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**VIA ELECTRONIC CORRESPONDENCE**

October 2, 2015

CCN: 59756

File No: 8.DC.20.19 & 82

Chief, Environmental Enforcement Section  
Environment and Natural Resources Division  
U.S. Department of Justice  
P.O. Box 7611  
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Washington, D.C. 20044-7611  
RE: DOJ No. 90-5-1-1-4022/1  
[Walter.Benjamin.Fisherow@usdoj.gov](mailto:Walter.Benjamin.Fisherow@usdoj.gov)

Chief, Clean Water Enforcement Branch  
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Attn: Brad Ammons  
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Attn: Compliance/Enforcement Section  
[Diane.Pupa@dep.state.fl.us](mailto:Diane.Pupa@dep.state.fl.us)

**RE: Consent Decree (Case: No. 1:12-cv-24400-FAM)**  
**Reference DOJ Case No. 90-5-1-1-4022/1**  
**Section VI – Specific Capital Improvement Projects, Paragraph 19(i)**  
**Section XX – Modification**  
**Request for Non-Material Change – CD Project 2.27 – Oxygen Production**

Dear Sir/Madam:

Pursuant to our discussions during our July 16, 2015 telephone conference, the Miami-Dade Water and Sewer Department (WASD) respectfully requests approval of a non-material change to Appendix D-2, Project 2.27 Oxygen Production, in conformance with Section VI.19(i) and XX of the above referenced Consent Decree. Attached for your reference are copies of the PowerPoint presentation presented to Mr. Mike Bechtold (FDEP) on August 20, 2015 and his email correspondence to Mr. Brad Ammons confirming that he has no objections with a substitution of oxygen production technologies from cryogenic to Vacuum Pressure Swing Adsorption (VPSA).

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Should you have any questions regarding this matter, please call me at (786) 552-8120.

Sincerely,



Bertha M. Goldenberg, P.E., LEED® Green Associate  
Assistant Director, Regulatory Compliance and Planning

Attachments: PowerPoint presentation and email correspondence

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Rashid Istambouli (RER-DERM)  
David Haywood (CD PMCM)  
Abby Diaz (CD PMCM)  
Cynthia Doyon (CD PMCM)

# **The Consent Decree Description for CD 2.27 Oxygen Production is Prescriptive**

*Construction of a new 80 ton/day oxygen production cryogenic tower and air compressor unit to provide full redundancy as existing units are near the end of their useful life and prone to failure*

# Drawbacks to Cryogenic Oxygen Generation

- Complex systems (“black box”)
- Costs – high capital and O&M
- Limited suppliers/limited competition
- Reaching technical obsolescence for water/wastewater applications
- Service and spare parts harder to find
- Lack of turn-down capabilities to match generation with demand
- Age/Reliability - 2 units: 35 yrs / 1 unit: 25 yrs

# Advantages of VPSA

- Cost effective
  - Lower capital
  - Much lower O&M
- Smaller carbon footprint – higher efficiency
- Contemporary technology
- Greater supplier competition –faster delivery
- Safer, simpler and more flexible operations
- Greater serviceability

# VSPA – Higher Rated

PARAMETERS		WEIGHT	OXYGEN GENERATION TECHNOLOGIES			
			Rehabilitate Existing Cryogenic System		VPSA System	
			Rating	Wt. Rating	Rating	Wt. Rating
1	Operational Complexity	20	5	100	9	180
2	Maintenance Complexity	20	5	100	9	180
3	LOX Production Capability	5	10	50	0	0
4	Turn Down Power Efficiency	5	5	25	10	50
5	Speed of Turn Down	5	5	25	10	50
6	Amount of Turn Down	15	5	75	10	150
7	Noise	5	7	35	3	15
8	Robustness of Equipment	15	7	105	9	135
9	Expected Life	10	7	70	9	90
	<b>Total</b>	<b>100</b>		<b>585</b>		<b>850</b>



# CD 2.27 Oxygen Production Alternatives Evaluation

Alternative	Process Equipment to be Constructed	Notes
<b>1</b> (New Cryo)	Add one 80 TPD cryogenic oxygen unit	Consent Decree
	Rehab Cryogenic unit 2 now	Non-Consent Decree
	Rehab Cryogenic unit 3 in ten years	Non-Consent Decree
<b>2</b> (1 VSPA)	Construct one new 80 TPD VPSA unit	Consent Decree
	Rehab cryogenic unit 2 now, 3 in ten years	Non-Consent Decree
	Add a second VPSA unit in 10 years	Non-Consent Decree
<b>3</b> (2 VPSA)	Construct one new 80 TPD VPSA unit now	Consent Decree
	Construct second new 80 TPD VPSA unit now	Non-Consent Decree
	Rehab cryogenic unit 3 in ten years	Non-Consent Decree

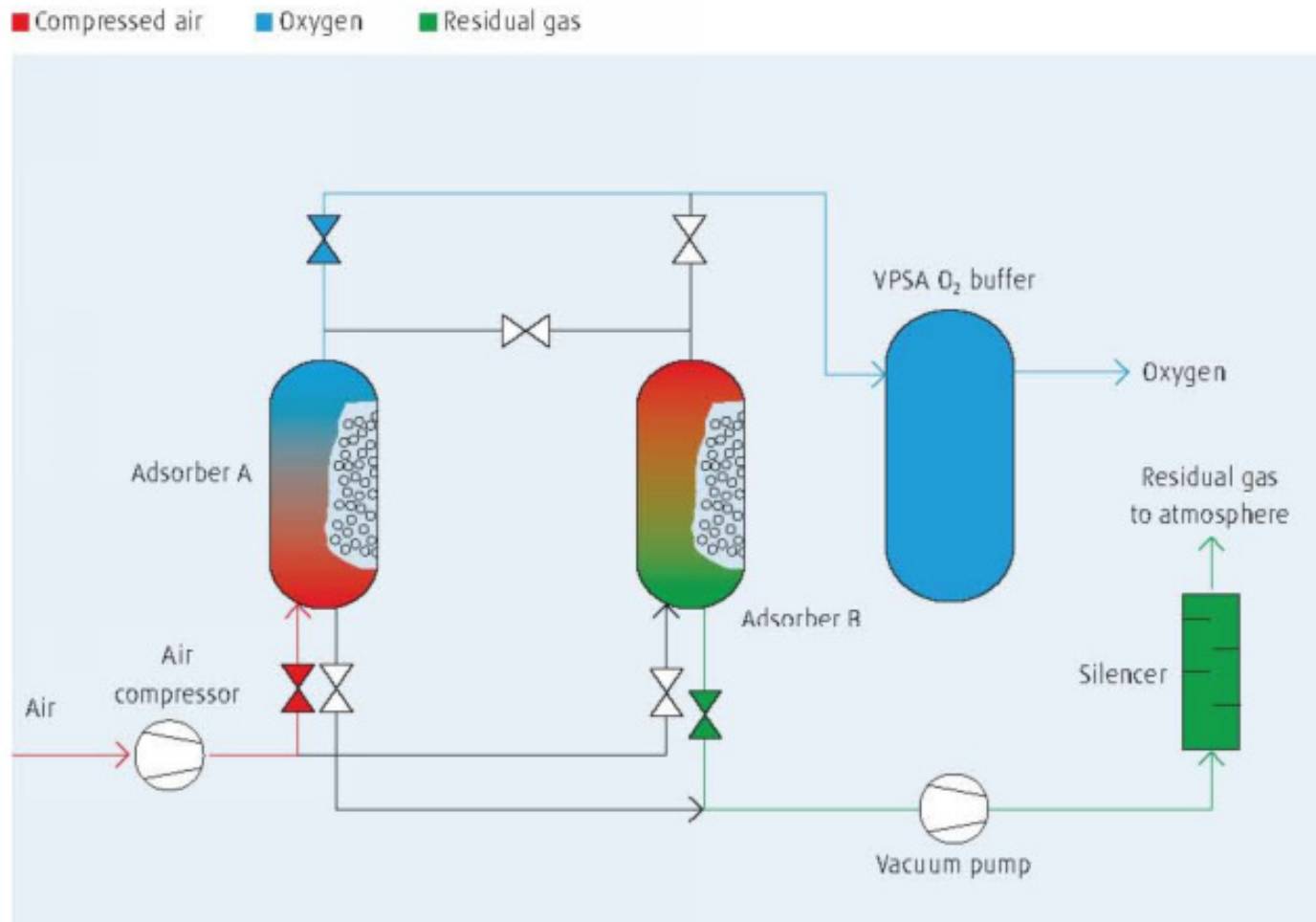
# CD 2.27 Oxygen Production Alternative Selection

	Alternative 1 New Cryo	Alternative 2 1 New VPSA	Alternative 3 2 New VPSA
Total Project Cost	\$26,848,000	\$23,733,000	\$22,552,000
Estimated Annual Costs Year 1-10	\$1,508,000	\$547,000	\$561,000
Estimated Annual Costs Year 11-40	\$818,000	\$550,000	\$571,000
Total NPV	\$50,912,000	\$35,969,000	\$35,191,000

**40 year life cycle cost analysis**

# Recommending

- **Alternative Technology** – vacuum pressure swing adsorption (VPSA) in lieu of cryogenic



# CD 2.27 Summary

## Requesting approval to:

- Use VPSA technology in place of cryogenic oxygen generation
- Modify CD Project 2.27 description to read:

*“Construction of a new oxygen production system to provide full redundancy as existing units are near the end of their useful life and prone to failure”*

**QUESTIONS??**

## Suarez, Andrea (Consultant)

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**From:** Bechtold, Mike <Mike.Bechtold@dep.state.fl.us>  
**Sent:** Wednesday, September 16, 2015 2:19 PM  
**To:** Suarez, Andrea (Consultant); Brad Ammons (ammons.brad@epa.gov)  
**Cc:** Moncholi, Manuel E. (WASD); O'Rourke, Richard M. (WASD); Stitt, Brian (Consultant); Donal Bassett; Andreotta, Jason; Self, Lisa M.; Pupa, Diane  
**Subject:** RE: CD 2.27 Oxygen Production VPSA presentation

This confirms that we have no objects to the change in Oxygen production process. The consent order had included cryogenic system as description. . The actual manufacturer of Oxygen generation equipment uses different equipment (thereby different processes) for production. We had assumed that during the design of the projects, the Consultants and MDWASD should evaluate the alternatives and sometimes the original thinking may change. When we review and approve the various Preliminary Design Reports, we will approve any design changes.

Mike

Michael W. Bechtold, P.E.  
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**Florida's Water - Ours to Protect:** Check out the latest information on Florida Water Issues at <http://www.protectingourwater.org/> presented by the Florida Department of Environmental Protection.

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**From:** Suarez, Andrea (AECOM Consultant) [<mailto:SUAREZA@miamidade.gov>]  
**Sent:** Thursday, August 20, 2015 3:16 PM  
**To:** Bechtold, Mike  
**Cc:** Moncholi, Manuel E. (WASD); O'Rourke, Richard M. (WASD); Stitt, Brian (Consultant); Donal Bassett  
**Subject:** CD 2.27 Oxygen Production VPSA presentation

Mike,

Good afternoon, as discussed this morning in our presentation, after a detailed analysis on the oxygen production technologies, a recommendation was provided to EPA for a substantive change of technology in this consent decree project from the current cryogenic system to a VPSA (vacuum pressure swing adsorption) system. As part of the

discussion EPA wanted your agreement into this change before providing official approval of the change. Therefore, we are respectfully requesting your concurrence with our recommended technology modification.

Thank you,

Andrea Suárez-Abastida  
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Miami Dade Water and Sewer Department  
Consent Decree PMCM Team

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