ASH AT WORK

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Anthony, NAA's New Executive VEEP, Will Seek Expanded Use of Recovered Resources

Tobias Anthony is the new Executive Vice President of the National Ash Association. He began his tenure on June 28 as the NAA's third Executive Director since its formation in 1968.

His selection was announced by President James P. Plumb following an extensive screening of applicants by the trade association's Executive Committee. He succeeds James N. Covey.

"Toby brings with him the necessary background and corporate experience we were seeking to effectively re-establish an active Washington Connection for the ash industry," Plumb observed.

"Additionally," Plumb said, "we are very pleased with his efforts to coordinate and develop a strategy program relating to ash utilization with the Utility Solid Waste Activities Group (USWAG) and Edison Electric Institute."

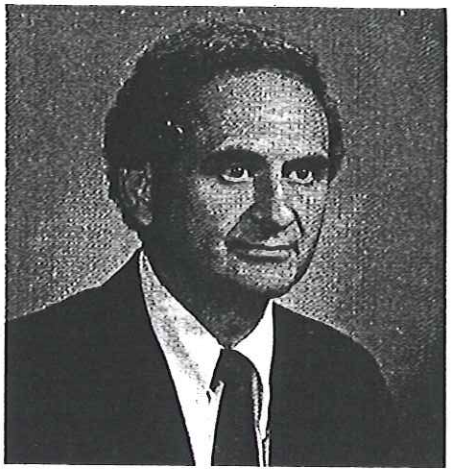
The 57-year old Anthony joined the NAA following a ten year stint as Vice President-Business Development and Washington Affairs for Research-Cottrell of Bedminster, N.J.

Eliminate Barriers

In accepting his new position, Anthony stated he would work toward the elimination of artificial barriers to the use of recovered ash when it is clear it has economic advantages over natural materials.

"National policy should favor, yes, even promote the recovery and expanded use of a wide-range of industrial by-products such as power plant ash," he noted. "Resource recovery should be on everyone's mind."

His corporate background, spanning a period of 30 years following his graduation from Holy Cross College and Queens College, also included employment with Grumman Corporation of Bethpage, Long Island and Jelco Corporation of New York City. He has done graduate studies in macro-economics and finance.



Tobias Anthony

The new NAA executive has authored numerous papers on economics, energy, and the environment, and has served as a panelist for several Congressional, EPA, and DOE Seminars.

Anthony has served as an Advisory member of EPA's Construction Grants Program, Chairman of the Environmental Industry Council, and was founder of the Council of Industrial Boiler Owners. He was named to Who's Who in Finance and Industry in 1977-1978.

He and his wife, Ines, are the parents of four children - Dayna, Lisa, Tobin, and Adam.

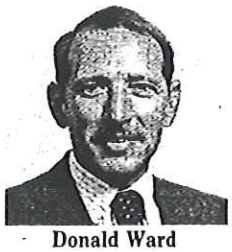
Ash Short Course Enrollment Now Being Finalized at LSU

BATON ROUGE, LA. — Enrollees are still being accepted for the Ash Short Course to be held here at Louisiana State University beginning November 6.

The three-day program will feature ash management and quality control as well as basic utilization skills for the use of the by-products of the coal combustion cycle.

Interested? Complete the enclosed registration blank.

Ward, Tackett Are New NAA Officers



Donald Ward

WASHINGTON — Two changes in the make-up of the officers of the National Ash Association have been approved by the Executive Committee. President James P. Plumb disclosed that Donald T. Ward of Baltimore Gas & Electric Company and Charles Tackett of Pennsylvania Power & Light Company were named vice president and assistant secretary-treasurer, respectively.

Vice President Ward is project Manager-Ash Management for the Baltimore utility and is serving as chairman of Budget/Finance for the Association.

Tackett is currently Manager-Ash Marketing for the Pennsylvania utility at the corporate level in Allentown.

The action followed the resignation of Stephen T. Benza as P.P. & L's Supervisor of Ash Marketing. He left the employ of the electric utility to form his own ash marketing organization - KBK Enterprises, Inc., headquartered in Bethlehem, PA.

The former VEEP stated he planned to remain active in the NAA as a Class M member and the Ash Marketing Council. KBK has contracts to screen and sell bottom ash for P.P. & L and American Electric Power.

IN THIS ISSUE

NAA Message Board

Tobias Anthony
Executive Vice President

It is a pleasure for me to be the new Executive Vice President of the National Ash Association (NAA) and to have this opportunity to share my thoughts with you.

My relationship with the electric utility industry extends back some ten years. During that period, I studied the role of the industry particularly as it relates to environmental prerogatives. Those studies revealed to me the nature of the electric industry and the value of its contribution.

I am impressed as to just how essential low cost electric power is to a productive nation. Automation driven by electric power is the key to an industrial, productive nation, and through increases in productivity, future generations are assured a higher standard of living. The cheaper the power, the greater the productivity. All of this brings me to a philosophical point. It is clear that elected officials, particularly in Washington, tend to take utilities for granted, and neglect almost always leans toward disregard. It will be NAA's mission along with other utility associations to change that direction.

One of my goals is to impress upon officials in Washington that utilities produce the fourth most abundant mineral in this country - coal ash. One year's production contains as much aluminum as we produce annually from natural sources. It contains more than 2.5 million tons of lime, and over 12 million tons of ferric oxide. One day, it will be essential and cost-effective to extract those materials while becoming energy independent, and a coal-based economy.

A second goal is to remove impediments to the use of ash and to prevent future unfounded concerns. There are artificial factors in the marketplace which work against the competitive re-use of materials; barriers established by tradition and even biases. We believe these factors work against the needs to a productive nation as natural materials inevitably become depleted. Concurrently, we are addressing concerns over practices designed to reclaim land with ash in an environmentally sound manner. Sound ash-management is the solution to these concerns, just as soil conservation practices have worked well for decades to maintain productive, agricultural land.

In the overall, it is gratifying to be part of a conservation movement of such value to our nation. There is an indigenous marketing and social value in re-using ash to keep it out of landfills while conserving other natural material. In the short lifespan of the NAA, its members have made exceptional progress of benefit and value to the public. I am delighted to join the leadership in accelerating this progress.

ASH PROJECT BECOMES T-SHIRT INSIGNIA—The mine subsidence control project in Fairmont, WV has become emblazoned on a T-Shirt and distributed by the contractor, Nicholson Construction, Co. of Bridgeville, PA, to city officials and others associated with the project. The art work is shown above. To-date the firm has pumped more than 60,000 tons of a fly ash-cement grout mixture into an abandoned mine beneath the city to prevent further subsidence from taking place.

John Tonkovich Dies At 59, Was An Active NAA Member

John Tonkovich

SHADYSIDE, OH. — John D. Tonkovich, an ardent supporter of the National Ash Association and a well-known contractor, died at his home near here on June 27. He was 59.

His son, Jim, has succeeded him as president of the firm and continues the firm name - John D. Tonkovich & Son, Inc. The company has a contract to remove and sell the power plant ash from Ohio Edison's Burger Station at Powhatan Point.

Known to his friends as "Big John," he worked in concert with the NAA and the Ohio Contractor's Association to get ash approved as a construction aggregate by the Ohio Department of Transportation.

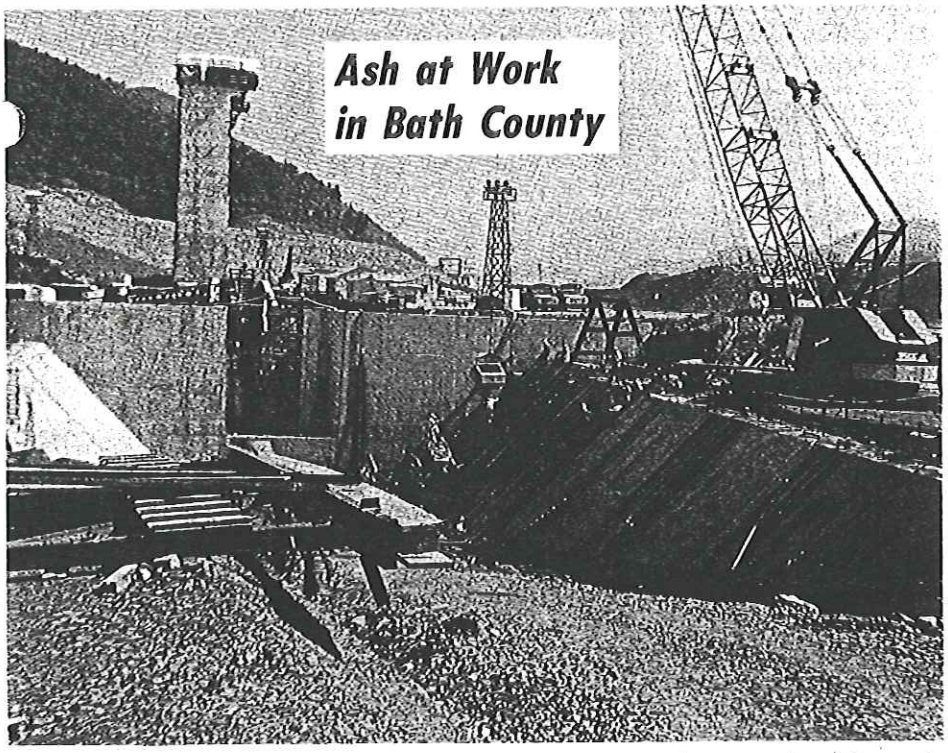
He participated in a demonstration fly ash reclamation project with the U.S. Bureau of Mines on an abandoned coal refuse embankment near his operation which ultimately led to the acceptance of the concept by the U.S. Soil Conservation Service.

Calendar of Events

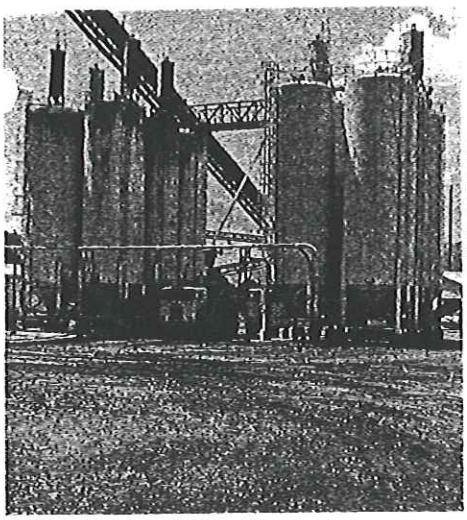
OCTOBER
- 1-4 1983 Annual AASHTO Conference, Denver, CO.
- 19 American Society of Highway Engineers, Altoona Section. Altoona, PA. (Dinner Meeting).

NOVEMBER
- 6-9 Ash Short Course, Technology & Utilization of Power Plant Ash, Louisiana State University, Baton Rouge, LA.
- 12-18 NSGA-NRMCA Short Course in Concrete Aggregates University of Maryland, College Park, MD.
- 15-17 6th International Coal Utilization Exhibition & Conference, Astro Hall, Houston, TX.
- 29-30 Fly Ash Work Shop, Federal Highway Administration, Airport Hilton, DeMoine, IA.

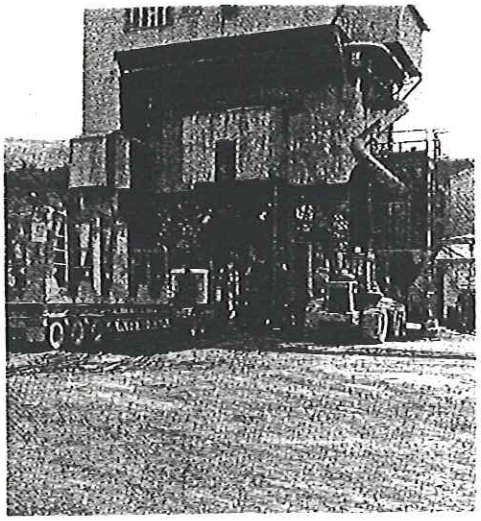
JANUARY
- 15-18 Concrete Industries Exposition sponsored by National Concrete Masonry Association, New Orleans, LA.



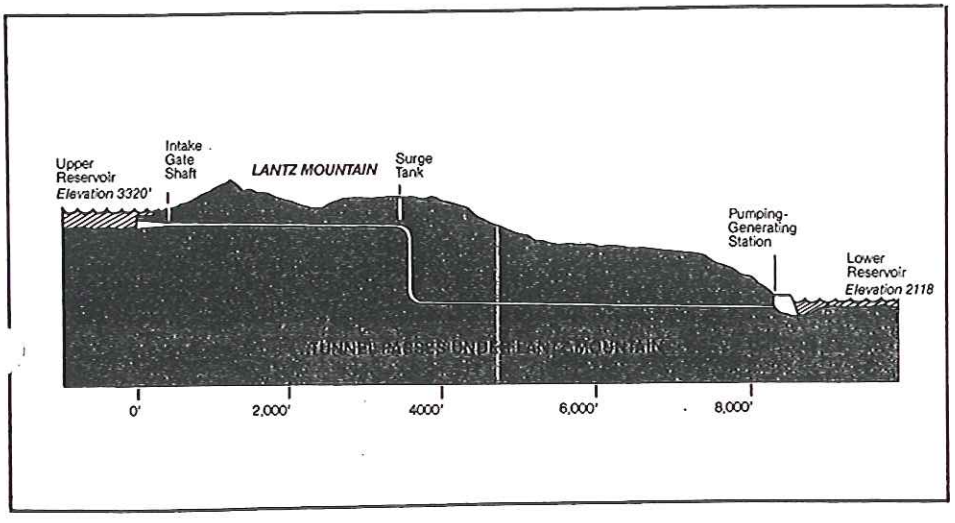
Spillway to Lower Reservoir



Ash, Cement Silos



Cement Batch Plant



PR

Project Cost - $1.65 billion (est.);

Construction began - March 1977;

Concrete Contractor - Daniel Con

Generating Capacity - Peak 2,100

Maximum flow of water when gen
(cfs), 2,420,000 gallons per minu

Energy required to fill upper res

Upper reservoir and dam: surface
feet (4.2 billion gal.) to 35,500 a
to 410'; dam - 460' high and
miles; earth and rock volume -

Lower reservoir and dam; depth
flood storage pools - 58' to 118'
drainage area - 73.4 square m
cubic yards;

Power tunnels; diameter - 28.5'; l
grade, 990' vertical shaft secti

Powerhouse - Above ground, co
(south end), and service bay (w
and 200' high; concrete: 356,00

Penstocks - 897' to 1,257'; diame

Surge shafts - diameter of three

Hydro Stati
Uses 65,00

MOUNTAIN GROVE, VA. — Work i
about 69 percent complete on what wi
be the largest single use of fly as
concrete in the eastern United States.

The project is the giant Bath Count
pumped storage hydroelectric gene
ating station being jointly constructe
by Virginia Electric and Power Compan
and the Allegheny Power System. Vepc
initiated work on the $1.65 billion projec
and APS could possibly own between 4
and 50 percent of the station or it
capacity.

Scheduled commercial operation date
for the individual 350,000 KW unit
begin in May, 1985, with Unit 1 an
culminate in April, 1986, with Unit 6.

The station will have the capability t
generate up to 2.1 million kilowatts
electrical energy - making it the mos
powerful pumped storage project in th
world to date.

Over 1 million cubic yards of concret
will be utilized in the overall constru
tion program, and virtually every yar
being poured contains fly ash. The mi
design calls for the use of 65,000 tons
ash.

Applications include the powerhous
three 28.5' diameter water tunnel
through Lantz Mountain connecting th
upper reservoir to the powerhouse, th
upper reservoir intake structure, th

JECT DATA

ruction Company, Greenville, S.C.

00 kw, six 350,000 kw generating units;

rating (per unit) - 5,400 cubic feet per second
(gpm);

voir power storage - 30,300,000 kwh;

rea - 175 to 265 acres; volume - 13,000 acre-
-feet (11.6 billion gal.); depth of water -305'
,200 feet across; drainage area 2.4 square
million cubic yards;

f water with full conservation and empty
dimensions - 135' high and 2,400' in length;
s; earth and rock fill volume - 3.6 million

gth and grade - 3,700' upper section @ 2%
, 4,800' lower section @ 2 grade.

rete with six unit bays, one erection bay
t side); Dimensions: 500' long, 150' wide,
cubic yards.

r of six steel -line penstocks - 18';

its 44' each, 330' deep.

n Construction Tons of Fly Ash

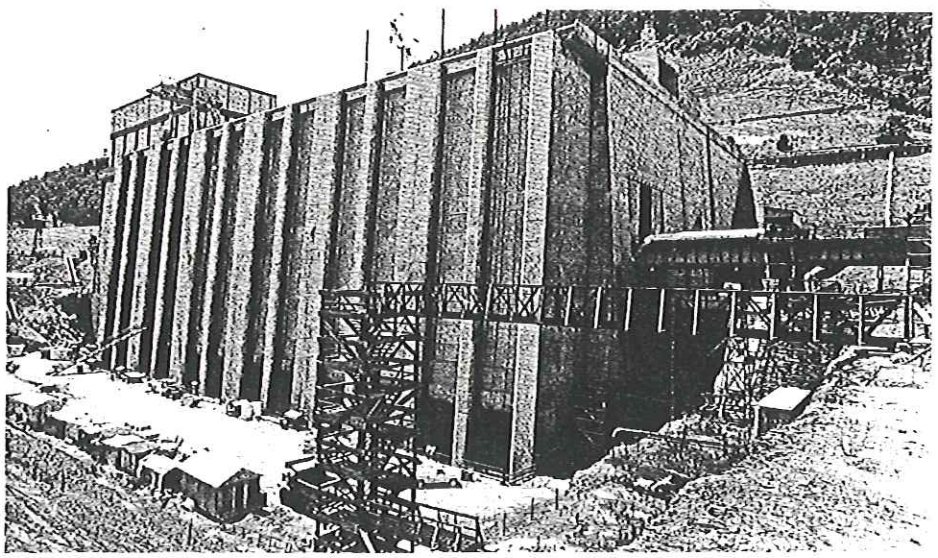
penstocks and surge shafts, lower dam spillway, and low level outlet works.

MAJOR CONCRETE QUANTITIES	
Tunnels (Including penstocks)	405,000 cy
Powerhouse	361,000 cy
Upper Intake	168,000 cy
Lower Spillway	74,000 cy
Low Level Outlet	16,000 cy
	Over 1,000,000 cy

Fly ash for the project is being supplied by American Electric Power Company from their Clinch River and John E. Amos stations at Carbo, Va. and St. Albans, WV, respectively. Several sources of ash were evaluated and tested at the outset, but because of the required quantity of specification material, the AEP ash was selected.

The remoteness of the station, nestled in the rugged mountains near the Virginia-West Virginia border, dictated the use of an on-site batch plant to supply the needed concrete and minimize transportation logistics.

The site selection also enabled Vepco to establish its own on-site quarry to supply approximately 5.5 million tons of limestone aggregate and sand needed for construction and the development of 20 miles of permanent and temporary haul roads. The network includes a twisting 3½ mile road up Lantz Mountain on an 8 percent grade to the upper reservoir.



Generating Station

Vepco purchased and installed a 300-cubic-yard-per-hour batch plant as well as 20 agitator wet batch mix trucks, 3 rotary drum mixer trucks, 3 low-boy tractor-trailer units with four 4-cubic-yard-buckets, and 2 flat-bed trailers with three 4-cubic-yard buckets to transport the concrete to the various locations on the job site. Daniel Construction Company actually has the responsibility for operating the plant.

The plant itself, the rotary and the agitator vehicles were insulated to permit the operation of the batch plant on a year-round basis.

Support facilities for the plant included an overhead conveyor system to transfer the aggregate materials from the stockpile, six 140-ton storage silos for the fly ash, and five 190-ton cement silos.

The mix designs for the fly ash concrete vary, depending upon the particular application. For example, 4,000 psi concrete is required in certain areas.

MIX DESIGN FOR 4,000 PSI CONCRETE	lbs./c.y.
Cement	340
Fly ash	113
Sand	1,191
Aggregate	
3/4"	635
1½"	635
3"	846
Water	217
Water Reducing Agent - 18.12 oz.	
Air Entraining Agent - As Required	

In early June (1983), the project had a record pour of 20,840 yards of concrete in a single week. Most of the material was utilized in the vertical flow shaft phase of the tunnel construction and the surge tanks. The tanks, measuring 330 feet deep and 44 feet in diameter with 4-foot-thick walls, act as a relief reservoir for the water prior to its 1,000-foot vertical drop into the powerhouse. (See tunnel schematic).

A pumped storage hydroelectric station simply utilizes two large reservoirs - one higher than the other. When power is required to meet customer demands, valves are opened allowing the water from the upper reservoir to fall through the tunnels to drive the massive hydraulic generators in the powerhouse and into the lower reservoir. When the demand drops, the large turbin generators are reversed to become pumps. Electricity from other units on the system is used to recycle the water back to the higher level until needed again.

With all six generating units in operation, water will flow through the tunnels at a rate of 14.5 million gallons per minute to spin the turbines and generate electricity and spill over into the lower reservoir.

When reversed to act as pumps, the turbines can refill the upper reservoir in 13.5 hours - at the rate of 11 million gallons per minute.

No water is consumed during the operation of the pumped storage facility. The only losses are through evaporation from the reservoirs and minor seepage. Once the reservoirs are filled, the normal flow of streams is simply passed through the project.

Besides generating power, the Bath County project will improve flow control in Back Creek and provide a variety of recreation benefits in the area downstream of the lower dam.

Extreme, rapid fluctuations in water levels will preclude the use of the two reservoirs by the general public. Vepc is, however, developing a 325-acr recreational area including two ponds covering about 80 acres for fishing, boating, and swimming. The site will also include camping facilities, picnic areas, and hiking trails.

Ohio SCS Prescribes Ash To Treat Strip Mine Site

CALDWELL, OH. – Work is nearing completion on the reclamation of a 57-acre abandoned strip mine site near here utilizing fly ash as the primary soil amendment.

The $438,000 project is being administered by the U.S. Soil Conservation Service with funds provided through the Rural Abandoned Mine Program (RAMP). The contractor, Ben Cookson of New Philadelphia, hopes to complete the assigned task by mid-October.

The program involves the total restoration of the property overlooking Duck Creek, where the coal was removed in the 1940's, and was designed by the SCS staff in Columbus headed by State Conservationist Robert Shaw.

Treatment called for the ash to be spread at the rate of 200 tons per acre - a two-inch application - and then mixed into the spoil along with 10-tons of lime utilizing a heavy disc. The 12,000 tons of ash, trucked to the site a distance of 48 miles, is being supplied by American Electric Power Company from an old disposal pond at its now-closed Philo Station.

An Outstanding Example

The seed mixture, including 950 tons of Triple 16 fertilizer, was broadcast over the site from a hydro-seeder truck. The treated area was then covered with three tons of straw per acre to assist in the germination process.

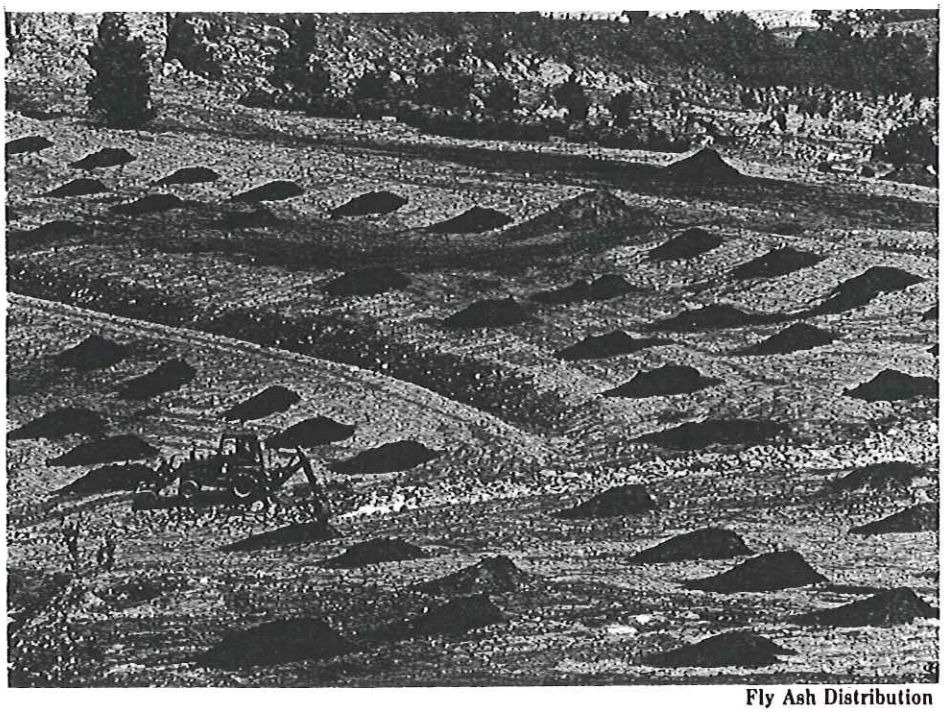
After only 10 days, the first touch of green was evident from the initial seeding. The permanent seeding includes two different mixtures comprising timothy, orchard and switch grass, tall fescue as well as red and yellow sweet clover.

Project Manager Willard Roby said the ash was easy to work into the soil although he admitted it "got a mite dusty when the wind kicked up while machinery was spreading the ash and lime."

Aside from the prescribed treatment of the acid soil, the site work involved the contouring of rocky overburden below the bench with limestone lined drainage ditches along the steep slopes to minimize erosion problems, controlling the runoff water seeping from the high wall, and shaping the bench area.

Roby added it took two dozers working in tandem to move some of the boulders.

Representatives of the National Ash Association, who visited the site on September 22, termed the project an outstanding example of reclamation planning.



Fly Ash Distribution

HERE & THERE

MORGANTOWN, WV. – Thirty undergraduate Civil Engineering students at West Virginia University have enrolled in a Professional Engineering Practice Program for a course in Power Plant Ash Utilization.

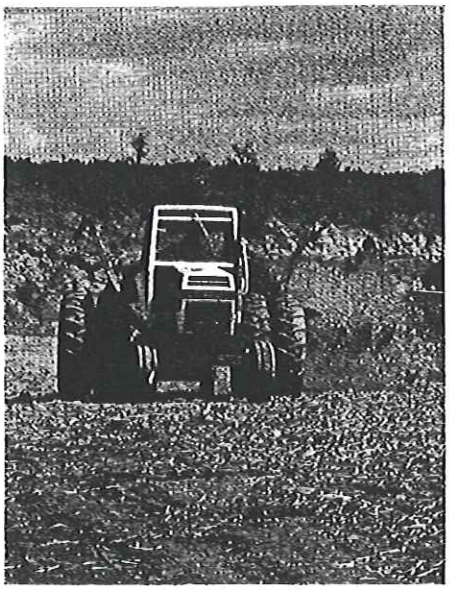
Secretary Allan W. Babcock of the National Ash Association is serving as the coordinator and a visiting instructor for the unique program. Other industry participants will include John H. Faber, Faber Associates; Dr. A.M. DeGioia, GAI Consultants; and Dennis L. Kinder, American Electric Power Co.

Dr. Mumtaz Usmen, Acting Chairman of the CE Department, is also actively participating in the course. Subjects being covered by the guest lecturers include ash production, ash management, ash utilization, and ash marketing.

PITTSBURGH, PA. – GAI Consultants, Inc. and Massaro Corporation have announced the formation of a new Utility Waste Management Corporation.

The new firm is designed to provide full service waste disposal and utilization capabilities to the electric utility industry.

GAI has been active as a consultant to the ash industry in both fields for several years.



Mulching Spoil

CRISFIELD, MD. – Researchers at the Cooperative Shellfish Aquaculture & Technology Laboratory here report progress in the development of oyster reefs utilizing fly ash.

A 36% blend of crushed shells added to fly ash plus an addition of 6% hydrated lime have been fabricated into a stable material that could be used in the future construction of such reefs.

Another encouraging aspect of the study indicates "levels of leachates from the mixes are lower than levels of metals that have been found in oysters and in some Chesapeake Bay bottom muds."

Ash Production Dips to 65.41 Million Tons in '82, Utilization Also Declines

WASHINGTON — Power plant ash production and utilization both dipped to five year lows in 1982, according to figures released by the National Ash Association.

Ash from the power production cycle amounted to 65.41 million tons - the lowest total since 1976 - while usage totaled 13.55 million tons representing an overall percentage of 20.7.

Despite the decline, ash moved into the fourth slot among the most abundant solid minerals ahead of Portland cement and iron ore.

During the same period, the responding electric utilities consumed 585.37 million tons of coal in their coal-fired generating stations.

Individual figures compiled by the NAA included 47.91 million tons of fly ash, 13.13 million tons of bottom ash, and 4.37 million tons of boiler slag.

The corresponding utilization totals for the 12-month span indicated applications, including in-house and external sales, of 7.95 million tons of fly ash (16.6%), 3.63 million tons of bottom ash (27.6%), and 1.97 million tons of boiler slag (45.1%).

Ash industry analysts attribute the decline to four major factors - a substantial reduction in consumption of electrical energy, a slow down in new home starts, a lowering of the ash content of the coal burned by the utility industry to meet emission standard and achieve lower operating costs, and a slow down in highway construction and maintenance.

Also, deferrals in coal conversion decisions and construction programs were contributors.

The same forecasters also predicted an upswing in the two categories when the 1983 figures are compiled.

Perhaps the most revealing statistic in the report was the fact that 51.86 million tons of power plant ash were removed to disposal areas with no utilization. These numbers included 39.96 million tons of fly ash, 9.50 million tons in bottom ash, and 2.40 million tons in boiler slag.

The major volume of ash sold went to cement and concrete products including 2.68 million tons of fly ash, 0.38 million tons in bottom ash, and 0.12 million tons in boiler slag.

Industry promotional efforts will be centered on mass tonnage applications such as structural fills and in coal mine reclamation work while preparing for a resumption of construction activity.

Producers are also being urged to beef up quality control through ash management activities.

Other marketing efforts are being geared toward the increased emphasis on the use of bottom ash in the manufacture of construction products.

Ash Production Ash Utilization - 1982

	(Million Tons)
I. ANNUAL COAL CONSUMPTION	585.37
II. TOTAL ASH PRODUCED	65.41
III ASH UTILIZED	13.55

	FLY ASH	BOTTOM ASH	BOILER SLAG
1. EXTERNAL UTILIZATION			
a. Cement and concrete products	2 68	38	.12
b. Structural Fills	.44	23	06
c. Road Base	23	.69	07
d. Filler in asphalt mix	.10	-0-	06
e. Snow and ice control	-0-	.62	73
f. Blasting grit and roofing granules	07	-0-	.68
g. Grouting	29	-0-	-0-
h. Coal mining applications	.11	-0-	-0-
i. Miscellaneous	.62	.10	07
TOTAL EXTERNAL UTILIZATION	**4.54**	**2.02**	**1.79**
2. INTERNAL UTILIZATION			
a. Cement and concrete products	01	-0-	-0-
b. Structural fills	1.69	1.45	06
c. Road Base	03	.05	005
d. Miscellaneous	1 68	.11	12
TOTAL INTERNAL UTILIZATION	**3.41**	**1.61**	**.18**
3. TOTAL ASH UTILIZED	**7.95**	**3.63**	**1.97**
4. ASH REMOVED TO DISPOSAL AREA AT COMPANY EXPENSE WITH NO UTILIZATION	39.96	9 50	2 40
5. TOTAL ASH PRODUCED	**47.91**	**13.13**	**4.37**

Comparative Results

Ash Produced	1966*	1977**	1978	1979	1980	1981	1982
Fly Ash	17.1	48 5	48 3	57.5	48.31	50 26	47.91
Bottom Ash	8.1	14.1	14.7	12 5	14.45	12 87	13 13
Boiler Slag	-0-	5 2	5.1	5 2	3.64	5 18	4 37
TOTAL ASH PRODUCED	**25.2**	**67.8**	**68.1**	**75.2**	**66.40**	**68.31**	**65.41**
Ash Utilized							
Fly Ash	1.4	6 3	8 4	10 0	6 42	9.41	7 95
Botom Ash	1.7	4 6	5.0	3 3	4 26	4 07	3 63
Boiler Slag	-0-	3 1	3.0	2 4	1 75	2 93	1 97
TOTAL ASH UTILIZED	**3.1**	**14.0**	**16.4**	**15.7**	**12.43**	**16.41**	**13.55**
Percent of Ash Utilized							
% Fly Ash	7.9	13.0	17.4	17.4	13.3	19.0	16.6
% Bottom Ash	21.0	32.6	34.0	26.4	29.5	32.0	27.6
% Boiler Slag	-0-	60.0	58.8	46.0	48.1	57.0	45.1
PERCENT OF TOTAL ASH UTILIZED	**12.1**	**20.7**	**24.1**	**21.0**	**18.7**	**24.0**	**20.7**

*First year that data was taken

**1967-1976 data omitted from tabulation because of space limitation.

Compiled by the National Ash Association, Inc.•