United States
Environmental Protection
Agency

Region 5
230 South Dearborn Street
Chicago, Illinois 60604

Water Division

June, 1982

EPA

Environmental Impact Statement

Final

Alternate Waste Treatment Systems For Rural Lake Projects

Case Study Number 6
Williams County Commissioners
Nettle Lake Area
Williams County, Ohio

ADDENDUM

This addendum sheet serves to provide greater detail on elements contained in the Final Environmental Impact Statement on Alternative Wastewater Treatment Systems for Rural Lake Projects, Case Study No. 6 Nettle Lake Area, Williams County, Ohio.

The EIS Recommended Action P. II-4

As this section indicates, EIS alternative 8 is selected as an approach to upgrade or replace existing on-site waste treatment systems with different forms of on-site technology. It is not site specific but would necessitate a cooperative decision between a small waste flows management district (see P. II-10) and each homeowner to select the appropriate technology for each site.

The EIS assumed replacement of approximately 30 flood prone privies with forest service type vault toilets as one form of on-site technology. In order to minimise mixing of flood water with these toilet wastes, and thus minimise public health problems, the alternative proposes that these vaults be emptied at the end of each season and back filled with fresh water. This will prevent them from floating out of the ground during flood events. If the systems are inundated, a vault filled with water would minimize turbulent mixing and would thus limit the exchange of nutrients and pathogens between privy waters and flood waters. Prior to the vacation season these vaults would again be pumped out in preparation for summer use.

In estimating the total present worth of this alternative, the costs of having a private septage hauler pump and backfill vault toilets were calculated. The cost also reflect charges incurred to treat these wastes at the Montpelier treatment plant (See P.V-7). Thus the $110 estimated annual average homeowner cost takes all of these considerations into account. (See P.II-12)

Chapter III Affected Environment P. III-1

Chapter III of this document provides a generalized description of the environmental resources found in the Study Area and the environmental impact that would result from taking no action. For a more detailed description of resources found locally, please consult the Draft EIS Chapter II, Environmental Setting on Pages 21 through 80.

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION V
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

AUG 12 1982

REPLY TO ATTENTION OF:
5WFI

TO ALL INTERESTED AGENCIES, PUBLIC GROUPS, AND CITIZENS:

Enclosed is a copy of the Final Environmental Impact Statement (EIS) for Alternate Waste Treatment Systems for the Nettle Lake Area, Williams County, Ohio. Pursuant to the National Environmental Policy Act and regulations (40 CFR Part 6, November 6, 1979) promulgated by this Agency, action or approval will not occur until thirty days after the availability of this document is published in the Federal Register.

After this date, we will issue a Record of Decision explaining what the final action taken by EPA will be and mitigative measures developed through the EIS process. Copies will be sent to all persons who received the Final EIS or who request a copy. For additional copies of this Final EIS please contact the Environmental Impact Section of the Water Division at the above address.

Sincerely yours,

Valdas V. Adamkus
Regional Administrator

Enclosure

FINAL ENVIRONMENTAL IMPACT STATEMENT

ALTERNATIVE WASTEWATER TREATMENT SYSTEMS FOR RURAL LAKE PROJECTS
WILLIAMS COUNTY COMMISSIONERS

CASE STUDY NO. 6

NETTLE LAKE AREA, WILLIAMS COUNTY, OHIO

Prepared by the

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION V

CHICAGO, ILLINOIS

With the assistance of

WAPORA, Inc.

CHEVY CHASE, MARYLAND

Approved By:

Valdas V. Adamkus
Regional Administrator

PREPARERS

This Final Environmental Impact Statement was prepared with the assistance of WAPORA, Inc., under the guidance of Catherine G. Garra, EPA Region V Project Officer. Mr. J. Ross Pilling, II was WAPORA's Project Manager.

Much of the material in the Draft Enviromental Impact Statement was provided by WAPORA employees and sub-contractors; they are listed in that doucment.

EXECUTIVE SUMMARY

This Final Environmental Impact Statement (EIS) addresses water quality and wastewater management alternatives for the Nettle Lake area, Williams County, Ohio. (See Figure 1 for a map of the Study Area.) The EIS is based on issues identified during a U.S. Environmental Protection Agency (EPA) review of the Facilities Plan proposed for funding under EPA's Construction Grants Program by the Applicant, the Commissioners of Williams County, Ohio. The Applicant's Facilities Plan proposed the construction of a centralized gravity/force main collection system, with an aerated waste stabilization lagoon east of Nettle Lake, and a discharge downstream to Nettle Creek (see Appendix E, page E-3 for a description of the Facilities Plan Proposed Action). The issues that made necessary the preparation of this EIS were the following:

- Sizing of the proposed facility based on optimistic population projections could result in unneeded facilities and a high cost burden on local residents.

- The high cost of centralized collection and treatment facilities could result in hardship and displacement of homeowners with modest incomes who could not afford to pay such costs.

- The amount and rate of population growth and residential development that would occur if the facility were constructed, would increase demand for local community services; and could adversely affect the water quality of the lake by resulting in additional pollutant runoff into the lake.

- The amount of growth projected could result in degradation of the floodplain and wetland areas surrounding the lake, and could also adversely affect the habitats of state-listed endangered species.

To document the need for the proposed project, EPA devoted a substantial effort to defining existing water quality problems and potential public health hazards associated with malfunctioning on-site wastewater treatment systems surrounding Nettle Lake. This effort included an aerial photographic survey and field investigation of surface malfunctions; a door-to-door sanitary survey of 11 percent of the housing units, representing the most continuously occupied homes; a septic leachate survey of the lakeshore; and water quality modeling based upon available data. Several of these documentation techniques had not yet been developed at the time of the original facilities plan, and were therefore not utilized in its preparation.

EPA concluded that the principal reason why wastewater treatment improvements are needed is to protect Nettle Lake and the health of the area's residents from sewage contamination during flood events. At these times, back-ups of sewage into houses occur, effluent is found on the ground outside homes, and privies are inundated.

The results of the technical studies and limited sanitary survey referred to above indicate that most of the on-site wastewater treatment facilities in the Study Area are operating satisfactorily, except during flood events. On-site systems do not appear to contribute a significant amount of nutrients

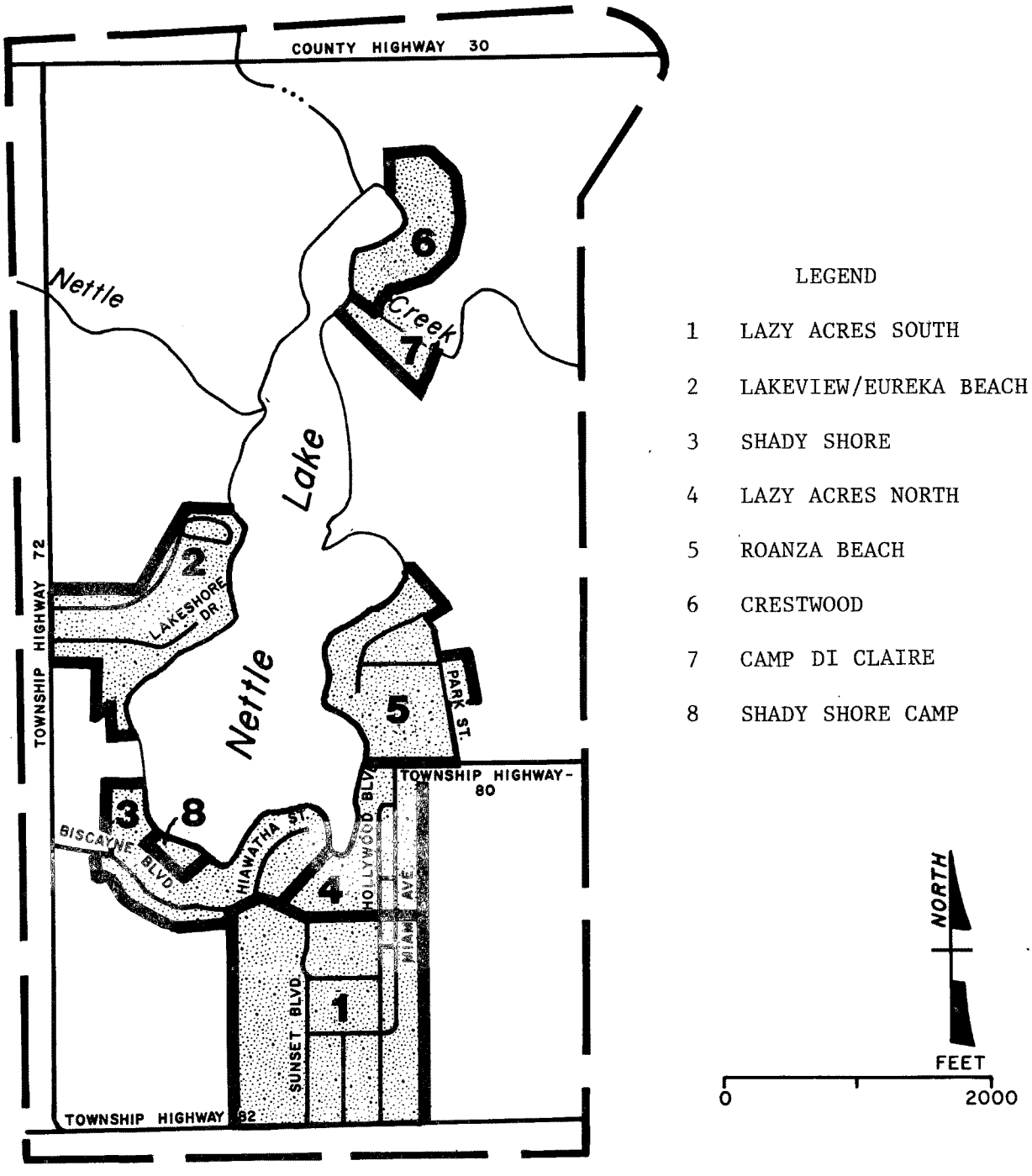

FIGURE I NETTLE LAKE: SEGMENTED SUBDIVISIONS IN THE PROPOSED SERVICE AREA

to Nettle Lake. Of the total load of phosphorus entering the lake, an estimated 13 percent or less comes from on-site systems. During non-flood conditions, the remaining load comes from non-point sources, such as agricultural runoff.

EIS Alternatives

The conclusions reached in the needs documentation effort described above were integral to the development and evaluation of nine alternatives to the Facilities Plan Proposed Action. These alternatives were presented in detail in the Draft EIS. The alternatives, some of which were developed based on designs evaluated in the Facilities Plan, ranged from centralized facilities (EIS Alternative 1) to decentralized facilities (EIS Alternatives 7 and 8). These alternatives considered water conservation, alternative collection systems (low-pressure sewers), treatment techniques (land application), multi-family septic systems (cluster systems), and alternative on-site technologies (waterless toilets, holding tanks, improved privies). (See Table 1 for a summary of the major components of the eight alternatives.) Present worth costs ranged from $1,842,500 for the Facilities Plan Proposed Action to $796,500 for EIS Alternative 8. The Draft EIS recommended implementation of Alternative 8 as the most cost-effective and environmentally sound wastewater management plan.

Public Participation

A public hearing on the Draft EIS (July 1981) was conducted on 2 October 1981, in Williams County, Ohio, to gather additional input from all interested parties. Many comments were voiced at the hearing or were submitted to EPA in writing before the end of the month. The majority of public comments and questions addressed the following topics:

- The validity of EPA's analysis of field data and determination of need for the project;
- The problems caused by frequent flooding, which inundates privies along the lake shore;
- The potential solutions for correcting the flooding problem;
- The feasibility of continued use of on-site treatment systems;
- Project costs and affordability; and
- The implementability of decentralized wastewater management approaches.

Final EIS

The primary emphasis of this Final EIS is to respond to all substantive public and agency comments on the Draft EIS and to clarify or modify information that was presented in the Draft EIS. The only new alternative developed for this Final EIS is a suggested voluntary action alternative, if Federal funding is unavailable.

Table 1

ALTERNATIVES -- SUMMARY OF MAJOR COMPONENTS

Alternative	Centralized Treatment	Treatment Plant Siting	Effluent Disposal	On-lot and Cluster Systems	Alternative Collection Method
Facilities Plan Proposed Action	Aerated lagoon serving entire Proposed Service Area	Northwest Township Section 24	Discharge to Nettle Creek	No	No
EIS Alternative 1	Aerated lagoon serving Segments 1,3,4,5,7 and 8	Northwest Township Section 24	Discharge to Nettle Creek	Segment 2: Cluster systems Segment 6: ST/SASs	No
EIS Alternative 2	Aerated lagoon serving Segments 1,3,4,5,7 and 8	Northwest Township Section 24	Discharge to wetlands (aquaculture)	Segment 2: Cluster systems Segment 6: ST/SASs	No
EIS Alternative 3	Aerated lagoon serving Segments 1,3,4,5,7 and 8	Northwest Township Section 24	Discharge to Nettle Creek	Segment 2: Cluster systems Segment 6: ST/SASs	Use of pressure sewers/septic tank effluent pumping (STEP) system in suitable sections of the central collection system
EIS Alternative 4	Aerated lagoon serving Segments 1,3,4,5,7 and 8	Northwest Township Section 24	Discharge to wetlands (aquaculture)	Segment 2: Cluster systems Segment 6: ST/SASs	Use of pressure sewers/STEP system in suitable sections of the central collection system
EIS Alternative 5	Stabilization Pond/land application system serving Segments 1,3,4,5,7 and 8	Northwest Township	Land application by rapid infiltration with recovery of renovated wastewater and discharge to Nettle Creek	Segment 2: Cluster systems Segment 6: ST/SAS	No
EIS Alternative 6	No	No	No	Segments 1,3,4,5: Holding tanks (maximum flow reduction) and septic tanks with mounds and "super systems" Segment 2: Cluster systems Segments 6 to 8: ST/SAS Repair, replacement and hydrogen peroxide treatment of existing systems as necessary	No
EIS Alternative 7	No	No	No	Segments 1 to 5: Holding tanks (maximum flow reduction) and septic tanks with mound and "super system" absorption fields. Segments 6 to 8: ST/SASs Repair, replacement and hydrogen peroxide treatment of existing systems as necessary	No
EIS Alternative 8	No	No	No	Segment 1 to 5: Replace privies with alternative technologies and septic tank with mound or "super system" absorption fields Segment 6 to 8: ST/SAS Repair, replacement, and hydrogen peroxide treatment of existing systems as necessary	No

Note: See Appendix E for more detailed information

In general, the Final EIS confirms the conclusions of the Draft EIS. These conclusions are listed below.

- The No-Action Alternative is not an acceptable course of action.
- The Facilities Plan Proposed Action is not the most appropriate wastewater management alternative.
- Continued use of on-site wastewater treatment systems, including new and upgraded systems, as proposed by EIS Alternative 8, is the appropriate, cost-effective solution to the area's wastewater treatment needs.
- Elimination of on-site wastewater systems from the shores of Nettle Lake would not markedly change the nutrient loading to the lake.

Recommendations

The recommendations of the Final EIS remain the same as those proposed in the Draft EIS:

- Design and implement EIS Alternative 8, to include the establishment of a Small Waste Flows Management District.
- Conduct a site-specific environmental and engineering analysis of all existing on-site systems in the Study Area.
- Repair and replace on-site systems as required.
- Upgrade existing privies or replace them with alternative forms of toilet and on-site technology as needed.

The recommended action will reduce the potential public health hazard during flood periods to a markedly decreased risk. It would also result in a modest improvement in overall lake water quality. Eligible portions of the project may receive 85% Federal funding for design and construction. With this funding level, annual homeowner costs should amount to approximately $110 a year.

If the Applicant wished to pursue EPA Construction Grants funding, the Facilities Plan would need to be revised to reflect the conclusions of this EIS. The precise regulatory requirements for such funding are not known at this time, since the Federal regulations concerning these activities are in a state of flux. The following recommendations reflect the best understanding of the regulations as they now stand.

A Small Waste Flows Management District would need to be established for the operation and management of the proposed on-site and alternative systems. To complete the Facilities Planning process, the Applicant would need to do the following:

- Certify that the project will be constructed and that an operation and maintenance program will be established to meet local, State, and Federal requirements.

- Certify that privately owned individual on-site treatment systems will be properly operated and maintained.

- Obtain assurance (such as an easement or County Ordinance) of unlimited access to each individual system at all reasonable times.

- Establish a comprehensive program for regulation and inspection of individual systems.

In the eventuality that Federal funding of EIS Alternative 8 is not feasible, the alternative local management recommendation in Section I-D of this EIS can be used. Taking no action to correct the public health problems at Nettle Lake would result in continued contamination of the Lake during periods of flooding. Problems with on-site systems should be addressed through monitoring, improved maintenance, and renovation or replacement of existing systems. A voluntary action alternative could be implemented which makes maximal use of existing technical capability and local initiative. Such a program would significantly reduce the public health and water pollution problems in the area.

C O N T E N T S

L I S T O F T A B L E S

L I S T O F F I G U R E S

Chapter I

Purpose of and Need for Action

A. THE APPLICANT'S FACILITIES PLAN

In 1977, Floyd G. Brown Associates submitted the "Facilities Plan - Nettle Lake Area, Williams County, Ohio," with Addenda, on behalf of the Williams County Commissioners, to the U.S. Environmental Protection Agency (EPA) for Federal funding under Section 201 of the Clean Water Act of 1977. The Facilities Plan evaluated wastewater collection and treatment alternatives for the Nettle Lake area and developed a construction plan for a gravity/force main collection system, treatment in an aerated lagoon east of Nettle Lake, and discharge downstream in Nettle Creek. (See Appendix E for a description of the Facilities Plan Proposed Action.) Figure I-1 shows the location of Nettle Lake in Williams County, and Figure I-2 shows the Study Area addressed in this EIS. A preliminary environmental review of the Facilities Plan and Addenda by EPA indicated the possibility of significant environmental impacts and led to the Agency's decision that an EIS was warranted.

The major issues defined in the Notice of Intent to prepare an EIS were as follows:

1. Population. An estimated 110 permanent and 550 seasonal residents live in the Study Area. The applicant's year 2000 population projections foresaw 250 permanent and 1,000 seasonal residents. U.S. Census Bureau figures and P-25 population estimates showed an essentially static permanent population in Northwest Township: 924 in 1960, 914 in 1970, and 934 in 1973. Commercial atlases for 1968 and 1977 showed no summer population increases for the unincorporated area around Nettle Lake: 250 summer residents in both years, with an increase in the permanent population from 60 to 100.

2. Secondary Impacts and Induced Growth. The Facilities Plan and public hearing transcript stated that the population projections assumed increased growth rates caused by the availability of sewer service for new housing development. This increased population would place additional demands on local community services. Increased development may impact the quality of the lake and surrounding natural areas as well.

3. Cost-Effectiveness and Socioeconomic Impact. Capital costs were estimated at $1.6 million, a $1,818 cost per capita for the 1977 summer population and $960 per capita for the year 2000 summer population. Grant-eligible capital costs would have been covered by 75 percent Federal funding. Each resident would be charged about $192.00 per year for sewer service. The user would also be responsible for any tap-in fee or sewer assessment, the costs of a house lateral line, septic tank disconnection, and (in the case of some privy-equipped homes) installation of indoor plumbing and a water supply. Even if spread out over an extended period of time, these costs may be a significant burden for retired persons or those owning a modest summer home. This may result in displacement of existing residents, many of whom live in mobile homes. Low-cost system alternatives need to be thoroughly examined.

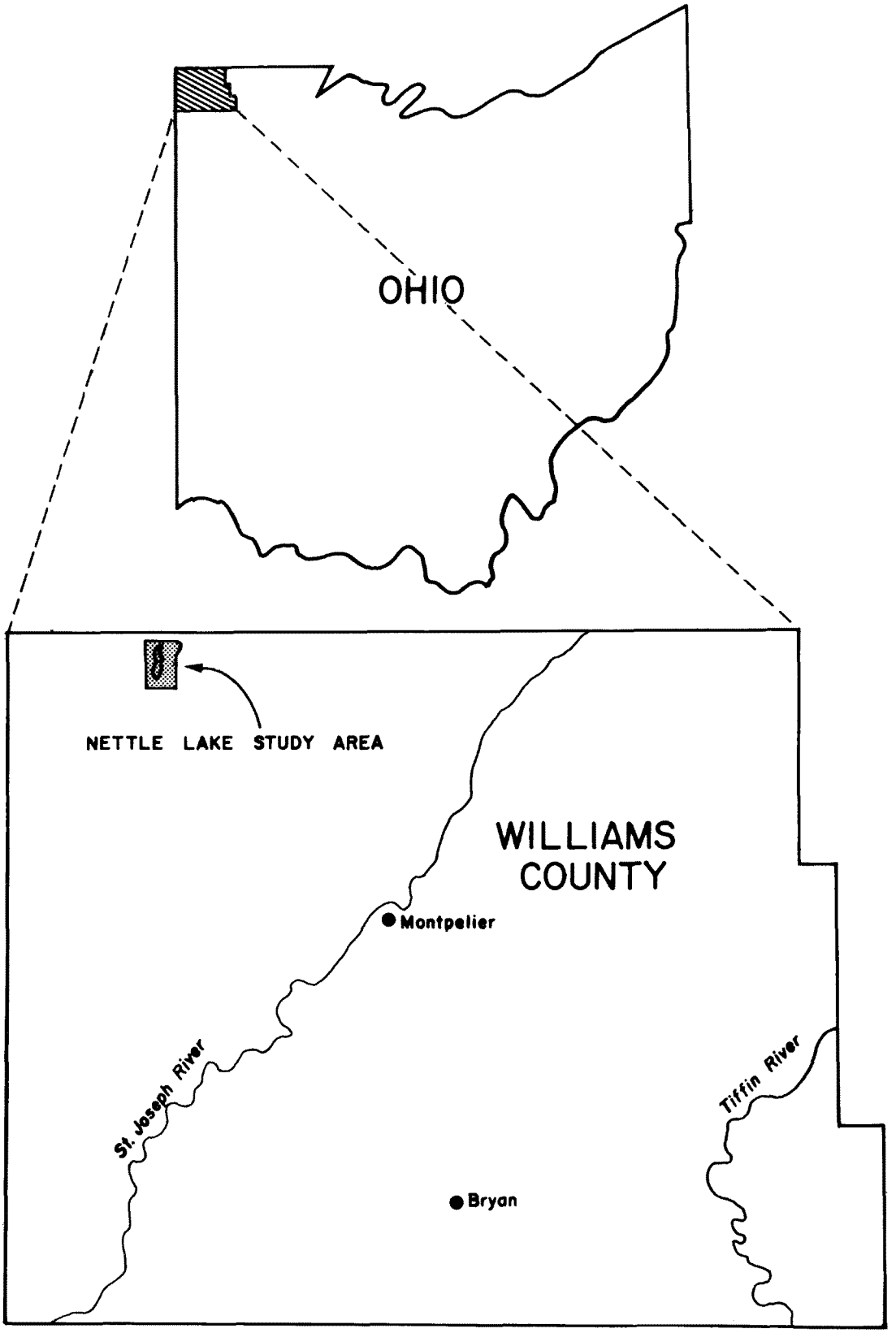

FIGURE I-1 LOCATION OF THE NETTLE LAKE STUDY AREA

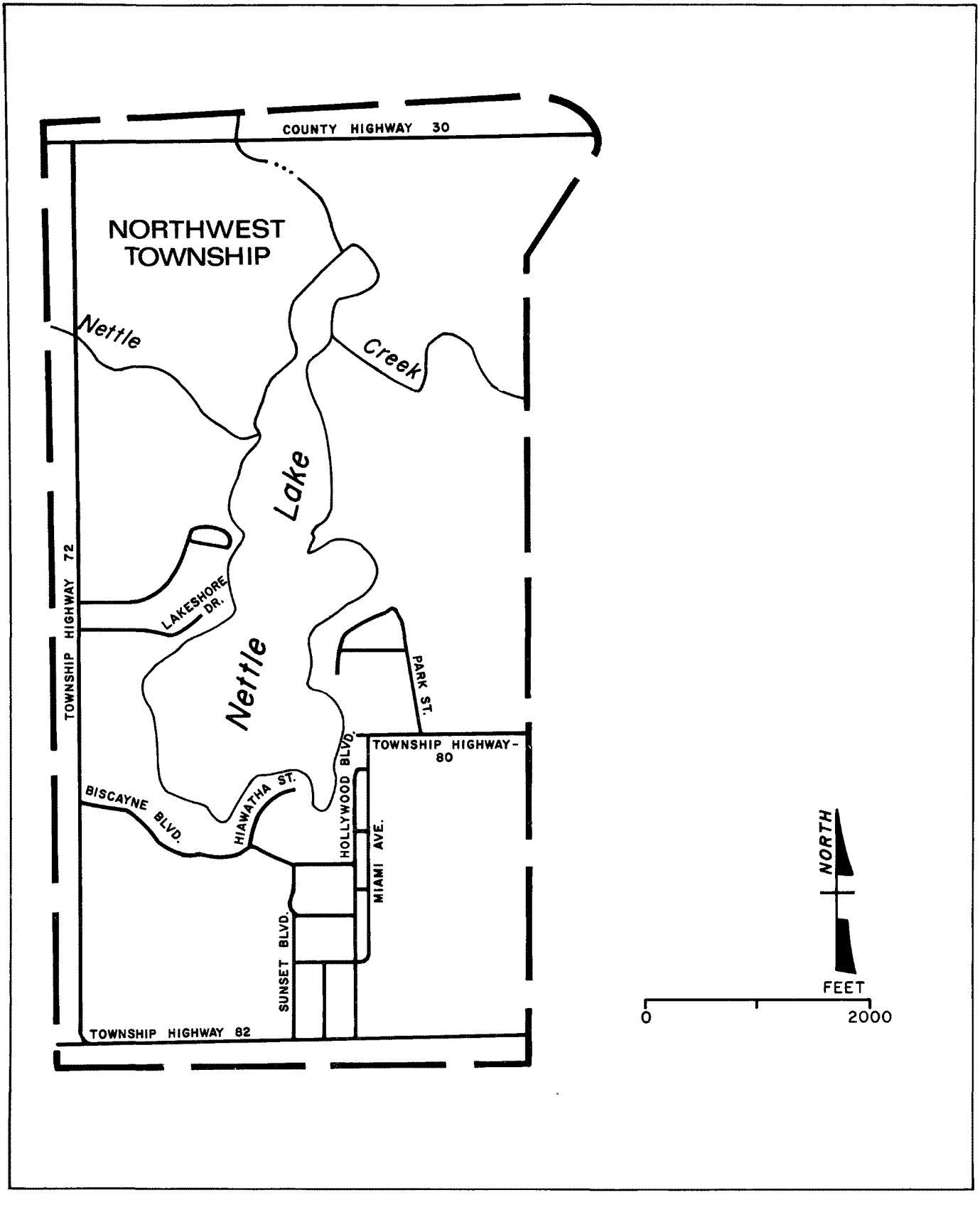

FIGURE I-2 NETTLE LAKE: STUDY AREA

4. Wildlife Habitat and Wetlands Impact. The Facilities Plan states that the Nettle Lake area provides habitat for five State-listed endangered species, according to the Ohio Department of Natural Resources. These include two birds (King Rail and Upland Sandpiper), one snake (Northern Copperbelly), and two fishes (Iowa Darter and Lake Chubsucker). The Facilities Plan contains no specific discussion of the location of these habitats. Such a grouping of species that are considered rare within the State constitutes an area of special scientific interest.

   Several wetland areas surround the lake. Increased development may alter the character of the wetlands, and additional groundwater pumping by an expanded population may lower wetland levels and affect Nettle Lake itself, one of the few natural lakes in Ohio. The project's biological and hydrologic impacts appear environmentally significant.

B. THE NEED FOR IMPROVED MANAGEMENT

The Facilities Plan cites the following as demonstrating a need for action:

- Reports from the Williams County Health Department of malfunctioning on-lot wastewater treatment facilities;

- Complaints by residents of untreated sanitary wastes entering the lake.

The Facilities Plan also states:

> "Many filter and leaching beds in the area have become filled; the effluent often ponds on top of the ground and then drains directly to the lake or to drainage ditches which lead to the lake. During late winter and spring when the lake surface is at a higher elevation than normal, this ponded effluent mixes directly with lake water. Because of the soil limitations, the platted lots are not large enough for proper on-lot septic tank treatment facilities."

Consequently, on 26 September 1978, the Ohio Environmental Protection Agency (OEPA) issued NPDES Permit No. G746*AD to the Williams County Commissioners, who agreed to prepare a wastewater management plan in compliance with the permit.

When the EIS was under way, EPA conducted a series of studies to evaluate in greater detail the water quality and public health problems related to the use of on-site systems around Nettle Lake. These studies utilized newly developed techniques that were not previously available to the Facilities Planners. The studies were reported in the Draft EIS, in Section II.F.1. and Appendix D. Their major conclusions are as follows:

- Eutrophication Modeling - On-site sewage treatment systems contribute an estimated 13% of the phosphorus load to Nettle Lake. Elimination of this source would result in a negligible change in the lake's current moderately eutrophic status.

- Aerial Photographic Survey - EPA's Environmental Monitoring and Support Laboratory (EMSL) conducted an aerial photographic survey in May and June 1978 to determine the location of surface malfunctions in the Study Area. Two suspected malfunctioning systems identified by this remote sensing technique were later inspected on the ground, and neither were found to be malfunctioning at that time.

- On-Site Sanitary Survey - EPA conducted an on-site sanitary survey of the Nettle Lake Area between 29 November and 6 December 1978. The survey provided information on the types of on-site systems in the area, the nature and extent of their non-compliance with the Sanitary Code, and the nature and extent of problems with these systems. The survey, conducted at a time when only permanent residents were present, does not reflect peak in-summer use conditions, but does give a representative sample of the most intensively used systems. Of the residents surveyed, 14 percent indicated having problems with their systems. Survey results suggested that problems with in-house backups, surface ponding of effluent, and privy flooding are common during spring flooding.

- Investigation of Septic Leachate Discharges - Septic leachate discharges into Nettle Lake were investigated in December 1978 to determine whether groundwater plumes were emerging along the lakeshore. No distinct groundwater plumes of wastewater origin were detected along the shoreline of Nettle Lake, at a time of year in which such plumes would be evident if they existed.

In addition to these special studies, data have been gathered on the recurrence and elevation of flooding in Nettle Lake, local groundwater and well water quality, and the extent of bacterial contamination of the lake. This effort relied upon existing data collected from local, state, county and Federal agencies.

Fecal coliform and fecal streptococci bacteria were analyzed from water samples taken from Nettle Lake by OEPA on 12 July and 2 August 1976. No conclusive violation of water quality standards is apparent, and the low ratio of fecal coliform to fecal streptococci bacteria suggest limited contamination from farm animals, not human sources. One exception was a sample, taken in a drainage ditch off the south shore, which suggests contamination by human sewage. Information from the Williams County Board of Health indicates low-level bacterial counts from surface water samples taken and no reports of disease or illness from the area (by letter from Estel Cottrell, Williams County Sanitarian, 15 December 1977).

Information on groundwater quality and possible sources of contamination was solicited from the Williams County Board of Health, OEPA, Ohio DNR Division of Water, and the U.S. Geologic Survey. Well logs and available geologic information indicate a confining surface clay layer 30 to 180 feet thick, overlying an artesian aquifer used for domestic water supply. None of the sources consulted had records of groundwater contamination from on-site wastewater management systems.

The principal basis on which a need has been defined for improved wastewater management in the Nettle Lake Area is the suspected water pollution and public health problems associated with the inundation of on-site systems during flood events. Several first-hand sources have indicated that the lake level rises an average of 5 feet during spring runoff (see Figure III-1). This could result in an inundation of the lots of 122 units, or 26% of the total, including 90% of the privy systems. Floodwater intrusion into privy systems results in the mixing of these waters and allows for transfer of bacteria and nutrients to the lake water column. The release of bacteria and viral disease vectors presents the possibility of contaminating surface water, which may enter poorly sealed wells. Flooding of septic tank soil absorption systems results in saturation of the absorption field. This can result in backups into houses or in ponding of effluent on the ground surface, with attendant potential for public health problems.

C. CONCLUSIONS

Flooding of on-site treatment systems in the Nettle Lake area presents a public health and water pollution problem that needs to be addressed. The risk of health hazard from contamination by unmanaged on-site systems is currently substantial. Field work conducted for this EIS shows recurrent problems associated with spring flood events. The septic leachate detector found no effluent plumes entering the lake. The aerial photo survey located only two suspected malfunctions that were not confirmed by ground inspection. The sanitary survey results indicated that, of the residents surveyed, only 14% have recurrent problems with their on-site systems.

Four out of 29 residents interviewed reported backups of effluent into their houses. All four of these houses were located in floodplain areas with a seasonal high water table. Recent health department records show one surface malfunction where effluent is ponded on the ground surface. There are no reports of groundwater or well water contamination. Bacterial surveys of beach areas show no violation of water quality standards. While the lake is characterized as eutrophic, the major input of nutrients is from non-point sources, emanating from the watershed above the lake. On-site systems may contribute to eutrophication during mixing due to flooding; however, clayey soils and intermittent use of the systems probably prevent leaching into the lake for most of the year.

Many topics discussed in this EIS respond to problems and opportunities addressed during preparation of seven individual EIS's for rural lake projects. This series, "Alternative Waste Treatment Systems for Rural Lake Projects," began in 1977. These Seven Rural Lake EIS's were specifically intended to evaluate the feasibility, cost-effectiveness, and environmental impacts of alternative wastewater collection and treatment systems. The alternative systems were compared to centralized systems that had been proposed in Step 1 Facilities Plans. Varying modular combinations of the two were also considered. To date, Final EIS's have been published for the first five case studies. Each recommended that grantees optimize the operation of existing on-site systems, and replace or upgrade failing on-site systems with

conventional or alternative on-site systems. The major finding of the Seven Rural Lakes EIS's is that wastewater management based on existing systems allows substantial capital, operation, and maintenance savings compared to new centralized facilities wherever continued use of a substantial percentage of existing systems is feasible. Water quality objectives can still be met while realizing this cost savings.

Chapter II

Alternatives

Solutions to the wastewater management problems in the Nettle Lake Study Area, as proposed by the Facilities Plan and the Draft EIS, are described in this chapter. The discussion of these recommendations focuses on rehabilitation and maintenance of existing on-site wastewater treatment systems, installation of alternative technologies, and implementation of a decentralized Small Waste Flows Management District. The development of these alternatives was described in Chapter III of the Draft EIS. Table 1 of the Executive Summary summarizes the major components of each alternative. Table II-1 presents the major factors considered in selecting the most appropriate wastewater management plan for the Nettle Lake Area. Appendix D describes these alternatives in detail.

A. THE FACILITIES PLAN PROPOSED ACTION

The Facilities Plan proposed the construction of a centralized gravity/force main collection system, together with an aerated waste stabilization lagoon located east of the lake. Effluent would discharge to Nettle Creek downstream of Nettle Lake, as shown in Figure II-1. Design capacity would handle 0.14 million gallons per day (mgd) in peak summer use.

Costs developed in the Draft EIS for the Facilities Plan Proposed Action are as follows:

1980 Construction Costs (including engineering, legal, and contingency costs)	$1,750,396
Future Construction Costs	8,711
Annual Operation and Maintenance Expenses	4,620
1980 Local Cost	936,483
1980 Average Annual Homeowner Cost	335*

* These costs may vary due to changes in Federal regulations enforcing the Clean Water Act as amended in December 1981 (P.L. 97-117).

The 1980 Average Annual Homeowner Cost includes all operation and maintenance costs for the year, plus annual payment on the debt of privately and publicly financed construction costs at an interest rate of 6-5/8% and a payback period of 30 years. Calculation of costs using this interest rate is mandated by Federal regulations (40 CFR Part 35, Appendix A). This charge would be strongly influenced by the grant eligibility of new sewers. Implementation of the Facilities Plan Proposed Action would include conventional construction and management procedures that are described in the Facilities Plan.

Table II-1 Decision Matrix.

Alternatives	Costs ($)		Environmental Impacts				Socioeconomic Impacts		Flexibility	Reliability
	Present Worth (x 1,000)	Annual User Charges	Surface Water Quality	Groundwater Quality	Environmentally Sensitive Areas	Population and Land Use	Financial Burden	Displacement Pressure		
EIS Alternative 8	796.5	110	• Minimal reduction in nutrient leading of the lake • Non-point sources continue to be the most significant sources of nutrients to the lake • Reduced potential for bacterial contamination • No significant impcats on shoreline algal growth.	No significant impact on chemical or bacteriological quality.	• No significant construction impacts expected on floodplains, steep slopes, wetlands, prime agricultural lands, or historical sites • No significant long-term impacts expected in any of the above categories; all facilities must comply with the floodplain zoning ordinance • No secondary impacts expected.	No induced growth or land use impacts.	10-15%	20-25%	Highest for future planing; lowest for future growth.	Lowest; maximum use of on-site systems implies maximum opportunity for system failure.
EIS Alternative 7	1,394.3	255	Same as EIS Alternative 8.	Same as EIS Alternative 8.	Same as EIS Alternative 8.	Same as EIS Alternative 8.	25-30%	15-20%	Same as EIS Alternative 8.	Same as EIS Alternative 8.
EIS Alternative 6	1,599.7	376	Same as EIS Alternatives 7 and 8.	Same as EIS Alternatives 7 and 8.	Same as EIS Alternatives 7 and 8.	Same as EIS Alternatives 7 and 8.	40-45%	20-25%	Similar to EIS Alternatives 7 and 8 for future planning; greater for future growth.	Somewhat higher than EIS Alternatives 7 and 8; use of two cluster systems eliminate several potential system failures.
Facilities Plan Proposed Action	1,842.5	335	• 12% reduction in nutrient loading of the lake • Non-point sources continue to be the most significant sources of nutrient to the lake • Greatest reduction in the potential for bacterial contamination • No significant impacts on shoreline algal growth.	Same as EIS Alternatives 7 and 8.	Sewer construction during dry weather expected to have no significant impacts on forested wetland with little understory vegetation.	No significant impacts -- insignificant induced growth would result in no land use conversions.	30-35%	20-25%	Lowest for future planning; highest for future growth.	Highest; pumping facilities decrease relability because of maintenance requirements.
EIS Alternative 2	1,896.3	325	Similar to Facilities Plan Proposed Action except for 9% reduction in nutrient loading of the lake.	Same as EIS Alternatives 7 and 8.	Same as Facilities Plan Proposed Action; but in addition, agriculture system enhances effluent quality and wildlife habitat.	Similar to Facilities Plan Proposed Action.	30-35%	20-25%	Higher than EIS Alternative 6 and the Facilities Plan Proposed Action for future planning; good but lower than both for future growth.	Slightly less than EIS Alternative 2; discharge to wetlands introduces the possibility of flooding and freezing problems.
EIS Alternative 1	1,904.9	270	Same as Alternative 3.	Same as EIS Alternatives 7 and 8.	Same as Facilities Plan Proposed Action.	Similar to Facilities Plan Proposed Action.	15-70%	20-25%	Same as EIS Alternative 3.	Somewhat lower than Facilities Plan Proposed Action because of decentralized treatment provided for Segments 2 and 6.
EIS Alternative 4	2,331.3	361	Same as Alternative 3.	Same as Alternatives 7 and 8.	Same as Alternative 3.	Similar to Facilities Plan Proposed Action.	35-40%	20-25%	Same as EIS Alternative 3.	Slightly less than EIS Alternative 4; discharge to wetlands introduces the possibility of flooding and freezing problems.
EIS Alternative 5	2,334.3	355	Same as Alternative 3.	Same as Alternatives 7 and 8.	Same as Facilities Plan Proposed Action.	Similar to Facilities Plan Proposed Action.	35-40%	20-25%	Higher only than the Facilities Plan Proposed Action for future planning; second to it for future growth.	Same as EIS Alternative 3.
EIS Alternative 3	2,339.9	320	Same as Alternative 3.	Same as Alternatives 7 and 8.	Same as Facilities Plan Proposed Action.	Similar to Facilities Plan Proposed Action.	20-25%	15-20%	Same as EIS Alternative 3.	Somewhat less than EIS Alternative 2 because extensive use of grinder pumps introduces an issue of maintenance.

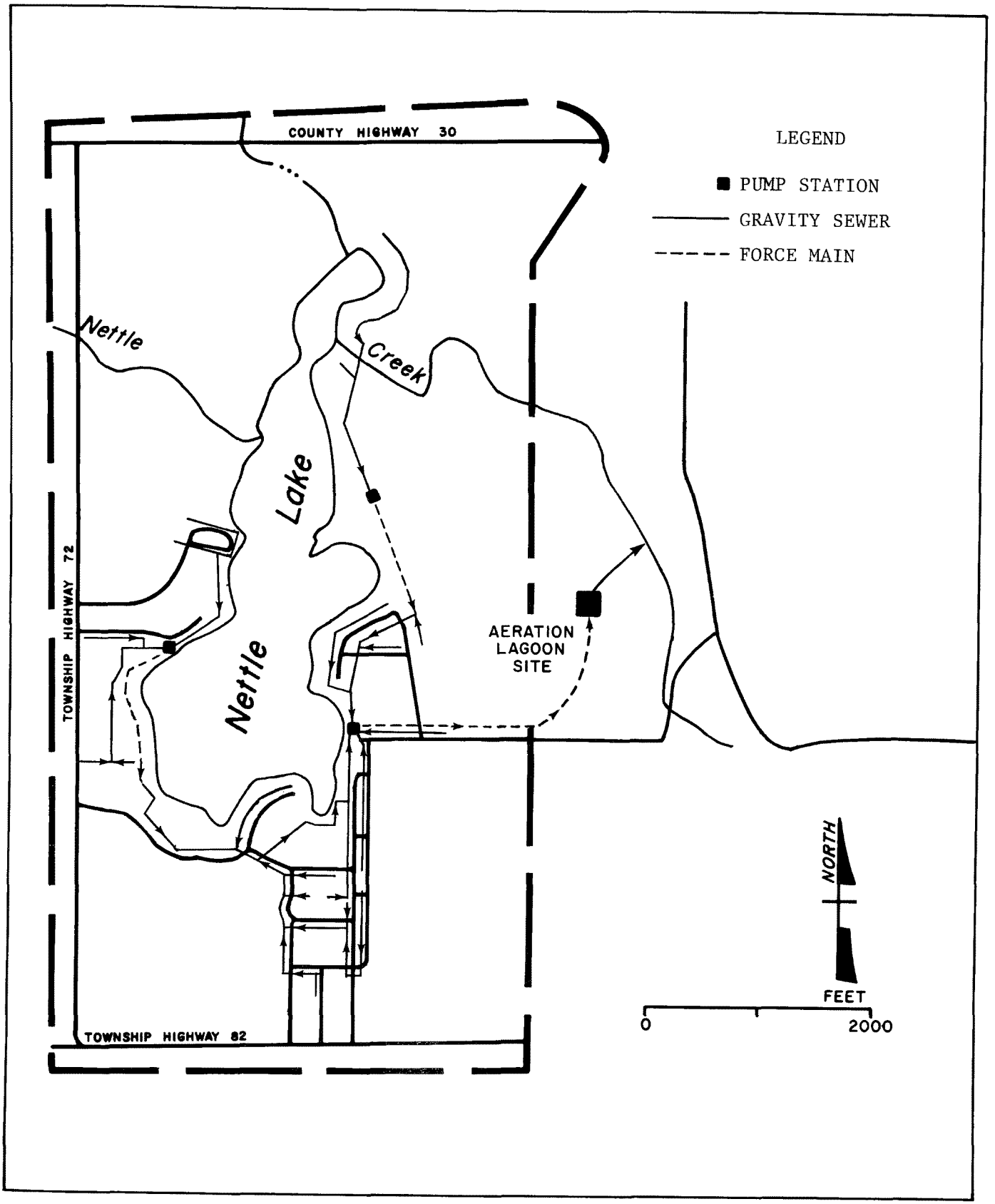

FIGURE II-1 NETTLE LAKE: FACILITIES PLAN PROPOSED ACTION

B. THE NO-ACTION ALTERNATIVE

The No-Action Alternative implies that EPA would not provide funds to support new construction, upgrading, or expansion of wastewater treatment systems. If this course of action were followed, all existing on-site systems in the Study Area would presumably continue to be used in their present condition. The No-Action Alternative is not recommended, for the following reasons:

- There are some problems with on-site systems in the Proposed EIS Study Area that should be addressed through monitoring, improved maintenance of existing and future systems, residential water conservation, and renovation or replacement of existing systems.

- There is a continuing public health hazard due to bacterial contamination from those unmanaged on-site systems which are subject to flooding.

- Improved surveillance and regulation of on-site systems in the Study Area are justified to protect public health and to maintain the area's recreational values.

Under the No-Action Alternative, the County Board of Health would continue to have inadequate information with which to design appropriate on-site system repairs. The result could be further reliance upon holding tanks to the exclusion of other innovative methods for solving problems. Chapter III of this document further describes the affected environment and impacts of no-action.

C. THE EIS RECOMMENDATION, ALTERNATIVE 8

EIS Alternative 8 recommends upgraded on-site wastewater treatment for all residences. This EIS estimates that 132 privies exist in the Study Area, and about 90% of them are inundated by flood waters every year or two. In order to address this problem. EIS Alternative 8 proposes replacement of privies with any one of four different forms of technology, to be selected by a small waste flows management district in cooperation with the homeowner. The replacement technologies would consist of outdoor vault toilets, air-assisted low-flush toilets and a holding tank, chemical toilets, and electrical composting toilets. Other on-site systems would be upgraded as necessary by replacing substandard systems. Approximately 35% of these replacements would take the form of new septic tanks and 20% would take the form of new drainfields, dual drainfields, or elevated sand mounds. Figure II-2 illustrates this alternative.

A Small Waste Flows Management District would work with the homeowner to select, install, operate, and maintain the technology appropriate to a particular site. The Small Waste Flows Management District would also contract for a septage hauler or would apply for eligible 85% funding for purchase of a "honey wagon." A post-summer pumpout program would need to be initiated for holding tanks and vault toilets. Pumpings would continue to be land-spread on agricultural areas, or arrangements might be made to treat the wastes at a local wastewater treatment plant.

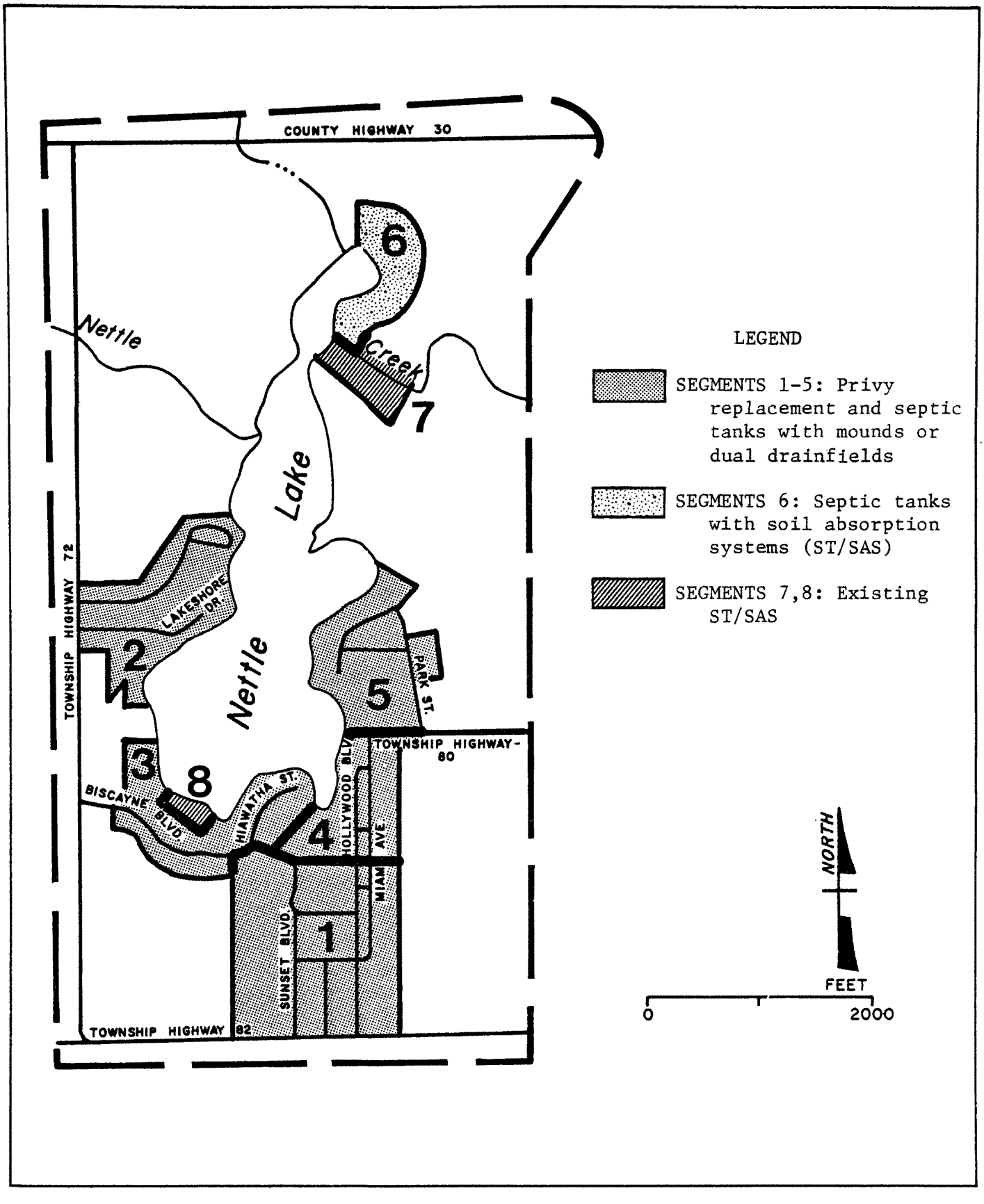

FIGURE II-2 NETTLE LAKE: EIS ALTERNATIVE 8

Many elements of this approach, including likely maximum costs, can be projected, but final details will not be known until: 1) a house-by-house analysis allows selection of a treatment method suitable for each property, and 2) the applicant and the community decide on the method and degree of management to be provided. These two considerations are discussed below, followed by a presentation of costs and discussion of project implementation.

1. Technology Selection

Identification of on-site system problems and their causes is the first step to be taken to specify technologies for individual residences. Site-specific analysis is necessary to accomplish this. The analysis should include the following sequential steps: Consultation with experts in the County Health Department, and examination of their records; interviews with residents on the use and maintenance of their systems; inspection of the site for obvious malfunctions; and inspection of the location and condition of any on-site wells or springs. On the basis of information gathered, additional investigations may be warranted to identify causes and possible remedies for recognized problems. Examples of additional investigations, keyed to problems, are as follows:

Problem	Investigations in Sequential Order
Recurrent Backup into House or Evident Ground Surface Malfunction	Monitor and reduce water use
	Uncover, pump out, and inspect septic tank for obstruction and determine groundwater inflow
	Rod house sewer and effluent line
	Excavate and inspect drainfield distribution lines, if present
	Determine soil absorption system size and degree of clogging by probing and sample pit excavation. Note soil texture and depth to groundwater
Inadequate Separation Distance from Septic Tank or Soil Absorption System to Well	Inspect well for proper seal, vent, drainage, and grouting
	Sample well and analyze for fecal coliform bacteria, nitrates, and fluorescence
	Monitor groundwater flow if drinking water aquifer is shallow or unconfined

Problem	Investigations in Sequential Order
Inadequate Separation Distance from Septic Tank/Soil Absorption System to Lakeshore, or Inadequate Separation Distance from Soil Absorption System to Groundwater or Evidence of Increased Plant Growth	Monitor groundwater flow direction and rate Locate effluent plume in vicinity of lakeshore using groundwater probe and fluorescent analysis (septic leachate detector) Sample groundwater in leachate plume at lakeshore. Analyze for total phosphorus, total Kjeldahl nitrogen, nitrate nitrogen, and fecal coliform bacteria
Septic Tank or Soil Absorption System Size or Design Suspected of Being Less than Code Requires	Inspect property to assess feasibility of replacement or upgrading If feasible, document system inadequacies by probing and sample pit excavation
Septic Tank or Soil Absorption System Size or Design Known to be Grossly Less than Code Requires	Inspect property to assess feasibility of replacement or upgrading

In the selection of technologies for individual sites, this EIS strongly recommends as follows:

- Alternatives other than those covered by existing codes should be considered.
- The process should involve local and state officials legally responsible for permitting of on-site systems, drawing fully on local expertise.
- The availability and cost of skilled manpower for maintaining and monitoring innovative or sub-code systems should be weighted against the feasibility and cost of requiring conventional on-site systems or off-site systems
- There should be a multidisciplinary team, consisting of a sanitarian-administrator and available specialists in a number of fields (see Management Section), to advise a locally appointed Sanitary Review Board on a case by case basis
- A range of appropriate technologies should be pre-selected by local sanitary experts.
- The individual homeowner should be informed of the different options being considered (and their costs) when technology selections are being made, and the owners' opinion and advice should be solicited.

Using information gained from the site-by-site analysis, a technical expert should discuss with the owners the feasible approaches to solving any problems. Primary criteria for identifying appropriate technology should be costs, benefits, and risk of failure. The analysis should also consider eligibility for Construction Grants funding. Detailed determination of grant eligibility would be performed prior to the award of a Federal grant and would depend upon regulations in effect at that time. General guidelines for eligibility of on-site technologies are presented below:

- Replacement of inadequately designed facilities will be eligible if feasible. Cesspools and privies in flood-prone areas are examples of obviously inadequate facilities. Septic tanks in very poor repair or substantially smaller than required by state codes are another example. Small drainfields, dry wells, or unusually designed systems are not of obviously inadequate design, and thus their replacement is ineligible unless they are subject to the other guidelines.

- Parts of systems that cause recurrent surface failures, backups, or contamination of potential drinking water aquifers are eligible for repair or replacement. This does not apply to water-using fixtures. Systems that fail because they are abused will not be eligible unless the abuse is terminated and the usage of the system is documented by water meter readings and/or reinspection of the system.

- Facilities not currently causing public health or water quality problems may be eligible for repair or replacement if similar systems in the area are failing. "Similarity of systems" includes design and site characteristics that can be shown to be contributing to failures.

- Design of repairs and replacements, where feasible and effective, should aspire to comply with state and local on-site design regulations. Compliance is not a condition of eligibility if sub-code design or alternative processes can reasonably be expected to eliminate or substantially mitigate public health and water resources problems. Innovative designs will similarly be eligible, with the added condition of assured inspection and monitoring commensurate with the degree of risk. For sub-code, alternative or innovative systems, it is expected that the owner or Applicant will install water conservation devices commensurate with the degree of risk for hydraulic overloading.

- On-site systems built after December 1977 are not eligible for repair or replacement but will be eligible for site analysis. Accommodation of new water-using devices, added since December 1977, will not be a basis for determining eligibility. Systems adequately designed for the building they serve but malfunctioning because of hydraulic or organic overloading or other abuse will not be eligible, except as explained above.

In EIS Alternative 8, many technologies were considered for replacement of existing pit privies. The criteria considered for evaluation included capital cost, operation and maintenance cost, reliability, and applicability to seasonal use. Other forms of technology are also available and may be preferable to local homeowners, depending on the nature of particular problem situations. Some of the technologies considered are listed below.

Detailed determination of grant eligibility would be performed priot to the award of a Federal grant, and would depend upon regulations in effect at that time.

- Vault toilets
- Holding tanks - Low-flush toilets
- Chemical toilets - Oil flush toilets - Incinerating toilets - Compost toilets
- Electrical composting toilets
- Air-assisted toilets

It is recognized that some developed lots may ultimately require service by off-site technologies such as cluster systems. Off-site treatment and disposal systems will be eligible for Federal funding if:

- A public health or water resource contamination problem is documented which no combination of on-site conventional, innovative, sub-code, flow reduction or waste restriction methods can abate, or
- The life cycle costs of off-site treatment and disposal for an individual building or group of buildings is less than costs of appropriate on-site technologies for the same buildings.

These recommendations apply only to existing systems. EPA recommends and may fund EIS Alternative 8 to help the community and system owners minimize the failure risk, thereby protecting water quality and the public health. For systems at new houses, EPA makes no recommendations on the permitting process, because the Agency does not presently expect to fund remedies for their failures. The responsibility for approving new systems in compliance with the Ohio Sanitary Code rests with the District Board of Health of Williams County.

2. Community Management

A wide range of community management options are available, as discussed in Appendix C, Community Management and Recovery of Local Costs. Three additional topics and their interrelationships are discussed here. They are: risk, liability, and scope of the applicant's responsibilities.

"Risk" as used here refers to the probability that wastewater facilities will not operate as intended, thereby causing water quality or public health problems or inconvenience for the user. Whether centralized, small-scale, or on-site, all wastewater facilities have inherent risks, depending on the degree of skill employed in design, construction, operation, and maintenance.

"Liability" as used here refers to the responsibility of various parties to minimize risk and to accept the consequences of facility failure. In the past, the state and county have accepted liability for facilities around Nettle Lake only insofar as permitting and inspection activities minimized

risk. The consequences of facility failure rested with system owners. In building a sewer around Nettle Lake, the Williams County Commissioners essentially would have accepted liability for all failures except for plumbing and house sewer blockages.

With EIS Alternative 8, the community may limit its liability only to the improvement of those systems upgraded, and consequently would see at least a partial abatement of some existing risks, such as the probability of system failure due to lack of management or poorly designed and constructed on-site treatment components. With EIS Alternative 8 the community still has the opportunity to assume increased liability in whatever manner it sees fit, the only limitation being that the applicant will be responsible for actively identifying failures of interest to the community (inconvenience for the user not included) and attempting to remedy the failures. Strictly speaking, the Applicant's responsibility applies only to those individual systems funded by EPA.

Many of the statements made in describing and costing EIS Alternative 8 were based on the assumption that the Applicant would play a very active role in improving, monitoring, and maintaining all wastewater facilities around Nettle Lake. EPA encourages this but does not require it. The scope of the Applicant's responsibilities depends on how much liability for wastewater facilities it wants and is legally capable of assuming. EPA will, by funding facility planning, design, and construction, assist the Applicant in meeting those liabilities.

To illustrate the range of approaches the applicant might take, three possible management options are described below.

a. Minimum Management Requirement Option

The Williams County Commissioners would act as the recipient and distributor of Construction Grant funds. Homeowners who wished to improve their on-site facilities could apply to the Commissioners for assistance. After documenting that minimum requirements for on-site system eligibility are met, the Applicant would receive the funding and distribute it to homeowners who show proof of satisfactory installation. These homeowners would be assessed a fee each year to cover the cost of a site inspection, perhaps every three to five years, and would be required to show proof of appropriate maintenance activities as part of the site inspection. A groundwater monitoring program would take well water samples during the site inspection.

With this approach, Williams County would not incur any long-term debt. the County would not necessarily have any responsibility for, or interest in, permitting of future on-site systems. Without a comprehensive site inspection and evaluation program, it is unlikely that all water quality and public health problems would be identified and abated. Liability for facility malfunctions would remain wholly with the owners.

b. Comprehensive Wastewater Management Option

This is the approach recommended in this EIS for adoption by the Applicant. It involves instituting the Small Waste Flows Management District concept discussed in the Draft EIS (See particularly pages 105 through 109 and Appendix H). All buildings within the Study Area boundaries would be

included. At a minimum, each building's wastewater system would be covered in the site-specific analysis and would be inspected at regular intervals. Owners or residents of each building would be responsible for a user charge to repay their share of necessary operating costs. The local debt for construction of each system could be directly assessed to individual homeowners, as in the Minimum Management option, or could be funded as long-term debt. In the cost figures of the Draft EIS (Appendix I-2) all these costs are funded as long-term debt.

This approach should identify all wastewater generation, treatment, and disposal problems in the Study Area and should ensure that future problems are minor or short-lived. In contrast to the Minimum Management scenario, the higher level of responsibility resulting from this approach would allow the authority greater discretion in sharing liability for facility operation with the resident or building owner.

Technical expertise would be provided in several different ways. The Commissioners could hire a part-time sanitarian-administrator to conduct the necessary studies. The Williams County District Board of Health, in cooperation with the County Engineers, could also expand their staff responsibility to accommodate this type of operation for Nettle Lake as a demonstration project, with additional projects possible in other parts of the district.

c. Watershed Management Option

The Applicant's concern with prevention and control of water pollution need not be restricted to wastewater facilities. It is obvious from comments on the Draft EIS that citizens of the Study Area are greatly interested in maintaining the water quality of Nettle Lake. If that interest is expressed in the form of willingness to pay for additional governmental services, the Comprehensive Wastewater Management scenario could be augmented by the following functions:

- Sampling of surface waters during flood events for privy contamination
- Monitoring non-point source pollution
- Controlling non-point source pollution
- Educating residents and visitors about individual pollution control, practices, costs, and benefits
- Inventorying the biological resources of the lake and their tributaries
- Researching the chemical, hydrological, and biological dynamics of the lake
- Coordinating with other local, state, and Federal agencies on pollution control activities and funding.

3. Cost Estimate

The costs associated with EPA's recommended wastewater management approaches are construction costs, operation and maintenance costs, and estimated annual costs to homeowners. The cost parameters for EIS Alternative 8 are:

	Service Area
1980 Construction Cost (including engineering, legal, and contingency costs)	$878,400
Future Construction Costs	$59,483
Annual Operation and Maintenance Expense	$34,181
1980 Local Cost	$84,880
1980 Average Annual Homeowners Cost	$110*

* These costs may vary due to changes in Federal regulations enforcing the Clean Water Act as amended in December 1981 (P.L. 97-117).

4. Implementation

As concluded in the Draft EIS, the Recommended Action is for Williams County to form a Small Waste Flows Management District and implement EIS Alternative 8. The formation of this District is in compliance with the adopted Williams County Land Use Plan (1980) which recommends "county-operated on-site management districts to reduce (or eliminate) stream pollution." The technologies selected for this alternative may vary from the design outlined in Chapter IV of the Draft EIS, because the detailed site-by-site design work needed to decide the level of on-site upgrading for each house may indicate that particular dwellings have problems requiring different technologies from those discussed. When upgrading of existing conventional septic tank soil absorption systems is found to be impractical, alternative on-site measures, such as alternative toilets, flow reduction, and holding tanks, should be employed.

Specific aspects of implementing the Nettle Lake project were discussed in Section VI.D. of the Draft EIS. Those discussions are summarized as follows:

a. Completion of Facilities Planning Requirements for the Small Waste Flows District

As part of the facilities planning process, and to expedite the release of available design and construction funds, the applicant would need to:

- Certify that the project will be constructed and an operation and maintenance program established to meet local, state, and Federal requirements.

- Obtain assurance (such as an easement or County Ordinance) of unlimited access to each individual system at all reasonable times for such purposes as inspections, monitoring, construction, maintenance, operations, rehabilitation, and replacement. Appendix D contains a sample easement form.

- Establish a comprehensive program for regulation and inspection of individual systems before EPA approves the plan and specifications.

- Plan for this comprehensive program as part of the facilities plan.

b. Scope of Design for the Small Waste Flows District

A five-step program for wastewater management in Small Waste Flows Districts was suggested in Section III.E. of the Draft EIS. The first three steps would appropriately be completed during the design period. These steps are as follows:

- Develop a site-specific environmental and engineering data base in a house by house survey;

- Design the management organization; and

- Agency start-up.

U.S. EPA will assist the applicant in defining specific objectives and tasks for design and construction work.

c. Compliance with State and Local Standards in the Small Waste Flows District

As discussed in Section II.F of the Draft EIS, many existing on-site systems do not conform to current standards for size, design, or distance from wells or surface waters. For some systems, such as those with undersized septic tanks, non-conformance can be remedied relatively easily and inexpensively. In other cases, the remedy may be disruptive and expensive and should be undertaken only where the need is clearly identified. Data on the effects of existing systems indicate that many existing non-conforming systems, including some that will be repaired and still not conform to design standards, may operate satisfactorily. Where compliance with design standards is infeasible or too expensive, and where site monitoring of groundwater and surface waters shows that acceptable impacts are attainable, then a variance procedure to allow renovation and continued use of non-conforming systems is recommended. Decisions to grant variances should be based on site-specific data or on a substantial history of similar sites in the area.

Local and State decisions on variance procedures are likely to be influenced by the degree of authority vested in the small waste flows district. If the district has the authority and sufficient financial means to correct errors, and has the trained personnel to minimize errors in granting variances, variance procedures may be more liberal than where financial and professional resources are limited. Higher local costs, caused by unnecessary repairs or abandonment of systems, would be expected to result from very conservative or no variance guidelines. Conversely, ill-conceived or improperly implemented variance procedures would cause frequent water quality

problems and demands for more expensive off-site technologies.

d. Ownership of On-Site Systems Serving Seasonal Residences

Construction Grants regulations allow Federal funding for 1) renovation and replacement of publicly owned on-site systems serving permanent or seasonally occupied residences, and 2) privately owned on-site systems serving permanent residences. Privately owned systems serving seasonally occupied residences are not eligible for Federally funded renovation and replacement.

Depending upon the extent and costs of renovation and replacement necessary for seasonal residences, the County or a Small Waste Flows Management District may elect to accept ownership of the on-site systems. Rehabilitation of these systems would then be eligible for Federal assistance, and local costs for seasonal residents would be dramatically reduced.

In other states, existing public health and regulatory powers have allowed counties to pass laws or ordinances giving sanitarians or small waste flows districts access to all on-site systems and authority to require repair and upgrading. To a considerable extent, these powers are already exercised by local sanitarians in Ohio. EPA Headquarters has indicated that such a law would be a binding commitment tantamount to public ownership, and that if this were done, no easements at all might be required. Preliminary discussion with the Ohio Attorney General's staff suggests that existing police and public health powers are sufficient to allow passage of such a county law.

D. THE VOLUNTARY ACTION ALTERNATIVE

Because of the project's low position on the draft Ohio Priority List, questions have arisen recently as to the availability of EPA Construction Grants funding for its implementation. The ability of the project to be funded will depend upon the U.S. Congressional budgetary allocation for Construction Grants projects. Projects higher on the Ohio Priority List may use all available funds. If these funds do not become available, it is strongly recommended that the County, through its planning, engineering, and health offices, pursue alternative means of solving these local problems.

An alternative approach would be voluntary participation by property owners in a local program analyzing, constructing, and managing on-site wastewater treatment improvements. This would require the County to designate Nettle Lake as a priority wastewater service area and to provide decentralized wastewater management services to the area.

This approach has a number of advantages, as follows:

- Rapid identification of sites to be evaluated. Instead of community-wide sanitary surveys, the applicant would publicize data on soil conditions and past failure rates, then designate a place for owners to sign up for assistance.

- Access considerations would be simplified, requiring only contractual permission to enter property as needed for inspection and repairs.

- Field data collection could be limited to detailed site analysis in the planning phase. Individual sites would be analyzed and technologies could be selected for each site.

- Because of the above factors, design work for this approach would be relatively uncomplicated.

This approach, however, while appropriate for the Nettle Lake area, could encounter the following disadvantages:

- Serious public health and water quality problems may be missed. Individuals who know they have difficult problems that require solutions with high operational costs may be reluctant to undertake corrective action.

- Unless most occupants in segments with high density or high failure rates volunteer, feasible off-site solutions may not be affordable by those who do seek relief.

Community understanding of public management of private wastewater facilities must be cultivated in the Nettle Lake area. Where community management is desirable, the public needs to be educated about its benefits if the program is to be successful. The public should be directly involved in agency design and operation when individual homeowners are to be affected by management agency policy and decisions. Homeowners may be required to perform necessary maintenance; to repair, replace, and upgrade failed systems; and to pay user fees to the management agency. These requirements may meet with considerable opposition unless an effective public education program is initiated to inform homeowners about their role in the community management programs. Homeowners should be notified and kept informed of their responsibilities and obligations to the management agency.

To involve the public more directly in agency design and operation, a Sanitary Review Board of community residents could be established. The board would ensure that the management agency's technical and economic decisions are consistent with citizen interests. The powers and duties of the board could be structured to reflect citizen interest. The board might maintain autonomous control over management agency decisions and personnel, or it could serve as an advisory body to the agency. Where the board is given autonomous authority, it may be desirable for the administrator of the management agency to be a member of the board to ensure that technical matters are properly understood and considered. The board could also act as an appeals body to hear and decide on objections to agency decisions.

Planning for on-site wastewater management approaches that complement decentralized technologies can be a complex process. Although most of the decisions that will be needed are based on common sense, many types of information will be required to make good decisions. The County can facilitate its information-gathering process for these new management approaches by taking the following steps:

- Inventory skills of existing personnel that might be available from local, state, and Federal agencies, and from consultants and contractors.

- Assess the impacts of existing regulatory authorities on the local management agency's design.

- Familiarize local decision makers and the interested public with the technology and management functions that may be required and options for providing those functions.

An advantage of small waste flows management by Williams County would be the flexibility that the County would retain in determining management system operation, maintenance responsibilities, system expansion, and local economic and environmental impacts. The major options available to communities in designing a small waste flows management agency can be identified in terms of the following questions:

- Who should assume ownership for the wastewater facilities?
- Should liability for wastewater facilities be borne by the homeowners, a private organization, or the management agency?
- Should responsibility for routine operation and maintenance rest with the homeowners, a private organization, or the management agency?
- Which functions should be incorporated into a management agency?
- Which of the functions should be performed by the homeowners, a private organization, or the management agency?
- What type of regulatory authority should be used?
- What type of homeowner fee system should be instituted?

The County would make decisions concerning agency design on the basis of two groups of factors. The first group are factors that must be identified and considered before design decisions are made. They represent existing or projected Study Area characteristics, and include the following:

- Types of wastewater facilities required or used,
- Expertise available for use by residents of the Study Area,
- Regulatory authority available to the County,
- Existing organizational structure, such as engineering, health, and planning offices,
- Size of the management district and number of systems in use,
- County jurisdictional setting,
- Study Area residents' attitudes toward growth, and
- Residents' attitudes toward public management of decentralized wastewater facilities.

The second group of factors to be considered are those which constitute potential consequences of option selection decisions. These include:

- Anticipated costs,
- Anticipated environmental impacts, and
- Anticipated levels of risk assumed by various parties.

In order to address these issues, a sequential demonstration and planning process is advisable. A pilot study of on-site systems renovation and waste flow reduction technologies is recommended as the first step in this process. Technology selection will take into account the performance record of various technologies evaluated to date. A number of potentially useful technologies have not been well demonstrated, however, and alternative technologies have not been tried locally. Technology selection will be improved if some of the most promising techniques are installed and monitored locally for a period of time.

Specifications and layouts for various decentralized technologies will be similar for many individual sites and could lend themselves to the establishment of standard design packages for non-site-dependent technologies. Time and effort may be saved by the development and description of standard specifications and layouts. Designers should be allowed flexibility within the standard design packages to accommodate individual site characteristics.

A significant amount of guidance exists for this modified facility planning process. "Region V Guidance - Site-Specific Needs Determination and Alternatives Planning for Unsewered Areas" (Appendix A) defines an approach to rural wastewater planning that is applicable to the situation in the Nettle Lake area. A Generic Environmental Impact Statement on Wastewater Management in Rural Lake Areas has been published (EPA, 1982) which provides useful guidance on surface water and groundwater monitoring, use of soils information, alternative technologies, and management options.

E. OTHER ALTERNATIVES

Many other alternatives were considered in the Applicant's Facilities Plan and in the Draft EIS. The alternatives considered, and the reasons for their rejection or other status, are summarized below:

Facilities Plan Alternative	
Optimum operation of existing on-site systems	Rejected because of small lot sizes and severe soils limitations
Centralized collection and treatment in an aerated lagoon east of the lake	Accepted in the Facilities Plan as the Proposed Action
Low-pressure sewers with grinder pumps	Rejected as not cost-effective
Vacuum sewer collection	Rejected as not cost-effective
Land application	Rejected due to poor soil conditions

Facilities Plan Alternative	
Extended aeration treatment	Rejected due to high cost
Controlled-discharge photosynthetic pond	Rejected due to odor impacts and possible impacts on Nettle Creek
No action	Rejected in Facilities Plan on basis of failure to address pollution problems.

EIS Alternatives Not Considered in the Facilities Plan	
Residential flow reduction by various devices	Expected to be effective in maintaining the operability and minimizing impacts of on-site systems in the EIS Recommended Action
Pressure Sewers	Extensive use of pressure sewers rejected because of lack of need.
Alternative toilets, various designs	Incorporated in EIS Recommended Action; useful where control of nutrients is sought
On-site treatment and disposal, various designs	Incorporated in EIS Recommended Action for Nettle Lake area
Off-site treatment and disposal, various designs (cluster systems)	Recommended only where shown to be worth the expense

Chapter III

Affected Environment and Impacts of No Action

A. SOILS

The soils in the Nettle Lake Study Area have been formed predominantly of clay loam material underlain with limy loam glacial till (see also the Draft EIS, Section II.B.3). Two major associations have been identified in the Study Area (Stone and Powell, 1975):

- Blount, Loam Substratum Phase-Glynwood, Loam Substratum Phase soils, found in the southeastern half of the area, are poorly drained and occupy level or gently sloping land. Wetness resulting from seasonal high water table and clayey subsoils is a severe limitation of this soil for many engineering purposes.

- Glynwood, Loam Substratum Phase-Spinks-Haney soils are found in the northwestern half of the area. These soils are moderately well drained and occur in gently sloping to moderately steep areas. The well-drained Spinks soils are underlain by sand and gravel; the Haney soils are formed in deep sandy and loamy deposits.

Suitable soils for wastewater treatment by soil absorption systems are located in the northern and western sections of the Study Area. With the main exception of the northeastern lakeshore, all existing development within the Study Area is located on soils rated as unsuitable for standard on-site wastewater treatment systems. Further development on these unsuitable soils will be limited by the Ohio Sanitary Code and the Williams County Floodplain Ordinance. Building of new dwellings and on-site systems will continue outside of these soils under the No-Action Alternative. Some erosion and sedimentation will probably occur because of this activity.

B. SURFACE WATER RESOURCES

Nettle Lake's tributary, Nettle Creek, originates in Hillsdale County, Michigan, and its drainage basin comprises 20 square miles. Discharge from Nettle Lake flows southeasterly to join the St. Joseph River near Montpelier, Ohio. The lake itself covers 94 surface acres and has a mean depth of 20 feet.

Nettle Lake's water quality is classified as moderately eutrophic, which means that there is a relative abundance of nutrients available for aquatic plant growth. While periods of oxygen depletion may place stress on aquatic animal life, sufficient oxygen exists to support and sustain them.

There is evidence that existing on-site systems are contributing bacterial loads to the lake, especially during flood events. This contamination by human waste presents a potential for substantial public health risk. The bacterial data discussed in Section I-B of this EIS were collected at a time of year that would not reflect the severity of these conditions. This situation, while requiring further documentation, constitutes a distinctly negative impact of the No-Action Alternative.

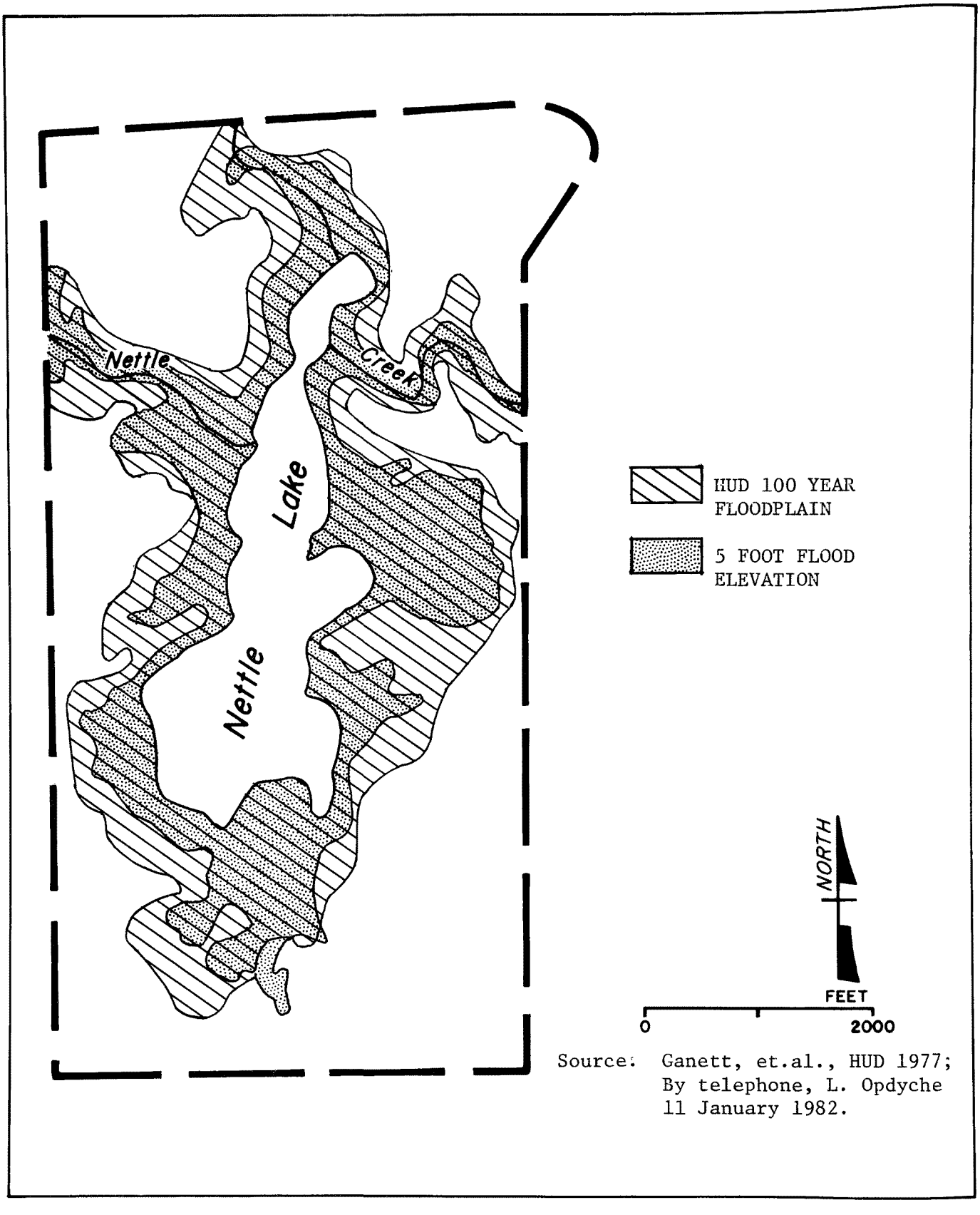

FIGURE III-1. FLOOD PRONE AREAS

Local flood studies and interviews with residents have indicated that the floodplain of Nettle Lake (approximately 60% of the Study Area) is inundated at least once in every two-year period--a more frequent incidence of flooding then was presented in the Draft EIS. On the average the lake level will rise 5 feet (from 945 to 950 feet msl) during spring flood events. This flood-prone area (delineated in Figure III-1) largely coincides with the 100-year floodplain as mapped by the U.S. Department of Housing and Urban Development.

In 1978, Williams County investigated the feasibility of dredging Nettle Creek from the lake downstream to the St. Joseph River to alleviate the problem of flooding. Public meetings were held to discuss the issue, and a decision was reached that the project was not cost-effective. The Ohio DNR Geologic Survey has indicated that since the lakeshore is privately owned, initiative for any type of improvement would have to come from the local level (by telephone, Mr. Finke, 2 March 1982).

Under the No-Action Alternative, Nettle Lake would remain moderately eutrophic. Nutrients would continue to enter the lake. This is largely due to non-point loading contributed from up-stream sources. Most of the nutrient load from on-site systems stems from floodwater inundation, which would continue under the No-Action Alternative.

C. GROUNDWATER RESOURCES

Glacial deposits of sand and gravel underlying the Study Area constitute the area's major aquifer and source of drinking water. Wells in the area are 30 to 180 feet deep and are overlain by a layer of impermeable clay. This clay layer prohibits wastewater from entering the drinking water supply. No significant primary or secondary impacts on groundwater quality or quantity are anticipated as a result of the No-Action Alternative.

D. POPULATION AND LAND USE

Of the existing total in-summer population of 1,873 estimated in the Draft EIS, approximately 93 percent are seasonal residents. Land use in the immediate lakeshore area (148 acres, predominantly in the southern portion) is devoted to residences and campgrounds. The population of the area is projected to be 1,904 by the year 2000, largely as a result of the conversion of seasonal units to permanent use. This represents a change from 93% seasonal population in 1975 to 88% in the year 2000. The limited projected growth in new housing is due to floodplain limitations and lack of buildable lakeshore lots, as well as competition from other lakeshore developments in surrounding areas.

The 1980 Census has produced new population figures for Northwest Township, showing an 11.5 percent increase between 1970 and 1980. This is a marked departure from previous trends which showed a 1 percent loss between 1960 and 1970 and a 2 percent gain between 1970 and 1973. These figures do not change the population estimates for Nettle Lake, as the dynamics of the Nettle Lake Study Area are substantially different from the Township as a whole. The No-Action Alternative will not impact these population or land use patterns.

E. ENVIRONMENTALLY SENSITIVE AREAS

Environmentally sensitive areas in the Study Area include floodplains, wetlands, habitat for rare and endangered species, and historic and archaeological resources (see Draft EIS Sections II.C, D, and E). Adoption of the No-Action Alternative would not result in adverse impacts on any of these areas.

Information gained from comments on the Draft EIS indicates that additional species listed by the State as threatened or endangered have been sighted at Nettle Lake (see Table III-1). Of particular note is the Blackchin Shiner (Notropis heterodon), which was believed to have disappeared from Ohio waters since 1957. The pugnose minnow (Notropis emiliae) population in Nettle Lake is believed to be the highest in the State (by letter, Richard D. Habbell, ODNR, 15 October 1981). Also of note from the standpoint of endangered species protection is the recent acquisition by ODNR of 600 acres on the east side of the lake, including a substantial portion of the wetlands in that area.

F. ECONOMICS

The mean family income of permanent residents in Northwest Township was estimated as $8,870 by the 1970 census. No new estimates have yet been produced from the 1980 census. The $8,870 figure is substantially lower than the 1970 National and State mean figures of $10,999 and $11,488 respectively. In 1970, Northwest Township showed a higher incidence of families living under poverty levels (16.9%) than either the County (7.4%) or the State (7.6%). The No-Action Alternative would have no short or long-term impact on the local economy.

Table III-1. Species Sightings In and Along the Shores of Nettle Lake

Species	Scientific Name	Status*
Blackchin Shiner	Notropis heterodon	OBSX
Pugnose minnow	Notropis emiliae	OWE, OBSE
Iowa darter	Etheostoma exile	OWE, OBSE
Slender Naiad	Najas flexilis	OPP
Clearweed	Pilea fontana	OPP
White-stem Pondweed	Potamogeton praelongus	OPE
Small Burr-reed	Sparganium chlorocarpum	OPE
Tiger Salamander	Ambystoma tigrinum	OBST
Small Purple-Fringed Orchid	Platanthera psycodes	OPT
Large-leaved Pondweed	Potamogeton amplifolius	OPP

* OSBX - Extirpated (Ohio Biological Survey)
OWE - Endangered Wildlife
OBST - Threatened Wildlife (Ohio Biological Survey)
OPE - Endangered Plant
OPT - Threatened Plant
OPP - Potentially Threatened Plant

Chapter IV

Environmental Consequences of the Action Alternatives

This chapter presents the environmental impacts of the alternatives embodied in the Facilities Plan Proposed Action and in EIS Alternative 8 as described in detail in the Draft EIS, Section V. Please note that EIS Alternative 8 is not presently a set of explicit proposals for each site--it is an approach to the formulation of such proposals, based on local conditions, the environmental sensitivity of this area's natural resources, and the ability of these resources to assimilate wastewater from on-site systems. The recommended approach relies on environmental management in the form of continuing attention to the use and effects of small-scale systems, and on the community's capacity to make balanced decisions in the best interests of the natural and human environment. The environmental consequences of the action alternatives considered in this EIS were determined by means of four primary criteria: Costs, impacts, reliability, and flexibility. In the evaluation and selection of a recommended alternative, impacts on the following environmental aspects were considered to be decisive: Surface water, groundwater, population, land use, and economics.

A. SURFACE WATER RESOURCES

Neither the Facilities Plan Proposed Action nor EIS Alternative 8 is anticipated to have a significant impact on the overall water quality or trophic status of Nettle Lake. The difference between the two alternatives in terms of total phosphorus reduction to Nettle Lake is 10 percent (Facility Plan Proposed Action, -13 percent; EIS Alternative 8, -3 percent). This would not change the moderately eutrophic status of the lake because of the large load of nutrients from upstream sources of agricultural runoff.

The Facility Plan Proposed Action would eliminate the mixing of human wastes with lake waters during flood events. This would have the effect of mitigating the potential public health threat caused by the release of bacterially and virally contaminated waters to the lake. A decreased risk of health hazard would be attained, but at a substantially higher dollar cost than EIS Alternative 8.

EIS Alternative 8 would not totally eliminate overland or groundwater transport of bacteria and viruses into the lake. However, selection of appropriate technology, together with scrupulous management, can reduce the risk of health hazard by controlling the amount of waste material available for transport. Seasonal export of vault toilet and holding tank effluent beyond the reach of floodwaters is a feasible means of reducing this risk. Installation of in-cabin chemical toilets or electrical composting toilets above flood levels would also achieve these ends. The analysis called for in the next step of planning would require homeowners to work with County and State agencies in selecting technology suitable to specific site conditions that would reduce or eliminate water pollution and public health problems.

B. GROUNDWATER

No significant primary or secondary impacts on groundwater quality or quantity would result from the implementation of either the Facility Plan Proposed Action or EIS Alternative 8. This is due to the thick impermeable clays that overlie the artesian aquifer which supplies local domestic wells. Projected water withdrawal rates are small, especially compared to existing supply. The thick impermeable clays also confine the aquifer and prevent vertical recharge and thus contamination from on-site wastewater treatment systems in the Study Area. The Facility Plan Proposed Action would eliminate the discharge of all wastewater effluent to the shallow groundwater table that recharges part of Nettle Lake.

In EIS Alternative 8, potential contaminants in groundwater would be detected by means of site-by-site environmental and engineering analysis, and would be reduced through application of appropriate on-site technology. Requisite actions in this alternative include: 1) inspection of existing wells and all on-site systems; 2) sampling of wells that are down-gradient from, or within 50 feet of, on-site systems; and 3) selection of on-site or, where necessary, off-site measures to eliminate sources of contamination.

C. POPULATION AND LAND USE

Population figures used for the design of EIS Alternative 8 were based on recent growth trends and data from a variety of sources. Because of the limited development potential for both seasonal and permanent residences in the Nettle Lake area, it is anticipated that the Facility Plan Proposed Action would result in only a 5 percent increase over the 1.7 percent population growth anticipated for the area for the year 2000. EIS Alternative 8 would permit the present growth rate to continue toward the 1.7 percent growth anticipated. This modest growth rate reflects the lack of proximity to major centers of employment, retail trade, and service amenities. There is also a lack of available development sites with direct access to this relatively small lake. In addition, the Williams County Flood Plain Ordinance restricts further development in flood plain areas. As a result of these factors, development pressures in the Study Area are extremely limited.

New residential development, in accordance with the level of population growth anticipated, will be relatively small during the planning period. Even with the maximum growth potential of the Facilities Plan Proposed Action, residential land use is expected to increase by only a maximum of ten acres (30 new dwelling units at 3 to 4 dwelling units per acre) over the baseline projections. All of this land would probably be converted from currently platted but vacant residential lots. No conversion of agricultural, recreational, or other undeveloped land would be expected. EIS Alternative 8 would induce no significant land use conversion above projected levels. No major non-residential land use conversions are anticipated to occur, and no change in residential densities is projected to take place under either of the alternatives.

D. ECONOMIC IMPACTS

The major economic impact of either alternative would be in the form of direct costs to system users. The most significant difference between the two alternatives is their estimated direct cost. With the Facility Plan Proposed

Action, the 1980 average annual homeowner's cost[1] around Nettle Lake would be $335. In contrast, the 1980 average annual homeowner's cost around Nettle Lake for EIS Alternative 8 is $110 (see Appendix 2 for more discussion on annual costs).

The human impacts of these costs are defined in terms of the percentage of the population facing a significant financial burden. EPA considers a project to be excessively expensive when total annual homeowner costs for wastewater facilities exceed the following percentages of annual household median income:

- 1% when median income is under $10,000
- 1.5% when median income is between $10,000 and $17,000
- 1.75% when median income exceeds $17,000

Using the 1980 census mean of $5,055 per-capita income for Williams County, and an average of 2.79 persons per household, a mean family income of $14,100 can be calculated (by telephone, 7 April 1982, Doug Cavanaugh, Ohio Data Center). Applying the above threshold of 1.5% to this income results in a figure of $212; or $102 more than the average annual homeowner cost of $110 for EIS Alternative 8, and $123 less than the Facilities Plan Proposed Action of $335--thus showing the greater cost-effectiveness of EIS Alternative 8.

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[1] "Average annual homeowner's cost" includes one residence's equal share of its community 1980 debt retirement cost, plus 1980 operating expenses, plus a reserve fund contribution of 20 percent of this debt retirement share. To this is added an equivalent annual payment for private costs (such as house sewers) as if they were paid at 6-5/8 percent for 30 years. These costs may vary due to changes in Federal regulations enforcing the Clean Water Act as amended in December 1981 (P.L. 97-117)

CHAPTER V COMMENTS AND RESPONSES

There were many substantial comments on the Draft EIS submitted by letter and at the public hearing held on 2 October 1981. Copies of the comment letters and the hearing transcript index are attached to this document as Appendix F. This chapter contains a compilation of paraphrased comments received and the response to the comments. A list of commentors is included on page V-12.

Nettle Lake Comments and Responses (C and R)

Surface Water

C.1 What are the water quality modeling techniques used to develop the nutrient budget analyses in the Draft EIS and did they rely on locally collected field data. (Cole, Hollinger)

R.1 As discussed in the Draft EIS, Section II.C.1.b. on Surface Water Quality, only very limited field data were available from Nettle Lake for analysis. Consequently, in evaluating the lake water quality, it become necessary to employ "theoretical estimates" based on analyses of physical and chemical parameters of the lake and its watershed along with actual data. Non-point source nutrient loads were derived using a simple mathematical model developed by Omernik (1976). Using the data from this model and other sources, predictions of the phosphorus input and trophic status of the lake were developed from an empirical model developed by Dillion (1975).

C.2 What is the status of the pollution problem in Nettle Lake; is it dangerous to local residents? (Kachenmeister, Miller)

R.2 The water quality of the lake is rated as moderately eutrophic which is to say that a substantial amount of nutrients are found in the water of Nettle Lake. Approximately 87 percent of these nutrients stem from runoff from residential and agricultural uses upstream of the lake. There may be periods of oxygen depletion stress, but there is still an abundance of oxygen for aquatic life to thrive.

There is a problem associated with the inundation of privies during flood events which presents a potential public health threat. This threat exists during flood events and for short periods thereafter, but bacterial die-off reduces the impact with time (See Final EIS Section III.B.).

C.3 Given that 87 percent of the nutrient load is coming from non-point sources above the lake, what can be done to stem these sources of pollution. (Maneval)

R.3 Non-point, largely agricultural sources of phosphorus are the largest sources of "pollution" in Nettle Lake, and these sources are not directly related to the proposed project. Thus this project would only have a limited effect on reducing phosphorus loads under the alternatives. Under the mandate of Section 208 of the Clean Water Act of 1972, Ohio EPA has been directed to address non-point source water quality problems. The initial Water Quality Management Plan, Maumee/Portage River Basins (Ohio EPA, 1979) states that the Maumee River basin is a priority for agricultural pollution abatement. Programs will be ongoing to implement voluntary approaches to agricultural pollution abatement. Coordination may be made with the USDA Soil Conservation Service District in Bryan.

C.4 What are the groundwater quality impacts of the alternatives and do the existing on-site systems affect well water supplies? (Schutz)

R.4 As noted in Section I of the Final EIS, contact was made with various local, State, and Federal agencies to gather well water data. No evidence currently exists that wastewaters are penetrating the thick impermeable clays to enter domestic water supply wells.

The decentralized wastewater management approach under EIS Alternative 8 will address the problems of nutrient and bacterial levels in private water supplies around the lake. During the design and construction phase of this project, the Applicant will conduct a survey of 100 percent of the dwellings around Nettle Lake. The survey will include an interview with homeowners to determine the suitability of individual wells, and an inspection of each well for proper seal, vent, drainage, and grouting to determine the extent to which groundwater quality is protected by proper well construction.

Flood Hazard

C.5 One of the most central issues of this EIS in the recurrence and elevation of flooding in Nettle Lake and the question of how to resolve the flooding problem. (Schutz, McIrath, Eubank, Miller, Lindley, Salvo, Williams County Commissioners)

R.5 As noted in Section III.B. of this Final EIS, flood waters raise the elevation of the lake approximately 5 feet every year or so. This elevation covers a broad expanse of land surrounding Nettle Lake. The Williams County Commissioners were petitioned to initiate a dredge project from Nettle Lake, down Nettle Creek, to the St. Joseph's river, a distance of over 10 miles. This proposal was ultimately rejected as not being cost-effective. Subsequent inquiries with Ohio DNR Geologic Survey indicate that the lakeshore is privately owned, thus the State does not have jurisdiction to regulate the water level and improvement actions would have to be initiated and paid for at the local level. Such a project does not appear to be implementable and may carry its own adverse impacts.

Biota

C.6 In addition to the fish, wildlife and plant species listed in the Draft EIS, the Natural Heritage Program data base records the occurence of 10 additional species along the shores of Nettle Lake that were not previously noted (Hubbel).

R.6 EPA appreciates the transmittal of this information and has included it in Section I.4. of this Final EIS.

Needs Documentation

C.7 November was a poor time to conduct a sanitary survey in a seasonal resort where a vast majority of the residents are not available. (Rupp, Kachenmeister, Schutz)

R.7 November is admittedly not the optimal time for such a survey. For lake areas with high seasonal populations, the best time would be in late spring and early summer. However, those residents who were surveyed were year round residents who use their on-site systems most intensively. These systems thus would have the highest probability of failure. At the time EPA made the decision to do the survey, it was considered more important to get data quickly than to wait eight to ten months.

Besides the Nettle Lake survey, EPA has conducted four other sanitary surveys in rural lake communities. In all cases, the information collected regarding system performance comes almost entirely from the residents. In general, most residents are concerned with good sanitation and are willing to offer whatever knowledge they have. It matters little what time of year this most valuable source of information is sought. A reticent resident will be as unhelpful in November as in July.

With the exceptions of intermittent direct discharges and seasonal surface ponding, information collection during site inspections is not hampered by the time of year. Lot size, elevation above a lake, locations of wells and septic systems, proximity of neighbors, and surface drainage patterns all contribute to the surveyor's interpretations. This type of information is available upon inspection year round. The survey did cover 11 percent of the residences in the Study Area. All were lakeside properties, and many were in flood-prone areas. Thus, while the survey is heavily biased toward residences that are most likely to have problems, a reasonable sample was represented.

C.8 The septic leachate survey was conducted at the wrong time of the year. Again the highest number of problems would normally appear in peak summer usage. (Rupp, Schutz)

R.8 As with the sanitary survey, the decision to proceed with the septic leachate survey put more emphasis on trying to get the field work done and acquire information than to wait for what was believed to be the optimum time of year. The winter and summer septic leachate surveys at this and in the six other rural lake communities where EIS's are being done have given new insights on the validity of field data collection at various times of the year. One of the principal findings of these subsequent surveys is that late fall is perhaps the best time of year for detecting the existence and breakthrough of effluent plumes. In areas such as Nettle Lake, plumes take time to force their way through the soil and into the lake so that it is not until long after the summer is over that plumes reach there.

C.9 It is the opinion of Ohio EPA that in a lake where primary body contact is being made, the most important environmental concern should be with bacterial and viral contamination of the water. OEPA feels that pathogenic contamination of the near shore areas does exist and the potential for spread of waterborne disease is great. (Rupp)

R.9 This Final EIS agrees that the principal need for action in the Nettle Lake area stems from the inundation of on-site and privy systems and the attendant health hazard. By focusing on this issue, the EIS should give strong indication that there is a public health problem in the area that needs to be addressed. The EIS does maintain, however, that EIS Alternative 8, with appropriate on-site management, would achieve a significantly reduced risk of health hazard in a cost-effective manner.

C.10 The actions proposed seem to be way out of proportion to the need defined in this EIS. Estimating from the data presented, there are perhaps a dozen redidences which need alteration of their wastewater handling. Perhaps such simple ideas as pumping septic tanks before spring floods or temporarily relocating people during them could be considered. (Salvo)

R.10 The EIS acknowledges that the overall lake water quality would not change markedly under any of the wastewater management alternatives. However, the EIS does document a need based on recurrent problems in approximately 120 systems. These malfunctions represent a public health and water quality problem that should be addressed through monitoring, surveillance, and upgrading on-site treatment systems as proposed under EIS Alternative 8.

C.11 As the Draft EIS states on p. 42, the bacterial sampling program was inadequate to conclusively define a problem and thus justify any action for the area. Is an appropriate sampling program going to be utilized? (Schutz)

R.11 EIS Alternative 8 proposed a community wastewater management approach that specifies the development of a site-by-site environmental and engineering data base. As part of the development of this data base, this final EIS recommends that the Small Waste Flows Management District perform a comprehensive bacterial sampling program to quantify what the extent of bacterial contamination is. The data collection effort calls for a comprehensive surface water and well water sampling program on a site-by-site basis. Surface water sampling should also be conducted before, during, and after spring flood events to gain a better understanding of the pathways of disease vectors into areas of direct human contact.

C.12 The aerial photograph, septic leachate, and sanitary surveys base their analysis on "failing" systems. What constitutes a "failing" system in these three studies? (Schutz)

R.12 A failing system is one which presents a public health or water pollution problem in a local area. These system failures include: backups of sewage into homes, septic tank effluent ponded on the ground, contamination of on-site water supply wells in excess of drinking water standards by on site treatment systems, and discharge of untreated septic tank effluent to surface waters in excess of water quality standards.

C.13 Wouldn't it be wise to sample for nitrates before ruling out aquifer contamination? (Schutz)

R.13 The EIS has relied to the greatest extent possible on available data. Data that has been gathered from county, state and Federal sources give no indication of groundwater contamination from on-site systems (See section I.B. of this Final EIS). As part of the site-by-site analysis in the next phase of facilities planning for the Nettle Lake Area, a comprehensive well sampling program is recommended.

Alternatives

C.14 The reliability of alternative on-site systems and toilet technologies are seriously questioned for application at Nettle Lake. (Rupp, Schutz)

R.14 EIS Alternative 8 does not include specific design of alternative on-site treatment and toilet technologies for specific homes in the Study Area. Under this Alternative, local sanitarians in cooperation with State agencies would become versed in such technology and would be able to advise owners on the selection of such systems. Information on alternative toilet design and reliability is available from EPA Region V, Municipal Facilities Branch. A workshop on alternative technologies available to implement EIS Alternative 8 can be held so that individuals have the information necessary to make decisions. Local sanitarians would then be able to use their knowledge of local soils and geohydrology in selecting the appropriate technology for each site around the lake.

The reliability of alternative toilets has increased recently as more units are installed. Problems with earlier installations have led to corrections in subsequent designs. Since some technologies such as low-flow toilets do not change the method of waste disposal from standard flush toilets, they have become more readily acceptable and have subsequently been refined further than systems like composting toilets.

As a result of this higher level of refinement, low-flow toilets are required for new construction and replacement by plumbing codes in many parts of the United States. Such codes are indications of the reliability of these types of toilets. Although composting toilets are not yet mentioned in plumbing codes, their reliability has gained wide acceptance in many parts of the country. Because of the change in disposal method associated with composting toilets, more low-flow toilets have been installed than composting toilets. Most of those installed, however, have proven to be very reliable, with very few operational tasks required for initial start-up.

There have been problems with certain types of enzyme, incinerating, small scale composting, and recirculating toilets that have demonstrated excessive operation and maintenance problems. These types of systems may present more problems than homeowners are willing to

bear. However, local sanitarians, versed in this type of technology, would be available to advise owners on the selection of such systems under EIS Alternative 8. The key requirements for maximizing the reliability of on-site technology under EIS Alternative 8 are:

- o Selection of appropriate technologies for each house based upon well-planned and executed site analysis;
- o Provision of adequate community supervision of all on-site wastewater treatment systems; and
- o Measurement of and design with the natural assimilative capacity of local soil/groundwater/surface water resources.

C.15 Holding tanks are not a recognized on-site treatment method under the Ohio Sanitary Code and thus are not a viable alternative under this project. (Schutz)

R.15 The use of holding tanks for full residential flows in areas without any form of management district is a management practice many states hold in disfavor. Shortcomings include continuing costs, difficulty finding disposal areas for sewage, lack of management mechanisms to assure the continuation of pumping contracts, and potential for illicit connections to drains, ditches, or surface waters. The Great Lakes - Upper Mississippi River Board of State Sanitary Engineers policy statement on pump and haul procedures generally disapproves of this method if unsupervised but states, "this policy statement does not preclude the possibility of establishing a management or service program under the control of a government... acceptable to the administrative authority."

If the small waste flows management district were implemented, this type of technology would be considered only after evaluation of other alternatives. The small waste flows district may contract for long-term treatment at the Montpelier or Bryan Plant. The District will monitor the performance of the system and will provide long-term maintenance.

C.16 An analysis of septage and holding tank disposal options was not presented in the Draft EIS. (Rupp)

R.16 The EIS's level of detail in design and costing was not intended to satisfy all facilities planning requirements.The need for proper disposal of septage and two disposal options appropriate for different EIS alternatives were discussed on page 97 of the Draft EIS. In alternatives which involve use of septic holding tanks, pumping once every three to five years at a cost of $65 per pump was included in the cost-effectiveness analyses. Selection of this cost was based upon contacts with local contractors experienced in the proper disposal methods appropriate to local

codes and conditions. The same cost was assumed for pumping holding tank wastes.

C.17 Questions were raised on the costing methods used for comparison purposes, given the conceptual design details of the alternatives. (Johnson, Rupp)

R.17 EPA recognizes that the level of detail in design and costing used in preparing the EIS in not as refined as may be expected by the State, especially for a selected alternative. However, the costing methods used were consistent from one alternative to the other. Because of the substantial differences between alternatives, it is not likely that any amount of increased design and costing effort is going to change the basic conclusion that continued use of on-site systems in the Nettle Lake area is cost-effective compared with centralized systems.

C.18 The average annual homeowner cost calculation is unclear; is it based on 100 percent participation of the Study Area residences; will houses with serviceable on-site systems be required to participate? (Cole, Eubank, Frankforther, Webb, Monahan)

R.18 The costing of EIS Alternative 8 and attendant annual homeowner cost allocation was conducted on the assumption of 100 percent participation of all houses in the Study Area. All residences would be responsible for retirement of the debt incurred for upgrading facilities around the lake. However, establishment of the actual charge system to be implemented at Nettle Lake will be an element in the process of designing the small waste flows management district. The various methods for recovering local cost incurred and establishing a system of user charges is discussed in Appendix B of this Final EIS. It is recommended that all residences be inspected in the site-by-site analysis for the performance of their on-site treatment system.

C.19 Wouldn't it be more disirable to pay for a technologically advanced system rather than a minimal amount for a system that may function no better than what currently exists? (Schutz)

R.19 As shown in Section IV.D. of the Final EIS, the average annual homeowner cost is estimate at $110 a year; the Facilities Plan Proposed Action, $335 a year. The economic impact of the Facilities Plan Proposed Action is thus significant under current EPA definitions and is likely to be an unworkable solution. EIS Alternative 8 would utilize alternative on-site technologies that have made significant advances technologically in recent years. This technology coupled with rigorous management will decrease the risk of health hazard in a cost-effective manner.

C.20 Considering that the (Draft) EIS did not document a severe water quality problem and federal funding through the Environmental Protection Agency currently is not available, we do not believe that any additional corrective action should be taken at this time. (Williams County Commissioners)

R.20 The Draft and Final EIS have indicated that the principal need for the project stems from the substantial risk of public health hazard associated with the inundation of privy systems during spring flood events. EIS Alternative 8 was developed to specificall address the problems defined in the EIS Study Area with Federal participation through the Construction Grants Program. Section II.D. of the Final EIS recommends a voluntary action alternative that can be taken to mitigate this health hazard, making maximum use of existing technical capability at the local level.

C.21 Serious questions have been expressed over the performance of any form of on-site systems during flood events. (Schutz)

R.21 In a resort area such as Nettle Lake where 93% of the population is seasonal, early spring flooding will not affect system use since most of the systems would not be in use until later in the season when the water table has dropped to an lower level. For permanent homes in areas subject to flooding, decisions will have to be made between the homeowner and the Small Waste Flows Management District on water use limitations during periods of high water. One method might be to hold portable chemical toilets in reserve for use during periods of high water.

Impacts

C.22 What are the impacts on retired persons and people with limited incomes? (Eubank, Seasler)

R.22 Of the total permanent population in the Northwest Township, census figures show that 16 percent of the population in 1970 were living below Federally established poverty levels. However, no data area availabel on people who live at Nettle Lake on a seasonal basis. The Draft EIS Section V.E.3. did conclude that the more centralized alternatives (EIS Alternatives 2 and 3, and the Facility Plan Proposed Action) could be a financial burden on population living around the lake. EIS Alternative 8 would This EIS estimates that these statistics would affect retired persons with limited for fixed incomes more than any other segment of the population. The applicant might seek additional sources of funding (such as FHA) to alleviate some of the burden placed on residents with fixed incomes.

C.23 The Draft EIS does not contain an inventory of mineral or other natural resources extracted from the local area for sale. (Huff)

R.23 Sand, gravel, and peat are mined in the Williams County area; however, no extraction operations of any type are found in the EIS Study Area. The project is not anticipated to have any impact on extractive resources in the area with the exception of construction materials used for upgrading on-site systems as specified in Sections VII and VIII of the Draft EIS.

C.24 The Facilities Plan Proposed Action appears to have met the cost-effectiveness criteria of Program Requirements Memorandum (PRM) 78-9 and is therefore not a viable EIS issue. (Schutz)

R.24 At the time that the Notice of Intent was issued, PRM 78-9 had not been promulgated and therefore its definitions did not apply. At that time, public and agency comments indicated that the project costs might be more expensive than local residents could afford and significant adverse environmental impacts could be associated with the development of the project.

C.25 It seems that the writers of the EIS were unable to conceal their value bias against growth by using the adjective "induced" with it. (Salvo)

R.25 The point that the EIS tries to make is that bringing new wastewater facilities into an area where there previously were none can provide a significan new influence that would stimulate growth. The literature is very conclusive on this point. It indicates that new sewer facilities have an overwhelming influence on the rate, location, and density of new residential development (See Real Estate Research Corp., 1974, The Costs of Sprawl).

Implementation and Management

C.26 The legality of an on-site wastewater management has been questioned under existing Ohio enabling legislation. (Rupp, Miller, Schutz)

R.26 At the present time, Ohio has no enabling legislation specifically endorsing the formation of this type of destrict, although it has been proposed. U.S.EPA believes that there is no legal language that prohibits the formation of this type of agency. Thus the police power of Williams County should extend to cover this type of function.

Included in Section Section II.B.2 and Appendix of this Final EIS is a discussion of three management approaches possible for Nettle Lake. While EPA can recommend an approach, final selection of any one or a combination of these is up to the applicant. EPA wishes to encourage the approach; the benefits are well worth the cost.

C.27 Since the majority of the on-site systems around Nettle Lake do not meet sanitary code specifications because of severe site limitations, upgrading on-site systems will not solve the problem over the 20-year life span of the project. (Schutz, Rupp)

R.27 There is sufficient information on the condition and effects of the existing systems to predict that, with modifications their use in most areas around Nettle Lake will be acceptable for years to come. The existing systems are old; many are undersized and poorly maintained. Yet the failure rate is low at present and can be reduced even further and kept at very low levels with the procedures recommended under EIS Alternative 8.

The Draft and Final EIS's recognize that some individuals homes may require new and innovative technology to provide reliable wastewater treatment. Discussion of the proposed technologies are proceeding as part of a Generic Environmental Impact Statement on Rural Lake Projects and will be available soon.

C.28 OEPA recommends a meeting between US EPA, the Applicant, the Ohio Clearinghouse, and interested Ohio reviewers to discuss the Facilities Plan and the EIS in more detail and to consider the results of local floodplain zoning, the adoption of more stringent county subdivision regulations, and increased enforcement of Ohio sanitary codes by the local health department. (Schutz)

R.28 The Final EIS concurs with this proposal and has incorporated it into the recommendation for formation of the Small Waste Flows Management District and implementation of EIS Alternative 8 (See Final EIS Section II.C.). The adoption of this new approach would necessitate a pilot program to clearly demonstrate the viability of these methods. This would require the combined talents of all parties mentioned in order to make this project work as well as any other Facilities Plan.

C.29 Concern was expressed that insufficient coordination occurred between local residents, County, State, and Federal agencies. (Schutz)

R.29 EPA has made considerable effort to elicit input from sources of local information pertinent to the EIS effort. Contacts were made early in the process to gather as much existing information as possible. In addition there have been published notices on three public meetings, a public hearing, publication of an EIS newsletter, and circulation of the EIS to all interested parties. This review period on the Draft EIS has served to solicit precisely the type of input that EPA has received on shortcomings or omissions of the EIS. Should the Williams County Commissioners decide to implement EIS Alternative 8 with the formation of a small waste flows management district, considerable opportunity for public and agency input will be actively encouraged. US EPA will be depending upon Ohio EPA for technical assistance and coordination efforts with the Ohio Health Department on issues related to planning appropriate on-site wastewater management in the Nettle Lake area. See Section II.B. of the Final EIS for a description of the various means of involvement.

C.30 The concern has arisen that conclusions reached in this EIS will serve as a basis for EPA policy for all rural lake projects. (Johnson, Salvo)

R.30 This project is one of seven rural lake EIS projects that EPA has conducted in the upper mid-west states. The findings from the seven EIS's are forming the basis for a Generic EIS on Wastewater Management in Rural Lake Project Handbook that will provide guidelines to conduct facility planning in these areas.

The general conclusion resulting from this work is that rural communities' wastewater systems should be selected and designed on the basis of local data obtained for each individual community. (See Section I.C. of this Final EIS). The specific conclusions for the Nettle Lake Study Area are based on locally acquired information and are not necessarily transferrable to other communities.

Miscellaneous

C.31 Is the reference to "900 feet msl" on p. 21 of the Draft EIS correct? (Schutz)

R.31 The commentor notes that the height of the lake averages 945 feet msl and the shoreline at the edge of the lake is thus the low point of the Study Area.

C.32 This EIS should be submitted for review by an independent third party more familiar with the performance of environmental assessments and environmental conditions in Ohio. (Schutz)

R.32 The purpose of the publication of a Draft EIS and holding public hearings is to solicit comments from a wide variety of interests, thus comprising a comprehensive review. EPA received 17 comment letters and testimony at the public hearing by 20 different people. The Final EIS, as required under the regulations enforcing the National Environmental Policy Act, has responded to these comments.

LIST OF COMMENTORS

Mr. Gary Cole, Floyd G. Brown Associates

Mr. Bruce Hollinger, Floyd G. Brown Associates

Mr. Claire Kachenmeister, Area Resident

Mr. Vernon Miller, Area Resident

Mr. Russ Maneval, Area Resident

Mr. Albert McIlrath, Area Resident

Mr. Louvere Eubank, Area Resident

Mr. Clifford Lindey, Area Reaisent

Mr. Lynn Salvo, Concerned Citizen

Williams County Commissioners

Mr. Alan L. Rupp, Ohio Environmental Protection Agency

Mr. Roger Hubbel, Ohio Department of Natural Resources

Ms. Beverly Frankforther, Area Resident

Mr. & Mrs. Eldon B. Webb, Area Residents

Rep. Larry Manahan, State Senator

Ms. Flossie Sesler, Area Resident

Ms. Sheila M. Huff, U.S. Department of Interior

Mr. Dennis Miller, Maumee Valley Resource Conservation, Development and Planning Organization

BIBLIOGRAPHY

Allison, D. and H. Hothem, Ohio Department of Natural Resources, Division of Wildlife. June 1975. "An evaluation of the status of fisheries and the status of other selected wild animals in the Maumee River Basin, Ohio." 15 pp. mimeo.

Bailey, J.R., R.J. Benoit, J.L. Dodson, J.M. Robb, and H. Wallman. 1969. A study of flow reduction and treatment of wastewater from households. Cincinnati, OH. US Government Printing Office (GPO).

Clean Water Act of 1977. Public Law 95-217. (33 U.S.C. 466 et seq.)

Cohen, S., and H. Wallman. 1974. Demonstration of waste flow reduction from households. Environmental Protection Agency, National Environmental Research Center, Cincinnati, OH.

Cooper, I.A., and J.W. Rezek. 1977. Septage treatment and disposal. For EPA, Technology Transfer.

Dearth, K.H. 1977. Current costs of conventional approaches. Presented at EPA National Conference of Less Costly Wastewater Treatment Systems for Small Communities, 12-14 April 1977, Reston, VA.

Dillon, P.J. 1975. The application of the phosphorus-loading concept to eutrophication research. Scientific Series No. 46, Canada Center for Inland Waters, Burlington, Ontario, 14 p.

Environmental Monitoring Support Laboratory (EMSL). 1978. Nettle Lake environmental inventory and assessment. EMSL-LV Project RSD 7851. EPA Office of Research and Development. Las Vegas, NV.

Farmland News. 5 September 1978.

Federal Water Pollution Control Act Amendments of 1972, Public Law 92-500.

Floyd G. Browne and Associates, Ltd. 1976. Facilities plan, Nettle Lake area, Williams County, Ohio. Marion OH.

Groszyk, Walter. 1977. Septic tank problem analysis: Impact on groundwater. Information memorandum 77-164. USEPA, Water Planning Division, Washington DC.

Humphrey, S.R., A.R. Richter, and J.B. Cope. 1977. Summer habitat and ecology of the endangered Indiana bat, Myotis sodalis. Journal of Mammalogy, 58:334-346.

Johnson, Gerald and Stanley Keller. 1972. Geologic map, 1° X 2° Fort Wayne Quadrangle Indiana, Michigan, and Ohio, showing unconsolidated deposits and bedrock. Indiana Geological Survey.

Jones, R.A. and G.F. Lee. 1977. Septic tank disposal systems as phosphorus sources for surface waters. EPA-600/3-77-129. Robert S. Kerr Environmental Research Laboratory.

Kaser, Paul and Leonard J. Harstine. 1975. An inventory of Ohio soils, Williams County. Progress Report No. 44. Ohio Department of Natural Resources, Division of Lands and Soils.

Kerfoot, W. 1978. Investigation of septic leachate discharges into Nettle Lake, Ohio. K-V Associates, Inc. Falmouth, MA.

Mazur, Paul. 1976. Water quality data, Nettle Lake. (Unpublished reports). Ohio Department of Health.

Nettle Lake construction grants sanitary survey. Williams County, OH. November 29-December 6, 1978.

NOAA, Environmental Data Service. 1973. Monthly normals of temperature, precipitation, and heating and cooling degree days 1941-1970: Ohio. Climatography of the U.S. No. 81. USDC National Climatic Center, Asheville NC.

NOAA, Environmental Data Service. 1975. Climatological data, Ohio: Annual summary. USDC National Climatic Center, Asheville NC. Vol.80, No. 13.

NOAA, Environmental Data Service. 1976a. Climatological data, Ohio: Annual summary. Vol. 81, No. 13. USDC National Climatic Center, Asheville NC.

NOAA, Environmental Data Service. 1976b. Local climatological data, Toledo OH: Annual summary with comparative data. USDC National Climatic Center, Asheville NC.

NOAA, Environmental Data Service. 1977. Climatological data: Ohio. Vol. 82, No. 8 (Aug.). USDC National Climatic Center, Asheville NC.

ODNR (Ohio Department of Natural Resources), Division of Water. 1965. Ground-water levels in Ohio, October 1959-September 1964. Bulletin 41.

ODNR, Division of Geological Survey. 1977. Publications list.

ODNR, Division of Water. 1962. Ohio hydrologic atlas. Ohio Water Plan Inventory Report No. 13.

OEPA (Ohio Environmental Protection Agency). 1974a. Regulations EP-9-01 and EP-38-01 through EP-38-08. (Mimeo) Columbus OH.

OEPA. 1974b. Water supply, sewerage, and sewage treatment for public buildings in Ohio. Columbus OH.

OEPA. 1975a. Rotating biological disc treatment systems. (Mimeo) Columbus OH.

OEPA. 1975b. Tertiary treatment high rate sand filters. Draft. (Mimeo) Columbus OH.

OEPA. 1976a. Sanitary sewer design and installation guidelines. Part I: Gravity sewers. (Mimeo) Office of Water Pollution Control, Columbus OH.

OEPA. 1976b. Solid waste disposal licenses regulations. OAC-3745-27. Columbus OH.

OEPA. 1976c. Solid waste disposal regulations. OAC-3745-27. Columbus OH.

OEPA. 1976d. Standards, guidelines, and references. (Mimeo) Public Wastewater Engineering Section, Columbus OH.

OEPA. 1977. Final Draft, water quality standards. (Revised.) (Unpublished).

OEPA. Undated. Water quality standards. OAC-3745-1.

Ohio Department of Health and Ohio Water Development Authority. 1971. Engineering report standards and design criteria for small wastewater treatment plants: Contact stabilization, extended aeration, oxidation ditch.

Ohio Department of Health. 1968. General policy in regard to waste stabilization lagoons for domestic wastes, as amended. (Mimeo) Columbus OH.

Ohio Department of Health. 1974. Policy relative to aeration type treatment systems in the Ohio Sanitary Code effective 7/1/74. (Mimeo) Columbus OH.

Ohio Department of Health. 1976a. Approved individual aeration type treatment systems. (Mimeo) Columbus OH.

Ohio Department of Health. 1976b. Duties and responsibilities: Board of Health. Columbus OH.

Ohio Department of Health. 1976c. Evaluation procedures for individual aerobic wastewater treatment plants. (Mimeo) Columbus OH.

Ohio Department of Health. 1977a. Policy relative to special processes or devices used in treating wastewater. (Mimeo) Columbus OH.

Ohio Department of Health. 1977c. Rules: Household sewage disposal systems. Ohio sanitary code, Chapter 3701-29. (Mimeo) Columbus OH.

Ohio Department of Health. Undated. Individual aerobic wastewater treatment plants approved by the Ohio Department of Health. (Mimeo) Columbus OH.

Ohio Division of Lands and Soil. 1974. Soil maps, Williams County, OH.

Ohio State University Cooperative Extension Service. 1976. Ohio guide for land application of sewage sludge. Bulletin 598. Prepared in cooperation with Ohio Agricultural Research and Development Center. Columbus OH.

Omernik, J.M. 1977. Non-point source stream nutrient level relationships: A nationwide survey. EPA-600/3-77-105. National Environmental Research Laboratory, Corvalis, OR.

Otis, R.J. and E.E. Steward. 1976. Alternative wastewater facilities for small unsewered communities in rural America. Annual report to the Upper Great Lakes Region Commission.

Stone, Kenneth L., Jr., and Kenneth L. Powell. 1975. An inventory of Ohio soils: Williams County. Progress Report No. 44. Ohio Department of Natural Resources, Division of Lands and Soil. Columbus, OH.

Subdivision Regulations for Williams County, Ohio as amended 1967.

Sutfin, Charles H. 11 July 1977. US EPA Region III Decision Memo for the Seven Lakes Project to George R. Alexander, Regional Administrator. Chicago, IL.

Troyan, J.J. and D.P. Norris. March 1977. Cost-effectiveness analysis of alternatives for small wastewater treatment systems. For the US Environmental Protection Agency Technology Transfer, Municipal Design Seminar on Small Wastewater Treatment Systems, Seattle, WA.

US Department of Housing and Urban Development. 27 January 1978. Flood hazard boundary map, Williams County, OH.

US EPA (United States Environmental Protection Agency). 1975. Cost-effective comparison of land application and advanced wastewater treatment.

US EPA. 1977a. National interim primary drinking water regulations of the Safe Drinking Water Act. 40 CFR 141.

US EPA. 1977b. Process design manual for land treatment of municipal wastewater. EPA-625/1-77-008. Technology Transfer.

US EPA. 1978a. Construction grants program requirements memorandum 78-9. 3 March 1978.

US EPA. 1978b. Construction grants program requirements memorandum 79-3. 15 November 1978.

US EPA. 1978c. Grants for construction of treatment works-Clean Water Act (40 CFR 35 Part E): Rules and regulations. 43 FR 44022, 27 September 1978.

US EPA. 1978d. Innovative and alternative technology assessment manual. 1978 Draft. Municipal Environmental Research Laboratory, Cincinnati, OH.

US EPA. 1978e. Microbiological methods for monitoring the environment--water and wastes. EPA-600/8-78-017. Environmental Monitoring and Support Laboratory. Cincinnati, OH.

US Geological Survey (USGS). 1952.

US Public Health Service. 1962. Drinking water standards. US Department of Health, Education, and Welfare, Public Health Service Publication No. 956. Washington, DC.

USDA SCS. 1978. Soil survey of Williams County, Ohio.

USDA SCS (Soil Conservation Service). 1977. Proposed rule, prime and unique farmlands: Important farmland inventory. 42 FR 42359, 23 August 1977.

USDA SCS. 1979. List of prime farmland map units in Williams County.

USGS. 1961. Nettle Lake 7.5 minute series topographic quadrangle. (Photo-revised 1973).

USGS. 1970. Climate.

USGS. 1978.

White House Rural Development Initiatives. August 1978. Making water and sewer programs work. Washington, DC.

Williams County Floodplain Ordinance 1978.

Witt, M., R. Siegrist, and W.C. Boyle. 1976. Characteristics of rural household wastewater. Journal of the Environmental Engineering Division, American Society of Civil Engineers, No. EES, Proceedings Paper 12200:533-548.

APPENDIX A

DRAFT EIS BY REFERENCE

APPENDIX B

EPA REGION V GUIDANCE -

SITE SPECIFIC NEEDS DETERMINATION and

ALTERNATIVE PLANNING FOR UNSEWERED AREAS

REGION V GUIDANCE

SITE SPECIFIC NEEDS DETERMINATION AND ALTERNATIVE PLANNING FOR UNSEWERED AREAS.

I. Objective

The objective of this guidance is to clarify fulfillment of the requirements regarding the demonstration of need for sewage treatment associated with the application of Program Requirements Memorandum (PRM) 78-9, "Funding of Sewage Collection System Projects," and PRM 79-8, "Small Wastewater Systems." This guidance is written particularly with respect to the needs of small, rural communities and the consideration of individual on-site and small scale technologies. It suggests procedures which may be utilized to minimize the time, effort, and expense necessary to demonstrate facilities needs. It is also intended to provide guidance pertaining to the selection of decentralization alternatives for a cost-effectiveness comparison. It is intended to prevent indiscriminate definition of need based upon "broad brush" use of a single criterion or on decisions unsupported by fact.

The procedure recommended herein may not be the optimum procedure for all projects. However, compliance with this approach will be prima facie evidence for the acceptability of the "needs" portion of a proposed plan of study. If another method is proposed for documenting needs for wastewater facilities, it is recommended that the grant applicant discuss the proposed approach with reviewing authorities prior to the submission of the Plan of Study and the Step 1 grant application.

This guidance is predicated on the premise that planning expenditures should be commensurate with the cost and risk of implementing feasible alternatives for a specific planning area. The guidance further recognizes the complexity of planning alternative technology. It presents procedures for, and rationally limits, the amount of detailed site investigation necessary to determine the suitability of alternative technology for specific areas within the community, and allows for a degree of risk inherent to limited data gathering.

II. Goal

The goal of this process is to enable communities to categorize existing on-site treatment systems into three groups. The groups are those experiencing: (a) <u>obvious</u> sewage treatment problems, (b) <u>no problem</u>, and (c) <u>potential problems</u> representing a planning risk that requires resolution by the acquisition of original data.

The acquisition of original data as described will support not only documentation of need but also development of appropriate alternatives and their associated costs.

III. Criteria for site-specific needs determination

A. Direct evidence that demonstrates obvious problems includes:

1. Failure by surface (breakout) ponding of filter field discharges can be identified through direct observations, mailed questionnaires, and remote imagery.

2. Sewage backup in residences can be identified through respones to mailed questionnaires, knowledge of local septage haulers, or knowledge of local health or zoning officials.

3. Flowing effluent pipes detected by aerial photography, site visits, knowledge of local officials, or results of mailed questionnnaires.

4. Contamination of water supply wells (groundwater) by sewage can be demonstrated by well inspection and sampling and analyses for whiteners, chlorides, nitrates, fecal coliform bacteria, or other indicators, and a finding of their presence in concentrations which significantly exceed background levels in groundwaters of the area or primary drinking water quality standards. Improperly constructed wells or wells inadequately protected from surface runoff cannot be used to demonstrate an obvious need. Wells for which construction and protection are unknown cannot be used to demonstrate an obvious need.

5. Samples taken from effluents entering surface water through soil that analysis shows to have unacceptable quantities of nutrients or bacteria.

B. Indirect evidence that indicates potential problems due to site limitations or inadequate design of treatment systems includes:

1. Seasonal or year-round high water table. Seasonal or annual water table can be determined by taking transit sightings from a known lake level, if the dwelling in question is adjacent to a lake or other surface waters. Elsewhere, Soil Conservation Service maps may indicate depth to groundwater.

2. Water well isolation distances (depending on depth of well and presence or absence of impermeable soils). Isolation distances may be addressed in part by lot size. In cases where a community water system is installed or is concurrently planned, this criterion will not be considered. Lots, including consolidated lots, which are less than 10,000 square feet in area, will be assumed to have insufficient isolation distances. However, before this criterion may be used as areawide evidence, a correlation with results of limited representative sampling which substantiate water well contamination must be made.

3. Documented groundwater flow from a filter field toward a water supply well may override seemingly adequate separation distances.

4. Sewage effluent or tracer dye in surface water detected by site visit or various effluent detection systems. Additional tests that indicate unacceptable quantities of nutrients or bacteria in the effluent reaching surface water will establish direct evidence of need.

5. Bedrock proximity (within three feet of filter field pipe) can be assessed by utilizing existing SCS soils maps.

6. Slowly permeable soils with greater than 60 minutes/inch percolation rate.

7. Rapidly permeable soil with less than 0.1 minutes/inch percolation rate. Soil permeability may be assessed by evaluating existing SCS maps.

8. While holding tanks, in certain cases, can be a cost-effective alternative, for purposes of site-specific needs determination, a residence equipped with a holding tank for domestic sewage should be considered as indirect evidence of need for sewage treatment facilities. Location of holding tanks will be identified through records of local permitting officials, septage haulers, or results of mailed questionnaires.

9. On-site treatment systems which do not conform to accepted practices or current sanitary codes may be documented by owners, installers, or local permitting officials. This category would include cesspools and grossly under-sized system components (the proverbial "55 gallon drum" septic tank).

10. On-site systems: (a) incorporating components, (b) installed on individual lots, or (c) of an age, that local data indicate are characterized by excessive defect and failure rates, or non-cost-effective maintenance requirements.

Indirect evidence may not be used alone to document the need for either centralized or decentralized facilities. Prior to field investigation, indirect evidence should be used to define the scope and level of effort of the investigations. When the investigations are finalized, indirect evidence and results of the field work can be used together to predict the type and number of on-site and small scale facilities needed in the community. Facilities predictions form the basis for alternatives development in Step 1 facilities planning.

IV. Needs determination for unsewered communities

For projects in which the scope of work is difficult to assess during the Step 1 application, it is recommended that Step 1 be divided into two phases to more effectively allow estimation of the planning scope and associated costs. Phase I will consist of a review of existing or easily obtainable data. Phase II will include on-site investigations and representative sam-

pling necessary to adequately define water quality and public health problems, identify causes of the problems and predict measures that remedy the problems. Phase II will also include development of alternatives and completion of the facilities plans. Both phases should be addressed in the Plan of Study and grant application. The phases are discussed in greater detail below.

A. Phase I

The review of existing or easily obtainable data may include the following as appropriate:

1. Review of local well and septic tank permit records. Repair permits for septic tank systems can provide valuable data on rates and causes of system failures as well as information on the repairability of local systems.

2. Interviews with health department or other officials responsible for existing systems, with septic tank installers and haulers, and with well drillers.

3. Review of soils maps

4. Calculation of lot sizes

5. Estimate depth to water table by reference to lake levels or from information in soil maps.

6. Aerial photography interpreted to identify suspected surface malfunctions

7. Leachate detection surveys of ground or surface water

8. A mailed questionnaire regarding each owner's or resident's knowledge of the on-site system and its performance. Mailed questionnaires will generate useful data only if well prepared. Generally, mailed questionnaires should be used only where available information indicate very low problem rates (to support No Action alternatives) or where the data indicate very high problem rates (to support central collection and treatment alternatives).

This preliminary data will be used to categorize developed lots within the planning area into one of three groups:

1. Obvious-problem
2. No-problem
3. Inconclusive

The"obvious-problem" group consists of those lots where at least one criterion of direct evidence of a need (specified on Page 2 of this guidance) is satisfied.

The "no-problem" group consists of those lots where there is no direct or indirect evidence to indicate that the present system is inadequate or malfunctioning.

The "inconclusive" group consist of developed lots with indirect evidence of problems. The size of this group and the types of indirect evidence associated with it will dictate the scope and level of effort of field investigations conducted during Phase II.

Typically field work in Phase I will be limited to rapid, community-wide surveys which require little or no entry onto private property. Examples are acquisition and interpretation of aerial photography, field checking of aerial photography interpretations, and shoreline effluent scans. Additionally, a windshield survey of the community in the company of health department officials, soil scientists or other locally knowledgeable persons will help the applicants' representative or consultant develop a strategy and cost estimate for Phase II field investigations.

To facilitate communication of Phase I information, preparation of a planning area base map at a scale sufficient to locate individual buildings will normally be helpful. U.S. Geological survey 7.5 minute maps (1:24,000) Soil Conservation Service soil maps (1:15,840) or local tax maps can be used to inexpensively prepare base maps. At the end of Phase I, base maps can be used to show developed areas obviously requiring centralized facilities, individual buildings with obvious problems and developed areas with indirect evidence of problems.

Phase I as used here applies principally to needs documentation activi ties. Obviously, other facilities planning tasks can proceed concurrently with Phase I.

B. Mid-Course Review

At the end of Phase I, the results of the Phase I effort should be presented for review and concurrence before proceeding to Phase II. The Mid-Course Meeting facilities plan review is an appropriate time for the presentation and discussion of the Phase I results.

The following should be considered at the Mid-Course Meeting:

1. It may become apparent during Phase I that on-site, alternative technology systems will not be cost-effective for segments of the community that have obvious needs. In this case, a preliminary cost estimate for conventional collection and treatment should be compared to that for the innovative/alternative treatment solution. If cost estimates and technical analysis indicate that the use of alternative technology is clearly not cost-effective, needs documentation may be terminated for these segments without proceeding to the on-site investigations of Phase II.

2. The number of lots to be investiaged during the on-site evaluation should be reasonably estimated. If the original estimation of on-site work included in the Step 1 Grant Agreement is found to be in error at the end of the preliminary evaluation (Phase I), a request to amend the grant amount, if necessary, may be

submitted and a grant amendment expeditiously processed provided there is concurrence at the Mid-Course Meeting.

C. Phase II Work

Field investigations in Phase II have two primary purposes:

- o reclassification of buildings from the "inconclusive" category to "obvious problem", "no problem" or "potential problem" categories (defined below)

- o development of information needed to predict the technologies and their costs for responding to the community's waste water problems.

Field investigations can also be designed to accomplish other objectives such as public participation, socio-economic data collection, etc.

During Phase II previously unrecognised but documentable water quality and public health problems may be identified, increasing the number of "obvious problem" buildings. The remainder of buildings investigated will be classified in the two remaining categories. In order to do this, representative sampling of site conditions and water quality in conjunction with partial santiary surveys may be conducted. Both "obvious" and "inconclusive" problem buildings should be included in the partial sanitary survey so that reasonable correlations between site conditions, system usage and system failures in the community can be made.

"Potential problems" are systems which do not yet exhibit direct evidence of failure but which can reasonably be expected to fail in the future. Justifying this expectation must rely on analysis of the causes for failure of substantially similar systems in the community. Similarity will be judged on informaton for system usage (number of occupants and types of sanitary appliances), system design and age, and verified site limitations (permeability, depth to groundwater or bedrock, slope, surface drainage, etc.). Buildings in the "inclusive" category whose systems are not similar to any documented failing system will be included in the "No Problem" category.

This work should be proposed and conducted with the knowledge that adoption of decentralized alternatives will necessitate complete site analysis for each building later in the Construction Grants process. Work should, therefore, be thorough enough that augmentation of the Phase II work by later studies can be accomplished without duplicating the Phase II work. The work should also seek the causes of problem, not just their existence, so that typical on-site and small scale technologies can be tentatively identified and incorporated into community alternatives.

Representative sampling of site conditions and water quality should be carefully coordinated with partial sanitary surveys. While the design of this work will obviously have to be tailored to each community's unique situation, general guidance is provided here.

1. Representative Sampling

a. Seasonal or permanent high water table. Soil surveys and comparison with known lake levels reviewed in Phase I may not be accurate enough to explain specific on-site system problems or to carefully delineate groups of lots where high water table is a serious site limitation. Soil to a depth of 5 or 6 feet on or adjacent to suspect lots can resolve such uncertainties. Where seasonal high water table is suspected and work has to be conducted during dry weather, a soil scientist with knowledge of local soils should be involved.

b. Groundwater Flow. The safety of on-site well water supplies and springs on small lots may depend on the rate and direction of groundwater flow. Estimating the effects of effluents on surface waters may also require such information. Methods which indicate groundwater flow characteristics should be selected and supervised by qualified professionals. Generally this work in Phase II will be limited to evaluation of well logs and other available data and of rapid surveys in special areas such as lakeshores. Exceptions for more intensive work will be considered where uncertainties about sources of well contamination need to be resolved for specific lots or groups of lots.

c. Well water contamination. Where lot sizes are small or soils are especially permeable, collection and analysis of well water samples at residences included in sanitary surveys should be considered. Parameters that can be evaluated as pollution indicators include, but are not limited to: chlorides, nitrates, phosphates, fecal coliforms, surfactants, whiteners and other readily detectable constituents inherent to domestic waste water. No well samples should be collected from wells that are improperly protected from surface runoff or other non-wastewater sources. An inspection report should accompany each well analysis.

d. Shallow groundwater contamination. In areas with drainfield to groundwater separation distances less than state standards, shallow groundwater at or near affected water bodies (lake, stream, unconfined aquifers) should be sampled before abandoning on-site wastewater systems on the basis of high water tables. Discrete samples may be collected during checks of high water tables for analysis of conventional parameters as listed above. Alternatively, as rapid survey techniques are perfected, they may be more appropriate.

e. Soil permeability. If very slow or very rapid soil permeability is suspected of contributing to surface malfunctions, backups or groundwater contamination, soil characteristics can be evaluated by augering to 5 or 6 foot depth on or adjacent to selected lots. Usually, descriptions of soil horizons by depth, color, texture and presence of mottling,

water or bedrock will suffice. Percolation tests for existing systems will be necessary only in extraordinary circumstances.

2. Partial Sanitary Surveys

It is not the intent of needs documentation to finally identify each and every wastewater problem in a community. It is not cost-effective to select appropriate technologies for each property in Step 1.

Therefore, Phase II sanitary surveys will include only a sufficient number of existing buildings to confirm the level and type of need present, and to predict the type and approximate number of measures to correct the problems. Correlation of partial sanitary survey data, representative sampling, and indirect evidence of system problems should be sufficient to meet these objectives.

Sanitary surveys should include for each building:

- o an interview with the resident to determine age of the building and sewage disposal system, design and location of the sewage disposal system, system maintenance, occupancy of the building, water using appliances, use of water conservation devices, and problems with the wastewater system.

- o an inspection of the property, preferably in the company of the resident, noting location of well, septic tank, soil absorption system, pit privies and other sanitary facilities; lot dimensions; slope; roof and surface drainage; evidence of past and present malfunctions; and other relevant information such as a algae growth in shoreline areas.

- o any representative sampling that is appropriate to the site and that can be scheduled concurrently.

- o preliminary conclusions on maintenance, repairs, applicable water conservation methods, and types and location of replacement or upgrading for existing wastewater systems.

As a rule of thumb, the number of buildings surveyed should not exceed 30 percent. Where Phase I data is very incomplete, the buildings may be selected on a random basis and should include a minimum of 20 percent of existing buildings. Where buildings with obvious problems and areas with indirect evidence of problems are well delineated in Phase I, the surveys can be better focused, perhaps requiring fewer buildings to be surveyed. From 10 to 50 percent of buildings having obvious problems should be surveyed. In areas with indirect evidence of problems, 20 to 30 percent would be sufficient. Areas with neither direct nor indirect evidence may be surveyed where system age, unusual occupancy patterns or especially severe consequences of system failure so indicate.

V. Planning of Alternatives

In unsewered, low housing density areas, PRM 78-9, "Funding of Sewage Collection System Projects", puts the burden of proof for need and cost-effectiveness of sewers on the applicant. The four criteria outlined in PRM 78-9 for eligibility of collector sewers are:

- o need
- o cost-effectiveness
- o substantial human habitation in 1972
- o 2/3 rule

Figure 1 portrays the relationship of these criteria in a decision flow diagram.

Definition of need by the approach outlined above will address the first criterion. Estimating cost-effectiveness will typically require two steps: determining the feasibility of non-sewered technologies for remedying obvious and potential problems, and comparing the present worth of feasible non-sewered technologies with the present worth of sewers.

The determination of feasibility for non-sewered technologies should not be limited to standard septic tank/soil absorption systems. Where lot sites, site limitations or excessive flows can be overcome by alternative technologies, these must be considered. To the extent that the needs documentation results show that existing soil absorption systems smaller than current code requirements can operate satisfactorily sub-code replacements for obvious problems should also be considered if lot site or other restrictions preclude full sized systems.

The use of needs documentation results in developing alternatives should be guided by methods selected to design the Phase II field investigations. If sanitary surveys and representative sampling were conducted on a random basis, then the types and numbers of technical remedies should be projected for the entire area surveyed without bias. However, if efforts were focused on identified problem or inconclusive segments of a community, then predictions from the data should be made for surveyed segments only. Real but unrecognized problems in "no problem" areas can be accounted for by assuming upgrading or replacement of existing systems in these areas at frequencies reasonably lower than surveyed segments.

Infeasibility of remedying individual, obvious problems on-site will not be sufficient justification for proposing central sewering of a community or segment of a community. Off-site treatment can be achieved by pumping and hauling and by small scale, neighborhood collection and treatment systems. The choice between these approaches should be based upon a cost comparison which includes serious flow reduction measures in conjunction with any holding tanks.

Segment by segment cost-effectiveness comparisons will be required only for those segments where new facilities for off-site treatment are proposed. Community-wide cost estimates for upgrading or replacement of on-site systems in decentralized areas will generally be adequate for description of Proposed Actions pending detailed site analysis and cost estimates for each building in Step 2.

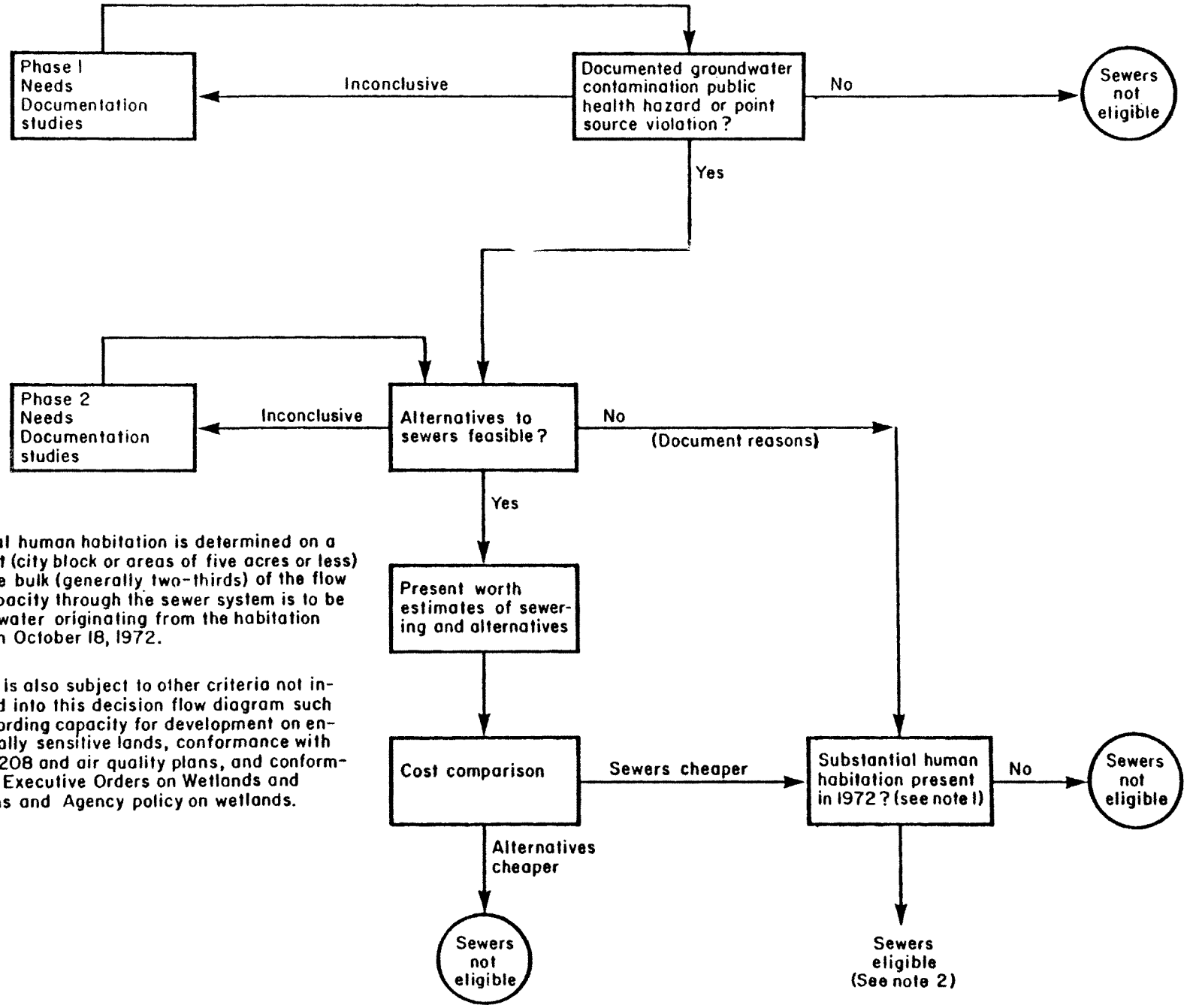


Figure 1. Collector sewer eligibility - decision flow diagram based on PRM 78-9.

Note 1: Substantial human habitation is determined on a small tract (city block or areas of five acres or less) basis. The bulk (generally two-thirds) of the flow design capacity through the sewer system is to be for wastewater originating from the habitation existing on October 18, 1972.

Note 2: Eligibility is also subject to other criteria not incorporated into this decision flow diagram such as not affording capacity for development on environmentally sensitive lands, conformance with approved 208 and air quality plans, and conformance with Executive Orders on Wetlands and Floodplains and Agency policy on wetlands.

Field work necessary to thoroughly evaluate the condition of individual on-site systems and to select technology for necessary upgrading or replacement is generally to be viewed as Step 2 or Step 2 + 3 work. Typical field work for this level of analysis includes completion of the sanitary survey and, as appropriate to each building, installation and monitoring of water meters, inspection of septic tanks, rodding house sewers and effluent lines, probing or limited excavation of soil absorption systems for inspection, and other measures listed above for representative sampling. Construction of on-site replacements and upgrading may proceed in tandem with this site specific analysis provided:

- o state and local officials concur (their prior concurrence might be limited to standard systems),
- o contract language allows for flexibility in the facilities to be constructed,
- o property owner concurrence with the selected alterations is obtained, and
- o additional cost-effectiveness analysis to support technology selection is not necessary.

Necessary state and local agency approval of off-site, non-standard, or owner-protested facilities or those requiring additional cost analysis would optimally proceed on a segment-by-segment basis to minimize the time between technology selection and construction.

The establishment of a management district's authority to accept responsibility for the proper installation, operation and maintenance of individual systems per 40 CFR 35.918-1(e) and (i) should be completed before award of Step 2 or Step 2 + 3 grants. Development of a management district's program for regulation and inspection of systems must be completed before a Step 3 grant award or before authorization to proceed with construction procurement is granted under a Step 2 + 3 grant.

VI. Public participation

The following comments are intended to demonstrate how this guidance relates to the standard requirements for public participation. It is not all inclusive.

A. Although mailed questionnaries have limited utility for needs documentation, they can serve as useful public participation tools. A useful "mailing list" may include all owners of residences within unsewered areas in the planning area and other interested and affected parties.

The requirement for consulting with the public set forth in 40 CFR 35.917-5(b)(5) will be considered satisfied if questionnaires are submitted by individuals on the "mailing list."

B. The public meeting required by 40 CFR 35.917-5(b)(6) provides an opportunity for property owners to be informed of whether or not they have been found to need wastewater treatment facilities. During the meeting they can respond to the consultant's determination of their need status. A map with each lot designated as no-need, obvious-problem, or inconclusive would be helpful for public understanding. This meeting could be conveniently scheduled at the end of Phase I.

C. Partial sanitary surveys conducted during Phase 2 of needs documentation offer an excellent opportunity to gain public input provided surveyors are adequately informed about the project or can refer difficult questions to a knowledgeable person for immediate response.

D. The final public hearing required by 40 CFR 35.917-5 should be scheduled at the end of facilities planning. At this public hearing a map showing service areas for grantee supervised decentralized technologies will be displayed. Within service areas, tentatively proposed methods of treatment and disposal for individual developed lots will be available to the lot owners. It should made clear to the public that site investigations conducted in Steps 2 or 3 may result in adjustments to the proposed treatment and disposal methods for individual lots.

APPENDIX C

COMMUNITY MANAGEMENT AND RECOVERY OF LOCAL COSTS

COMMUNITY MANAGEMENT

"Community management" refers to the management of small waste flows systems by a centralized authority. These may include on-site systems, small cluster systems with subsurface disposal and other small-scale technologies. They can be managed by a wide variety of public or private entities or a combination of these entities. Public entities may include state, regional, or local agencies and nonprofit organizations; private entities may include private homeowner associations and private contractors.

In this chapter, the term "management agency" refers to the authority responsible for managing the systems. A management agency need not be an autonomous agency with the single purpose of managing these systems. It may in fact be charged with other duties sharing systems management responsibility through agreements with other agencies. The term "management program" in this chapter refers to the broad range of services needed to ensure the proper design, installation, and operation and maintenance of the small waste flows systems.

A. THE NEED FOR MANAGEMENT

1. PAST AND PRESENT MANAGEMENT PRACTICES

As discussed in Section I.C.1., governmental concern with the use of on-site systems has increased in response to perceived and actual inadequacies of early systems. Most governmental authorities now regulate the installation of new systems and can require upgrading and replacement of failing on-site systems. Few authorities, however, have accepted supervisory responsibility for operation and maintenance of on-site systems.

The value of small waste flows systems as a long-term rather than short-term alternative to centralized collection treatment began to be recognized in the 1970's. As a result, communities preparing facilities plans after September 30, 1978, were required to provide an analysis of the use of innovative and alternative wastewater processes and techniques that could solve a community's wastewater needs (PRM 78-9, U.S. EPA, 1978a). Included as alternative processes are individual and other on-site treatment systems with subsurface disposal units (drainfields).

The 1977 Clean Water Act amendments recognized the need for continuing supervision of the operation and maintenance of on-site systems. U.S. EPA Construction Grant Regulations (U.S. EPA, 1978a; U.S. EPA, 1979b), which implement that act, require that before a construction grant for private wastewater systems may be made, the applicant must meet a number of requirements, including:

- certifying that a public body will be responsible for the proper installation, operation, and maintenance of the funded systems;
- establishing a comprehensive program for regulation and inspection of on-site systems that will include periodic testing of existing potable water wells and, where a substantial number of on-site systems exists, more extensive monitoring of aquifers; and
- obtaining assurance of unlimited access to each individual system at all reasonable times for inspection, monitoring, construction, maintenance operation, rehabilitation, and replacement.

PRM 79-8 extends these requirements to grants for publicly owned systems.

2. COMMUNITIY OBLIGATIONS FOR MANAGEMENT OF PRIVATE WASTEWATER SYSTEMS

Communities have obligations to protect public health and water resources from the adverse impacts of malfunctioning private wastewater systems. Depending on the type and frequency of malfunctions, community obligations may outweigh individuals' rights to constant privacy and absolute possession of private property.

In the most severe cases, the community may require abandonment of privately owned systems. The economic feasibility of most sanitary district expansion is based on their statutory authority to require property owners to abandon existing on-site systems and hookup to new sewers. Under existing state and local law this can often be done even without demonstrating need.

For less severe cases, central community management is a way to minimize this intrusion, avoiding higher costs, landscaping damage, and abandonment of potentially satisfactory facilities. The degree of central management needed is a reflection of the problem itself, and the interference with privacy and property is no greater than that required for public health by actual conditions.

Where the public health and water quality impacts of existing on-site systems are acceptable under present management practices, no changes should be necessary in management or in individuals' privacy or property. This is in stark contrast to sewering, where all systems in a given area must connect, whether or not they are working well.

EIS II-C-D

Proper assessment of system problems (both type and severity) is the key to determining community obligations while minimizing or eliminating intrusion. Overestimation of systems' adverse impacts may lead to overregulation, increased community costs and reduced community support for management programs. Underestimation of the problems or necessary management may perpetuate problems to the detriment of the entire community.

EIS I-B-1

The previous chapter discussed ways to measure the impacts of existing on-site systems. On-site system density, failure rate, and the vulnerability of the affected water resources can all affect the level of management needed. When houses are far apart, the probability of a system malfunction harming other residents may be too low for community concern. However, when houses are closer together, the potential for public health and groundwater impacts is greater. At high densities, even with no apparent system malfunctions, impacts on groundwater quality by nitrates and other chemical constituents may be of concern to the community.

The significance of failures relates directly to density. Among denser populations, the potential for adverse impacts is greater. Even where the failure rate is low, densely developed communities have an interest in aggressively preventing future failures. Failures occurring in sparsely settled areas may pose only a marginal threat to the common good. Some individual failures such as plumbing backups are of interest to the general public since disease contracted by one individual can spread to affect many.

Water resources vulnerable to on-site systems include recreational lakes, water supply reservoirs, groundwater aquifers, and other water bodies. The vulnerability of these water resources and their usage by the public will determine threats to the community posed by on-site system problems. Where a eutrophic lake is receiving a small amount of nutrient input from on-site systems, the community obligation to abate the input may be absent. However, when a lake is oligotrophic or is used as a water supply, the community may have to recognize a greater obligation.

Community involvement with existing on-site systems should be limited to assessment of water quality and public health impacts, requiring remedial action where un-

acceptable impacts exist and implementing management programs to deal with future impacts. Community obligations associated with future wastewater systems should be to regulate their design, installation, and operation and maintenance, in order to limit their potential to affect public health and the environment.

B. SIX COMMUNITY MANAGEMENT MODELS

The following six models reflect increasing levels of community obligation for the management of private wastewater systems. When community obligation is low, community management may be limited to initial installation. Increasing community obligations may require management of all phases of system life, including installation, operation and maintenance, failure, renovation and, ultimately, abandonment. Abandonment represents the maximum intervention that a community may take in managing individual systems and should only be taken when community obligations for protecting public health and water resources cannot be satisfied in any other way.

1. STATUS QUO ALTERNATIVE

Where community obligation for the regulation of private systems is low because of a low density of systems, lack of problems with the existing systems, and/or lack of sensitive water resources, a community management program may be minimal. Such a program is usually limited to management agency approval of permits, inspection of system installations, and investigation of complaints concerning failures of on-site systems. Management programs such as this are currently in general use throughout Region V.

Under this approach, the homeowner is completely liable for system operation and maintenance, including necessary system repairs. The management agency does not conduct routine inspections to monitor system performance, finance system repairs, consider the use of off-site treatment, or permit the use of experimental on-site designs.

This approach is normally adequate for rural land areas where scattered development, farms, and large tract subdivisions predominate. Construction Grants funding eligibility, however, requires both identified community need and a higher level of community management than this alternative offers.

2. OWNER VOLUNTEER

Certain communities may have limited areas of high density, high failure rates, or sensitive water resources, which may raise community obligations for the private systems. In addition to the management program outlined under the status quo model, the community management agency may survey the likely impact areas to identify specific problems. Homeowners would be notified of necessary repairs for their systems, and the community management agency may offer technical and possibly financial assistance to facilitate the repairs.

If a significant enough problem area is identified, the homeowners could receive Construction Grants funds for repair of their systems. The community management agency could apply for and distribute the funds to homeowners whose systems qualify for assistance.

The homeowner would retain both responsibility for system operation and maintenance and liability for system repair. The community management agency's role would be limited to education and technical assistance. For Construction Grant recipients, the community management agency must also insure proper operation and maintenance of the systems. At a minimum this could be accomplished by homeowners, periodically providing proof that the system is being properly maintained (that is, by providing pumping records) or by direct inspection and monitoring by the management agency.

3. UNIVERSAL COMMUNITY MANAGEMENT

As system density, failure rate, and sensitivity of water resources increase, community obligations for managing private systems shift from voluntary owner participation to universal community management. Under this approach, all wastewater facilities in a community or section of a community would be included in a management program. Wastewater facilities may include on-site systems, cluster systems, other small-scale facilities, or combinations of these small waste flows technologies. Cluster systems and other off-site facilities would only be utilized where difficulties in the use of on-site alternatives require the community to explore all feasible solutions to meeting the community wastewater needs.

The community management agency would assume all of the management responsibilities common to the preceding two models. The management agency would also conduct well water sampling and appropriate monitoring of water resources impacted by the wastewater systems. Depending on the type of wastewater facilities utilized, the level of risk assumed by the management agency, and other factors, the management agency could assume responsibility for performing system operation and maintenance and liability for system repairs.

The community management agency could apply for and distribute Construction Grants funds to property owners for repair of qualified private systems if the owners retain liability. Alternatively, the agency could contract directly with installation firms and recover the local share of the construction costs from owners immediately or as part of periodic user charges. In any case, owners would be assessed periodic fees to cover the costs of management services actually provided.

4. COMBINED MANAGEMENT APPROACHES

Sections of a given community may have different wastewater and management needs based on system density, failure rate, and sensitivity of water resources. Centralized wastewater facilities may be in place or required in certain areas, and small waste flows systems may be appropriate for other areas. Owing to varying levels of community obligations, both voluntary and universal management zones may also be present. A management agency should develop specific approaches for each section of the community based on both the projected types of wastewater facilities and community obligations for regulating the private systems. By so doing, the agency can ensure that the program meets each given area's needs.

A possible objection to this approach is the diversity of skills that may be needed. However, there may be sufficient overlap in skills so that agency staff can be maintained at a reasonable number. For instance, sewage treatment plant operators may be able to inspect and repair on-site dosing pump and STEP units. Laboratory personnel can collect and analyze groundwater and surface water samples as well as treatment plant effluent samples. The community may group property owners by type of wastewater system and achieve economies of scale in providing services that would not be achieved by private contractors providing services to owners individually.

Under a multizone management approach, homeowners would be responsible for paying annual fees to support the management services received. Responsibility for operation and maintenance and liability for system failure may vary within each zone.

5. COMPREHENSIVE WATER QUALITY MANAGEMENT

Where the sensitivity of water resources is the paramount concern, prevention and control of water pollution need not be restricted to wastewater facilities. The management program in these communities would consist of universal

community management of the wastewater facilities and be expanded to identify and control other sources of water pollution. Additional management agency responsibilities may include pollution control assessment and control activities such as:

- o non-point source monitoring,
- o non-point source control,
- o education of residents and visitors about individual pollution control practices, costs, and benefits,
- o inventory of the biological resources of the lake and its tributaries,
- o research into the chemical, hydrological and biological dynamics of the lake, and
- o coordination with other local, state, and Federal agencies on pollution control activities and funding.

Communities with such a high interest in the control of water pollution are also likely to assume direct responsibility for system operation and maintenance and liability for correcting system failures.

C. DESIGN OF SMALL WASTE FLOWS MANAGEMENT PROGRAMS

TRD VI-H

The process by which a community develops a management program involves six major steps:

1. inventorying factors affecting the design process,
2. making decisions on system ownership and liability,
3. identifying services to be provided,
4. determining how selected services will be performed,
5. determining who will be responsible for providing services, and
6. implementing the management program.

Each is discussed in the following sections.

1. INVENTORYING FACTORS AFFECTING THE DESIGN PROCESS

Communities face many choices in designing a management program. The factors influencing the community decisions are of two types. "First-order factors" need to be identified and considered before program design decisions are made. They are existing or projected community characteristics. First-order factors include:

- o types of wastewater facilities utilized and proposed,
- o expertise available to the community,
- o size of the community or management district and number of systems in use,
- o available regulatory authority,
- o community jurisdictional setting,
- o community attitudes toward growth, and

- o community attitudes toward public management of private wastewater facilities.

"Second-order factors" are potential consequences of program design decisions. These factors include:

- o costs, including initial costs and economic impact of failures,
- o environmental impacts, especially impacts on water resources, and
- o level of risk assumed by various parties.

The ultimate success of a management program will be measured by these second-order factors.

Most of these factors will directly or indirectly affect decisions for the remaining program design steps.

2. MAKING DECISIONS ON SYSTEM OWNERSHIP AND LIABILITY

TRD VI-B

Wastewater facilities may be owned by the individual user by a community management agency, or by a private organization. User ownership of facilities generally is limited to those located upon his or her property. For off-site systems that serve more than one homeowner, community or private organization ownership is most likely.

Liability involves acceptance of the responsibility for consequences of facility failure. Assumption of liability may involve making necessary repairs and, possibly, paying damages to parties injured by facility failure. Historically, communities have accepted all liability for the failure of centralized collection and treatment systems, with the exception of house connections and plumbing blockages. The liability for individual system failures has traditionally remained with the system owner. With improved management of decentralized systems, there may be advantages to reassignment of the liability for system failure. The assignment of liability to either individuals or a public agency is a matter of choice for the community and its residents.

A community may assign ownership and liability separately for the wastewater systems. For instance, a management agency may agree to replace, upgrade, or repair privately owned small waste flows facilities that malfunction after Construction Grants projects are completed. In return for accepting this liability, the agency

EIS III-I

requires that owners pay a reserve fund charge along with other user charges. The reserve fund charge is, in essence, comparable to an insurance premium.

A possible objection to management agencies assuming liability for future malfunctions is that the economic incentive for owners to use their systems judiciously is removed. This possibility will be weighed against the impacts of prolonged failures should owners not be financially able to make repairs quickly. A resolu-

EIS III-E

tion of this trade-off may be agency assumption of liability on condition that use variances are issued and complied with or that user charges are based on metered water use with rapidly increasing rates above a predetermined limit.

3. IDENTIFYING SERVICES TO BE PROVIDED

TRD VI-A

The range of services that a management agency could perform in managing small waste flows systems varies greatly within the limitation of state guidelines. For Construction Grants grantees, Federal guidelines may also influence local discretion. Services chosen should be those needed to fulfill community obligations without superfluous regulation, authorities, manpower, or investments. Although a few services are essential to all management programs, many are optional, and their incorporation into a management program is left to community discretion.

Table III-C-1 lists administrative, technical and planning services that a community might select.

TABLE III-C-1. POTENTIAL MANAGEMENT PROGRAM SERVICES

Administrative

- o Staffing
- o Financial
- o Permits
- o Bonding
- o Certification programs
- o Service contract supervision
- o Accept for public management privately installed facilities
- o Interagency coordination
- o Training programs
- o Public education
- o Enforcement
- o Property/access acquisition

Technical

- o System design
- o Plan review
- o Soils investigations
- o System installation
- o Routine inspection and maintenance
- o Septage collection and disposal
- o Pilot studies
- o Flow reduction program
- o Water quality monitoring

Planning

- o Land use planning
- o Sewer and water planning

4. DETERMINING HOW SELECTED SERVICES WILL BE PERFORMED

It is an artificial distinction to separate selection of services from the definition of how they should be performed and the designation of parties and persons to perform them. In practice, these three design steps will be taken in sequence, and perhaps repeated, each step directly influencing the others.

Taken by itself, this step defines specific practices by which the services will be provided. For instance, for water quality monitoring, the decision must be made whether to include non-point source and surface water monitoring. Then the groundwater monitoring plan, and other monitoring as decided, must be designed. This step would also develop the user charge system and make decisions on financing the local share. For plan review services, specific policies on experimental or innovative systems may be established or existing standards and procedures may be confirmed.

EIS III-I

5. DETERMINING WHO WILL BE RESPONSIBLE FOR PROVIDING SERVICES

Generally there are three groups who could provide the services selected and detailed in the two prior steps:

- o the public management agency (includes assistance from regional and state organizations),
- o property owners or occupants, and
- o private organizations such as contractors, consultants, development companies, private utilities, and private community associations.

Some communities may control services by providing them directly, but others may provide those services that only the designated regulatory body can provide (as permit issuance and enforcement), supervising the services assigned to owners or
TRD VI-C private organizations. Assignment of service responsibilities should account for the skills and regulatory authority needed to successfully provide the service as well as the costs for different parties to provide them and the risks attendant on poor performance.

EIS IV-A-3 The public management agency need not be a new or single-purpose organization. Personnel with appropriate expertise may already be available in agencies with necessary authority to provide public management services. A combination of interagency agreements, supplemental training of existing personnel and new hires will be an adequate basis for agency development in many communities. Other communities may, for various administrative or legal reasons, find it more suitable to establish a new operating agency.

6. IMPLEMENTING THE MANAGEMENT PROGRAM

The last step in the design process is implementation of the management program. The specifics of this step will vary widely depending on decisions made in the design process. Examples of implementation procedures are:

- o drafting and adopting county or municipal ordinances establishing the agency or providing it with needed authorities,

EIS III-I
- o hiring new personnel,
- o notifying potential contractors and consultants of performance criteria and contract requirements for operating within the management district,
- o drafting and adopting interagency agreements,

EIS III-D
- o creating a sanitary review board, and

IV-F
- o informing property owners about their responsibilities for specific services.

D. PUBLIC INVOLVEMENT IN AGENCY DESIGN AND OPERATION

Public attitudes toward community growth and public management of private wastewater facilities must be considered in agency design decisions.

EIS IV-C-2 The use of small waste flows systems in some settings will directly impact community growth. Unlike centralized systems, small waste flows systems do not provide impetus for growth. While this may be desirable in many rural areas, other areas seek the growth facilitated by centralized sewers for economic and other reasons.

EIS VI-B On the other hand, the use of alternative small waste flows systems facilities may permit the development of land formerly considered undevelopable. This may lead to scattered rural development and/or the development of enviromentally sensitive property, which may be contrary to public desires. Such development may be controlled by effective land use planning if the problem is recognized.

Community understanding of public management of private wastewater facilities will be limited in many rural areas. Where community management is desirable, the public must be educated about its benefits if the program is to be successful.

The public will be directly involved in agency design and operation when individual homeowners are affected by management agency policy and decisions. Homeowners may be required to perform necessary maintenance, to repair, replace, and upgrade failed systems and to pay user fees to the management agency. These requirements may meet with considerable opposition unless an effective public education program is initiated to inform homeowners about their role in the community management programs. Homeowners should be notified and kept informed of their responsibilities and obligations to the management agency.

EIS IV-F

To involve the public more directly in agency design and operation, a Sanitary Review Board of community residents could be established. The board would ensure that the management agency's technical and economic decisions are consistent with citizen interests. The powers and duties of the board could be structured to reflect citizen interest. The board might maintain autonomous control over management agency decisions and personnel, or it could serve as an advisory body to the agency. Where the board is given autonomous authority, it may be desirable for the administrator of the management agency to be a member of the board to ensure that technical matters are properly understood and considered. The board could also act as an appeals body to hear and decide on objections to agency decisions. This function is similar to that performed by zoning and other boards.

E. USE OF VARIANCES

TRD VII-A-B

Variances are granted where practical or physical constraints prohibit literal compliance with the regulations. All states in Region V currently allow construction variances for the new construction of on-site systems where conditions prevent conformity to code. Variances may also be granted for existing systems.

In any small waste flows district with existing on-site systems, many systems may not conform to current regulatory standards for site conditions, system design, or distances from wells or surface waters. Some systems can be upgraded easily and inexpensively to conform with current codes. In many situations, however, upgrading may be unfeasible or impracticable because of site limitations and/or costs. From an economic viewpoint, it would clearly be desirable to continue to utilize a system for its full, useful life, as measured by absence of adverse public health or water quality impacts rather than by conformity to code.

Many study results have indicated the viability of existing on-site systems, including those which may not be in conformance with existing code requirements. Data developed during the study of alternative waste treatment systems for the Seven Rural Lake Projects indicated that many nonconforming systems operate satisfactorily and cause no adverse impacts. In these seven studies, although up to 90% of the systems were nonconforming, failure rates represented by system backups, surface ponding, elevated well nitrate levels and well coliform levels, combined, ranged from a low of 8% to a high of 27%. Many of the problems identified were the result of poor system maintenance and could be corrected with minimal cost and effort. Chemical analysis was also performed on effluent plumes entering the lakes from groundwater. This indicated that even when drainfields or dry wells were actually in groundwater, water quality standards were met at adjacent shorelines in nearly all cases. Bacteriological and nutrient levels at the shorelines were comparable to those found in the center of the lake. The studies indicated that the natural assimilative capacity of soil/groundwater/surface water systems is greater than had previously been expected, and that actual public health and water quality problems caused by on-site systems were not as extensive as nonconformity with sanitary codes might indicate.

TRD II-D

1. CONSTRUCTION VARIANCES

TRD XV-A

Region V states currently allow variances for new construction of on-site systems where either practical or physical constraints make literal compliance with the regulations infeasible. Presumably, such variances could also be granted where upgrading is necessary for existing systems. This type of variance may be considered as a construction variance since it allows construction which is nonconforming to the regulations.

Generally, existing nonconforming systems are considered "grandfathered" systems and they are permitted to operate until problems arise. Correction is then normally required to bring the systems into conformance, if possible. If not, construction variances may be required.

2. USAGE VARIANCES

In most cases, existing nonconforming systems are not inspected. The governing body may have little or no knowledge of system design or construction and takes no liability for the system's performance. Difficulties arise, however, when nonconforming systems are inspected during a sanitary survey. The governing body then becomes cognizant of the nonconforming systems, and their liability for system performance may change. For example, if the governing body allows continued use of nonconforming systems with no structural changes, a court may rule, upon subsequent system failure, that the governing body was negligent in not requiring these systems to be upgraded, since the government was cognizant of the systems' nonconformity. The inspection and the lack of required upgrading may be considered tantamount to permitting the systems.

EIS III-C-2

To prevent this type of liability problem, a second type of variance, termed a "usage variance," may be granted. Usage variances are granted to those systems considered to have additional useful life, and which are not now causing, and generally have a slight potential for causing, public health or water quality problems. By issuing a usage variance, the governing body is legally recognizing that a nonconforming system exists. At the same time, the governing body notifies the system owner of the system's nonconformity, of his or her liability in case of system failure, and of maintenance and flow reduction measures that may be required. This process results in a clear record between the governing body, system owner, and other interested parties concerning the continued use of the system and liability in case of system failure. Provided that the governing body has the power to grant such variances and that the justification for each variance has been documented, the governing body would be within its discretion in deciding to grant such variances, and not liable for legal action in the case of system failure.

3. ISSUING VARIANCES

Construction or usage variances may be conditional, requiring periodic monitoring of system performance and renewal of the variances based upon satisfactory system performance. Conditions could also limit building occupancy or require the use of flow reduction devices.

Decisions to grant variances should be made on a well-documented, case-by-case basis. Construction variances should be restricted to those situations where compliance with regulations is impracticable or unfeasible and where, based on data concerning similar systems, soil conditions, and other information, the proposed construction can be reasonably expected to perform adequately and cause no adverse impacts. Usage variances should be limited to situations where site-specific performance data can be obtained concerning existing system performance.

TRD VII-B

The variances granted should directly relate to the financial resources and staff expertise available to the governing body. Where financial resources allow performance monitoring and employment of experienced personnel to minimize errors, the governing body may be more liberal in the types of variances allowed. Sufficient financial resources to correct future failures where variances have been granted

for high risk sites would also be desirable. Where financial resources and experienced staff will be limited, more conservative variance guidelines may be considered. Although costs may be incurred when corrections must be made to systems previously granted variances, they are expected to be substantially less than the costs of making unnecessary system repairs for code conformance or of totally abandoning useful systems when no variances are allowed.

The use of variance procedures may alter a community's decisions in designing its management agency. When variances are utilized, the management agency accepts a higher risk of system failure in order to achieve a lower overall cost to the community by allowing continued use of existing systems. When it accepts this higher level of risk, the management agency may also elect to assume liability for system repairs. Assumption of liability, in turn, affects decisions on user charge systems.

F. ACCESS CONSIDERATIONS

TRD VIII-E

U.S. EPA Construction Grants regulations (U.S. EPA, 1978a) implementing the 1977 Clean Water Act require in Section 35.918-1(h) that communities seeking funds for individual systems must "obtain assurance (such as an easement or covenant running with the land), before Step 2 grant award, of unlimited access to each individual system at all reasonable times for such purposes as inspection, monitoring, construction, maintenance, operation, rehabilitation, and replacement." PRM 79-8 also applies this to publicly owned on-site treatment systems, or their equivalent. Access is also a consideration during facilities planning surveys and detailed site analysis.

When the individual systems are on private property, the community must obtain the legal authority to enter such property. The three ways that a community can legally gain access to property for inspection of an individual wastewater system are:

1. by gaining the permission of the property owners,

2. by the acquisition of deeded rights, and

3. by a statutory grant of authority from the state legislation.

Each of these alternatives will be individually discussed.

1. BY OWNER'S PERMISSION

The easiest way to gain access to private property for purposes of inspection is with the owner's permission. This can be oral or written. There are several problems with this approach if a community requires guaranteed and long-term access. Bare permission by the owner can always be revoked. Moreover, when the property changes hands, the permission granted by the previous owner is of no legal standing. In some instances, the property owners may be difficult to locate, and a minority of property owners can be expected to refuse to grant permission under any circumstances. For these reasons, a community eventually may need more binding legal authority to enter property. Owner's permission will usually suffice for community surveys during facilities planning, however.

2. ACQUISITION OF DEEDED RIGHTS

The acquisition of deeded rights may involve the community in obtaining easements, easements in gross, or outright ownership of the individual wastewater systems. Easements confer a legal right, formally conveyed by deed or other witnessed and notarized writing and filed with land records, which conveys to one property owner the right to use the land of an adjacent property owner for a specified purpose. As applied to individual wastewater systems with no physical connection to agency-owned property, such a conventional easement may not be possible. The right to

enter the property of another, unrelated to the ownership of adjoining land, is sometimes called an easement in gross. However, easements in gross are sometimes held to expire upon a change of land ownership.

Property law relating to easements is highly formal, technical, and specific to a given state. Communities needing to acquire easements should consult first with local property attorneys and state or county agencies.

3. STATUTORY GRANTS OF AUTHORITY

In general, there are three types of statutes that confer rights of entry on municipal officials in connection with wastewater treatment systems:

1. statutes to abate or prevent nuisances,
2. statutes requiring licenses or permits, and
3. statutes establishing special wastewater management districts for small waste flows systems.

Statutes that confer the right to enter and inspect private property are commonly based on the community's right to prevent and abate nuisances. Since individual wastewater systems are traditionally considered to be nuisances per se when so constructed or maintained as to threaten or injure the health of others, communities can regulate and take actions necessary to assure compliance with their requirements for the construction and maintenance of private wastewater systems.

Statutes requiring licenses or permits can be utilized to require owners to obtain renewable permits for the continued use of their wastewater system. With such requirements courts often imply, if they do not state expressly, that entry and inspection are necessary prerequisites for the renewal of the permits.

Statutes granting communities the right to form on-site wastewater management districts have also granted communities access rights once the management district is formed. To minimize problems arising with utilization of such blanket authority, the degree of intrusiveness of any inspection program should be minimized consistent with maintaining the effectiveness of the district. Public education should be part of any inspection program, and homeowners should be notified prior to inspection.

Under the U.S. EPA Facility Requirements Division Memorandum of July 8, 1980, access by statutory grants is considered equivalent to public ownership or easement in satisfying requirements of 40 CFR 35.918-1(h). Some state statues granting this access limit it only to certain classes of municipalities.

G. IMPLEMENTING WATER CONSERVATION PROGRAMS

TRD VIII-D

Rural unsewered areas may be supplied with water by individual wells or by a community distribution system. Homeowners supplied by public systems often use more water than those with individual systems. The chances for hydraulically overloading on-site wastewater systems is subsequently greater for those served by a public water system. Methods for implementing water conservation programs in these areas include:

- o rate structure changes (increases in price),
- o use restrictions,
- o changes in plumbing codes,
- o public education, and
- o community subsidized distribution of flow reduction devices.

For rural areas served by individual wells, pricing schemes, use restrictions, and legal limits on amount of water used are not usually feasible. Water conservation programs for unsewered areas with individual water supplies must therefore rely on 1) changes in plumbing codes, 2) public education, 3) community subsidized water

conservation devices, or 4) on-site system permits requiring the installation of flow reduction devices. Combinations of these methods should be considered when planning a water conservation program.

Plumbing codes can require that plumbing fixtures used for new construction and retrofit applications be of the low-flow type. This method would gradually result in most residences using water conservation devices. While gradual replacement will achieve 20-year design goals with centralized wastewater facilities, more rapid methods for implementing water conservation programs may be needed to achieve water quality and public health goals with small waste flows facilities. Public education can focus on the following economic benefits of flow reduction:

- o reduced well water pumping,
- o reduced water treatment (where treatment is necessary),
- o reduced energy costs for heating water, and
- o prolonged life of on-site wastewater treatment system.

Public education should be used in conjunction with other methods of implementing water conservation programs to achieve the maximum benefit of each method.

Communities can subsidize the purchase and installation of flow reduction devices. This practice provides homeowners with a readily available means to conserve water and fosters good public relations at the same time. Distribution and installation of water reduction devices should be followed up to determine public acceptance and utility of the devices in saving water. Follow-up studies can determine the best devices for future distribution. Another method includes a requirement in the permit issued for on-site treatment systems stating that flow reduction devices will be installed. Such restrictions could be written into permits for new systems as well as those for upgrading or replacing failed systems.

H. MONITORING GROUNDWATER AND SURFACE WATER

TRD VIII-C

The success of pollution control programs cannot be taken for granted. There are many causes of unsatisfactory performance for any facility. Generally, the more complex the program or the greater the number of facilities, the greater the probability of failure. Early, thorough consideration of the causes of failure may prevent many potential failures. However, failures may still occur. Depending on the value of impacted resources, long-term monitoring may be necessary to complement structural elements of a selected pollution control program. Groundwater and surface water monitoring approaches are discussed below as they would be applied in small waste flows management.

1. GROUNDWATER

Nearly all on-site and many small-scale wastewater technologies discharge effluents to the soil. Except in rare instances, the treated effluents then enter groundwater. Effluent impacts on receiving groundwaters and the resulting impairment of the groundwater's potential use are not easily predicted. Consequently, both facilities planning and long-term operational success depend on sample collection and laboratory analysis.

EIS II-D-6
IV-D-1

Groundwater sampling programs for facilities planning are discussed in Chapters II.D.6 and IV.D.1. Information developed for planning will help define the need for and methods of long-term groundwater monitoring.

Three types of groundwater monitoring strategies may be needed: potable well sampling, aquifer sampling, and shallow groundwater sampling.

a. Potable Well Sampling

Most dwellings served by on-site systems in Region V also have on-site well water supplies. These wells are usually the point closest to on-site wastewater systems at which groundwater quality is a concern. Requirements for monitoring potable water wells are stated in 40 CFR 35.918-1(i) and PRM 79-8. PRM 79-8 states that a comprehensive program for regulation and inspection of Federally funded publicly and privately owned small waste flows systems shall also include, at a minimum, testing of selected existing potable water wells on an annual basis.

This policy allows the selection of wells tested each year on a case-by-case basis. The following suggestions may be useful in developing local monitoring programs.

- On-site wells within 50 feet of drain fields, within 100 feet and down gradient from drain fields in unconfined aquifers, or penetrating unconfined fractured or channeled aquifers could be sampled annually.

- Sand point wells and other shallow wells down gradient from drain fields could be sampled every 2 to 5 years or when the on-site system is inspected every 3 years.

- Wells not at risk need not be monitored. Examples are properly located wells cased and grouted down to a known, continuous confining layer; wells known to be substantially upgradient from wastewater disposal systems; and wells that have tested satisfactorily over extended periods of time.

- Private wells serving more than one dwelling could be sampled as suggested for on-site wells except where water withdrawal may be sufficient to alter natural groundwater flow patterns. These could be sampled annually unless a hydrogeologist demonstrates why more or less frequent sampling is appropriate.

- Public water supplies should be sampled as required by state regulatory agencies.

At a minimum, sample analysis should include nitrate-nitrogen and fecal coliform bacteria. Where improperly protected wells (wells with inadequate seals, casing, or grouting) must be sampled, analysis is also recommended for non-naturally occurring constituents of domestic wastewater, such as brighteners or surfactants. This analysis will help determine the source of contamination.

When samples are positive for bacteria or show unexpectedly high nitrate concentrations, provisions should be made for confirmatory sampling within a short time.

b. Aquifer Sampling

Sampling of aquifers will be necessary in addition to potable well sampling when large numbers of on-site systems are present in a groundwater shed or when wastewater from multiple dwellings or dwelling unit equivalents is land disposed at a single site.

Accumulations of nitrates in an aquifer down gradient from on-site systems are unlikely to affect public health unless a number of systems are lined up in the direction of groundwater flow. While the boundaries of groundwater sheds and flow vectors within them are difficult to delineate, it is safe to assume that single or double tiers of development will not result in hazardous accumulations of nitrates. Therefore, strip developments along roads or lakeshores should seldom be causes for aquifer monitoring. On-site well monitoring will suffice. For more intensive development, the need for and design of aquifer monitoring programs should be determined on a case-by-case basis by qualified hydrogeologists.

TRD II-K
III-B

Monitoring programs for cluster systems, rapid infiltration, or slow rate land application should be developed in concert with detailed design of the system itself. Hydrogeologic studies conducted for site evaluation and system design will provide information required for development of the monitoring program. A minimum system size above which aquifer monitoring should be required is not recommended here. State regulatory agencies are encouraged to address this topic.

c. Shallow Groundwater Sampling

On-site systems along stream banks and lake shores and larger land disposal systems located further away may contribute pathogenic organisms and phosphorus by effluent transport in groundwater. Although unacceptable discharges of this type should have been discovered and remedied during the Construction Grants process or similar work, continued surveillance of suspect systems may be advisable. The need for and design of a shallow groundwater monitoring program should be based on results of prior sampling, uses of the impacted surface waters, possible temporal changes in the discharges, results of septic leachate scans, and requests for this service from property owners.

2. SURFACE WATERS

Two types of surface water monitoring may be advisable in rural communities that rely on the optimum operation approach: effluent surveys and non-point source monitoring.

a. Effluent Surveys

EIS II-D-1-c

In lake communities, periodic septic leachate surveys would identify future groundwater failures of on-site systems and improve understanding of factors influencing effluent plume movement. As with septic leachate surveys conducted in Step 1, a capability for collecting, storing, and analyzing selected samples is desirable.

Because the state of the art in leachate detection is still developing, and because of uncertainties regarding presently available instrumentation, shoreline septic leachate surveys will not be required at this time in monitoring programs. Purchase of currently available instrumentation will be eligible for Construction Grants funding until superior equipment is developed. Grantees will be required to show that comparable instruments are not available on a timely basis from other nearby grantees. Funded instruments will be made available to other grantees.

Where leachates from cluster systems, rapid infiltration systems, or slow rate land application systems are expected to emerge in streams or lakes, monitoring of the leachate may be required depending on proximity of the systems to surface waters, use of the surface waters, and results of aquifer monitoring. Appropriate monitoring methods should be specified during detailed design of the systems. The need to implement some monitoring programs may be conditional on results of aquifer monitoring.

b. Non-point Source Monitoring

Grantees will not be required to monitor non-point sources of pollution. However, Construction Grants-funded laboratory facilities may be used for sample analysis. In comparing the cost-effectiveness of constructing a local laboratory with joint use of other municipal laboratories, or contracting with private laboratories, the projected number and type of samples can include those generated by a non-point source monitoring program that the grantee implements prior to or concurrent with Step 3 of Construction Grants activities.

I. RECOVERY OF LOCAL COSTS

1. DEFINITIONS

TRD VIII-B

The local costs of a project will generally be allocated to users of the system. The local costs consist of private capital costs, public capital costs (local share of capital), interest on public debt, operations and maintenance, and the reserve fund. With the exception of private costs, communities have a great deal of flexibility in determining how local costs are allocated and recovered.

Private capital costs will be borne directly by the users. That is, the users will contract for or purchase items related to the project. Examples of private cost items include house sewers, necessary plumbing modifications, and flow reduction devices. The payment of these costs is agreed upon by the user and contractor or supplier. Communities are not involved in the payment and recovery of private capital costs.

The community is involved directly, however, in the recovery of public capital costs, interest on debt, operation and maintenance costs, and reserve fund costs. These costs are usually recovered through a user charge system. U.S. EPA PRM 76-3 requires that the facilities plan include the estimated monthly charge for operation and maintenance, the estimated monthly debt service charge, the estimated connection charge, and the total monthly charge to a typical residential customer. The stated purpose for this is to encourage the consideration of least costly alternatives and the possible use of public and private facilities. A user charge system must be developed by the community and approved by U.S. EPA during Step 3, at the latest, of the Construction Grants Program.

Capital costs need not be part of an approved user charge system. Instead, users may be required to pay capital costs at the beginning of the project. However, most communities do include capital costs in their user charge systems. For centralized facilities and cluster systems, capital costs can be recovered from both present and future owners. Public capital costs for on-site systems are recovered from present users only. Future users of on-site systems will not be subsidized, and all their capital costs will be private costs in the absence of a local government subsidy.

Operation and maintenance costs, if the project receives grant funds, must be allocated on the basis of each user's proportionate use of the system. For optimum operation alternatives, proportionate use can be measured by type of user (for example, residential), duration of use (seasonal, permanent), flow, or type of technology. Users may also be billed directly for specific services provided by the management agency. In the case of some on-site technologies, some operation and maintenance costs may be paid by users directly to private contractors such as septic tank pumpers and haulers.

A reserve fund is not required but is encouraged by U.S. EPA. The reserve fund can provide for replacement of equipment and future expansion of centralized facilities. For on-site systems, the reserve fund can replace systems that may fail in the future. The reserve fund reflects the liability a community is willing to assume for each type of system used. If the community assumes no liability for future failures of wastewater systems, a reserve fund is not necessary. Payments into the reserve fund generally are low when the failure rate for systems is low. Greater payments are required for a relatively high failure rate. Reserve fund charges can be levied from different user groups at varying rates.

2. USER CHARGE STRUCTURES

The local public costs can be allocated by user charges in a variety of ways at the discretion of the local government. Three major ways of allocating local public costs are averaging the costs among all users in the project's service area, establishing user groups, (that is, charging on the basis of criteria such as flow,

technology used, or location), and charging each user the specific costs of facilities and services provided by the community. The method of allocating costs chosen by the community may be based on considerations such as the costs of implementing the user charge system, the number and locations of residents benefitting from the project, the extent to which a mix of technologies is used, and the consideration of equity and efficiency.

The cost of implementing the user charge system may be high yet still politically feasible if all users are charged by the community for the specific costs they impose on the community. A sophisticated bookkeeping system would be required to allocate specific capital, operation and maintenance, and reserve funds for each user; such a system may exceed the administrative capacity of the local government. Averaging all costs among all users would be the least expensive and time-consuming method of allocating costs. A system based on user groups would probably be intermediate in cost.

3. BASIS FOR SELECTION

The beneficiaries of the project are the initial consideration in the design of a user charge system. In addition to owners receiving direct assistance in the improvment, replacement or operation of their on-site systems, beneficiaries may include:

- residents and non-residents who use the water resources being protected,
- where off-site facilities are constructed, land owners who could not previously build but are thus enabled to,
- businessmen whose revenues depend on the attractions of the water resources being protected, and
- property owners do not require assistance at present but for whom the availability of assistance is a benefit,
- property owners who would otherwise be required to pay the price of sewers but who can retain properly operating on-site systems under an optimum operation alternative.

If such benefits are well distributed among users, the case for averaging all local costs is good. However, the range of technologies that may be used, the often localized or spotty problems for which improvements are necessary, and the possibility of use restrictions can be expected to present a more complex benefit distribution. A useful exercise for grantees, once the water quality problems are defined and appropriate technologies selected, would be to identify classes of beneficiaries.

Allocating costs to classes of users is most reasonable when a mix of technologies is used. Costs may vary significantly according to the type of technology used. Users with low-cost systems might be reluctant to subsidize users with high-cost technologies. Charging by user class requires the community to spend more time and effort for bookkeeping than it would to average costs among all users. However, the user group method would be less difficult and expensive than the individual user/specific cost method.

The final consideration in choosing a way to allocate costs involves the issues of equity and efficency. Equity in this case refers to charging users in proportion to the costs they impose on the management system. For the optimum operation alternative, the most equitable user charge system is the individual user/specific cost method. For instance, residents with conventional septic tank/soil absorption systems on large, well-drained lots would have very low costs. They may be charged only for septic tank pumping and drainfield inspection once every three years. Residents with dosed systems or residents served by cluster systems may have to pay larger charges and more frequently. Residents using holding tanks could have routine and quite substantial costs.

4. CONSEQUENCES AND TRADE-OFFS

User charge systems can affect the efficiency of the wastewater management system. Charges that encourage users to abuse their wastewater facilities are inefficient. Charges that promote efficiency, however, may not be equitable. Consider owners of holding tanks: if they have to pay the full cost of pumping their wastes, they may occasionally dispose of the wastes themselves in a manner hazardous to themselves or their neighbors. However, it is not equitable for the management agency to provide free pumping service for them and to average the cost to all other users. Clearly in this case, equity and efficiency in a user charge must be balanced. Charging substantial fees for water use that will not economically threaten the holding tank owners may encourage vigorous conservation and may prevent owners from endangering others with unsanitary practices. A partial subsidy may otherwise benefit the community by making holding tanks a feasible option so that everyone does not have to contribute to buying a sewer.

J. BROADER RESPONSIBILITIES OF PUBLIC AGENCIES RELATED TO RURAL WASTEWATER MANAGEMENT

Public agencies managing small waste flows systems may already possess or may assume responsibilities in addition to those related to wastewater management. Assumption of multiple responsibilities may be particularly attractive in small communities with few paid personnel. In such communities, the small waste flows systems alone may not justify full-time positions, making multiple responsibilities more efficient. Examples of broader responsibilities that may be assumed by a wastewater management agency are discussed below.

EIS III-C-1-5
TRD VI-A
VIII-A
EIS IV-C-2

Many rural communities lack any form of land use planning, the only land use restrictions relating to the suitability of a given site for on-site wastewater disposal. These restrictions may be altered through approval of innovative on-site systems or adoption of performance-based design standards by a management agency. If this occurs, the community may desire to develop appropriate land use designations. The management agency could be designed to provide this service.

EIS III-H-1

The use of private water systems is predominant in rural communities. In addition to ensuring adequate wastewater disposal, the management agency could ensure safe and adequate water supply. The agency can accomplish this by routinely inspecting and monitoring individual wells and/or community water supplies and by providing public education related to water supply management. The periodic inspection and monitoring of individual wells by a management agency is already mandated by Construction Grants Regulations Section 35.918-1(i) for grants involving individual systems.

TRD X-D
EIS IV-A-3
TRD VIII-B

Section 201(f) of the Clean Water Act of 1977 states that the administrator shall encourage waste treatment management that combines open space and recreational considerations with such management. A community management agency could coordinate the use of wastewater management district properties for recreational use, such as the use of a community drainfield for picnic or park land. The management agency could also manage recreational facilities not part of the management district.

TRD II-C
XII-G
EIS III-H-2-b

In communities with particularly sensitive water resources, the management agency could investigate and monitor sources of pollution unrelated to the wastewater facilities. In many rural areas, the management agency may be the only public body involved in pollution control; therefore, assumption of broader responsibilities in this area could be of great community benefit.

K. PERSONNEL

A broad range of skills and expertise may be required by the management agency. Typical job titles that may be involved in some aspect of wastewater management
TRD VI-D
include:

- o system designer,
- o clerk,
- o administrator,
- o inspector,
- o attorney,
- o equipment operator,
- o plumber,
- o small waste flows contractor,
- o laboratory technician,
- o water resource scientist,
- o soil scientist,
- o laborer,
- o environmental planner, and
- o wastewater system operator.

Although the list of job classifications is long, one person could provide a number of the skills. It is not necessary to employ one person to fill each position. Customary job titles such as engineer and sanitarian are not listed as such, in order to define more clearly the types of personnel needed and to avoid limiting personnel to these disciplines. Sanitarians and engineers could, however, fill many of the job classifications.

The task of defining and fulfilling management agency personnel needs requires five steps:

1. assess skills and skill levels required by the management agency,
2. estimate the level of effort required by skill,
3. inventory available personnel and define their skill levels,
4. select personnel to meet management agency needs and acquire their services through interagency agreements, hiring, or contracts, and

TRD VI-F

5. seek training programs to fill any remaining gaps in expertise required by the management agency.

A community planning a management program should consider hiring key personnel early in the process. These personnel, such as an administrator experienced with small waste flows technologies, would be invaluable in assisting the community in the design process, then later administering operation, maintenance and repair services.

TRD XV-C

EIS V-B-2

The search for personnel who may assist the management agency should not be limited to the local area. All sources of potential assistance should be evaluated, including state, regional and other municipal personnel, U.S. Soil Conservation Service personnel, utility company workers, private contractors, and consultants. State and regional agencies can provide many types of assistance, including:

- o direct technical assistance,
- o assistance to local communities in grant application and administration,
- o preparation of community wastewater needs analysis,
- o identifying the local feasibility of small waste flows technology and management,
- o review and upgrading of local and state regulations,
- o dissemination of information on small waste flows technology and management, and

o preparation of manpower inventories for local small waste flows programs.

In many rural communities, economies of scale in management may be realized by sharing personnel with other communities, or by a regional agency furnishing assistance on a shared time basis.

The community management agency should ensure that private contractors and consultants hired to perform management agency services are experienced in the utilization and management of small waste flows systems. Without experienced assistance, the community may not fully realize the benefits of the optimum operation approach.

L. REVISING THE MANAGEMENT PROGRAM

After the management program has been implemented, documentation of the performance of the program as a whole and of each of its component parts is important to long-term success and economy. Periodic review of this information, and evaluation and revision of the management program, should be an ongoing process.

The initial implementation of a management program in a community cannot be expected to result in an ideal program. This is particularly true since community management of small waste flows systems as broadly defined in this EIS will be a totally new management approach for many communities. As the program is implemented, unforeseen problems with the system are likely to develop. Certain seemingly prudent management practices may appear otherwise in actual operation.

The agency should encourage feedback on its management program by soliciting and being receptive to community and public comments on the program. The agency should develop minimum requirements for periodic evaluation of the successes and problems in the management program and of necessary revisions to the program to make it operate more effectively.

Provisions for revision of the management program should be flexible enough to allow constructive improvement in the program without altering the community's original commitment to the management of the small waste flows systems. Where this commitment is questioned, the community's original analysis of the need for a management program may have been wrong. If Construction Grants funds have been received for the individual systems, continuity in the management program must be assured by the community or by state or regional agencies.

APPENDIX D

SAMPLE EASEMENT FORM

SEWER EASEMENT AND RIGHT OF WAY

(I)(WE) _____

_____

_____

of _____

_____

_____

respectively, in consideration of the prospective benefits to be derived from a new or upgraded sewer and/or improved water quality in Crystal Lake, do hereby convey and release to the _____ an easement and right of way for unlimited access to the present or future on-site sewer system or other systems of sewage disposal, at all reasonable times for such purposes as inspection, monitoring, construction, maintenance, operation, rehabilitation, and replacement, over, upon and across lands owned by (me)(us) and situated in the Township of _____, County of Benzie, State of Michigan, and more particularly described as follows:

In witness, whereof, I have hereto set my hand this _____ day of _____, 19___.

WITNESSES:

_____ _____

_____ _____

_____

_____

STATE OF _____) ss.
)
COUNTY OF _____)

Subscribed and sworn to before me this _____ day of _____, 19__.

_____
Notary Public

My commission expires:

APPENDIX E

EIS ALTERNATIVES

EIS ALTERNATIVES

A. APPROACH

The preceding chapter described options for the functional components of wastewater management systems for the communities in the Study Area. This chapter examines alternative wastewater management plans for the Study Area, including a No Action Alternative.

The Proposed Action developed in the Facilities Plan (described earlier) provided for centralized collection and treatment of wastewater. In response to questions about the expense of the Proposed Action, the development of EIS Alternatives emphasized decentralized and alternative or innovative technologies, alternative collection systems, decentralized treatment, and land disposal of wastewaters. The EIS Alternatives would manage wastewaters in the same service area as the Facilities Plan Proposed Action, but the EIS Alternatives use decentralized collection and treatment to avoid some of the costs of sewers.

Because of the high cost of collection in the Proposed Action, the cost-effectiveness of pressure sewers, vacuum sewers, and small-diameter gravity sewers were compared. Of these, pressure sewers were the most cost-effective. Similarly, the use of a septic tank effluent pumping (STEP) system was analyzed as an alternative to grinder pumps. Assuming 35% of the septic tanks would be replaced, the STEP system was computed to be more cost-effective and was used in the EIS Alternatives. This selection should be reviewed during the preparation of detailed designs.

Analysis of decentralized treatment technologies and site conditions showed feasible alternatives to sewering the entire Study Area. It would be possible to combine multi-family filter fields (cluster systems) with rehabilitated and new on-site treatment systems to meet the wastewater treatment needs in parts of the Study Area. Additionally, on-site upgrading of existing treatment systems is examined, which includes abandoning privies in flood-prone areas and replacing them with vault toilets, composting toilets, or other technologies.

Appendix I-1 presents the assumptions used in design and costing of the alternatives. Section IV.B lists the major features of the Proposed Action and of the EIS Alternatives.

B. ALTERNATIVES

The Facilities Plan Proposed Action has been compared with the No Action Alternative and eight new approaches developed in this EIS. Table IV-1 summarizes these alternatives.

1. NO ACTION

The No Action Alternative implies that EPA would not provide funds to support new construction, upgrading, or expansion of existing waste-

Table IV-1

ALTERNATIVES -- SUMMARY OF MAJOR COMPONENTS

Alternative	Centralized Treatment	Treatment Plant Siting	Effluent Disposal	On-lot and Cluster Systems	Alternative Collection Method
Facilities Plan Proposed Action	Aerated lagoon serving entire Proposed Service Area	Northwest Township Section 24	Discharge to Nettle Creek	No	No
EIS Alternative 1	Aerated lagoon serving Segments 1,3,4,5,7 and 8	Northwest Township Section 24	Discharge to Nettle Creek	Segment 2: Cluster systems Segment 6: ST/SASs	No
EIS Alternative 2	Aerated lagoon serving Segments 1,3,4,5,7 and 8	Northwest Township Section 24	Discharge to wetlands (aquaculture)	Segment 2: Cluster systems Segment 6: ST/SASs	No
EIS Alternative 3	Aerated lagoon serving Segments 1,3,4,5,7 and 8	Northwest Township Section 24	Discharge to Nettle Creek	Segment 2: Cluster systems Segment 6: ST/SASs	Use of pressure sewers/septic tank effluent pumping (STEP) system in suitable sections of the central collection system
EIS Alternative 4	Aerated lagoon serving Segments 1,3,4,5,7 and 8	Northwest Township Section 24	Discharge to wetlands (aquaculture)	Segment 2: Cluster systems Segment 6: ST/SASs	Use of pressure sewers/STEP system in suitable sections of the central collection system
EIS Alternative 5	Stabilization Pond/land application system serving Segments 1,3,4,5,7 and 8	Northwest Township	Land application by rapid infiltration with recovery of renovated wastewater and discharge to Nettle Creek	Segment 2: Cluster systems Segment 6: ST/SAS	No
EIS Alternative 6	No	No	No	Segments 1,3,4,5: Holding tanks (maximum flow reduction) and septic tanks with mounds and "super systems" Segment 2: Cluster systems Segments 6 to 8: ST/SAS Repair, replacement and hydrogen peroxide treatment of existing systems as necessary	No
EIS Alternative 7	No	No	No	Segments 1 to 5: Holding tanks (maximum flow reduction) and septic tanks with mound and "super system" absorption fields. Segments 6 to 8: ST/SASs Repair, replacement and hydrogen peroxide treatment of existing systems as necessary	No
EIS Alternative 8	No	No	No	Segment 1 to 5: Replace privies with alternative technologies and septic tank with mound or "super system" absorption fields Segment 6 to 8: ST/SAS Repair, replacement, and hydrogen peroxide treatment of existing systems as necessary	No

water collection and treatment systems. Any changes or improvements of malfunctioning systems would be at the initiative and expense of either the property owner or local government.

2. FACILITIES PLAN PROPOSED ACTION

The Facilities Plan recommended construction of a regional collection system and centralized treatment. The collection system would comprise a combination of gravity sewers with lift stations and force mains.

The Facilities Plan proposed treatment of 0.14 mgd of wastewater by aerated lagoons, with discharge to Nettle Creek. Figure IV-1 is a representation of the proposed treatment process. The proposed layout for this alternative is illustrated in Figure IV-2.

3. EIS ALTERNATIVE 1

EIS Alternative 1 is similar to the Facilities Plan Proposed Action. Segments 1, 3, 4, 5, 7, and 8 would be sewered as in the Facilities Plan Proposed Action (see Figure IV-3). Similarly, wastewater would be treated in an aerated lagoon and discharged to Nettle Creek. However, Segment 2 would be served by cluster systems, while Segment 6 would remain with the existing on-site ST/SAS systems, since soils in this segment are suitable for on-lot treatment. The design flow for the aerated lagoon would be reduced to 0.09 mgd. This alternative is depicted in Figure IV-4.

4. EIS ALTERNATIVE 2

EIS Alternative 2 differs from EIS Alternative 1 only in the type of discharge provided after centralized collection and treatment. In this alternative, treated wastewater from the aerated lagoon would be discharged to nearby wetlands, thus reducing the length of the outfall line. Figure IV-5 depicts this alternative.

5. EIS ALTERNATIVE 3

EIS Alternative 3 employs pressure sewers instead of gravity sewers wherever suitable. Septic tank effluent pumping (STEP) was selected over grinder pumps on the basis of cost-effectiveness. This alternative was intended to investigate whether the different methods of collection would reduce costs; in a few parts of the Service Area, notably Segment 1, gravity sewers were retained. This was because gravity sewers could be more cost-effective than pressure sewers in this higher density area.

As in EIS Alternative 1, 0.09 mgd of wastewater would be conveyed to an aerated lagoon for treatment and discharge to Nettle Creek. EIS Alternative 3 is illustrated in Figure IV-6.

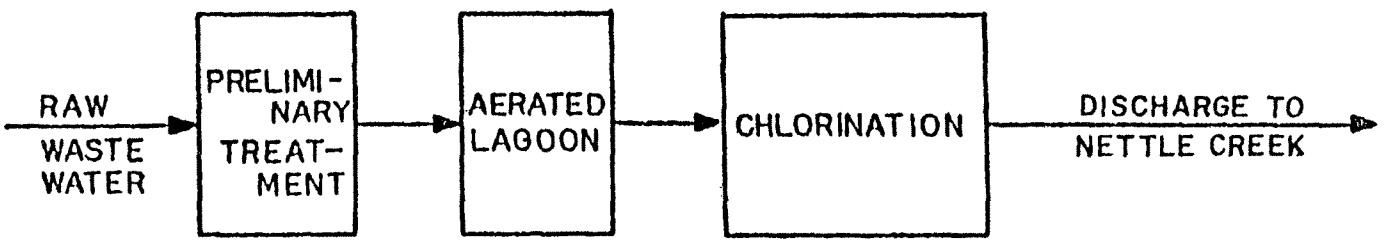


FIGURE IV-1 FACILITIES PLAN PROPOSED ACTION
TREATMENT PROCESSES

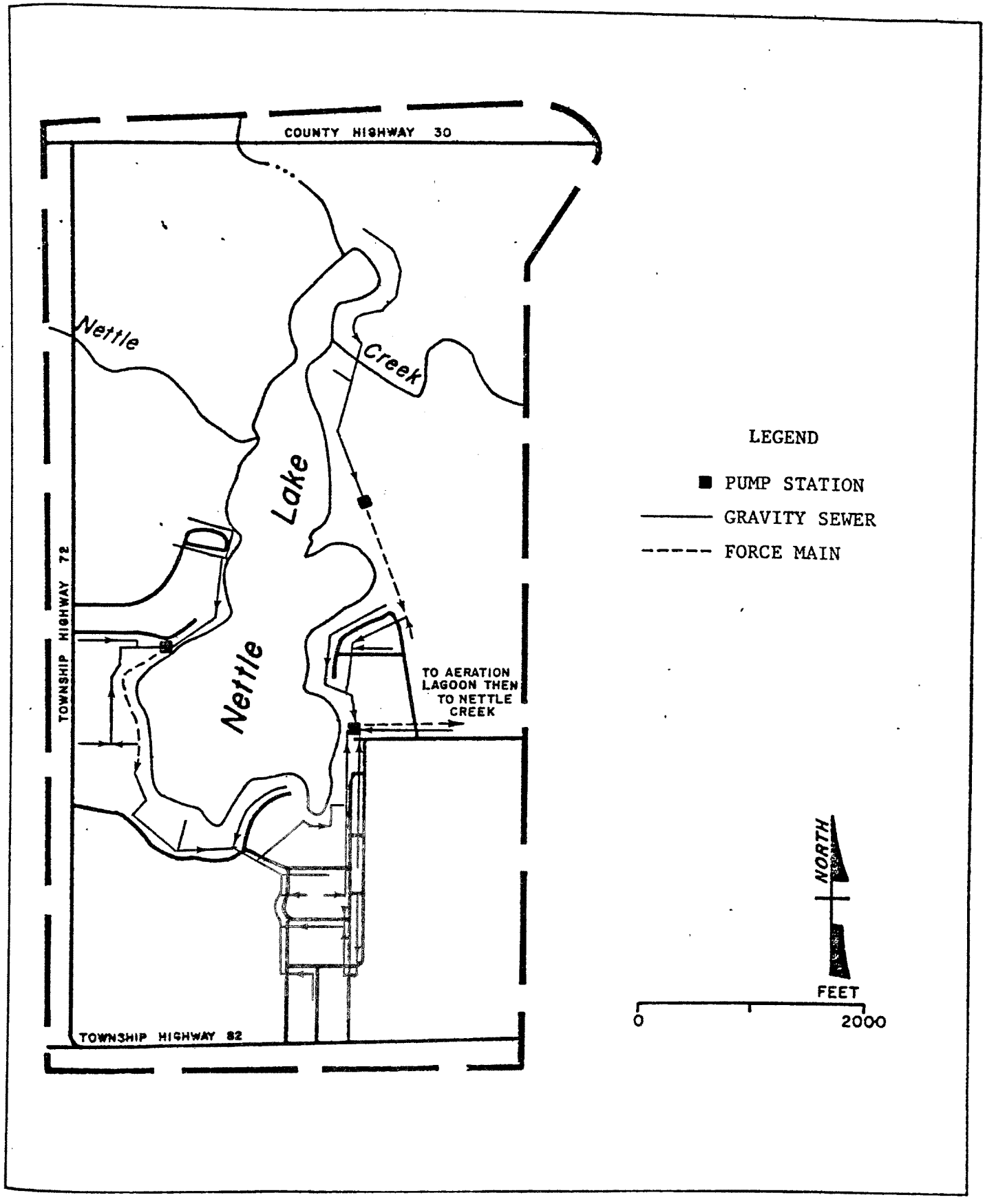


FIGURE IV-2 NETTLE LAKE: FACILITIES PLAN PROPOSED ACTION

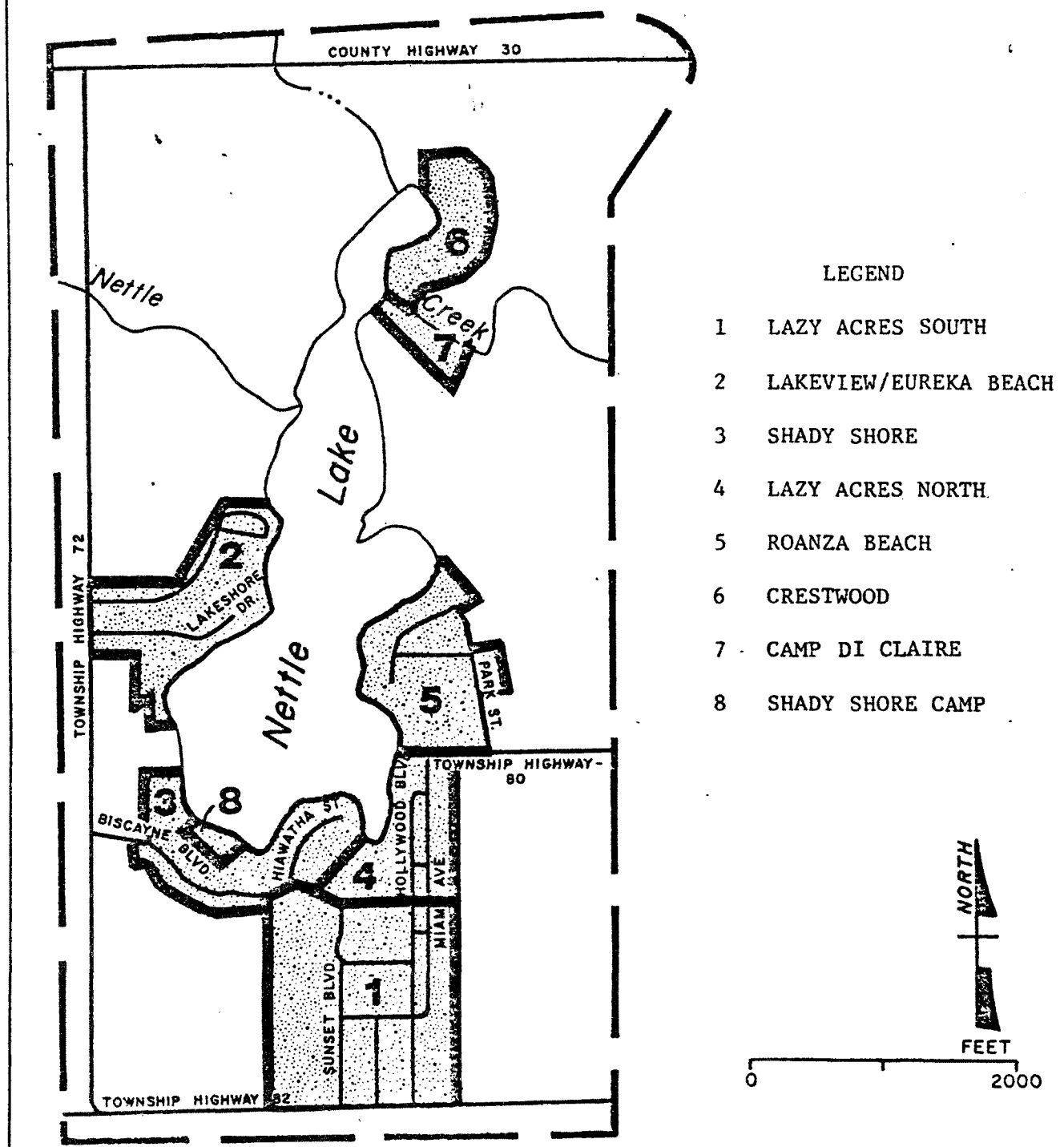


FIGURE IV-3 NETTLE LAKE: SEGMENTED SUBDIVISIONS IN THE PROPOSED SERVICE AREA

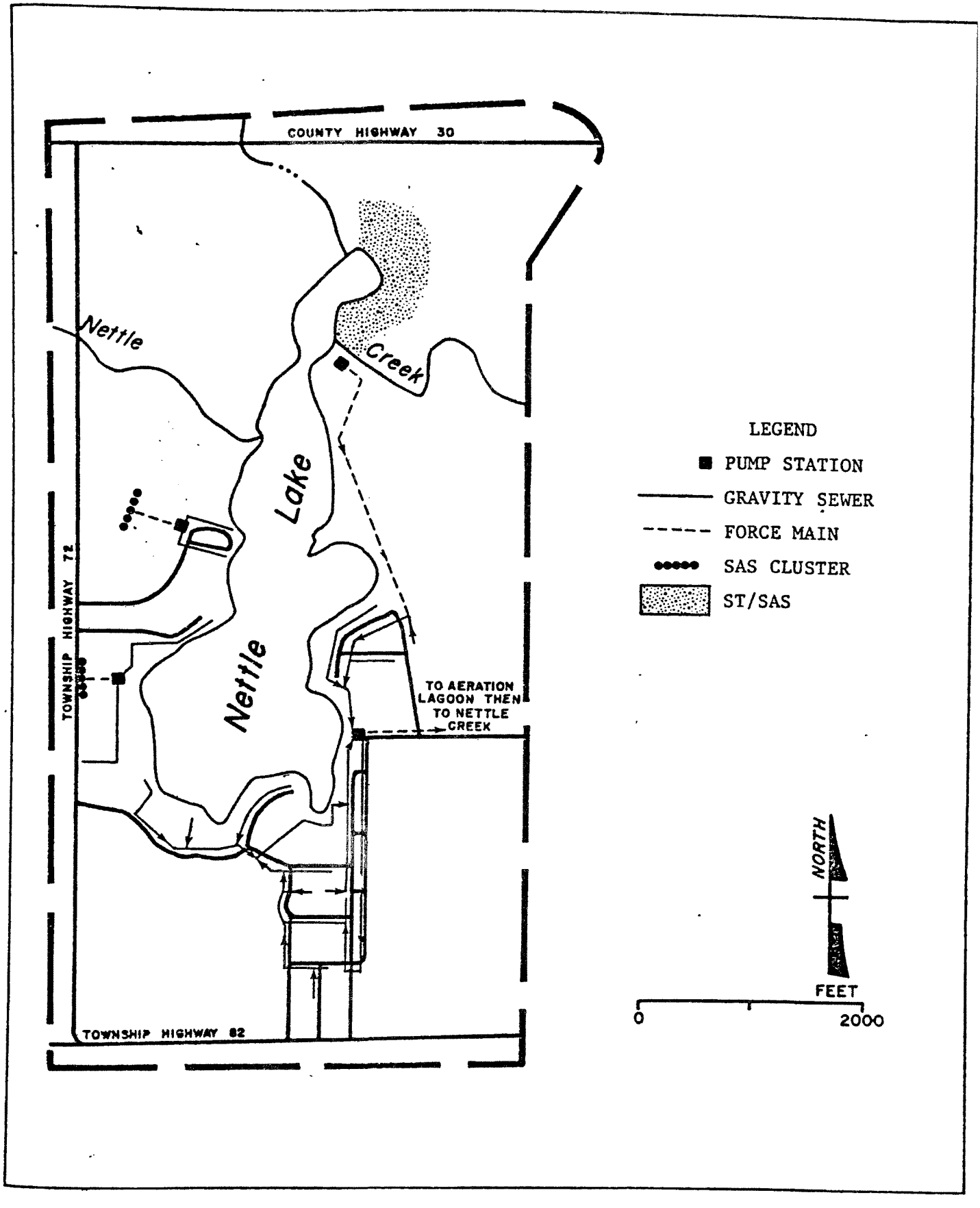


FIGURE IV-4 NETTLE LAKE: EIS ALTERNATIVE 1

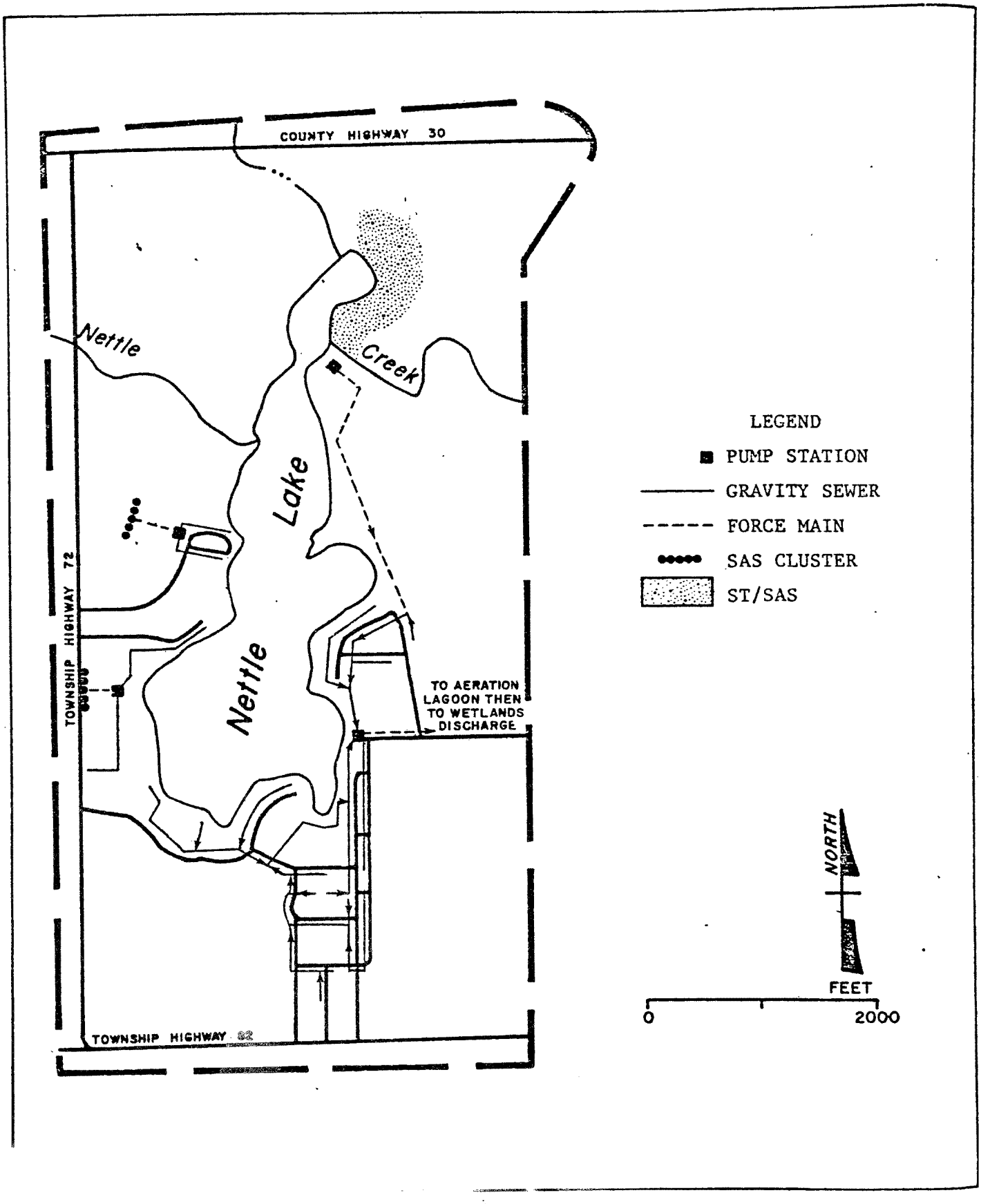


FIGURE IV-5 NETTLE LAKE: EIS ALTERNATIVE 2

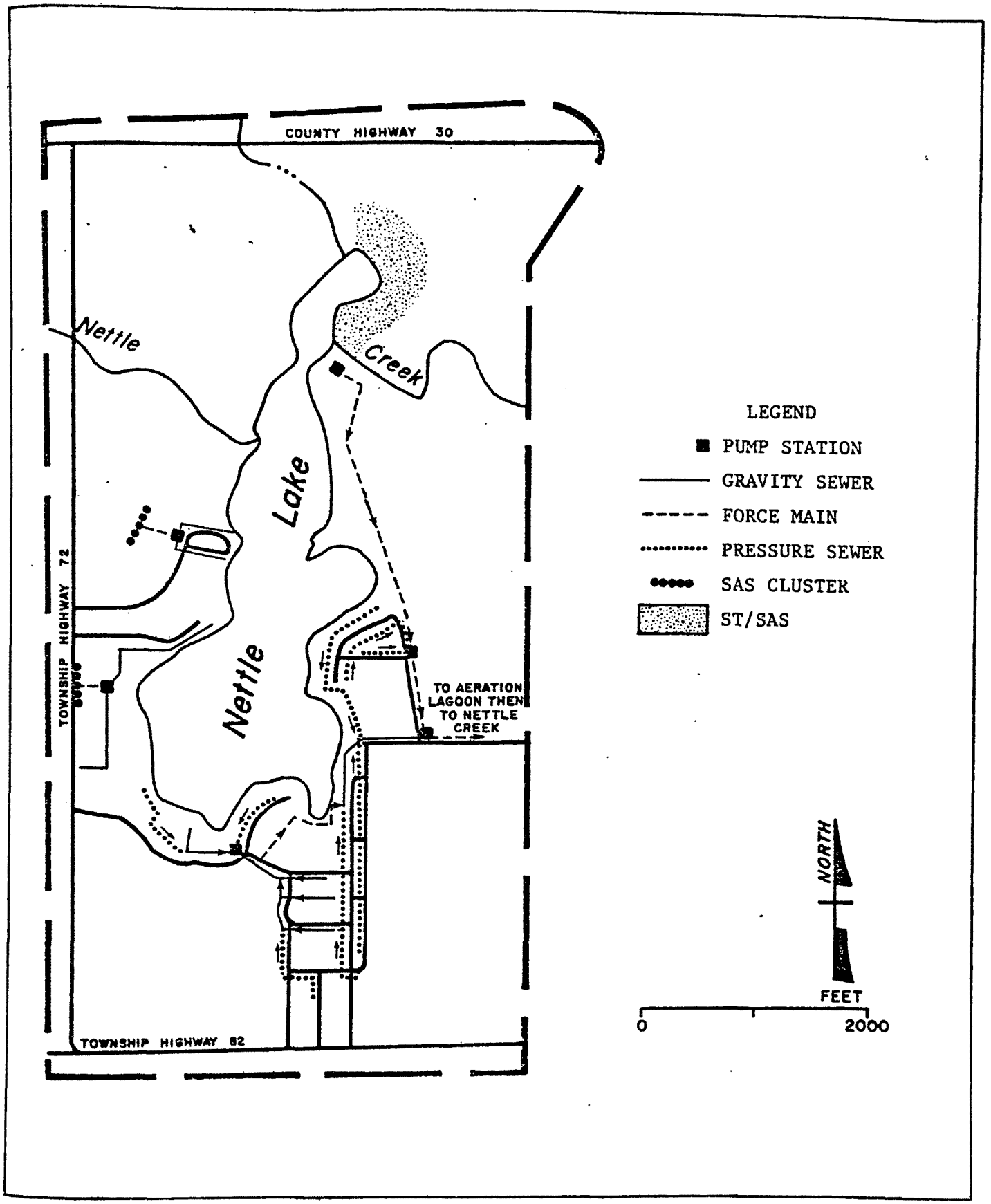


FIGURE IV-6 NETTLE LAKE: EIS ALTERNATIVE 3

6. EIS ALTERNATIVE 4

EIS Alternative 4 would employ the STEP system of pressure collection, with on-site ST/SAS treatment in Segment 6 and two cluster systems in Segment 2. The difference between this and the previous alternative is that, in this alternative treated wastewater would be discharged to wetlands instead of directly to Nettle Creek. This alternative would employ pressure sewers instead of gravity sewers. Figure IV-7 depicts this alternative.

7. EIS ALTERNATIVE 5

EIS Alternative 5 investigated land application as an alternative method of treatment. The only soils near Nettle Lake suitable for land treatment are located southwest of the lake and their characteristics dictate the type of land application that would be appropriate. Since the two basic soils are Spinks sand and Ottokee sand, both of which have a permeability greater than 6 inches per hour, rapid infiltration was selected. Pretreatment for the 0.09 mgd of flow would include preliminary treatment, a stabilization pond, and chlorination. Recovery wells would collect renovated effluent and would discharge to Nettle Creek.

As in previous alternatives, Segment 6 would employ on-site systems and Segment 2, cluster systems. Wastewater would be collected by a combination of gravity sewers and lift stations with force mains. The treatment process is illustrated in Figure IV-8 and the alternative in Figure IV-9.

8. EIS ALTERNATIVE 6

EIS Alternative 6 would provide service to residences in Segment 2 by two cluster systems with drainfields located west of the segment. Cluster systems are examined as a solution in Segment 2 because soils within the residential developments are indicated as being unsuitable for absorption systems, while suitable soils exist within short distances to the west of the developments. All other segments would be served by upgraded on-site ST/SAS systems. In this alternative, all privies would be abandoned, backfilled, and indoor plumbing would be installed. This alternative is illustrated in Figure IV-10.

9. EIS ALTERNATIVE 7

EIS Alternative 7 is based upon on-site disposal for all residences. No central collection or treatment would be provided. A small waste flows agency would be responsible for maintaining, repairing, and/or replacing on-site systems as appropriate.

In Segments 1-5, holding tanks would replace the existing privies. A water supply would be installed, bathrooms constructed, and maximum water-saving devices would be installed in these residences, reducing consumption to 13.4 gpcd. For on-site ST/SAS systems in these segments, it is assumed that 35% of the septic tanks and 20% of the drainfields would require replacement. Half of these drainfields would be replaced by sand mounds and half by dual drainfields. The latter would consist

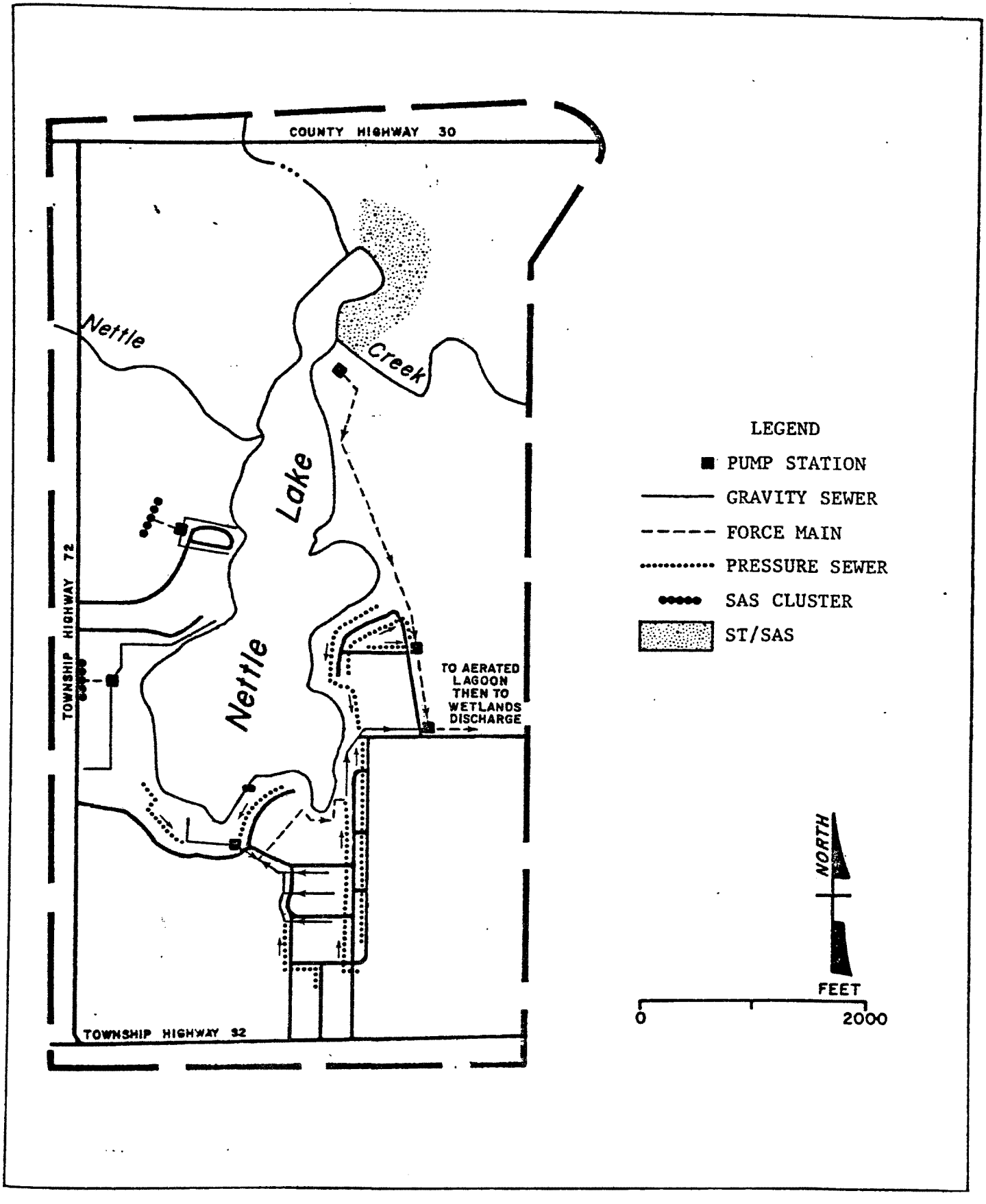


FIGURE IV-7 NETTLE LAKE: EIS ALTERNATIVE 4

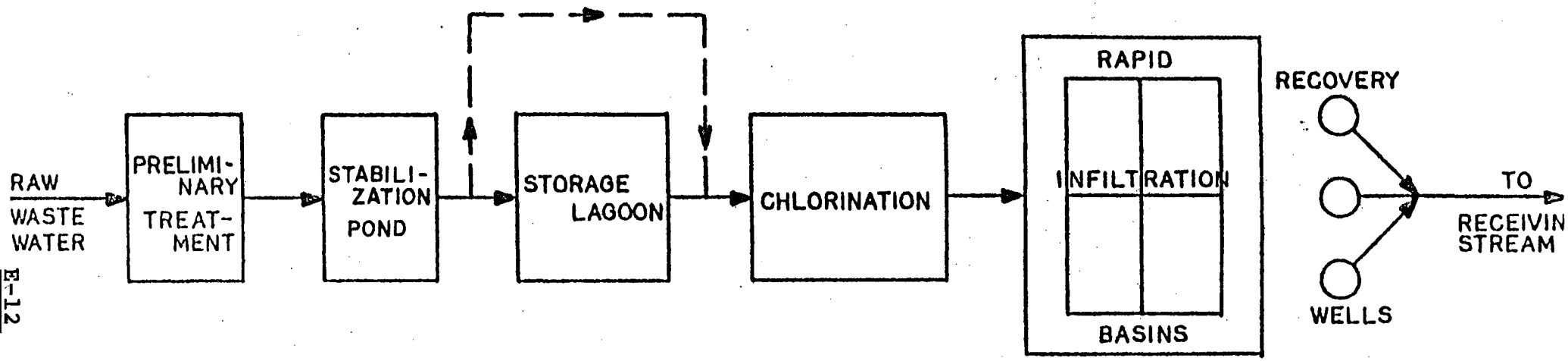


FIGURE IV-8 EIS ALTERNATIVE 5 TREATMENT PROCESSES

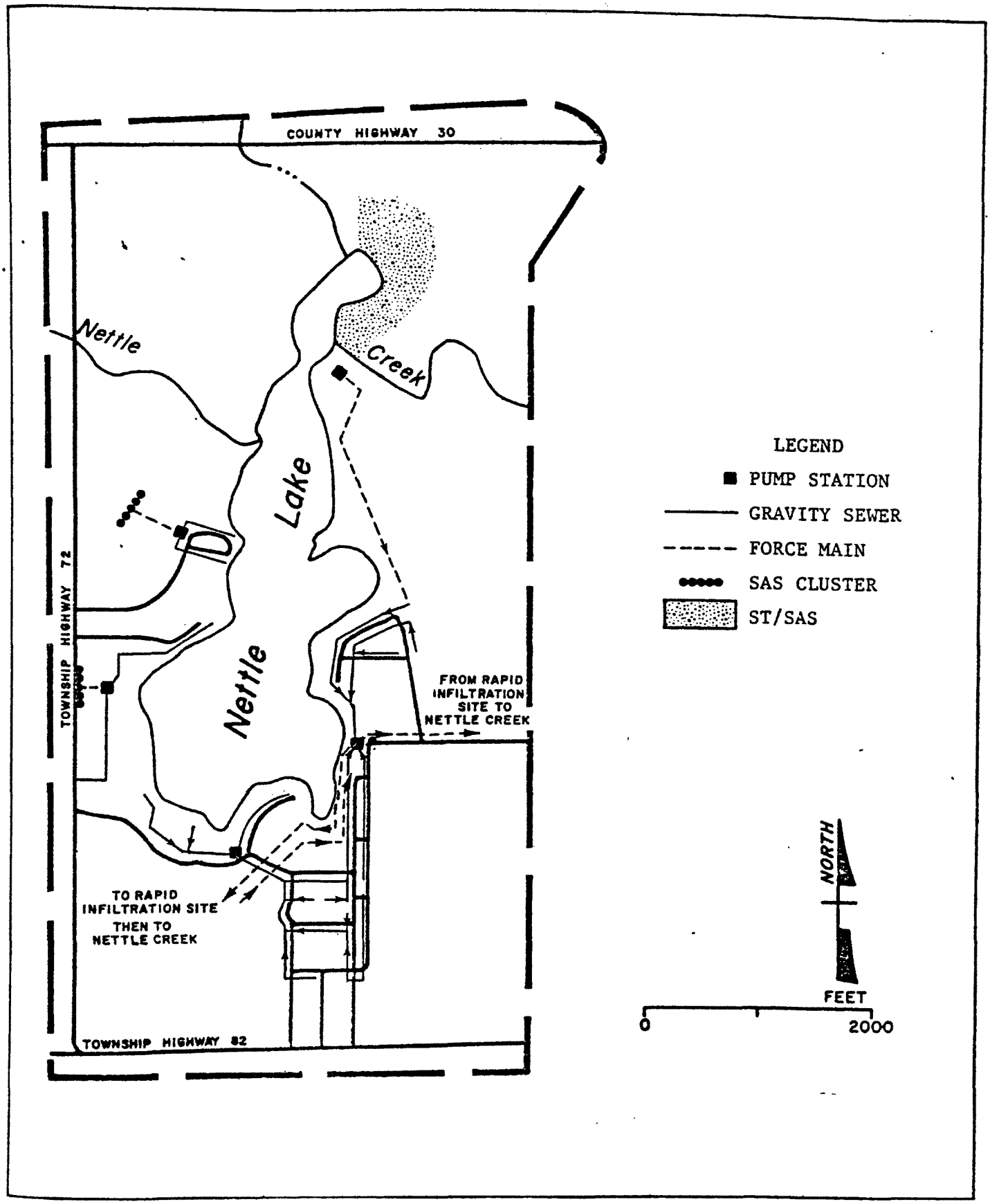


FIGURE IV-9 NETTLE LAKE: EIS ALTERNATIVE 5

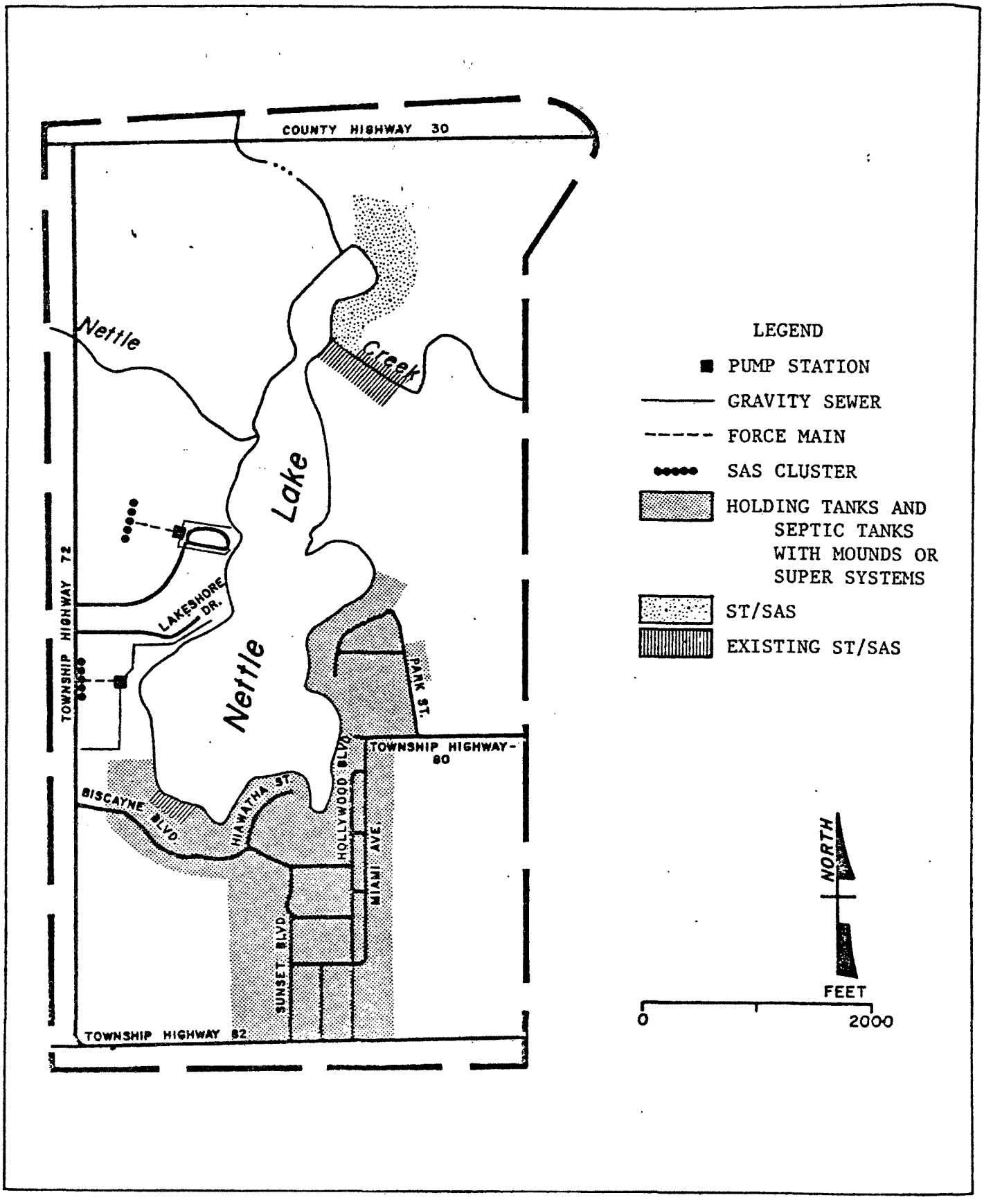


FIGURE IV-10 NETTLE LAKE: EIS ALTERNATIVE 6

of two full-sized drainfields and a valving arrangement, permitting one field to function while the other is inactive.

The large lot sizes and suitable soils permit the existing on-site systems in Segment 6 to continue in use. As in Segments 1 through 5, 35% of the septic tanks and 20% of the drainfields are assumed to require replacement. Conventional drainfields would be used to replace faulty ones in this segment.

In Segments 7 and 8 the existing on-site systems would continue in use. It is assumed that the only costs associated with these systems would be those for ordinary operation and maintenance.

In all segments it was assumed that 10% of the septic systems would require hydrogen peroxide treatment at some time during the planning period. Figure IV-11 illustrates this alternative. A small waste flows agency would be responsible for maintaining, repairing and/or replacing on-site systems as appropriate.

10. EIS ALTERNATIVE 8

EIS Alternative 8 also recommends on-site wastewater treatment for all residences. In segments 1 through 5 all privies would be replaced with different technologies. This EIS estimates that 132 privies exist in the Study Area, and many of them are inundated and washed out annually. In order to address this problem, this alternative recommends abandonment of these privies. The alternative assumes replacement of privies equally with four different forms of technology selected by the homeowner in cooperation with the small waste flows district. The replacement technologies would consist of outdoor vault toilets, air assisted low flush toilets and a holding tank, chemical toilets, and electrical composting toilets. All other segments would upgrade on-site systems as described in Alternative 7.

The small waste flows district would work with the homeowner to select, install, operate, and maintain the technology appropriate to a particular site. Figure IV-12 illustrates this alternative. The small waste flows district would also contract for a septage hauler or would apply for the eligible 85% funding for purchase of a "honey wagon." A post summer pumpout program would probably be initiated for holding tanks and vault toilets. Pumpings would continue to be land-spread on agricultural areas.

C. FLEXIBILITY OF ALTERNATIVES

This section evaluates the flexibility of the Proposed Action and the EIS Alternatives to accommodate future Service Area growth, along with their operational flexibility over the design period. It should be recognized that flexibility for accommodating future growth relies upon certain conditions that are opposed to the accommodation of planning for the future. Specifically, flexibility for future expansion implies a commitment to provide growth and its associated infrastructure. Retaining the flexibility to provide planning for the future implies deferment of any such commitment. Viewed in this context, the No Action Alterna-

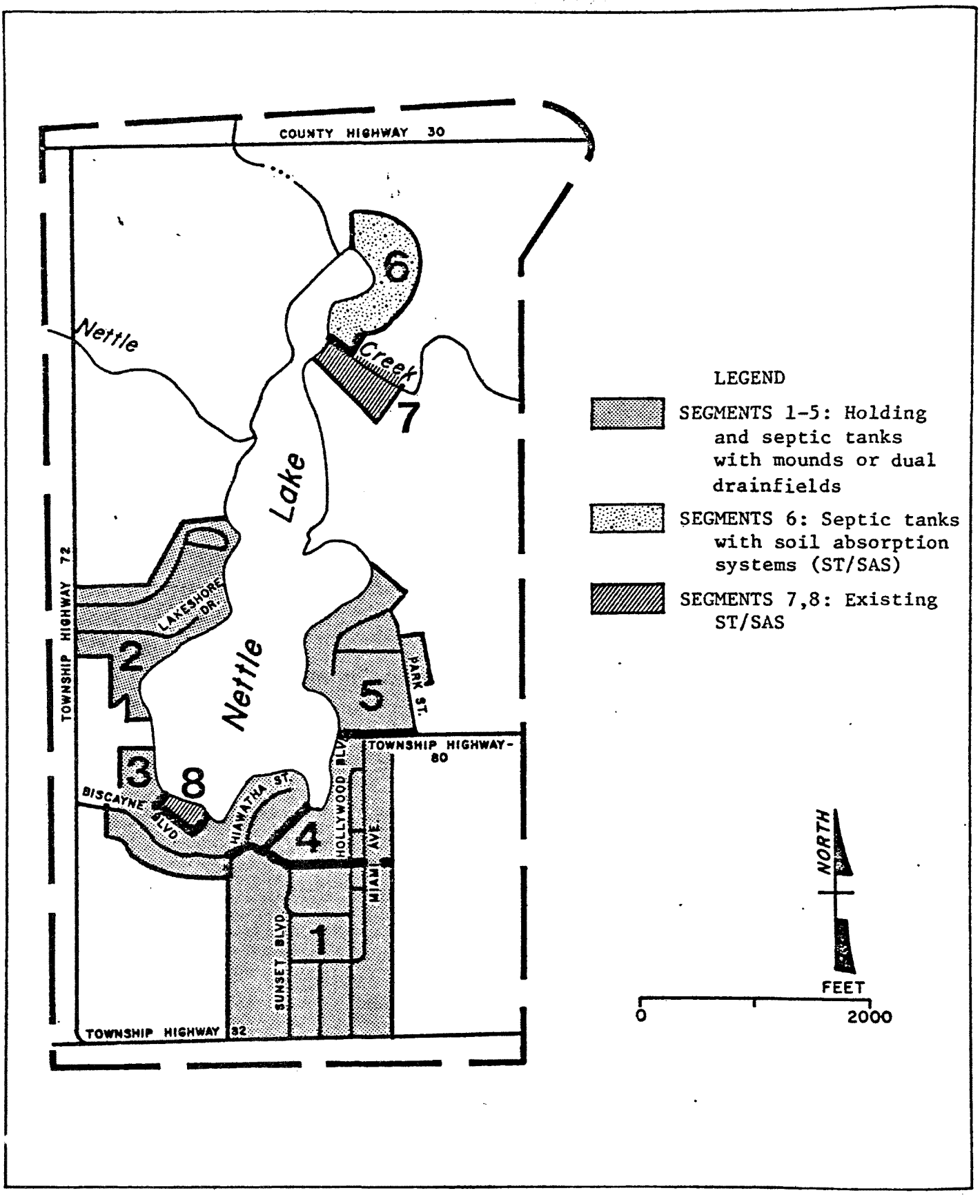


FIGURE IV-11 NETTLE LAKE: EIS ALTERNATIVE 7

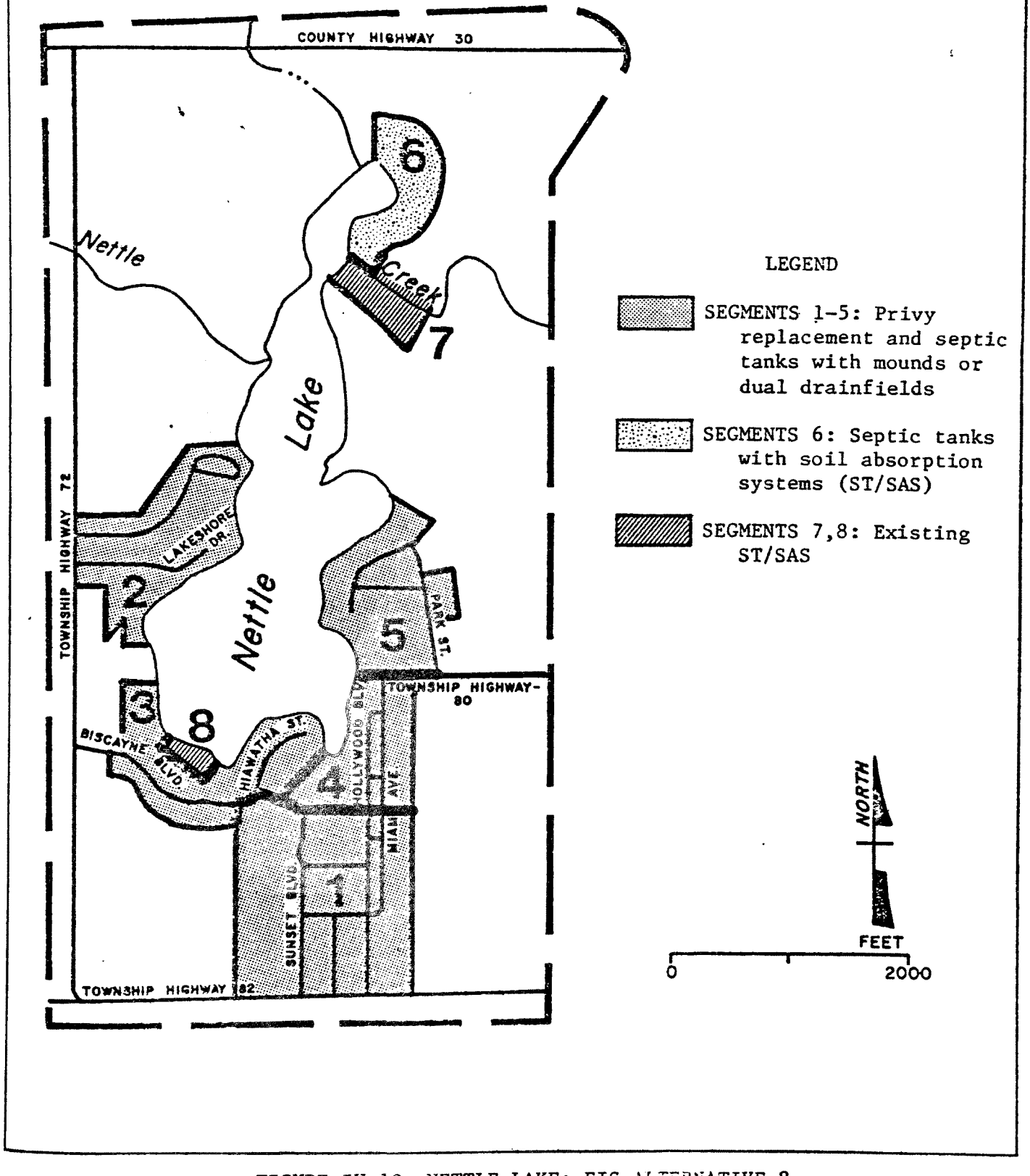


FIGURE IV-12 NETTLE LAKE: EIS ALTERNATIVE 8

tive offers the greatest flexibility for planning for the future and the least flexibility for future growth. Conversely, the Facility Plan Proposed Action offers the least flexibility for planning for the future and the greatest flexibility for future growth.

1. NO ACTION

By maintaining the status quo, the No-Action Alternative provides the greatest flexibility in planning for the future. Conversely, the flexibility for accommodating future growth is minimal because no action would be taken that would permit progress in that direction.

2. FACILITIES PLAN PROPOSED ACTION

This alternative offers good flexibility for growth; as long as land is available, aerated lagoons can be expanded to accommodate increased flows relatively easily. Flexibility for future growth is, however, reduced somewhat because the entire Proposed Service Area is sewered. Greater flexibility for future expansion is usually available with alternatives that require a smaller initial commitment of resources.

3. EIS ALTERNATIVE 1

Because of the similarity between Alternative 1 and the Facilities Plan Proposed Action, this alternative similarly offers high flexibility in accommodating future growth by employing cluster systems in Segment 2. By retaining septic systems in Segment 6, less growth is possible than would be expected with the Facilities Plan Proposed Action. To this extent, the flexibility in planning for the future has been increased in Alternative 1 relative to the Facilities Plan Proposed Action.

4. EIS ALTERNATIVE 2

EIS Alternatives 1 and 2 are essentially identical differing only in the point of discharge of treated wastewater. Consequently, the flexibilities of the two alternatives are also quite similar. The flexibility of EIS Alternative 2 to accommodate future growth is high, and there is somewhat limited flexibility in planning for the future, though, like Alternative 1, it is greater than that of the Facilities Plan Proposed Action. The changed point of discharge is not expected to appreciably alter these flexibilities.

5. EIS ALTERNATIVE 3

Because EIS Alternative 3 is similar to Alternative 1, differing only in the type of collection system, the flexibilities of the two alternatives are also similar. Ability of the alternative to accommodate future growth depends more upon the layout of the collection system than upon the type of collection. Since the layouts of the two alternatives are virtually identical, the flexibilities of each are comparable.

6. EIS ALTERNATIVE 4

Since the only difference between Alternative 4 and Alternative 3 lies in the point of discharge of treated wastewater, there is no appreciable difference in the flexibilities of the two alternatives.

7. EIS ALTERNATIVE 5

EIS Alternative 5 differs from Alternatives 1 to 4 and the Facilities Plan Proposed Action in the method of wastewater treatment. Where the previous alternatives proposed aerated lagoons for treatment, EIS Alternative 5 would employ rapid infiltration and recovery wells. The use of land application for treatment provides somewhat greater flexibility to accommodate future growth than aerated lagoons. This is because it is easier to expand the capacity of a land treatment facility than to expand an aerated lagoon. Consequently, if pressures for additional growth develop, a land treatment facility can be more easily expanded to meet the pressure. Conversely, this decreases the flexibility to plan for the future. This alternative's flexibility for growth, while higher than those of EIS Alternatives 1 to 4, is lower than that of the Facilities Plan Proposed Action because of the decentralized systems that would serve Segments 2 and 6 in Alternative 5. Its flexibility for future planning is higher only than the Facilities Plan Proposed Action.

8. EIS ALTERNATIVE 6

Because of the similarity between Alternative 6 and Alternatives 7 and 8, this alternative offers high flexibility in planning for the future. By providing cluster systems in Segment 2, the flexibility to accommodate future growth is somewhat greater than for Alternatives 7 and 8.

9. EIS ALTERNATIVES 7 and 8

Alternatives 7 and 8 offer the most decentralized approach of all wastewater management plans evaluated in this EIS and thus the most flexibility for future planning. Lacking centralized collection and treatment facilities for present and future residents, they are the least flexible of all alternatives in terms of accommodating future growth.

D. COSTS OF ALTERNATIVES

Project costs were grouped by capital expenses, operating and maintenance expenses, and salvage values of the equipment for each alternative. A contingency fund amounting to 25% of capital and 20% of salvage value was included to provide for such expenses as engineering and legal fees, acquisition of rights-of-way, and administration. The assumptions used in the analyses are described in Appendix I-1. Detailed costs for each alternative are presented in Appendix I-2.

Table IV-2 summarizes present and future project costs for each of the alternatives. The analyses of total present worth and annual equiv-

Table IV-2

COST-EFFECTIVE ANALYSIS OF ALTERNATIVES

	FACILITIES PLAN PROPOSED ACTION	EIS 1	EIS 2	EIS 3	EIS 4	EIS 5	EIS 6	EIS 7	EIS 8
Present Project Cost (x$1,000)	1,976.6	1,885.7	1,885.2	2,121.2	2,120.7	2,308.0	1,287.3	1,059.2	557.1
Future Project Constuction Costs (x$1,000/yr)	2.2	3.7	3.7	5.5	5.5	3.7	4.3	3.2	3.2
Total Present Worth (x$1,000)	1,842.5	1,904.9	1,896.3	2,339.9	2,331.3	2,334.3	1,599.7	1,394.3	796.5
Average Annual Equivalent Cost (x$1,000)	168.8	174.5	173.7	214.3	213.5	213.8	146.5	127.7	73.0

alent costs of each alternative are also included. (Debt service of financing the local share is not included.) A discussion of Federal and state cost-sharing and remaining local costs is presented in Section V.E.

E. RESOURCES NEEDED TO OPERATE AND MAINTAIN WASTEWATER FACILITIES (By Alternative)

The operation and maintenance (O&M) costs cover the costs of labor, electricity, fuel, chemicals, and materials needed to run wastewater facilities proposed by the alternatives. To enable direct comparison of resources needed to run these facilities, the annual labor, energy, and chemical/material/supply requirements of each alternative have been estimated and are shown in Table IV-3.

The labor required to operate and maintain the sewers and the sewage treatment plant proposed by the Facilities Plan appears to be less than the labor required for alternative facilities. However, note that the labor estimates for the Alternatives 7 and 8 and Alternative 6 are conservatively high because they are based in part on the assumption that 5 hours per system will be spent to monitor septic systems and to pump septic tanks (once per tank per 4 years). Also, note that use of flow reduction devices lowers the labor required to operate the Facilities Plan Proposed Action facilities.

The energy required to collect and to treat area wastewater is less for Alternatives 7 and 8 and Alternatives 5 and 6 than for remaining alternatives. The Alternatives 6, 7, and 8 rely on extensive use of on-site wastewater systems, which generally require less energy to operate than centralized treatment facilities. (Note, however, that the energy requirements shown for these alternatives do not include energy required to haul septage and holding tank wastes to a disposal site.) Similarly, Alternative 5 proposes use of rapid infiltration treatment, a process that requires less energy than the aerated lagoon process proposed by remaining alternatives. As was the case with labor, use of flow reduction devices lowers energy required to operate the Facilities Plan Proposed Action facilities.

Finally, although costs of chemicals, materials, and other supplies appear to be higher for Alternatives 5, 6, 7, and 8 than for remaining alternatives, the costs given for Alternatives 6, 7, and 8 are almost certainly overstated. These alternative costs are for chemicals, materials, and supplies needed to treat holding tank wastes at a treatment plant (probably the Montpelier municipal plant), yet these costs are higher than costs shown for treatment of all area wastewater at a treatment plant. Therefore, these costs should be considered to be rough estimates only.

Table IV-3. Annual Resource Requirements by Alternative

RESOURCE	FPPA*	1	2	3	4	5	6	7&8	FPPA (reduced flow)
LABOR (manhours/yr.)	1,991	2,387	2,379	4,403	4,394	2,635	3,461+	3,573+	1,660
ENERGY• (kwh/yr.)	202,780	141,880	141,880	177,480	177,480	70,079	60,750	69,750	122,862
CHEMICALS, MATERIALS & SUPPLIES° ($/year)	2,421	1,954	1,954	1,954	1,954	3,037	5,350+	6,600+	1,757

* Facility Plan Proposed Action
• Not including energy used for pumping and hauling of septage and holding tank wastes, but including energy used for treatment of these wastes
o Not including materials needed for sewer or pump station maintenance
\+ These figures are conservatively stated

Table IV-4 Estimated Annual User Charges

Alternative	User Charges Per Household
Facilities Plan Proposed Action ----------	$335
EIS Alternative 1 ----------	$270
EIS Alternative 2 ----------	$325
EIS Alternative 3 ----------	$320
EIS Alternative 4 ----------	$361
EIS Alternative 5 ----------	$355
EIS Alternative 6 ----------	$376
EIS Alternative 7 ----------	$255
EIS Alternative 8 ----------	$110

Table IV-5 Total Local Share of Capital Costs (1979 Dollars)

Alternative	Local Share of Public Costs*	Local Share of Private Costs**	Total Local Share
Facilities Plan Proposed Action	396,271	540,212	936,483
EIS Alternative 1	126,255	349,504	475,759
EIS Alternative 2	344,200	537,504	881,704
EIS Alternative 3	325,110	537,504	862,614
EIS Alternative 4	289,149	537,504	826,653
EIS Alternative 5	270,059	537,504	807,563
EIS Alternative 6	392,717	537,504	930,221
EIS Alternative 7	90,446	291,984	382,430
EIS Alternative 8	83,568	1,320	84,888

* Includes percentage of costs not covered by the Federal grant (15% - 25%), operation and maintenance costs, debt financing and a reserve fund charge.

** Includes costs to be paid out-of-pocket by homeowner: gravity sewer house lateral or cluster system hook-up, indoor bathroom construction and water saving devices.

Table IV-6 Estimated Annual User Charges

Alternative	User Charges
Facilities Plan Proposed Action	335
EIS Alternative 1	270
EIS Alternative 2	325
EIS Alternative 3	320
EIS Alternative 4	361
EIS Alternative 5	355
EIS Alternative 6	376
EIS Alternative 7	255
EIS Alternative 8	110

TABLE IV-7

Total Local Share of Capital Costs
(1979 Dollars)

Alternative	(1) Local Share of Public Costs	(2) Local Share of Private Costs	(3) Total Local Share
Facilities Plan Proposed Action	396,271	540,212	936,483
EIS Alternative 1	126,255	349,504	475,759
EIS Alternative 2	344,200	537,504	881,704
EIS Alternative 3	325,110	537,504	862,614
EIS Alternative 4	289,149	537,504	826,653
EIS Alternative 5	270,059	537,504	807,563
EIS Alternative 6	392,717	537,504	930,221
EIS Alternative 7	90,446	291,984	382,430
EIS Alternative 8	83,568	1,320	84,888

APPENDIX F

COMMENT LETTERS

DELBERT L. LATTA
5TH DISTRICT, OHIO

COMMITTEES:
RULES
BUDGET

1.

Congress of the United States
House of Representatives
Washington, D.C. 20515

September 3, 1981

Mr. Valdas V. Adamkus
Acting Regional Administrator
U. S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, Illinois 60604

Dear Mr. Adamkus:

On behalf of Congressman Latta, who is presently in Ohio during the Congressional District Work Period, I want to acknowledge receipt of the draft of the Environmental Impact Statement on Alternate Waste Treatment Systems for Rural Lake Projects, for Williams County, Ohio.

I do want you to know that this statement will be brought to Congressman Latta's attention upon his return to Washington, and I know he will deeply appreciate your thoughtfulness.

With all best wishes, I remain

Sincerely yours,

Joan Southard

for:
DELBERT L. LATTA
Representative to Congress

JS/bk

2.

Sept 11, 1981

Dear Mr. Wojcik,

Regarding Wastewater Treatment Systems at Little Lake, Williams County, Ohio.

Thank you for notifying us of the meeting & changes.

We are unable to attend the meeting & would like to express our opinion that we

We welcome you at any time from EPA (or interested, like) to come visit our Little Lake property

F-1

3.

Swanton, Ohio
Sept. 17, 1981

Gene Wozcik, Chief E.I.S Section
Water Division

Dear Sir:

On the matter of the Draft E.I.S. We will be unable to attend this meeting of Oct. 2, 1981. As we have a Nephew getting married Oct. 3, and it is away.

I can not see how this will benfiet us. As we have our own leach bed and septic tank. When we put it in we had it inspected and OK and they are still giving us good working service.

We do not live at Nettle Lake. We are their only in the summer months, and not more then 2 to 3 days a week and some time not that. It is just my husband and myself. who uses the cottage.

We are both retired and live on a fixed income and this would be a added expense, and a burden to us.

We have worked hard to get this cottage, and hoped to be able to enjoy it, and do a littl fisking in our retirement days with out a lot added expense which we do not need. Things such as this makes it hard for us to have a cottage and be able to enjoy it.

My Husband is not able to do this kind of work any more. So while we were working, and could do this kind of work. we had every thing taken care of. So now we can set back, and enjoy the convenience of our cottage. A drilled well, Leach bed, and septic tank. So this is how we feel about the E.I.S

F-2

I check it out, I advise you if any thing has to be changed We feel our leach bed, septic tank & well & everything else is OK & up to par. If you can prove us different we would be in a position to change what need. We do not feel it is fair to any one to be slapped with the thing bill of thousands of dollars & who can afford that? We certainly can not.

Thank You,

Sincerely,
Mr. & Mrs. Eldon B. Webb
302 W. Capestrano Ave
Toledo, Ohio 43612

for Atternative Waste Water Treatment System for Nettle Lake. Why should we have to pay for some one else, who realy need this kind of service?

Sincerely Yours,

J.M.F. L.F.F.

Mr. & Mrs. John Faber

By: L.F.F.

Leone F. Faber

111 Dodge St.
Swanton, Ohio 43558

4.

1858 Patton Terrace
McLean, Va. 22101
September 24, 1981

Ms. Catherine Grissom Garra, Project Monitor
230 South Dearborn Street
Chicago, Illinois 60604

Dear Ms. Garra:

Having carefully read the impressive Draft Environmental Impact Statement on alternate waste treatment systems for Nettle Lake, a rural Ohio lake, I wish to submit my comments on it.

After considerable thought, it appeared to me that the fundamental issue of this project is the advisability of rural sewering. This Draft EIS presents an interesting and concise description of the subject on pp. 10-12. I believe the EIS would benefit by having this description directly at the beginning. The reader would then immediately see the larger picture into which the Nettle Lake problem fits. The issues listed as significant issues in the EIS are, in my opinion, subsets of this larger issue and should be treated as such by being discussed second. Growth is one of these offshoot issues. It seems to me that the writers of the EIS were unable to conceal their value bias against growth by using the adjective "induced" with it. (By "induced", something is less than "normal" or "natural".) I personally have this bias myself but it is not the same bias as that of U. S. policy which generally hails and encourages growth.

E-13

A second general comment concerns the need (as distinguished from want) for this project. Is it the local people who need it? The sanitary survey results would not indicate so as only 14% noted problems. The fact that others "may have considered these problems too routine to mention" would suggest that the need is not of grassroots origin. Further, if it were, some brief anec-

dotal material could easily have been included to document it. If it is not for the local people, is it to preserve the lake? Sanitary snooping and aerial photography failed to reveal seepage into the lake. Could the "need" be instead a "want" of politicians to see Federal dollars flow into the area? From the history beginning on p. 1, one might infer that to be the case.

In any case, the actions proposed seem to be way out of proportion to the need. (In fact, it seems remarkable that such a huge document as this EIS has been prepared for such a small problem in a small community.) Estimating from the data presented, there are perhaps a dozen residences which need alteration of their wastewater handling. Perhaps such simple ideas as pumping septic tanks before spring floods or temporarily relocating people during them could be considered.

This brings me to my third general comment. There seems to be almost a disdain for the local people. Who are they? One can piece together that they are not well off, are mostly in manufacturing and that many live in mobile homes and use privies but that leaves plenty of blanks. How do they cope with the situation? Do they visit relatives out-of-town when spring rains come? Do they want the sewer or any other form of outside intervention? Could they be contented as they are? The only part of the project that touched base with local people was the sanitary survey through the thorough well-written questionnaire in Appendix D. Perhaps the survey could have been educative as well with questions such as "Do you know what a composting toilet is?", etc. In that way people could have been thinking about their choices well in advance of having to decide. Some very good ideas for involving local people are tucked away nearly at the end of the document (p. 167). These should be expanded.

My fourth general comment is that there is a good selection of alternative technologies considered and discussed, including conservation.

My next set of comments regards the document itself more than the problems it addresses. I would like to see a human element enter more in the introduction. Who are the people? How do they live? What is it like to live on Nettle Lake? My guess is that the drawing on the front cover is not representative, or is it? How about a photo or two to set the scene?

Second, I would suggest indentation and/or different size lettering to set off headings, subheadings, etc. These are difficult to follow when neatly lined up in a column. I had to refer back to the table of contents constantly.

Third, the graphics are abundant, pleasant, and easy to read with a few exceptions. Two critical tables, IV-1, p. 112, and VI-1, p. 160, which summarize pages and pages of narrative are done in fine print. They should be pullout pages or printed over several pages. The impact matrix, pp. 153-7, could be moved to the beginning of the chapter and be followed by a discussion of major points. Further, I'd suggest that the column "Impact Description" be subdivided into the 8-10 alternatives so that it would be possible to see at a glance all the impacts of a selected alternative. Set up as it is, the table is conducive to one selecting an impact one is concerned about and checking to see which alternative would affect it the way one wishes. This could leave one blind to the other consequences of the alternative. Next, the maps which illustrate the alternatives are redundant. The differences should be highlighted, by color if possible. What strikes the reader is how they are the same rather than different.

Finally, there is a certain redundance in the document. Perhaps it could be streamlined a bit.

My third set of comments regards details that could be improved. I will list and discuss them in order by their page numbers.

i- a. DEIS is an unnecessary acronym. Draft EIS is short enough and more meaningful.

b. What is "Step 2"?

vi- Population numbers don't total up correctly.

xii- Impacts could be more concise and clear in a pictorial table.

xviii- "Septic" is inserted an extra time.

2- Include two or three major cities on the map of Ohio to show distance of Nettle Lake from metropolitan areas.

6- It should be spelled out explicitly and together in one place why the conclusions of the Browne and EPA studies differ.

15- Give the case study numbers. Nettle Lake has a #6 on the cover but it's never referred to again. This detail could help put Nettle Lake into perspective as part of a larger rural sewering question.

17- "Septic snooper" near the top of the page needs quotation marks and an asterisk.

18- List the criteria, then discuss them.

21- Where Indian mounds are mentioned, add "See Figure II-13".

57- The relationship between Northwest Township and the study area isn't clarified until here, rather late for getting one's bearings.

64- "Communications" is printed extraneously once in the table.

67- Since there's only one industrial/commercial site on the map, specify what it is.

72- Septic snooping was done in December instead of at spring flooding when it would have been most likely to pick up something.

89- It's rather late in the document to be defining centralized vs. decentralized.

116- Where is the rationale behind the eight subdivisions selected for all the alternatives? I could only figure out that 6 was soil suitable for soil absorption systems and that 7 and 8 were the camps but I couldn't find the basis on which the rest of the study area was cut up.

137- This graph is very technical. Also, the alternatives seem to be listed rather than in three positions on the graph.

150- The No Action alternative should definitely be included in these tables. It might show that even the recommended alternative, #8, is expensive.

162- a. The last item in the list doesn't seem to belong.

b. The statement about throwing conpost in the garbage reveals a lack of understanding of the purpose of a composting toilet. Why waste a waste? You're turning a waste into a resource this way. You'd pay for composted cow manure so why not use your own free manure?

165- Near the middle of the page, a comma is needed between "Step 2" and "the design period".

169, 171, 173- Chapters 7,8, and 9 could comprise one chapter which should come before, not after, the conclusions. As is, they physically appear to have no bearing on the conclusions.

Appendices- Several did not copy well.

I will close my comments with a short list of spelling errors.

xii- middle- "wasteswaters" for "wastewaters"

xvi- middle- "projecttions" for "projections"

xx- a. middle- "burder" for "burden"

b. near bottom- "seasional" for "seasonal"

95- top- "paritioned" for "partitioned"

153- near bottom of matrix in right column- "reducted" for "reduced"

I hope my comments will be useful to you and I hope that Nettle Lake and its residents will be benefitted by the great amount of work which has been expended for them in preparing this Draft EIS.

Respectively submitted,

Lynn Salvo

Lynn Salvo

United States Department of Agriculture

Soil Conservation Service

200 North High Street
Room 522
Columbus, Ohio 43215

September 28, 1981

Mr. Gene Wojcik
Chief, E.I.S. Section
Water Division
Region V, U.S., EPA
230 South Dearborn Street
Chicago, Illinois 60604

Dear Mr. Wojcik:

The draft Environmental Impact Statement for Alternate Waste Treatment Systems for Rural Lake Projects, Case Study Number 6, Williams County Commissioners, Nettle Lake Area, Williams County, Ohio, was directed to the U.S.D.A., Soil Conservation Service, Columbus, Ohio, for review and comment.

We have reviewed this document and have no major concerns with the document as submitted.

We appreciate the opportunity to review and comment on this project.

Sincerely,

Robert R. Shaw
State Conservationist

6.

Maumee Valley
Resource Conservation, Development
& Planning Organization

October 14, 1981

Gene Wojcik
Chief, EIS Section
Water Division
U.S. EPA
Region V
230 South Dearborn St.
Chicago, IL 60604

RE: Comments on Nettle Lake, EIS

Mr. Wojcik:

As the director of the Maumee Valley Resource Conservation, Development and Planning Organization, a multi-county planning organization, serving the Counties of Defiance, Fulton, Henry, Paulding, and Williams, I would like to comment on the Nettle Lake EIS. Our agency has been actively involved in 208 planning through a subcontract with the State of Ohio. As a part of our local 208 Planning Process an On-Lot Sewage Disposal Committee was formed. The Committee actively studied On-Lot Sewage Disposal problems and solutions for nearly a year and a half. A major issue of concern to the Committee was the high cost of provision of centralized treatment system in order to treat problem areas.

As a result of this concern the Committee did formulate alternative recommednations for dealing with local problem areas. These recommendations included: 1) The use of alternative and innovative treatment technologies in order to address pollution control, while limiting construction costs, and 2) The establishment of a management agency which would inspect and maintain individual or group treatment systems.

In conclusion, the recommendation selected for potential application to the Nettle Lake Area is generally supportive of the recommendations established by the On-Lot Sewage Disposal Committee. The only concern that arises from the proposed recommendation is that the operation of an On-Lot district.

F-9

MVRCD&PO · 1012 Ralston Avenue · Defiance, Ohio 43512 · Phone: (419) 782-4548

At the time of our study enabling legislation applying to the establishment and operation of an On-Lot Sewage Management District did not exist. Therefore, would you please inform me of any changes with regard to the enabling legislation in the State of Ohio.

Sincerely,

Dennis Miller

Dennis Miller
Director

DM/gv

7.

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION 5
18209 DIXIE HIGHWAY
HOMEWOOD, ILLINOIS 60430

October 16, 1981

IN REPLY REFER TO:

HEP-05

Mr. Gene Wojcik, Chief
EIS Section, Water Division
Environmental Protection Agency, Region V
230 South Dearborn Street
Chicago, Illinois 60604

Dear Mr. Wojcik:

The draft EIS for the alternate wastewater treatment system, Nettle Lake area, Williams County, Ohio has been reviewed with regard to effects on the adjacent roadways from the proposed alternates. The alternatives outlined do not appear to have any effect on the adjacent roadways. We, therefore, have no comments to offer on the draft EIS.

Sincerely yours,

James A. Walsh

James A. Walsh
Associate Regional Administrator
for Planning and Program Development

8.

OhioEPA

Re: Williams County
Nettle Lake
Sewerage

Mr. Gene Wojcik, Chief
EIS Section, Water Division
U.S. EPA - Region V
230 S. Dearborn Street
Chicago, Illinois 60604

October 16, 1981

Dear Mr. Wojcik:

In response to the draft EIS for Nettle Lake, we have the following comments:

1. Comments 1, 2, 3 & 4 in our letter of September 9, 1980, are still valid.

2. As noted in Table VI-1, Alternative 8 (the selected alternative) has the lowest reliability. We cannot in good conscience support a solution which will provide only a short term improvement. The holding tank-pump out portion of the selected alternative could have our endorsement if:

   a. there is County operation,
   b. the tanks are put on all residences, and
   c. provisions are made to treat the pumped out waste.

Yours truly,

Allen L. Rupp, P.E.
Wastewater Section Chief

AIR/jw

cc: Jack Hoogeveen, Public Wastewater Section
cc: Williams County Health Department

8-a.

OhioEPA

Re: Nettle Lake
Sewerage

U.S. EPA
EIS Section, Environmental
Engineering Branch
230 S. Dearborn
Chicago, Illinois 60604

September 9, 1980

Gentlemen:

Subsequent to the July 28, 1980 public meeting on the Nettle Lake EIS, we have the following comments:

1. We believe that the consultant's surveys were totally inadequate since they were made at times of low occupancy of the summer homes. We cannot understand why the "septic snooper" was used in December, the door-to-door survey was made in November and December, and the aerial "signature" photography study was flown in May. Obviously, a summer resort in northwest Ohio would only experience heavy use from Memorial Day to Labor Day.

2. From the information we received, the consultant apparently feels that the only environmental threat to the people using the lake is the phosphorous input. It is our opinion that in a lake where primary body contact is being made, the most important environmental concern should be with bacterial and viral contamination of the water. We feel that pathogenic contamination of the near shore areas does exist and the potential for the spread of waterborne diseases is great. We believe the people were misled at the public meeting and should have been more fully advised of the serious public health hazard that exists.

3. It also appears that the consultant is leaning toward upgrading existing individual sewage systems as the solution to all problems. Frankly, this is a non-solution for the following reasons:

   a. Many of the lots around the lake are so small the replacement of the existing leaching field or construction of a new one where none existed before would be impossible. On most lots, the water supply well is, or would be, too close to the sewage system.

F-8

b. Even if it would be possible to install new on-lot systems on the small lots, the severe soils would not permit a prolonged operating life. When second failures begin to occur, we will probably have to order sewers in the area.

c. Mound systems are also subject to eventual failure over a period of years and the replacement costs should be included in the cost of the project. It appears that the mounds are proposed in the flood plain area where their prolonged operation is doubtful following a severe flood.

d. The continued use of privies (if they are upgraded) may keep most of the sewage out of the lake, however, they do provide breeding places for flys and mosquitos and therein create additional public health hazards.

4. Inflation has increased so much in the last three years that no matter what the solution, the local share of the cost will probably be higher than if the project had proceeded with central sewers in 1977 when the EIS was initiated. Three years for an EIS on this small area seems to be an exceptionally long time.

5. Alternatives 1 and 7/8 do not appear to provide a plant for treating holding tank wastes.

In summary, from the information provided, we feel the surveys were improperly conducted, the serious public health aspects of the problem were ignored, and alternatives 1 and 7/8 provide only temporary solutions which will eventually result in a return of pathogens to the lake.

Yours truly,

Allen L. Rupp, P.E.
Public Wastewater Group Chief

ALR:sd

cc: Williams County Health Department
cc: Williams County Commissioners
cc: Representative Larry W. Manahan

9.

United States Department of the Interior

OFFICE OF THE SECRETARY
NORTH CENTRAL REGION
175 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604

ER-81-1807

October 20, 1981

Mr. Valdas V. Adamkus, Acting Regional Administrator
U.S. Environmental Protection Agency
Region 5
230 South Dearborn Street
Chicago, Illinois 60604

Dear Mr. Adamkus:

The Department of Interior has reviewed the Draft Environmental Impact Statement for Alternative Waste Treatment Systems for Rural Lake Projects, Case Study No. 6, Nettle Lake Area, Williams County, Ohio.

We believe that adequate treatment of fish and wildlife resources in the project area has been demonstrated in the document, and the alternative plan recommended will result in little or no damage to valuable wetlands adjacent to Nettle Lake.

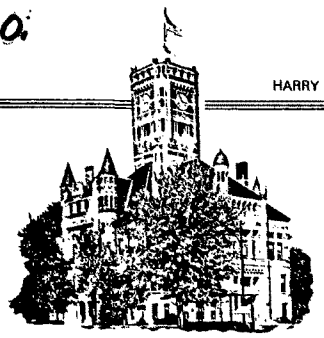
The Draft Environmental Impact Statement does not contain an inventory of mineral resources or mention mineral resources as a significant natural resource of the affected environment. Sand, gravel, and peat are produced in Williams County. The Environmental Impact Statement should include the above resource information. If the impact on in-the-ground mineral resources is considered minimal, the draft should contain a statement to that effect. Mention should also be made of construction material committed to the project.

Sincerely yours,

Sheila Minor Huff
Regional Environmental Officer

F-9

10.



HARRY L. OSBORN HOWARD W. SKILES MAURICE L. BRETTHAUER

WILLIAMS COUNTY
COMMISSIONERS OFFICE
BRYAN, OHIO 43506

October 20, 1981

Mr. Gene Wojcik
EIS Section, Water Division
United States Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, Il. 60604

Dear Gene:

Subject: Comments on Nettle Lake Environmental Impact Statement (EIS) - SWEE

We are taking this opportunity to comment on the Draft Environmental Impact Statement (EIS) for the Nettle Lake Area and explain our position on any further corrective action. Considering that the EIS did not document a severe water quality problem, that the Williams County Board of Health presently regulates the onsite systems in the subject area, and federal grant funding through the Environmental Protection Agency (EPA) currently is not available, we do not believe that any additional corrective action should be taken at this time.

The EIS stated that the majority of the existing onsite treatment systems were operating satisfactorily. It was also documented that flooding of the leach fields and pit privies of the residences during the spring floods was contributing to the increased nutrient input to the Lake revealed that the onsite systems were only responsible for 13 percent or less of the total nutrient load. It is therefore, our contention that improvement of the existing onsite systems will not significantly improve the water quality of Nettle Lake and could only impose an undue financial burden on the existing residences.

The Williams County Board of Health is responsible for investigating any reported sewage nuisances. Bans on installation permits may be imposed on any area that is currently unsuitable for installation of septic tanks with soil absorption fields. This existing management system may be used to control any future increase in point source pollutant loads to Nettle Lake and also can be used to correct any reported sewage nuesances.

An additional concern that was discussed at the public hearing was the possibility of a myriad of different individual mechanical units being operated and maintained by a County management system. Such a "solution" would create management problems by requiring excessive personnel expertise and spare parts to adequately maintain these many different types of units.

Following the public hearing for the EIS, held on October 2, 1981, we discussed the current funding status of the Nettle Lake area with Mr. Jack Hoogeveen, Construction Grants Coordinator with the Ohio Environmental Protection Agency (OEPA). We understand that the Nettle Lake Project will not be receiving fiscal year 1981 funding and with a 1981 priority list sequence number of 100 may not receive a grant in fiscal year 1981. We do not believe that the residents in the Nettle Lake area would be able to "handle" the financial burden of the EIS recommended plan without grant assistance.

Again, due to the above stated reasons, it is our intention to not pursue any additional corrective action for the existing onsite treatment systems at Nettle Lake. Please contact us if you need any additional clarification on our position. Based on these and other comments you have received, we request that you inform us of the final recommendations you expect to make in the final EIS before final publication.

F-10

Sincerely,

WILLIAMS COUNTY COMMISSIONERS

WWC/ngk

cc: Floyde Browne Associates, Limited
A. R. Rupp, NWDO/OEPA
Jack Hoogeveen, OEPA

11.

STATE CLEARINGHOUSE

30 EAST BROAD STREET • 39TH FLOOR • COLUMBUS, OHIO 43215 • 614 / 466-7461

81-10-22 P
08

Valdas V. Adamkus, Acting Reg. Administrator
U.S. Environmental Protection Agency
Region V, 230 South Dearborn Street
Chicago, Illinois 60604

RE: Review of Environmental Impact Statement/Assessment
Title: Draft Environmental Impact Statement for Alternative Wastewater Treatment Systems for the Nettle Lake Area in Williams County, Ohio.
SAI Number: 36-552-0005

Dear Mr. Adamkus:

The State Clearinghouse coordinated the review of the above referenced environmental impact statement/assessment.

This environmental report was reviewed by all interested State agencies. Attached is a list of the following species in and along the shores of Nettle Lake. It is the opinion of the Department of Natural Resources (DNR) that implementation of the preferred alternative will not have any significant adverse impacts on the natural resources of the Nettle Lake area. Please contact Michael Colvin of DNR if you have any further questions about the above or attached comments.

The Ohio Department of Health (DOH), being the state agency having primacy over domestic onsite systems in Ohio, has serious concerns regarding various issues raised and comments made in the Nettle Lake EIS. We request that a third-party review of this EIS be performed by a firm more familiar with Ohio laws and the actual conditions of the study area. Under the economic impact measures, wouldn't it be more desirable to pay 80% more for a technologically appropriate system rather than a minimal amount for a system that may function no better than the system that currently exists? Secondly, a code for onsite sewage disposal existed prior to 1974. The current code is known as Chapter 3701-29 of of the Ohio Administrative Code (OAC) which contains Rules 3701-29-01 through 3701-29-21, OAC. A holding tank is not a wastewater treatment system and can not be included in the code. Also, is there a reason that enforcement of existing Ohio laws and administrative codes and appropriate land subdivision requirements can not mitigate environmental hazards? The U.S. EPA should consider the results of local zoning to prohibit further development in the floodplains, the adoption of more stringent county subdivision regulations and increased enforcement of Ohio sanitary codes by the local health department. Why can't identified (if they are) malfunctioning on-site wastewater treatment systems be brought into compliance, thus preventing water pollution?

On-site systems improperly located in floodplains represent the same hazards as the current privies. On page 48, the Draft EIS states: "The Planning Director must require within flood prone areas new and replacement water supply systems to be designated to minimize or eliminate infiltration of flood waters into the systems." The only acceptable way of satisfying this requirement is to not locate any on-site or soil-dependent sewage treatment systems within a floodplain. Under Groundwater Contamination on page 78, wouldn't it be wise to sample for nitrates before ruling out aquafer contamination? Were the residents questioned about illness and odors from their drinking water? In reviewing the various collection-systems, was consideration given to the effects of groundwater infiltration? The last three technologies listed on page 93 of On-lot treatment and disposal, are considered experimental systems in Ohio and would require special reviews before permitting their installation.

When we consider that (1) cost-effectiveness was used as a justification for doing an EIS despite the apparent compliance of the Facilities Plan, (2) the cost of on-site systems were arrived at without evaluating the individual lots and (3) no direct measurable effect has been shown as required to justify federal funding, we wonder why the No Action alternative wasn't selected. It is recommended that you contact the Ohio Department of Health to answer these and many other questions you may find in the attached comments.

F-11

Thank you for the opportunity to review this statement/assessment.

Sincerely,

Judith Y. Brachman

Judith Y. Brachman
Administering Officer

JYB:alf

cc: DNR, Mike Colvin
EPA, Beth Whitman
DOH, Bob Schutz

Received 5 Oct. 1981
Room 3941, 39th Floor
ANITA FRIES

STATE CLEARINGHOUSE ENVIRONMENTAL
IMPACT STATEMENT COVER SHEET

te Review Started 81-09-15 SAI Number 360552-0005
turn No Later Than October 12, 1981 Draft XX
Final ____
Summary, full copy to follow ____

escription Alternative Wastewater Treatment Systems for Nettle Lake Area in Williams Co. Ohio

Agency List:

Sent		Number of Copies	Returned
✓	Ohio Environmental Protection Agency Attn: Beth Wolfe	2	____
✓	Department of Natural Resources Attn: Mike Colvin	4	____
✓	Historic Preservation Office Attn: Bert Drennen	1	____
✓	Department of Transportation Attn: Helen Stone	2	____
✓	Department of Economic & Community Dev. Attn: Bob Freedman	2	____
✓	Department of Health Attn: Bob Schutz	1	____
✓	Department of Energy Attn: Chris Schlemmer	2	____
✓	Department of Agriculture Attn: Ed Kirby	2	____

____ No comment or further interest
____ Comments on overleaf
✓ Comments attached

RECEIVED
OCT 20 1981
State Clearinghouse
Budget & Management

Signature of Reviewer

ROBERT J. SCHUTZ
Name of Reviewer (Print or Type)

246 N. High Street
Post Office Box 118
Columbus, Ohio 43216
Telephone (614) 466-3543

JAMES A. RHODES
Governor

JOHN H. ACKERMAN, M.D., M.P.H.
Director of Health

12.

October 19, 1981

Re: Williams County (Ohio)
Nettle Lake Area
Alternative Wastewater
Treatment Systems
Draft Environmental
Impact Statement

Gene Wojcik, Chief
EIS Section
Water Division
U.S. Environmental
Protection Agency
Region V
230 South Dearborn Street
Chicago, Illinois 60604

F-12

Dear Mr. Wojcik:

Per Mr. Adamkus' letter dated August 28, 1981 which we received on October 5, 1981 regarding the above-referenced project we wish to make those comments which you will find on the attached pages. These comments should be viewed of paramount importance to this department.

We are appreciative of the current EPA Construction Grants Program requirements to review all cost effective systems, including onsite systems, as alternatives to conventional sewage collection and treatment systems, where such conventional facilities may be unrealistically expensive.

Notwithstanding our support of such alternative wastewater treatment system program, as the state agency having primacy over domestic onsite systems in Ohio, we have serious concerns regarding various issues raised and comments made in the Nettle Lake EIS. Perhaps these concerns could have been resolved had our department been notified of the study and involved in its development. This lack of notification and involvement is a courtesy we sorely missed.

Re: Williams County (Ohio)
Nettle Lake Area
Alternative Wastewater
Treatment Systems
Draft Environmental
Impact Statement

As a final thought, we request that a third-party review of this EIS be performed by a firm more familiar with Ohio laws and the actual conditions of the study area. This seems particularly necessary due to some of the inappropriate comments in the draft EIS.

We trust that our comments at this late stage will receive some consideration.

Very truly yours,

Robert J. Schutz

Robert J. Schutz, P.E., R.S.
Chief Engineer
Bureau of Environmental Health

RJS/km

Copy Furnished:

John Frazier, Chief, Bureau of Environmental Health, ODH
Judith Brachman, Administrator, State Clearinghouse
Greg Binder, Chief, Office of Construction Grants, Ohio EPA
Ernie Rotering, Chief, Office of Water Pollution, Ohio EPA
John H. Cousins, Chief, Division of Water, ODNR
Glen Hackett, Head, Private Water System and Household Sewage Disposal Unit, ODH

Enclosures

SUBJECT: A-95 SAI #36-552-0005
Williams County
Northwest Township
Nettle Lake ARea Alternate
Waste Treatment Systems
Environmental Impact Statement
(Draft)

APPLICANT: U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, Illinois 60604

COMMENTS FOR THE STATE CLEARINGHOUSE:

We recommend that this draft environmental impact statement (EIS) not proceed to a final EIS until additional study has been undertaken and the concerns directed to the applicant have been satisfactorily addressed.

Further, we strongly recommend that this draft EIS be submitted to a comprehensive review by an independent organization familiar with the performance of environmental assessments, with Ohio's sewage disposal regulations and with the actual environmental conditions of the study area.

At the very least, the U.S. EPA should conduct a meeting with the Ohio Clearinghouse and the Ohio review agencies to discuss the draft EIS before proceeding further.

F-13

COMMENTS FOR THE APPLICANT:

page iii, Legal Implementation

The first sentence is incorrect and should be discussed Ohio EPA and Ohio Department of Health officials at least.

page vi, Cost Effectiveness

We were of the understanding that the Facilities Plan Proposed Action was within the cost-effectiveness criteria of PRM 78-9 and therefore not a viable EIS issue. Were we mistaken?

page viii, Environment-Soils, Sentence 4

If the present systems are so effective why is any action or grant necessary?

Surface Water Resources, Paragraph 2

Using the strict definition of a 100-year flood plain we concur that a 1% chance of flooding in any year may be interpretated; however, are we supposed to believe that flooding only occurs that frequently in actuality?

page xii, EIS Alternative 7

Is "elevated sand mound" absorption now a recommended design for floodplains? The same question applies to "holding tanks."

EIS Alternative 8

How does seasonal pumping of vault toilets prevent flood water contamination?

Key Impacts of the Alternatives. Surface Waters

We were of the belief that exposure to disease organisms, either directly or through insect vectors, is a question, not eutrophication.

page xiii, Floodplain Impacts Sentence 4

This is totally unrealistic. How do you define and enforce temporary limitations?

Sentence 7 (final)

We disagree with conclusion. Onsite systems improperly located in floodplains represent the same hazards as the current privies.

Economic Impacts

Wouldn't it be more desirable to pay 80% more for a technologically appropriate system rather than a minimal amount for a system that may function no better than what currently exists?

Page 1-6, History of the Construction Grant Application

Wasn't it deemed appropriate for the contractors to contact the state and local health departments?

Page 21, Physiography Sentence 2

Is the reference to "900 feet msl" correct? We note in Figure II-1 that the lake surface is 945 feet msl.

Page 42, Bacteria Paragraph 2

As stated, the bacterial sampling was inadequate, but does not appear to justify any action for the area. Is an appropriate sampling program going to be utilized for the final EIS?

Page 44, Table II-7

The results listed are not indicative of a "direct measurable effect" upon which to justify any action.

Page 48, final paragraph

The only acceptable method of satisfying this requirement is to not locate any on-site or soil-dependent sewage treatment system within a floodplain.

Page 68, c. Future Land Use, Paragraph 2

Is there a reason that enforcement of existing Ohio laws and administrative codes and appropriate land subdivision requirements can not mitigate environmental hazards? Why can't identified (if they are) malfunctioning on-site wastewater treatment systems be brought into compliance, thus preventing water pollution?

Page 70, Special Studies

What constituted "failing" in the three studies?

We assume that references to SAS are the same as DF, since the terms seem to be used interchangably.

Page 73, c. Nettle Lake Construction Grant Sanitary Survey, next to the last sentence.

How did the survey suggest that backup, ponding and odor problems were "common"?

Page 75, COMPLIANCE WITH THE SANITARY CODE.

A code for onsite sewage disposal existed prior to 1974. The current code is known as Chapter 3701-29 of the Ohio Administrative Code (OAC) which contains Rules 3701-29-01 through 3701-29-21, OAC.

A holding tank is not a wastewater treatment system and therefore is not included in the code.

Page 77, Undersized Drainfields.

This is an accurate statement, but other comments in the EIS seemed to forget it.

Page 78, Groundwater Contamination.

Wouldn't it be wise to sample for nitrates before ruling out aquafer contamination? Were the residents questioned about illness, diarrhea, or odors from their drinking water?

Page 79, Odors.

Was the surveyor convinced that the odors were produced by the onsite systems since it has been stated that this is a eutrophic lake?

Page 81, Paragraph 3.

Again we note that the centralized facilities including the various alternative collection systems seem to have met the economic criteria for funding.

Page 87, COLLECTION.

In reviewing the various collection-systems, was consideration given to the effects of groundwater infiltration?

Page 93, On-lot treatment and disposal.

The last three technologies listed under this heading are considered experimental systems in Ohio and would require special reviews before permitting their installation.

Page 94, next to last paragraph

The major problem is the innundation of any onsite system by flood waters.

Page 99, ON-SITE SEPTIC SYSTEMS, last paragraph.

We can only ask what? to this paragraph as we can not determine what the restriction would be.

Page 101, Grinder Pumps, Paragraph 2.

You might be surprised to find that water closets and bathtubs still function during power outages depending upon the water supply's storage capacity.

Page 103, Sand Mounds.

Not in all cases. Even the Wisconsin folks who developed this design stress that it is not recommended in floodplains.

Alternative Toilets, second sentence.

This statement is inconsistent with our experiences. Nearly all demonstrations of alternative toilets which we have permitted, have been removed by the owners voluntarily.

Page 109, Design of the Management Organization.

We disagree with the management agency choice. Even the County Sanitary Engineers of Ohio which is an arm of the County Commissioners Association of Ohio has expressed the inappropriateness of such designation. This is not a criticism of the Williams County Board of Commissioners in any way; merely a recognition of organization capabilities as enabled in Ohio.

Agency Start-Up.

This is unnecessary in Ohio because the structure of local health departments under the local boards of health already exist in Ohio.

Page 143, FLOODPLAINS, Primary Impacts.

Again we stress that soil absorption even when preceeded by a "watertight" septic tank can not function when innundated by flooding or high water table.

Page 149, Calculation of User Charges, third paragraph.

How can the user charge be evaluated if the costs vary as expressed in your first sentence.

Do these costs assume public ownership of mounds and ST/SAS?

Page 152, MITIGATIVE MEASURES.

We didn't find a significant financial burden by any alternative using the U.S. EPA criteria.

COMMENTARY:

This document appears to be a justification for federal funding rather than a statement of environmental impact.

We believe that it would be appropriate for the U.S. EPA, Region V Project Officer to do the following:

1. Have this draft EIS reviewed by an appropriate Environmental Assessment organization such as Battelle Memorial Institute;

2. Hold a meeting with the State (Ohio) Clearinghouse and interested Ohio reviewers to discuss the facilities plan and EIS in more detail;

3. Consider the results of local zoning to prohibit further development in the floodplains, the adoption of more stringent county subdivision regulations and increased enforcement of Ohio sanitary codes by the local health department.

When we consider that (1) cost-effectiveness was used as a justification for doing an EIS despite the apparent compliance of the Facilities Plan, (2) the costs of on-site systems was arrived at without evaluating the individual lots and (3) no direct measurable effect has been shown as required to justify federal funding, we wonder why the No Action alternative wasn't selected.

We have other review comments, but these constitute the most significant.

Robert J. Schutz, P.E., R.S.
Chief Engineer

10/15/81-km

13.

THE OHIO DEPARTMENT OF NATURAL RESOURCES

Memo

TO: Judith Y. Brachman, Administering Officer
State Clearinghouse

DATE: October 15, 1981

FROM: Roger D. Hubbell, Chief
Office of Outdoor Recreation Services

RE: COMMENTS SAI #36-552-0005

Attached are the Department of Natural Resources comments on the Draft Environmental Impact Statement entitled Alternate Waste Treatment Systems for Rural Lake Projects, Nettle Lake Area, Williams County. The transmittal form for this project has been lost.

If you have any questions, please contact Michael Colvin, Environmental Review Coordinator at 614-466-8387.

RDH:sjk

Enc.

13-a.

ODNR

Ohio Department of Natural Resources

Fountain Square · Columbus, Ohio 43224 · (614) 466-3770

October 15, 1981

COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENT
ALTERNATE WASTE TREATMENT SYSTEMS FOR RURAL LAKE PROJECTS
NETTLE LAKE AREA, WILLIAMS COUNTY, OHIO
USEPA, JULY 1981
SAI #36-552-0005

The Ohio Department of Natural Resources has completed a review of the above-referenced document and concurs with it's findings and recommendations.

In addition to the fish, wildlife and plant species listed in the DEIS, the Natural Heritage Program data base records the occurence of the following species in and along the shores of Nettle Lake:

Notropis heterodon* - Blackchin Shiner OBSX: in 3-4 ft. of water at old launch ramp, SW. Corner of Nettle Lake, 10/80.

Notropis emiliae* - Pugnose minnow OWE, OBSE: off gravel bar, east side of Nettle Lake, 10/80

Etheostoma exile - Iowa darter OWE, OBSE: gravel bar, east side of Nettle Lake, 10/80

Najas flexilis - Slender Naiad OPP; west shore of Nettle Lake, 7/71

Pilea fontana - Clearweed OPP; sandy-muddy SW. shore of Nettle Lake, 9/63

Potamogeton praelongus - White-stem Pondweed OPE: SW. end of Nettle Lake, 9/69

Sparganium chlorocarpum - Small Burr-reed OPE: shallow water along SW. shore of Nettle Lake, 9/69

Ambystoma tigrinum - Tiger Salamander OBST: W. side of Nettle Lake in woods, 7/73

SAI #36-552-0005 COMMENTS CONTINUED

Platanthera psycodes - Small Purpled Fringed Orchid
OPT; moist woods around Nettle Lake, 8/58.

Potamogeton amplifolius - Large-leaved Pondweed
OPP; shallow water along edge of Nettle Lake, 9/69

It is the opinion of the Department that implementation of the preferred alternative will not have any sigificant adverse impacts to the natural resources of the Nettle Lake Area.

If you have any questions, please contact Michael Colvin, Environmental Review Coordinator, Office of Outdoor Recreation Services, 614-466-8387.

* Notropis heterodon, collected 10/80, has been extirpated from Ohio since 1957. The population of Notropis emiliae at Nettle Lake is considered to be the best in the state, according to staff zoologist, Dan Rice. The fish species in this list all require submerged aquatic vegetation and relatively clean water. The improvement of the waste treatment systems would be beneficial to water quality. The Nettle Lake study discusses increasing population growth. Care should be taken to prevent shoreline alterations by landowners that would destroy the gravel bars and aquatic vegetation.

OBSX--Extirpated (Ohio Biological Survey)
OWE - Endangered Wildlife
OBST - Threatened Wildlife (Ohio Biological Survey)
OPE - Endangered Plant
OPT - Threatened Plant
OPP - Potentially Threatened Plant

14.

Johnson & Anderson, Inc.

Consulting Engineers

2300 Dixie Highway
Pontiac, Michigan 48055
Telephone: 313-334-9901

October 23, 1981

Ms. Catherine G. Garra, Project Monitor
U.S. Environmental Protection Agency - Region V
230 South Dearborn Street
Chicago, Illinois 60604

Re: Draft Environmental Impact Statement
Case Study Number 6
Nettle Lake Area, Williams County, Ohio

Dear Ms. Garra:

Thank you for sending me a copy of the Draft EIS for review. Since I received it on October 22, it was obviously impossible to send you my comments by September 28, as the Draft requested. However, I would still like to remark on the project in hopes that answers may help me in my work.

I am currently developing facilities plans for two townships on the suburban fringe of Detroit, specifically in northwestern Oakland County. As the study areas encompass more than two dozen inland lakes, I have found your case studies on "Alternative Wastewater Treatment Systems for Rural Lake Projects" to be very valuable. We have used door-to-door sanitary surveys, wellwater quality sampling, and the septic leachate detection survey techniques in our attempts to document water pollution and public health problems from septic systems per PRM 79-8. I believe that the EPA made their point in the first case study on Crystal Lake that these techniques are required for adequately documenting the need for the project. Therefore, though interesting, I fail to see why the EPA is planning to conduct six other (very similar) rural lake EIS's, rather than requiring the communities' consultant to do this work.

Each of the three EIS's that I've seen (Crystal Lake, Otter Tail Lakes, and now Nettle Lake) are almost identical in approach, and are identical in recommended actions. The recommendation for "site-specific environmental and engineering analysis of existing on-site systems throughout the proposed service area" has appeared in each EIS. This would seem a better topic for a case study rather than preparing three more EIS's providing virtually a repeat of approaches taken in the earlier works. Also, the application of the above-mentioned techniques to urban and suburban unsewered inland lake communities would provide more fruitful information.

Additionally, it doesn't appear that EPA is following the documentation of need for action requirements that appear in the Region V guidance entitled "Site Specific Needs Determination and Alternative Planning for Unsewered Areas." The supplemental studies that were conducted for determining pollution problems comprise a work program that would appear to satisfy both Phase 1 and Phase 2 representative sampling work conducted in Step 1. Based upon this data, the guidance calls for a designation of residences into one of the following categories:

1. Residences having adequate treatment facilities;
2. Residences having failing or inadequate systems that need on-site upgrading with either a standard septic tank/filter field or with a non-standard on-site system;
3. Residences having failing or inadequate systems that are not capable of on-site upgrading.

This designation was not performed, however, and instead all residences in the proposed service area are recommended to receive detailed site-specific analysis in Step 2. It seems to me that the guidance allows for only a 15-30% analysis in Step 1, accompanied by the above-mentioned classification. However, the guidance does not explain if this classification is supposed to cover residences on a subdivision, street-by-street, or individual basis. Perhaps some clarification can be made on this point.

I also think that the Final EIS should explain, in much more detail, how the cost estimate for at least the recommended alternative was derived.

Finally, in Appendix G "Financing," it is stated that "Where population density is less than 10 persons per acre, it must be shown that new gravity collector sewer construction and centralized treatment is more cost-effective than on-site alternatives." Does that mean, conversely, that where population density is greater than 10 persons per acre, new gravity sewer construction does not have to be analyzed against on-site alternatives for cost-effectiveness?

I'm sure that answers to these comments will help me immensely in my facilities planning, and wish to thank you again for allowing me to comment on the report.

Sincerely,

JOHNSON & ANDERSON, INC.

Michael A. Czuprenski

Michael A. Czuprenski, P.E.
Project Manager

MAC:klp

ENVIRONMENTAL IMPACT STATEMENT

ALTERNATE WASTE TREATMENT SYSTEMS

FOR RURAL LAKE PROJECTS

In re: Draft EIS

Stenographic Report of Hearing
Held at Bryan-Montpelier Holiday
Inn Conference Room, adjacent to
Exit 2 of Ohio Turnpike,
Montpelier, Ohio

Friday, October 2, 1981,
2:17 o'clock p.m.

MEMBERS PRESENT:

CHARLES QUINLAN, Hearing Officer
CATHERINE GRISSOM GARRA, Project Officer
J. ROSS PILLING, II, WAPORA Consultant

ALSO PRESENT:

MAURICE BRETTHAUER, Williams County Commissioner
HARRY OSBORN, Williams County Commissioner
HOWARD SKILES, Williams County Commissioner
JACK HOOGEVEEN, Coordinator from Ohio EPA
LARRY MANAHAN, Representative

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ENVIRONMENTAL IMPACT STATEMENT

ALTERNATE WASTE TREATMENT SYSTEMS

FOR RURAL LAKE PROJECTS

In re: Draft EIS

Stenographic Report of Hearing
Held at Bryan-Montelier Holiday
Inn Conference Room, adjacent to
Exit 2 of the Ohio Turnpike,
Montpelier, Ohio

Friday, October 2, 1981,
7:10 o'clock p.m.

MEMBERS PRESENT:

CHARLES QUINLAN, Hearing Officer
CATHERINE GRISSOM GARRA, Project Officer
J. ROSS PILLING, II, WAPORA Consultant

ALSO PRESENT:

MAURICE BRETTHAUER, Williams County Commissioner
HARRY OSBORN, Williams County Commissioner
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