



1501 Omni Way, St. Cloud, FL 34773

March 25, 2015

Mr. Scott Sheplak, P.E.  
Office of Permitting and Compliance  
Division of Air Resource Management  
Florida Department of Environmental Protection  
2600 Blair Stone Road, MS 5500  
Tallahassee, Florida 32399-2400

Subject: H<sub>2</sub>S Scrubbing System Selection Notification  
Air Construction Permit No. 0970079-011-AC/PSD-FL-429,  
Facility ID No. 0970079  
J.E.D. Solid Waste Management Facility  
Omni Waste of Osceola County, LLC  
St. Cloud, Osceola County, Florida

Dear Mr. Sheplak:

Omni Waste of Osceola County, LLC (Omni) is submitting this notification as required of Air Construction Permit No. 0970079-011-AC/PSD-FL-429 (permit) issued for the JED Solid Waste Management Facility. Specific Conditions 6 & 7 listed in Section 3(A.) of the permit requires Omni to submit to the Florida Department of Environmental Protection detailed information on the selection of the H<sub>2</sub>S scrubbing system as soon as it becomes available. Omni has contracted with MV Technologies to supply a H<sub>2</sub>S treatment system capable of meeting the first stage H<sub>2</sub>S concentration limits of less than 160 ppm for the near term landfill gas flows in PSD Phase 1. The treatment equipment proposed by MV Technologies will be a dry-scrubber (sacrificial media) type system installed in the general location shown in the permit application documents. Attached for your information is the proposal provided by MV Technologies that describes the technology, overall system, and preliminary layout drawings/figures. The system will consist of 6 initial treatment vessels capable of treating existing and future landfill gas flows until such time the system would need to be expanded. If necessary due to increased landfill gas flows and/or H<sub>2</sub>S concentration levels, the system can easily be expanded by adding additional treatment vessels and piping.

I hope the information provided herein meets with your approval and conditions of our permit. Feel free to contact me at (904) 673-0446 or by e-mail at [michael.kaiser@progressivewaste.com](mailto:michael.kaiser@progressivewaste.com) if you have any questions or need additional information.

Sincerely,

A handwritten signature in black ink that reads "Mike Kaiser". The signature is written in a cursive style with a prominent initial "M" and a long, sweeping underline.

Mike Kaiser  
Southeast Region Engineer  
Progressive Waste Solutions



MV TECHNOLOGIES

Performance Based Sulfur Removal System PROPOSAL

J.E.D. Progressive Waste Solutions  
Landfill Gas Extraction System  
J.E.D. Landfill—St. Cloud, FL  
Project No. 20130028

Presented to:



Submitted on 02/05/15

by:

[tom.jones@mvseer.com](mailto:tom.jones@mvseer.com)

Thomas A. Jones

VP-Business Development

MV Technologies, LLC

751 Pine Ridge Road

Golden, CO 80403

Submitted electronically to:

Michael Kaiser

Southeast Region Engineer

Progressive Waste Solutions

E: [michael.kaiser@progressivewaste.com](mailto:michael.kaiser@progressivewaste.com)

C: 904 673 0446

1099 Miller Drive

Altamonte Springs, FL 32701

[www.progressivewaste.com](http://www.progressivewaste.com)

SIGNING

(In the manner required for execution of an agreement)

Progressive Waste Solutions  
signed by:

MV Technologies  
signed by:

Name: Michael Kaiser

Name: John Jenkins

Title: S.E. Regional Engineer

Title: President

Date:

Date:

## Table of Contents

Scope of Work.....	2
Executive Summary.....	2
Bid Details .....	3
Total Cost .....	3
Exclusions.....	3
Payment Terms .....	4
List of Recommended Spare Parts .....	4
List of Replacement Parts .....	4
Warranties .....	5
Execution.....	6
Proposed ‘Sacrificial Media’ Technology Overview.....	6
Proposed H2SPlus™ System Description Detail .....	8
Construction, Commissioning/Startup and Testing Services.....	11
Construction.....	11
Owner Responsibility .....	11
Pre-Start-up Checklist .....	11
Commissioning/Startup Plan & Checklist .....	12
Training .....	13
Equipment Testing Services .....	13
Estimated O&M Labor Requirements and Power Cost .....	13
System Operation Description .....	13
Additional Chemicals Required.....	14
Waste Generation Rates .....	14
Delivery Checklist.....	14
Statement of Experience.....	14
List of Drawings.....	15
Addendum – Delivery Schedule .....	16

## Scope of Work

### Executive Summary

MV Technologies' H2SPlus™, dry-scrubber (sacrificial media) systems are in operation throughout the landfill industry, successfully handling requirements as outlined in the J.E.D. Landfill RFP. Our Statement of Experience is attached, and references can be provided upon request.

MV Technologies has applied dry-scrubber (sacrificial media) technology for odor, H<sub>2</sub>S and Mercaptan removal for more than a decade in a wide variety of applications in the Food, Beverage and Agricultural Processing industries; Petroleum Refining and Processing; and Landfill and Municipal Waste Treatment installations. Clients include Warren County Landfill, Coors, Cargill, JBS, British Petroleum, Cape May Municipal Landfill, UGI's Broad Mountain Landfill, ESG's Advanced Disposal site in GA, and many others. In all cases, we have demonstrated lower capital cost, longer operating life and significantly lower operating cost when compared to other H<sub>2</sub>S removal systems.

As testimony to the superior performance of its approach, MV has successfully retrofitted competitor's iron sponge scrubbers and demonstrated a media life almost 3X longer, providing a dramatic reduction in operating costs; and our H2SPlus system was recently selected to replace a wet chemical scrubber system operating at a Municipal Landfill.

MV Technologies proposes to apply a 6 vessel configuration of its H2SPlus™ System Dry Media Scrubber to meet J.E.D. Landfill's specific criteria as well as achieve minimum annual operating and maintenance costs.

Unique features of the H2SPlus™ System that provide low capital and operating costs include:

- Incorporation of both the physical and chemical removal of H<sub>2</sub>S (via *traditional FeOH reaction*) in combination with complementary in situ biological activity that extends media life, reduces operating/service costs and increases operational safety.
- Use of fiberglass tanks that provide far greater corrosion resistance than the metal offerings of competitors – H2SPlus™ Systems have eliminated tank corrosion issues, with some installations still in service after nearly 20 years.
- A control architecture and operating design that is engineered to be "Set and Forget" and easily addresses changing H<sub>2</sub>S concentration levels with no need for system changes.
- The application of MVNets™ that makes for safe, easy, and low cost removal of spent media - historically, difficulty of removal has been an impediment to the use of dry-scrubber systems.



## Bid Details

### Total Cost

BID SCOPE: This RFP is for the manufacture, assembly and delivery of a landfill gas Sulfur Removal system as defined in the specifications. Scope includes shop drawings, testing, delivery, field adjustment, start-up services and training as defined in the specifications and compliant with the schedule of deliverables. Pricing provided per the Bid Schedule below: Prices exclude sales tax.

Item #	Item Description	# of Items	Unit Cost	Extended Cost
1	Complete Sulfur removal system	1		
2	Shipping to site* *see addendum for delivery schedule	1		
3	Commissioning spares and expendables (Includes first fill of media, chemicals, filters, etc. for initial operation)	1		
4	Insulation (vessels, skid piping) <sup>6</sup>	1		
5	Installation assistance, commissioning and training	1		
			Subtotal:	
Optional Items:				
			Subtotal:	
TOTAL PURCHASE ORDER Price:				

### Exclusions

1. Pricing above does not include any taxes, sales or otherwise, MV Technologies is not authorized to collect taxes in the State of Florida.
2. MV Technologies will not supply any gas header piping for the project. The gas header piping provided by others starts at the inlet and outlet gas valve on each vessel.
3. MV Technologies will not supply any electrical wiring between control panel and sumps, actuator valves.
4. MV Technologies will not supply the concrete pad.

5. MV Technologies will not provide any installation of the components provided. All installation is by others.
6. MV will not supply any insulation on this project. The PVC water recirculation lines may need to be insulated at the buyer's discretion.

#### Payment Terms

- 30% To be received 35 days after receipt of order
- 30% Due 95 days after receipt of order
- 30% Due upon demonstration that all components are ready to ship
- 10% Due 1 year after start-up or 18 months after receipt of order, whichever is earlier

#### List of Recommended Spare Parts

For MV H2SPlus System

Part No.	Description	Unit	Quantity	Unit Cost
GRP19/3 3 phase	Homa sump pump	Homa	1	
Bray 700012-12200536	Bray Actuator Motor	Bray	1	

#### List of Replacement Parts

Components subject to occasional replacement

For MV H2SPlus System

Component	Location	Supplier	Unit Cost
Bray Actuator Addition Valves	Air & Water	MV Technologies	
RTD (E-1T-PX12548X)	1 per media vessel	MV Technologies	
Thermowell	1 per media vessel	MV Technologies	
Homa Submersible GRP 19/3 (460V)Pumps	7 total in sump, 1 per media vessel + overflow	MV Technologies	

## Warranties

**General Warranty:** The equipment shall be warranted to be free from defects in workmanship, design and materials. If any part of the equipment should fail during the warranty period, it shall be replaced and the equipment shall be restored to service at no expense to Owner. The warranty period shall be 12 months from the date of documented successful startup with a maximum period from shipment of 18 months.

**Performance Warranty:** MV Technologies warrants, for a period of ten years, that the proposed H2SPlus™ or systems will meet or exceed the requirements of J.E.D. Landfill (St. Cloud, FL.) as stated in the Project No. 20130028. This warranty is contingent upon: the user's demonstration that system application has been, at all times, within the landfill gas flow rates and H<sub>2</sub>S loading provided in the Equipment Purchase Specification; the user's demonstration that MV's Operations and Maintenance procedures have been followed; the user's demonstration that media use has not exceeded 13-pounds of H<sub>2</sub>S per cubic foot of BioActive Media before change out; that on-site annual system performance inspections are conducted by MV Technologies authorized personnel and that recommended necessary adjustments to operating conditions are made in a timely fashion. This warranty may be extended at the end of the ten year period by mutual agreement of the parties.

**Limitations of Remedy and Liability:** In no event shall MV Technologies be liable for any special, incidental or consequential damages based upon breach of warranty, breach of contract, negligence, strict tort or any other legal theory. Such damages include, but are not limited to, loss of profits, loss of savings or revenue, loss of use of the Bio-Filter unit and/or the system to which it is attached or has been made a part of, costs of any substitute equipment, downtime, the claims of third parties, including customers, and injury to property.



## Execution

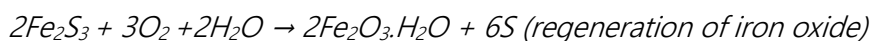
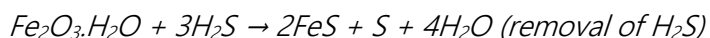
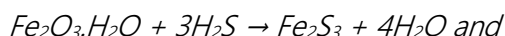
### Proposed 'Sacrificial Media' Technology Overview

H2SPlus™ Systems are based on dry-scrubber technology that employs long-proven, low-cost iron hydroxide coated media which MV Technologies has enriched with select bacteria and complemented with other system design changes to extend media life and dramatically increase ease of system use.

The core element in an H2SPlus system is our improved reactive material, a High Performance Upgrade of Iron Sponge, itself a hydrated iron oxide on a carrier of wood particles, which has been used for many years to remove H<sub>2</sub>S from gas streams. MV Technologies has significantly upgraded the performance of this tried and proven technology by applying biological agents to the iron sponge and making other system design changes. The biological reactions result in removal of numerous non-sulfur bearing species such as VOC's and readily biodegradable organic compounds and provides improved re-oxidation of iron sulfide compounds (troilite and pyrite) to regenerate iron oxides for subsequent reactions. All this adds up to extended life of the reactive media and lower total cost of operation.

There are no fundamental limits to the application of the H2SPlus system technology – whether in total flow rate or H<sub>2</sub>S concentration. System design can achieve H<sub>2</sub>S reductions to 1ppm and handle flow rated in excess of 15,000 cfm.

The basic reactions are shown below:



Importantly, the chemical reaction in an H2SPlus system eliminates H<sub>2</sub>S. Compare this to filter or capture systems such as those built on Activated Carbon that typically just trap the H<sub>2</sub>S and leave you with the job of "transporting" the problem to your disposal site to deal with.

In addition to developing improved reactive media technology, MV has continued to develop a large portfolio of engineering optimization techniques that are brought to bear on your specific conditions such as flow rate, H<sub>2</sub>S concentrations, other gas constituents, site foot print constraints, climate conditions, etc. The result is an optimum balance of low operating cost and H<sub>2</sub>S limit control.

Our proposed 7-Vessel H<sub>2</sub>SPlus™ System:

- Meets all specific operating requirements as described in the J.E.D. Landfill RFP – the system will readily handle fluctuating H<sub>2</sub>S landfill gas concentrations and deliver the target outlet concentrations without system upset.
- Requires little operator attention – relying on straight forward controls and robust design the system is truly “set and forget” – and will not only meet the minimum attention requirements stated in the RFP but go beyond the intent of those criteria and deliver long term stable and predictable performance with little operator attention.
- Operates at 100% effectiveness immediately upon startup and does not require any maturation period for full effectiveness, as is standard in biological scrubbers.
- Is NOT susceptible to upset conditions such as large swings in H<sub>2</sub>S concentrations or changes in temperature that have serious performance impact on biological scrubbers.
- Converts all of the H<sub>2</sub>S in the treated portion of the landfill gas stream into pyrites and elemental sulfur as a direct result of our media formulation. Spent media can be land applied or disposed of as non-hazardous waste.
- Operates with no need for a water treatment system or sewer line access. The system proposed will require approximately 1,000 gallons of pH neutral make up water per week and generate 8,000 gallons of waste water per full-system media change out...estimated once every 10 to 12 months.
- Provides for staggered tank media change out cycles such that the scrubber continues to condition the landfill gas stream during media replacement or other maintenance events.
- Requires no hazardous material handling such as sodium hydroxide.
- Delivers the required performance without the need for liquid effluent treatment systems as are typically required in biological systems.
- Meets performance requirements with minimal pressure drop across the system. This translates to lower blower horsepower requirements and significant savings in power costs.
- At time of media replacement, MV Technologies top-entry tanks, in combination with our MVNets™, make the process simple and efficient. MV’s leadership position in dry scrubber technology is based not only on the engineering of cost-effective H<sub>2</sub>S conversion reactions, but also importantly, designing the whole process to be simple and safe for our clients.

## Proposed H2SPlus™ System Description Detail

To meet the specified requirements, MV Technologies proposes to deliver a 7-Vessel configuration of our H2SPlus™ System that incorporates a sump and recirculating water system to provide vessel temperature control and maintain media moisture and pH levels for optimum life. The system also includes a bypass and blend feature (manual control) that allows the operator to treat only the amount of gas required to meet emission limits, further reducing operating costs.

Major System Elements include:

- Top-entry fiberglass vessels are filled with iron sponge media, augmented with bacteria additives to treat the incoming gas to reduce H<sub>2</sub>S concentrations. Each tank has a gas isolation valve on the inlet and on the outlet line. The size and quantity of vessels for a system are determined by client operating requirements. MV Technologies specifically engineers these systems to optimally meet requirements, while minimizing operational costs including media consumption.
- Bio-Activate Media, BAM™, is our iron sponge reactive material. MV Technologies' addition of biological agents to the media results in removal of numerous non-sulfur bearing species such as readily biodegradable organic compounds, and improves re-oxidation of the iron sulfide compounds to regenerate iron oxides for subsequent reactions. All of this adds up to extended life of the reactive media and lowers the cost of operation.
- A set of MVNets™ are layered within each vessel to make media changeover simple and safe. Each set is specifically designed based on vessel diameter, along with media bed height, and lifting constraints. During the placement of media, nets are laid in series as further described in our H2SPlus *IOM Manual* [attached.]
- An FRP sump tank with one sump pump per media vessel are utilized to recirculate water through the vessels and keep the media at an appropriate moisture and temperature level. The sump has a level transmitter and an actuated valve to add water to the sump. Excess water will be pumped by the overflow to an appropriate location. The sump pumps typically operate once per day for several minutes.
- The installed final grade elevation of the media vessels is required to be 20" higher than the final grade elevation of the sump tank.

The specific 6-Vessel configuration proposed for the J.E.D Landfill includes:

- Qty. (6) un-insulated vessels (14' dia. X 11'-6" tall) – operating in parallel configuration.
  - Design capacity of 1,386 ft<sup>3</sup> of BioActive Media in each vessel
  - Fully removable flanged and domed lid
    - Gasket
    - Bolt kit
    - Spray Nozzle
    - Drain Screen
  - Maximum rated pressure to 3 psi
  - Maximum rated vacuum 3 psi
  - MV Technologies designed media support system and gas distribution system
  - Qty. (12) 12" flanged inlet/outlet
  - Qty. (12) 12" Inlet/outlet vibration isolators and butterfly valves for each vessel.
    - Proco vibration isolator/expansion joint (2 on each vessel)
    - Bray butterfly valves, lug style, cast iron housing, SS disk and stem, Buna seat (2 with motor operator, per vessel)
    - Bolt kits for all valves
- Recirculation System (Class I, Div 2)
  - Sump: Designed for system operating pressure 2.5 psi
    - One 1) HDPE 8' diameter x 8' deep discharge
  - Sump pumps sized to provide recirculation of MV Technologies Bacteria, Nutrients and water required to maintain correct moisture content of BioActive Media:
    - Submersible sump pump sized according to system requirements
    - Sump level transmitter
- Online BioActive Temperature Monitoring System
  - 3-wire 100 OHM RTD with Explosion Proof head. Field wiring between temperature control unit and RTD's required.
  - Thermo-well (for RTD) thermometer for local display

- Bio-Active Media Removal System
  - 6 sets of 4 MV Nets designed and fabricated for this specific application
  - Each MV Net with a minimum lifting capacity of 13 tons
- Flow Switch
  - MV Technologies Specified
- Qty. (1) 14" bypass valve with manual gear operator and bolt kit
- Drain water pressure equalization tank, 15 gallon capacity
  - With level transmitter
  - Motor operator stainless drain ball valve
- Spare Inventory (included in initial system price)
  - One spare sump pump
- The pressure drop across the tanks will be  $\leq 15$ " water column, at a treated flow rate of 5,500 scfm. Approximately 1,000 scfm. will be bypassed to achieve the blended H<sub>2</sub>S outlet concentration requirements.
- Operating pressure inlet equals 2.5 psig and outlet equals 2.0 psig
- The system is designed for use with our BioActive Media BAM™, a combination and arrangement of commercially proven iron sponge, coupled with MV's bacteria additives.

NOTE: MV typically adds O<sub>2</sub>, through the introduction of small amounts of ambient air to the LFG. This increases the efficiency of the reaction between the H<sub>2</sub>S (and other sulfur compounds) and the media. Due to the current LFG quality at the JED landfill, specifically the relatively low levels of H<sub>2</sub>S and the amount of O<sub>2</sub> present in the LFG, MV feels it is unnecessary to take this additional step. If in the future H<sub>2</sub>S concentrations increase or LFG O<sub>2</sub> levels decrease it may be necessary to add O<sub>2</sub> through the addition of a small auxiliary blower.

## Construction, Commissioning/Startup and Testing Services

### Construction

MV will provide on-site engineering support at time of equipment delivery, time of tank setting and time of equipment checkout prior to startup.

### Owner Responsibility

Owner is responsible for the following items:

- Concrete pad for media tanks
- Installation of below ground sump tank
- Installation of drain water equalization tank
- Installation of all recycle spray and return water piping
- All electrical connections of supplied equipment
- Placing of rock and media in vessels
- Installing lids on vessels
- Gas piping to and from the vessel

Owner provided utilities required for operation:

- Plant water; make up waste 1,000 gallons/week and 8,000 gallons of waste water per media change out approx. once per year at initial flow rate.
- 480-Volt, 3 Phase Power
- 120-Volt, Single Phase Power
- Sewer connection

### Pre-Start-up Checklist

Completion of the items below is required prior to MV Technologies system startup and commissioning.

- Verify all piping has been installed per provided drawing package.
- Verify media has been installed per provided instructions. MV will provide on-site support for the initial media installation.
- Verify all pipe and lid flange bolts and unions are tightened to correct torque specification.
- Verify that all field wiring is terminated within the control panel.
- Verify all field wires are labeled with the same designator as listed on the control panel terminal blocks. Notes:
- Verify all connections to/from the motors. Make certain of proper connections, taped, and that the unit is grounded. Note: Wire nuts are not an acceptable method for wiring motors

with a horsepower rating above 5-hp. MV Technologies recommends split bolt connections, or equivalent, on all motor terminations. Split bolt shall be jacketed with 15-20 wraps of vinyl electrical tape, sticky side out (Scotch Super 33+), 15-20 wraps varnished cambric tape (Scotch 2520 with Adhesive), 20-25 wraps of linerless rubber splicing tape (Scotch 130C), and a final jacket of 15-20 wraps of vinyl electrical tape sticky side in (Scotch Super 33+). Notes:

- If the unit has an external 480VAC to 240 or 120VAC transformer, verify the transformer neutral is bonded to ground.
- If the unit has an external 480VAC to 240 or 120VAC transformer, verify all unused taps are capped and taped.
- If the unit is equipped with local motor disconnects, open them and verify they are wired correctly. Also make a note of the installation on the electrical prints if it is not already noted. Notes:
- Verify hazardous location conduits & wiring systems are provided per Article 500 of the NEC, or as required by state and/or local codes.

#### Commissioning/Startup Plan & Checklist

The following items will be incorporated in the system Commissioning/Startup Plan developed specifically for this site by MV Technologies personnel.

- Turn on power to control panel.
- Verify that motor starter overloads are set correctly to the motor nameplate.
- Verify correct rotation of motors. Both the regeneration air blower (if equipped) and pump motors. (see pump manual for methods of verifying rotation)
- Verify correct running amps on all motors.
- Set sump level switch points based on level transmitter in the PLC to the levels indicated on the sump drawing.
- Fill sump with water to normal level.
- Set temperature set points on bed temperature monitors. Verify correct temperature reading.
- Set sump pump and sump water fill timers.
- Open all treatment vessel LFG valves, labeled V101, V102, V201, V202, V301, V302, V401, V402, V501, V502, V601, V602, V701, V702, V801, AND V802.
- Start LFG flow by opening tank inlet and outlet LFG valves. Open bypass valve.
- Direct flow of LFG to the H<sub>2</sub>S treatment system with outlet directed to the flare.
- Set low LFG flow switch to ~50% of normal flow.
- Verify pump(s) and regeneration air intake valve run and stop according to all parameters in the control narrative.

- Add BAM agent to sump.
- Turn all controls to auto.
- Verify all water circulation valves are open.
- Monitor flare LFG content (methane or O<sub>2</sub> content)
- Once air has been purged (system filled with gas) and LFG content has stabilized, direct LFG to the engines.
- System is now online.
- Verify LFG is flowing and confirm outlet H<sub>2</sub>S concentration is treated to the correct level. This concentration is set by opening/closing the manual bypass valve.

### Training

After startup, an MV Technologies Engineer will work with a designated Owner Representative to develop IOM documentation specifically for the client's system.

MV Technologies Engineers will provide operations training to Owner designated staff. Hours at a minimum will meet RFP requirements. On line training for media change out is also provided and MV will provide on-site support and training at the time of the first media change.

### Equipment Testing Services

Panel checkout will be performed prior to shipping. All other rotating equipment, instruments, and valves shall be tested prior to, or during, startup.

## Estimated O&M Labor Requirements and Power Cost

### System Operation Description

MV Technologies H<sub>2</sub>SPlus™ Systems typically require only occasional operator attention, even when installed with minimal instrumentation and control automation. The reactions which reduce H<sub>2</sub>S to elemental sulfur and other compounds occur in a fixed bed of bio-activate iron sponge media contained in one or more fiberglass vessels. Supporting systems recirculate water and introduce air into the system, to ensure the bed is kept moist and to help with media regeneration

An operator will typically measure H<sub>2</sub>S concentrations and pH conditions on a weekly basis, and even less, in the event that control automation is included in the system. Occasional addition of sodium carbonate to the sump system for pH adjustment is required. Control of the pH is readily accomplished through periodic introduction of sodium carbonate (soda ash) into recirculation sump, as determined necessary.



Resources required for operation of the H2SPlus System are as follows (see addendum for estimated annual changeout requirements):

- Weekly: 8 hrs. labor
- Monthly: 32 hrs. labor
- Annually: 384 hrs. labor
- Power costs: ≤ \_\_\_\_\_ /year (assumes adequate O<sub>2</sub> in LFG)
- For media changeout labor (see addendum)

#### Additional Chemicals Required

- Reactive media (BAM) landed pricing \_\_\_\_\_, annually, based on initial design for flow and concentration in year one. Price per unit quantity will be maintained through the end of 2017. Annual media consumption will vary proportionately with variations (+/-) in treated sulfur load.
- Sodium Carbonate: 5,000 lbs. per year ≤ \_\_\_\_\_ /year

#### Waste Generation Rates

- 8,000 gallons of water, per full 8-vessel system changeout
- ~450 tons of spent media per changeout

#### Delivery Checklist

- Seven (7) vessels: weight ~7,000 lbs./each
- Seven (7) lids: weight ~1,000 lbs./each
- One (1) sump tank: weight ~5,000 lbs.
- One (1) bundle of 2-inch schedule 80 PVC pipe, 20-foot lengths each.
- Three (3) pallets of miscellaneous pipe fitting, pumps, valves, bolts, instruments, MV Nets
- One (1) pallet of control panel
- Approximately 90 tons of media support material (i.e., 1-1/2" to 2" of river rock)

#### Statement of Experience

The first MV Technologies H2SPlus™ system, installed in 2001, was placed in service to remove hydrogen sulfide gas from a biogas stream collected from a covered lagoon at a Cargill meat packing plant in Ft. Morgan, Colorado.

Since 2001, MV Technologies has installed numerous H2SPlus™ systems, providing H<sub>2</sub>S solutions for facilities such as landfills, waste water treatment plants, covered lagoons, anaerobic digesters at food and beverage plants, and farm-based anaerobic digesters.

Following is an abbreviated list of just some of the various projects completed by MV Technologies:

#### Landfill Gas (1500-5500cfm; 1200-3500ppm H2S)

- Ada County Landfill, Boise, Idaho
- Warren County Landfill, New Jersey
- Cape May Municipal Landfill, , New Jersey (three projects)
- Emerald Park Landfill, Muskego, Wisconsin
- Pecan Road Landfill, Decatur, Georgia

#### Digester Biogas

- MillerCoors Brewery in Golden, Colorado
- MillerCoors Brewery in Ft. Worth, Texas
- Spoetzel Brewery in Shiner, Texas
- Potawatomi Digester, Milwaukee, WI (Biothane, LLC)

#### Covered Lagoons

- Ft. Morgan, Colorado (Cargill)
- Fresno, California (Cargill)
- Dodge City, Kansas (Cargill)

#### List of Drawings

- P and ID / PFD
- General arrangement
- Media vessel detail drawing
- Sprinkler detail
- Drain screen detail
- Thermo well detail
- Sump tank detail
- Pressure equalization drain tank detail
- Control panel schematics and layout

## Addendum – Delivery Schedule

### System Delivery Date:

MV's H2SPlus™ System as specified in The Proposal for the J.E.D. Landfill, Project No. 20130028 dated February 5<sup>th</sup>, 2015 will be available for shipment to customer site on or before June 1<sup>st</sup>, 2015

This schedule assume that Seller will receive a Purchase Order on or before February 11<sup>th</sup>, 2015.

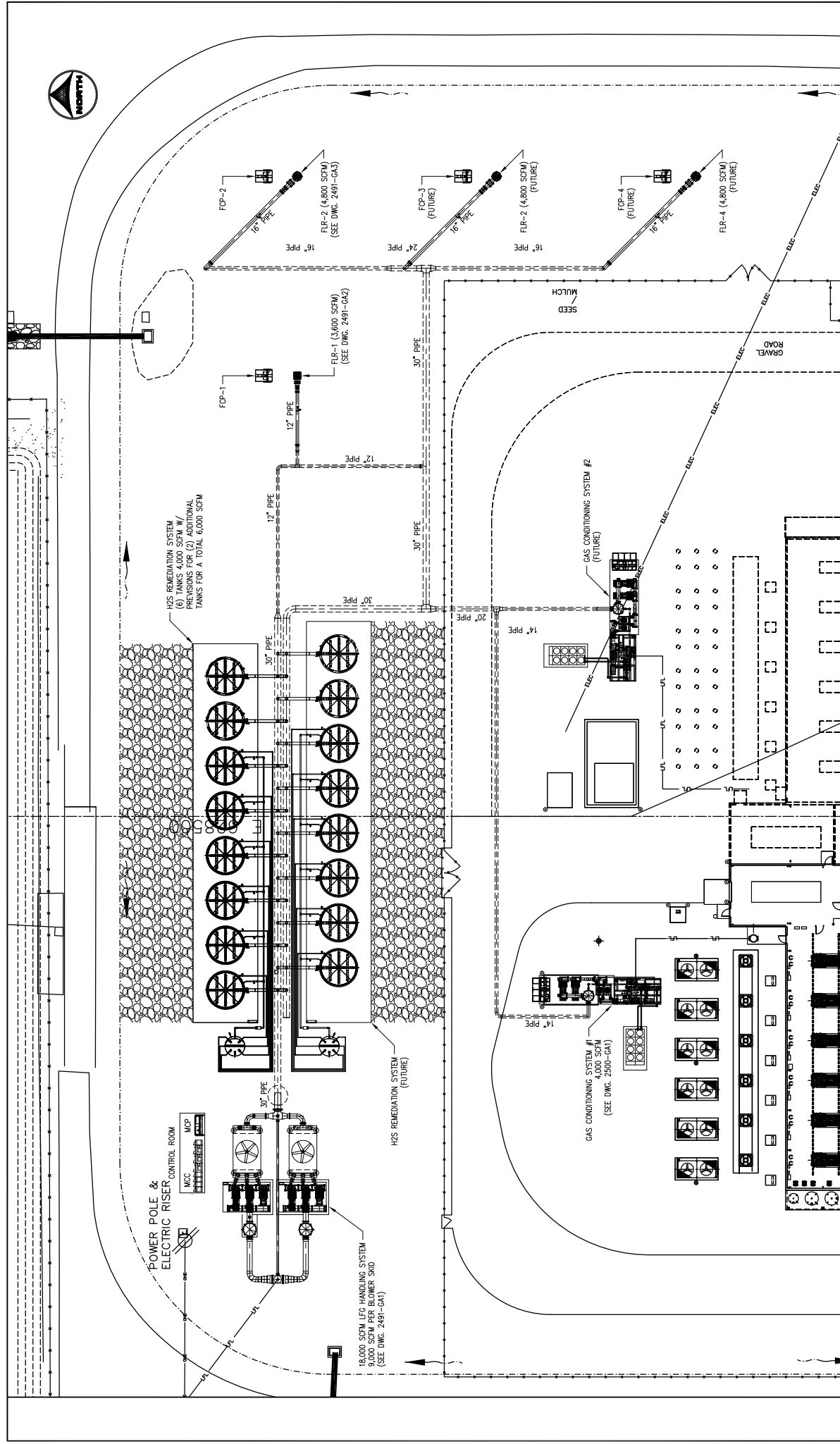
This schedule assumes that Owner will approve or have approved MV Submittals within 10 business days of Owner's receipt thereof. System Delivery Date will be adjusted for delay in review and approval of Submittals beyond this assumed response time.

Delays in transport, or any other matters beyond the control of MV are not its responsibility.

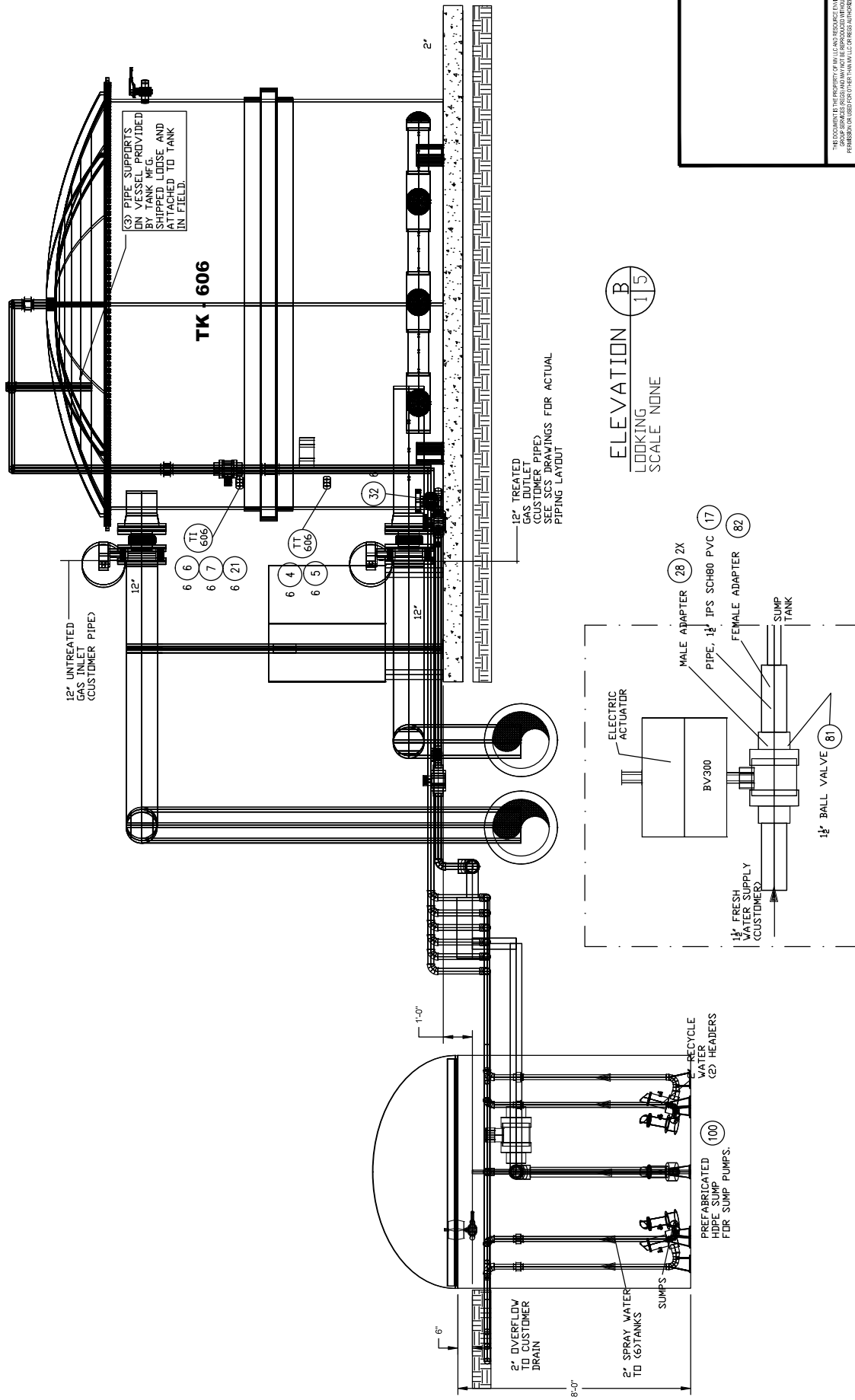
Neither party shall be liable to the other hereunder for In the event of any delay or failure of performance due to fire, earthquake, flood, explosion, accident, dispute with or inability to secure workmen, lack of material, lack of facilities, Act of God, voluntary or involuntary compliance with any valid or invalid law, order, regulation, request or recommendation of any governmental agency or authority, lack of transportation facilities, or any other cause beyond the its control and without the its fault or negligence of a party the effected party may be entitled to an extension of time, to the extent granted by the Owner, provided, however, that when Seller has reason to believe that its performance hereunder as scheduled will thereby be affected, written notice setting forth the cause thereof and the extent of the delay shall be given immediately to Buyer.

### Liquidated Damages:

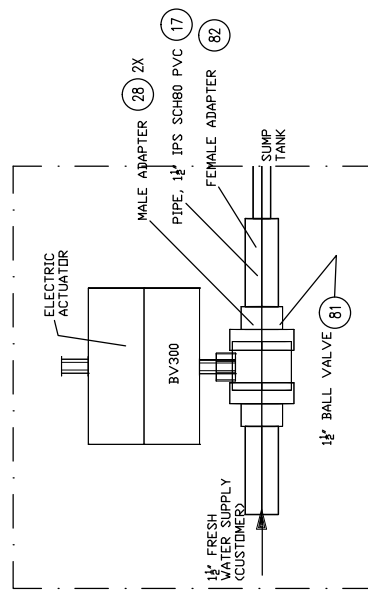
Seller will pay to Owner, the sum of \_\_\_\_\_ per day for each day of unexcused delay in meeting the System Delivery Date as specified above, subject to the noted qualifications, and Owner itself being assessed Liquidated Damages.



<p><b>LFG Specialties, L.L.C.</b>          16406 US ROUTE 224 E          FINDLAY, OH 45840-9761          TEL: (419) 499-1100          FAX: (419) 499-1101          WEBSITE: www.lfg.com/fsppecialties</p>		<p>THIS DRAWING REPRESENTS INTELLECTUAL PROPERTY OF LFG SPECIALTIES, L.L.C. AND IS THE PROPERTY OF LFG SPECIALTIES, L.L.C. THE ORIGINAL IS KEPT AT THE OFFICE OF LFG SPECIALTIES, L.L.C. ANY REVISIONS TO THIS DRAWING SHALL BE INDICATED BY A REVISION CIRCLE AND SHALL NOT BE HELD LIABLE FOR ANY CHANGES MADE TO THIS DRAWING WITHOUT THE EXPRESS WRITTEN CONSENT OF LFG SPECIALTIES, L.L.C.</p>		<p>OUTDOOR - CALL CHARGES</p>		<p>DATE: 12/15/14          DATE: 03/17/15          BY: N.I.S.          BY: C. KING</p>		<p>DESCRIPTION / ISSUE</p>		<p>REV: A          PRELIMINARY, NOT FOR CONSTRUCTION          DATE: 12/15/14          BY: N.I.S.</p>		<p>DATE: 11/26/14          DATE: 11/26/14          BY: N.I.S.</p>		<p>PROJECT NO: 132288</p>		<p>PROJECT: LFG EXTRACTION, DISTRIBUTION &amp; FLARING SYSTEM          LFG SOLID WASTE MANAGEMENT FACILITY          SAINT CLOUD, FL</p>		<p>SHEET NO: 2491          SHEET: SITE          OF: 1</p>	
---	--	---	--	-------------------------------	--	--	--	----------------------------	--	--	--	---	--	---------------------------	--	---	--	---	--




ELEVATION B  
 LOOKING 15  
 SCALE NONE



DETAIL 5  
 SCALE NONE

SCALE: NTS	REV: 0000	SHEET: 5 OF 7
DRAWN BY: SSW	DATE: 09FEB2014	
CHECK BY: XXX	DATE: XX/XX/XX	
CAGE CODE:	CONTR. #	XXX
SIZE	DRAWING #	21860.400
D	REV	A

DRAWING TITLE: 6 TANK, 14FT DIAMETER TANKS  
 JED LANDFILL, ST CLOUD FL  
 H2S REMOVAL SYSTEM  
 SECTION END VIEW


  
 NV TECHNOLOGIES  
 11000 W. 10TH AVENUE, SUITE 100  
 DENVER, CO 80231  
 PHONE: 303.751.1000  
 FAX: 303.751.1001  
 WWW.NVTECHNOLOGIES.COM

ALL DIMENSIONS ARE IN INCHES  
 UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS ARE IN INCHES  
 UNLESS OTHERWISE SPECIFIED  
 UNLESS OTHERWISE SPECIFIED