ENGINEERING REPORT
1985

SANITARY SEWER EXTENSIONS

INTO THE

SETTLEMENT OF ASHVILLE

IN THE TOWNS OF

NORTH HARMONY & BUSTI
CHAUTAUQUA COUNTY, NEW YORK

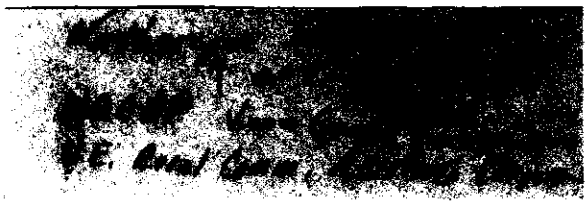
SOUTH AND CENTER CHAUTAUQUA LAKE SEWER DISTRICT

Engineering Report

PLAN OF STUDY - FEASIBILITY STUDY FOR 201 WASTEWATER FACILITIES

VILLAGE OF ASHVILLE

South and Center Chautauqua Lake Sewer Districts



December 1985

Project 710-05-1

MALCOLM PIRNIE

ENVIRONMENTAL ENGINEERS, SCIENTISTS & PLANNERS

3/27/01 Steve Johnson - CCHD said malfunctioning on-lot systems "fixed" by late 1980s in Asheville - we would find it difficult to justify the area has a high malfunction rate now in his opinion. Note: some fixes were "marginal" due to soils, lot size, etc!

INDEX

INDEX (continued) Page No.

LIST OF TABLES

LIST OF EXHIBITS

APPENDICES

1.0 INTRODUCTION

This Plan of Study - Feasibility Study preliminarily addresses the need for and the economics of public sewers in the Ashville area of the South and Center Chautauqua Lake Sewer Districts.

This study will also include an outline scope, schedule and associated costs for preparing a Facilities Plan in conformance with the EPA Construction Grants Program.

2.0 FACILITY PLANNING AREA

2.1 Boundaries and Political Jurisdictions

The Hamlet of Ashville is located in central Chautauqua County on the south side of Chautauqua Lake in Western New York as shown on Figure 1.

The Facility Planning Area encompasses the northwest portion of the Town of Busti and the southeast corner of the Town of North Harmony. The planning area includes Maple Street, Hoag Road, NYS Rt. 474, Stone Ledge Road and Fardink Road. These areas are shown in Figure 2.

Those parts of the towns which presently have sewers under construction are not included in this study.

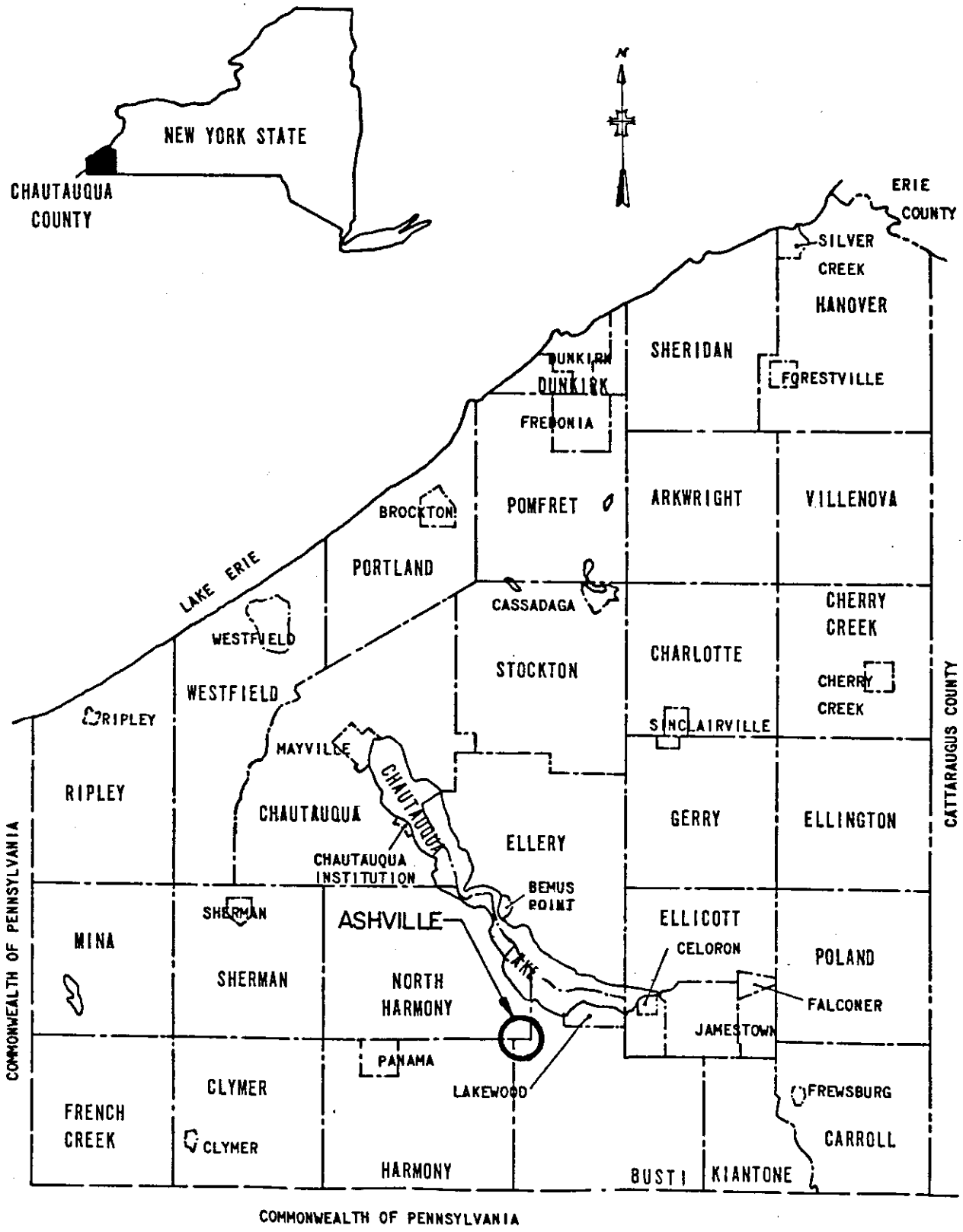
The entire service area spans approximately 1.5 square miles and is located within the South Chautauqua Lake Sewer District.

2.2 Planning Area Population

The current population of the Facility Planning Area is estimated to be 994 persons. This is calculated by assuming an average of 3.5 persons per house and 284 homes. The Chautauqua County Health Department conducted a survey of the area and identified 250 homes. This Plan of Study - Feasibility Study identified 284 homes within the boundaries specified by the survey area.

Future development was estimated according to the Town of Busti and the Town of North Harmony zoning requirements. The Town of Busti "CR District" requires a minimum lot width of 250 feet on two acres of land for a structure to be built. The Town of North Harmony, Ashville Area, requires a minimum lot size of 20,000 square feet with the structure at least 10 feet from the property lines and at least 25 feet from the road right-of-way. For estimating purposes, the future development in the Town of North Harmony is assumed to be on 200-foot-wide lots. This is

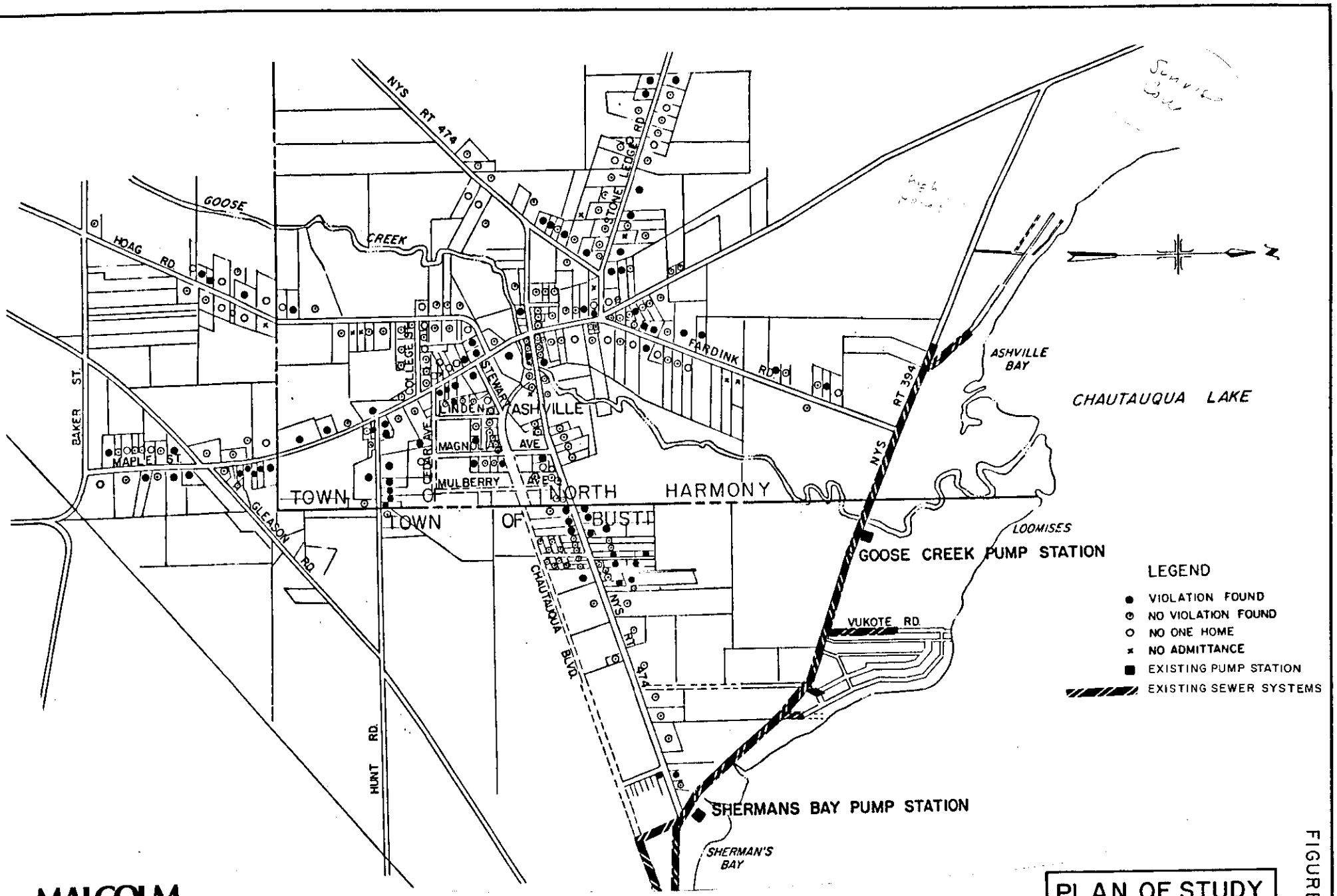
FIGURE 1



MALCOLM PIRNIE

PLAN OF STUDY
LOCATION PLAN

ASHVILLE, N.Y. NOVEMBER 1985



MALCOLM PIRNIE

PLAN OF STUDY PLANNING AREA

ASHVILLE, NY. NOVEMBER 1985

FIGURE 2

consistent with the existing average lot sizes in the Town of North Harmony. Future development in both towns was assumed to be along existing rights-of-way, only.

The following table illustrates the present and future homes in the listed areas along with their corresponding flows.

TABLE 1
ASHVILLE AREA - PRESENT AND FUTURE CONDITIONS

AREA	ACCUMULATED HOUSES PRESENT	FUTURE	FLOWS (GPM) PRESENT	FUTURE
Hoag...Maple...Stewart	106	156	61.83	86.45
Rt. 474 (East of Maple)	56	68	32.67	39.67
Fardink...Stone Ledge	122	146	71.17	80.91
	284	370	157.38	194.25 GPM
		MGD TOTALS:	0.227	0.280

The calculation for flow is based on the following:

Accumulated Flow (GPM)

$$Q = [\#\ \text{houses}] \times [3\ \tfrac{\text{people}}{\text{house}}] \times [70\ \tfrac{\text{GPD}}{\text{person}}] \times [\ \tfrac{1}{1440}\ \tfrac{\text{day}}{\text{min.}}\ ] \times [\text{peak factor}]$$

Where: Peak factor is based on # of houses:

Range of Units	Peak Factor
0 - 30	4.2
31 - 145	4.0
146 - 300	3.8
301 - 545	3.6
546 - 925	3.4
926 - 1515	3.2

2.3 Planning Entities

The South and Center Chautauqua Lake Sewer Districts will act as the Lead Agency for this project. The Districts' consultant will direct and coordinate the planning effort.

The Chautauqua County Departments of Health and Planning will be advised of the project as it progresses.

The New York State Department of Environmental Conservation (NYSDEC) and the United States Environmental Protection Agency (USEPA) will be conferred with on a regular basis to assure timely completion and approval of the Facilities Plan.

The District and its consultant will work with the Southern Tier West Regional Planning Board and the New York State Planning Clearinghouse to secure the necessary public notification and review system (A-95) approvals.

2.4 Supporting Documents

Among the reports and past studies to be utilized in the planning phase are:

- "Chautauqua County Health Department Private Water Sewage Disposal System Surveys", taken from 8/84 to 11/84.
- "Memorandum Regarding Ashville Sewer Survey", from Steven M. Johnson, Chautauqua County Health Department, November 19, 1984.
- "Memorandum Regarding Sewage Violations", from Steven M. Johnson, Chautauqua County Health Department, May 6, 1985.
- Ashville Area - Goose Creek Ditch Water Samples, from tests conducted 4/85 to 6/85.
- "Letter Regarding Ashville Sewage Violations", from Steven M. Johnson, Chautauqua County Health Department, October 2, 1985.

Copies of the above are included as Appendices B, C, D, E & F respectively.

2.5 Project Financing

Construction costs associated with the project are eligible for federal and state grants under the Clean Water Act. For this project, municipal bonds may be used to finance that portion of the project not financed by the USEPA and NYSDEC Grants.

Eligibility for funding under the Construction Grants Program is assumed to be 55% Federal funding level with an

additional 20% Federal funding for Innovative/Alternative (I/A) sewer systems. There will be no State funding for collection systems.

In order to determine the local cost to the individual user, the following must be evaluated utilizing the Districts' approved User Charge System:

1. The combined impact of the local share of the proposed project;

2. The local share of previously constructed facilities;

3. Expected operation and maintenance expenses of the WWTP and Collection System.

3.0 NATURE AND SCOPE OF PROBLEM

3.1 Existing Facilities

The homes in the Planning Area have private sewage systems. There is no public sewer system for the Ashville area.

Along Route 394, to the north and east of Ashville, a sewer system is under construction. Homes will be serviced by vacuum, low pressure and gravity sewers. Figure 2 illustrates the construction.

Two pump stations are also under construction nearby as shown in Figure 2. The existing Goose Creek Pumping Station is being modified into a vacuum pump station. It will be equipped with two pumps each rated at 415 GPM at 48 feet TDH for present conditions, and a future capacity of 590 GPM at 63 feet TDH. One pump serves as a 100% standby pump in both cases. This pump station is located just east of Goose Creek and north of Route 394.

The Sherman's Bay Pump Station was constructed as a conventional pump station in 1972 and modified as part of the present construction projects. It contains two pumps, each rated at 1200 GPM. The total capacity is 1200 GPM at 117 feet TDH for present conditions. Future capacity is 1670 GPM at 155 feet TDH. One pump serves as a 100% standby pump in both cases. The pump station is located at the eastern end of Route 474 at the intersection of Route 394.

The treatment plant in Celoron was designed for an average daily flow of 4.1 MGD with a peak hydraulic capacity of 10.25 MGD. Presently, the average daily flow is approximately 2.0 MGD.

The additional flow from the Ashville expansion would amount to 0.227 MGD under present housing conditions and 0.280 MGD under future flow conditions.

The Celoron treatment facility would not require modifications to handle the expansion into Ashville. Future flows from Ashville were incorporated into the original design of the Celoron Plant, therefore, additional modifications are not necessary.

3.2 Nature of the Problem

The Chautauqua County Health Department conducted a survey of the private sewage systems in the Ashville area from August 7, 1984 to November 8, 1984. Of the 197 homes surveyed, 39% were documented as having violations. The distribution of violations was fairly uniform throughout the survey area with no concentrations of specific problems.

These violations include blackwater discharges to the ground surface and into ditches and streams in the Ashville area. The blackwater discharges have been confirmed by introducing dye into toilets and then documenting the discharge from the failing septic system. Photographs of the blackwater discharges are shown in Figure 3.

In addition, it is likely that more sewage systems are in violation of sanitary regulations than have actually been documented. When dye tests are done to detect violations in individual systems, the dye does not surface because the clay soil drains so poorly. Failing septic systems are, therefore, difficult to detect.

Neither the lot sizes, topography nor soil conditions in Ashville lend themselves well to on-site systems or corrections of failing systems. The soil is primarily clay, with only 6 to 8 inches of topsoil. The water table varies in depth from about 20 inches to several feet below ground surface in areas of higher elevation. As such, many of the septic systems are located within the water table. Discharge into the water table is a violation of sanitary code regulations in this area. Failing septic systems also threaten water supply, as many homes depend upon private wells for their drinking water.

Surface water sampling from Goose Creek and its tributaries in the area as far downstream as Chautauqua Lake was also a part of the survey. Water samples were analyzed for suspended solids, dissolved solids, BOD_5, ammonia and biological contaminants. The results of the analyses were compared with typical concentrations of these constituents in untreated domestic sewage. The results

ASHVILLE, N.Y. SEPTEMBER, 1985

ASHVILLE, N.Y. SEPTEMBER, 1985

MALCOLM PIRNIE

PLAN OF STUDY
PHOTOGRAPHS OF
BLACKWATER DISCHARGE

ASHVILLE, N.Y. NOVEMBER, 1985

are presented in Table 2. The concentrations of all the constituents in four of the samples verify that the sample was untreated sewage. The other samples have at least two constituents which are typical of untreated sewage. These results confirm the blackwater discharge into the ground surface and into the ditches and streams in the area.

The blackwater discharges also have an adverse impact on Chautauqua Lake. The sampling from Goose Creek and its tributaries resulted in extremely high counts of fecal coliform, fecal streptococcus, and total coliform bacteria. The degradation in surface water quality can therefore be attributed to failing septic systems and raw sewage discharges. Appendices B, C, D, E & F present supporting documentation on the nature and extent of the problem in the Ashville area.

TABLE 2
RESULTS OF SURFACE WATER SAMPLING

	Date	Suspended Solids mg/l	Dissolved Solids mg/l	BOD_5 mg/l	Ammonia as NH_3 mg/l	FC/FS[1]
Untreated Domestic Sewage Concentration[3]						
Weak-Medium		100-220	250-500	110-220	12-25	
Creek, South of Goose Creek	1-May-85	6.4	354.6	4.1	0.1	67
Pipe into Goose Creek	"	45.8	161.2	1.7	0.88	7
Creek at rear of Sam & Steve Carlson's	"	12.4	301.6	54.0	0.1	8
Ditch at Steward & Linden	8-May-85	7405.0	1.0	960.0	2.8	TNTC[2]
Ditch - Rt. 474	"	93.6	357.4	4.9	3.1	TNTC[2]
Woods, from trailer court	"	2330.0	2984.0	2190.0	37.3	TNTC[2]
Ditch, West side of Magnolia	15-May-85	698.0	294.0	155.0	16.5	-
Creek, South side, Hunt Road	"	12.4	249.6	7.1	0.1	TNTC[2]
Creek, East side, Ashville School	"	5.8	285.2	4.0	0.1	19
Ditch, West Side, Brook St.	29-May-85	10785.0	660.0	900.0	61.4	TNTC[2]
Ditch, Rt.474, by cemetery	"	64.0	354.0	6.8	0.1	11
Ditch, So. Maple St., East side	"	2175.0	879.0	174.0	23.4	-
TOTAL SAMPLES COLLECTED		39	39	39	39	44
NO.WITHIN WEAK-MEDIUM SEWAGE RANGE		6	21	5	4	16

(1) FC/FS - Ratio of fecal coliform to fecal streptococci greater than 5 is indicative of human waste.
(2) TNTC - Too numerous to count
(3) From Metcalf & Eddy, Inc., "Wastewater Engineering, Treatment and Disposal," 2d ed., McGraw-Hill, New York, 1979.

4.0 TENTATIVE TREATMENT WORKS NEEDS

Tentative treatment works needs include providing a complete sewer system for the Ashville area to connect into the sewers presently under construction. The capacity will also accommodate future flows from expected population increases within the service area.

The Facility Plan will analyze all alternatives for Best Practicable Waste Treatment Technology (BPWTT) to determine the most cost-effective and environmentally sound solution to the problem.

4.1 Preliminary Evaluation of Alternatives

Several alternate systems may provide service to the Ashville area. The following sections give a brief description of each alternative that was evaluated and a preliminary cost estimate of each. Appendix G contains maps outlining services to be evaluated for each alternative.

4.1.1 Alternative #1 - Gravity Sewers To Existing Sherman's Bay Pump Station

This alternative consists of constructing gravity sewers in the entire service area including a gravity sewer along Route 474 feeding into the Sherman's Bay Pump Station. Based on preliminary field investigations and USGS maps, a sewer installed in or along Route 474 would be at least 23 feet deep at the pump station. This does not take into consideration creek crossings and any adverse grades within the Ashville area. This would require excessive, expensive excavation that is not economically feasible.

In the early 1970's, this Planning Area was to be serviced by gravity sewers. Construction was halted because of excessive costs due to poor soil conditions and deep excavations. The soil conditions in Ashville are similar to those where the construction was attempted. In order to avoid the same problems, this alternative will no longer be considered because it is not economically feasible.

4.1.2 Alternative #2 - Vacuum Sewers to Existing Goose Creek Pump Station

This alternative examines serving the entire planning area with vacuum sewers to connect into the existing Goose Creek vacuum pumping station.

A visual inspection was made of the geography of Fardink Road. Heading north from Maple Street on Fardink Road, in the direction of flow to the Goose Creek Pump Station, a steep uphill grade of 20-25 feet was encountered for about 1/4 mile. The maximum headloss allowable for a vacuum sewer system is 13 feet. The Fardink Road branch would consume the entire headloss allotted for the system without considering friction losses or losses from the other branches that tie into it. The alternative is to lower the vacuum line through the hill, but this is prohibitive given the cost of excavation. Therefore, the alternative of running a vacuum line from Ashville down Fardink to the Goose Creek Pump Station is not economically feasible.

4.1.3 Alternative #3 - Low Pressure Grinder Pumps To Existing Sherman's Bay Pump Station

For this alternative, the entire Planning Area will be served by low pressure sewers with grinder pumps providing the house services. The low pressure sewer will connect directly to the Sherman's Bay conventional Pumping Station, eliminating the need for construction of a new pump station. A preliminary cost estimate will determine whether or not the cost of all the grinder pumps can offset the construction of a new pump station.

4.1.4 Alternative #4 - Gravity Sewer To Proposed Pump Station With Force Main To Sherman's Bay Pump Station

This alternative involves the construction of gravity sewers to serve the homes in the Planning Area. A conventional centrally located pump station is proposed to pump sewage from this area to the Sherman's Bay Pumping Station.

Following a brief field survey, several tentative pump station sites were located. The general points of low elevation appear to be in an area bounded by Maple Street on the west, Mulberry Avenue on the east and Route 474 and Stewart Avenue/Chautauqua Boulevard on the north and south respectively. The exact location of the pump station would be determined by a detailed field survey.

A force main would carry sewage from the proposed Pump Station to the Sherman's Bay Pump Station. Major modifications to the Sherman's Bay Pump Station are not necessary since the pump station was designed to accommodate future flow from this area.

4.1.5 - Alternative #5 - Gravity and Low Pressure Grinder Pumps to Proposed Pump Station with Force Main to Sherman's Bay Pump Station

This alternative is similar to Alternative #4 in that it combines gravity sewers and low pressure service to the homes in the Ashville area. A force main will carry sewage from a proposed centrally located conventional pump station to the existing Sherman's Bay pump station.

A low pressure system requires the installation of several grinder pumps to serve homes located in lower elevations. A detailed field survey would be done to determine the actual number of homes to be serviced by low pressure grinder pumps. The cost of the grinder pumps may be offset by the reduction in the quantity of earth excavation for an entire gravity system. The cost of this alternative will be for gravity service to homes on Maple Street, Hoag Road, Stone Ledge and portions of Route 474. All the other homes will be costed as low pressure service.

4.1.6 - Alternative #6 - Vacuum Sewers to Proposed Pump Station With Force Main to Existing Sherman's Bay Pump Station

This alternative serves the entire Planning Area with vacuum sewers feeding into a proposed centrally located vacuum pump station. The pump station would be located as in Alternative #4. A force main will carry wastewater east along NYS Route 474 to the Sherman's Bay Pump Station.

In this alternative, houses between the proposed pump station and Sherman's Bay will be serviced by grinder pumps. As a part of the BPWTT in the Facilities Plan, vacuum sewers will also be evaluated for these houses.

4.2 Modifications To Existing Facilities

The existing treatment facilities, including the Sherman's Bay and Goose Creek Pumping Stations and the Celoron Treatment Plant, would not require any major modifications to handle the expansion into Ashville. Future flows were incorporated into the design of these facilities as part of the current construction project, therefore, additional modifications do not appear to be necessary at this time with the exception of a possible pump impeller and/or motor change.

4.3 Preliminary Cost Estimates of Alternatives

Table 3 summarizes the preliminary cost estimates of each alternative. Alternates 1 and 2 were not economically feasible, therefore preliminary cost estimates are not given. Appendix H is a breakdown of the cost estimtes for each alternative.

TABLE 3
PRELIMINARY COST ESTIMATES OF ALTERNATIVES

Alternative	Construction Cost Estimate* ($1000)	Operation and Maint. Costs** ($1000)	Total Project Cost Estimate ($1,000)
3	$3,407	$291	$3,698
4	$4,101	$101	$4,202
5	$3,991	$183	$4,174
6	$3,403	$123	$3,526

* Includes 35% for engineering, legal, financial and administrative costs, and construction contingencies

** Present worth costs

4.3.1 Basis for Cost Estimate

The total project cost is based on a 20-year present worth analysis. The construction cost was estimated at present worth. Operation and maintenance costs were calculated with a 7-7/8 percent interest rate for a 20-year period. Specific assumptions and estimates are based on the following parameters:

Construction Cost Estimate

- The unit costs used in developing the construction costs are based upon recent bid tabulations for similar projects in the Chautauqua Lake area and equipment vendor quotes.

- The construction cost estimates include 35 percent for engineering, legal, financial and administrative costs, and construction contingencies.

Operation and Maintenance Cost Estimates

- The operation and maintenance costs associated with the vacuum sewer collection systems include vacuum valve overhaul every five years and complete valve replacement at the 20-year point.

- The operation and maintenance costs associated with the low pressure grinder collection systems include grinder pump overhaul every ten years; complete grinder pump unit replacement at the 20-year point; and grinder pump power costs based on Niagara Mohawk's minimum charge per meter.

- The operation and maintenance costs associated with the pumping stations includes power costs at $0.07/kwh for the vacuum and sewage pumps, daily pump station inspections, routine maintenance and repair of pump stations, pump overhaul every ten years, and pump replacement at the 20-year point.

- No additional costs were added for sewer system maintenance. This project is small in comparison to the total sewer district, therefore it was assumed maintenance costs would be absorbed within total district maintenance costs.

4.4 User Costs

Table 4 summarizes the preliminary user costs of each alternative. User costs were calculated with and without federal funding and were based on the previously developed user costs approved in the District in the 1982 project referendum.

TABLE 4
PRELIMINARY USER COSTS OF ALTERNATIVES

Alternative	Area*	With Funding	Without Funding	Cost Without Ashville
3	Lakewood/Celoron/W.Ellicott	$157	$164	$153
	South District	344	502	330
	Center District	304	311	302
4	Lakewood/Celoron/W.Ellicott	162	174	153
	South District	400	503	330
	Center District	309	321	302
5	Lakewood/Celoron/W.Ellicott	162	175	153
	South District	374	497	330
	Center District	309	322	302
6	Lakewood/Celoron/W.Ellicott	158	172	153
	South District	331	455	330
	Center District	305	320	302

* South and Center District User Costs are for new customers. Base costs are from the 1983 Bond Issue.

4.4.1 Basis for User Costs

User costs were calculated with a 20-year capital recovery factor at a nine percent (9%) interest rate and 300 additional customers from Ashville in the South District. Specific assumptions are based on the following parameters:

Costs

- The cost of constructing force mains, pump stations, and the associated pavement and test pits was allocated among all the users in the South and Center Chautauqua Lake Sewer Districts.

- The remainder of the construction cost for the sewers and appurtenances was allocated only to the customers of the New South District.

- Engineering, legal, and administrative costs, planning costs and interest were allocated among all the users of the South and Central Districts.

- Operation and maintenance costs were allocated among all users of the South and Central Districts.

Funding

- Vacuum sewers, low pressure sewers, vacuum pumping stations, and low pressure grinder pumping units are funded at 75 percent because they are Innovative/ Alternative Technology.

- Force mains are funded at 55 percent.

- Gravity sewers and conventional pumping stations are funded at 55 percent.

- Gravity service connections are not eligible for funding.

5.0 FACILITY PLANNING REQUIREMENTS

All Facility Planning activities will be conducted in accordance with applicable USEPA Regulations from Part 35, 40 CFR, Subpart I, latest revisions.

Innovative and alternative solutions, energy conservation and open space and recreation will receive particular attention in the Facility Plan preparation. Environmentally sensitive areas such as 100-year flood plains and tentative wetlands within the Planning Area will be given special consideration during preparation of the Facility Plan with respect to potential adverse primary, secondary and operational impacts.

The preparation of the Facilities Plan will entail several tasks related to analysis of the most efficient design within the Planning Area to serve as an extension of the sewers currently under construction.

The Step I Facility Planning will include, but not be limited to, the following tasks:

- Assessment of current situation
- Assessment of future situation
- Development and evaluation of alternatives
- Public participation
- Environmental assessment
- Plan development
- Conceptual design of selected facilities
- Preparation of final report

6.0 PLANNING TASKS, SCHEDULE AND ESTIMATED COSTS

6.1 Description of Work Tasks

6.1.1 Program Implementation

Following approval of this Plan of Study - Feasibility Study by the South and Center Chautauqua Lake Sewer Districts, it will be submitted for review by the NYSDEC and the USEPA. The scope and pricing will be discussed with those agencies and the plan shall be amended as required. The Facility Planning Process will officially begin upon submission of the A-95 Letters of Intent and the Step I Grant Application.

6.1.2 Public Participation

Within 45 days of notice of Grant Award, the District will submit a detailed work plan for the Public Participation Program in accordance with 40 CFR 35.917-5. The outline for this program is included with this Plan of Study as Appendix A.

Upon submission of this Plan of Study, the District will select persons to serve on the Citizens Advisory Committee so that the members will be prepared to select a committee chairman, schedule meetings, etc. prior to the first public meeting.

6.1.3 Assessment of Current Conditions

A full inventory of existing facilities within the Planning Area will be made and the present problems evaluated. This phase of the study will evaluate the existing pumping stations, treatment plant and sewer system, and their capabilities.

6.1.4 Assessment of Future Situation

The future situation, including land use, demographic and economic projections and forecasts of flows will be

evaluated for a 20-year planning period. The future environmental effects of the "no project" alternative will be evaluated.

6.1.5 Develop and Evaluate Alternatives

Alternative methods of pollution abatement will be developed, defined and evaluated for the Planning Area.

6.1.6 Environmental Review

The alternatives developed will be evaluated and screened to determine environmental impacts. Primary impacts directly related to the construction of facilities will be addressed as will the long-term effects such as changes in population, land use and development. Both positive and negative impacts will be assessed for each alternative. Environmentally sensitive areas within the Planning Area will be carefully examined for any adverse effects related to construction of facilities during preparations of the joint Environmental Impact Statement/Environmental Information Document.

6.1.7 Cultural Resources Survey

A Stage I literature search will be performed, including a windshield survey, to identify areas of particular archaeological/historical value within the Planning Area. A certified archaeologist experienced in performing such surveys shall be retained for this segment of the Facilities Planning.

6.1.8 Plan Selection and Preliminary Design

Alternative proposals will be thoroughly evaluated by technical personnel and discussed at a public meeting to explain the alternatives and to receive public input. The environmental, financial, feasibility, reliability, and energy consumption will be presented and analyzed.

Following selection of an alternative, a preliminary design shall be prepared. At this time all data used as a

basis for selection of that alternative shall be summarized including preliminary layouts, sizing, detention times, operational requirements and financial information. Cost estimates to prepare final plans and specifications, construction costs, and a schedule of completion shall also be prepared.

6.2 Manhour Breakdown and Project Costs

The listings on the following pages detail the anticipated effort which will be required to complete the Facilities Planning, by work item, for the Consultant and the Districts' forces. Table 5, which follows this section, is a summary of the total manhours and costs required to complete each segment of the project. Pricing is based upon a project start by November 1985 and must be adjusted for later starts.

6.3 Project Schedule

The Project Schedule, based on the described work tasks and manhour projections included previously, is presented as Figure 4.

As shown on the schedule, it is anticipated that the preparation of the Facility Plan will require nine months to complete.

MANHOUR BREAKDOWN
SOUTH AND CENTER CHAUTAUQUA LAKE SEWER DISTRICTS
201 FACILITY PLAN
WORK TASKS

Task Description	Effort (Man Hours) Consultant	Districts
1. PROJECT ADMINISTRATION/COORDINATION		
a. Technical Phase Meetings DEC/EPA (1 local, 1 away)	64	20
b. A95 Review Documentation Steps I & II	8	0
c. Subcontractor Coordination/ Interfacing	32	0
d. EPA Reimbursement Requests	40	12
e. Consultant Technical Project Administration & Coordination with District/DEC/EPA/Others	140	40
2. ASSESS CURRENT SITUATION		
a. Evaluate Existing System; Identify Problems and Deficiencies	56	16
b. Planning Area Description	12	0
c. Demographic & Economic Data	24	0
d. Water Quality Data	4	0
e. Environmental Inventory	12	0
f. Cultural Resources Survey Step Ia Literature Search and Windshield Survey	Subcontractor	
3. ASSESS FUTURE SITUATION		
a. Environmental Consequences of "No Action"	12	0
b. Land Use Projections	12	0
c. Demographic & Economic Projections	16	0
d. Project Future Waste Flows	8	0
e. Prepare Draft E.I.S./E.I.D.	54	4

Manhour Breakdown (continued)

Task Description	Effort (Man Hours) Consultant	Districts
4. DEVELOP AND EVALUATE ALTERNATIVES		
a. Alternative BPWTT Waste Management Techniques		
- Expanding and Upgrading Existing System	16	4
- Alternative Sewer Systems and Configurations including Innovative Systems	120	8
- Evaluate Need for Additional Pump Station	40	0
- Examine Environmental Effects	16	0
- Evaluate System Reliability	12	4
5. PLAN SELECTION AND PRELIMINARY DESIGN OF SELECTED SEWER SYSTEM		
a. Sewer System Design, Layout, Sizing Flow Rates, Capacities	60	8
b. Detailed Cost Estimates: Design, Construction O&M	48	8
c. Environmental Impacts of Selected Plan	16	0
6. IMPLEMENTATION		
a. Institutional and Legal Requirements	40	40
b. Preliminary O&M Plan	24	8
c. Develop User Charges and Financial Capability	40	8
d. Financial Arrangements (Non Federal Share)	24	8
7. PREPARE REPORT		
a. Initial Draft	100	0
b. Review & Modify with District	16	48
c. Modify After Public Hearing	24	0
d. Print Final Report	40	0
TOTAL MANHOURS 201 FACILITIES PLAN	1,132	236

SOUTH AND CENTER CHAUTAUQUA LAKE SEWER DISTRICTS
201 FACILITY PLAN
PUBLIC PARTICIPATION PROGRAM

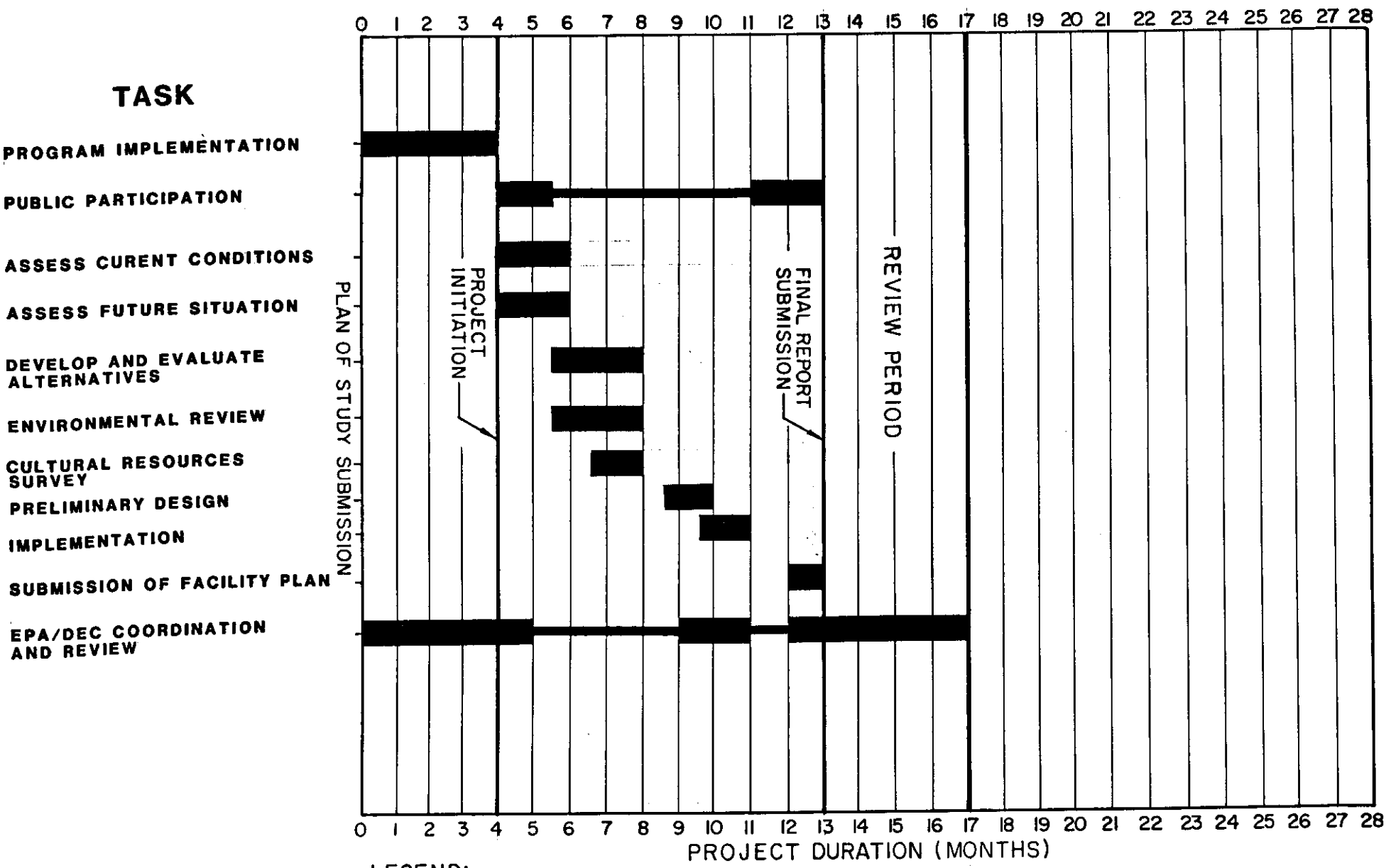
Task Description	Effort (Man Hours)	
	Consultant	Districts
1. PUBLIC PARTICIPATION PROGRAM		
a. Assist in Development of Program	40	40
b. Review with DEC/EPA	16	0
c. Meetings with CAC (maximum 6)	60	24
d. Meetings with Public Participation Coordinator (6)	18	12
e. Mailing Lists	4	16
f. Preparation of Handouts, Questionnaires, News Releases	40	12
g. Public Meeting Public Hearing	80	16
h. Responsiveness Summaries	40	8
TOTAL MANHOURS PUBLIC PARTICIPATION	298	128

TABLE 5

SOUTH AND CENTER CHAUTAUQUA LAKE SEWER DISTRICTS
FACILITIES PLANNING MANHOUR SUMMARY
AND COST ESTIMATE

Segment	Effort (Manhours)		Cost[1]		Expenses[2]		Total	
	Consultant	District	Consultant	District	Consultant	District	Consultant	District
201 Facilities Plan	1132	236	50,940	3,776	4,500	--	55,440	3,776
Public Participation	298	128	13,410	2,048	1,500	3,700[3]	14,910	5,748
PROJECT TOTAL	1,430	364	64,350	5,824	6,000	3,700	70,350	9,524
Profit							12,663	-
TOTAL PROJECT							83,013	19,048

1 - includes labor plus overhead
2 - includes $1500 for Archaeological Subcontractor
3 - see Public Participation Outline, Appendix A



MALCOLM PIRNIE

201 FACILITY PLAN
PROJECT SCHEDULE

ASHVILLE, N.Y. NOVEMBER, 1985

FIGURE 4

7.0 NEW YORK STATE PROJECT PRIORITY RATING SYSTEM

In order for a project to be eligible for state and federal grant aid in New York State, the project must be ranked within a category on the State's Project Priority List. A project is ranked on a numerical point system according to the criteria of the priority system. Federal and state aid is then distributed based on position of the project on the Priority List and availability of funds, in accordance with the rules of the system.

The criteria of the numerical point system are existing conditions, water quality improvement, and intergovenmental needs. A preliminary determination of the points for each criterion of the priority system for Ashville Bay is made in the following sections.

7.1 Existing Conditions Criterion

The existing conditions of the private sewage treatment works in Ashville were investigated by the Chautauqua County Department of Health. As a result of this survey, approximately 39 percent of the 197 homes surveyed were found to have violations of the sewage system regulations, and were cited for their system failure (See Appendix D). The details of the survey are in Appendices B, C, D, E and F.

Surface water samples from ditches and Goose Creek in Ashville were collected and analyzed for suspended solids, dissolved solids, BOD_5, ammonia as NH_3, total coliform, fecal coliform (FC), and fecal streptococci (FS). The chemical analyses from at least four (4) of these locations show that the water quality is typical of untreated domestic sewage. These results indicate that raw sewage is discharging into the surface water in Ashville. The degradation in surface water quality can be attributed to failing septic systems and raw sewage discharges.

In addition, groundwater quality is threatened because many of the private systems are located within the water table and discharge directly into the water table.

Because more than 20 percent of the individual systems in Ashville have been cited by the Chautauqua County Board of Health for sewage violations, and these failing systems are causing degradation of surface and groundwater quality, 30 points can be awarded to the Ashville project under the existing conditions criterion.

7.2 Water Quality Improvement Criterion

Water quality improvement is based on the classification of the receiving water at the point of discharge or the downstream surface water affected by the existing discharge; the severity of impairment of the affected desired usage of the receiving water; and the potential for improvement of water quality resulting from the project.

7.2.1 Classification Points (CPF)

The Chautauqua County Health Department has documented blackwater discharges in the Ashville area (See Appendix F). The receiving water affected by blackwater discharges and failing septic systems in Ashville is the adjacent groundwater, Goose Creek and Lake Chautauqua. The groundwater is used as a drinking water supply. Of the 67 potable water samples which were collected from wells in the area, three were biologically unsatisfactory.

Because a drinking water supply is affected by the failing septic systems, the classification points (CPF) which can be allotted to the Ashville project are 30.

7.2.2 Impairment Factor (IF)

The impairment caused by the onsite septic systems in Ashville is "severe".

The Chautauqua County Health Department has confirmed the discharge of blackwater from failing septic systems to the ground surface, and into ditches and tributaries of Goose Creek. The results from chemical and biological

analyses of samples from these discharge areas verify that the samples were untreated sewage.

The impairment factor corresponding to "severe" is 6.

7.2.3 Potential Improvement Factor (PIF)

The Potential Improvement Factor represents the improvement in impacted water quality which can be brought about by the Ashville project. Sewering this area will eliminate the discharge of septic effluent and sewage to the ground surface, resulting in no public health or nuisance condition. The PIF for reducing impairment three levels, from severe to none, is 5.

7.2.4 WQIC Points

The number of points to be awarded to the Ashville project under the Water Quality Improvement Criterion is calculated as follows:

$$WQIC = \frac{CPF \times IF \times PIF}{5}$$

$$WQIC \quad \frac{30 \times 6 \times 5}{5} = 180$$

7.3 Intergovernmental Needs Criterion

Points can be awarded to the Ashville project on the basis of meeting governmental needs, requirements and mandates.

A Step 3 grant has previously been awarded to the South and Center Chautauqua Lake Sewer Districts, of which Ashville Bay is a part. The Ashville Bay project will be physically connected to funded projects in the Sewer Districts. The projects are also fiscally interconnected since a portion of the user costs will be divided among all the users. Because of this, 15 points can be awarded to the Ashville Project.

Based on the preliminary cost estimate, vacuum sewers are the recommended alternative for Ashville Bay. This is a substantial use of Innovative/Alternative Technology, therefore 10 points can be awarded to the Ashville project.

7.4 Project Rating for Ashville

The preliminary point total for the Ashville Bay Project according to the criteria of the priority system is 235, as shown:

Existing Conditions	30
Water Quality Improvement	180
Intergovernmental Needs:	
a. previous grant	15
b. I/A technology	10
TOTAL POINTS	235

APPENDIX A

PUBLIC PARTICIPATION PROGRAM OUTLINE

I. CONSULTATION TECHNIQUES

A. Following approval of the Plan of Study

1. Public Meetings

a. One public meeting at onset of project following grant award

2. Public Hearing

a. One public hearing will be held prior to the adoption of the final facilities plan

3. Citizens Advisory Committee

a. Membership to include representatives from the following groups as required: 1) Private citizens 2) Public interest groups 3) Elected and appointed public officials 4) Industry

b. Short biographies of committee members will be submitted for EPA approval

c. Opportunities for membership will be solicited prior to formation of CAC

d. Anticipated that a maximum of 5 members will be appointed to CAC

e. Meetings of the CAC with the Consultant will be held throughout the project on a regular basis

f. Members of the CAC will be encouraged to:
   1) Become knowledgeable about all aspects of the project
   2) Make recommendations to the grantee
   3) Be aware of and represent community attitudes
   4) Conduct public participation activities where appropriate
   5) Investigate and develop recommendations on issues as they arise

4. Informal personal communications with interested parties

II. INFORMATION TECHNIQUES TO BE UTILIZED

A. Preparation and Submittal of Mailing List at Time of Grant Application

B. Preparation of Fact Sheet Following Grant Award

1. Fact sheet and public participation work plan to be distributed to all those on mailing list

C. Preparation of Responsiveness Summaries Following Each Public Meeting

1. Dissemination to all those on mailing list

D. Grantee to Establish Central Information Center For Project Prior to Submittal of Grant Application

III. TARGETED PUBLIC SEGMENTS WITHIN STUDY AREA

A. Municipal Governments
B. Environmental Groups
C. Industry
D. General Public

IV. PUBLIC PARTICIPATION SCHEDULE

A. Prepare Budget Requirements

1. Submit with grant application

B. Designate Public Participation Coordinator

1. Following grant award

C. Establish Citizens Advisory Committee

1. Solicit for membership prior to grant approval

2. Submit list of proposed membership with biographies to EPA within 45 days of grant award
3. Establish CAC within 45 days after grant award

4. Schedule meetings as required with the CAC after grant award for duration of project

D. Establish Mailing List

1. Submit list with grant application

2. Utilize list for sending out notices and responsiveness summaries

E. Prepare Work Plan for Public Participation Program

1. Prepare fact sheet describing the proposed project

2. Detail information techniques, budget, and staff requirements

3. Submit Work Plan to EPA within 45 days of the acceptance of award

4. Distribute Work Plan to interested parties

F. Conduct First Public Meeting

1. Advertise 30 days prior to meeting

2. Hold meeting approximately 60 days after acceptance of award

3. Acquaint general public with proposed project and receive input on needs of study area during meeting

4. Prepare and distribute responsiveness summaries within 14 days of meeting

5. Tabulate response for consideration by grantee and consultant

G. Hold Public Hearing

1. Prepare posters, invitations to the press and notices to announce the public hearing to the general public

2. Provide notice to general public 45 days prior to the hearing in accordance with the provisions of 40 CFR 25

3. Provide relevant materials for public information 30 days prior to the hearing

4. Request feedback on extent of Public Participation to be used for Steps II and III

5. Delineate key segments of the Facilities Plan

6. Prepare plan and distribute final responsiveness summaries within four weeks of the public hearing

7. Tabulate the response to the public hearing

8. Evaluate the effectiveness of the Public Participation Program in regard to the project

SOUTH AND CENTER CHAUTAUQUA LAKE SEWER DISTRICTS

PUBLIC PARTICIPATION BUDGET

Plan Element	
o Public Meeting	
Advertisements (legal notice, news media ads, mailed notices, news releases)	$ 350
Responsiveness Summary (preparation-printing and mailing, updating mailing list)	$ 400
Meeting Location	$ 100
o Public Hearing	
Advertisements (same as No. 1)	$ 350
Responsiveness Summary	$ 600
Meeting Location and Material	$1,000
o Citizens Advisory Committee	
Out-of-Pocket Expenses Assume 5 members, 6 CAC meetings and 2 Public Meetings @ $10 per member	$ 400
Meeting Material & Notification	$ 500
TOTAL PUBLIC PARTICIPATION BUDGET	$3,700

APPENDIX B

CHAUTAUQUA COUNTY HEALTH DEPARTMENT
PRIVATE WATER SEWAGE DISPOSAL SYSTEM SURVEYS
TAKEN FROM 8/84 to 11/84

Chautauqua County

DEPARTMENT OF HEALTH

MEMORANDUM

To:

From:

Subject: Ashville Survey

The survey was begun in Ashville on 8/7/84 and concluded on 11/8/84. There were 195 homes surveyed out of a total of 248. The 53 not surveyed are those where no one was home during the survey period. In all cases several attempts were made to find someone home. Of the 195 surveyed homes, 77 were found in violation, and 118 were found to not be in violation. Percentage of the catergories above are 38.5, and 61.5.

67 water samples were taken. Only 3 were unsatisfactory.

There have been 50 Chautauqua County Health Department approved systems installed in this survey area in the last 10 years.

Soil conditions in the Ashville area are predominately clay, with generally 6 to 8 inches of topsoil. The water table varies from very high (approx. 20") along Route 474 to several feet at higher elevations. The high water table and poorly drained clay soils along Rt. 474 make all of these existing systems very suspect. It is difficult to confirm violations in this area because the systems generally are located within the water table and the dye does not surface. Actually, this type of a system is in violation of sanitary code regulations because it is illegal to discharge into this water table.

Breakdown

75 Violations > 39%
120 No Viol.
40 Not Home
2 Vacant
11 No Admittance
248
2 laundry viol. corrected (not counted in 75)
250