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Subject: Bridgeton - LFG stream Odor Treatment Pilot Test - Draft Work Plan
Date: Thursday, July 24, 2014 2:04:48 PM
Attachments: [Bridgeton - LFG Odor Evaluation Work Plan 24July2014.pdf](#)

Chris and Jeremy:

As per amended Paragraph 27-Odor Control, Item E, of the First Agreed Order, Bridgeton Landfill has engaged SCS Engineers to conduct an odor analysis and evaluation as outlined in their June 16, 2014 memorandum.

This submittal presents a draft of the relevant work plan for investigation, pilot test, and assessment to treat the odoriferous compounds. Per the Second Amendment conditions, this work plan is to be provided for review to MDNR and SLCHD by July 31, 2014. However, to be proactive on this item, Bridgeton Landfill has ordered the equipment for the onsite pilot test, and it is being received at the site next week. SCS is scheduled to assemble the equipment August 4, 2014 and begin the four week pilot test. Your review comments/approval of the work plan would be appreciated in order to meet the above project schedule.

Respectfully Submitted,

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SCS ENGINEERS

July 24, 2014

WORK PLAN

ODOR EVALUATION PILOT STUDY

SCS Engineers (SCS) has been contracted to assist Bridgeton Landfill (Site) in conducting an analysis of compounds within the landfill gas that may contribute to odors from the gas collection and control system, and evaluating potential control mechanisms to remove odor causing compounds. As part of this assessment, SCS has proposed to evaluate a pilot test system that may be used to help remove compounds found in the landfill gas that could contribute to odors from the gas system at the site. This Work Plan provides an overview of the proposed scope and approach to complete this assessment.

INTRODUCTION

SCS was contracted to evaluate the gas system infrastructure and operations at the Bridgeton Landfill and to identify potential sources of, and potential treatment technologies for, odors that may be associated with the gas collection system. As an initial part of the evaluation, two rounds of grab samples were taken from various points within the gas system. While the grab samples are not considered representative of the site because they were not duplicated at any one sampling location and were not sampled over multiple times to replicate results, the preliminary results provide guidance for development of an initial pilot study to assess odor sources and treatment options.

Based on these preliminary sampling results, the pilot test will be focused on the test system effectiveness of removing total reduced sulfurs (TRS) from the total gas stream. As the pilot study and assessment continues, additional testing may be appropriate to further the odor evaluation.

PILOT TEST SETUP

To evaluate a gas treatment system for potential utilization on site, a small-scale pilot test system is being constructed by MV Technologies (MVT) for use at the site. The pilot test will utilize their "OdorFilter" unit. The test unit will only use a small amount of collected landfill gas to test the removal capabilities of the filter media. The following describes the installation of the pilot test system at the Bridgeton Landfill.

Installation

The pilot system will be installed in the main flare yard, with the inlet of the pilot equipment being connected to the outlet of the existing blower skid (pressure side). The outlet of the pilot system will be piped back to the inlet side of the existing blower skid (vacuum side), to create a closed loop system, and minimize potential landfill gas odors. The inlet pipe will be connected to the pilot test system which consists of two over-pack drums of filter media, arranged in series. The pilot treatment system will treat 3 to 25 scfm of landfill gas.

Installation of the pilot test equipment will require one day of onsite assembly. Site configuration, sample train schematic, and equipment photo are shown in Figure 1, 2, and 3, attached.

Media Adjustments

The goal of the pilot study will be to assess effectiveness of the treatment media on the landfill gas at Bridgeton Landfill and to assess preferred treatment conditions. To determine the efficiency of the pilot treatment system, gas samples will be taken at the inlet, between the first and second stage media, and the outlet of the pilot treatment system. Initial gas samples will be taken about two hours after system initiation, so as to provide a base line value of comparison to future sampling. Gas samples will be collected during each phase, as the microbes within the media reach a repeatable state of sulfur removal. The media must be kept at the target moisture level with the manual periodic addition of water. After each round of gas samples, the results will be analyzed by MVT to determine modifications to the media to affect the sulfur compound(s) removal efficiency of the pilot system.

The initial run of the test will likely be 5 to 7 days before repeatable results can be expected. Thereafter, the number of tests will be based on the removable efficiencies of the initial test. Three iterations are expected so as to push the variable limits and estimate the functional relationship curve. If there is no immediate removal success, additional attempts will be made to confirm the results. The results will then be used to assess the next evaluation phase of the pilot study. Four weeks total time is estimated to complete this reiterative process.

Gas Sampling

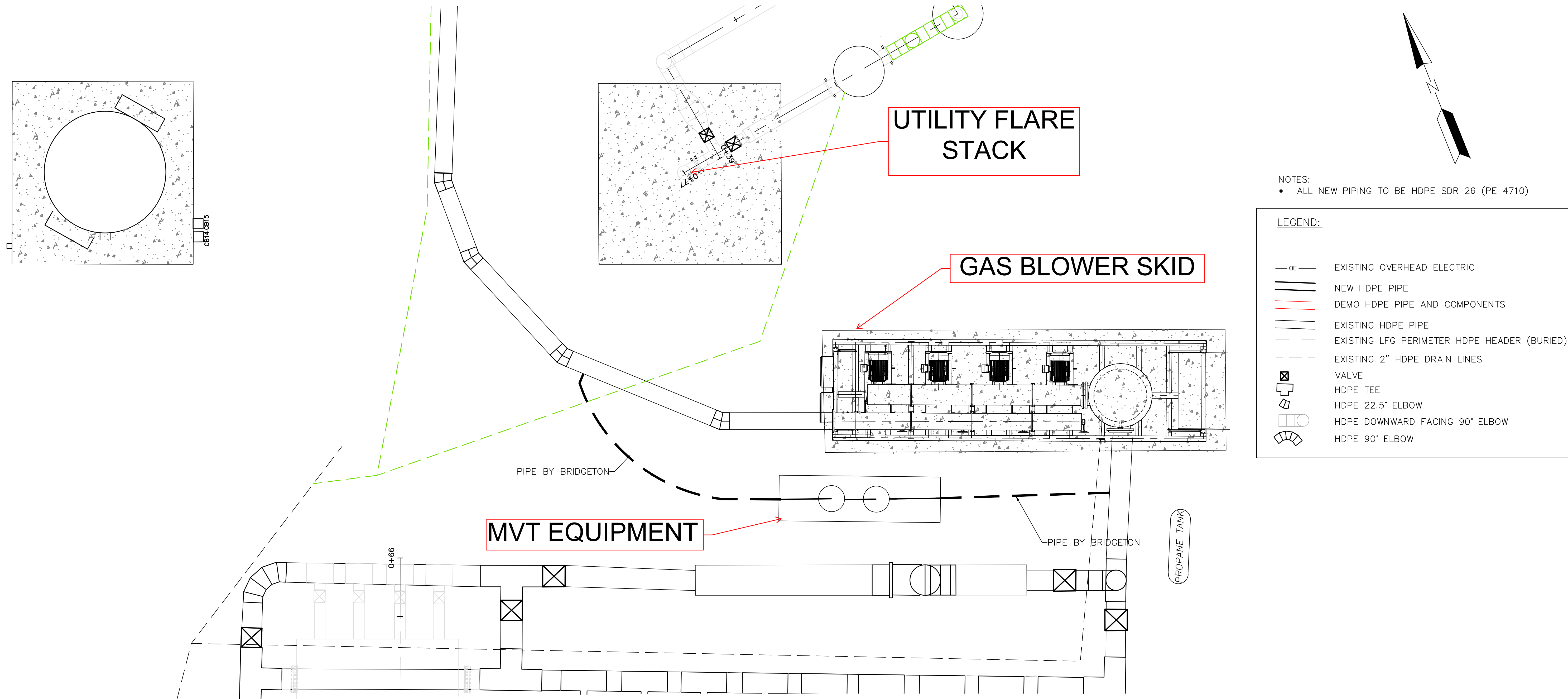
At various times during the pilot study, as described above, gas samples will be collected from the sampling ports of the pilot system. The gas samples will be collected in silonite SUMMA canisters sent to a laboratory for analysis by ASTM D-5504 (TRS constituents) and Method 3C (major gas compositions).

CONCLUSIONS

After the various test phases, MVT will prepare a summary report detailing the lab results and the pilot test system's effectiveness at removing total reduced sulfurs (TRS) from the total gas stream. While individual sulfur compounds may be reviewed for individual removal effectiveness, the TRS removal effectiveness is what will be reported and compared to other technologies to determine success of the pilot study. If the pilot treatment system is successful, MVT will develop a design to implement the most successful phase on a full-scale basis. A preliminary report will be prepared within 45 days after that last round of gas sample results having been received.

If the pilot treatment system testing with MVT is unsuccessful in reducing TRS, alternate technologies will be reviewed for appropriateness to the Bridgeton landfill gas constituents.

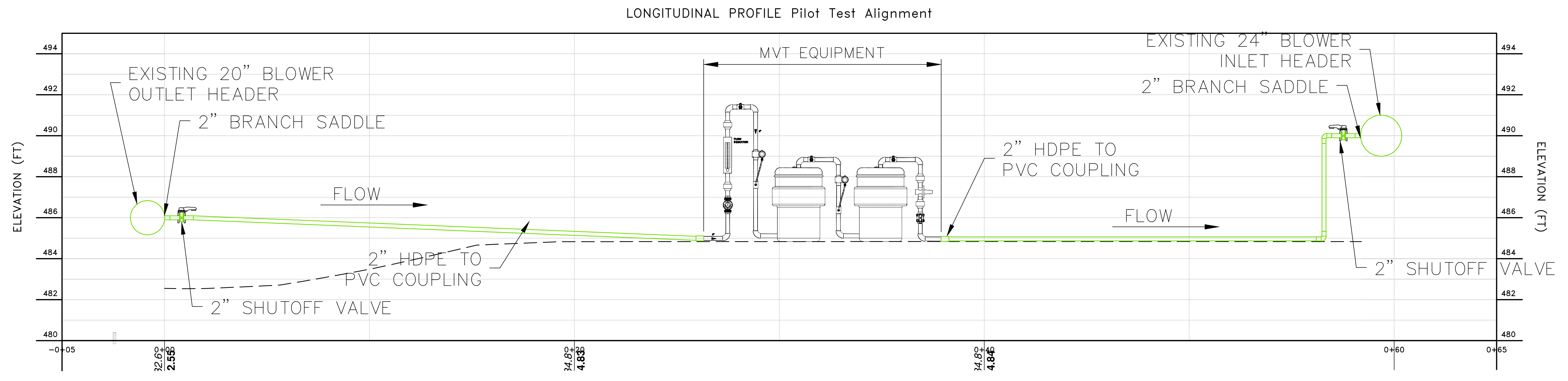
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NOTES:
• ALL NEW PIPING TO BE HDPE SDR 26 (PE 4710)

LEGEND:

- OE — EXISTING OVERHEAD ELECTRIC
- ===== NEW HDPE PIPE
- ===== DEMO HDPE PIPE AND COMPONENTS
- ===== EXISTING HDPE PIPE
- EXISTING LFG PERIMETER HDPE HEADER (BURIED)
- EXISTING 2" HDPE DRAIN LINES
- ⊠ VALVE
- ⊕ HDPE TEE
- ⌒ HDPE 22.5° ELBOW
- ⌒ HDPE DOWNWARD FACING 90° ELBOW
- ⌒ HDPE 90° ELBOW



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SHEET TITLE	PLAN/PROFILE SHEET
SECTION I-I (PROPOSED LINE TO ZINK FLARE)	

PROJECT TITLE	BRIDGETON LANDFILL
2014 BLOWER/FLARE STATION MODIFICATIONS	

CLIENT:

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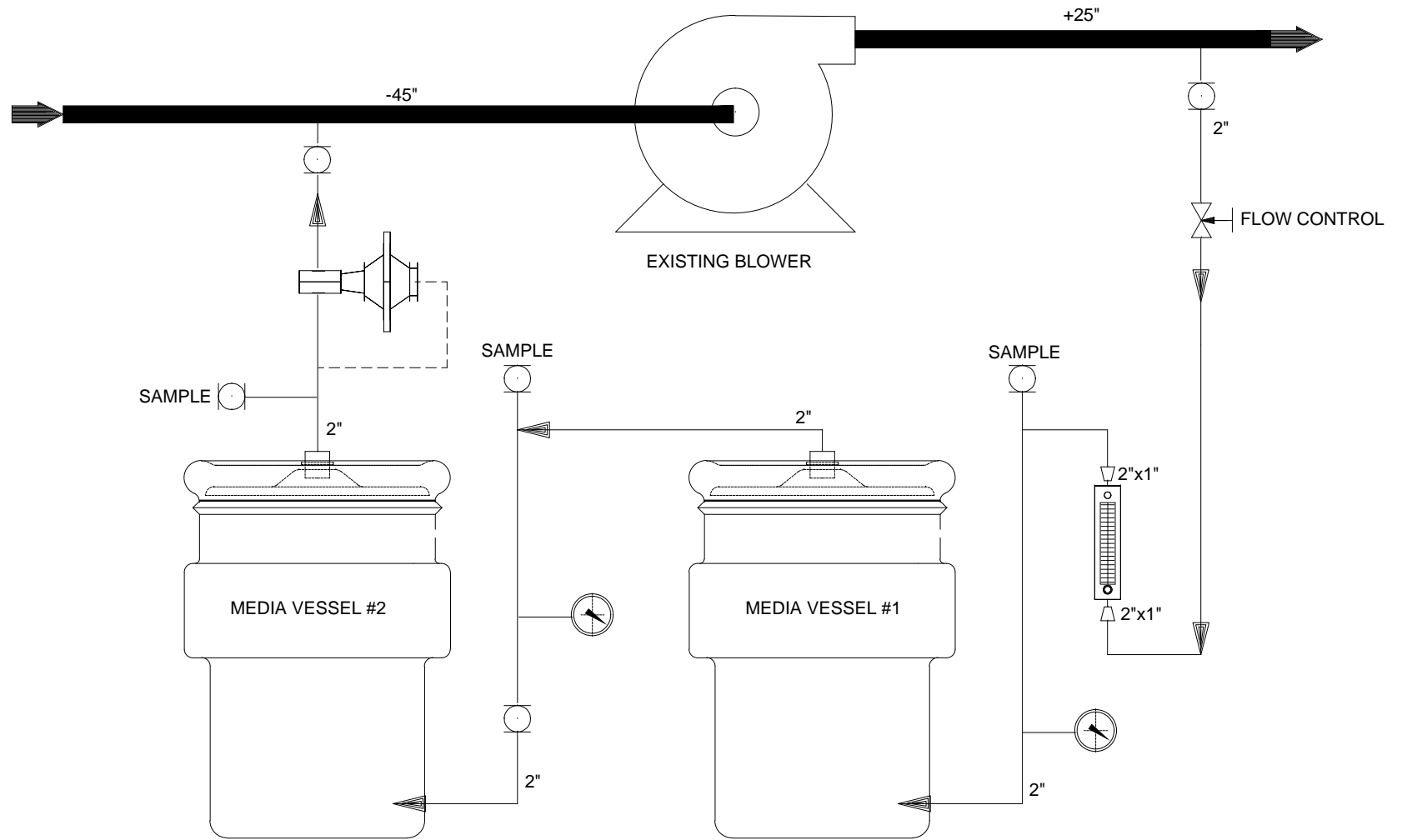
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SCALE: AS SHOWN

FIGURE 1 of 1

ODOR CONTROL TEST UNIT ATTACHED TO EXISTING FAN

MV TECHNOLOGIES
303.277.1625
751 PINE RIDGE Rd.
GOLDEN, CO 80403



FLOW = 3 - 25 CFM

FIGURE 2

ODOR CONTROL TEST UNIT - EQUIPMENT SETUP

MV TECHNOLOGIES
303.277.1625
751 PINE RIDGE Rd.
GOLDEN, CO 80403



FIGURE 3