 2009 aerial photography used in PBW's April 2013 DRAFT APAR Figures.

- Pond Liners:**
- 1) Surface areas were derived from 2009 Aerial Photography from the North Central Texas Council of Governments.
 - 2) Only the volume of the plastic liner material is estimated in the "Pond Liner" sheet. It is assumed that neither pond has had a release and that overexcavation of the underlying material will not be necessary.
 - 3) Multiplier of 10% was added to the plastic pond liner volume calculations to account for the additional amount of liner material that will be present on the sideslopes of the ponds.

- Bowtie Perimeter:**
- 1) Surface areas were derived from Figures created by PBW. Sources of the Figures include:
Site Investigation Report For The Exide Frisco Recycling Center, Frisco, Texas, PBW, 7 July 2012
Soil Reuse Evaluation for Lake Parcel Borrow Area, Exide Frisco Recycling Center, Frisco, Texas, PBW, 25 February 2013.
Screening Level Ecological Risk Assessment, Exide Technologies, Former Operating Plant, Frisco, Texas, by PBW, dated 10 May 2013.
Affected Property Assessment Report, Exide Technologies, Former Operating Plant, Frisco, Texas, by PBW, dated 8 July 2013.
 - 2) Contaminant depths were derived from the same sources referenced above.
 - 3) Additional areas were added to the information provided by PBW and based on CJI experience.
 - 4) Mulching costs are estimated for all contaminated areas that contained woody vegetation in the 2009-2010 aerial photography used in the PBW reports referenced above.

AREAS THAT WILL BE EXCAVATED IF PROPOSED "HAUL OFF" CLOSURE OPTION IS SELECTED

- Class 2 Landfill:**
- 1) Surface area was derived from 2009 and 2010 Aerial Photography from the North Central Texas Council of Governments.
 - 2) The amount of waste in the Class 2 landfill was obtained from PBW's February 5, 2013 Landfill Capacity Calculations.
 - 3) The excavation calculations assume that NO RELEASE has occurred from this unit.
- South Disposal Area:**
- 1) Surface area was obtained from derived from the 8 July 2013 APAR for the Former Operating Plant (specifically from text in the APAR and from multiple figures, including Figure 3 from the *South Disposal Area Cap Repair Report*, W&M Environmental Group, dated 5 July 2013.
 - 2) Landfill depth was obtained from the 8 July 2013 APAR for the Former Operating Plant.
 - 3) Additional areas were added to the information provided by PBW and based on CJI experience.
- Former Exide Facility:**
- 1) Surface area was derived from the 8 July 2013 APAR for the Former Operating Plant (specifically from text in the APAR and from multiple figures).
 - 2) Contaminant depths were derived from the 8 July 2013 APAR Tables.



Summary of Estimated Excavation Volumes and Areas

Haul Off Option

Area	Minimum Excavation Estimate* (Cubic Yards)	Probable Excavation Estimate** (Cubic Yards)	Surface Area Estimate (Acres)***
J-Parcel	31,698	41,208	14.22
Pond Liners	153	199	4.13
Bowtie Perimeter	22,027	28,636	10.00
Class 2 Landfill	151,973	151,973	8.50
South Disposal Area	15,488	20,134	1.00
Exide Facility	412,895	536,763	24.20
ESTIMATED TOTAL	634,234	778,912	62

* Estimate based on in-place volume derived as indicated in individual spreadsheets and fluff factor to account for expansion of volume due to excavation.

** Estimate based on potential 30% increase in volume than minimum due to an increase in the actual extent of material determined through verification sampling to exceed cleanup criteria.

*** The surface area estimate does not include potential overexcavation.

Close in Place Option

Area	Minimum Excavation Estimate* (Cubic Yards)	Probable Excavation Estimate** (Cubic Yards)	Surface Area Estimate (Acres)***
J-Parcel	31,698	41,208	14.22
Pond Liners	153	199	4.13
Bowtie Perimeter	22,027	28,636	10.00
Class 2 Landfill	0	0	11.14
South Disposal Area	0	0	1.74
Exide Facility	0	0	29.00
ESTIMATED TOTAL	53,879	70,042	70

* Estimate based on in-place volume derived as indicated in individual spreadsheets and fluff factor to account for expansion of volume due to excavation.

** Estimate based on potential 30% increase in volume than minimum due to an increase in the actual extent of material determined through verification sampling to exceed cleanup criteria.

*** The surface area estimate does not include potential overexcavation in areas to be removed; the surface area estimates for areas to be capped represent the area estimated to be encompassed by the slurry wall and cap.



BASIS FOR EXCAVATION VOLUME - J-PARCEL PROPERTY, FRISCO, TEXAS

ID	Source	Muliplier	Height (ft)	Width (ft)	Area (ft ²)	Depth (ft)	In Place Subtotal (ft ³)	Fluff Factor	Excavated Subtotal (ft ³)	Conversion Factor	Excavated Subtotal (yd ³)	Mulching ?	Mulching Cost \$/Acre	Estimated Cost (\$)
BC-8	4A-5	1	145	130	18,850	1	18,850	1.2	22,620	27	837.78	No		
C-9	4A-5	1	75	75	5,625	1	5,625	1.2	6,750	27	250.00	No		
BC-8 & C-9	4A-5	0.5	30	30	450	1	450	1.2	540	27	20.00	No		
BC-8 & C-9	4A-5	0.5	30	30	450	1	450	1.2	540	27	20.00	No		
D-8	4A-5	1	85	75	6,375	1	6,375	1.2	7,650	27	283.33	No		
E-8	4A-5	1	75	75	5,625	1	5,625	1.2	6,750	27	250.00	No		
E-9W	4A-5	1	145	65	9,425	1	9,425	1.2	11,310	27	418.89	No		
E-9N	4A-5	1	70	150	10,500	1	10,500	1.2	12,600	27	466.67	No		
D-9	4A-5	1	140	150	21,000	1	21,000	1.2	25,200	27	933.33	No		
Δ south of E-10	4A-5	0.5	55	215	5,913	1	5,913	1.2	7,095	27	262.78	No		
E-10	4A-5	1	215	150	32,250	1	32,250	1.2	38,700	27	1,433.33	No		
D-10S	4A-5	1	55	155	8,525	1	8,525	1.2	10,230	27	378.89	No		
D-10	4A-5	1	35	75	2,625	1	2,625	1.2	3,150	27	116.67	No		
HI-5	4A-6	1	20	550	11,000	1	11,000	1.2	13,200	27	488.89	Yes	\$230.00	\$58.08
West of KL-9	4A-6	1	75	35	2,625	1	2,625	1.2	3,150	27	116.67	No		
K-10	4A-6	1	230	135	31,050	1	31,050	1.2	37,260	27	1,380.00	No		
Δ east of K-10	4A-6	0.5	230	65	7,475	1	7,475	1.2	8,970	27	332.22	No		
Δ north of M-12N	4A-7	0.5	20	310	3,100	1	3,100	1.2	3,720	27	137.78	Yes	\$230.00	\$32.74
M-12	4A-7	1	200	310	62,000	1	62,000	1.2	74,400	27	2,755.56	No		
N-12N	4A-7	1	65	205	13,325	1	13,325	1.2	15,990	27	592.22	No		
N-11	4A-7	1	80	80	6,400	1	6,400	1.2	7,680	27	284.44	No		
N-12	4A-7	1	80	85	6,800	1	6,800	1.2	8,160	27	302.22	No		
OP-12	4A-7	1	105	110	11,550	1	11,550	1.2	13,860	27	513.33	No		
M-14	4A-7	1	250	255	63,750	1	63,750	1.2	76,500	27	2,833.33	Yes	\$230.00	\$336.60
M-15W	4A-7	1	80	160	12,800	1	12,800	1.2	15,360	27	568.89	Yes	\$230.00	\$67.58
M-15	4A-7	1	40	100	4,000	1	4,000	1.2	4,800	27	177.78	Yes	\$230.00	\$21.12
M-16A3	4A-7	1	850	30	25,500	2	51,000	1.2	61,200	27	2,266.67	Yes	\$230.00	\$134.64
O-15A12	4A-7	1	450	45	20,250	1	20,250	1.2	24,300	27	900.00	Yes	\$230.00	\$106.92
O-15A2	4A-7	1	140	35	4,900	1	4,900	1.2	5,880	27	217.78	Yes	\$230.00	\$25.87
N-16	4A-7	1	50	75	3,750	1	3,750	1.2	4,500	27	166.67	Yes	\$230.00	\$19.80
M-16N	4A-7	1	560	50	28,000	1	28,000	1.2	33,600	27	1,244.44	Yes	\$230.00	\$147.84
L-16S	4A-7	1	300	60	18,000	1	18,000	1.2	21,600	27	800.00	Yes	\$230.00	\$95.04
L-17	4A-7	1	140	90	12,600	1	12,600	1.2	15,120	27	560.00	Yes	\$230.00	\$66.53
M-17	4A-7	1	80	90	7,200	1	7,200	1.2	8,640	27	320.00	Yes	\$230.00	\$38.02
I-18	4A-8	1	20	125	2,500	1	2,500	1.2	3,000	27	111.11	No		
D-16	4A-8	1	75	110	8,250	1	8,250	1.2	9,900	27	366.67	No		
E-16	4A-8	0.5	60	90	2,700	1	2,700	1.2	3,240	27	120.00	No		
F-17	4A-8	0.5	90	85	3,825	1	3,825	1.2	4,590	27	170.00	No		
F-16	4A-8	1	80	80	6,400	1	6,400	1.2	7,680	27	284.44	No		
G-16	4A-8	1	25	90	2,250	1	2,250	1.2	2,700	27	100.00	No		
HI-15B	4A-8	1	30	70	2,100	1	2,100	1.2	2,520	27	93.33	No		
HI-15B	4A-8	1	400	60	24,000	2	48,000	1.2	57,600	27	2,133.33	No		



BASIS FOR EXCAVATION VOLUME - J-PARCEL PROPERTY, FRISCO, TEXAS

ID	Source	Muliplier	Height (ft)	Width (ft)	Area (ft ²)	Depth (ft)	In Place Subtotal (ft ³)	Fluff Factor	Excavated Subtotal (ft ³)	Conversion Factor	Excavated Subtotal (yd ³)	Mulching ?	Mulching Cost \$/Acre	Estimated Cost (\$)
TP-9 & TP-7	4A-9	1	160	90	14,400	4	57,600	1.2	69,120	27	2,560.00	No		
Triangle/Debris*	4A-9	1	NA	NA	68,600	1	68,600	1.2	82,320	27	3,048.89	No		
CF-1	4A-11	1	30	30	900	2	1,800	1.2	2,160	27	80.00	No		
SUBTOTALS					619,613		713,213		855,855		31,698.33			\$1,150.79

EXPANDING EXCAVATIONS TO REMOVE AREAS WITH "HOT" CONFIRMATION SAMPLES 1.3

ESTIMATED EXCAVATION AREA (ACRE) 14.22

ESTIMATED TOTAL 41,207.83

- Notes: ID = The ID number of the soil sample closest to the center of the area that requires remediation.
 Source = The Draft PBW APAR figure number that the area was derived from.
 Multiplier = 0.5 for triangular areas, 1 for square or rectangular areas. Derived from formula for area of triangle (1/2base x height).
 Height = The distance from the southern to the northern boundary of the remediation area.
 Width = The distance from the western to the eastern boundary of the remediation area.
 Depth = The initial pre-planned depth of each excavation area.
 * = Size of this area provided by Southwest Geoscience
 Mulching cost obtained from http://texbrushmulch.com/brush_faq.html. They quote rates of \$140 to \$150/hour, with 1 to 1.5 acres mulched per hour. \$230/acre used for cost estimate.



POND LINER VOLUME ESTIMATE

Item	Liner Area (sq ft)	Slope Adjustment*	Liner Area (sq ft)	Liner Thickness (ft)	Volume (cu ft)	Volume (cu yd)
Stormwater Pond Liner	120000	1.1	132000	0.020833333	2750.00	101.85
Leachate Pond Liner	60000	1.1	66000	0.020833333	1375.00	50.93
Totals	180000				4125.00	152.78

Notes: Pond Liner Areas calculated based on measurements obtained from 2011 aerial photograph.
A 60 mil liner is 0.06 inches thick. A thickness of 0.25 inches was used in volume calculations as a conservative estimate.

* = Multiplier to account for the additional amount of liner material that will be present on sideslopes of the ponds.



BASIS FOR EXCAVATION VOLUME - VARIOUS AREAS ON BOWTIE PROPERTY, FRISCO, TEXAS

Area	ID	Source	Muliplier	Height (ft)	Width (ft)	Area (ft ²)	Depth (ft)	In Place Subtotal (ft ³)	Fluff Factor	Excavated Subtotal (ft ³)	Conversion Factor	Excavated Subtotal (yd ³)	Mulching ?	Mulching Cost \$/Acre	Estimated Cost (\$)
South Field	SDA-9-2	SIR-19	1	53	173	9,169	2	18,338	1.2	22,006	27	815.02	Yes	\$230.00	\$48.41
	SDA-8	SIR-19	0.5	53	30	795	3	2,385	1.2	2,862	27	106.00	No		
	SDA-2	SIR-19	1	80	328	26,240	1	26,240	1.2	31,488	27	1,166.22	Yes	\$230.00	\$138.55
	SDA-3	SIR-19	1	42	190	7,980	1	7,980	1.2	9,576	27	354.67	No		
	Δ north of SDA-3	SIR-19	0.5	27	190	2,565	1	2,565	1.2	3,078	27	114.00	No		
	Wooded Area 1	ECO-8	1	164	601	98,564	1.5	147,846	1.2	177,415	27	6,570.93	Yes	\$230.00	\$520.43
	Wooded Area 2	ECO-8	1	129	491	63,339	1	63,339	1.2	76,007	27	2,815.07	Yes	\$230.00	\$334.43
North Wooded Strip	LMW-22	APAR-4A	0.5	220	890	97,900	1	97,900	1.2	117,480	27	4,351.11	Yes	\$230.00	\$1,033.84
Crystallizer Area	2013-CUFT-7	APAR-4A	1	250	30	7,500	1	7,500	1.2	9,000	27	333.33	Yes	\$230.00	\$39.60
Stewart Creek	2012-FWCS-1	SIR-23	1	20	180	3,600	1	3,600	1.2	4,320	27	160.00	No		
	2012-FWCS-6	SIR-23	1	20	70	1,400	1	1,400	1.2	1,680	27	62.22	No		
	2012-FWCS-8	SIR-23	1	20	90	1,800	1	1,800	1.2	2,160	27	80.00	No		
Lake Parcel	G-5	LP-2	1	200	200	40,000	1	40,000	1.2	48,000	27	1,777.78	No		
	G-6	LP-2	1	200	40	8,000	1	8,000	1.2	9,600	27	355.56	No		
	□ north of G-6	LP-2	1	30	55	1,650	1	1,650	1.2	1,980	27	73.33	No		
	Δ north of G-6	LP-2	0.5	180	85	7,650	1	7,650	1.2	9,180	27	340.00	No		
	Δ east of G-6	LP-2	0.5	30	30	450	1	450	1.2	540	27	20.00	No		
	F-4	LP-2	0.5	265	130	17,225	1	17,225	1.2	20,670	27	765.56	No		
	F-5	LP-2	0.5	265	300	39,750	1	39,750	1.2	47,700	27	1,766.67	No		
	SUBTOTALS						435,577		495,618		594,742		22,027.47		

EXPANDING EXCAVATIONS TO REMOVE AREAS WITH "HOT" CONFIRMATION SAMPLES 1.3

ESTIMATED EXCAVATION AREA (ACRE) 10.00

ESTIMATED TOTAL 28,635.71

- Notes: ID = The ID number of the soil sample closest to the center of the area that requires remediation.
 Source = The PBW Document (either the 2012 SIR, the 2013 APAR, the 2013 SLERA, or Lake Parcel letter) figure number that the area was derived from.
 Multiplier = 0.5 for triangular areas, 1 for square or rectangular areas. Derived from formula for area of triangle (1/2base x height). Use for surface area calculation.
 Height = The distance from the southern to the northern boundary of the remediation area.
 Width = The distance from the western to the eastern boundary of the remediation area.
 Depth = The initial pre-planned depth of each excavation area.
 Mulching cost obtained from http://texbrushmulch.com/brush_faq.html. They quote rates of \$140 to \$150/hour, with 1 to 1.5 acres mulched per hour. \$230/acre used for cost estimate.



BASIS FOR EXCAVATION VOLUME - CLASS 2 LANDFILL, FRISCO, TEXAS

ID	Source	In-Place Waste Volume (yd³)	Over-Excavation Factor*	Volume of Soil/Slag Piles	Fluff Factor**	Excavated Subtotal (yd³)
Class 2 Landfill	PBW	116500	1.1	4000	1.15	151972.5

Notes: ID = Description of the area.
Source = The February 5, 2013 Landfill Capacity Calculations done by PBW.
* = 10% over-excavation factor to account for incidental liner soils excavated with waste for complete removal.
** = 15% Fluff factor used instead of 20% due to the consolidated nature of the material being excavated.



BASIS FOR EXCAVATION VOLUME - SOUTH DISPOSAL AREA, FRISCO, TEXAS

ID	Source	Area (Acres)	Conversion Factor	Depth (ft)	In Place Subtotal (ft ³)	Fluff Factor	Excavated Subtotal (ft ³)	Conversion Factor	Excavated Subtotal (yd ³)	Mulching?	Mulching Cost \$/Acre	Estimated Cost (\$)
South Disposal Area	W&M Figure 3	1	43560	8	348480	1.2	418176	27	15488.00	No		
EXPANDING EXCAVATIONS TO REMOVE AREAS WITH "HOT" CONFIRMATION SAMPLES												
										1.3		
ESTIMATED EXCAVATION AREA (FEET AND ACRES)		43560.00						ESTIMATED TOTAL		20134.40		

- Notes: ID = Description of the area.
 Source = The W&M Figure number from *South Disposal Area Cap Repair Report*, W&M Environmental Group, dated 5 July 2013.
 Acres = The reported surface area of the south disposal area.
 Depth = The initial pre-planned depth of each excavation area.



BASIS FOR EXCAVATION VOLUME - FORMER EXIDE INDUSTRIAL FACILITY, FRISCO, TEXAS

ID	Source	Muliplier	Height (ft)	Width (ft)	Area (ft ²)	Depth (ft)	In Place Subtotal (ft ³)	Fluff Factor	Excavated Subtotal (ft ³)	Conversion Factor	Excavated Subtotal (yd ³)	Mulching?	Mulching Cost \$/Acre	Estimate d Cost (\$)
Slag Landfill	PBW-4A	1	NA	NA	151,115	16	2,417,841	1.2	2,901,409	27	107,460	No	\$0.00	\$0.00
North Disposal Area	PBW-4A	1	NA	NA	239,606	16	3,833,689	1.2	4,600,427	27	170,386	No	\$0.00	\$0.00
Battery Receiving/Storage Building Area	PBW-4A	0.5	237.5	450	106,875	12	641,250	1.2	769,500	27	28,500	No	\$0.00	\$0.00
Battery Breaker Area	PBW-4A	1	130	285	37,050	30	1,111,500	1.2	1,333,800	27	49,400	No	\$0.00	\$0.00
WMU 6 Area	PBW-4A	1	85	175	14,875	4	59,500	1.2	71,400	27	2,644	No	\$0.00	\$0.00
Slag Treatment Building	PBW-4A	0.5	175	225	39,375	4	78,750	1.2	94,500	27	3,500	No	\$0.00	\$0.00
Raw Material Storage Building & Immediate Vicinity	PBW-4A	1	280	175	49,000	9	441,000	1.2	529,200	27	19,600	No	\$0.00	\$0.00
Blast Furnace Building	PBW-4A	1	132.5	255	33,788	4	135,150	1.2	162,180	27	6,007	No	\$0.00	\$0.00
WMU 14 Area (Oxide Building)	PBW-4A	1	145	230	33,350	7	233,450	1.2	280,140	27	10,376	No	\$0.00	\$0.00
Bale Stabilization Area/Truck Staging Area/Area 2 (of remainder of facility)	PBW-4A	1	250	470	117,500	1	117,500	1.2	141,000	27	5,222	No	\$0.00	\$0.00
Remainder of Facility (Area 1)	PBW-4A	1	300	677.5	203,250	1	203,250	1.2	243,900	27	9,033	No	\$0.00	\$0.00
Remainder of Facility (Area 3)	PBW-4A	1	250	25	6,250	1	6,250	1.2	7,500	27	278	No	\$0.00	\$0.00
Remainder of Facility (Area 4)	PBW-4A	0.5	40	550	22,000	1	11,000	1.2	13,200	27	489	No	\$0.00	\$0.00
SUBTOTALS					1,054,033		9,290,130		11,148,156		412,894.66			\$0.00

EXPANDING EXCAVATIONS TO REMOVE AREAS WITH "HOT" CONFIRMATION SAMPLES

1.3

ESTIMATED EXCAVATION AREA (ACRE) 24.20

ESTIMATED TOTAL (CY) 536,763.06

USE 540,000 CY

ESTIMATED HAZARDOUS WASTE TOTAL (CY) 135,000.00

ESTIMATED HAZARDOUS WASTE TOTAL (TONS) 148,500.00

ESTIMATED CLASS 2 TOTAL (CY) 405,000.00

Notes: ID = The ID number of the soil sample closest to the center of the area that requires remediation.
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 Height = The distance from the southern to the northern boundary of the remediation area.
 Width = The distance from the western to the eastern boundary of the remediation area.
 Depth = The initial pre-planned depth of each excavation area.
 Mulching cost obtained from http://texbrushmulch.com/brush_faq.html. They quote rates of \$140 to \$150/hour, with 1 to 1.5 acres mulched per hour. \$230/acre used for cost estimate.
 Tonnage Calculation # cy X 1.1

City of Frisco
 Projected Cost Estimate
Stewart Creek Remediation - Exide Off-Site Impact Project
 2/24/14

Scenario Number	Scenario Description	Estimated Sediment Volume (CY) ¹	Contractor Responsibilities								Consultant Responsibilities				Contractor Total	Consultant Total
			Excavation Cost/CY ²	Excavation Cost	Dewatering Cost/CY ³	Dewatering Cost	Transport Cost/CY ⁴	Transport Cost	Disposal Cost/CY ⁵	Disposal Cost	Design Cost ⁷	Delineation Cost ⁸	Confirmation Cost ⁹	Oversight Costs ¹⁰		
1	Contractor - Install Access Roadway and deforest specific areas for access. Manage Stormwater Pump-around. Construction Dewatering Compound. Excavate sediments (prefer land-based excavation) from RR Bridge to Stonebrook parkway; haul to dewatering compound. Dewater and sample water, store on site until shipment to Exide WWTP for treatment. Transport non-haz materials to Landfill for use as daily cover/disposal as appropriate	36,569	\$ 22.50	\$ 822,635.73	\$ 11.50	\$ 420,688.89	\$ 12.22	\$ 446,944.96	\$ 35.12	\$ 1,284,167.33					\$ 2,974,436.91	
	Consultant - Obtain creek sections and design excavation plan, perform pilot study for slag/chip removal process and dewatering process (RAP). Delineate potential impacts from Grand Park swales/tributaries. Provide Construction administration services. Collect confirmation samples on 150' intervals. Document (RACR) activities.										\$ 148,721.85	\$ 18,000.00	\$ 69,300.00	\$ 148,721.85		\$ 384,743.69
	OPTION - Haz Waste Disposal at Lone Mountain 30% volume 6		30%					\$ 76.33	\$ 837,427.56	\$ 45.00	\$ 493,680.00					\$ 1,331,107.56
2	Contractor - Install Access Roadway and deforest specific areas for access. Manage Stormwater pump-around. Construction Dewatering Compound. Excavate sediments (prefer land-based excavation) from Station 0+00 upstream to the upstream edge of the park AND six additional pockets upstream and downstream; haul to dewatering compound. Dewater and sample water, store on site for analysis and transport to the Exide WWTP. Transport non-haz materials to Landfill for use as daily cover/disposal as appropriate	20,433	\$ 26.94	\$ 550,566.00	\$ 12.69	\$ 259,333.33	\$ 12.22	\$ 249,736.20	\$ 35.12	\$ 717,544.88					\$ 1,777,180.42	
	Consultant - Delineate "Hot Spots" upstream and downstream of Park Area. Obtain creek sections and design excavation plan, perform pilot study for slag/chip removal process and dewatering process (RAP). Delineate potential impacts from Grand Park swales/tributaries. Provide Construction administration services. Collect confirmation samples on 150' intervals in park area, and at 50' intervals in Hot Spot recovery. Document (RACR) activities.										\$ 88,859.02	\$ 60,450.00	\$ 31,290.00	\$ 88,859.02		\$ 269,458.04
	OPTION - Haz Waste Disposal at Lone Mountain 30% volume 6		30%					\$ 76.33	\$ 467,923.33	\$ 45.00	\$ 275,850.00					\$ 743,773.33
3	Contractor - Install Access Roadway and deforest specific areas for access. Manage Stormwater pump-around. Construction Dewatering Compound. Excavate sediments (prefer land-based excavation) at the 13 "Hot Spots"; haul to dewatering compound. Dewater and sample water, store on site prior to shipping to treatment facility. Transport non-haz materials to Landfill for use as daily cover/disposal as appropriate	16,458	\$ 32.75	\$ 539,063.62	\$ 13.34	\$ 219,578.70	\$ 12.22	\$ 201,148.09	\$ 35.12	\$ 577,940.98					\$ 1,537,731.39	
	Consultant - Delineate Hot Spots at all 12 planned locations. Obtain creek sections and design excavation plan, perform pilot study for slag/chip removal process and dewatering process (RAP). Delineate potential impacts from Grand Park swales/tributaries. Provide Construction administration services. Collect confirmation samples on 50' intervals from within Hot Spot recovery. Document (RACR) activities.										\$ 76,886.57	\$ 89,700.00	\$ 51,450.00	\$ 76,886.57		\$ 294,923.14
	OPTION - Haz Waste Disposal at Lone Mountain 30% volume 6		30%					\$ 76.33	\$ 376,885.23	\$ 45.00	\$ 222,181.25					\$ 599,066.48
Fields and South	Contractor - Install Access Roadway and deforest specific areas for access. Manage Stormwater Pump-around. Construction Dewatering Compound. Excavate sediments (prefer land-based excavation) from Stonebrook parkway to Lebanon Road; haul to dewatering compound. Dewater and sample water, store on site until shipment to Exide WWTP for treatment. Transport non-haz materials to Landfill or CAMU for use as daily cover/disposal as appropriate	31,651	\$ 23.54	\$ 745,058.18	\$ 11.74	\$ 371,514.13	\$ 12.22	\$ 386,843.57	\$ 35.12	\$ 1,111,483.33					\$ 2,614,899.21	
	Consultant - Obtain creek sections and design excavation plan, perform pilot study for slag/chip removal process and dewatering process (RAP). Delineate potential impacts from Grand Park swales/tributaries. Provide Construction administration services. Collect confirmation samples on 150' intervals. Document (RACR) activities.										\$ 130,744.96	\$ 89,700.00	\$ 51,450.00	\$ 130,744.96		\$ 402,639.92
	OPTION - Haz Waste Disposal at Lone Mountain 30% volume 6		30%					\$ 76.33	\$ 724,817.36	\$ 45.00	\$ 427,294.07					\$ 1,152,111.43

Notes

- Scenario 1 volume based on 1.87 mile length, by 40' nominal width, by 2.5' nominal depth. These figures are based on Google Earth Calculations and notes from site reconnaissance (soundings). Scenario 2 volume based on 0.75 creek mile length of planned park area, plus the distances of the 7 "Hot Spots" outside of the park area, 40' width and 2.5' nominal depth, from site reconnaissance. Scenario 3 volume based on the measured areas as defined by the site reconnaissance team for the 13 hotspots, which consist of 12 areas of higher-concentration slag and/or battery chips, four co-located with second effects PCL exceedance, and one PCL exceedance area not in the presence of chips or slag. Estimates are ONLY based on chips found in the sediments within the streambeds. Fields and South volume based on 2.40 mile stream length, by nominal 40' width, by 1.5' nominal depth. These figures are based on Google Earth calculations and notes from site reconnaissance.
- Extraction costs based on average production rates in a steep streambed with pump-around equipment for creek water. Roads must be built to access the area. Costs increase as the number of equipment extractions increase to re-mobilize the equipment to different areas. Based on costs provided by USES.
- Dewatering costs based on a centralized materials management area construction to dewater the sediment to allow passage of the Paint Filter Test to allow re-use of materials. Includes costs to remove, stockpile, load, and empty the filter boxes from trucks into new trucks. Cost increase based on fixed costs for the centralized materials management area.
- Transport Costs assume transport along temporary roads onto public highways and back to the Exide Plant for re-use of sediments and disposal of water from Saturated Sediments, based on historic price for nearby hauling of 20-CY truck loads (15 BCY) of \$183.33/load to the DFW WM landfill
- Assumes 1.2 Tons / LCY and 1.33 BCY to LCY expansion factor
- Transport Costs assume transport along temporary roads onto public highways to Lone Mountain (660 mi round trip, long haul). Assumes haul costs of \$1.35/mile for a load consisting of 12 in-place cubic yards (less 33% than full 18 CY load to account for handling expansion), and \$25/load tipping fee and no Demurrage at Lone Mountain, and \$45/cy for disposal of Haz (metals) waste for 30% of the total volume
- Based on a 5% design cost, assuming Survey excluded. More detailed estimate is available after additional information is obtained
- Scenario 1 Delineation Costs based on 30 samples. Scenario 2 Delineation Costs based on 30 trib samples plus 7 areas by 3 samples by 3 grid per area. Scenario 3 Delineation costs based on 30 tributary samples plus 13 areas by 3 sample array by 3 sample grid, estimated cost for collection, analysis for metals ONLY, and tabulation and validation of \$600/sample
- Scenario 1 Confirmation costs based on 3 samples per 150 LF of creek bed. Scenario 2 Confirmation based on 3 samples per 150 LF of creek bed, plus 9 samples per area. Scenario 3 Confirmation based on 9 samples per area for 8 areas, plus 15 samples per area for the remaining 5 areas, based on size. Cost for analysis for metals ONLY and tabulation and validation of \$300/sample (collection captured in Oversight Costs)
- Based on a 5% oversight cost, excluding sampling and analysis. Can be refined after contractor provides a schedule for oversight services.
- Previous versions included rounding differences

CRITICAL ASSUMPTIONS

Scenario 1-3 Estimates include only portions of Stewart Creek from the FOP to Stonebrook Parkway. Private, USACE, and City-Owned properties remediation costs were not included in this estimate
 Estimates were based on information obtained and released for use prior to 8/31/2013.

Fields Property and South estimate assumes worst-case scenario to remove possible chips and slag by removal and disposal of all sediments in Exide Class 2 On-Site landfill

Fields Property and South estimate does not include mitigation/restoration costs, as ecological risk assessments have not been conducted
 Water generated from Dewatering will be treated and disposed from Exide on-Site treatment system
 See attached sheet for specific costs.

	Contractor Total	Consultant Total	Total
Scenario 1 Cost	\$ 2,974,436.91	\$ 384,743.69	\$ 3,359,180.60
Scenario 2 Cost	\$ 1,777,180.42	\$ 269,458.04	\$ 2,046,638.46
Scenario 3 Cost	\$ 1,537,731.39	\$ 294,923.14	\$ 1,832,654.53
Fields and South	\$ 2,614,899.21	\$ 402,639.92	\$ 3,017,539.13
Scenario 1 plus Fields South	\$ 5,589,336.12	\$ 787,383.61	\$ 6,376,719.73
Variable Max	\$ 1,331,107.56		

Budgetary Estimate of Costs
Stewart Creek Remediation
Options - Basis of Estimate
2/24/2014

Stream Length (Exide Property to end of Grand Park, INCLUDES Lowrey Tract), measured from Google Earth			
Mile	Ft/Mile	LF	Total Lowrey Grand Park Fields Property*
1.87	5280	9873.6	
		2185	
		7688.6	
		12683	

Stream Width (Nominal), measured from Google Earth and field verified during multiple stream widths, no stream profile has been completed			
Width	Lowrey, Grand Park		
40	Fields Property*	Average from 16 Transects	
25.62			

Sediment Depth (Average), as estimated by SWG during multiple field events.			
Depth	Lowrey and Grand Park		
2.5	Fields Property*	Average from 16 Transects	
2.63			

Estimated Sediment Volume								
987360	BANK cuft							
36569	BANK cy	Option 1 - Full Stream						
20433	BANK cy	Option 2	5355	lf plus	6	hotspots@	100	cy/hotspot
16458	BANK cy	Option 3	177745	SqFt of hotspots (from GIS figs)				
1334252	BANK cuft	Fields and South						
31651	BANK cy	Fields and South						

Sediment Removal/Excavation			
Clear and Grub	Stewart Creek	Fields and South	
	4	9	Acres
	\$ 5,500.00	\$ 5,500.00	\$/Acre
	\$ 22,000.00	\$ 49,500.00	

Haul Roads	Grand Park		Fields and South	
	2.25	miles	2.75	miles
	20	ft.-width	20	ft.-width
	0.5	ft.-depth	0.5	ft.-depth
	4400	CY of Crush and Roll	5378	CY of Crush and Roll
	\$10.92	\$/cy placed	10.92	\$/cy placed
	\$ 48,048.00		\$ 58,725.33	(Contractor Inquiry)

Excavation			
Short Haul	\$ 7.19	\$/CY excavated	(Contractor Inquiry, average of 1500 CY/day in EASY ACCESS conditions)
	\$ 3.10	\$/CY haul to dewatering	
	\$ 10.29	\$/CY excavated and hauled to dewatering	
	2.0	Difficulty Multiplier (steep slopes, difficult excavation, limited access and haul routes) Option 1 and 2	
	1.15	Secondary Multiplier - Option 3 (Limited access, multiple equipment relocations, discontinuous excavation)	

Bypass Pumping			
	8	weeks-Duration	
\$ 6,000.00	\$/wk. (from Contractor Inquiry)		
\$ 2,000.00	\$/setup (from Contractor Inquiry)		
	6	setups (From Contractor Inquiry)	
\$ 60,000.00	\$/Dewatering		

Dewatering			
\$ 55,000.00	Estimate for dewatering area setup (any size)		
\$ 10.00	\$/CY to dewater, including handling, loading after passing Paint Filter Test etc. (from Contractor Inquiry)		

Transportation					
15.00	BANK CY per 20-CY truck		1.25	Under load for crossing state line	
\$ 210.00	\$/trip to Itasca (C1)	(Contractor Inquiry)		Tipping Fee	(Contractor Inquiry)
\$ 183.33	\$/trip to DFW LF (C2)	(Contractor Inquiry)	Miles	Cost/Mile	\$ 25.00
\$ 916.00	\$/trip to Lone Mountain (Haz)		660	\$ 1.35	

Disposal			
\$ 155.00	\$/ton @ Lone Mountain (Haz)	(Contractor Inquiry, confirmed with call to LM)	
\$ 45.00	\$/ton @ Lone Mountain (Cover)		
\$ 79.50	\$/ton @ Itasca (Class 1)	(Contractor Inquiry, includes \$21.95 env fee from Landfill)	
\$ 22.00	\$/ton @ DFW (Class 2)	(Recent Historic Projects, with 5% inflation factor)	

BCY to Ton Conversion			
88.9	lb./cu ft.	dewatered sediment (clayey silt, loose)	
27	cu ft./CY		
2400.3	lb./CY		
1.20	ton/CY		
1.33	LCY/BANK CY		
1.60	Ton/Bank CY		