

TO: Weston Lee
Project Engineer/Manager
ADEQ - Office of Land Resources

FROM: Thomas Huetter, P.G., Harbor

DATE: January 21, 2019

RE: Well Lock Survey
NABORS Landfill
Mountain Home, AR

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AFIN:	03-00051	
PMT#:	0249-S1-R2	
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Harbor conducted a survey of the existing groundwater monitoring well and landfill gas probe network at the NABORS landfill in Mountain Home, Arkansas. The primary purpose of the survey was to verify that the outer casing of all wells and gas probes were locked and to document the existing condition of each well and gas probe. As a result of landfill closure activities, several of the groundwater monitoring wells were extended and new outer extended well casings were placed.

Harbor mobilized to the landfill on December 11, 2018 to document the wells that were accessible by vehicle. Harbor returned to the landfill on January 14, 2019 to document the remaining wells. Site conditions required the use of an all-terrain vehicle for access. Table 1 below summarizes the existing groundwater monitoring wells and their condition. Photographs of each groundwater monitoring well are included in Attachment A.

Table 1 – Summary of Groundwater Monitoring Well Conditions

Monitoring Well	Status	Condition	Date Inspected
CAO-1	Locked	Good	12/11/2018
CAO-2	Extended - locked with new lock	Good	12/11/2018
CAO-3	Locked	Good	12/11/2018
MW-1	Locked – new hasp has been installed	Good	12/11/2018
MW-1R	Locked with new lock	Good	12/11/2018
MW-2	Locked	Good	12/11/2018
MW-3	Extended - locked with new lock	Good	12/11/2018
MW-4	Locked	Good	12/11/2018
MW-5	Locked	Good	12/11/2018
MW-6	Locked	Good	12/11/2018
MW-7	Locked	Good	01/14/2019
NAB-2	Extended - locked with new lock	Good	12/11/2018
NAB-3	Locked	Good	01/14/2019
NAB-4	Extended - locked with new lock	Good	12/11/2018

Table 1 – Summary of Groundwater Monitoring Well Conditions

Monitoring Well	Status	Condition	Date Inspected
NAB-7	Locked	Good	01/14/2019
NAB-8	Extended - locked with new lock	Good	12/11/2018
MW-509D	Locked	Good	12/11/2018
MW-577	Locked	Good	12/11/2018
MW-633D	Locked	Good	12/11/2018
MW-689D	Locked	Good	12/11/2018
NE-2	Locked	Good	12/11/2018
NE-3	Locked	Good	01/14/2019
NE-4	Locked	Good	12/11/2018
NE-6	Locked	Good	01/14/2019

Table 2 below summarizes the existing gas probes and their condition. Photographs of each gas probe are included in Attachment B.

Table 2 – Summary of Gas Probe Conditions

Gas Well	Status	Condition	Date Inspected
GP-1	Locked	Good	12/11/2018
GP-2	Locked	Good	12/11/2018
GP-3	Locked	Good	12/11/2018
GP-4	Locked	Good	12/11/2018
GP-5	Locked	Good	12/11/2018
GP-6	Locked with multiple locks	Outer casing cannot fully shut	12/11/2018
GP-7	Locked	Good	01/14/2019
GP-8	Locked	Good	12/11/2018
GP-9	Locked	Good	12/11/2018
GP-10	Locked	Good	12/11/2018
GP-11	No lock – added new one	Good	12/11/2018
GP-12	Locked	Good	01/14/2019
GP-13	Locked	Good	01/14/2019
GP-14	Locked	Good	01/14/2019
GP-14R	Locked	Good	01/14/2019
GP-15	Locked	Good	12/11/2018
GP-16	Locked	Outer casing nearly covered with soil	12/11/2018
GP-16R	Locked	Good	12/11/2018
GP-17	Locked	Good	12/11/2018

Table 2 – Summary of Gas Probe Conditions

Gas Well	Status	Condition	Date Inspected
GP-18	Locked	Outer casing nearly covered with soil	12/11/2018
GP-18R	Locked	Good	12/11/2018

Harbor appreciates the opportunity to provide assistance on this project. We look forward to providing additional services to ADEQ in the future.

Sincerely,

HARBOR

A stylized, handwritten signature in blue ink, likely belonging to Thomas Huetter.

Thomas Huetter, P.G.
Senior Project Manager
thuetter@harborenv.com

A handwritten signature in purple ink, likely belonging to Leslie Davis.

Leslie Davis
Principal
ldavis@harborenv.com

Attachments:

Attachment A – Groundwater Monitoring Well Photographs

Attachment B – Gas Probe Photographs

Attachment A

Groundwater Monitoring Well Photographs

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Attachment A - Monitoring Well Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 1: Groundwater monitoring well CAO-1 - locked.



Photograph 2: Extended groundwater monitoring well CAO-2 - new lock has been added.

Attachment A - Monitoring Well Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 3: Groundwater monitoring well CAO-3 - locked.



Photograph 4: Groundwater monitoring well MW-1 - new hasp has been added and well locked.

Attachment A - Monitoring Well Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 5: Groundwater monitoring well MW-1R - locked.



Photograph 6: Groundwater monitoring well MW-2 - locked.

Attachment A - Monitoring Well Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 7: Extended groundwater monitoring well MW-3 - new lock has been added.



Photograph 8: Groundwater monitoring well MW-4 - locked.

Attachment A - Monitoring Well Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 9: Groundwater monitoring well MW-5 - locked.



Photograph 10: Groundwater monitoring well MW-6 - locked.

Attachment A - Monitoring Well Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 11: Groundwater monitoring well MW-7 - locked.



Photograph 12: Groundwater monitoring well MW-509 - locked.

Attachment A - Monitoring Well Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 13: Groundwater monitoring well MW-577 - locked.



Photograph 14: Groundwater monitoring well MW-633 - locked.

Attachment A - Monitoring Well Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 15: Groundwater monitoring well MW-689 - locked.



Photograph 16: Extended groundwater monitoring well NAB-2 - new lock has been added.

Attachment A - Monitoring Well Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 17: Groundwater monitoring well NAB-3 - locked.



Photograph 18: Extended groundwater monitoring well NAB-4 - new lock has been added.

Attachment A - Monitoring Well Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 19: Groundwater monitoring well NAB-7 - locked.



Photograph 20: Extended groundwater monitoring well NAB-8 - new lock has been added.

Attachment A - Monitoring Well Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 21: Groundwater monitoring well NE-2 - locked.



Photograph 22: Groundwater monitoring well NE-3 - locked.

Attachment A - Monitoring Well Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 23: Groundwater monitoring well NE-4 - locked.



Photograph 24: Groundwater monitoring well NE-6 - locked.

Attachment B

Gas Probe Photographs

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Attachment B - Gas Probe Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 1: Gas probe GP-1 - locked.



Photograph 2: Gas probe GP-2 - locked.

Attachment B - Gas Probe Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 3: Gas probe GP-3 - locked.



Photograph 4: Gas probe GP-4 - locked.

Attachment B - Gas Probe Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 5: Gas probe GP-5 - locked.



Photograph 6: Gas probe GP-6 - new daisy-chained locks added.
Outer casing will not close properly due to extended inner well pipe.

Attachment B - Gas Probe Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 7: Gas probe GP-7 - locked.



Photograph 8: Gas probe GP-8 - locked.

Attachment B - Gas Probe Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 9: Gas probe GP-9 - locked.



Photograph 10: Gas probe GP-10 - locked.

Attachment B - Gas Probe Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 11: Gas probe GP-11 - no lock was present. Added new lock.



Photograph 12: Gas probe GP-12 - locked.

Attachment B - Gas Probe Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 13: Gas probe GP-13 - locked.



Photograph 14: Gas probe GP-14 - locked.

Attachment B - Gas Probe Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 15: Gas probe GP-14R - locked.



Photograph 16: Gas probe GP-15 - locked.

Attachment B - Gas Probe Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 17: Gas probe GP-16 - locked.



Photograph 18: Gas probe GP-16R - locked.

Attachment B - Gas Probe Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 19: Gas probe GP-17 - locked.



Photograph 20: Gas probe GP-18 - locked.

Attachment B - Gas Probe Photographs

NABORS Landfill, Mountain Home, Arkansas

12/11/2018, 1/14/2019

Well Lock Verification



Photograph 21: Gas probe GP-18R - locked.