

*David Garrett, P.G., P.E.*

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*Engineering and Geology*

May 16, 2011

Ms. Elizabeth Werner, Hydrogeologist  
NC DENR Division of Waste Management  
Solid Waste Section  
401 Oberlin Road  
Raleigh, North Carolina, 27611

**RE: Preliminary Blasting Plan  
Construction of Phase 2, Cell A  
WCA Brownfield Road C&D Landfill  
Wake County, NC (Permit #92-31)**

Dear Ms. Werner:

On behalf of WCA (Waste Corporation of America), I am pleased to convey the following plan for removing known pinnacles or ledges of rocklike materials within the referenced cell. The presence of rocklike materials above finished grades was anticipated based on the Phase 2 site permitting study (by me) ca. 2008. Test borings and test pits identified isolated boulders, ledges, and “pinnacles” (abrupt vertical elevation changes in short lateral distances), similar to those encountered in Cell 1B ca. 2006, for which I prepared and oversaw a blasting plan for then-unanticipated rocklike materials. The anticipated rocklike materials in Phase 2A were demonstrated not to be bedrock based on the investigative work. Conditions of isolated rocklike materials are quite common due to differential weathering within the Rolesville Granite formation that underlies the site.

WCA has prepared the attached blasting plan with my input, which describes the techniques, agents, and monitoring that will be used. The plan is considered preliminary at this time, whereas the precise locations, depths, and volumes have yet to be identified. Grading has commenced and rock bodies in the vicinity of those anticipated have been found but not drilled for quantifying or setting charges. We anticipate that the rocklike materials will be removed during the upcoming week or two, likely utilizing one or more grouped shots – several areas may be shot simultaneously using appropriate delays to minimize damage to existing monitoring wells and existing waste cells. The attached map shows the approximate area of anticipated blasting, whereas I have tentatively identified two locations for seismic monitoring, including MW-1, and the edge of Phase 1C (along the “strike” of the rocklike ledge extending from the center of Phase 2A into Phase 1C). The rock bodies will be delineated in more detail during the drilling for the shot placement (explained below).

My experience has been that once the rock body is identified, a blasting area is delineated both horizontally and vertically by drilling on a 5 to 7 foot grid, extending to a depth of 4 feet beneath design base grades. The driller will keep a record of the depths at which rocklike materials are

encountered for pay quantities (and whether the drill passed through the rock, as was the case for ledges encountered within Phase 1B). Blasting agents for each event are always loaded, wired, and shot in a single day, typically the day after the drilling is completed on larger shots.

This plan includes a provision for 24-hour notification to the Solid Waste Section, in order to afford an opportunity for Section staff to observe the shots first-hand. The follow up reports will be prepared by a licensed geologist and will include relevant driller's data, observations made during the shot preparation (weight and type of blasting agents, delay times, number of delays per shot, depths of borings, whether stemming or matting was used, post-blasting observations of the blasted particles and subgrade), photographic documentation, and seismic monitoring records (to be collected by others). These reports will be submitted to the Section within 48 hours following the shot and incorporated into final CQA documentation (by others). The geologist's reports will provide the required certification that the conditions encountered during construction are consistent with those anticipated based on the permitting studies.

Please contact me at your earliest convenience (on my mobile phone) if you have any questions or comments. I will gladly meet you at the site to review present conditions or discuss these plans. I anticipate we will receive a written approval from the Section, and we will provide you with certification of the construction in accordance with Section requirements.

Very Truly Yours,

A handwritten signature in black ink, appearing to read "G. David Garrett".

G. David Garrett, P.G., P.E.

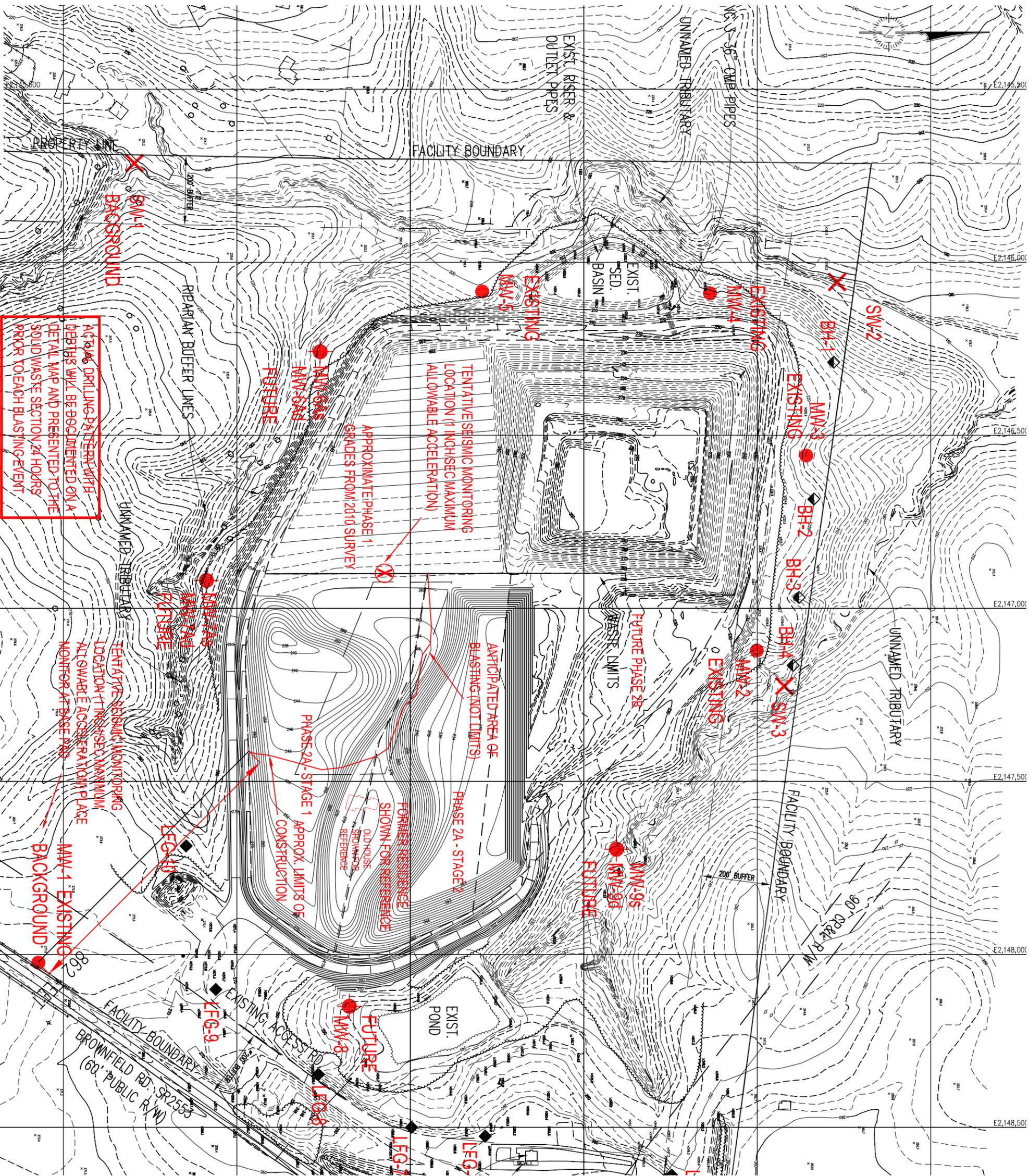
cc: Ed Mussler, P.E., Permitting Branch Head, Solid Waste Section  
Nick Marotta, Dennis Gehle – WCA

WCA Waste Corporation  
Raleigh Brown Field Road C&D Landfill  
Phase 2, Cell A  
Blasting Work Plan

This narrative presents a plan to drill and blast an estimated 30,000 cubic yards of rock confined to the area of Phase 2, Cell A, now under construction. This rock is the same formation that was blasted at the site during the construction of Phase 1, Cells B and C in 2006. (Reference Mr. David Garrett's plan for Phase 1, Cell B) A map showing the Phase 2, Cell A Subgrade contours and the anticipated area of blasting is included herewith. The rock to be blasted ranges at depths from approximately 12' to 30' below existing ground surface.

Drilling and blasting operations are to be conducted by our subcontractor, Wampum Hardware Co. Copies of their Certificate of Insurance and Explosives License are included herewith. All blasting will be monitored with surface vibration monitors. There are no structures within 1,500 lineal feet of the blast area, the nearest being the landfill scale house and office. Since the landfill is an unlined facility, controlled blasting would not have deleterious impact on the site. Every effort will be made to limit the peak particle velocity to 1 inch per second at the blast monitoring locations.

A post-blast observation summary shall be prepared and submitted within 30 days of the completion of rock removal from the blasting area. The report will provide details of the blasting activities, a certification from the blasting contractor that the drill hole pattern, charges and delays were selected in such a manner to minimize energy impacting the underlying rock. This report shall also include certification from a licensed geologist.



ACTUAL DRILLING PERMIT WITH DEBITS WILL BE DOCUMENTED ON A DETAIL MAP AND PRESENTED TO THE SOLID WASTE SECTION 24 HOURS PRIOR TO EACH BLASTING EVENT

TENTATIVE SEISMIC MONITORING LOCATION (1 INCH/SEC MAXIMUM ALLOWABLE ACCELERATION) PLACE MONITOR AT BASE PMS

MM-1 EXISTING BACKGROUND

MM-1 EXISTING BACKGROUND



## Distributors of Explosives

636 PADEN ROAD  
New Galilee, PA 16141

Business Phone:  
(724) 336-4501  
(724) 336-5153  
FAX (724) 336-3818

Brownfield Road C&D Landfill  
2600 Brownfield Road  
Raleigh, NC 27610  
DNR Permit 92-31  
Blast Plan

BLAST LOCATION	TBD
NUMBER HOLES	150 max
SPACING	10' max
BURDEN	10' max
DEPTH	36' max
STEMMING	7-10' max
HOLE DIAMETER	4.5" max
LBS PER DELAY	250# max
DELAY INTERVALS	150 max
SCALED DISTANCE	35 min
INITIATION	NON-ELECTRIC
SEISMOGRAPH	2 ea
SEISMIC LOCATION	CLOSEST DWELLING
BLASTING MATS	NA
POWDER FACTOR/YD	1.5 MAX
Stations #	TBD
Structures:	None within 1000 ft

**WARNING SIGNALS: Three (3) audible horns/sirens of ten seconds each, 2 minutes before detonation of the blast. Two (2) audible horns/sirens of ten seconds, one minute before detonation. The all clear audible horn will be sounded for twenty (20) seconds after the blast.**

## Procedure for Blasting

### **1. Project Designations**

Blasters on site: Robert McConaughy, Joe Wilhelm, & Bill Wagner

### **2. Safety and Health Requirements.**

Audible warning signals will be done with a siren.

No on site storage of explosives. Wampum Hardware Co. will deliver to the job.

Pre-blast surveys will be done on dwellings within 1000 feet of blast area.

Both air and PPV will be monitored at the closest dwellings, structures and utilities.

Seismographs will be done by Wampum Hardware Co.

Fly rock control will be prevented by using safe confinement calculations and blasting mats when needed.

### **3. Methods and Procedures**

Pneumatic drills will be used

Hole diameter for production blasting boreholes a max. of 4.5"

Drill pattern to be determined rock size breakage.

All blasting will be done with non-electric detonators

#### Type of explosives:

Manufacturer	DYNO Nobel & Wampum Hardware Co.
Types	High Explosives & Blasting agents
Dimensions	2x8 up to 5.5 x 35
Weight	1/2Lb to 35 lb sticks

#### Type of Detonators

Manufacture	DYNO Nobel
Type	Nonel
Delays	17, 25, 33, 67, 84 100 350, 500 ms

#### Loading Parameters

Maximum powder factor	1.5 lbs per cubic yard
Maximum Weight/delay	250 lbs delay

#### Detonator Delay Pattern

Blast will be designed so that no more than 250 lbs will detonate within 8 milliseconds. The delay pattern will vary on each blast.



# CERTIFICATE OF LIABILITY INSURANCE

OP ID MB  
WAMPU-1

DATE (MM/DD/YYYY)

06/21/10

<b>PRODUCER</b> First Nat'l Ins - Chippewa 110 Central Square Dr. Suite B Beaver Falls PA 15010 Phone: 724-846-1550 Fax: 724-846-0845	<b>THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW</b>	
	<b>INSURERS AFFORDING COVERAGE</b>	<b>NAIC #</b>
<b>INSURED</b>  Wampum Hardware Co. 636 Paden Road New Galilee PA 16141	INSURER A: Ins Co of the State of PA	
	INSURER B: *National Union Fire Ins Co	19445
	INSURER C:	
	INSURER D:	
	INSURER E:	

## COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR ADD'L LTR	INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YYYY)	POLICY EXPIRATION DATE (MM/DD/YYYY)	LIMITS	
B		<b>GENERAL LIABILITY</b> <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY CLAIMS MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO. JECT <input type="checkbox"/> LOC	GL1595372	07/01/10	07/01/11	EACH OCCURRENCE	\$ 1,975,000
						DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 100,000
						MED EXP (Any one person)	\$ 5,000
						PERSONAL & ADV INJURY	\$ 1,975,000
						GENERAL AGGREGATE	\$ 2,000,000
						PRODUCTS - COMP/OP AGG	\$ 2,000,000
B		<b>AUTOMOBILE LIABILITY</b> <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS	CA1606939	07/01/10	07/01/11	COMBINED SINGLE LIMIT (Ea accident)	\$ 2,000,000
						BODILY INJURY (Per person)	\$
						BODILY INJURY (Per accident)	\$
						PROPERTY DAMAGE (Per accident)	\$
		<b>GARAGE LIABILITY</b> <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT	\$
						OTHER THAN AUTO ONLY: EA ACC	\$
						AGG	\$
B		<b>EXCESS / UMBRELLA LIABILITY</b> <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE DEDUCTIBLE <input checked="" type="checkbox"/> RETENTION \$10,000	BE1058482	07/01/10	07/01/11	EACH OCCURRENCE	\$ 20,000,000
						AGGREGATE	\$ 20,000,000
							\$
							\$
							\$
A		<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under SPECIAL PROVISIONS below Y/N <input type="checkbox"/>	WC3621283	07/01/10	07/01/11	<input checked="" type="checkbox"/> WC STATUTORY LIMITS	
						OTH-ER	
						E.L. EACH ACCIDENT	\$ 1,000,000
						E.L. DISEASE - EA EMPLOYEE	\$ 1,000,000
						E.L. DISEASE - POLICY LIMIT	\$ 1,000,000
		OTHER					

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

## CERTIFICATE HOLDER

## CANCELLATION

PA Dept of Environmental Protection, Bureau of Mining & Reclamation, State Office Bldg. PO Box 8461 Harrisburg PA 17105

PADEPT

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE



LICENSE/PERMIT (18 U.S.C. CHAPTER 40, EXPLOSIVES)

In accordance with the provisions of Title XI, Organized Crime Control Act of 1970, and the regulations issued thereunder (27 CFR Part 555) you may engage in the activity specified in this license/permit within the limitations of Chapter 40, Title 18, United States Code and the regulations issued thereunder, until the expiration date shown. See "WARNING" and "NOTICES" on back.

DIRECT ATF CORRESPONDENCE TO Christopher R. Reeves Chief, Federal Explosives Licensing Center (FELC) Bureau of Alcohol, Tobacco, Firearms and Explosives 244 Needy Road Martinsburg, West Virginia 25405 Telephone: 1-877-283-3352 Fax: 1-304-616-4401

LICENSE PERMIT NUMBER 8-PA-007-20-2C-00015 EXPIRATION DATE March 1, 2012

8-PA-007-20-2C-00015

March 1, 2012

NAME WAMPUM HARDWARE CO Premises Address CHANGES? You must notify the FELC at least 10 days before the mo 636 PADEN RD NEW GALILEE, PA 16141-0000

TYPE OF LICENSE OR PERMIT 20-MANUFACTURER OF HIGH EXPLOSIVES

CHIEF, FEDERAL EXPLOSIVES LICENSING CENTER (FELC)

Christopher R. Reeves Christopher R. Reeves

PURCHASING CERTIFICATION

I certify that this is a true copy of a license/permit issued to me to engage in the activity specified.

(SIGNATURE OF LICENSEE/PERMITTEE)

Mailing Address CHANGES? You must notify the FELC at least 10 days before the change

WAMPUM HARDWARE CO 636 PADEN RD ATTN IAN ANDERSON NEW GALILEE, PA 16141-0000

The licensee/permittee named herein shall use a reproduction of this license/permit to assist a transferor of explosives to verify the identity and status of the licensee/permittee as provided in 27 CFR Part 555. The signature on each reproduction must be an ORIGINAL signature.