

State of Washington Radioactive Materials License

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License Number: WN- I0508-1

Amendment Number 23

Pursuant to the Nuclear Energy and Radiation Control Act, RCW 70.98, and the Radiation Control Regulations, chapters 246-220 through 246-255 WAC, and in reliance on statements and representations heretofore made by the licensee designated below, a license is hereby issued authorizing such licensee to transfer, receive, possess and use the radioactive material(s) designated below; and to use such radioactive materials for the purpose(s) and at the place(s) designated below. **This license is subject to all applicable rules and regulations promulgated by the State of Washington Department of Health.**

1. Licensee Name: <p style="text-align: center;">Perma-Fix Northwest Richland, Inc. (formerly: Pacific EcoSolutions, Inc.)</p>	3. License Number: <p style="text-align: center;">WN-I0508-1 is amended in its entirety to read as follows:</p>
2. Address: <p style="text-align: center;">2025 Battelle Boulevard Richland, Washington 99354</p>	4. Expiration Date: <p style="text-align: center;">August 31, 2008</p>
	5. Reference Number(s):

6. Radioactive Material (element and mass number).

A. Any radioactive material Atomic Numbers 1- 83.

7. Chemical and/or Physical Form.

A. Solid or liquid form (contamination, as received or possessed, on equipment or in waste form).

8. Maximum quantity licensee may possess at any one time.

A. 60 curies (2.2 TBq) total, not to exceed the following individual isotope activity limits:

- Cobalt 60 – 20 curies (740 GBq),
- Strontium 90 – **25** curies (**925** GBq),
- Niobium 94 – 4 curies (148 GBq),
- Cadmium 113m – 2 curies (74 GBq),
- Europium 154 – 2 curies (74 GBq),
- Iodine-129 – 500 millicuries (18.5 GBq), and
- Lead-210 – 100 millicuries (3.7 GBq).

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|--|--|--|
| 6.B. Special Nuclear Material. | 7.B. Solid or liquid form
(contamination, as received or
possessed, on equipment or in
waste form). | 8.B. Not to exceed unity
formula quantities as
specified in WAC 246-220-
010 under the definition
"Special nuclear material in
quantities not sufficient to
form a critical mass." See
License Condition 9. |
| C. Source material. | C. Solid or liquid form
(contamination, as received or
possessed, on equipment or in
waste form). | C. 1,000 kilograms total (334
millicuries if U-238). |
| D. Any other radioactive
material, Atomic Numbers
84-103, except Special
Nuclear Material and source
material. | D. Solid or liquid form
(contamination, as received or
possessed, on equipment or in
waste form). | D. 2 curies (74 GBq) total,
except as specified in
License Condition 9.D. |

CONDITIONS

9. Authorized use.
- A-D. (1) For cutting, shearing, shredding (TP-01), compaction, supercompaction, and macro-encapsulation of dry waste, excluding explosive or highly flammable materials. This waste shall be kept onsite for no more than twelve (12) months from date of receipt.
- (2) For solidification mixing (TT-02; low-capacity mixer) of liquid wastes, excluding explosive or highly flammable materials. This waste shall be kept onsite for no more than twelve (12) months from date of receipt.
- (3) For in-container mixing/neutralization (TT-03; in-container mixer) of liquid waste, excluding explosive or highly flammable materials. This waste shall be kept onsite for no more than twelve (12) months from date of receipt.

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9. A-D. (4) For use in the development of new techniques for treating radioactive material or waste in order to reduce the volume of waste that must be disposed. A detailed work plan shall be submitted to the department in writing at least one month in advance of the planned work, and the project shall not begin until written approval is received from DOH.
- D. (1) Any container in which the activity of the diffuse waste is greater than 100 millicuries, departmental approval will be required prior to receipt of the waste.
- (2) Any container in which the activity of the diffuse waste is greater than 10 millicuries, Perma-Fix Northwest Richland, Inc. will institute Low Level Operating Procedure 104 (Non-Routine Operational Planning).
- (3) Any container or package that contains a discrete source (sealed or otherwise) with activity greater than 10 millicuries, departmental approval will be required prior to receipt or prior to processing for material already on site including LLR06-059.
10. Radioactive material shall be received, stored, and processed only at 2025 Battelle Boulevard, Richland, Washington, 99354.
11. The licensee shall comply with the provisions of chapter 246-220 WAC, "General Provisions"; chapter 246-221 WAC, "Radiation Protection Standards"; chapter 246-222 WAC, "Radiation Protection -- Worker Rights"; chapter 246-231 WAC, "Packaging and Transportation of Radioactive Material"; chapter 246-232 WAC, "Radioactive Materials -- Licensing Applicability"; chapter 246-235 WAC, "Radioactive Materials -- Specific Licenses"; and chapter 246-247 WAC, "Radiation Protection -- Air Emissions."
12. The Radiation Safety Officer for this program shall be Curt N. Cannon, assisted by dedicated staff that includes (1) a Radiological Engineer, (2) Health Physics Manager, and (3) a Dosimetry Control Clerk.
13. Radioactive material shall be used by, or under the direct supervision of Timothy A. Burckhard, Scott Call, Curt N. Cannon, Dakin Utley, Bradley Mulliner, Canyon Hoopes, Joe Schroeder, Zane Turner. **Andy Senter, Dave Ellingson, Marshall Lane, Rhonda Coughren, and/or, John Mullen.**

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14. **The licensee shall maintain, and follow the Emergency Plan, dated December 2006, as specifically approved by the department. Changes to the Emergency Plan shall be approved, in writing, by the department prior to implementation.**
15. The licensee shall maintain records of receipt, storage, and transfer of all radioactive material authorized by this license. These records shall be kept for inspection at 2025 Battelle Boulevard, Richland, Washington, 99354.
16. Approved procedures shall be contained in the Richland Mixed Waste Operations Procedures (MWOP). New or revised procedures shall be reviewed and approved as described in LLOP 102, "Revisions to the Operational Procedures." Departmental approval of new or revised procedures shall constitute incorporation by reference of those procedures.
17. The licensee shall establish in every contractual obligation, relating to radioactive materials, the ability to return radioactive materials, processed or unprocessed, to the prior licensed possessor.
18. The licensee is exempt from WAC 246-221-160(3) (3-hour survey requirement), provided the requirements of the Mixed Waste Operations Manual (MWOM) and DOH-approved Mixed Waste Operating Procedures (MWOP's) are adhered to.
19. Received waste shall be packaged in such a manner that waste containers received at the facility do not show:
 - A. Significant deformation.
 - B. Loss or dispersal of contents.
 - C. An increase in the external radiation levels as recorded on the manifest, within instrument tolerances.
 - D. Degradation due to rust or other chemical action which results in a loss of container integrity.
20. Waste shipments shall not be accepted at the facility unless accompanied by the following (a single shipment shall consist of not more than one vehicle or one tractor with legal trailer(s) attached):

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20.
 - A. Shipment manifest approved by DOH, Office of Radiation Protection, Waste Management Section.
 - B. Washington State Patrol vehicle inspection certificate or current visible Washington State 90-day vehicle inspection seal.
 - C. Properly executed current DOH Form RHF-31.
 - D. Upon Department of Health's request, other permits or documentation required under this license, or state or federal law or regulation.
21. Decommissioning of the licensed facility will be initiated within 12 months after operations have ceased, in accordance with applicable regulations.
22. Waste onsite before November 19, 2001 (i.e., bankruptcy legacy waste totaling about 385,000 lbs) shall be removed from the facility to a licensed receiver (e.g., disposal facility, broker, or original generator) by September 15, 2004.

Commencing September 16, 2004, DOH, Waste Management approval of incoming waste will be required if all legacy waste is not removed by September 15, 2004.
23. The licensee shall have and maintain a Washington State Office of Radiation Protection-approved financial surety arrangement adequate to cover decommissioning of the facility and disposal of all radioactive material possessed under the license. This arrangement is described in the July 7, 1999 Permit for Storage and Treatment of Mixed Waste and TSCA Regulated PCB Waste. The basis for the financial estimates shall be reviewed and adjusted as necessary annually. This review shall be provided to the Office of Radiation Protection, Waste Management Section by March 1 of each year. **The licensee shall obtain and have in place a standby trust agreement acceptable to the department by August 13, 2007.**
24. The licensee shall comply with the requirements set forth in Order dated November 29, 2005, signed by Gary Robertson, Director, Office of Radiation Protection, and made a part hereof by this reference. The licensee shall comply with any new requirements issued subsequent to date of original Order.

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25. The licensee shall conduct an environmental monitoring program capable of detecting the potential contribution of radioactive material from the facility to the environment. The program shall include collection of samples and analyses as described in the Low Level Operations Manual, Section 5.3, "Environmental Monitoring" in LLOP 212-217, and as subsequently revised per requirements of the Environmental Radiation Section of the Office of Radiation Protection.

At a minimum, the annual report shall include a comprehensive analysis, with statistical trend analyses and discussions of all anomalous results and actions taken, of all sample results, radionuclide usage, and the annual wind rose for the facility. The report shall also include a detailed description of events in which contaminants were released to the restricted/ unrestricted environment (outside of buildings) during the preceding year. The quantity and concentration of each principal contaminant released shall also be reported. The report shall be submitted in general accordance with the department's document entitled "Recommended Content and Format for Annual Environmental Reports". Deviations in the reporting format must be approved by the department. In addition, the licensee shall report immediately any environmental monitoring results in excess of reporting levels specified in the Low-Level Operations Manual (LLOM).

Two copies of the annual (calendar year) environmental report shall be submitted to the department no later than June 30 of each year. As a supplement to the annual report, one aerial photograph of the entire facility, taken within the calendar year of the report, will be submitted to the department. In addition to the two hard copies, the annual report will be submitted in an electronic format.

26. The licensee shall notify the department in writing 30 days prior to any changes in the licensee corporate structure, and shall notify the department with the appointment of a new Site Manager or RSO.
27. Reference to the "department" in this license shall mean the Department of Health or successor agency.
28. By June 30 of each year, the licensee shall submit a copy of its financial report or a certified financial statement and Security and Exchange Commission (SEC) Form 10K.

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29. The licensee shall have all licensee generated waste removed from the site with in 12 months of date of closure of the waste container. The licensee shall document, and mark the container with the date of closure, and the waste container shall be tracked from this date of closure.
30. The licensee shall conduct and document in a written report the annual review of the ALARA (As Low As Reasonably Achievable) Program. At a minimum, the annual ALARA review and written report shall include a:
- A. Detailed description of changes in the ALARA Program that were implemented during the review period,
 - B. Comprehensive analysis, with statistical trends, discussion of all anomalous results, actions taken, and comparison to ALARA goals for individual (worker) doses and facility (collective) doses,
 - C. Comprehensive analysis, with statistical trends, and comparison to ALARA goals for the duration of time licensee generated waste remained onsite,
 - D. Review of the facility layout, plant operations, new system installations, and operating procedures against ALARA goals to determine if modifications to systems, the facility, or procedures and practices are required to ensure compliance with ALARA goals, including reduction in exposure and reduction in the duration of time licensee generated waste remains onsite,
 - E. New ALARA goals for individual (worker) doses, facility (collective) doses, and the acceptable duration of time licensee generated waste may remain onsite, and
 - F. Specific recommendations including implementation plans for changes in systems, the facility, or procedures and practices that are deemed necessary to achieve compliance with ALARA goals including the reduction of exposure and the reduction in the duration of time licensee generated waste remains onsite.

The written ALARA reports shall be maintained by the licensee. A copy of the report shall be submitted to the department no later than June 30 of each year for the previous calendar year's operations.

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31. **Radioactive material, in closed, metal, containers (except drums), which have been prepared for transportation off site, may be stored outside the mixed waste buildings but within designated areas of the Radiological Controlled Area.**
32. Accept as specifically provided by this license, the licensee shall possess and use radioactive material described in Items 6, 7, and 8 of this license in accordance with statements, representations and procedures contained in the documents listed below, which are incorporated by reference into this license, and the department's "Rules and Regulations for Radiation Protection." The department's "Rules and Regulations for Radiation Protection" shall govern the licensee's statements in applications or letters, unless the statements are more restrictive than the regulations. Except as provided in License Condition 16, any change to the documents listed below shall require departmental approval in the form of an amendment to this license.
- A. Application and attachments dated April 8, 1998.
 - B. Letter dated November 19, 1998, RE: Application Item #29 signature of senior management.
 - C. Letter dated April 26, 2000, RE: Increase activity limits, add source material storage condition, additional authorized users and update MWOM.
 - D. Letter dated May 30, 2000, RE: Delete source material in storage request and R. Grondin from April 26, 2000 amendment request letter.
 - E. Letter dated August 9, 2000, RE: Add GASVIT™ Building to authorized storage locations and remove Phil Clash from authorized user list.
 - F. Letter dated October 11, 2000, RE: Add TT-03 (liquid treatment) to license, demonstration testing of MSO system, change RSO to Curt Cannon and remove Wayne Gregory from authorized user list.
 - G. Letter dated November 20, 2000, RE: Response to DOH request for additional information regarding liquid treatment and molten salt oxidation system demonstration.
 - H. Letter dated December 15, 2000, RE: Response to DOH request for additional information regarding waste form demonstrations.

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32. I. Letter dated December 19, 2000, RE: Variance request for source material increase to 500 kg under Conditions 9.A-D, and 500 kg under a new part of Condition 9.
- J. Letter dated January 11, 2001, RE: Add source material storage provision, shredder, low-capacity mixer, authorized users, WAC exemption, and MWOM changes.
- K. Letter dated February 9, 2001, RE: Withdrawn source material storage provision request, revised authorized users, request R & D condition, and additional GASVIT demonstration authorization.
- L. DOH's letter dated March 5, 2001, RE: Administrative changes to ATG amendment.
- M. DOH's letter dated April 3, 2001, RE: Implementing the March 5, 2001 letter with the exception of the RHF-31 clause.
- N. DOH's letter dated April 6, 2001, RE: Clarifying DOH's April 3, 2001 letter.
- O. Letter dated September 4, 2001, RE: Adjust subitems 8.A and 8.D, minor Condition 9 changes, and add/remove authorized users.
- P. Letter dated September 27, 2002, RE: Move all material to processing portion of license, remove storage conditions, add/remove users, add new condition regarding decommissioning and update MWOM.
- Q. ATG's Mixed Waste Operations Manual dated November 18, 2002.
- R. Letter dated June 19, 2003, RE: Change company name, add process, add users, add new condition regarding waste onsite when ATG shutdown.
- S. Letters dated December 15, 2005 and January 24, 2006, signed by Curt Cannon, Radiation Safety Officer (Change in Corporate Structure).
- T. PEcoS Operational Procedure (MWOP/LLOP) #102 rev. 5 dated May 23, 2006, and MWOP #101 rev. 1 dated May 23, 2006.

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32. U. Letter dated May 30, 2007 regarding transfer of license from Pacific EcoSolutions, LLC to Perma-Fix Northwest, Inc.
- V. Letter and attachment dated April 14, 2005 from DOH, RE: Notice of Correction regarding East Gate installation; Letter dated May 11, 2005 from PEcoS, RE: response to Notice of Correction regarding East Gate installation; Letter dated May 24, 2005 from DOH, RE: response to PEcoS letter dated May 11, 2005; Letter dated June 11, 2005 from PEcoS; RE: response to DOH letter dated June 11, 2005; Letters from DOH dated June 13 and July 2005, RE: response to PEcoS letter dated June 11, 2005; Letter dated August 12, 2005 from PEcoS, RE: updated facility diagram showing East Gate.
- W. Attachment dated May 24, 2005 RE: MOU between PEcoS and IsoRay; Letter and attachment dated August 12, 2005 from PEcoS, RE: updated facility drawing showing IsoRay gates;
- X. Letter dated September 29, 2006 from PEcoS, RE: amendment request for increased possession limit, removal/addition of authorized users, changes to various License Conditions.
- Y. Letter and attachments dated June 21, 2007 from DOH, RE: DOH approval of PEcoS Emergency Plan dated December 2006.
- Z. LLOP/MWOP #101 rev. 2 dated August 22, 2007, and LLOP/MWOP #102 rev. 6 dated June 25, 2007.
- AA. Letter dated August 31, 2007 from Perma-Fix Northwest, RE: amendment request for licensee name change, increased possession limit, removal/addition of authorized users, changes to various License Conditions.

FOR THE STATE OF WASHINGTON DEPARTMENT OF HEALTH

Date: October 5, 2007

By _____

Mikel J. Elsen, Supervisor
Waste Management Section