

Water Remediation Technology, LLC

April 28, 2009

Mr. Keith McConnell, Deputy Director c/o Document Control Desk United States Nuclear Regulatory Commission Decommissioning and Uranium Recovery Licensing Directorate Office of Federal and State Materials Licensing and Environmental Management Programs Two White Flint North 11545 Rockville Pike Rockville, Maryland 20852-2738

Re: License SUC-1591, WRT Uranium Water Treatment – General License Registration of Uranium System at West Milford, NJ

Dear Mr. McConnell:

Water Remediation Technology (WRT) has installed a small Uranium Treatment System at the West Milford Township Municipal Utility Authority, West Milford NJ. The system has been operating since the week of March 2, 2009. The system is small enough that, under its planned operating parameters, less that 15 pounds of uranium will be collected and stored on site at any one time; therefore, the system can operate under the NRC General License, rather than under WRT's Specific License SUC-1591.

In accordance with License Condition No. 20 of License SUC-1591, WRT hereby submits three (3) copies of the attached information package to register the Uranium Removal System operating at West Milford's Birch Hill Well under the NRC General License.

If you have any questions regarding this submission, please do not hesitate to contact either Duane Bollig at 303.424.5355, or Ted Adams, WRT's Corporate Radiation Safety Officer at 716.592.3431.

Respectfully Submitted,

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Duane W. Bollig Vice President – Business Development & Government Affairs

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Charles S. Williams Chief Executive Officer Chairman – Safety & Environmental Review Panel

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cc: Ted Adams Ted Carter, NRC Chris Pugsley, Esq. file NJ-WMI 1.05

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## General License Registration WRT Uranium Removal System

## West Milford, NJ – Birch Hill Well Site Information, System Operating Parameters, and Estimated Activity

West Milford NJ – Local Point of Contact

Ms. Judy Kehr Director – Staff Operations West Milford Township Municipal Utilities Authority 1480 Union Valley Road West Milford NJ 07480-1303 Phone: 973.728.2711

West Milford Well Location

Birch Hill Well (No. 1615-001), PWS ID# NJ1615001 Legal Description: Block 6401, Lot 6.02 West Milford Township

Nearest street address: 136 Marshall Hill Road West Milford NJ 07480 Well Location – Across the street from address above, approximately 300 ft off the road.

well and Treatment System Operating Parameters		
Nominal well flow rate	50 gpm	
Estimated/contracted usage	4.93 Mgal/yr	
Uranium concentration in feed water	40 µg/L	
Treatment System Type	WRT, skid-mounted	
Number of treatment vessels in system	2	
Media stages per treatment vessel	1	
Treatment vessel size (dia x ht)	3 ft x 6 ft	
Treatment vessel material of construction	Reinforced fiberglass w/ polyethylene liner	
Volume of media per stage	18 cu ft	
Weight of media per stage (dry basis)	790 lb/ 0.40 ton	
Weight of media on site (dry basis)	1,580 lb/ 0.80 ton	
Approximate Media Life	Up to four (4) years	

# Well and Treatment System Operating Parameters

#### Quantity Calculations

1. Approximate pounds of uranium collected per year =

$$4.93 \underline{\text{Mgal}}_{yr} \times 3.78 \underline{\text{L}}_{gal} \times 40 \,\mu\text{g} = 7.45 \times 10^8 \underline{\mu\text{g}}_{yr} = 745 \underline{\text{g}}_{yr} = 1.6 \underline{\text{lb}}_{yr} \underline{\text{lb}}_{yr}$$

2. Maximum amount of uranium expected on site, at any one time =

 $1.6 \underline{lb U}$  x 4 yr media life = 6.4 lb U on site year

3. Maximum uranium loading on media (at 6.4 lb of U on site) =

 $\underline{6.4 \text{ lb U}}_{1,580 \text{ lb media}} = 0.0041 = 0.41 \text{ percent} (> 0.05 \text{ percent})$ 

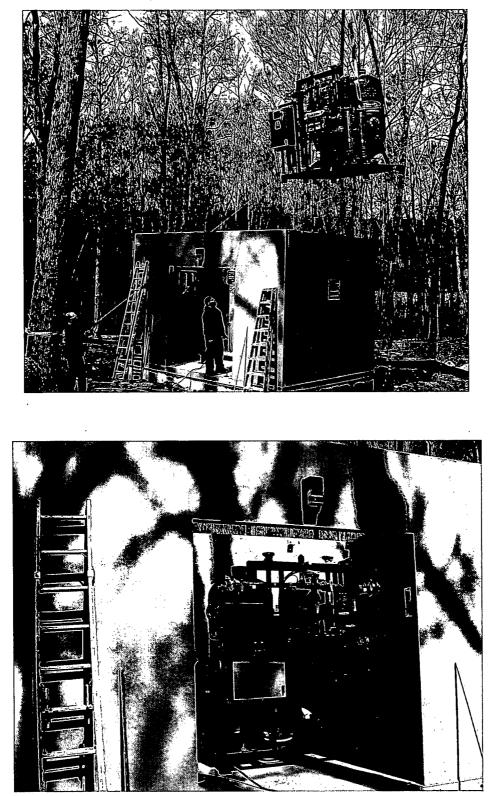
Therefore, the uranium concentration is over the limit for an Unimportant Quantity of Source Material (10 CFR 40.13).

4. Time to reach 15 lb U on site = 15 lb U = 9.4 yr 1.6 lb U/yr

#### Discussion

<u>Treatment Building Description</u> – The WRT Uranium Removal System is located in a separate, small treatment building dedicated to the system. The building is approximately 17 ft long x 12.5 ft wide x 10 ft high, with pre-cast concrete walls and ceiling and a concrete floor, with a double-width access door. The building is locked and the well site is fenced. Views of the skid-mounted treatment system and the treatment building, seen during installation and construction, is shown in the figures on the following page.

<u>Operating Plan</u> – The Uranium Removal System at West Milford started operation during the week of March 2, 2009. As shown in the calculations above, the operating time before the treatment system would collect and store at least 15 lb of uranium source material on site, approximately 9.4 years, far exceeds the expected life of a charge of treatment media, up to four (4) years. WRT proposes that this small well will be operated by exchanging the media at intervals frequent enough to have less than 15 pounds of source material on site at any time. This is the primary basis for operating this treatment system under the NRC General License, in accordance with 10 CFR 40.22.



WRT will monitor the performance of the system and estimate the amount of source material collected by tracking the gallons of water treated by the system, along with the average uranium content of the feed water. With this information, WRT can calculate an approximate mass

balance of the uranium removed and collected on the treatment media. West Milford's compliance water monitoring results, the uranium concentration in the treated discharge, will be the primary indicator used for scheduling a treatment media exchange, along with secondarily tracking the amount of uranium collected by the system.

In accordance with WRT's License Condition No. 20, a Facility Description Summary and information on the Number and Dimensions of Facility Components (information consistent with NUREG-1757, Vol. 3, Appendices A.3.4 and A.3.5, respectively) is presented at the end of this document.

#### **SERP Review Conclusions**

After a complete review of the Environmental Report (ER) as submitted by RMD on September 27, 2005 and the technical and environmental aspects of the Uranium Removal System in place at the treatment site at **West Milford Township Municipal Utility Authority**, NJ, Birch Hill Well, the SERP has concluded the following:

- 1. The Uranium Removal System will concentrate uranium source material in excess of the NRC "Unimportant Quantity" limit (e.g., greater than 0.05 percent by weight or 500 ppm) and, therefore, the System will be subject to either an NRC general or specific license;
- 2. Under WRT's proposed operating plan, the Uranium Removal System will not accumulate in excess of 15 lb of uranium source material at any one time and will not accumulate in excess of 150 lb of source material in any one calendar year. Pursuant to WRT's License Condition No. 20 and 10 CFR § 40.22(a), the SERP has determined that this Uranium Removal System should operate under the NRC General License for "Small Quantities of Source Material";
- *3.* Further, pursuant to WRT's License Condition No. 20, the SERP has determined that this Uranium Removal System is not subject to specific license requirements for financial assurance nor on-site NRC inspection;

# Community Water System (CWS) Registration Facility Description Summary (from NUREG-1757, Vol. 3, Appendix A)

## West Milford Township MUA, NJ – Birch Hill Well

## A.3.4 Facility Description Summary

NRC license numbers and types (i.e., Part 30, 40, and 70)

SUC-1591, Part 40 (and in this case, the10 CFR 40.22 General License)

Types and quantities of materials authorized under the licenses listed above.

Source, unlimited quantity

Description of how licensed materials are used.

The licensed material is not "used" in the traditional interpretation of that word. The licensee does not bring the licensed material onto the site, and does not produce any product or use the license material for any analysis or in any process. In the treatment system, the licensed source material, uranium, is removed from the drinking water of the community water supply (CWS) in order to comply with the EPA Maximum Contaminant Level for uranium promulgated under the Safe Drinking Water Act.

Description of facilities including building, rooms, grounds, and description of where particular types of materials are used.

Separate, dedicated uranium treatment building, approximately 12.5 ft x 17 ft.

Quantities of materials or waste accumulated before shipping or disposal.

Uranium – less than 15 lb of source material.

# A.3.5 Number and Dimension of Facility Components

Use this table to summarize relevant features of the facility. Copy and complete the table as necessary for each room, laboratory, or area. Rooms, laboratories, or areas with similar levels of contamination may be consolidated in one table.

Name of room, laboratory, or area: <u>Uranium Treatment Building, Birch Hill Well, West</u> <u>Milford Township MUA, Milford NJ</u>

Component	Number of Components	Dimension of Component (specify units)	Total Dimensions (specify units)
Glove Boxes	n/a		
Fume Hoods	n/a	1	
Lab Benches	n/a		
Sinks	n/a		
Drains	n/a		· .
Floors	One (1)	12.5 ft x 17 ft	212 sq ft
Walls	Four (4)	10 ft x 12.5 ft and 10 ft x 17 ft	590 sq ft
Ceilings	n/a		
Ventilation/Ductwork	n/a		
Hot Cells	n/a	· · · · · · · · · · · · · · · · · · ·	
Equipment/Materials	n/a		
Soil Plots	n/a		
Storage Tanks			
Storage Areas	n/a		
Radwaste Areas	n/a		
Maintenance Shop	n/a		
Equipment	n/a		
Decontamination Areas			
Other (specifiy)	Two (2) self- contained treatment vessels	3 ft dia x 6 ft high	85 cu ft, cumulative



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West Milford Well Location Birch Hill Well (No. 1615-001), PWS ID# NJ1615001 Legal Description: Block 6401, Lot 6.02 West Milford Township

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Treatment vessel material of construction	Reinforced fiberglass w/ polyethylene liner	
Volume of media per stage	18 cu ft	
Weight of media per stage (dry basis)	790 lb/ 0.40 ton	
Weight of media on site (dry basis)	1,580 lb/ 0.80 ton	
Approximate Media Life	Up to four (4) years	

#### Well and Treatment System Operating Parameters

#### **Quantity Calculations**

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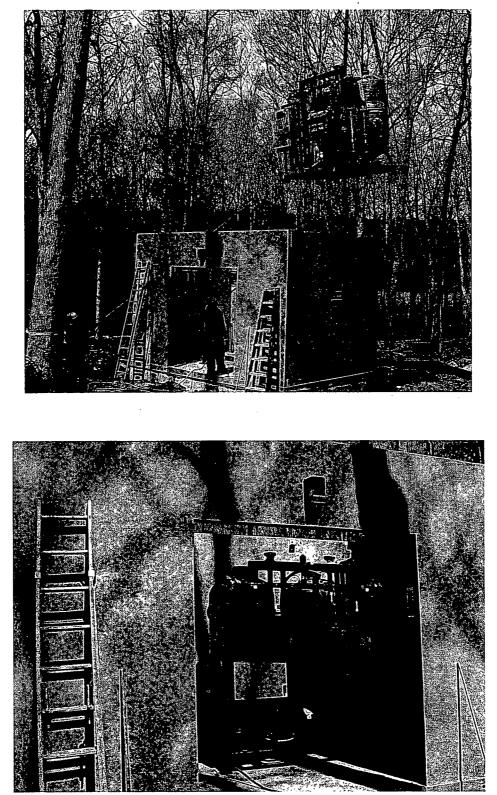
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Name of room, laboratory, or area: <u>Uranium Treatment Building, Birch Hill Well, West</u> <u>Milford Township MUA, Milford NJ</u>

Level of Contamination: \_\_\_\_\_\_\_ potentially small quantities of spilled uranium-laden treatment media, synthetic resin beads, sand-sized particles

Component	Number of Components	Dimension of Component (specify units)	Total Dimensions (specify units)
Glove Boxes	n/a		
Fume Hoods	n/a		
Lab Benches	n/a		
Sinks	n/a		
Drains	n/a		
Floors	One (1)	12.5 ft x 17 ft	212 sq ft
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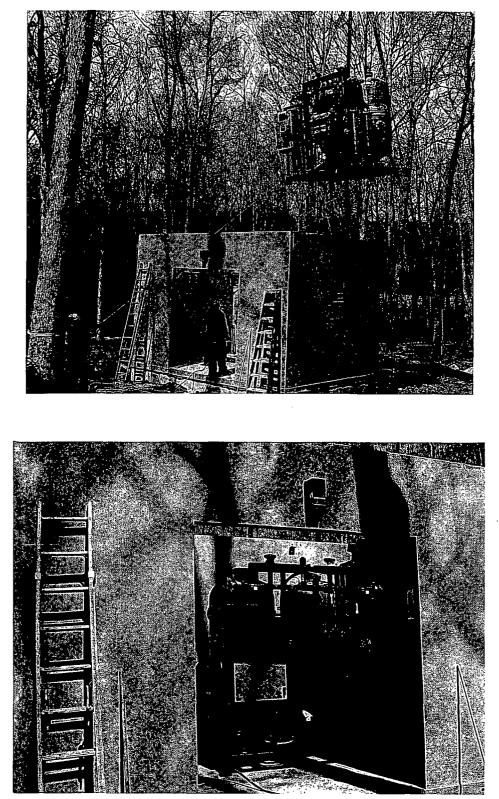
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Level of Contamination: \_\_\_\_\_\_\_potentially small quantities of spilled uranium-laden treatment media, \_\_\_\_\_\_\_\_\_\_synthetic resin beads, sand-sized particles

Component	Number of Components	Dimension of Component (specify units)	Total Dimensions (specify units)
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Lab Benches	n/a		
Sinks	n/a		
Drains	n/a		
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Walls	Four (4)	10 ft x 12.5 ft and 10 ft x 17 ft	590 sq ft
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Ventilation/Ductwork	n/a		
Hot Cells	n/a		
Equipment/Materials	n/a		
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