



# Memorandum

## MONTEREY REGIONAL WASTE MANAGEMENT DISTRICT

DATE: May 17, 2021

Reviewed by:  Date: 5/14/21  
General Manager

TO: General Manager

FROM: Director of Engineering & Compliance - District Engineer

SUBJECT: Request for Change Order Approval to Contract with BSE General Engineering Inc. of Descanso, CA for Landfill Gas Collection and Control System (GCCS) Improvements

**RECOMMENDATION:** That the Board authorize the General Manager to execute a contract change order with BSE General Engineering Inc. (BSE) of Descanso, CA for Gas Collection and Control System (GCC) Improvements for the Monterey Peninsula Landfill in the amount not-to-exceed \$294,600.

### BACKGROUND

On July 16, 2016, the CEC released a notice of Grant Funding Opportunity GFO-15-606 Community-Scale and Commercial-Scale Advanced Biofuels Production. At that time, staff together with Cornerstone Environmental Group-Tetra Tech (CEG-TT) began development of conceptual project scoping and preparation of a pre-application submittal in the Community-Scale project category (public project). On November 14, 2017, the District's full grant application was submitted to the CEC proposing an estimated \$3,647,989 project to convert biogas to a compressed natural gas (CNG) transportation fuel project. The District proposed to treat biogas generated by existing permitted operations in order to produce a renewable natural gas (RNG) that can be compressed and used as a CNG fuel for motorized vehicles. A biogas treatment system would be used to remove most of the non-methane constituents in the biogas in order to produce RNG. The biogas conditioning system has been designed to have the capability to treat gas collected from existing permitted sources that include a) biogas from the Landfill (aka landfill gas (LFG)), b) biogas from the M1W regional wastewater treatment plant, or c) a combination of these two existing biogas sources. The RNG produced will be directed to the District's CNG fueling facility located at the Franchise Truck Yard (currently owned and operated by Trillium). The CNG fuel can be used by both the District's CNG fueled vehicles and the franchise waste collection trucks (currently GreenWaste Recovery's waste collection vehicles).

On December 7, 2017, the California Energy Commission (CEC) announced as part of their Second Revised Notice of Proposed Award - GFO-15-606 - Community-Scale and Commercial-Scale Advanced Biofuels Production Facilities that the Monterey Regional Waste Management District had been approved for a matching funds Grant. The Award consisted of a \$1,816,800 Grant to convert biogas to a CNG transportation fuel (\$3,647,989 overall project estimate (2017 basis)). On March 23, 2018, the Board approved the CEC Grant Award and initiated the project's design, permitting, and construction development.

In March 2019, the Board approved the purchase of the Biogas Conditioning system equipment from Unison Solutions, Inc (\$2,093,150). In addition, the Board approved the purchase of four media storage tanks (\$1,094,875) for the pre-treatment of all landfill gas prior to its delivery to the gas plant, the enclosed flare, and the Grant project's biogas conditioning system. The four media storage tanks are for removal of hydrogen sulfide (H<sub>2</sub>S) from the LFG to reduce sulfur oxide (SO<sub>2</sub>) emissions resulting from the destruction of LFG by the source abatement devices; the LFG flare and the LFG-fired engine-generator sets in the gas plant. Note that the H<sub>2</sub>S treatment system permitting with the Air District is incomplete and is the subject of their letter of May 13, 2021 that is listed under correspondences on the May Board Meeting agenda.

On February 12, 2020, Staff issued a bid solicitation to four construction companies for the construction of the various structural slab foundations associated with the biogas conditioning system equipment and media storage tanks. The Board subsequently awarded a construction contract to Monterey Peninsula Engineering of Marina, CA to complete the foundation construction work. The foundation installation was completed in 2020.

On March 13, 2020, the District received and publicly opened four bids for the construction of the CEC Grant Biogas Conditioning System, the H<sub>2</sub>S Treatment System, and the landfill's GCCS improvements. The four construction bids are summarized in the table below. At the regularly scheduled board meeting on March 20, 2020, the Board approved the award of a construction contract to the lowest qualified bidder, BSE General Engineering, Inc. (BSE) of Descanso, CA. The scope of work of the BSE contract consisted of two phases.

<b>NAME OF BIDDER</b>	<b>BID AMOUNT</b>
<b>1. BSE General Engineering, Inc.</b>	\$1,167,427.13
<b>2. Blue Flame Crew West, LLC</b>	\$1,579,370.00
<b>3. APTIME &amp; I, LLC</b>	\$1,725,678.00
<b>4. SCS Field Services, Inc.</b>	\$2,568,338.00

Phase I: The first phase of the work consisted of the installation of five (5) hydrogen sulfide removal tanks (owner provided) and high density polyethylene (HDPE) piping and piping support from an existing landfill gas (LFG) header to the tanks. Four (4) of the tanks associated with the new H<sub>2</sub>S Treatment System and the fifth tank as a 'polishing vessel' associated with the Biogas Conditioning System. The Phase I work also included the installation of fencing, improvements to the landfill's GCC generally consisting of the replacement of seven (7) laterals connections, 42 horizontal well heads, and 27 vertical well heads. This work was completed in 2020 with the exception of the fencing which is currently being installed at this time.

Phase II: The Phase II work generally involved the installation of vertical gas wells, and installation of associated HDPE piping to tie the wells into the existing gas collection and control system (GCCS). Twenty-five (25) vertical LFG wells were drilled to depths of about 70-100 feet, approximately 20 well abandonments, and lateral piping improvements associated with the LFG well installations and abandonments. The Phase II work of well drilling and well installation began in December 2020 and was completed in March 2021.

## DISCUSSION

The 2019 design of the Phase II LFG vertical wells was developed in part to address surface emission experienced in some portions of the landfill. MRWMD's standard vertical well design was modified to include a near surface geomembrane layer and well boot to provide a second barrier layer or 'seal' to mitigate surface emissions around the well. Surface emissions around vertical wells is an ever present challenge common to landfill gas control operations. The 25 wells installed for the Phase II work mainly consisted of new wells; 13 vertical wells primarily in the Module 3 area and 12 vertical wells primarily in the Module 1 and southern portion of Module 2 areas. These new wells have positively addressed surface emissions in those areas of the landfill. One of the reasons for this is that the new wells have perforated collection capacity beginning about 30 feet below the ground surface and capturing gas in more recently placed waste materials. In contrast, the existing wells were installed prior to placement of the recent waste materials and do not have the ability to collect gas from the recent waste materials.

It is for that reason that staff previously advised the Board on a couple occasions that additional LFG wells would be required to continue the improvements to the landfill's GCCS. The Board approved funding for GCCS improvements in the mid-year revisions to the District's FY20/21 budget. Staff has identified that 18 existing wells in the northern portion of the Module 2 top deck area and various areas of Module 3 should be replaced with new vertical wells. The existing wells have been raised 3 or 4 times as recent waste materials have been deposited and raised the elevation of the landfill by 15-25 feet. The new wells will provide collection capacity in both i) the vertical collection zone of the existing well and ii) the vertical collection zone of the upper solid piping portion of the existing well and that portion of the recent waste materials located in the zone 30 feet below existing ground surfaces. Staff has also identified two new wells in the western portion of Module 5 area and in the vicinity of several former horizontal collection wells that were removed from the GCCS to allow for the construction of Module 6. In summary, the Phase III improvements to the landfill's GCCS is proposed to consist of 20 new vertical wells and abandonment of 20 existing wells.

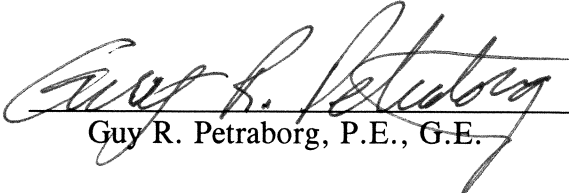
**FINANCIAL IMPACT**

The total budgeted cost of the change order for the Phase III GCCS improvements is estimated by staff to be \$294,600 for the added scope of work. This change order amount is less than the amount that was included in the amended 2020/21 budget recently approved by the Board.

GCCS Improvements		C.O. - Estimated Billing Quantities						
Item	Description	Qty			QTY	%	Unit Price	Total
1	Fittings, joints and valves	1			1	25%	\$ 205,512.82	\$ 51,378.21
4	6" SDR 17 Material	2000			2000	100%	\$ 5.07	\$ 10,140.00
5	6" SDR 17 Install Below Grade	2000			2000	100%	\$ 11.41	\$ 22,820.00
14	36" Gauge 16 Corrugated Material	100			100	100%	\$ 51.12	\$ 5,112.00
15	36" Gauge 16 Corrugated Install	100			100	100%	\$ 6.76	\$ 676.00
16	Lateral Connection Replacement	20			20	100%	\$ 838.57	\$ 16,771.40
17	Drill and Completion 36" LFG Well	20			20	100%	\$ 40.36	\$ 807.20
18	Well Material and Install	20			20	100%	\$ 3,581.87	\$ 71,637.40
19	2" QED Vertical Wellhead-Supply	20			20	100%	\$ 775.06	\$ 15,501.20
21	2" QED Vertical Wellhead-Install	20			20	100%	\$ 764.47	\$ 15,289.40
22	Decom/Abandon Wells	20			20	100%	\$ 1,021.41	\$ 20,428.20
31	Mobilization	1			1	100%	\$ 49,000.00	\$ 49,000.00
32	Survey	1			1	10%	\$ 10,058.82	\$ 1,005.88
					0	0%	\$ -	\$ -
<b>Orig. Base Contract Total \$308,421.03</b>				<b>Estimated Cost of Change Order</b>		<b>\$ 280,566.89</b>		
<b>Contract Total w/Change Order =</b>		<b>\$ 603,021.03</b>		<b>Estimated Contingency (5%)</b>		<b>\$ 14,033.12</b>		
				<b>Estimated Cost of Change Order</b>		<b>\$ 294,600.00</b>		

**CONCLUSION**

The proposed Phase III GCCS improvements are part of a normal and routine process to replace existing wells that have had deteriorated LFG collection performance and have been raised to higher elevations by recent waste materials disposal. The proposed Phase III wells will improve LFG collection and positively benefit surface emissions control in those portions of the landfill which are separate from the Phase II GCCS Improvements recently completed. Staff therefore recommends the Board authorize the General Manager to execute a contract change order with BSE General Engineering Inc. (BSE) of Descanso, CA for the Phase III Gas Collection and Control System (GCC) Improvements for the Monterey Peninsula Landfill in the amount not-to-exceed \$294,600.

  
 Guy R. Petrabor, P.E., G.E.