

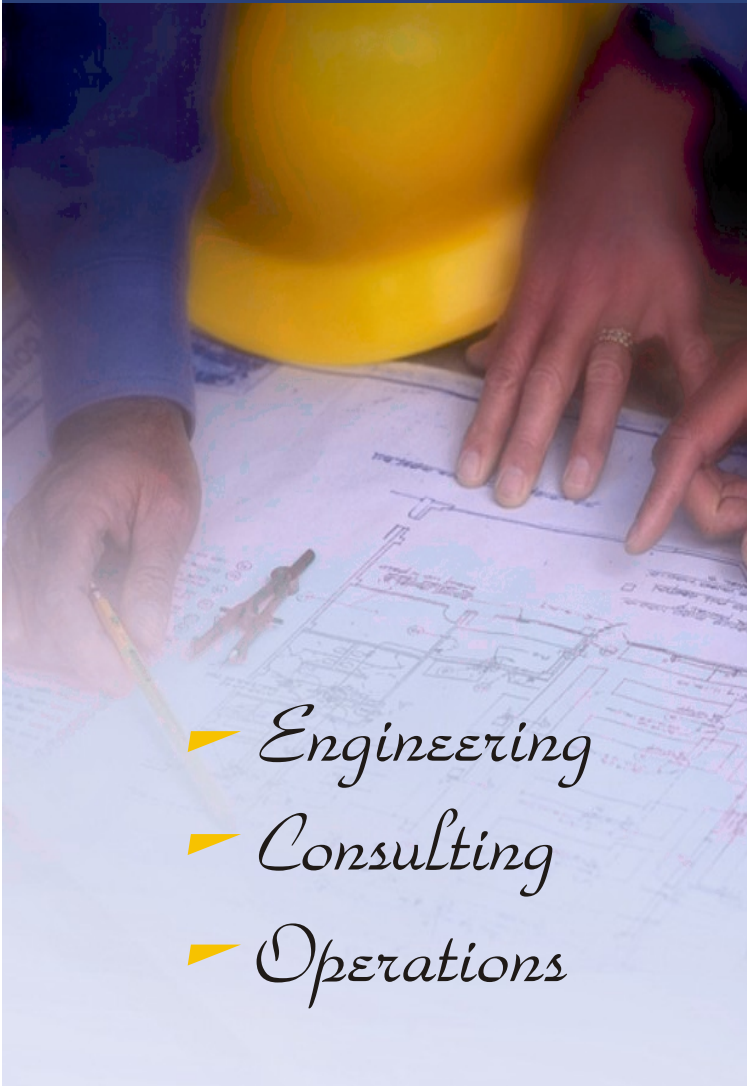
*ENPWJSA implements BNR Improvements*

The East Norriton-Plymouth-Whitpain Joint Sewer Authority (ENPWJSA) owns and operates an 8.1 MGD wastewater treatment facility that serves a customer base of approximately 45,000 from neighboring East Norriton and Whitpain Townships as well as residents of Plymouth Township.

Subsequent to a capital plan completed by ARRO in 2004, the Authority embarked on a series of capital improvements to its facilities. One such project entails implementation of the Symbio® process in the existing activated sludge reactors in order to achieve increased biological nutrient removal while increasing process efficiency and reducing operating costs.

The Symbio® process utilizes an innovative technique for monitoring metabolic activity in addition to conventional dissolved oxygen monitoring in order to determine the optimal amount of oxygen to be supplied to the system. These monitoring and aeration control techniques allow an aeration tank to be maintained at dissolved oxygen levels between 0.2 and 0.6 mg/l, facilitating simultaneously nitrification and denitrification within the same basin. The process permits the treatment facility to achieve the desired effluent quality while significantly reducing energy costs for aeration.

Prior to proceeding with detailed design and permitting, ARRO completed a New or Innovative Water/Wastewater Technology Grant application for submission to PA DEP's Growing Greener program. In February 2005, the Authority was awarded a grant in the amount of \$356,250 to implement the project.



- *Engineering*
- *Consulting*
- *Operations*

# ARRO

# *Dynamics*

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# Pennsylvania's Nutrient Trading Program



One of the major pollution threats to the health of the Chesapeake Bay is the discharge of excess nutrients, namely nitrogen and phosphorous, to tributary waterways. Recently, the six states and District of Columbia that make up the Chesapeake Bay Program Partnership, of which Pennsylvania and Maryland are signatory parties, committed to an ambitious reduction in the amount of nitrogen, phosphorous, and sediment being discharged to the Bay.

As a result of the commitment to significantly reduce nutrient levels in the waterways, many municipal wastewater treatment plants in the Chesapeake Bay watershed will be required to reduce the amount of nitrogen and phosphorous in point (direct pipe) discharges. This could result in the need for costly treatment plant upgrades. Recognizing that alternative tools and innovative ideas were needed, in 1999 the Chesapeake Bay Program partnership began considering the feasibility of using nutrient credit trading as a means of achieving realistic nutrient reduction within the watershed.

Non-point (run-off) discharges are the source of the majority of the nutrient discharges into the Chesapeake Bay. Nutrient credit trading encourages a more community-wide solution by

recognizing that the nutrients come from multiple sources.

Development of a nutrient credit trading



program includes the investigation of all potential avenues for compliance. Options that are considered include:

- Acquisition of nutrient credits from the local agricultural community when best management practices (BMPs) are implemented beyond the standard requirements.
- Acquisition of nutrient credits by virtue of streambed and floodplain restoration projects.
- Acquisition of nutrient credits as the result of the implementation of nutrient-reducing stormwater BMPs.
- Acquisition of nutrient credits as a result of voluntary reductions at point source locations.

After a thorough investigation of the viable alternatives for nutrient reduction and nutrient credit acquisition is completed, a cost-benefit analysis is performed and the most suitable alternatives for long-term compliance are presented. These alternatives may likely include a combination of the options available and take into account the unique goals and values of each particular community.

In Mount Joy, PA, ARRO is assisting the Mount Joy Borough Authority and nearby Brubaker Farms develop and implement Pennsylvania's first nutrient tracking program. This effort, which is being assisted by the Lancaster County Conservation District, is being funded by a grant provided by the Commonwealth of Pennsylvania.

# this' n that

## *Shippensburg Borough receives Pennvest Grant*

Shippensburg Borough Council and wastewater treatment plant manager Chuck Music recently accepted a \$2.66 million grant from the Pennsylvania Infrastructure Investment Authority (Pennvest). The grant will help offset the cost of a \$4.5 million biological nutrient removal (BNR) upgrade that ARRO designed for the Borough's wastewater treatment plant.

Previously, the Borough was the recipient of a \$500,000 Growing Greener grant for the project. The BNR project will reduce the level of nitrogen and phosphorus that is discharged by the plant helping to reduce the amount of pollution in the Chesapeake Bay.

## *City Nicknames*

Can you match these international cities to their nicknames:

- |                              |                        |
|------------------------------|------------------------|
| 1) Paris                     | A) Bride of Sea        |
| 2) Hong Kong                 | B) City of David       |
| 3) Vancouver (& Toronto too) | C) Pearl of the Orient |
| 4) Venice                    | D) City of Light       |
| 5) Jerusalem                 | E) Hollywood North     |

The first person to e-mail the correct answers to [info@thearrogroupp.com](mailto:info@thearrogroupp.com) will win a prize.

## *Giving a Fair Critique*

Ever called upon to critique someone's work? Christopher Meeks, an English professor at Santa Monica College, offers these great guidelines to giving a fair review:

- Begin with what you like about the work and then offer comments to foster improvement. For example, "Here are the project's strengths - keep these. Here are some weaknesses - let's work on these."
- Talk about most important areas first.
- Be as brief as possible, don't nitpick.
- Remember that criticism refers to the work not the person. "The report is weak," is acceptable. "You write weak reports," is not.

### Do's

- Some words are harder to spell than others... using spell check might be helpful.
- Let's work together to strengthen this report.
- Let's try different words here to see which works best.
- Let's try to work the theme of this report into the first paragraph.

### Don'ts

- Where did you learn to spell?
- My child could write a better report!
- Ever hear of a dictionary?
- Does this report have a point?

## *Reducing Eye Strain*

Office workers, particularly computer users, often suffer eye soreness, headaches, blurred vision, and dry, itching, or burning eyes. To reduce the risk of eyestrain, the Environmental Health & Safety Department of Oklahoma State University recommends doing these three eye exercises once every 20 minutes:

- Change focus by glancing at objects across the room or look out the window and
- focus on objects at least 20 feet away.
- Cup your hands gently over your closed eyes and keep them closed for 60 seconds.
- Look away from the screen and roll your eyes up and down, around, and side to side.



## *Employee of the Month*

Rod Baer was selected ARRO Employee of the Month for April 2006. On July 1, Rod will celebrate 32 years of service with ARRO. As ARRO's facility coordinator, Rod has multiple responsibilities maintaining the facilities and equipment that ARRO uses to provide services to its clients.

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ARRO provides advice, design, project management, consulting, and operations services for a wide range of infrastructure including water, wastewater, and transportation systems.

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## *Finding the Right Consultant*

Now more than ever, communities are finding that they need a consulting engineer like ARRO that is proficient and experienced in providing the comprehensive engineering services necessary to plan and implement effective programs that are essential to the day-to-day operation of local government.

Many of these officials are conscientiously aware that the public is counting on them to make the proper choice and they take this responsibility quite seriously. The relationship between a municipality and its engineer has traditionally focused on elements such as the engineer's knowledge of the local community; the engineer's commitment to providing cost-effective, reliable and on-time service; the skill and experience level of the engineer's staff; and, when necessary, the engineer's ability to

complete specialized tasks.

ARRO focuses on developing long-term relationships. The rapport that develops during a long-term relationship allows a more intimate understanding of the municipality's needs and concerns. This teamwork and personalized level of service is important and it is characteristic of what distinguishes ARRO from other consulting engineering firms.

Many communities are learning that, in the long run, teamwork and communication have the potential to pay the greatest dividends.

