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Environmental Protection Division
Water Quality & RCRA Group (ENV-RCRA)
P.O. Box 1663, Mail Stop K490
Los Alamos, New Mexico 87545
(505) 667-7969/FAX: (505) 665-9344

Date: November 22, 2010
Refer To: ENV-RCRA-10-227
LA-UR: 10-07819

Mr. William Olson, Chief
Ground Water Quality Bureau
New Mexico Environment Department
Harold Runnels Building, Room N2250
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502

Dear Mr. Olson:

SUBJECT: ADDITIONAL INFORMATION, NOTICE OF INTENT TO DISCHARGE TREATED GROUNDWATER FROM CDV-16-4IP DEVELOPMENT AND PUMPING TESTS

On October 28, 2010, Los Alamos National Laboratory (the Laboratory) submitted a notice of intent (NOI) to discharge treated groundwater produced during well development and pumping tests at monitoring well CdV-16-4ip (ENV-RCRA-10-210). In the NOI the Laboratory committed to provide your agency with additional information on the granular active carbon (GAC) treatment system once it became available from the water treatment subcontractor. This letter provides the following additional information on the GAC treatment system:

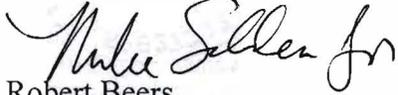
1. Specifications on the GAC (Enclosure 1)
2. Specification on the absorber vessel (Enclosure 2)
3. Total Carbon Usage at Breakthrough (Enclosure 3)
4. Final Treatment Configuration (Enclosure 4)

Additionally, the Laboratory has revised downward its estimate of the volume of water to be treated and discharged under the NOI from 400,000 – 600,000 gallons to 200,000 – 400,000 gallons.



Please contact me at (505) 667-7969 if you have questions regarding additional information.

Sincerely,



Robert Beers
Water Quality & RCRA Group

Enclosures: a/s

Cy: Marcy Leavitt, NMED/SWQB, Santa Fe, NM, w/enc.
James Bearzi, NMED/HWB, Santa Fe, NM, w/enc.
Gene Turner, LASO-EO, w/enc., A316
Hai Shen, LASO-EO, w/enc., A316
Steve Yanicak, LASO-GOV, w/enc., M894
Michael B. Mallory, PADOPS, w/o enc., A102
J. Chris Cantwell, ADESHQ, w/o enc., K491
Michael Graham, ADEP, w/o enc., M991
Victoria George, REG-DO, w/o enc., M991
Kate Lynnes, REG-COM, w/o enc., M991
John McCann, PMFS-DO, w/enc., M992
Tim Goering, ET-EI, w/enc., M992
Mark Everett, ET-EI, w/o enc., M992
Mike Saladen, ENV-RCRA, w/o enc., (E-File)
Jennifer Griffin, ENV-RCRA, w/enc., (F-File)
ENV-RCRA File, w/enc., K490
IRM-RMMSO, w/enc., A150

ENCLOSURE 1

Westates[®] coconut shell based granular activated carbon - AquaCarb[®] 830C, 1230C and 1230AWC

For use in Potable water, Wastewater and Process Water applications

Description

AquaCarb[®] 830C, 1230C and 1230AWC carbons are high activity coconut shell based granular activated carbons. These hard, attrition resistant high surface area carbons are designed to remove difficult to adsorb organics from potable, waste and process water. They are especially effective for adsorbing chlorine, disinfection by-products, TCE, PCE, MTBE and other trace level organics. AquaCarb[®] 1230AWC carbon is acid washed yielding a very low ash content, pH neutral carbon that is ideally suited for use in potable water and high purity water systems for the microelectronics and other industries.

Applications

Cost effective AquaCarb[®] activated carbons developed by Siemens have been demonstrated to provide superior performance in an extensive array of liquid phase treatment applications. AquaCarb[®] activated carbons are available for:

- Removal of trace organic contaminants
- Pesticide removal
- MTBE removal
- Disinfection by-product (DBP) removal
- Drinking water treatment
- Industrial process water treatment
- High purity water applications
- Home water filtration systems

Quality Control

AquaCarb[®] activated carbons are extensively quality checked at our State of California certified environmental and carbon testing laboratory located in Los Angeles, CA. Siemens' laboratory is fully equipped to provide complete quality control analyses using ASTM standard test methods in order to assure the consistent quality of all Westates[®] carbons.

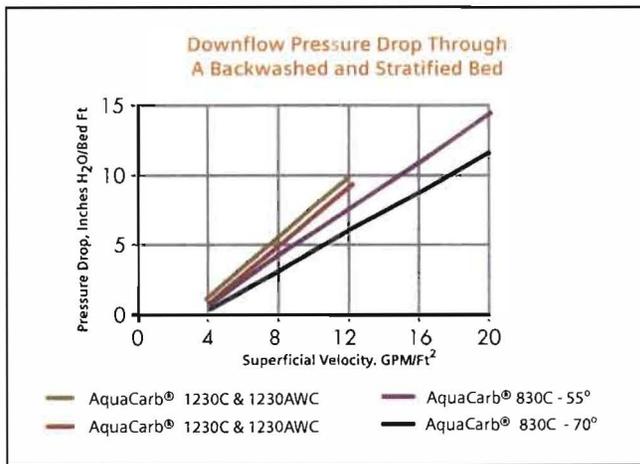
Our technical staff offers hands-on guidance in selecting the most appropriate system, operating conditions and carbon to meet your needs. For more information, contact your nearest Siemens representative.



Features and Benefits:

- ANSI/NSF Standard 61 classified for use in potable water applications
- Fully conforms to physical, performance and leachability requirements established by the current ANSI/AWWA B604 (which includes the Food Chemical Codex requirements)
- A detailed quality assurance program guarantees consistent quality from lot to lot and shipment to shipment

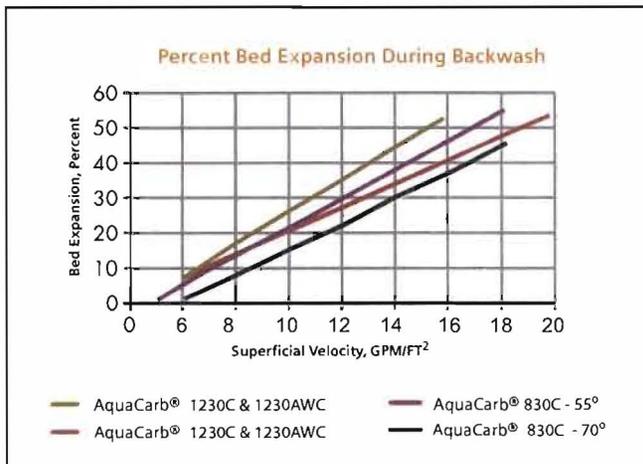
Typical Properties			
Parameter	AquaCarb® 1230C	AquaCarb® 1230AWC	AquaCarb® 830C
Carbon Type	Coconut Shell	Coconut Shell	Coconut Shell
Mesh Size, U.S. Sieve	12 x 30	12 x 30	8 x 30
Effective Size, mm	0.6 - 0.85	0.6 - 0.85	0.8 - 1.1
Uniformity Coefficient	2.0	2.0	2.1
Iodine No., mg I ₂ /g	1100	1100	1100
Hardness No., Wt. %	95	95	95
Abrasion No., Wt. %	85	85	85
Apparent Density, g/cc	0.46 - 0.52	0.45 - 0.52	0.46 - 0.52
Water Soluble Ash, Wt. %	2	0.2	2
Contact pH	9 - 10	6.5 - 8	9 - 10



Safety Note: Under certain conditions, some compounds may oxidize, decompose or polymerize in the presence of activated carbon causing a carbon bed temperature rise that is sufficient to cause ignition. Particular care must be exercised when compounds that have a peroxide-forming tendency are being adsorbed. In addition the adsorption of VOCs will lead to the generation of heat within a carbon bed. These heats of reaction and adsorption need to be properly dissipated in order to fully assure the safe operation of the bed.

Wet activated carbon readily adsorbs atmospheric oxygen. Dangerously low oxygen levels may exist in closed vessels or poorly ventilated storage areas. Workers should follow all applicable state and federal safety guidelines for entering oxygen depleted areas.

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Water Technologies
phone 866-613-5620

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The information provided in this literature contains merely general descriptions or characteristics of performance which in actual case of use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of the contract.

ENCLOSURE 2

PV[®] Series Liquid Phase Adsorbers

PV-500, PV-1000, PV-2000

Applications

The PV[®] Series adsorbers are designed for use in a wide range of low/high flow and pressure applications.

- Groundwater remediation
- Wastewater filtration
- Tank rinse water treatment
- Pilot testing
- Underground storage tank clean up
- Leachate treatment
- Dechlorination
- Spill cleanup
- Hydrotesting
- Drinking Water

Installation, Startup and Operation

Siemens can provide a total service package that includes utilizing OSHA trained personnel providing on-site carbon changeouts, packaging and transportation of spent carbon for recycling at our reactivation facilities.



At the time of purchase or rental of the adsorbers, arrangements should be made for the reactivation of the spent carbon. Siemens will provide instructions and assistance on how to obtain acceptance of the spent carbon at our reactivation facilities. Spent carbon cannot be accepted for reactivation until the acceptance process is completed.

Benefits & Design Features

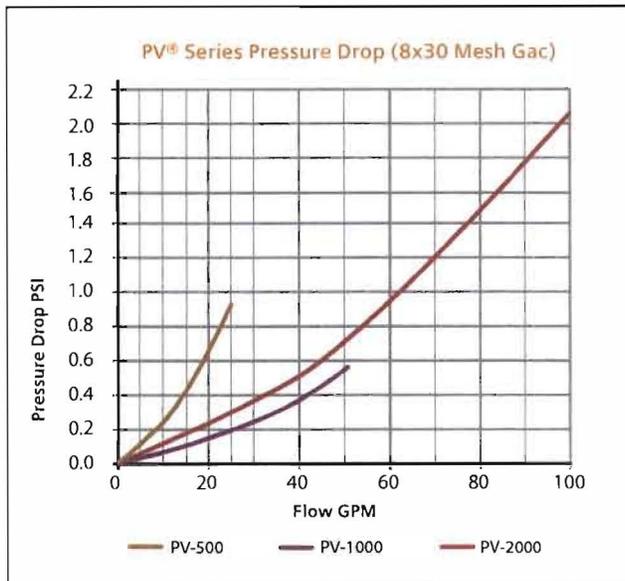
- Durable, carbon steel construction includes internally/externally welded seams.
- SSPC-SP5 sandblasted, NSF-approved baked epoxy interior coating; urethane exterior finish.
- Approved for the transport of hazardous spent carbon.
- Top and side manways permit easy access and inspection of vessels internals and linings.
- Skid-mounted for easy handling and installation.
- Optimized underdrain system for low pressure drop operation.

Piping Manifold (Optional)

- 2" / 3" sch 80 PVC piping and valves that allow either adsorber to be used in the lead or lag position (optional carbon steel and stainless steel piping).
- Series or parallel operation.
- Clean utility water connection for manual backflush.
- Sampling ports and pressure gauges.
- Flexible hoses with Kamlock fittings allow easy installation and removal during service exchange operations.
- Available for purchase or rental.

Specification/Typical Properties			
	PV®-500	PV®-1000	PV®-2000
Dimensions (Dia. x Overall Height – Approx.)	30" x 5'7"	48" x 5'7"	48" x 8'8"
Inlet Connection, (Top)	2"	3" NPT (Female)	3" NPT (Female)
Outlet Connection, (Bottom)	2"	3" NPT (Male)	3" NPT (Male)
Manway, Top & Lower Side	11" X 15" (top only)	11" X 15"	11" X 15"
Internal Piping	PVC	PVC	PVC
Interior Coating (All Units)	Epoxy	Epoxy	Epoxy
Exterior Coating (All Units)	Epoxy/Urethane	Epoxy/Urethane	Epoxy/Urethane
Carbon Fill Volume (Cu.ft.)	18.5	34	68
Vessel Weight (lbs.):			
Shipping (With Carbon)	1050	1910	3200
Operating (Approx.)	1750	4300	7500
Flow, GPM (Nominal)	25	50	100
Pressure, PSIG (Maximum) ¹	75	75	75
Temperature °F. (Maximum)	140	140	140
Pounds Of Activated Carbon	500	1000	2000
Contact Time @ Max Flow/Min	5	5	5
Backflush rate (GPM) @ 55°F	15-20	40-50	40-50

¹The PV® Series adsorbers are not ASME code stamped. Pressure rating applies to liquid only.
 For detailed dimensional information or drawings, contact your local Siemens sales representative.
 For information on the HP® Series ASME code stamped adsorbers, contact your local Siemens representative.



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Siemens
 Water Technologies
 2430 Rose Place
 Roseville, MN 55113
 800.525.0658 phone

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ENCLOSURE 3

LIQUID PHASE ISOTHERM DESIGN PARAMETERS

Water Flow Rate

25.00000 gpm

LIQUID PHASE DESIGN

<u>Component Name</u>	<u>Concentration</u>	<u>#GAC/1000 gallons of water</u>
RDX (Cyclonite) est.	320.0000 ppbw	0.0197

Total Carbon Usage Estimated at Breakthrough

0.7077 #GAC/day

0.0197 #GAC/1000 gallons of water

The above carbon usage estimates are based on both experimental data as well as predictive models. Actual carbon usage rates observed at various stages of breakthrough depend on many factors, and may therefore differ from the above estimates. Please contact Westates Carbon Products for further assistance.

LIQUID PHASE ISOTHERM DESIGN PARAMETERS

Water Flow Rate

25.00000 gpm

LIQUID PHASE DESIGN

<i>Component Name</i>	<i>Concentration</i>	<i>Q [Wt %]</i>	<i>#GAC/1000 gallons of water</i>	<i>Suitability</i>
RDX (Cyclonite) est.	320.0000 ppbw	23.7506	0.0112	In Range

Total Carbon Usage Estimated at Breakthrough

0.7077 #GAC/day

0.0197 #GAC/1000 gallons of water

*(Both totals have been multiplied
by a factor of 1.75)*

The above carbon usage estimates are based on both experimental data as well as predictive models. Actual carbon usage rates observed at various stages of breakthrough depend on many factors, and may therefore differ from the above estimates. Please contact Westates Carbon Products for further assistance.

ENCLOSURE 4

Final Treatment Configuration – CdV-16-4ip Pumping Tests
(all treatment equipment by SUBCONTRACTOR unless noted)

