

HISTORY AND SUMMARY OF THE WELLFIELD PROTECTION PROGRAM PALM BEACH COUNTY, FLORIDA

Approximately 80% of Palm Beach County's potable water supply is from groundwater sources and the use, handling, production and storage of hazardous and toxic materials (regulated substances) present a risk of contamination to the groundwater. A general definition of these "Regulated Substances" is provided in the Wellfield Protection Ordinance and a generic substances list is provided to facilitate compliance by those persons using regulated substances but not schooled in the chemistry of those materials.

In January, 1985 the Palm Beach County Utilities Council requested the County pursue the adoption of a Wellfield Protection Ordinance. In April 1985, the South Florida Water Management District informed the County that a request for an increase in its water consumption permit would not be granted until an Ordinance was developed. In addition, the 1985 growth management legislation (Comprehensive Plan) required that counties and municipalities throughout the State protect their wellfields.

A Water Resources Management Advisory Board was created in April 1985 by the Board of County Commissioners to address water resource issues and to develop a Wellfield Protection Ordinance. The Advisory Board in turn created the Wellfield Protection Ordinance Subcommittee specifically for the purpose of drafting an Ordinance.

The primary purpose is to protect existing and proposed wells and wellfields. The Ordinance accomplishes this by regulation of existing and new nonresidential use, handling, storage and production of hazardous and toxic materials within certain zones of influence of the 44 wellfields in the incorporated and unincorporated portions of Palm Beach County.

A wellfield is one which is permitted for pumpage of 100,000 gallons or more of potable water per day. There are four regulation zones (i.e. zones of influence) around each regulated wellfield. Zone 1 is the land area situated between the well and the 30day travel time contour line. Zone 2 is the land area between the 30day and the 210day travel time contour lines. Zone 3 is the land located between the 210day and 500day travel time contour lines. Zone 4 is the area within the 1foot drawdown contour line. In general, Zone 1 is a zone of prohibition. Zone 2 is a zone of secondary containment and groundwater monitoring. Zone 3 is a zone of secondary containment and zone 4 is a zone of daily monitoring of regulated substances.

A wellfield is subject to protection only when zones of influence maps are developed pursuant to groundwater modeling and only when the Board of County Commissioners, after notice to affected property owners and two public hearings, includes the wellfield for protection under the Ordinance. Zone maps are required to be reviewed annually for possible adjustment based on changed circumstances or advances in technical information.

The Ordinance establishes certain requirements with respect to the use, handling, production and storage of regulated substances in zones of influence. Those requirements address containment, emergency collection devices, emergency plans, inspection, maintenance of containment and emergency equipment,

reporting of spills, monitoring for regulated substances in the potable water wells, monitoring of regulated substances in groundwater monitoring wells on sites where the substances are used, alterations and expansions of uses of regulated substances, reconstruction after catastrophes and financial responsibility.

The types of requirements which the Ordinance provides for the permitting of the use of regulated substances in wellfield zones are common sense management and structural devices which serve to isolate highrisk contamination areas. The requirements are devised so prudent and knowledgeable users of regulated substances would be inclined to employ them. These requirements should reduce the risk of liability for contamination cleanup and damages to which they are presently subject under Federal and State law.

The Ordinance provides for operating permits, closure permits, permit conditions and modifications, bonds, cleanup and reimbursement, permit fees, revocation and revision of permits, enforcement hearings, appeals, exemptions, transfers, trade secrets, compensation for businesses which must close or move and penalties for violations.

There are two exemption categories, General and Special. General exemption categories address utilities, continuous transit, vehicular and lawn maintenance, fuel and lubricant use, application of pesticides, herbicides fungicides and rodenticides, retail sales activities, office uses, activities subject to regulation due to accumulated waste regulated substances and construction activities. Special Exemptions can only be granted after the petitioner demonstrates by a preponderance of competent, substantial evidence that special or unusual circumstances and adequate technology exists which will isolate the facility or activity from the potable water supply. It is not the emphasis of the Ordinance to put a regulated facility out of business, but to protect the environment from any adverse effects from the operation of the facility.

Should a zone 1 facility not be able to address the protection of the environment technologically, the facility is required to cease operation 365 days from notification. With notice to close, the facility has the right under the Ordinance to request compensation for ceasing operation.

Disputes regarding the denial, revocation or revision of a permit, general exemption, or nondisclosure of trade secrets, will be heard by the Environmental Ordinance Appeals Board, whose decision constitutes final County action appealable directly to Circuit Court.

Wells and wellfields are located using information from utilities and field inspections and information placed on aerial photographs. When the field mapping process is completed, the various rough maps are placed on Property Appraiser aerials and 30, 210, 500 day travel time and 1 foot drawdown contours are developed by computer model. Each designated facility is then assigned to its proper wellfield protection zone (i.e. zone 1, 2, 3, or 4). Where a facility falls between two or more zones, it is assigned to the more restrictive zone.

The initial modeling required setting up the entire eastern part of the County into a series of grids based on 1984 pumpage rates and water level configurations. Due to wellfields moving father west, grids have now been developed for some of the western areas. To calibrate the model, predictive simulations based on utility information for the year 2010 were used.

The McDonald and Harbaugh (1984) "Modular Three Dimensional FiniteDifference Ground Water

Low Model” (Modflow) is used for stressing the aquifer under 2010 pumping conditions. By using hydraulic head values, travel time contours are generated using a mass transport algorithm (Pritchett’s “Random Walk”). In order to account for contaminant attenuation factors such as dispersion and dilution, the time interval of the model was increased by 25%.

A legal analysis prepared by the Palm Beach County Attorney’s Office concluded that while it is recognized that any claim of taking should be reviewed on a case by case basis, the Wellfield Protection program prohibition against or regulation of the use, handling, production or storage of regulated substances would not constitute legal taking in violation of the State and Federal constitutions.

The County Attorney’s Office also concluded that it is not expected that the County would be required by law to compensate property owners as a result of the operation of the Ordinance except in the most unusual circumstance. However, the Ordinance includes a compensation provision.

Milestones

The Ordinance was approved by the Board of County Commissioners (BCC) on February 23, 1988, and has an effective date of March 7, 1988.

On June 24, 1988, the BCC approved an amendment to the Ordinance incorporating the remainder of the wellfield maps and a provision for administrative review and enforcement of the Ordinance.

On August 21, 1988, the BCC approved changes to the Code Enforcement Ordinance which allowed the Wellfield Protection Ordinance to be enforced through local administrative hearings.

On December 20, 1988, the BCC approved an amendment requiring increased standards of protection in wellfield zones and added a zone 4. Conflicts between the Code Enforcement Ordinance and the Wellfield Protection Ordinance were eliminated.

On July 16, 1991, the BCC approved an amendment separating the Groundwater and Natural Resources Protection Board from the appeals process and referring appeals to the Environmental Ordinance Appeals Board.

On July 14, 1991, the National Association of Counties selected Palm Beach County to receive an achievement award for the the Wellfield Protection Ordinance stating that it “successfully addressed a public concern”.

On June 23, 1992 the BCC adopted the Unified Land Development Code and the Wellfield Protection Ordinance was included as Section 9.3 (Wellfield Protection).

Wellfield map changes have been approved by the BCC on June 21, 1988, December 20, 1988, June 20, 1989, July 16, 1991, February 18, 1992, June 15, 1993, February 21, 1995, April 15, 1997 and February 27, 2001.

Achievements

A minimum of 3,550,000 gallons of regulated substances and 118 pollutant storage tanks were provided secondary containment and monitoring or removed from zones 1, 2 and 3.

Over 300 regulated facilities elected to exempt themselves from the permitting requirements of the Ordinance by reducing the regulated substances below the threshold of five gallons or twentyfive pounds.

— Four hundred sixtysix present and future wells and fortyfour wellfields have been placed under the wellfield protection program.

Initially 366 potable wells were individually tested at utility expense for 126 organic and 8 inorganic contaminants. No unexpected contamination was revealed.

The wellfield protection program has received statewide and national recognition and provided assistance to cities, counties, states and even a province in Canada in developing their programs.