



Fernald Preserve Aquifer Restoration Extraction Well and Pump Maintenance Improvements

Jane Powell, Fernald Preserve Site Manager
U.S. Department of Energy Office of Legacy Management
10995 Hamilton-Cleves Highway, Harrison, OH 45030

William A. Hertel, Cathy Glassmeyer
S.M. Stoller Corporation
10995 Hamilton-Cleves Highway, Harrison, OH 45030



- 186-acre groundwater uranium plume in the Sole Source Great Miami Aquifer
- Being remediated by the pump-and-treat method per CERCLA Record of Decision
- 23 extraction wells
 - Design target pumping rates from 100 to 300 gallons per minute each
 - Total well field design target pumping rate is about 4,800 gallons per minute, or 6.9 million gallons per day

www.LM.doe.gov



Iron-fouling on pump and pipe

By questioning the way we perform tasks, we found a better way.

Our new method for pump/well maintenance has many benefits, including

- Maintaining our online well performance
- Increasing the life of our pumps
- Keeping well screens clean longer
- Reducing job safety hazards
- Reducing well field maintenance costs

Clog Removal Techniques

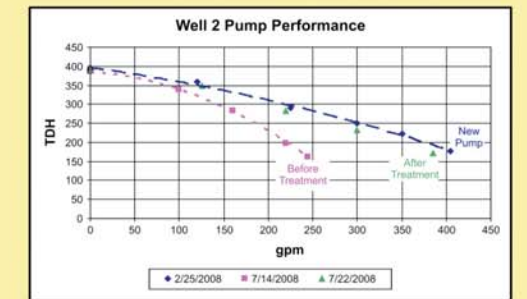
Old method had greater hazards and was more expensive



New method is safer and less expensive



Results of New Treatment Method



Results of Well Pump Cleaning With New Method

Well Number	Set Point L/s (gpm)	Maximum Flow Rate before Treatment L/s (gpm)	Pressure at Max. Flow Rate before Treatment (psi)	Maximum Flow Rate after Treatment L/s (gpm)	Pressure at Max. Flow Rate after Treatment (psi)	% Improvement in Max. Flow Rate
1	14 (220)	20 (320)	62	25 (398)	60.4	20%
3	14 (220)	18 (280)	34	23 (358)	40	22%
4	14 (220)	22 (351)	41	29 (462)	54	24%
6	14 (220)	15 (236)	31.9	19 (302)	32	22%
7	14 (220)	19 (295)	27.1	23 (359)	41	18%
17 (first treatment)	11 (175)	9 (144)	37.8	16 (260)	47.8	45%
17 (second treatment)	11 (175)	18 (290)	38	19 (300)	48	3%
20	7 (110)	11 (170)	19.3	14 (215)	23.8	21%
21	14 (220)	16 (250)	24.1	22 (350)	22.8	29%
22	21 (330)	20 (312)	39.7	21 (332)	41.7	6%
23 (first treatment)	21 (330)	24 (388)	30	28 (448)	58	13%
23 (second treatment)	21 (330)	21 (337)	29	26 (413)	31	18%
24	21 (330)	20 (315)	35	25 (397)	41.3	21%
25 (first treatment)	9 (150)	8 (127)	26.3	12 (186)	24.2	32%
25 (second treatment)	9 (150)	13 (204)	23.3	15 (242)	22	16%
30 (first treatment)	14 (220)	15 (235)	28.8	20 (315)	25.4	25%
30 (second treatment)	14 (220)	18 (286)	31.2	19 (296)	26.3	3%
34	14 (220)	14 (222)	23.9	20 (310)	37.1	28%

L/s: liters per second
psi: pounds per square inch

Legacy Management Goals



Protect human health and the environment through effective and efficient long-term surveillance and maintenance. This goal highlights the Department's responsibility to ensure long-term protection of people, the environment, and the integrity of engineered remedies and monitoring systems.

Preserve, protect, and make accessible legacy records and information. This goal recognizes Legacy Management's commitment to successfully manage records, information, and archives of legacy sites under its authority.




Support an effective and efficient work force structured to accomplish Departmental missions and assure contractor worker pension and medical benefits. This goal recognizes the Department's commitment to its contracted work force and the consistent management of pension and health benefits. As sites continue to close, the Department faces the challenges of managing pension plan and health benefits liability.

Manage legacy land and assets, emphasizing protective real and personal property reuse and disposition. This goal recognizes a Departmental need for local collaborative management of legacy assets, including coordinating land use planning, personal property disposition to community reuse organizations, and protecting heritage resources (natural, cultural, and historical).



Improve program effectiveness through sound management. This goal recognizes that Legacy Management's goals cannot be attained efficiently unless the federal and contractor work force is motivated to meet requirements and work toward continuous performance improvement.

 Printed on recycled paper



Fernald Preserve Aquifer Restoration Extraction Well and Pump Maintenance Improvements

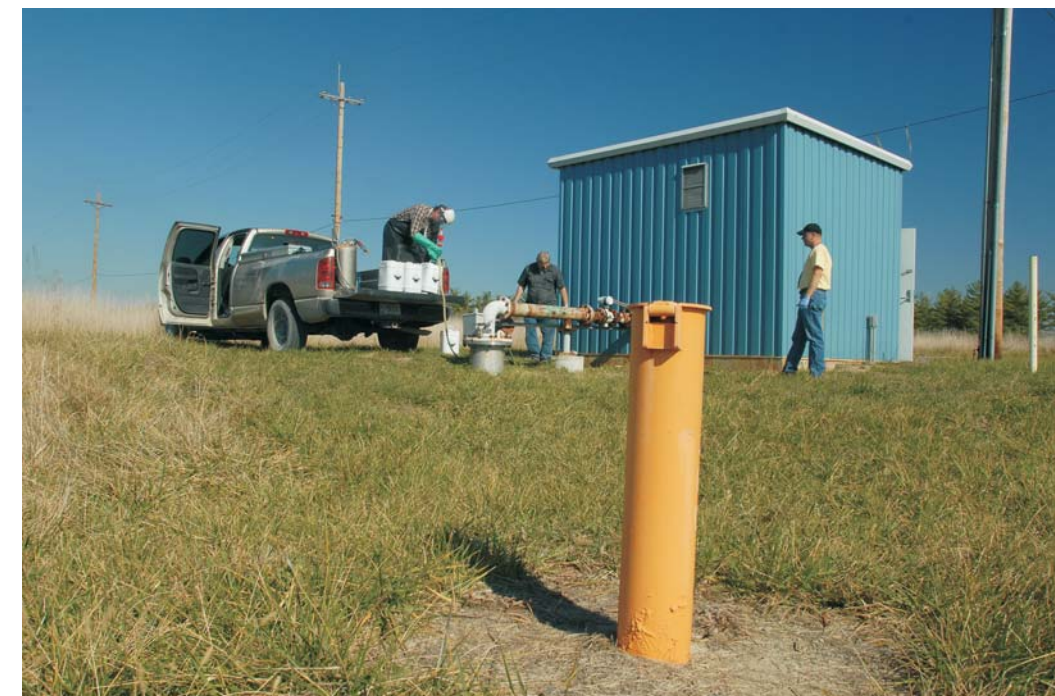
Contact Information

Jane Powell
U.S. Department of Energy
Office of Legacy Management
Fernald Preserve Site Manager
(513) 648-3148
Jane.Powell@LM.doe.gov

William Hertel
S.M. Stoller Corporation
Fernald Preserve
Aquifer Restoration Project Lead
(513) 648-3894
Bill.Hertel@LM.doe.gov

Acknowledgment

Stuart Smith
Ground Water Science
372 W. Wyandot Ave.
Upper Sandusky, OH 43351



U.S. DEPARTMENT OF
ENERGY

Office of
Legacy Management

www.LM.doe.gov