

Annual Audit of the WRT Radiation Protection Program

February 2014



Water Remediation Technology LLC

A handwritten signature in black ink, appearing to read "T. G. Adams". The signature is written in a cursive style and is positioned above a solid horizontal line.

Theodore G. Adams, PMP
Corporate RSO

February 2, 2014

Annual Audit of the WRT Radiation Protection Program

February 2014

1.0 Overview

An annual audit of the Water Remediation Technology, Inc., (WRT) Radiation Protection Program was performed by Mr. Ted Adams, WRT Corporate Radiation Safety Officer (CRSO). The audit consisted of an ongoing review of various WRT activities that were supported by the Radiological Protection Group throughout the calendar year 2013.

The audit included an evaluation of various WRT drinking water treatment facilities and WRT onsite activities (media exchanges, packaging/shipping, internal/external inspections, postings, placement of dosimetry, radiological controls, house keeping, waste storage), as well as, an evaluation of the status of training, dosimetry, surveys, instrument calibration, and related documentation. The audit also included interviews with various WRT personnel and reviews of records/documentation supporting the WRT Radiation Protection Program. The audit also evaluated the effectiveness of the WRT Radiation Protection Program.

2.0 Surveys

Surveys performed by WRT during 2013 included baseline surveys, media exchange surveys, inspection surveys, packaging/shipping surveys, operational surveys, and miscellaneous surveys for other needs.

A review of selected surveys that were performed by WRT radiological personnel during media exchanges or facility inspections/visits was performed as part of the audit. The following surveys were reviewed:

1. Canonicito, NM-July 19, 2013 - (Routine Site Visit/Inspection)
2. Vineland , NJ Well 5- November 4-8, 2013 - (Media for Resin Exchange)
3. Schwartzwalder Mine, CO – January 9, 2013- (Site Visit/Inspection)
4. Brookfield, WI- June 28, 2013 - (Semi-Annual Survey)
5. Pewaukee 2, WI- June 28, 2013 - (Semi-Annual Survey)
6. Ethan Allen 3, WI- June 28, 2013 – (Semi-Annual Survey)
7. Arbors Trust 1, WI- June 28, 2013 - (Semi-Annual Survey)
8. Washington Township 10 and 11, NJ - March 26 - April 6, 2012 (Media Exchange)
9. Schwartzwalder Mine, CO - May 6, 2013 - (Routine Survey/Inspection)
10. United Water, Sussex, NJ- Well 2- December 6, 2013- (Resin Exchange)
11. Elburn, IL Well 4- March 19-22, 2013- (Media Exchange)
12. Sycamore, IL- Well 6- November 19-21, 2013- (Media Exchange)
13. Grand Island, NE- April 15, 2013- (Site Visit)
14. Washington Twp MUA, NJ Well 18- April 25, 2013 (Media Exchange)
15. Aqua NJ Central Well 11- January 29, 2013- (Media Exchange)
16. Winslow Twp, NJ Well 8- February 11, 2013 (Media Exchange)
17. Aqua NJ, Central, NJ Well 8- February 15, 2013- (Media Exchange)
18. Elburn, IL Well 3-March 4- 7, 2013- (Media Exchange)

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19. Bartlett, IL Well 7- May 3, 2013- (Media Exchange)
20. Sycamore , IL Well 8- May 17, 2013- (Media Exchange)
21. Brookwood, NC Well 37, 2013- July 24, 2013- (Media Exchange)
22. Brookwood, NC Well 61- July 24, 2013 (Media Exchange)
23. Brookwood, NC Well 13- August 8, 2013- (Media Exchange)
24. Brookwood, NC Well 69&70- September 23-25, 2013- (Media Exchange)
25. Aqua NJ, Erial NJ Well 15- August 26, 2013- (Media Exchange)
26. Brookwood, NC Well 40- September 9, 2013- (Media Exchange)
27. Grand Island, NE TIVI- October 11, 2013- (Resin Exchange)
28. Cotter, CO V1&V2- November 12, 2013- (Resin Exchange)
29. Sycamore, IL Well 6- November 22, 2013- (Media Exchange)
30. United Water, NJ Sussex Well 2- December 12, 2013- (Resin Exchange)

These surveys were reviewed/signed off by the CRSO. The review of the all of the surveys listed above found the related survey documentation complete, legible, and appropriately reviewed.

3.0 Inspections

Both internal (WRT performed) and external (responsible regulatory agency performed) inspections were reviewed.

3.1 Internal Inspections

The following WRT internal inspections were reviewed:

1. Semi-annual inspections of the Wisconsin treatment systems performed on June 28, 2013 by Mr. K. Stovall, RSO and by Mr. T. Adams, CRSO on July 11-12, 2013.
2. Quarterly inspections of the treatment systems performed by the responsible WRT field service representative (Mr. Mike Hubler, NJ/NY: Mr. Sam Parrot NC/SC/VA/GA: and Mr. Josh Joiner and Mr. Jim Etheridge, IL/WI/MO).
3. Periodic inspections conducted by Mr. Ted Adams, WRT Corporate RSO and other WRT personnel.

Semi-Annual Inspections

The review of the semi-annual inspections of the Wisconsin treatment systems found the inspection/survey documentation in order, complete, legible, and prepared in a timely manner.

Quarterly Inspections

The review of the quarterly inspections by the WRT field service representatives found the inspection/survey documentation for the most part, in order, complete, legible, and being completed in

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a timely manner. Awareness training regarding the importance of these inspections and related inspection documentation continues to be provided to the WRT field service representatives. The overall responsibility of ensuring that the quarterly inspections and related inspection documentation are performed continues to be the responsibility of the WRT Operations Supervisor.

Periodic Inspections

The following selected internal inspections performed by the RSO and other WRT personnel during 2013 were reviewed:

1. Schwartzwalder Mine, CO- January 9 and May 6, 2013- Inspector- K. Stovall, RSO
2. Canonicito, NM – July 19, 2013 - Inspector – J. Thome
3. Grand Island, NE –April 15, 2013 - Inspector –K. Stovall, RSO

During the inspections, attention was placed on postings, housekeeping, surveys/survey documentation, instrumentation and related daily checks/ calibration, radiological control practices, and personnel awareness of radiological safety. The inspections of the Canonicito, NM, Schwartzwalder, CO and Grand Island, NE facilities resulted in no deficiencies being identified.

3.2 External Inspections

There were a number of external inspections at the WRT drinking water treatment sites that were performed by state regulators during the 2013 period. These included, but are not limited to:

1. Illinois Emergency Management Agency (IEMA):

WRT multi-site license – February 20, 2013 - Mr. M. Klebe

Antioch and Cortland, IL – October 21, 2013 – Inspector - Mr. M. Klebe

No findings were identified by the inspector as a result of these inspections. It was suggested however, by the IEMA inspector that the training records show the date, the local CWS personnel sign the training log.

2. New Jersey Department of Environmental Protection, Bureau of Environmental Radiation

New Jersey Department of Environmental Protection, Bureau of Environmental Radiation

Aqua NJ Southern/Erial- June 30, 2012- Inspector- Ms. Karen Flanigan

Aqua NJ Central/Hamilton – October 23, 2012 – Inspector – Ms. K. Flanigan

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No findings or recommendations were identified by the inspector.

3. North Carolina Department of Natural Resources

WRT Offices (KL Gates Law offices), GA – October 29, 2013 – Inspector- Mr. C. Harris

No items of non-compliance with the DNR requirements were identified.

4. NRC

Five Year Inspection of WRT License SUC-1851- July 21, 2013- Inspector- Mr. R. Evans, Region IV, Arlington, TX.

No findings or recommendations were identified by the NRC inspector.

4. Texas Department of State Health Services

Comfort, TX, Well 1- November 19, 2013- Inspector- Mr. R. Winkelmann

No findings or recommendations were identified by the TXDHS inspector

5. Wisconsin Department of Health Services

Brookfield Site, Brookfield, WI- July 12, 2013- Inspector- Mr. M. Paulson

No findings or recommendations were identified by the WDHS inspector.

4.0 Notices of Violations

There was one (1) Notice of Violations (NOVs)/Notice of Noncompliance issued in 2012. This was issued by the Nebraska Department Human Health Services Office of Radiation Health. See Item 3 above.

5.0 Postings, Signs and Notices

During the various internal/external, inspections/audits performed during 2013 there were no issues identified related to postings, signs, or notices (Notice to Workers). Many of the regulatory agencies update/revise their "Notice to Employees" without notification to the licensee. This requires the licensee to continuously go to the regulatory agency's website to identify any changes in the radiation protection regulations including revised notices. The auditor recognizes this challenge of maintaining current regarding the most recent notice and regulations. (See Section 15.0)

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6.0 Radiological Instrumentation

Condition

Radiological instrumentation used by WRT to support media exchanges and other related work was evaluated both during onsite use and offsite storage (WRT Corporate Offices). All instrumentation was found to be in good working condition and in calibration. Daily instrument source and background checks were performed by the WRT RSO prior to use and appropriately documented. A review of the daily instrument source and background forms found the documentation to be complete.

Calibration

A review of the instrumentation (listed in Attachment 1) currently being stored at the WRT Corporate Offices in Arvada Ridge, Colorado was performed on January 28, 2014 and found to be in good working order and in current calibration. A review of the calibration certificates for all of the instruments in use by WRT (either by WRT field service representatives or the WRT RSO) were found to be complete, appropriately filed, and available to the auditor for inspection. The status of the instrumentation is managed and maintained by the RSO via a database/matrix (Survey Meter and Detector Head Inventory) which presents all of the instrumentation, model and serial numbers, status of calibration, and copies of calibration certifications.

WRT currently uses Ludlum Instruments, Sweetwater, Texas and Griffin Instruments, Kingston, Tennessee as their calibration vendors. As part of their service, Griffin Instrument provides the RSO with a notice of calibrations due which serves as an independent check on the status of the calibration of the instrument(s).

Instrument Check Sources

Check sources used to perform daily instrument performance checks are maintained by the RSO in a locked box which is located in lockable file cabinet located in the RSO's office. The main WRT building is also locked after hours. An inspection of the check sources demonstrated that all of the check sources were inventoried/listed and accounted for.

7.0 Media Exchanges

Media exchanges performed during 2013 are presented in Attachment 2.

8.0 Training

The audit reviewed documentation in support of WRT personnel and CWS/HOA personnel radiation safety training. See Attachment 3.

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WRT Personnel Training

Training documentation of WRT personnel was reviewed during the audit. In general, is a relatively clear paper trail to confirm that appropriate WRT individuals have received the required training (Radiation Worker, DOT HazMat, etc).

CWS/HOA Personnel Training

The audit found that a strong effort was made to ensure that appropriate initial and refresher Radiation Safety Awareness Training was provided to a number of CWS Utility Operators and Managers and HOA personnel. However, there are still a small number of CWS personnel that haven't received the subject initial or refresher training. This weakness is a carryover from previous audit.

While WRT System Specialists are responsible for the handling of any of the radioactive material and CWS personnel are not involved in any radioactive material handling activities, such voluntary training is more for "awareness/peace of mind" rather than health and safety and it not directly required for the performance of the CWS personnel tasks in and around the treatment systems.

However, not providing this training to the CWS operators/managers as part of the WRT Radiation Protection Program volunteer effort may be interpreted by certain regulatory agency as a violation of the license (i.e., IEMA). The auditor recognizes that maintaining the training of CWS/HOA personnel current is a challenge. CWS/HOA personnel staff are continuously changing (many times without WRT's knowledge) at any given CWS/HOA. Furthermore, the cost and time required to provide a classroom training opportunity for the subject training is increasing.

Attachment 3 lists the Radiation Safety Awareness Training that was provided to CWS/HOA personnel in 2013. Based on the above, continued priority attention needs to be given to providing initial and refresher Radiation Safety Awareness Training to CWS personnel and to ensure the implementation and maintenance of this training. During the audit, it was discussed with the RSO to continue with the preparation of a simplified "required reading" for the refresher training of the CWS/HOA personnel that would be included as part of the annual dosimetry reports issued to the CWA/HOA personnel.

9.0 Dosimetry

The WRT Dosimetry Program consists of dosimeters issued for WRT personnel, CWS personnel, and for System (Primary and Secondary stages vessels) and Areas (a distance away from vessel), and specifically for NJ, the placement of a dosimeter on all vessels, area, and fence line.

WRT Dosimetry

The Dosimetry Program which involves WRT personnel appeared to be well executed and maintained. Results of doses are provided to WRT personnel on an annual basis.

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CWS/HOA Dosimetry

A review of the CWS/HOA portion of the WRT Dosimetry program revealed that the execution and maintenance of the program is satisfactory. There were still some instances that occurred in 2013 (delayed installation/return, lost badges, area badges being placed on vessels and vice versa) that demonstrate that continued attention to these instances are warranted. .

With the increase in the number of systems being installed and operated, and hence, an increase in the number of dosimeters to be managed, it is important that close attention be placed on this item to minimize the identified issues. This is especially important since WRT's long term goal is to reduce the number of dosimeters that will be required to be issued. A database has been established to track the status of dosimeter exchanges and results. This will assist in monitoring the execution of the dosimetry program.

Copies of dosimetry reports for the NJ CWSs (personnel, vessel, and area) are being sent to the NJDEP within the 15-day requirement specified in the CWS license conditions. Quarterly and annual dosimetry reports are being reviewed by the CRSO. Annual dosimetry reports are being sent to the CWS/WRT personnel.

10.0 Radiological Field Procedures

The existing draft radiological field procedures were reviewed and found to be reflective of the current radiological control/protection practices/policies. Consistent with the recommendation in the previous audit, the RSO and the CRSO reviewed these draft field procedures and prepared the procedures for management signature.

11.0 License(s) Status

The current WRT licenses were reviewed. The status of the licenses is provided in the following section.

WRT Licenses

A number of license/amendments/renewals were prepared and or obtained in 2013. These include but are not limited to:

Mission Springs, Golden State Water, California – March 19, 2013 – License Amendment issued

Colorado – May 21, 2013 – License Amendment issued

New Jersey – February 7, 2013 – License Amendment issued

Falling Water, Texas – May 14, 2013 – License Amendment issued

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12.0 Records

Records documenting surveys, training, dosimetry, instrument calibration, and shipping/manifest were evaluated during the audit. Documentation of such is maintained in both hard copy (Central File) and electronic version ("P Drive").

Surveys

Documentation of all surveys reviewed was found to be complete, legible and well maintained. Daily instrument performance check logs were reviewed and found to be complete, legible, and well maintained.

Training

The audit found continued improvements in the documentation of training records, but additional attention to this area is warranted. As identified in the previous audit, a training database was established and updated for IL CWSs. However, this data base needs to be updated (or a new tracking program implemented) to include all CWS operators/managers for all of the WRT systems in the various states, as well as, WRT personnel.

Dosimetry

Documentation of dosimetry records was found to be complete and well maintained (with continued effort). Reports are being submitted to the NJDEP for NJ CWSs within the required 15 day period specified in the CWS license condition. Annual dose reports are sent to all CWS/HOA personnel.

Instrument Calibration

Documentation of instrument calibrations was found to be complete and well maintained. No issues were identified during the audit. See Attachment 2 for instrument which calibration certifications were reviewed. In addition, the auditor reviewed documentation for selected "alpha and beta-gamma efficiency and operation ranges for the Ludlum 3030 (#247403), the Ludlum 2241-2 (#24325) coupled with a Ludlum 43-5 (#262385) and a Ludlum 44-9 (#262082) dated September 11, 2013.

Shipping Documentation

Documentation of shipping records/waste manifests in support of media/resin exchanges were found to be complete and well maintained. No issues were identified during the audit.

13.0 Staffing

The current staffing of the radiation protection group is adequate but being strained. License applications/amendments are being prepared and submitted in a timely manner, media exchanges are being supported, semi-annual inspections are being performed, baseline surveys, and other surveys are being completed and reviewed, dosimetry records are being maintained and issues resolved, and

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training is being provided and records maintained. However, signs of weaknesses/deficiencies in the administrative function of maintaining the training, dosimetry, and quarterly inspection data bases were again identified during this audit. This is a carryover from previous audits.

The maintenance of the various data bases/records in support of the WRT Radiation Protection Program is currently being performed by the RSO. Because the RSO is also the primary individual responsible for the support of the media exchanges and since the number of media exchanges has continued to increase, the RSO has had to dedicate more of his time to support these media exchanges and has had less time to support the administrative effort required to maintain the data bases. As additional treatment systems become operational, and more training, dosimeters, surveys required, the administrative needs to maintain these data bases will become even greater.

With the responsibilities and roles of the radiological staff increasing, especially the need to support more and more media exchanges, the need for meeting the administrative needs of the program more often than not takes second priority. This situation provides increased opportunities for "missing" a number of important administrative requirements such as timely notification to the regulatory agency of the scheduled media exchanges. This lack of attention to the administrative requirements of the WRT license conditions (and license conditions of the CWS licensees who WRT provides radiological support to), can lead to unwanted notices of violations from the regulatory agency. In light of the above, WRT management should consider providing administrative support to the RSO to assist in the maintenance of the various databases.

As identified in the previous audit, more and more systems are coming on line, and the frequency for media exchanges is increasing. This increase is requiring the CRSO and the VP Government Affairs) radiological support personnel to be out of the office several times a year. Furthermore, as was the case in 2010, 2011, 2012 and continued in 2013, several exchanges were scheduled back to back or within a relatively short time frame between exchanges.

Discussions with the Operations Manager revealed that additional WRT operation personnel have been hired and will continue to be hired to address the increase in the number of systems requiring media exchanges and to address the number of systems requiring installation/startup. The increase in start up and media exchanges more than likely will require that two operation teams be out in the field simultaneously. This will require that radiological support (perform baseline surveys for start up and radiological control and survey support for the media handling, packing, transport, disposal including the related survey and shipping documentation) be provided to each of these teams, as appropriate.

As stated in the previous audit and restated in this audit, WRT management should consider providing/acquiring additional radiological support (an additional RCT resource) and administrative resource(s) to address the need for the increase in radiological support for the increase in media exchanges, startups, and other needs.

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14.0 ALARA

A review of the WRT and CWS personnel dosimetry records revealed that doses were maintained reasonably low. There were no unusual doses recorded. The program is being implemented effectively and thus, no modifications are necessary at this time to the WRT ALARA Program. WRT personnel and CWS personnel doses were reported to be less than 4mRem/yr.

15.0 Changes in Agreement State/NRC Radiation Protection Standards and Requirements

A review of the various Agreement States (New Jersey, New York, North Carolina, Virginia, Colorado, Nevada, California, Texas, Nebraska, Illinois, Georgia, Wisconsin, New Mexico, South Carolina, South Dakota, Missouri) and NRC where WRT has a license or has a uranium/radium and/or uranium/radium removal system/pilot system operating in 2013, radiation protection standards and requirements were performed. Based on that review, no changes or modification to the WRT Radiation Protection Program are necessary.

However, the auditor does recognize that certain changes such as the revisions of the "Notice to Employees", NRC Safety Culture Policy, and General Notices are a challenge to being able to stay current with these types of changes without going onto each and every regulatory agency website frequently. Continued effort will be made to keep as current as practical.

16.0 Issues

As a result of the audit, the no specific issues were identified.

17.0 Personnel Interviewed

The list of WRT Personnel interviewed during this audit is presented in Attachment 4.

18.0 Conclusion and Recommendations

Conclusion

As a result of the audit, the WRT Radiation Protection Program including the ALARA Program was found to be effectively implemented. However, a number of items/areas have been identified that need attention/corrective action to ensure that the Program continues to be efficiently and effectively maintained and implemented, especially in light of WRT's goal to increase the number of treatment systems and to become more involved in groundwater/wastewater treatment opportunities. Many of these items have been previously identified.

Recommendations

Based on the results of the audit, the following recommendations are presented:

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1. A full review of WRT Client personnel who have/have not received Initial/refresher Radiation Safety Awareness Training should be conducted. Based on the subject review, the selected training should be provided to all those CWSs/HOAs that have not yet received such training. In addition, the current training matrix/data base should be updated to reflect all CWS/HOA initial/refresher training, to ensure all CWS/HOA individuals are receiving the proper training/retraining at the required frequencies, to ensure that their training is current, to enable adequate and timely tracking of all CWS/HOA training, and to ensure that the training records are easily auditable. (Carry over recommendation)
2. While the current training tracking data base is working, the current database for tracking and maintaining training of WRT personnel should be reviewed and updated to reflect the status of each WRT individual required to be trained. This will ensure all appropriate WRT individuals are receiving the proper training/retraining at the required frequencies, that their training is current, enable adequate and timely tracking of all WRT training, and that the records are easily auditable. (Carry over recommendation).
3. Continued attention should be implemented to address the current issues related to the WRT Dosimetry Program for the CWS/HOA sites (carry over recommendation).
4. WRT management should review the need for administrative assistance support to the radiological group to develop, maintain, and track the data in the various established databases (training, dosimetry, quarterly inspections, etc.) (Carry over recommendation).
5. WRT management should review the need for additional radiological resources (full-time/part-time contract RCT, etc.) to support current and future needs (Carry over recommendation). The addition of a RCT would go a long way to address some of the needs addressed in Recommendations 1-4.

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Attachment 1 Radiological Instrumentation

<u>Instrumentation</u>	<u>Serial Number</u>	<u>Calibration Date</u>	<u>Calibration Due Date</u>
Ludlum 19	238786	6/20/13	6/20/14
Ludlum 19	244979	3/14/13	3/14/14
Ludlum 19	238715	6/18/13	6/18/14
Ludlum 19	253077	4/6/13	4/6/14
Ludlum 19	282718	6/18/13	6/18/14
Ludlum 19	282794	8/12/13	8/31/14
Ludlum 19	244979	3/14/13	3/14/14
Ludlum 3030	247403	7/24/13	7/24/14
Ludlum 43-10-1	263693	7/24/13	7/24/14
Ludlum 2241-2	243225	12/9/13	12/9/14
Ludlum 44-9	262082	12/9/13	12/9/14
Ludlum 43-5	262385	12/9/13	12/9/14
Ludlum 2401-P	188826	9/25/13	9/25/14
Ludlum 2401-P	190956	9/25/13	9/25/14
Ludlum 2401-P	190859	9/25/13	9/25/14
Ludlum 2401-P	200608	9/25/13	9/25/14
Ludlum 2401-P	200614	12/9/13	12/9/14
Ludlum 2241-2	254723	7/9/13	7/9/14
Ludlum 44-9	271879	7/9/13	7/9/14
Ludlum 43-5	272560	7/9/13	7/9/14
Ludlum 2241-2	298489	6/3/13	6/3/14
Ludlum 44-9	325643	6/3/13	6/3/14
Ludlum 43-5	325345	6/3/13	6/3/14

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Ludlum 2241-2	237687	7/3/13	7/3/14
Ludlum 44-9	251821	7/3/13	7/3/14
Ludlum 43-5	252521	7/3/13	7/3/14

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Attachment 2 Media Exchanged 2013

A list of the media exchanges performed in 2013 is presented in Attachment 2.

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Spent Media Exchanges - Annual Tracking Form

12/13/2013

Reporting Year: 2013

Media Exchanges in State: All

Container Codes: 1 = 96-cu ft Bag 2 = 96-cu ft Reinforced Bag (+500 pCi/g) 3 = 42-cu ft Reinforced Bag 4 = 96-cu ft B-25 Metal Box 5 = 55-gal Drum
6 = PES Vessel 7 = Rolloff Box 8 = Industrial Bulk Container, IBC (plastic tote) 9 = 570-cu ft Hopper Tanker(s)

Waste Shipment Date	Contaminant	CWS and Well Site	Container Code	Container ID	Est. Media Volume (cu ft)	Spent Media Weight (lb)	Activity - Parent Radionuclide (mCi)	Shipping Manifest Number	Disposal Site; Notes
1/29/2013	Ra	Aqua NJ Inc., Central Well 11	2	WRT-01 to -07	672	31,269	14.50	13-0047-01A	US Ecology ID, Grand View ID
		(Hamilton NJ)	2	WRT-08 to -14	672	38,200	20.50	13-0047-01B	01A activ = 991 pCi/g; 01B = 1,359
		Subtotal			1,344	69,469	35.0		avg activ conc = 1,180 pCi/g
2/11/2013	Ra	Winslow Township NJ, Well 8 (Dow RSC Resin)	1	WRT-01 to -12	507	20,348	1.50	13-0237-01	USE ID, Grand View; activ = 160 pCi/g
2/15/2013	Ra	Aqua NJ Inc., Central Well 14	7	n/a	520	33,820	2.79	13-0053-01A	USE ID, Grand View; activ = 182 Pci/g
		(Hamilton NJ)	7	n/a	428	29,200	9.21	13-0053-01B	activ = 695 Pci/g
			7	n/a	410	31,140	8.75	13-0053-01C	activ = 619 pCi/g
		Subtotal			1,358	94,160	20.8		avg activ conc = 486 pCi/g
3/6/2013	U	Grand Island NE	8	WRT-01	29	1,280	0.84	13-0214-01	Cameco Crow Butte Operation, Crawford NE (for uranium recovery pilot testing) activ conc = 1,480 pCi/g
3/22/2013	Ra	Elburn IL, Well 4	3	WRT-01 to -15	630	39,175	4.40	13-0013-01A	USE ID, Grand View; activ = 252 Pci/g
			3	WRT-16 to -30	630	38,218	8.90	13-0013-01B	activ = 510 pCi/g
		Subtotal			1,260	77,393	13.3		avg activ conc = 379 pCi/g
4/5/2013	Ra	Washington Township NJ, Well 18 (Dow RSC Resin)	3	WRT-01 to -06	240	10,172	0.67	13-0240-01	USE ID, Grand View; activ = 144 Pci/g
5/3/2013	Ra	Bartlett IL, Well 7	3	WRT-01 to -18	756	47,370	4.19	13-0022-01	USE ID, Grand View; activ = 195 pCi/g
5/17/2013	Ra	Sycamore IL, Well 8	3	WRT-13 to -24	504	32,964	4.10	13-0019-01A	USE ID, Grand View; activ = 274 pCi/g
			3	WRT-01 to -12	546	35,960	3.30	13-0019-01B	activ conc = 203 pCi/g
		Subtotal			1,050	68,924	7.4		avg activ conc = 237 pCi/g
7/2/2013 (ship 11/21)	Ra	Woodhaven Lakes Estates, Sublette IL (Water Treatment Sludge)	3	WRT-01 to -02	84	5,600	1.12	13-0236-01	USE ID, Grand View; activ = 439 pCi/g
7/12/2013	Ra	Aqua NC Inc., Brookwood W37 (Fayetteville NC)	3	WRT-01 to -05	210	11,884	2.36	13-0134-01	USE ID, Grand View; activ = 437 pCi/g
7/24/2013	Ra	Aqua NC Inc., Brookwood W61 (Fayetteville NC)	3	WRT-06 to -11	240	13,876	3.70	13-0136-01	USE ID, Grand View; activ = 587
8/12/2013	Ra	Bridgeton NJ, Well 13	3	WRT-01 to -13	546	35,080	5.50	13-0160-01	USE ID, Grand View; activ = 317 pCi/g

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Spent Media Exchanges - Annual Tracking Form

Waste Shipment Date	Contaminant	CWS and Well Site	Container Code	Container ID	Est. Media Volume (cu ft)	Spent Media Weight (lb)	Activity - Parent Radionuclide (mCi)	Shipping Manifest Number	Disposal Site; Notes
8/26/2013	Ra	Aqua NJ Inc., Southern W15 (Erial NJ)	3	WRT-01 to -17	714	40,244	9.10	13-0050-01	USE ID, Grand View;activ = 602 pCi/g
9/9/2013	Ra	Aqua NC Inc., Brookwood W40 (Fayetteville NC)	3	WRT-01 to -06	252	13,590	6.26	13-0135-01	USE ID, Grnd View;activ = 1,015 pCi/g
9/17/2013	U	Grand Island NE	9 2 x tankers	n/a	930	44,600	18.90	13-0214-02	Cameco Crow Butte Operation, Crawford NE (uranium recovery) activ conc = 1,000 pCi/g
10/2/2013	Ra	Aqua NC Inc., Brkwood W69/70 (Fayetteville NC)	3	WRT-07 to -11	210	12,025	2.86	13-0143-01	USE ID, Grand View;activ = 524 pCi/g
10/11/2013	U	Grand Island NE	9 2 x tankers	n/a	930	44,600	18.90	13-0214-03	Cameco Smith Ranch-Highland Oper., Douglas WY (uranium recovery) activ conc = 1,000 pCi/g
11/8/2013	Ra	Vineland NJ, Well 5	3	WRT-01 to -15	680	33,962	10.50	13-0195-01	USE ID. Grand View; activ = 675 pCi/g
11/11/2013	U	Cotter Corp, Schwartzwalder Mine Treatment	8	n/a	260				Z-92 resin was only unloaded and not shipped off site.
11/21/2013	Ra	Sycamore IL, Well 6	3	WRT-01 to -09	378	24,490	2.64	13-0018-01A	USE ID, Grand View, activ = 237 pCi/g
12/2/2013	U	United Water Co., Sussex NJ, Well 2	8	WRT-01 to -02	42	1,860	3.65	13-0008-01	Cameco Crow Butte Operation, Crawford NE (uranium recovery) activ conc = 4,350 pCi/g

Subtotal - Radium Media Exchanges	9,829	578,587	126.9
Subtotal - Uranium Media Exchanges	2,191	92,340	42.3
Total- Spent Media to LLRW Landfills or Other Licensed Facilities	<u>12,020</u>	<u>670,927</u>	<u>169.1</u>

Non-Compact Waste Shipments to Local Subtitle D Landfills

3/7/2013	Ra	Elburn IL, Well 3	7	n/a	368	21,338	1.75	13-0012.01A	Waste Management, Inc., Laraway Landfill, vic. Joliet IL
			7	n/a	348	20,208	1.66	13-0012.01B	
		Subtotal			716	41,546	3.41		avg activ conc = 181 pCi/g
11/21/2013	Ra	Sycamore IL, Well 6	7	n/a	297	18,046	1.31	13-0018-01B	Waste Management, Inc., Laraway Landfill, vic. Joliet IL; activ= 160 pCi/g

Waste Shipment Date	Contaminant	CWS and Well Site	Container Code	Container ID	Est. Media Volume (cu ft)	Spent Media Weight (lb)	Activity - Parent Radionuclide (mCi)	Shipping Manifest Number	Disposal Site; Notes

Total - Local Landfill Disposals

1,013

59,592

4.7

Grand Total - All Exchanges

13,033

730,519

174

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Attachment 3 Training/Refresher Training

The following WRT and CWS/HOA training was reviewed:

WRT

Certification of Radiation Safety Training for System Specific

Radiation Safety Training	Refresher	Required Reading	6/21/13
Radiation Safety Training	Refresher	Required Reading	8/16/13
Radiation Safety Training	Refresher	Required Reading	9/10/13
Radiation Safety Training	Initial	D. Bollig	1/14-15/13
Radiation Safety Training	Instrumentation	D. Bollig	1/15/13
Radiation Safety Training	Refresher	Required Reading	7/1/13

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Attachment 4: Personnel Interviewed

1. Duane Bollig- VP of Regulatory and Government Affairs and Business Development
2. Kent Stovall- RSO
3. David Jones- VP Operations
4. Mike Dimitriou – President
5. Dan DeBello – Operations
6. Mike Hubler- Service Rep