

**CLOSURE 13.6-ACRE OLD LANDFILL AREA**  
**CONSTRUCTION MEMORANDUM NO. 6**

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**TO:** Ms. Gerri Silva, M.S., REHS/EDC

**FROM:** Nick Farros, P.E./NJF Engineering

**COPIES:** Mr. Greg Stanton/EDC  
Ms. Kerri Williams/EDC  
Mr. Kevin Gilliland/EDC

**DATE:** October 4, 2007

**SUBJECT:** Final Pay Quantities  
13.6-Acre Class III Old Landfill Area  
El Dorado County, California

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The purpose of this memorandum is to present you with the final pay quantities for final closure construction of the 13.6-Acre Class III Old Landfill Area and provide you with an explanation as to how and why these final pay quantities differ from the quantities outlined in the Bid Schedules. The basis for developing the final pay quantities for this project were taken from the field "As-built" survey completed in August 2007 by F3 & Associates, Inc. (F3); the construction quality assurance (CQA) survey completed in August 2007 by Carlton Engineering, Inc. (CEI); my onsite observations during the construction period; and regular communications with CQA personnel and the County.

### **Background**

Waste Discharge Requirements (WDRs) Order No. R5-2006-0020 issued by the California Regional Water Quality Control Board, Central Valley Region (RWQCB), required the remaining 15.8 acres of the old Class III landfill area to receive a final cover consisting of the following:

- Two-foot-thick foundation layer;
- A one-foot-thick clay layer or geosynthetic clay liner (GCL);
- A 60-mil-thick geomembrane;
- A geocomposite drainage layer; and
- A one-foot-thick vegetative soil layer.

In June 2006, the County of El Dorado Environmental Management Department (County) contracted with NJF Engineering to prepare Final Closure and Postclosure Maintenance Plans, a Construction Quality Assurance Plan, Construction Bid Documents and provide Construction Administration services for construction of the Final Cover at the Union Mine Disposal Site. The Final Closure Plans were approved by the RWQCB and the California Integrated Waste Management Board (CIWMB) in June 2006 and July 2006, respectively. Because 2.2 acres of the 15.8-Acre Class III

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Old Landfill Area had not been filled to final grade, the RWQCB approved a phased construction approach which divided the final closure projects into two areas consisting of 13.6 acres and 2.2 acres. Bid Documents for final closure of the 13.6-Acre Old Class III Landfill area were completed in July 2006.

The County began their bidding process in July 2006 which consisted of advertising for qualified contractors to complete the Final Closure of 13.6 acres. Because time was of the essence, it was decided that the General Contractor will be responsible for all aspects of the final closure project, which included all earthwork and geosynthetics. Although it was known that the General Contractors would markup the bids of the subcontractors, specifically the geosynthetic's contractors, it was the most efficient course to take if we were to conform with the October 15, 2006, final closure completion date specified by the RWQCB in their WDR's Order No. R5-2006-0020. However, because the bids were not as competitive as we had hoped, the vegetative soil material identified for the site was no longer available, and the geosynthetic material would not be delivered to the site in less than 6 weeks, we decided to request an extension for final closure from the RWQCB until August 15, 2007. We received approval of our request from the RWQCB on September 6, 2006. Subsequently, it was decided to divide the closure project into three distinct projects:

1. Supply and Haul the Vegetative Soil Material to the site.
2. Furnish and Install the Geosynthetic Materials.
3. Perform Earthwork and Construct the Surface Water Control Drainage Control Facilities.

Although this process required additional project management from the County and project coordination from NJF Engineering, it was the correct path to take because of the substantial cost savings for the County. In addition, to save time and final closure construction costs, we approached the final closure construction of the 13.6-Acre Class III Old Landfill Area as a design/build project. This effort would utilize the current topographic information (Cartwright Aerial Surveys dated August 19, 2004), existing landfill engineering and geologic reports, and construction experience gained on similar projects at the Union Mine Disposal Site. This decision eliminated at least three (3) months of engineering design, approximately \$150,000 in consulting services fees and allowed the County to meet the August 15, 2007, deadline for closure construction of the 13.6-Acre Class III Old Landfill Area.

Accordingly, the final pay quantities determined by land surveys conducted by F3 and CEI would not have changed even if a new topographic survey would have been performed and an updated base grading plan prepared. The field design efforts were consistent with sound engineering principles

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and incorporated the current topographic features. Therefore, the following pay quantities have been computed based on the aforementioned field surveys and comply with the project specifications.

**Vegetative Cover Soil Material**

The line item in the Bid Schedule for this component of the Final Cover was 22,000 cubic yards. CEI's CQA survey to determine the in-place volume of the vegetative cover material placed resulted in a volume of 27,475 cubic yards. The increase in volume was primarily due to slope corrections (original volume was based on a two-dimensional surface area), diversion drainage berms and the additional one-foot of soil material required on the intermediate and lower benches as shown on the plans. In addition, because the onsite material was not acceptable for backfilling the anchor trenches, another 750 cubic yards of imported soil was used. Therefore, Joe Vicini Construction should be compensated for supplying 28,225 cubic yards of soil for the vegetative cover, anchor trenches and diversion berms.

**Geosynthetic Materials**

The line items in the Bid Schedule for LLDPE Liner and Double-Sided Geocomposite Drainage Layer were 592,500 square feet. Based on the CQA survey conducted by CEI, the panel layout drawing prepared by D & E Construction, Inc. and the actual lined area computed from the design drawings, the revised area is 615,775 square feet. This increase is primarily due to slope corrections and the additional liner required to ensure that the liner is terminated at the anchor trench located at the lower bench. In addition, the Construction Drawings require a 2-foot overlap on the northern and eastern boundaries. This increases the "lined" area another 3,400 square feet for the LLDPE and Geocomposite material. Lastly, the lower anchor trench requires that 2 feet of LLDPE be placed in the anchor trench and backfilled with soil for a future tie-in. The additional LLDPE required for this detail was 3,600 square feet. Therefore, D & E Construction should be compensated for furnishing and installing 622,775 square feet of LLDPE Liner and 619,175 square feet of Double-Sided Geocomposite Drainage Material.

**Earthwork**

The line items in the Bid Schedule for Clearing, Grubbing and Stripping; and Site Preparation and Grading are 592,500 square feet. Based on F3's "As-Built" survey, R. J. Gordon Construction should be compensated 595,600 square feet of Clearing, Grubbing and Stripping; and 620,752 square feet for Site Preparation and Grading. The additional 3,100 square feet of Clearing, Grubbing and Stripping was required for the 2-foot overlap and the additional 28,252 square feet of Site Preparation and Grading was due to slope corrections and additional work required on the lower bench and on the east facing slope.

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The line item in the Bid Schedule for Vegetative Cover Soil Placement is 22,000 cubic yards. Based on F3's "As-Built" survey, R. J. Gordon Construction should be compensated 25,990 cubic yards for Vegetative Cover Soil Placement. This increase was primarily due to adding an additional foot of soil material on the intermediate and lower benches as shown on the construction drawings.

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