BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

PC#14

IN THE MATTER OF:

PROPOSED 35 Ill. Adm. Code 304.123(g), 304.123(h), 304.123(i), 304.123(j), and 304.123(k)	))	R04-26 (Rulemaking - Water)

NOTICE OF FILING

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Chicago, Illinois 60601

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ALSO SEE ATTACHED SERVICE LIST

PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Pollution Control Board the Illinois Environmental Protection Agency **COMMENTS**, a copy of which is herewith served upon you.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

By: _____
Sanjay K Sofat
Assistant Counsel
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Dated: December 20, 2004
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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:

PROPOSED 35 Ill. Adm. Code 304.123(g), 304.123(h), 304.123(i), 304.123(j), and 304.123(k)	))	R04-26 (Rulemaking - Water)

AGENCY COMMENTS

THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY ("Agency") respectfully submits its comments in the above-entitled matter to the Illinois Pollution Control Board ("Board"). The Agency appreciates this opportunity to supplement the testimony it presented during the two public hearings. The Agency believes that the following comments along with the original petition and the subsequent testimony and comments provided by the Agency at the two public hearings address all of the major comments made by the Board and the stakeholders at these hearings. These comments also address the request for additional information made during the first public hearing.

The Agency sincerely appreciates the efforts made by other stakeholders' in providing their comments and testimony at the two public hearings. Because of these group efforts, the Agency believes that the rulemaking record contains all the pertinent and necessary information that the Board may need to make its final decision on this matter. As a large number of stakeholders either testified or provided written comments at the hearings, some of the information in the hearing record may not only be irrelevant but confusing. Thus, through these written comments, the Agency attempts to clarify the rulemaking record in that regard. The Agency believes that it

would be prudent to restate the goals and scope of the Agency's proposal to diffuse any confusion that the other stakeholders may have; discuss how the Agency's effluent standard proposal is based on the mandates of the Clean Water Act and the Illinois Environmental Protection Act; and how the Agency proposal satisfies the requisite burden.

I. THE PRIMARY OBJECTIVE OF THE AGENCY'S PROPOSAL IS TO REDUCE THE LOADING OF PHOSPHORUS FROM MAJOR SOURCES

The Agency's proposal is of a very limited scope. Simply put it requires a small number of dischargers to reduce the net amount of phosphorus loading into receiving streams. Not all point sources that have phosphorus in their effluents are required to control phosphorus under this proposal. Only new or expanded sources that have a certain capacity are required to control phosphorus in their effluents. Under this proposal, the Agency is recommending that new or expanded treatment works (POTWs) that have a design average flow of 1 million gallons per day or more, or new or expanded treatment works (industrial) that have a total phosphorus of 25 pounds or more in their effluent be subject to the requirements of this proposal. The Agency is intentionally leaving out any other point source that is not covered by the proposed language. This is consistent with the primary objective of this proposal, which is to reduce net loading of phosphorus from major sources into waters of the State.

This proposal is a step towards rational nutrient management fro the State's streams and rivers. The Agency believes that adoption of the numeric nutrient water quality standards will facilitate a more comprehensive nutrient management program in the future. In the interim, the Agency is attempting to reduce phosphorus loading from both point and non-point sources. The

Agency has, in the past, spent Section 319 of the Clean Water Act monies on projects that have the potential to reduce the loading of phosphorus from non-point sources. The Agency has found this approach to be effective and continues focus on nutrients in its non-point source management program. Some point sources have also been subject to phosphorus controls in the past. *See 35 Ill. Adm. Code 304.123(a)-(f).* Under these regulations, the Board has required certain kind of point sources to reduce phosphorus loading into lakes. The Agency's current proposal is just an extension to the existing regulations.

II. THE AGENCY IS PROPOSING AN EFFLUENT STANDARD NOT A WATER QUALITY STANDARD

A considerable amount of comment and testimony exist in the Board record to suggest that the Agency's proposed standard is not based on sound science or that the proposed standard is unnecessary because the existing Board regulations allow the Agency to impose phosphorus effluent limits where receiving waters are impaired. These comments are based on the misunderstanding of the Agency's proposal. The Agency's proposal seeks protection of all General Use waters, not just impaired ones. The scientific information necessary to propose an effluent standard is already part of the Board's hearing record. In order to show that the Agency proposal is consistent with the requirements of the Clean Water Act, the Agency considers it prudent to provide a brief synopsis on the roles of water quality standards and effluent standards in protecting waters of the State.

Water Quality Standards:

The Clean Water Act goals are:

1. achieve a level of water quality that provides the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water, where attainable.
2. restore and maintain the chemical, physical, and biological integrity of the Nation's waters. 33 U.S.C. §1251.

To achieve these goals, the Clean Water Act provides the basis for two different kinds of pollution control programs. Water quality standards are the basis of the water quality-based control program. The Clean Water Act also provides for technology-based limits knows as best available treatment technology economically achievable for point sources. 33 U.S.C. §1311 and § 1313.

A water quality standard defines the water quality goals of a water body, by designating the use or uses to be made of the water, by setting criteria necessary to protect the uses, and by protecting water quality through antidegradation provisions. 33 U.S.C. § 1313. Water quality standards serve dual purposes: (1) Establish the water quality goals for a specific water body; and (2) Serve as the regulatory basis for establishing water quality based treatment controls and strategies beyond the technology-based levels of treatment required by Sections 301(b) and 306 of the Clean Water Act.

When states adopt new or revised water quality standards, the state is required under Section 303(c) of the Clean Water Act to submit such standards to U.S. EPA for review and approval or disapproval. The following elements must be included in each state's water quality standards submittal to U.S. EPA for review:

1. use designation consistent with the provisions of Sections 101(a)(2) and 303(c) of the CWA;
2. methods used and analyses conducted to support water quality standards revisions;
3. water quality criteria sufficient to protect the designated uses, including criteria for priority toxic pollutants and biological criteria;
4. an anti-degradation policy and implementation methods consistent with Section 131.12 of the federal regulations;
5. certification by the State Attorney General or other appropriate legal authority within the State that the water quality standards were duly adopted pursuant to State law; and

6. general information to aid the Agency in determining the adequacy of the scientific bases of the standards that do not include the uses specified in Section 101(a)(2) of the Act as well as information on general policies applicable to State standards that may affect their application and implementation.

Effluent Standards:

Section 502 of the Clean Water Act defines Effluent limitations as "any restriction established by a State or the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources into navigable waters...." *33 U.S.C. §1362(11)*. The basis of establishing effluent standards is quite different from those of water quality standards. Section 301(b) requires EPA to promulgate effluent limitations on the dischargers of pollutants into the waters of the United States. *33 U.S.C. §1311*. The effluent limitations are based on the discharge levels achievable by what EPA determines to be the "best available technology economically achievable" (know as the "BAT") for existing discharging sources. *Id. §1311(b)(2)(A), (C), (D), and (F)*. The statutory approach is that over the course of years point sources are to achieve increasingly stringent levels of technological control of discharges.

Section 301 of the Clean Water Act requires EPA to develop list of conventional, non-conventional, and toxic pollutants. BOD, SS, pH, and fecal coliforms are classified as conventional pollutants under Sections 301(b)(2)(E) and 304(b)(2)(F). *33 U.S.C. § 1311(b)(2)(E)*. U.S. EPA had to set best conventional control technology (BCT) standards for these substances and industry had to comply with those standards by July 1, 1984. Non-conventional pollutants are all those substances not defined as either conventional or toxic. BAT standards are required for non-conventional pollutants such as phosphorus, nitrogen, and ammonia. BAT is defined the "very best control and

treatment measures that have been or are capable of being achieved." Consideration was to be given to cost and technology limitations when industries complied with those standards, but in no case could compliance be delayed beyond July 1, 1987. The Clean Water Act provides statutory variances from effluent standards only for non-conventional pollutants, based on economic hardship as covered in Section 301(c) or environmental considerations as covered in Section 301(g). Section 301(g) allows a waiver from BAT requirements for non-conventional pollutants where an industrial discharge bore the burden of proof to show compliance with BPT, water quality standards, and the Clean Water Act goal.

It is clear from the above discussion that effluent standards are established based ~~on the~~ type of pollutant and type of discharger. Each discharger is subject to effluent limitations based on technology feasibility and the costs of the technology. The Agency's proposal does exactly that. The Agency determined that a considerable amount of phosphorus loading is contributed by certain point sources. Since viable technologies exist and the cost of providing this technology is reasonable, these point sources be subject to the technologically achievable limits of 1 mg/l total phosphorus in their effluents.

III. THE AGENCY PROPOSAL MEETS THE REQUISITE BURDEN

To accomplish the Clean Water Act goals, Section 27 of the Illinois Environmental Protection Act ("Act") gives the Board authority to adopt substantive regulations. In promulgating these regulations, along with other hosts of factors, the Act requires the Board to consider "the technical feasibility and economic reasonableness of ... reducing the particular type of pollution." 415 ILS 5/27 (*emphasis added*). The Board regulations at 35 Ill. Adm. Code 102.202 also identify

the elements that need to be addressed by a proponent of a proposal. Section 102.202 requires that the statement of reasons supporting the proposal must include, among other things, "environmental, technical, and economic justification." The Agency's original petition thoroughly addressed these elements. However, in response to the comments made by other stakeholders, the Agency provides the following discussion to addresses these comments:

Environmental Benefit:

It is a well established fact that the primary nutrients, nitrogen and phosphorus, are generally plentiful in surface waters and that elevated concentrations of these elements can lead to problematic algal growth and eutrophic conditions, including depressed or widely fluctuating dissolved oxygen levels, in water bodies. Scientific literature typically also indicates that phosphorus is most often the limiting nutrient in most surface water bodies, including lotic systems (USDA 1999) American Public Health Association (1998), USDA (2003), Allen (1995). Accordingly, the control of phosphorus in surface water bodies is often considered to be "of prime importance in reducing the accelerated eutrophication of fresh waters" (USDA, 2003).

Phosphorus is found in the environment in various forms; the oxidized phosphate form is most readily available for biological uptake and is commonly referred to as soluble reactive phosphorus (SRP) or bioavailable phosphorus. Most of the phosphorus conveyed to surface water bodies from non-point sources (principally agricultural areas in Illinois) is absorbed to particulate matter and is not readily available to biological organisms. Phosphorus contributions from wastewater treatment plants, however, is typically in a form which is more bioavailable than non-point source phosphorus, as determined in a commissioned by the Minnesota Pollution

Control Agency and the Legislative Commission on Minnesota Resources (MPCA, 2004). The impacts of point-source phosphorus inputs are increased during dry or low-flow conditions when point sources contribute a greater portion of the flow in streams and when biological communities are under increased stress from warmer temperatures and reduced stream flows (MPCA, 2004).

The concentrations of total phosphorus which promote excessive algal growth or other problematic conditions in streams is indefinite and depends to some extent on the local hydrologic, land-use, and biological habitat conditions. However, scientific literature indicates that total phosphorus concentrations in streams ranging from 0.02 - 0.10 mg/L can cause nuisance levels of algal growth and associated impediments to in-stream biological health (Chetelat et. al, 1999, Correll, D.L., 1998, Danial et. al, 1998, Dodds and Welch, 2000, Dodds et. al, 2002, Xue et. at, 1998, Sheeder et. al, 2004).

Short (1999) analyzed stream water quality data collected by the Illinois Environmental Protection Agency's Ambient Water Quality Monitoring Program from 1980 to 1996. The following table constructed from data in the Short report provides a comparison of average Illinois stream concentrations compared to average Illinois waste-water treatment plant effluent concentrations and documents that effluent concentrations are generally an order of magnitude larger than stream concentrations. Implementation of the proposed standard would reduce effluent concentrations of phosphorus to less than one-third of the current average effluent concentration at wastewater treatment facilities and would result in a significant reduction in phosphorus loading (or a restriction on the amount of additional loading) to receiving streams and water bodies in Illinois.

	Total Phosphorus Concentration	
	Streams	Treatment Facilities
Mean	0.3791 mg/L	3.53 mg/L
Median	0.2000 mg/L	3.10 mg/L
Number of analyses	26,224	665

Reference: Short 1999

The same reference includes eight graphs depicting total phosphorus yields at The Agency's Ambient Water Quality Monitoring sites throughout the State (Exhibit 1). For reference, 1 Kg/Hectare/Year is equivalent to 1.564 Pounds/Square Mile/Day. In each of the eight graphs depicting total phosphorus yields at selected sites in major river basins throughout the State, those sites having the largest bars and highest yields of total phosphorus were determined to typically be sites with major wastewater treatment plants located upstream. Location maps are provided in Exhibit 2 for several of these sites.

The bar graph in Exhibit 1 showing phosphorus yields in the Kaskaskia River Basin presents an informative example of how an effluent phosphorus limit of 1 mg/L can be effective in limiting in-stream phosphorus. The monitoring site O-02 is located on the Kaskaskia River below the Urbana-Champaign Sanitary District's Southwest treatment plant (5.9 million gallons per day), which incorporates phosphorus removal, as well as several smaller treatment facilities, which are subject to the current phosphorus effluent standard in Section 304.123. It can be readily seen that phosphorus yields in the Kaskaskia River at site O-02 have remained relatively small, despite downstream of several wastewater treatment plants, including a major facility, that incorporate phosphorus removal.

The bar graphs for sites E-09 and E-05 provide a comparison of phosphorus yields in a

water body, which receives wastewater effluent input. These sites are located on the Sangamon River a short distance from each other; E-09 is located upstream of a major wastewater treatment effluent discharge and E-05 is located downstream of the wastewater discharge. The graph depicts an approximate 5-fold increase in the phosphorus yield of the Sangamon River below the discharge of the wastewater treatment facility.

The data presented in this table and in these figures illustrate the magnitudes and observed effects of wastewater effluent phosphorus loads on receiving streams. The conclusions from this Illinois data correspond well with conclusions from the Minnesota phosphorus study (MPCA 2004), which stated that "the largest source of phosphorus from POTWs is from large (>1.0 million gallons per day) facilities" and "phosphorus reduction efforts should begin at these facilities".

Technical Justification:

Phosphorus removal in the wastewater treatment process can be accomplished through either biological or chemical processes. There is debate as to which process might be incorporated by most facilities, should phosphorus removal be required. Initial construction and capital costs are generally larger for biological treatment, but continuing operational costs (principally chemical procurement) is usually higher for chemical phosphorus removal. Chemical addition might still be required following biological treatment to ensure that phosphorus removal is accomplished consistently. Large treatment plants are typically better suited, both physically and economically, to incorporation of phosphorus removal processes.

Both biological and chemical treatment systems have been identified as being capable of

achieving phosphorus removal to the 1 mg/L level, or lower (Water Environment Federation, 1998, Zenz, 2003, Kang et al., 2001). The IAWA concluded that effluents having total phosphorus levels of 0.5 mg/L "can be achieved using currently available chemical and biological processes", although achieving removal levels as low as 0.5 mg/L may require additional chemical treatment (Zenz, 2003). An effluent limit of 1.0 mg/L is stated by the IAWA to be a "relatively high effluent phosphorus discharge limit" (Zenz, 2003, p.6).

Some form of phosphorus removal to the level of 1.0 mg/L is currently practiced by numerous facilities in many states, including Ohio, Michigan, Wisconsin, Indiana, and Kentucky. Minnesota currently has a pending revision to incorporate such a standard. More than a dozen facilities in Illinois (design average flows ranging from 0.095 – 5.9 millions gallons per day ("MGD") currently practice phosphorus removal to 1.0 mg/L.

A variety of treatment technologies are available to achieve effluent levels of 1.0 mg/L total phosphorus. Many treatment facilities have been achieving phosphorus removal to this level for many years.

Economic Justification:

It is difficult to determine exact economic implications of this interim effluent phosphorus regulation because of the various types, designs, and sizes of treatment facilities presently in service and undergoing design. The Water Environment Federation (WEF) acknowledged this conclusion in its publication "Biological and Chemical Systems for Nutrient Removal" (WEF 1998) in which the following statement is made: "The costs to implement nutrient control have been found to be highly variable and dependent on the influent wastewater

characteristics". Several references to the costs for facility upgrades or costs to incorporate phosphorus removal have been presented during the testimony phase of this rulemaking, however, none have been able to satisfactorily estimate the economic costs and benefits of the proposed regulation.

The IAWA commissioned a report by Consoer Townsend Envirodyne Engineers, Inc.(Zenz, 2003), which provided estimated costs of $5.3 billion in capital construction costs and $500 million per year for nutrient removal at 814 municipal treatment plants in Illinois. However this estimate included costs for both phosphorus and nitrogen removal and included municipal facilities of all sizes and configurations, not only those facilities with capacities of 1 MGD or greater which would be affected by this standard. The Water Environment Federation found that the greatest costs for nutrient removal were associated with the need for nitrification and that "the capital costs for both chemical and biological phosphorus removal are relatively small" (WEF 1998). Consequently, the costs to implement phosphorus removal alone at the major facilities in Illinois would be significantly lower than the total cost estimates for nitrogen and phosphorus removal provided in the Zenz report. The economic impact of the proposed regulation would pertain to only a small fraction of the 814 facilities in Illinois and only to large facilities, which could likely incorporate capital and operational improvements more easily.

Written testimony of Beth Wentzel provided during the hearing process for this petition included information on costs to implement phosphorus removal for the Fox River Water Reclamation District's West wastewater treatment plant. The estimated operational costs were approximately $50.00 per million gallons treated and the capital improvement costs amounted to approximately $35,000 per million gallons per day capacity. Therefore, for a 5 MGD treatment

facility, approximately $175,000 in capital improvements and approximately $90,000 in annual operational costs would be required to implement phosphorus removal.

Previous testimony by the Agency included cost estimates obtained from design engineers and operators of existing wastewater treatment facilities, which incorporate chemical phosphorus removal. It was estimated that treatment plants with capacities between 1 MGD and 5 MGD design average flow would incur capital improvement costs between $50,000 to $60,000 if existing facilities could incorporate the necessary equipment, and an additional $200,000 to $300,000 if new construction is required. The annual chemical cost is estimated to be approximately $45,000 for a 5 MGD facility.

Dependent upon the facility's capability and chemical treatment used, some additional costs may be incurred to process additional sludge produced by chemical phosphorus removal. The costs associated with this additional sludge production and its disposal will vary due to the method of disposition and the options available to each specific facility, therefore, it is not practical to provide any estimates here.

The Agency has made a practical effort to obtain estimates of the costs associated with the implementation of this standard through consultation with existing facilities, engineers and a literature search. Because of the variety in sizes, types, and processes of wastewater treatment plants in use, it is not possible to provide a more precise accounting of the costs for implementation of the standard. It should be noted, however, that numerous facilities throughout the country currently provide phosphorus removal to levels at or below 1 mg/L and remain economically viable.

The Agency has requested assistance from the Ohio Environmental Protection Agency

(OEPA) to compile more accurate and specific information regarding the costs for phosphorus removal at wastewater treatment facilities. OEPA requires phosphorus removal from a significant portion of the facilities within the state. OEPA staff has indicated they may have actual operating cost data from numerous such facilities and have agreed to review their records and provide such cost information to IEPA. Once this information is obtained, the Agency will forward the information to all of the interested parties of the interim phosphorus effluent rulemaking.

IV. ADDITIONAL INFORMATION

The following is the information in response to the request made the first hearing:

Page 37 of the transcript:

1. USEPA. 1978. The Selenastrum capricornutum Printz algal assay bottle test. Miller, W.E., J.C. Greene, and T. Shiroyama (eds.). Environmental Research Laboratory – Cincinnati. U. S. Environmental Protection Agency, Corvallis, Oregon 97333. EPA-600/9-78-018.
2. USEPA. 2002. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Fourth Edition. EPA-821-R-02-013.
3. The 1978 paper is the original test method that describes using the test to determine whether phosphorus or nitrogen is the limiting nutrient in a solution. The 2002 paper is the updated method that also mentions solutions that stimulate algal growth.

Page 38 of the first hearing Transcript:

Water treatment additives intended to be added to finished drinking water in order to prevent or retard the mobilization of metals like copper and lead in the system are sold by several companies. Community water supplies add these products to coat the insides of distribution lines throughout the system in order to comply with end-of-tap metals standards for drinking water. There are also industrial applications that employ similar phosphorus-containing products to

maintain pipe quality in cooling water systems and other applications . At the August 30, 2004 hearing, IEPA promised to provide concentration data for the phosphorus in these type products as it would be found in drinking water prior to use by the consumer. According to Mr. Bill Utley of NALCO Chemical Company, the NALCO product for this purpose would be applied at a maximum total phosphorus (as P) concentration of 3.0 mg/L in the finished drinking water supplied to consumers. The City of Chicago adds phosphorus at a level of about 0.33 mg/L total phosphorus according to measurements obtained from the South and Jardine Water Purification Plants. Before addition of the phosphorus product at the purification plants, the raw Lake Michigan water phosphorus concentration is negligible.

V. CHANGES TO THE AGENCY'S ORIGINALLY PROPOSED LANGUAGE

The Agency is proposing to modify the original language in order to incorporate the comments and suggestions made at the two public hearings. The changes are intended only to clarify the originally proposed language. It is not the Agency's intention to expand the scope of the originally proposed language. In the interest of completeness, the Agency is providing the complete text of the originally proposed language along with the suggested changes. Any additions to the original language are marked with double underline, whereas the deletions are marked with strikethrough. The Agency's reasons for each proposed change are provided at the end of that subsection.

g) Except as provided in Section 304.123(h) below, the following new or expanded discharges into General Use waters, not covered by subsections (b) through (f) of this Section, are subject to monthly average permit limits for total phosphorus of 1 mg/l:

1) Treatment works with a Design Average Flow of 1.0 million gallons per day or more receiving primarily municipal or domestic wastewater; or

2) Any treatment works, other than those treating primarily municipal or domestic wastewater, with a total phosphorus effluent load of 25 pounds per day or more.

Agency Recommendation:

In response to the comments made at the hearings, the Agency is adding clarifying language to subsections (g)(1) and (g)(2).

h) Discharges qualifying under subsections (g)(1) and (g)(2) may not be subject to the Section 304.123(g) requirements provided the discharger demonstrate that phosphorus from treatment works is not the limiting nutrient in the receiving water. The Agency may impose alternative phosphorus effluent limits where the supporting information shows that alternative limits are warranted by the aquatic environment in the receiving stream. ~~Treatment works qualifying under subsections (g)(1) and (g)(2) may demonstrate that phosphorus from treatment works is not the limiting nutrient in the receiving water or that alternative phosphorus effluent limits are warranted by the aquatic environment in the receiving water.~~

Agency Recommendation:

The Agency is rephrasing the originally proposed language to address the comments and suggestions made at the two public hearings. Note, however, that the Agency is not proposing to change the scope of the originally proposed language. The first sentence provides that discharges that are otherwise subject to the Section 304.123(g) requirements may choose to demonstrate that the treatment works in question is not causing the phosphorus problems in the receiving water and therefore should not be subject to monthly average permit limit for total phosphorus of 1 mg/l. The second sentence allows the Agency to consider site-specific information in deciding whether alternative phosphorus effluent limits are more appropriate than the generic limit of 1 mg/l.

i) The following facilities ~~discharges~~ are not subject to the requirements of Section 304.123(g):

1) Existing treatment works operating at or below existing permitted flowrates;

2) New or expanded treatment works with a Design Average Flow of less than 1.0 million gallons per day; or

3) New or expanded treatment works with a total phosphorus effluent load of less than 25 pounds per day.

Agency Recommendation:
The use of word "facilities" is more appropriate for this sentence.

j) No additional phosphorus limitations are required pursuant to Sections 304.105 and 302.203 for the discharges that comply with the requirements of Sections 304.123(g) or (h). ~~Compliance with the provisions of Section 304.123 meets the applicable requirements of Sections 304.105 and 302.203.~~

Agency Recommendation:
The Agency is rephrasing the originally proposed language to address the comments and suggestions made at the two public hearings. Note, however, that the Agency is not proposing to change the scope of the originally proposed language. The proposed language provides that discharges that comply with the requirements of subsections 304.123(g) or (h) are not subject to additional phosphorus limitations that may be otherwise required by Sections 304.105 and 302.203 of the Board regulations.

k) The provisions of subsections (g), (h), (i), and (j) of this Section apply until such time as the Board adopts a numeric water quality standard for phosphorus and the adopted standard is approved by U.S. EPA.

Agency Recommendation:
The Agency agrees with the ELPC/Sierra Club's suggested change for this subsection. As state water quality standards are not effective until the U.S. EPA approves them, the Agency is adding the language to reflect this legal requirement.

Respectfully Submitted,

ILLINOIS ENVIRONMENTAL PROTECTIONAGENCY

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DATED: December 20, 2004

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References:

Short, M., 1999, *Baseline Loadings of Nitrogen, Phosphorus, and Sediments from Illinois Watersheds, October 1980 – September 1996*; Illinois Environmental Protection Agency, IEPA/BOW/99-020, 106 p.

Allen, J.D., 1995, *Stream Ecology*; London.

United States Department of Agriculture, October 1999, *A Procedure to Estimate the Response of Aquatic Systems to Changes in Phosphorus and Nitrogen Inputs*, National Water and Climate Center, 37 p.

Sharpley, A.N., Daniel, T., Sims, T., Lemunyon, J., Stevens, R., and Parry, R., September 2003, *Agricultural Phosphorus and Eutrophication*, 2nd Edition, United States Department of Agriculture, Agricultural Research Service, ARS-149, 38 p.

American Public Health Association, 1998, *Standard Methods for the Examination of Water and Wastewater*, 20th Edition, Washington, D.C., variously paged.

Minnesota Pollution Control Agency, February 2004, *Detailed Assessment of Phosphorus Sources to Minnesota Watersheds*, prepared by Barr Engineering Company.

Chetelat, J., Pick, F.R., Morin, A., and Hamilton, P.B., 1999, *Periphyton Biomass and Community Composition in River of Different Nutrient Status*, Canadian Journal of Aquatic Sciences, 56: 560-569.

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Dodds, W.K. and Welch, E.B., 2000, *Establishing Nutrient Criteria in Streams*, Journal of the North American Benthological Society, 19(1):186-196.

Dodds, W.K., Smith, V.H., and Lohman, K., 2002, *Nitrogen and Phosphorus Relationships to Benthic Algal Biomass in Temperate Streams*, Canadian Journal of Fish and Aquatic Sciences 59" 865-874.

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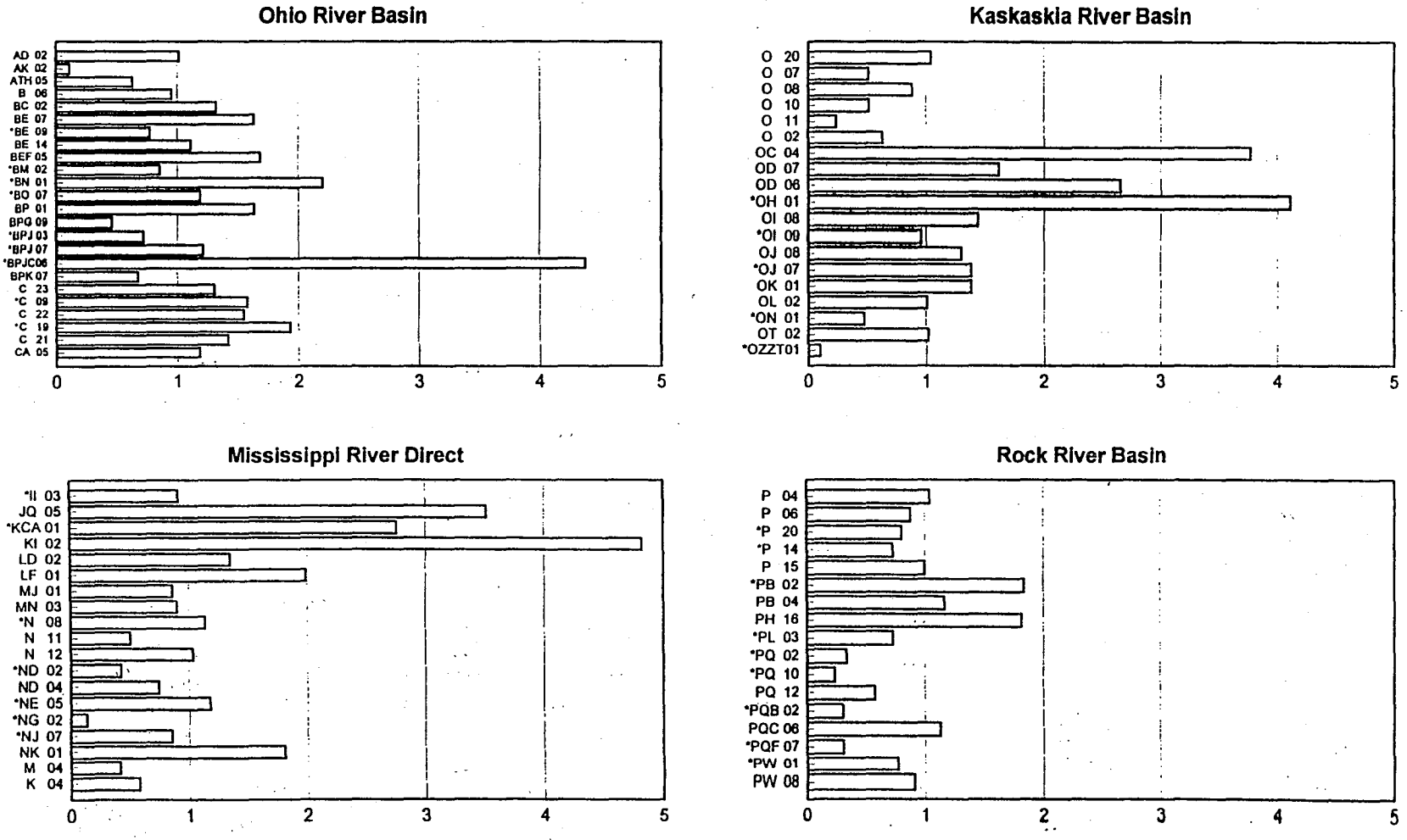
Sheeder, S.A. and Evans, B.M., 2004, *Estimating Nutrient and Sediment Threshold Criteria for Biological Impairment in Pennsylvania Watersheds*, Journal of the American Water Resources Association.

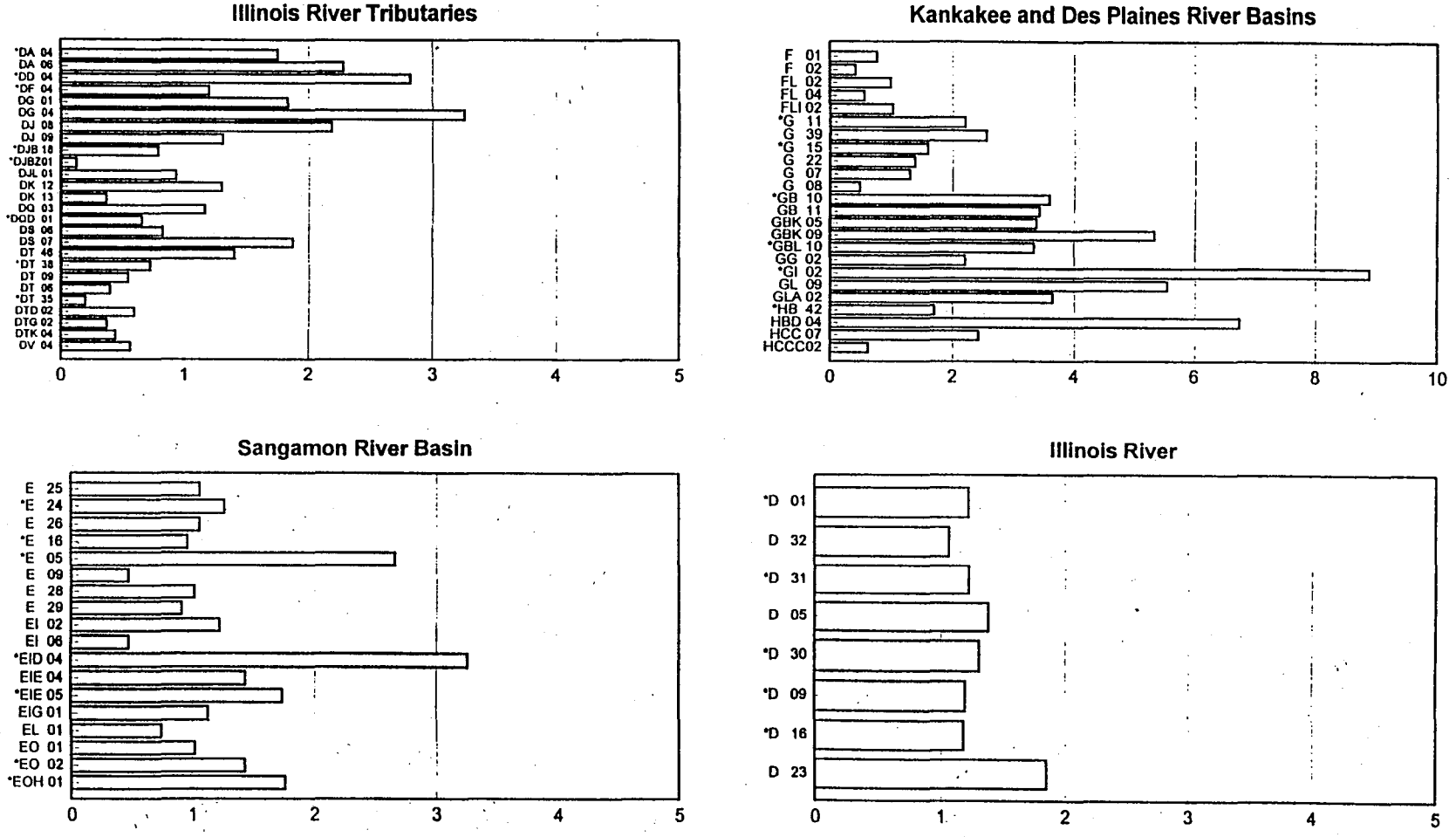
EXHIBIT 1

Figure 4-4. Comparisons of baseline yields of total phosphorus(Kg/Hectare/Year). Illinois EPA AWQMN data October 1980 - September 1996.



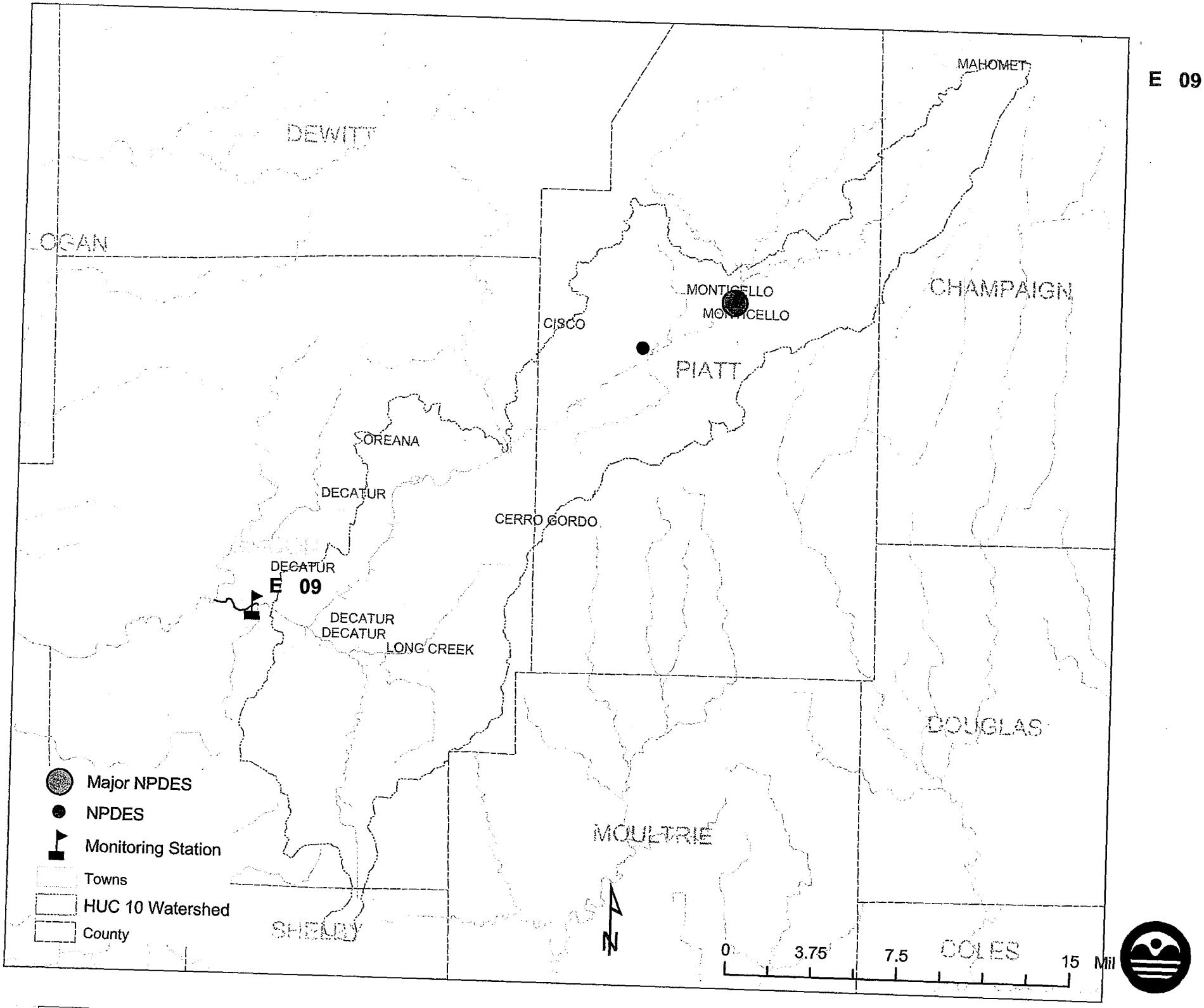
* indicates less than 16 years of flow data

Figure 4-4 (cont) . Comparisons of baseline yields of total phosphorus (Kg/Hectare/Year). Illinois EPA AWQMN data October 1980 - September 1996.



* indicates less than 16 years of flow data

EXHIBIT 2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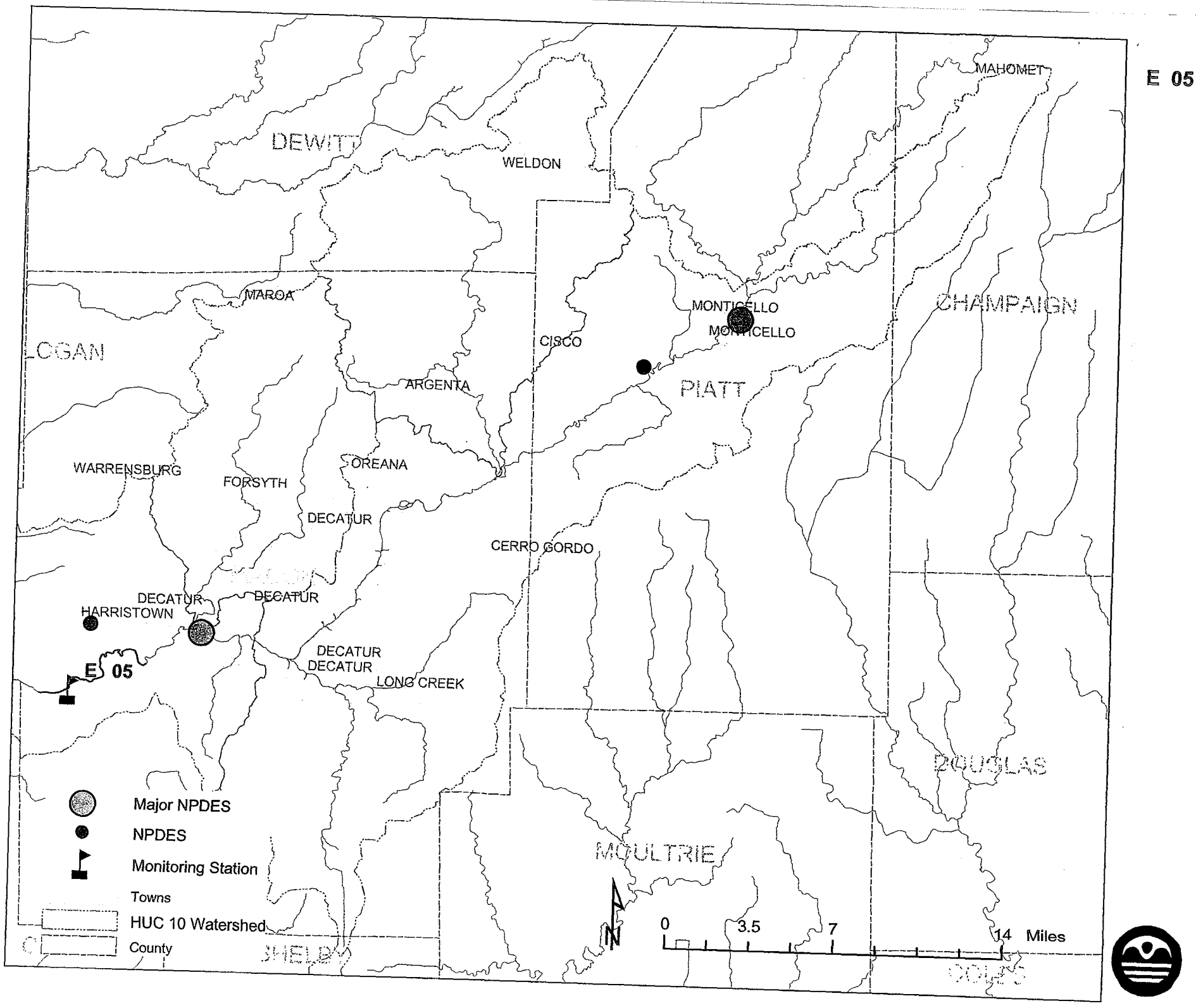
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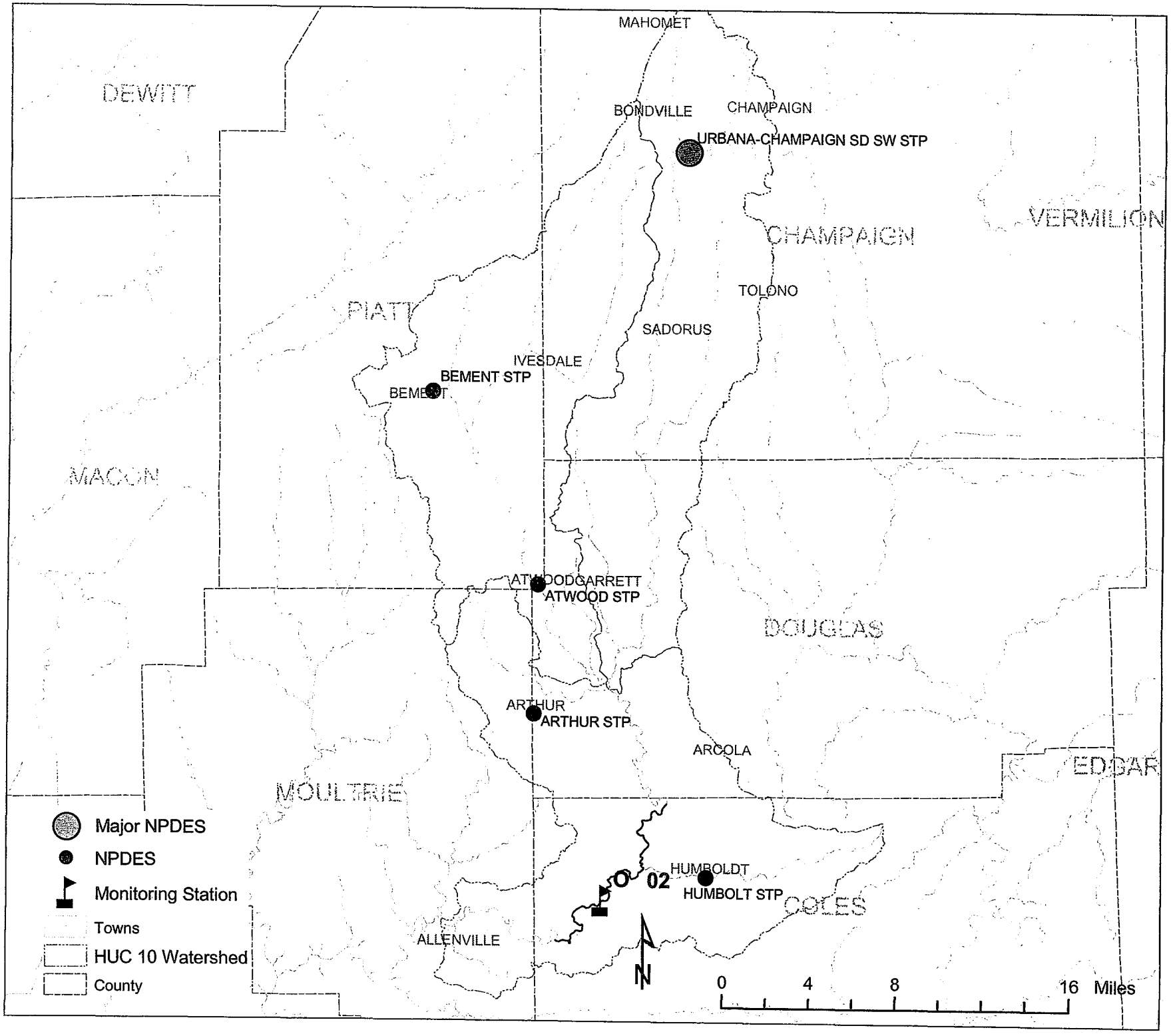
WARRENSBURG
FORSYTH
OREANA
DECATUR
CERRO GORDO
DECATUR
DECATUR
HARRISTOWN
DECATUR
DECATUR
LONG CREEK
E 05
DOUGLAS
MOULTRIE
SHELBY
DOUGLAS
Major NPDES
NPDES
Monitoring Station
Towns
HUC 10 Watershed
County
N
0
3.5
7
14 Miles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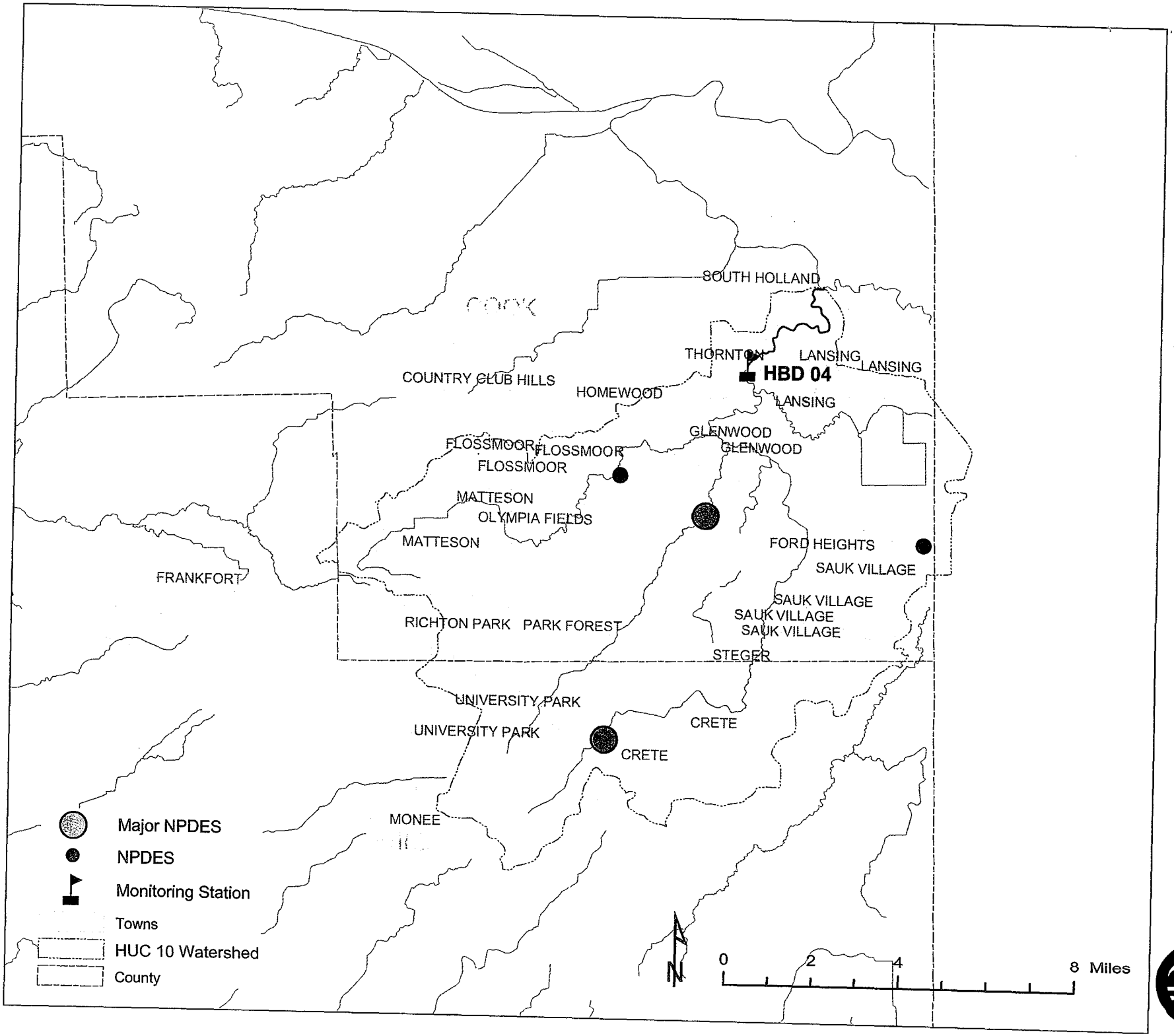
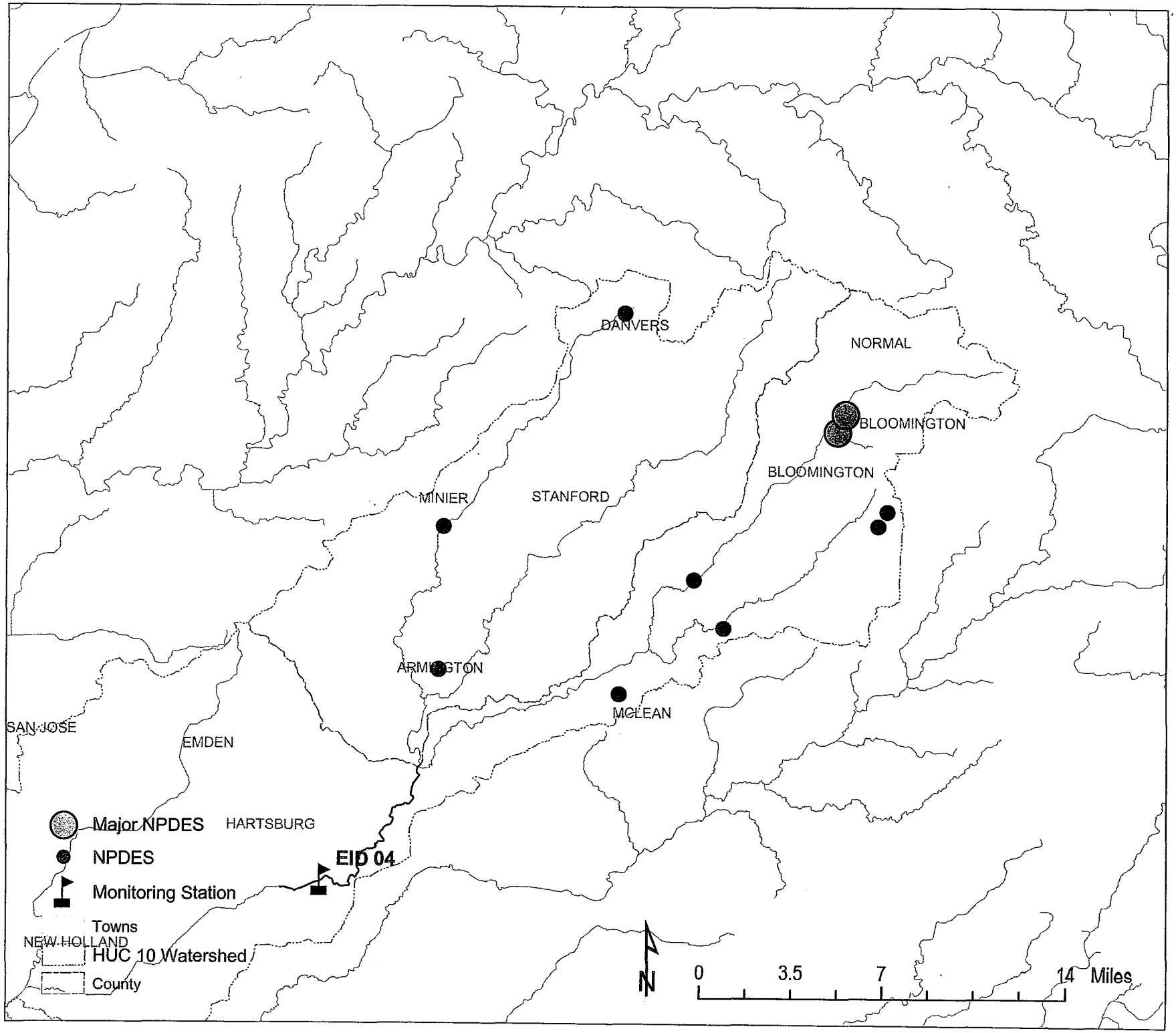
MAHOMET
DEWITT
BONDVILLE
CHAMPAIGN
URBANA-CHAMPAIGN SD SW STP
VERMILION
CHAMPAIGN
TOLONO
PIATT
SADORUS
IVESDALE
BEMENT STP
BEMENT
MACON
ATWOODGARRETT
ATWOOD STP
DOUGLAS
ARTHUR
ARTHUR STP
ARCOLA
EDGAR
MOULTRIE
HUMBOLDT
O 02
HUMBOLT STP
COLES
ALLENVILLE
Major NPDES
NPDES
Monitoring Station
Towns
HUC 10 Watershed
County
N
0
4
8
16 Miles

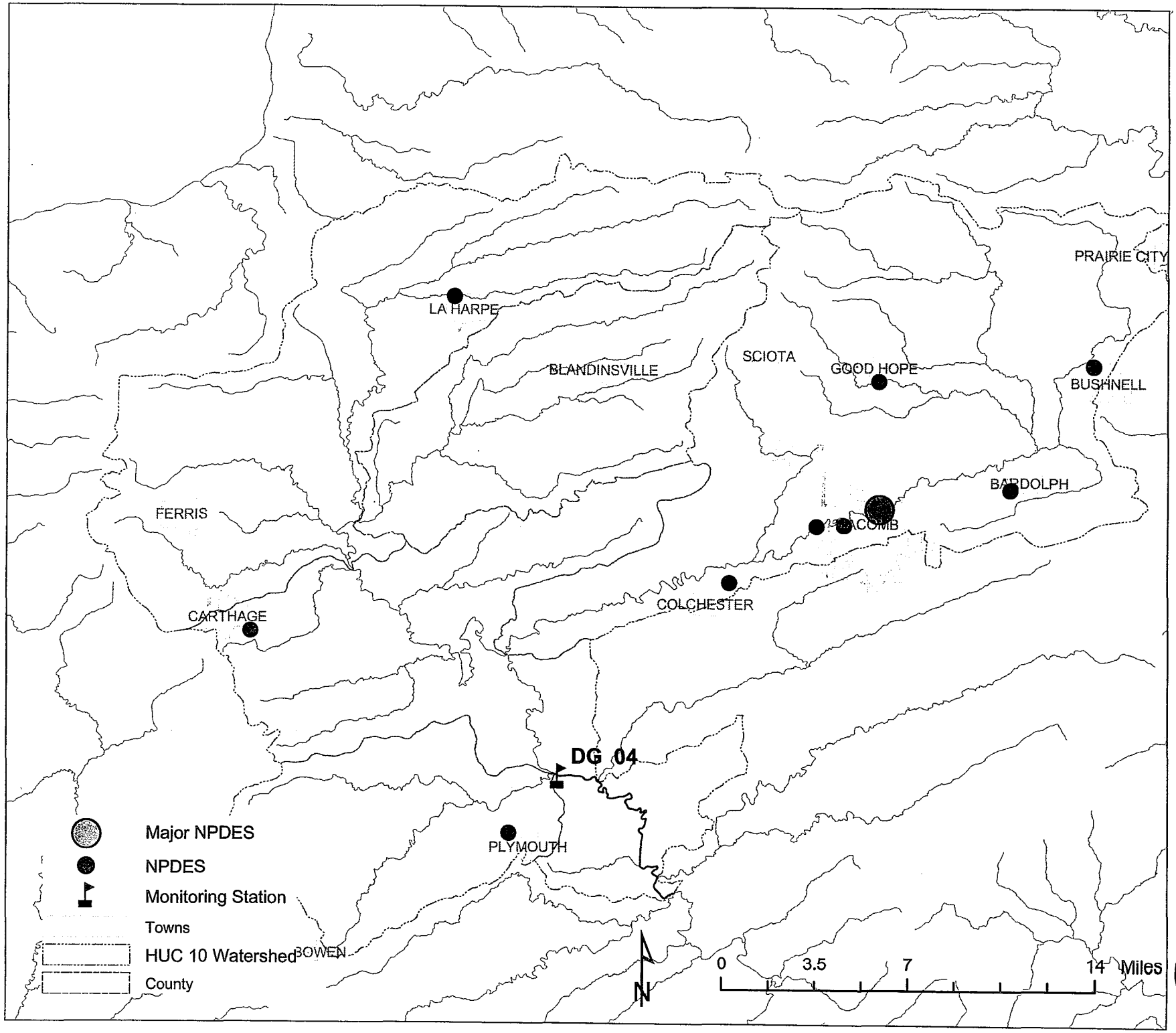
HBD 04


SOUTH HOLLAND
THORNTON
LANSING
LANSING
HBD 04
COUNTRY CLUB HILLS
HOMEWOOD
LANSING
GLENWOOD
GLENWOOD
FLOSSMOOR
FLOSSMOOR
FLOSSMOOR
MATTESON
OLYMPIA FIELDS
MATTESON
FORD HEIGHTS
SAUK VILLAGE
FRANKFORT
SAUK VILLAGE
SAUK VILLAGE
SAUK VILLAGE
RICHTON PARK
PARK FOREST
STEGER
UNIVERSITY PARK
UNIVERSITY PARK
CRETE
CRETE
MONEE
Major NPDES
NPDES
Monitoring Station
Towns
HUC 10 Watershed
County
N
0
2
4
8 Miles

EID 04


DANVERS
NORMAL
BLOOMINGTON
BLOOMINGTON
MINIER
STANFORD
ARMINGTON
MCLEAN
SAN JOSE
EMDEN
HARTSBURG
NEW HOLLAND
Major NPDES
NPDES
Monitoring Station
EID 04
Towns
HUC 10 Watershed
County
N
0
3.5
7
14 Miles

DG 04


LA HARPE
BLANDINSVILLE
SCIOTA
GOOD HOPE
PRAIRIE CITY
BUSHNELL
BARDOLPH
MACOMB
FERRIS
COLCHESTER
CARTHAGE
DG 04
PLYMOUTH
BOWEN
Major NPDES
NPDES
Monitoring Station
Towns
HUC 10 Watershed
County
N
0
3.5
7
14
Miles

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STATE OF ILLINOIS)
) SS
COUNTY OF SANGAMON)

PROOF OF SERVICE

I, the undersigned, on oath state that I have served the attached the **AGENCY'S COMMENTS** upon the persons to whom it is directed, by placing a copy in an envelope addressed to:

Dorothy Gunn, Clerk
Pollution Control Board
100 West Randolph Street
Suite 11-500
Chicago, Illinois 60601
(OVERNIGHT MAIL)

John Knittle
Hearing Officer
Pollution Control Board
2125 South First Street
Champaign, Illinois 61820
(OVERNIGHT MAIL)

Mathew Dunn
Illinois Attorney General's Office
Environmental Control Division
James R. Thompson Center
100 West Randolph Street
Chicago, Illinois 60601
(OVERNIGHT MAIL)

Jonathan Furr
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, Illinois 62702-1271

(OVERNIGHT MAIL)

ALSO SEE ATTACHED SERVICE LIST
(FIRST CLASS)

Nancy J. Lamport

SUBSCRIBED AND SWORN BEFORE ME
THIS 20th DAY OF DECEMBER 2004.

Brenda Boehner

OFFICIAL SEAL
BRENDA BOEHNER
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 11-14-2005