
RESPONSIVENESS SUMMARY

Responses to Public Comments

ENVIRONMENTAL INFORMATION DOCUMENT
"SITE INVESTIGATIONS AND
REMEDIAL ACTION ALTERNATIVES"
A STUDY OF THE LOVE CANAL AREA SEWERS AND CREEKS

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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EXECUTIVE SUMMARY

Introduction:

The purpose of the Executive Summary is to inform the reader of some of the planned activities relating to the Love Canal remediation, along with a brief history of major events leading to the investigation of the creeks and sewers in the vicinity of the Love Canal Site. The Executive Summary provides responses to questions the reader might not find elsewhere in the Responsiveness Summary Report.

History:

The Love Canal is a 16 acre tract of land located in the LaSalle Section of the City of Niagara Falls. Between 1942 and 1953, approximately 21,000 tons of chemical waste were disposed at the Love Canal. A school and approximately 230 homes were built adjacent to the Love Canal site. Following the discovery of the serious health and environmental danger of the disposed chemicals, remedial work was begun in 1978. The declaration of a Federal Emergency in 1978 and a Federal Disaster in 1980, resulted in the evacuation of people living in over 600 homes.

In July 1982, the New York State Department of Environmental Conservation (NYSDEC) entered into an Assistance Agreement with the United States Environmental Protection Agency (USEPA) pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980. The Assistance Agreement provided funding to continue the remedial efforts at the Love Canal site begun by the State of New York in 1978. The following briefly summarizes the planned activities regarding the remedial program for the Love Canal area:

It is recommended that the affected sewers be cleaned, that portions of the Black and Bergholtz Creeks be dredged and that contaminated sediment in the Niagara River be temporarily stabilized in place. This remedial program would include collection and chemical analysis of additional environmental samples to further refine the limits of the remediation. It is tentatively scheduled to begin the remedial work of sewers in Fall 1984 and remediation of creeks and 102nd Street outfall is expected to begin in Spring 1985.

Perimeter Sampling Program:

To better define the extent of groundwater and surficial soil contamination, additional environmental data will be collected in spring of 1985 from the area surrounding the Love Canal site. The data obtained in this sampling program will serve to:

1. determine if there are significant concentrations of chemical contaminants beyond the control of the containment system;
2. provide additional data to the Technical Review Committee (TRC) to reassess the habitability of the Emergency Declaration Area (EDA);
3. provide necessary information for the design of a remedial program to complement the existing leachate collection containment system if additional remedial work is considered necessary.

Long-Term Monitoring Program

The monitoring program shall be designed to monitor and evaluate the effectiveness of the remedial construction of the Love Canal site. The monitoring system will include the installation of monitoring wells in both the overburden and bedrock groundwater systems, and surface water sampling stations.

An "outside" panel of experts will be used to assist DHHS/NYSDOH in the development of the habitability criteria. Environmental quality data describing the Love Canal area will be compared with the habitability criteria and serve as a basis for NYSDOH's decisions regarding habitability of the EDA.

1. Introduction

1.1 Scope of Responsiveness Summary

The sanitary and storm sewers, the Niagara River bottom sediments in the vicinity of 102nd Street outfall, Cayuga Creek, Black Creek and Bergholtz Creek were sampled from January to March 1983 to investigate the extent of Love Canal contaminants migration. The analytical results, the contaminant assessment, and the recommendations for remediation are presented in the Environmental Information Document, "Site Investigations and Remedial Action Alternatives/Love Canal," prepared by Malcolm Pirnie, Inc., and copies were widely distributed by the New York State Department of Environmental Conservation (NYSDEC) in October-November 1983. For purposes of brevity this document will be referred to as the "EID".

The NYSDEC solicited comments on the report from interested citizens and parties. The findings of the study were presented in a Public Information Meeting in Niagara Falls, on November 29, 1983 and in a Workshop in Niagara Falls on December 13, 1983. The NYSDEC accepted written comments from interested parties until January 9, 1984.

This Responsiveness Summary presents responses to the comments received by the NYSDEC. The comments and responses are presented in five (5) chapters:

- o Background
- o Scope
- o Analytical Methods
- o Assessment
- o Remediation

Each chapter is subdivided into the following sections:

- i) General

5. Remediation

The comments related to the recommended remedial program for the sewers and streams such as extent of remediation, monitoring after remediation, anticipated/perceived problems during remediation, the effect of remediation, the cost/benefit of remediation are addressed in this chapter.

1.2 How to Use the Responsiveness Summary

Chapters 2 to 6 summarize and categorize comments received by the NYSDEC. The NYSDEC believes that each individual comment is addressed in this Responsiveness Summary. The comments received by the NYSDEC and where to find responses are presented in Appendices A to F. The comments received by the NYSDEC in the Public Information Meeting on November 29, 1983 are presented in Appendix A. The comments by Assemblyman Joseph T. Pillittere are presented in Appendix B. Public's comments expressed in the workshop session on December 13, 1983 are presented in Appendix C. Ms. Eileen Paron's comments are presented in Appendix D. The Love Canal Renters Association's comments are presented in Appendix E. Due to the length of comments received from Wald, Harkrader and Ross, representing Occidental Chemical Corporation, are edited and presented in Appendix F. Copies of an unedited version of the Occidental Chemical Corporation's comments and other documents referenced in this Responsiveness Summary are available for public inspection at the NYSDEC's Public Information Office at 9820 Colvin Blvd., Niagara Falls, NY 14304. (Telephone Number: 716/297-9637).

The following excerpt from Appendix A demonstrates how to find a NYSDEC's response to an individual comment:

"Was dioxin tested for in all soil samples?"

"Please see Response to comment No. 5.1.12."

2. Background

2.1 General

2.1.1 Comment: What are the trace levels of contamination found in Duero Drive, (refer to Pages 4-6 of the EID)? Are these contaminants Love Canal related and were these manhole locations resampled in this study?

Response: The trace contaminants referred to on Pages 4-6 were identified in the "Special Report to the Governor." The results were reported in micrograms/liter as equiivalent lindane. Consequently, the exact compounds detected were not identified or quantified. Therefore, the source of the contamination cannot be positively identified. These sewers were not resampled in this study because no direct connection to the Love Canal Area exists.

2.1.2 Comment: The data collected in the 1982 EPA Love Canal report were not integrated into the report.

Response: The EPA report was reviewed in its entirety and served as a basis for further investigations. However, the report reflected data collected in 1980. The new data in the Malcolm Pirnie report is more representative of current conditions.

2.1.3 Comment: When will New York State complete the development of the data base to assess the nature and extent of existing contamination (at the 102nd Street Outfall)?

Response: The sampling performed as a part of the Love Canal Superfund Remedial Program is sufficient for assessing the area of the Niagara River which is in greatest need of remedial action due

presented before the Public Information Meeting and workshop on November 29, 1983 and December 13, 1983, respectively. The recommendations for remedial work and the conclusions are based on assessments of the analytical results of the samples collected from the sewers and creeks from January to March 1983.

2.1.8 Comment: Does the City have a copy of the Malcolm Pirnie report?

Response: Yes

2.1.9 Comment: Who was pumping at 93rd Street on December 12, 1983?

Response: The City's Department of Public Works should be contacted for the information as to who was pumping at 93rd Street.

2.1.10 Comment: Did the Office of Technology Assessment (OTA) offer any comments on the report?

Response: A copy of the report was sent to the Office of Technology Assessment and to date no comments have been received from OTA.

2.1.11 Comment: Could a copy of the report be sent to the Town of Wheatfield?

Response: A copy of the EID was sent to the Town of Wheatfield Supervisor, Mr. Edward Greinert on January 30, 1984.

2.1.12 Comment: Please provide a copy of the following document titled "Overview of Environmental Pollution in the Niagara Frontier, New York," USEPA, 1982.

Response: A copy of the report may be obtained by writing to the United States Environmental Protection Agency, National Enforcement Investigation Center, Building 53, Box 25227, Denver Federal Center, Denver, CO 80225. A copy of this report is available for public review at 9820 Colvin Blvd., Niagara

Box 14249B, Cincinnati, OH 45214. A copy of this report is available for public review at 9820 Colvin Blvd., Niagara Falls.

2.2.5 Comment: Do previous analytical results indicate possible Love Canal chemical contamination outside of the creek areas sampled in this investigation?

Response: Other studies have shown chemical contamination possibly related to the Love Canal in the creeks draining the Love Canal area which are outside of the area investigated as a part of the Love Canal Superfund Remedial Program.

2.3 Task Area VI - 102nd Street Outfall

2.3.1 Comment: Identify existing data to determine 102nd Street sampling locations.

Response: Existing data are included in the USEPA Love Canal monitoring report of 1982. A copy of the report may be obtained by writing to ORD Publications, U.S. Environmental Protection Agency, P.O. Box 14249B, Cincinnati, OH 45214. A copy of this report is available for public review at 9820 Colvin Blvd., Niagara Falls.

description of the TRC and the process that will be used to make the habitability decision is available at the NYSDEC Public Information Office at 9820 Colvin Boulevard, Niagara Falls, New York 14304 and was printed in issue 7 of the NYSDEC's Love Canal "UPDATE."

3.1.3 Comment: The public information office appears to be in the immediate vicinity of contaminated manholes 265 and 256A. It is wrong to knowingly and needlessly expose people who visit the public information office to the possibility of exposure to Love Canal contaminants present in these areas. The public information office should remain accessible but be moved immediately.

Response: At present, there is no evidence that the Public Information Office is contaminated. To ensure the health and safety of people working at and visiting the office, the New York State Department of Health has collected environmental samples to determine if Love Canal contaminants have affected the office. If it is determined that the Public Information Office is not safe, it will be relocated from the present location immediately. Exposure to contaminants in manholes 265 and 265A is extremely remote.

3.1.4 Comment: No water table data is reported in the EID.

Response: The water-table data was not required to investigate the extent of contamination in sewers and creeks. However, relative sewer line elevations were compared to approximate groundwater elevations and bedding material investigations

Additionally, the amount of sediment to be found in a house lateral would be negligible. House laterals are typically between 4" and 6" in diameter. The velocities created in the pipe by regular household water usage (i.e., toilet flushing, showers, etc.) would be high enough to suspend sediment and transport it to the main sewer.

3.1.9 Comment: Why weren't the sewers on Buffalo Avenue investigated?

Response: Buffalo Avenue is separated from the Canal Area by the LaSalle Expressway. City sanitary sewer drawings do not show any connections between the sanitary sewers north of the expressway and those on Buffalo Avenue. City storm sewer maps and field inspections did not show any connections between the storm sewers north of the LaSalle Expressway and the storm sewers on Buffalo Avenue except for the main storm sewers which cross under the Expressway flowing to outfalls on the Niagara River which have been recommended for cleaning.

3.1.10 Comment: Why was not other sampling data integrated into the report?

Response: The creeks and sewers are dynamic environments. Previous data were not presented because of the possibility that the sewer and creek environments might have changed since the time of the previous sampling, the most comprehensive of which was last performed by the USEPA. The data used in this EID was restricted to that collected as part of this study although all previous available data was reviewed in designing the sampling program and was compared against the results of this most recent investigation.

3.1.11 Comment: The sewer invert data is insufficiently detailed for a thorough analysis of potential pathways of chemical migration

due to scouring. All the stormwater passes through the outfalls; consequently, if contaminant migration was occurring, it would be found at the outfall.

3.1.14 Comment: The investigation program inadequately tested for bedding material contamination because it did not first identify all areas of potential exfiltration and then take appropriate action.

Response: Exfiltration can occur anywhere in a sewer where improper joints exist or when cracks exist, the location of which can only be determined by televising, which requires cleaning first. Therefore, a number of locations were selected in each Task area to be representative of pipe and bedding conditions in that area. In selecting sewer bedding sampling locations special emphasis was placed on locations where granular bedding was known or suspected of being used and along major contamination pathways based on USEPA Monitoring Study.

3.1.15 Comment: Why wasn't the 103rd Street storm sewer investigated?

Response: The storm sewer on 103rd Street does not have any direct connections to the "Love Canal" area and is located sufficiently distant from the Canal Area to preclude the possibility of contamination except under extreme surcharge conditions which are not known to exist in that sewer reach.

3.1.16 Comment: What is the area of overburden and groundwater affected by the contaminated sewers?

Response: This was not addressed in this study. Please see the Executive Summary.

4. Analytical Methods

4.1.1 Comment: Why is the "May Protocol" for TCDD analysis inadequate for use in this investigation?

Response: The "May Protocol" for TCDD analysis was not utilized for several reasons. At the time the TCDD analysis was initiated, the referenced protocol had been made available to the laboratory from EPA only a few days earlier and was not, therefore, fully validated. EPA subsequently revised the protocol because of problems with it. Namely, that the chromatographic columns prescribed for use did not produce the performance characteristics desired. Consequently, CompuChem, a subcontractor to Malcolm Pirnie, employed the previous protocol (February) which had been validated and used chromatographic columns which were known to perform properly.

4.1.2 Comment: What precision, accuracy and completeness objectives were established for the organics, inorganics and dioxin analyses?

Response: For this project, the objective for accuracy and precision are detailed in, "Sample Analysis and Quality Assurance Plan" dated, December 1982, prepared for this project by Malcolm Pirnie. The completeness of an analysis is documented in the "Supporting Documents" which accompanied the EID and includes such items as chromatograms, spectra, Quality Control (QC) data, and summaries of results.

4.1.3 Comment: Interpretation of the EID reported sampling results for TCDD in sediments is difficult for values below five ppb because of

relative retention time of native TCDD found in the samples compared to the retention time of the deuterated standard added by the laboratory was within the 3 second allowance established by EPA.

The use of the words "Missouri Sample" on reporting sheets had no bearing whatsoever on the data generated for this project. Within the laboratory community, the EPA TCDD analytical protocol came to be known colloquially as the "Missouri" or "Region VII" protocol. The word "Missouri" became associated with many aspects of that protocol's specifications in order to distinguish it from other EPA dioxin methods (the Missouri protocol did not have an EPA method number). Consequently, it was often used on laboratory paperwork and was in no way related to the source of the samples.

4.1.4 Comment: To the degree they may be relied upon, the chemical analyses performed by CompuChem are useful indicators of which samples should be considered for application of the contamination assessment procedure used in developing the EID. But the data are particularly limited in the identification of non-priority pollutant compounds and in their quantification. The EID recognized this and has applied the contamination assessment procedure to priority pollutant compounds and elements only. The remainder of compounds whose concentration is listed as "EC" (Estimated Concentration) are not included in the assessment and in many cases should not be considered for any purpose; examples of these are siloxanes, methylester of formic

the mass spectral identification is incorrect or if it is correct, then other analysis parameters are out of control and the chemical found is simply the material they have added to the sample themselves.

In summarizing the results of each chemical analysis, the EID also includes both methylene chloride and phthalates.

Methylene chloride is widely recognized as a laboratory contaminant from its use as an extraction solvent. The volatility and water solubility of methylene chloride are such that it would not be expected to be found in sediments standing in liquid environments. It is not a "Love Canal" chemical, and is found in raw, untreated Love Canal leachate only as a by-product and then only at a level of only about 100 ppb. The inclusion of methylene chloride in these reports of analyses is in error.

Phthalates are also reported in the summaries of analysis. But the Supporting Documents note that the phthalates are often found at the same concentrations as in blank control samples. Nonetheless, the phthalate sample levels are reported as if they are the actual levels in the material analyzed. The summaries of analyses fail to report the differences between the control blanks and the samples. These reports are simply wrong.

Both methylene chloride and phthalate are reported frequently in the summaries of analyses. Unlike siloxanes, methylester of formic acid, and pentafluorophenol, they are then assigned

For pentafluorophenol, the laboratory used the compound as a surrogate standard, not an internal standard, which the lab adds to the sample. In the quality control notice associated with the library search resulting in pentafluorophenol, the tentative identification was qualified. Having run an authentic standard of pentafluorophenol prior to sample analysis, the exact retention time and mass spectrum of the compound is known.

This was used to indentify and quantitate the surrogate pentafluorophenol added by the laboratory. It is known that, depending on the contaminants contained within the sample, that pentafluorophenol will sometimes form a derivative or by-product of the original compound which elutes at a different time than pentafluorophenol. Thus the reason for the quality control notices included in the impacted data reports.

Two recurrent priority pollutant compounds reported were methylene chloride and phthalate esters. For both compounds, the laboratory can only refer to the blanks associated with these compounds. In the case of methylene chloride, the highest blank value found was 16 ppb. All other blanks did not have the compound present above the method detection limit.

In the case of the phthalate compound, there was some laboratory contamination, but this was pointed out in the quality control notices. In most cases, the phthalate in the blank was small compared to the value in the sample, and these

findings in the blank, duplicate or spiked quality control samples. Moreover, similar analytical quality controls were applied to samples with Compuchem Nos. 4376, 4378, 4382 and 4383. The quality control appears deficient. These samples were run over a ten day period (July 23 to August 4) and only one blank was run for that period. Also, it appears there was an unexplained change in the duplicate sample data used to qualify results generated over this time period.

Response: First, at an EPA Dioxin workshop held in Kansas City in July, 1983, statistics compiled by EPA indicated that the method failed on about ten percent of all samples (based on a population of 5000 samples) and failure was more likely on samples containing high levels of interfering organic compounds. A review of samples done for this project indicates a similar failure rate even though ALL samples were known to contain high levels of organics.

Secondly, the QC samples were picked blindly. It was simply bad luck that two field samples used for spikes and duplicates were themselves indeterminate. This, of course, made the spike and duplicate indeterminate also. In the case of indeterminate blanks, these samples were subjected to identical lab procedures as the field samples which included very rigorous cleanup procedures due to the high levels of organics present in the field samples. Subjecting a clean sample spiked with TCDD to the rigorous cleanup procedures sometimes removed the spiked material in the sample resulting in little or no recovery and thus an indeterminate result. It should be

were run to cover these samples. The reference to a change in the duplicate data during this period is not sufficiently detailed to provide a response.

4.1.7 Comment: The results of chemical analysis reported in the EID are deficient in many respects, as disclosed by the quality assurance documentation in the Supporting Documents. Although the surrogate mean percent recoveries from spiked samples are within the stated EPA Advisory Committee control limits, results for individual samples frequently do not meet these limits. By using mean percent recoveries, the contractor tends to smooth the data and mask potentially erroneous results. Careful inspection of individual surrogate recovery results indicate many instances in which advisory committee control limits are exceeded for specific samples, particularly for acid and base/neutral surrogates. When surrogate analyses fall outside control limits, it is a signal that analytical results are potentially incorrect. In this case, the contractor appears not to have taken any action to reject or otherwise deal with analyses which were indicated as potentially erroneous by the surrogate recovery data.

In the case of duplicate spikes and surrogates as well, average recovery values appear good or at least acceptable. But this is misleading. Wide variations exist upon inspection of individual recovery values. For example, 1,2,4-trichlorobenzene recoveries for duplicate spikes vary between 0 and 300%. Pentachlorophenol recoveries range from

5. ASSESSMENT

5.1 General

5.1.1 Comment: The contaminant assessment does not do the analysis necessary to understand the extent to which contaminated areas pose a danger to health and safety. Hence, it is exceedingly difficult to evaluate the sensibility of many of the report's conclusions and assumptions regarding appropriate remedial activities.

Response: The objective of this study is to develop, evaluate and recommend engineering alternatives for remedial programs in the five specific task areas, thereby mitigating potential migration of contaminants to wider areas.

The objective of the contamination assessment is to serve as a decision making tool for the prioritization and selection of areas requiring remedial action. The two conceptual components of the contaminant assessment are a toxicity assessment and an exposure assessment. Toxicity is the ability of a chemical to affect living organisms. Exposure, the actual contact with a chemical, is affected by properties of the contaminants such as persistence and mobility. These two important components, toxicity and exposure, are taken into consideration to prioritize and select specific task areas for remediation.

5.1.2 Comment: Why aren't the sources of storm sewer contamination to be monitored?

Response: The EPA's study in 1980 indicated that substances found in the area could be explained by transport through pathways leaving the site, such as storm sewers that discharge into area creeks and rivers. In the fall of 1982, the sewers were severed at the canal to deter future contaminant flow via these pathways, and the contamination that currently exists in the sewers should not increase. An assessment of potential health risk was made by the DHHS when they declared the EDA to be habitable subject to clean up of contaminated sewers. The objective of this study is to identify the extent of contaminants migration which were transported to these sewer lines prior to 1982. Based on this investigation, the contaminated sewers are recommended for remediation, to eliminate potential migration pathways.

5.1.5 Comment: What if the basements of homes were flooded by backup in the sewers?

Response: Basement flooding in specific areas of the Study Area is known to have occurred during high flow periods caused by rainfall. Before the sanitary sewers from the Canal Area were blocked off, contaminated liquid was flowing in the sanitary sewers. During a back-up period, the possibility existed that this contaminated sewage could enter the basement of homes that experienced backups.

Prior to sampling for this study, all of the sanitary sewers from the Love Canal Area had been blocked off. The sampling

Response: The potential transport downstream and subsequent uptake was assessed to be dominated by the exposure to such sediments.

5.1.11 Comment: What did the Mt. Sinai toxicologists do?

Response: The Mt. Sinai toxicologists acted as consultants in the development of the contamination assessment program which was used to prioritize the sampling sites.

5.1.12 Comment: Was dioxin tested in all the samples?

Response: All the samples which exceeded the screening criteria were analyzed for 2,3,7,8 TCDD dioxin. 183 samples were so quantified.

5.1.13 Comment: How does contamination enter the sanitary sewer?

Response: Contamination may enter the sanitary sewers as a result of infiltration of contaminated groundwater in those portions of the sewers near the Love Canal. This infiltration occurs because of cracks or breaks in the sewers.

5.1.14 Comment: What did the analysis of the bedding materials indicate?

Response: The analysis of bedding materials indicated that no contamination had entered that media. As a result, it was concluded that the bedding material is not an active migration pathway. Please note that bedding material was not sampled in the immediate vicinity of the Love Canal.

5.1.15 Comment: When was storm event sampling conducted? What manholes were sampled during the storm events?

Response: Storm event sampling was conducted between March 9 and March 11, 1983. The following manholes were sampled during this period:

Wheatfield Avenue to 101st Street, then north on 101st Street to Colvin Boulevard. The storm sewers became contaminated because of direct connections to the Love Canal Area on 97th and 99th Streets.

5.2.3 Comment: What is the source of contaminants in the apparent storm sewer migration pathway from the Love Canal which begins at 99th and Colvin Boulevard?

Response: At one time, a storm sewer left the Canal Area from 99th Street at this point. This storm sewer has been blocked. The contamination probably entered the storm sewers from basement sump pumps on 97th and 99th Streets and from surface runoff and groundwater infiltration into the storm sewers on 97th and 99th Street.

5.2.4. Comment: What is the source of contaminants in the sanitary sewer contamination pathway from the Love Canal area which begins at MH 264, 265 and 267?

Response: At one time, sanitary sewers which left the Canal Area at the intersection of 99th Street and Colvin Boulevard and Wheatfield at 99th Street flowed into these manholes. These sanitary sewers have been blocked.

5.2.5 Comment: What is the source of the Love Canal contamination in the storm sewers between 97th and 100th Street?

Response: Sewers on 97th, 98th and 99th are in the Love Canal Area. Sewers on 100th Street were, at one time, directly connected to a sewer which flowed from the Love Canal Area. This sewer which flowed from the Love Canal Area has been blocked.

Response: The "Normal Flow Samples" indicated little or no contaminants in the water column of the storm sewer systems. These storm event sampling was conducted to verify the normal flow conditions and no quantifiable amounts of contamination were discovered during the storm weather sampling period. The recommended remedial program will remove the contaminated sediments eliminating the transport of chemical contaminants attached to sediments during periods of high flow.

5.2.11 Comment: The origin and source of the contaminant migration in the sanitary sewers on 95th Street south of Colvin and north of Read Avenue is inadequately explained.

Response: The low to medium levels of contaminants are detected along 95th Street sanitary sewer. The source of contamination is probably from unknown connections, if any. The 95th Street sanitary sewer line is recommended for television inspection and hydraulic cleaning.

5.2.12 Comment: How did 30 ppb of dioxin get into the Colvin Boulevard sanitary sewer?

Response: The Colvin Boulevard sanitary sewer was directly connected to the Love Canal area. The contaminated manhole 264 (with 30 ppb of dioxin) was directly connected to 99th Street, which was a primary migration pathway. The manhole 264 was blocked on November 10, 1983. The past remediation, and on-going remediation of Love Canal area and the recommended remediation of the sewers would eliminate the contamination.

5.2.13 Comment: Why were high levels of contamination found in 95th Street?

Response: There may have been unknown connection to the Love Canal Area and television inspection have been recommended to verify

extent has been defined and additional sampling was performed in the vicinity of the 93rd Street school (Please see response to comment No. 5.3.1) to better characterize the downstream extent. If this additional sampling shows contamination, extension of the fencing will be considered.

5.3.3 Comment: Why shouldn't additional "verification sampling" be done on Black and Bergholtz Creeks to make sure that the proposed fenced area includes all contaminated areas?

Response: Additional sampling has been recommended in the Bergholtz Creek to verify that the extent of contamination in Black and Bergholtz Creeks have been identified.

5.3.4 Comment: Given the results of the analysis of the Lindbergh Avenue storm sewer outfall on Cayuga Creek indicating the presence of Love Canal Chemicals, an appropriately-sized area of Cayuga Creek should be immediately fenced off and a comprehensive sampling program be immediately implemented.

Response: The recommendation on the Cayuga Creek is to conduct additional sampling in the vicinity of Lindbergh Avenue. The measured contaminants do not present an imminent threat in terms of exposure or movement potentials.

5.3.5 Comment: Where was the sample on Duero Drive taken? How do the results of these samples U-5N and U-5M differ from the samples collected at the Black and Bergholtz Creeks?

Response: The sample was taken adjacent to the house at 28 Duero Drive. No contamination was detected in that sample.

C-12W, C-11E, C-11M and C-11W). Additional samples will be collected at the Lindbergh Avenue outfall, during the design phase.

5.3.10 Comment: Why shouldn't the entire length of Black and Bergholtz Creeks be tested?

Response: A specific sampling plan was established and implemented to determine the extent of contamination in the creeks. Upstream decreasing concentrations demonstrated that the extent had been confirmed in that direction. Downstream concentrations indicated that additional sampling is required and that has been recommended.

5.3.11 Comment: Do the groundwater and soil at the 93rd Street school pose a health and safety threat?

Response: The potential impacts of soils or groundwater were not part of the scope of this study. This site has been recommended to USEPA for inclusion in the National Priority List (NPL) of hazardous waste sites.

5.3.12 Comment: The three "hot spots" that have been located within the Black and Bergholtz Creeks are close to residential property within the third ring. If one side of the creek bed is in the second ring and is contaminated, logically the other side of the creek bed is also contaminated. What changes do these "hot spots" present to the residential property?

Response: The EID identified the contaminated parts of the creeks. As recommended in the EID, the entire width of the contaminated portion of the creeks will be remediated. During the design

Response: The sewers which connect to this outfall do not have a direct connection to the Canal area. Additionally, these sewers have been identified as having low contamination assessment priority levels. Finally, no liquid samples from storm manholes which are connected to this outfall were found to be contaminated. Consequently, no evidence exists which suggests that active migration is occurring and hence there is no need to seal off this outfall.

5.4.4 Comment: The (probable) cause of Love Canal area contamination in the 95th Street storm sewer is inadequately explained.

Response: This sewer has been recommended for television inspection to determine if there are any connections from this sewer coming from the Canal Area.

5.4.5 Comment: What is the status of the plug in the sewer at 99th Street?

Response: The sewer at 99th Street was temporarily plugged on March 1, 1983 and was permanently plugged on November 8, 1983, thereby eliminating potential pathway of contaminant migration. Field investigations and samples collection were conducted from January 3 to January 21, 1983 in Task Area IV. It was possible that the sewer at 99th Street may have been a migration pathway of contamination at the time samples were collected.

5.4.6 Comment: What is the source of contaminants in the storm sewer which begins at 99th Street and Wheatfield Avenue?

Response: At one time, a storm sewer ran from the Canal Area along Wheatfield Avenue connecting with the 99th Street storm sewer at this point. This storm sewer has been blocked.

The Wheatfield Avenue sanitary sewer ran across the Love Canal. It has been blocked.

5.4.10 Comment: Further information should be collected and reviewed regarding utility lines and other potential paths of migration along Frontier Avenue and the LaSalle Expressway in the vicinity of the 97th and 99th Street. If potential paths of migration are found, they should be evaluated and addressed.

Response: Consideration is now being given to abandoning the Frontier Avenue storm sewer. Although, utility lines along the Frontier Avenue between 97th and 99th Streets have been sealed by a two feet wide concrete wall monitoring of the storm sewers in this Task Area will be a significant part of the ongoing maintenance of the Canal site to assure the effectiveness of remediation. The utility lines along Frontier Avenue and LaSalle Expressway will be considered for monitoring in addition to manholes 402, 435, 434 and 401.

5.4.11 Comment: What is the extent of overburden contamination in the 95th Street area?

Response: This question was not addressed in this study. Please see the executive summary.

5.4.12 Comment: Has any previous investigation indicated Love Canal contamination of the 102nd and 103rd Street networks?

Response: Previous investigations have not identified any sanitary sewer contamination on 102nd and 103rd Streets. The "Special Report to the Governor" testing found trace quantities of chemical contamination on 102nd Street just south of Wheatfield Avenue. The results of this testing were reported in equivalent lindane;

Response: Absolute limitations to access are not feasible. Since the contamination is detected in the sediments, direct exposure is very remote. See also Comment 5.5.4 below.

5.5.3 Comment: On what basis can we conclude that the River bottom sampling program has identified for remedial action the full scope of River Bottom contaminated by the 102nd Street outfall? In fact, didn't the outermost limits of the investigation find particular areas of Love Canal contamination? Additional sampling is required to fully identify the areas of contaminated sediment and should be done immediately.

Response: A grid system was established to determine the nature and extent of contamination at the outfall. While it is true that several locations at the outermost limits demonstrated detectable concentrations of contaminants, no pattern was discerned and additional sampling will be performed during the design phase.

5.5.4 Comment: What safeguards exist which eliminate access to this site?

Response: The 102nd Street landfill site has fences on two sides, on west and north sides of the landfill site. The outfall discharges to the Niagara River. The road on the west is on private property owned by Olin. Since the contamination is detected in the sediments, direct exposure is very remote. The proposed temporary berm would restrict the access to the outfall.

5.5.5 Comment: The overburden and bedding material in the Read Avenue and 95th Street area must be tested for Love Canal area chemicals.

additional remedial essentially eliminating contaminant discharge from the 102nd Street storm sewer outfall.

5.5.8 Comment: Given the presence of dioxin upstream of the outfall, how might this affect further sampling?

Response: High levels of contaminants and 3.3 ppb of dioxin were detected in a restricted area upstream of the outfall. Most of the other sampling locations in the vicinity of the outfall were found to be contaminated with low or medium level contaminants. The recommended temporary earth berm with timber sheeting will mitigate the migration of the contaminants.

5.5.9 Comment: There is no indication that the chemicals found in the sediments of 102nd Street outfall came from Love Canal.

Response: Findings of the investigation reveal the presence of dioxin and other compounds such as chlorobenzene, chloroform, BHC isomers, 1,2,4-trichlorobenzene, etc., all of which are generally accepted as Love Canal related contaminants.

5.6 Task Area VII - West Storm and Sanitary Sewers:

5.6.1 Comment: How have individuals residing in Task Area VII and outside of the Declaration Area been notified that their neighborhood was to be sampled for contamination of sewers by the Love Canal and that their sewers are in fact contaminated by Love Canal chemicals, including dioxin, so that they might have an opportunity to be alerted to and to comment on this report?

Response: The engineering studies in five task areas were publicized in Niagara Falls. Also, citizens were informed of the sampling program in a Public Information Meeting on January 3, 1983 in Niagara Falls. The results of the engineering studies were

Boulevard and Wheatfield Avenue. These direct connections have been eliminated.

5.6.5 Comment: What is the source of contamination on Read Avenue between 93rd and 95th Streets and is there overburden contamination in the area of the LaSalle Development on Read Avenue between 93rd and 95th Streets?

Response: Several possible sources of contamination have been identified. First, there is the possibility of surcharging from the main sewer line on 91st Street. Second, this sanitary sewer is directly connected to sanitary sewers on 95th Street which may have unknown connections to the Canal Area. Consequently, the 95th sewer has been recommended for television inspection to determine, if any, unknown connections exist.

The investigation of chemical contamination of the soil, overburden, was not part of the scope of this project.

Consequently, no overburden samples were taken in the LaSalle Development Area and no conclusions can be drawn concerning the overburden contamination. If the television inspection does not identify the sources of contamination on 95th Street and Read Avenue, overburden sampling may be recommended.

5.6.6 Comment: Are there any sanitary sewers in the LaSalle Development Area?

Response: Yes, sanitary sewers exist in the LaSalle Development area and several were sampled. These include MH 750, 752, 754 and 755.

5.6.7 Comment: Is there a currently active pathway of overburden contamination from the Love Canal and adjacent areas in the LaSalle Development and won't contaminated overburden recontaminate cleaned sewers in the LaSalle Development?

6. REMEDATION

6.1 General

6.1.1 Comment: The recommendations sections do not consider remediating areas of the overburden that may have been contaminated by exfiltration from sewers as the result of broken pipes, leaking joints, etc.

Response: Obviously, the possibility of exfiltration exists whenever a break or misaligned joint occurs. Exfiltration of chemically contaminated wastewater is a possibility in many sewer lines throughout the City of Niagara Falls because of the many chemical industries which use the sewer system. No exfiltration contamination was found during the bedding sampling; consequently if exfiltration is occurring, it is probably localized in small pockets of contamination next to the leaking joint. The sewers are not under pressure and due to nature of the overburden soils (i.e., high silt and clay content), the amount of exfiltration would be very limited.

6.1.2 Comment: The report does not adequately nor completely deal with the issue of the need for vapor controls during the implementation of the remedial actions.

Response: No significant quantities of volatile contaminants were detected during the sampling except in the storm sewers on Frontier Avenue at 97th and 99th Streets. The source of this contamination has since been blocked. At this time it does not appear that vapor control during the sewer cleaning will

overflow sewers was not sampled, it is reasonable to assume that these sewers are contaminated because the lift stations have contamination and/or the creek outfall points are contaminated.

- c. As shown in the report, not every single manhole in the community neighboring the Love Canal Area was sampled. The sampling however did allow Malcolm Pirnie, Inc. to draw several conclusions. Love Canal related contaminants were found in several sewers which were not part of the sewer system which at one time had a direct connection to the Canal Area. These contaminated sewers were, however, subject to surcharges from the Canal Area. Consequently, the conclusion was drawn that the contamination was caused by surcharging.
- Other sewers which did not show contamination are also subject to surcharging from the main interceptor sewer. However, it must be recognized that grab samples were only taken in the manhole and no samples were taken from the sewers themselves. Consequently, it is probable that contamination exists due to surcharging in a number of sewers which are adjacent to the main interceptor sewer. In order to be certain that all contamination is removed from the sewers, those sewers which have been known to be subject to surcharging from the main interceptor sewer have

owners, which is expected to be in summer 1984. Gates to the property will be located on 93rd Street School property. The NYSDEC has requested access to the land and the Department will assume liability for any damage to the properties due to investigation and construction activities.

6.2.4 Comment: How does contaminated soil and groundwater at the 93rd Street school affect the recommended activities at Bergholtz Creek?

Response: While it is stated that a potential source may exist in the vicinity of the 93rd Street School, that site has not been fully characterized. Additional sampling will be performed in the vicinity of 93rd Street School to determine if it is a source of contamination to Bergholtz Creek. The 93rd Street school has been recommended for inclusion in the NPL of hazardous waste sites.

6.2.5 Comment: Specified remedial options for Black and Bergholtz Creeks must consider the potential for and implications on residents, neighbors and travelers of the airborne migration of contaminants during remedial activity.

Response: Based on field measurements made during the investigations there does not exist a major concern for airborne migration above ground. A Health and Safety Plan will clearly delineate precautionary measures. The potential for air emissions during remedial work will be addressed in the Health and Safety plans developed for this work.

6.2.6 Comment: What sides of the creek will be fenced? What does it mean to the property owner? What does "hot-spot" mean?

Response: The fencing is an intermediate measure to limit access until the remedial construction is completed. The fence will

Use of the Love Canal landfill as the Creek sediment disposal site would have to be coordinated with the ongoing Love Canal Task Area I remediation and closure (capping). The coordination of the two activities could be accomplished by either deferring the cap construction in the proposed disposal area or by later removing and replacing the landfill cover.

Response: It is the intent of the Department of Environmental Conservation to complete the installation of the improved and expanded cover over the Love Canal Site during the 1984 construction season. It is anticipated that the remedial work in Black and Bergholtz Creeks will take place during the construction season of 1985. During the design of the remedial program for Black and Bergholtz Creeks, consideration will be given to using the Love Canal Site for disposal of contaminated sediments removed from the creeks. In general the Department has attempted to keep similarly contaminated materials on-site when it was considered environmentally sound to do so and consistent with the overall remedial program for the Love Canal Site.

6.3 Task Area IV - South Storm and Sanitary Sewers:

6.3.1 Comment: Why are the sanitary sewers being cleaned and not the storm sewers in the 102nd Street line?

Response: There is no direct connection between the Love Canal and 102nd Street storm sewer. Please note that the sanitary sewers have been recommended for cleaning because the possibility exists that sewer backups have occurred in this area.

contaminated sampling locations within the recommended earth berm.

6.4.5 Comment: Would seepage of contaminated water and movement of contaminated sediment over and through the earth berm recommended in the EID occur after the implementation of the preferred 102nd Street outfall alternative? Why? How much? What would be the impact on the river and on people of such a level of continuing discharge?

Response: The water concentrations are negligible at the outfall. Sedimentary material will not pass under or through the berm. Some water seepage may occur but actual contaminant transport will be greatly reduced. It is anticipated that additional work to contain the contaminated sediments will be included in the remedial program for the 102nd Street landfills.

6.4.6 Comment: A simple crushed rock and stone berm would be wholly adequate and subsequently less costly. A twenty foot wide exposed top two feet above water level would be adequate and the entire project could be accomplished for less than \$400,000.

Response: This alternative will be given serious consideration during the design phase.

6.4.7 Comment: The remedial action proposed is unnecessary because the chemicals found in the sediments pose no immediate public health or environmental threat.

Response: The presence of 3.3 ppb of dioxin and other contaminants requires the remedial action. It is appropriate to take remedial action to mitigate the migration of contaminants in the

if recontamination of this area occurs, it will show up in Lift Station No. 6. All flow from 100th and 101st Streets pass through MH457 and hence if recontamination of Task Area IV occurs, it will be detected in MH457.

6.5.2 Comment: Is the blocked pipe on 91st Street and Read Avenue included for remediation?

Response: Yes, the nature (i.e., roots, dirt, etc.) of the blockage is unknown. Cleaning will first be attempted for this blockage; however, if the cleaning fails, replacement will be recommended.

6.5.3 Comment: Given the results of the analysis of the 93rd Street School storm sewer outfall on Bergholtz Creek, an appropriately-sized area should be immediately fenced off and a comprehensive sampling program immediately implemented.

Response: As stated in Response to Comment No. 5.3.1., additional samples were collected on April 12, 1984 in the vicinity of 93rd Street sewer outfall. Based on the analytical results of these samples, appropriate size area will be fenced.

QA: Quality Assurance
QC: Quality Control
TCDD: Tetra chlorodibenzo-p-dioxin
TRC: Technical Review Committee
USDHHS: United States Department of Health and Human Services
USDOJ: United States Department of Justice
USEPA: United States Environmental Protection Agency

APPENDIX A

COMMENTS PRESENTED IN A PUBLIC

INFORMATION MEETING IN

NIAGARA FALLS ON

NOVEMBER 29, 1983

COMMENT

RESPONSE

What part of the report was prepared by M. D. Twidell?	Please see Response to Comment No. 2.1.6.
Why are sanitary sewers being cleaned and not the storm sewers in the 102nd Street line?	Please see Response to Comment No. 6.3.1.
Why were sewers in the northern task area north of Colvin Boulevard sampled?	Please see Response to Comment No. 5.2.14.
What was found upstream of the confluence of Black/Bergholtz Creeks? Why wasn't the study area expanded further upstream in Bergholtz?	Please see Response to Comment No. 5.3.7.
Where was the sample on Duero Drive taken? How do the results of the samples U-5N and U-5M differ from the samples collected at the Black and Bergholtz Creeks?	Please see Response to Comment No. 5.3.5.
Where is the fence at 99th and Colvin Boulevard?	Please see Response to Comment No. 2.2.1.
Was dioxin tested for in all samples?	Please see Response to Comment No. 5.1.12.
Given the presence of dioxin upstream of the outfall, how might this affect further sampling?	Please see Response to Comment No. 5.5.8.
How did 30 ppb dioxin get into the sanitary sewers?	Please see Response to Comment No. 5.2.12.
When was storm event sampling conducted? What manholes were sampled during the storm events?	Please see Response to Comment No. 5.1.15.
How can data collected over a short period of time be used to determine habitability? What is the long-term monitoring program for the sewers?	Please see Response to Comment Nos. 3.1.2 and 5.1.2.

APPENDIX B

TESTIMONY OF ASSEMBLYMAN JOSEPH T. PILLITTERE
GIVEN IN A PUBLIC INFORMATION MEETING
IN NIAGARA FALLS, ON NOVEMBER 29, 1983

APPENDIX C

COMMENTS PRESENTED IN THE WORKSHOP
IN NIAGARA FALLS ON DECEMBER 13, 1983

COMMENTS

RESPONSE

Did Office of Technology Assessment offer any comments?

Please see Response to Comment No. 2.1.10.

Is rehabilitation the State's decision? Does this allow an easier opportunity to make the decision?

Please see Response to Comment No. 3.1.2.

What is the timetable for bidding work?

Please see Response to Comment No. 6.1.5.

Why wasn't 103rd Street storm sewer line investigated?

Please see Response to Comment No. 3.1.15.

Could a copy of the report be sent to the Town of Wheatfield?

Please see Response to Comment No. 2.1.11.

APPENDIX D

COMMENTS RECEIVED FROM
MS. EILEEN PARON OF
9529 CAYUGA DRIVE
NIAGARA FALLS, NEW YORK

APPENDIX E

Comments by Love Canal Renters' Association
at 649 Rainbow Boulevard, Niagara Falls

COMMENT	RESPONSE
<p>Please identify and provide access to the "existing information" which was reviewed with respect to the level and location of contaminated sediments from the 102nd Street outfall. (5-4)</p> <p>When will New York State complete the development of the "data base to assess the nature and extent of existing contamination (at the 102nd Street Outfall)...". (5-4)</p> <p>Why is the "Jay Protocol" for TCDD analysis inadequate for use in this investigation? (6-8)</p> <p>What precision, accuracy and completeness objectives were established for the organics, inorganics, and Dioxin analyses? To what extent were they achieved? What are the implications of this for the understanding of the study results?</p> <p>Why aren't the detection limits for the organics, inorganics and Dioxin analyses state of the art?</p> <p>Given the fact that Love Canal chemicals combine to create new and unknown toxic chemicals, why does the analysis assume that all unidentified chemical are not from the Love Canal and that exposure to these chemicals will not pose any health and safety threat?</p> <p>In order for a well-reasoned conclusion about the timing and selection of areas requiring remedial activity, it is necessary to understand the extent to which contaminated areas pose a danger to health and safety. The contaminant analysis does <u>not</u> do this and as a result it is exceedingly difficult to evaluate the sensibility of many of the report's conclusions and assumptions regarding appropriate remedial activities.</p> <p>Why does selection of a criterion value of 10^{-5} for particular organic contaminants "provide the <u>proper</u> weighting to carcinogens and non-carcinogens in the development of the contaminant assessment score". (7-7, emphasis supplied).</p> <p>Such an approach downwardly biases the final matrix scores for each sample and as a result provides an inappropriate representation of the need for remedial activity at a particular site.</p> <p>Does the analysis utilize the more rigorous criterion recommended by Mt. Sinai for the two unspecified contaminants referenced on page 7-3?</p> <p>Why do the number and type of phthalate ester classes identified in the Black and Bergholtz Creek upstream sediment samples suggest that <u>none</u> of these phthalate compounds may be related to the Love Canal? (7-10 & 13)</p>	<p>Please see response to Comment No. 2.3.1.</p> <p>Please see response to Comment No. 2.1.3.</p> <p>Please see response to Comment No. 4.1.1.</p> <p>Please see response to Comment No. 4.1.2.</p> <p>Please see response to Comment No. 4.1.5.</p> <p>Please see response to Comment No. 5.1.6.</p> <p>Please see response to Comment No. 5.1.1.</p> <p>Please see response to Comment No. 5.1.7.</p> <p>Please see response to Comment No. 5.1.8.</p> <p>Please see response to Comment No. 5.1.9.</p>

COMMENT	RESPONSE
<p>What is the source of the Love Canal contaminants in the sanitary sewer contaminant pathway from the Love Canal area which begins at mile 264, 265, and 267? What is the area of overburden and ground-water affected by this pathway? After implementation of the recommended remedial measures, how will this sanitary sewer line be sealed off from the source of this contamination?</p> <p>The origin and source of the contaminant migration in the sanitary sewers on 95th Street South of Colvin and north of Read Avenue is inadequately explained. The recommendations of the study must commit the State to identify the source of contamination and eliminate it and subsequently clean up the entire affected area. (A-15)</p> <p>How will the monitoring of Lift Stations No. 1 and 6 and sanitary MA 457 provide information <u>specific</u> to the effectiveness of the contaminant remedial measures proposed for Task Area II. (A-27)</p> <p>Why aren't the sources of storm sewer contamination to be monitored?</p> <p>What explains the inconsistency between the results of EPA's organic sampling program for these Creeks and the results of this investigation? What are the implications of possible explanations for the findings and recommendations of this program?</p> <p>Do previous analytical results indicate possible Love Canal chemical contamination outside of the creek areas sampled in this investigation?</p> <p>Why does the 93rd Street School represent a potential source of contamination to Bergholtz Creek? (B-12)</p> <p>The investigatory program failed to sample for chemical contamination in Bergholtz Creek in the immediate vicinity of the 93rd Street outfall.</p> <p>The sediment in Cayuga Creek was not sampled under the Lincolnton Avenue 30" outfall for Love Canal chemicals. It must be.</p> <p>Specified remedial options for Black and Bergholtz Creek must consider the potential for and implications on residents, neighbors and travelers of the airborne migration of contaminants during remedial activity. The analysis is silent as to this point.</p> <p>There is insufficient basis for the conclusion that results of the contaminant assessment do not justify the additional level of protection by, nor the additional expense of, the sediment trap? (B-43)</p>	<p>Please see responses to Comment Nos. 5.2.4 and 3.1.16.</p> <p>Please see response to Comment No. 5.2.11.</p> <p>Please see response to Comment No. 6.5.1.</p> <p>Please see response to Comment No. 5.1.2.</p> <p>Please see response to Comment No. 5.3.6.</p> <p>Please see response to Comment No. 2.2.5.</p> <p>Please see response to Comment No. 2.2.3.</p> <p>Please see response to Comment No. 5.3.8.</p> <p>Please see response to Comment No. 5.3.9.</p> <p>Please see response to Comment No. 6.2.5.</p> <p>Please see response to Comment No. 6.2.7.</p>

COMMENT	RESPONSE
<p>What is the source of Love Canal contamination in the storm sewer segment on 100th Street between MI 417 and 415? What is the area of overburden and groundwater affected by this storm sewer segment. After implementation of the recommended remedial measures, how will this storm sewer segment be sealed from the source of this contamination? C-15.</p> <p>What is the source of Love Canal contamination in the area of the declaration zone which has acted to contaminate the above-described storm sewer segment? How will this area be remediated by the recommendations presented for this Task Area? C-15</p> <p>What is the source of Love Canal contamination in the storm sewers between 97th and 100th Streets? What is the area of overburden and groundwater affected by this storm sewer segment? After implementation of the recommended remedial measures, how will this storm sewer segment be sealed from the source of this contamination?</p> <p>The (probable) cause of Love Canal area contamination in the 95th Street storm sewers is inadequately explained.</p> <p>Is there a currently active pathway of overburden contamination from the Love Canal and adjacent areas into the LaSalle Development?</p> <p>What is the extent of overburden contamination in the 95th Street area?</p> <p>What is the source of Love Canal contamination along the area of the sanitary sewer along Whentfield Street? What is the area of overburden and groundwater affected by this sanitary sewer segment? After implementation of the recommended remedial measures, how will this sanitary sewer segment be sealed from the source of this contamination? C-17</p> <p>What is the status of the plug in the sewer at 99th Street? How do we know? C-17</p> <p>Why won't contaminated overburden recontaminate cleaned sewers in the above described area?</p> <p>It is important that remediation measures be recommended so as to <u>eliminate</u> the contamination of the Niagara River by the Little Niagara River Outfall. It is important that remedial measures be proposed and adopted that will remove <u>all</u> contaminated sediment buildup from this discharge point into the Niagara River.</p> <p>Why won't the recommended 102nd Street Outfall's earth impoundment not be able to retain all of the contaminated sediment from the south storm sewers so as to stop completely the continuing discharges into the Niagara River</p> <p>Why can't this outfall be sealed off? What would happen if it were? (C-35)</p> <p>The investigatory report provides insufficient and unconvincing arguments for failing to test the 102 and 103rd Street sewer networks. Has any previous investigation indicated Love Canal contamination of these networks?</p>	<p>Please see responses to Comment Nos. 5.4.13 and 3.1.16.</p> <p>Please see responses to Comment Nos. 5.4.8 and 3.1.16.</p> <p>Please see response to Comment No. 5.4.4.</p> <p>Please see response to Comment No. 5.6.7.</p> <p>Please see response to Comment No. 3.1.16.</p> <p>Please see responses to Comment Nos. 5.4.9. and 3.1.16.</p> <p>Please see response to Comment No. 5.4.5.</p> <p>Please see response to Comment No. 3.1.16.</p> <p>Please see response to Comment No. 5.4.3.</p> <p>Please see response to Comment No. 6.4.8.</p> <p>Please see responses to Comment Nos. 5.4.12 and 3.1.15.</p>

COMMENT	RESPONSE
<p>What is the source of the Love Canal contamination of the sanitary sewer lines on Read Avenue between 93rd Street and 95th Street. The source of contamination is inadequately explained in the report. What is the area of overburden and groundwater affected by this sewer line? After implementation of the recommended remedial measures, how will this sewer line be sealed off from these contaminants? E-17.</p> <p>Does available evidence indicate that the overburden in the area of the LaSalle Development on Read Avenue between 93rd Streets and 95th Street is contaminated by the Love Canal? E-17. If so, what remedial measures are appropriate? Why?</p> <p>How have individuals residing in Task Area VII and outside of the Declaration Area been notified that their neighborhood was to be sampled for contamination of sewers by the Love Canal and that their sewers are in fact contaminated by Love Canal chemicals, including dioxin, so that they might have an opportunity to be alerted to and to comment on this report?</p> <p>The overburden and bedding material in the Read Avenue 95th Street area must be tested for Love Canal area chemicals. E-24</p> <p>Is the main interceptor route from Lift Station No. 6 to 60th Street and John Avenue recommended for cleaning or for additional testing? E-30.</p> <p>Why aren't all of the tributary sewers to the main interceptor sewer routes between Lift Station No. 6 and 60th Street and John Avenue also recommended for cleaning or for testing?</p> <p>The report does not adequately nor completely deal with the issue of the need for vapor controls during the implementation of the recommended remedial actions. The discussion in the North and West areas is especially conclusory and without analysis and the discussion with respect to the South sewers is of insufficient detail and does not consider the likelihood that the hydraulic cleaning techniques may result in the volatilization of chemical substances.</p> <p>The recommendations sections do not consider remediating areas of the overburden that may have been contaminated by exfiltration from sewers the result of broken pipes, leaking joints, etc.</p>	<p>Please see responses to Comment Nos. 5.6.5 and 3.1.16.</p> <p>Please see response to Comment No. 3.1.16.</p> <p>Please see response to Comment No. 5.6.1.</p> <p>Please see response to Comment No. 5.5.5.</p> <p>Please see response to Comment No. 5.6.2.</p> <p>Please see response to Comment No. 5.5.6.</p> <p>Please see responses to Comment Nos. 6.1.2 and 6.1.3.</p> <p>Please see response to Comment No. 6.1.1.</p>

APPENDIX F

Comments Received From Wald, Harkrader and Ross
of Washington, D.C., Representing Occidental
Chemical Corporation, Niagara Falls

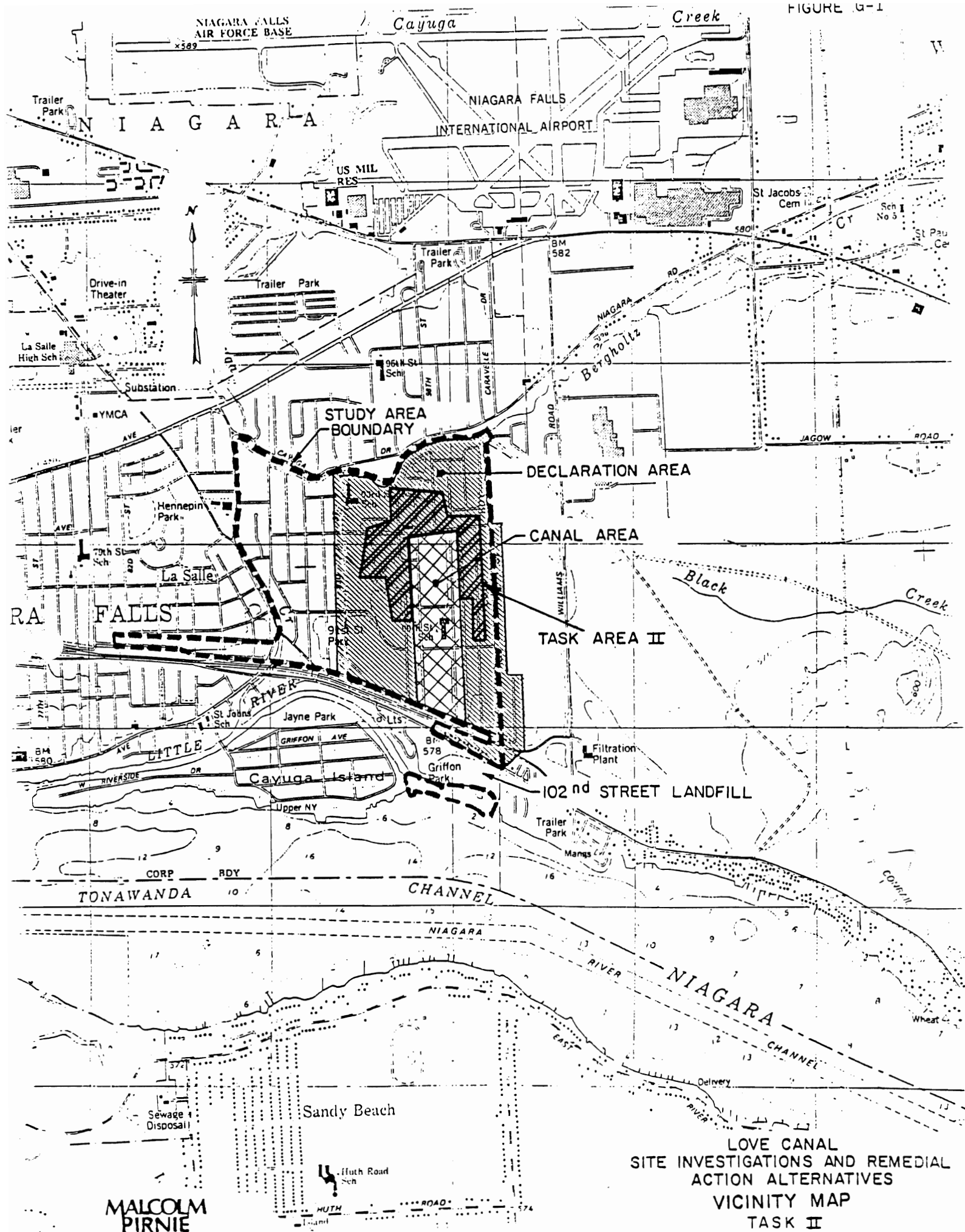
COMMENT	RESPONSE
<p>In addition to the difficulty of interpretation with regard to samples found to contain less than 5 ppb TCDD, many of the analytical reporting sheets for TCDD samples bear the unexplained phrase "Missouri Sample." Efforts should be made to determine why this phrase appears on so many of the TCDD analytical reporting sheets.</p>	<p>Please see response to Comment No. 4.1.3.</p>
<p>Review of the TCDD Quality Control Reports raises serious questions about the TCDD analyses. First, the TCDD quality control documentation deals with only 10 of the 12 positive TCDD analyses reported in the EID, locations D-7-M (Task Area III) and F-8 (Task Area VI) are not documented. Second, the values reported for samples with Compuchem Nos. 4193, 4239 and 4235 are highly suspect because of at least two indeterminate findings in the blank, duplicate or spiked quality control samples. Moreover, similar analytical quality controls were applied to samples with Compuchem Nos. 4376, 4378, 4382 and 4383. The quality control appears deficient.</p> <p>These samples were run over a ten day period (July 23 to August 4) and only one blank was run for that period. Also, it appears there was an unexplained change in the duplicate sample data used to qualify results generated over this time period.</p>	<p>Please see response to Comment No. 4.1.6.</p>
<p>The results of chemical analysis reported in the EID are deficient in many respects, as disclosed by the quality assurance documentation in the Supporting Documents. Although the surrogate mean percent recoveries from spiked samples are within the stated EPA Advisory Committee control limits, results for individual samples frequently do not meet these limits. By using mean percent recoveries, the contractor tends to smooth the data and mask potentially erroneous results. Careful inspection of individual surrogate recovery results indicate many instances in which advisory committee control limits are exceeded for specific samples, particularly for the acid and base/neutral surrogates. When surrogate analyses fall outside control limits, it is a signal that analytical results are potentially incorrect. In this case, the contractor appears not to have taken any action to reject or otherwise deal with analyses which were indicated as potentially erroneous by the surrogate recovery data.</p> <p>In the case of duplicate spikes and surrogates as well, average recovery values appear good or at least acceptable. But this is misleading. Wide variations exist upon inspection of individual recovery values. For example, 1,2,4-trichlorobenzene recoveries for duplicate spikes vary between 0 and 300%. Pentachlorophenol recoveries range from not detected to 170% recovery. For one isomer of BHC, duplicate spike recoveries vary from 24 to 230%. Again, no indications are given that the analyst took any action when the quality control indicators were outside of acceptable limits.</p>	<p>Please see response to Comment No. 4.1.7.</p>

COMMENT	RESPONSE
<p>Siloxanes were identified in several samples. The EID does not consider the possibility that this is likely an artifact of lab contamination. Silanized glassware is commonly used in these types of analytical procedures, notably in the preparation of chromatography columns and in injection port sleeves in the gas chromatograph/mass spectrometer.</p> <p>The identification of the methylester of formic acid is a good example of the limitations of relying upon computer identification of mass spectra. First of all, each spectra presented in the report is "enhanced" -- which means that certain information was purged from the data before presentation. When the level of the signal left over is small, the spectrum obtained is unreliable. Compounding this situation is the fact that the spectrum identified as the methylester of formic acid has only one significant peak and although the computer "score" for the matchup is high, the identification is totally unreliable.</p> <p>Pentafluorophenol is also frequently reported. Careful examination of the documents in the Supporting Documents reveals that Compuchem uses this compound as an internal standard. It is deliberately added to the sample. Compuchem claims, however, that another parameter used to confirm identification (retention time) does not match pentafluorophenol. This means that the analysis for the compound is totally in doubt. Either the mass spectral identification is incorrect or if it is correct, then other analysis parameters are out of control and the chemical found is simply the material they have added to the sample themselves.</p> <p>In summarizing the results of each chemical analysis, the EID also includes both methylene chloride and phthalates. Methylene chloride is widely recognized as a laboratory contaminant from its use as an extraction solvent. The volatility and water solubility of methylene chloride are such that it would not be expected to be found in sediments standing in liquid environments. It is not a "Love Canal" chemical, and is found in raw, untreated Love Canal leachate only as a by-product and then only at a level of only about 100 ppb. The inclusion of methylene chloride in these reports of analyses is in error.</p> <p>Phthalates are also reported in the summaries of analysis. But the Supporting Documents note that the phthalates are often found at the same concentrations as in blank control samples. Nonetheless, the phthalate sample levels are reported as if they are the actual levels in the material analyzed. The summaries of analyses fail to report the differences between the control blanks and the samples. These reports are simply wrong.</p> <p>Both methylene chloride and phthalate are reported frequently in the summaries of analyses. Unlike siloxanes, methylester of formic acid, and pentafluorophenol, they are then assigned a score and included in the matrix and thus in the contamination assessment. Methylene chloride scores should be excised from the matrix and the phthalate scores adjusted as they have skewed the contamination assessment input to the remedial action decision.</p>	<p>Please see response to Comment No. 4.1.4.</p>

COMMENT	RESPONSE
<p>The EID recommended sewer cleaning approach of closing off sections of the sewers and cleaning them out with water under high pressure (15,000 psi) is extremely unwise for the following reasons:</p> <ul style="list-style-type: none"> • As a practical matter, it is not possible to shut-off sanitary sewer flows for cleaning. Too many residential and commercial establishments would be adversely effected even for a short period of time. No consideration, for example, has been given to approximately 350 gal/day of sanitary sewage that originates from each house along the lines to be cleaned. • With respect to storm drains, a similar situation exists and it is quite conceivable that even temporary blockage could result in basement flooding during a rain storm. • There are serious questions whether high pressure cleaning of sewer pipes can be accomplished without extensive damage to the sewer systems or backups into homes. <p>With these disadvantages in mind, as well as its high projected costs (which appear to be seriously understated), any sewer cleaning deemed to be required should proceed along the following course:</p> <ul style="list-style-type: none"> • Using a vacuum truck with a carbon adsorption system on the exhaust air, remove sediments on the benches and in the channels at the manholes to the maximum amount possible. • Construct a temporary sediment catch basin to trap sediments at a low point downstream in the sewers. The lift stations, which make ideal sediment catch basins in the sanitary sewers, should be used for this purpose. • Starting at the highest sewer invert elevation, use fire hoses to flush the sediment downstream towards the catch basin. 	<p>Please see response to Comment No. 6.1.3.</p>
<p>The chemicals in the sediments, even the "Love Canal" chemicals, are not unique to the Niagara Falls POTW. The organic chemical loading which now reaches the POTW is described in the March 1983 Malcolm Pirnie, Inc., Report to the City of Niagara Falls at Tables S-2, S-3, S-4 and S-5. Even if all the organics present in the sewer sediments at issue were completely to dissolve in the flush water and make their way to the POTW all at once, the quantity of organic chemicals involved (approximately 15 lbs. would be insignificant compared to the present 400 lbs. average daily POTW load of priority pollutant type chemicals. The fact is, however, that well over 90% of the organic chemicals would remain within the suspended solids trapped in the sediment catch basins</p> <p style="text-align: right;">and that</p> <p>no measurable daily increase in the POTW loading would result.</p>	<p>Please see responses to Comment Nos. 5.5.8 and 5.5.9.</p>

COMMENT	RESPONSE
<p>The location of the now demolished 99th Street School would be one suitable area within the Love Canal site for disposal of the excavated sediments from Black and Bergholtz Creeks. This area is scheduled to be filled in and capped under the current remediation program.</p> <p>Disposal of the sediments at the 99th Street School location would require only one substantial change in the planned remediation program for the 99th Street School section of the Love Canal site. (Figure 1). This would be the installation of drain tiles connecting to the existing Love Canal perimeter drainage system. Another level of protection is provided by the groundwater flow which is well established to be toward the existing perimeter drainage system by reason of the hydraulic barrier created by the leachate collection system. Finally this area is to be capped, inhibiting substantially any migration by reducing the water loading to the site. The new drain tiles, the cap and existing hydraulic barrier will thus preclude the migration of any creek sediment chemicals away from the Love Canal landfill.</p> <p>Use of the Love Canal landfill as the creek sediment disposal site would have to be coordinated with the on-going Love Canal Task Area I remediation and closure (capping). The coordination of the two activities could be accomplished by either deferring the cap construction in the proposed disposal area or by later removing and replacing the landfill cover. Considering the very substantial cost savings to be achieved by disposal of the creek sediments at Love Canal and the fact that capping of that site will not even start until late Spring, the coordination of these two activities should be implemented.</p>	<p>Please see response to Comment No. 6.2.9.</p>

APPENDIX G
Sampling Location Maps



MALCOLM PIRNIE

LOVE CANAL
SITE INVESTIGATIONS AND REMEDIAL
ACTION ALTERNATIVES
VICINITY MAP
TASK II

FIGURE G-2

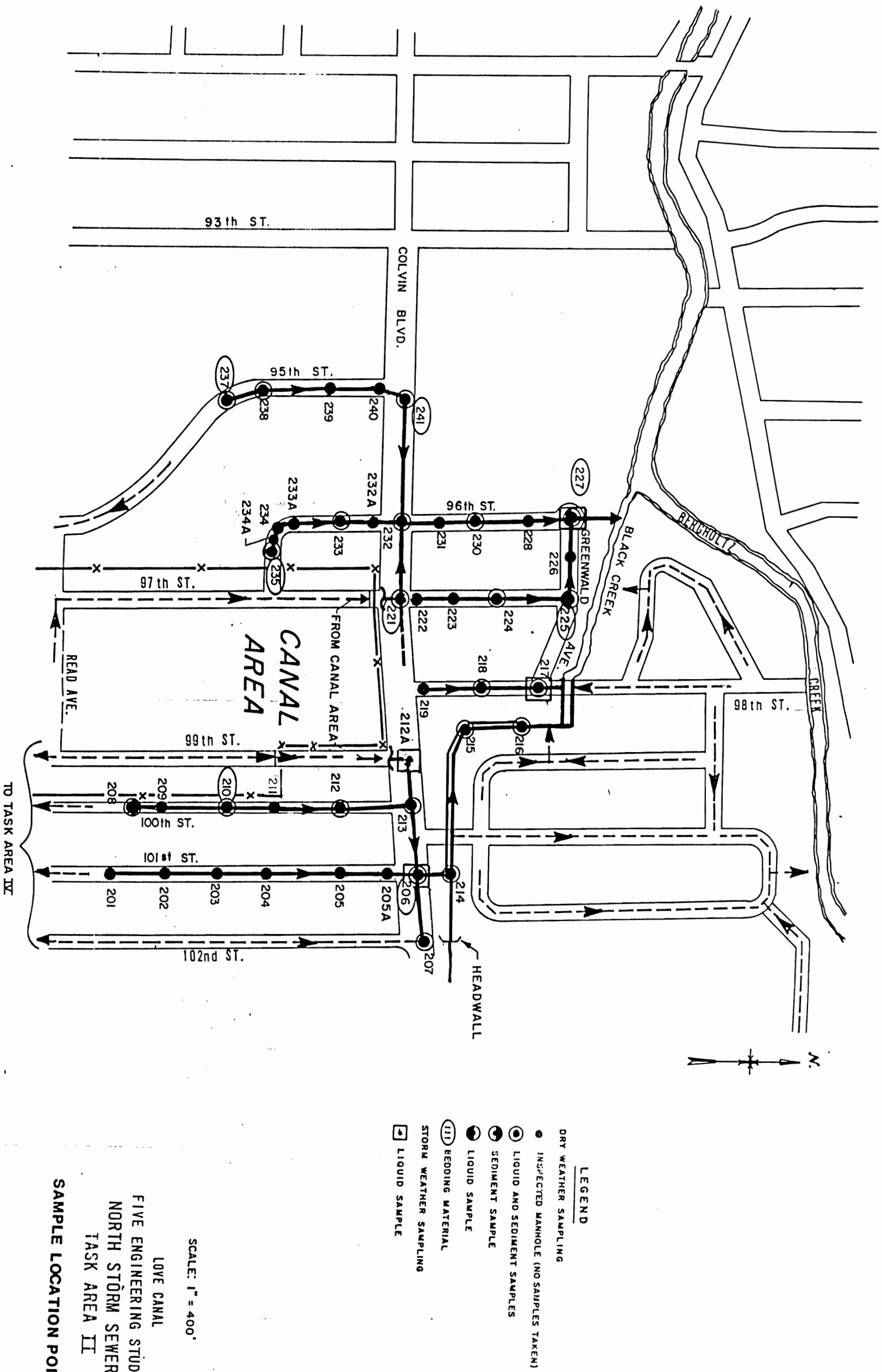
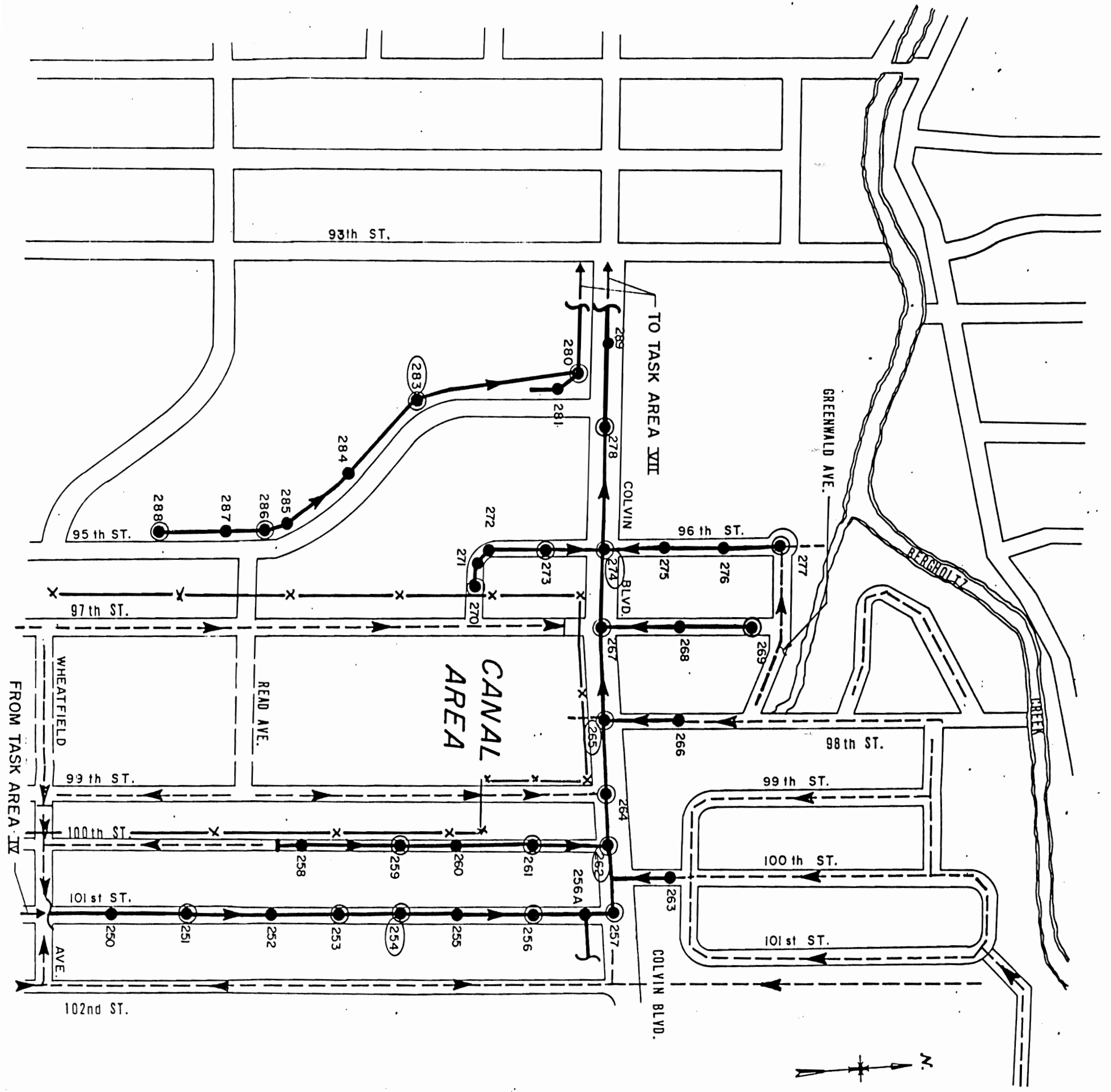


FIGURE G-3

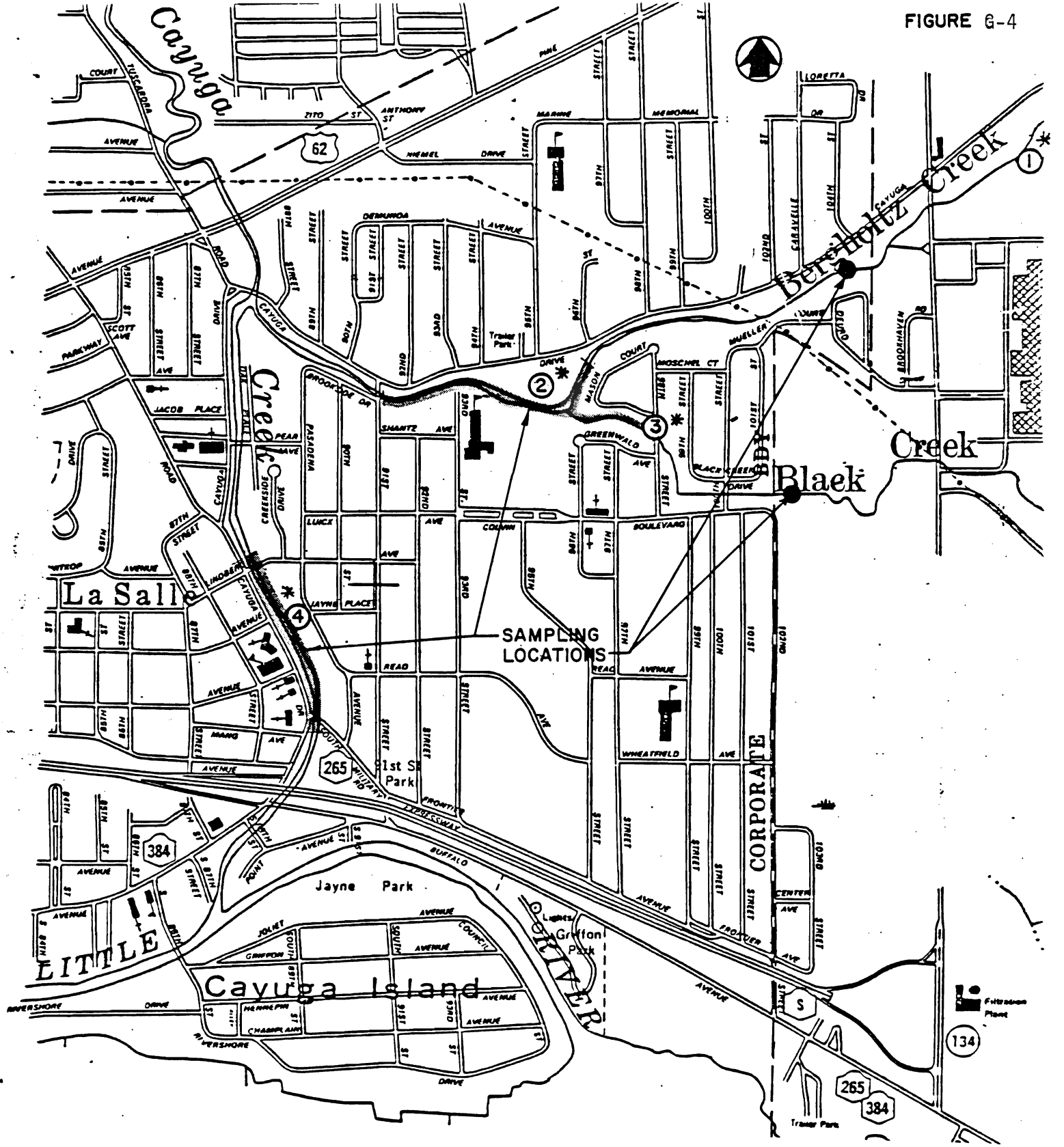


- LEGEND**
- DRY WEATHER SAMPLING
 - INSPECTED MANHOLE (NO SAMPLES TAKEN)
 - LIQUID AND SEDIMENT SAMPLES
 - ⊙ SEDIMENT SAMPLE
 - ⊙ LIQUID SAMPLE
 - (III) BEDDING MATERIAL
 - ⊙ STORM WEATHER SAMPLING
 - LIQUID SAMPLE

SCALE: 1" = 400'

LOVE CANAL
 FIVE ENGINEERING STUDIES
 NORTH SANITARY SEWERS
 TASK AREA II

SAMPLE LOCATION POINTS

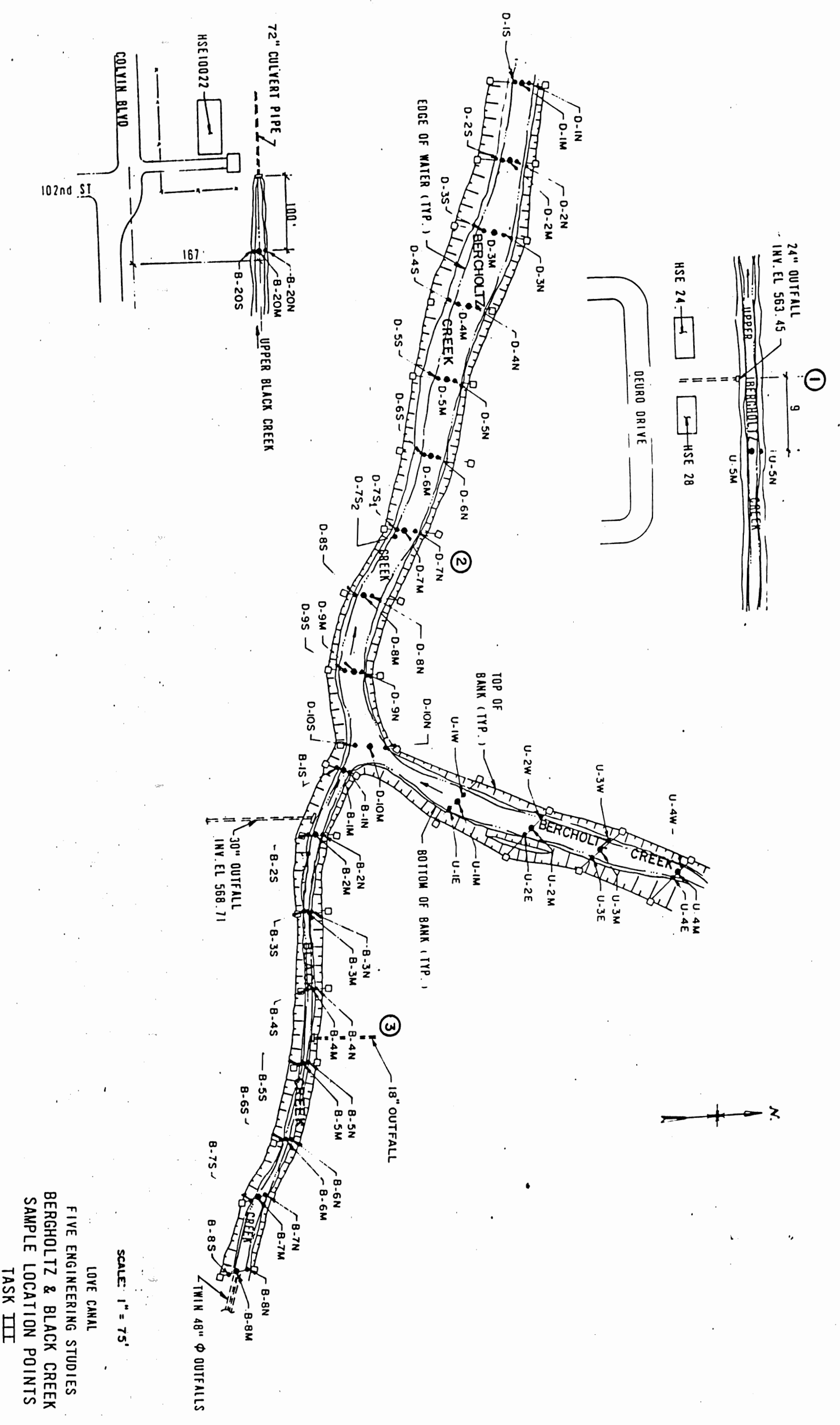


NIAGARA RIVER

*SEE FIGURE B.3-1 & B.3-2

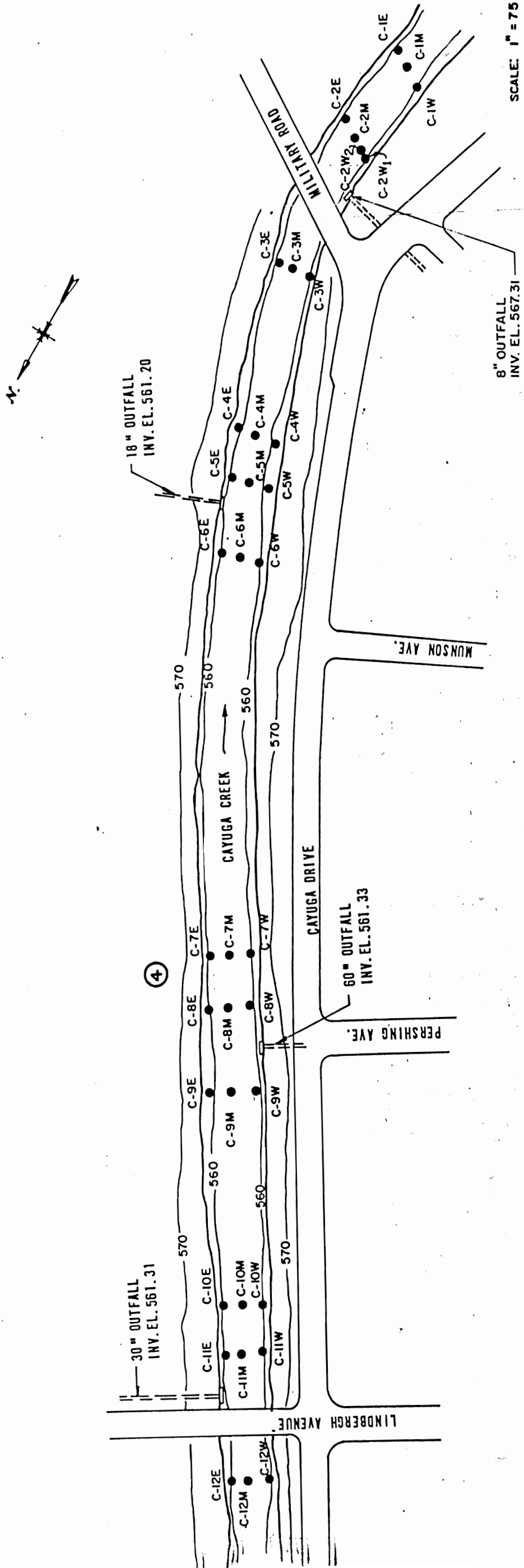
LOVE CANAL
 FIVE ENGINEERING STUDIES
BLACK AND BERGHOLTZ CREEK
 VICINITY MAP
 TASK III

FIGURE G-5



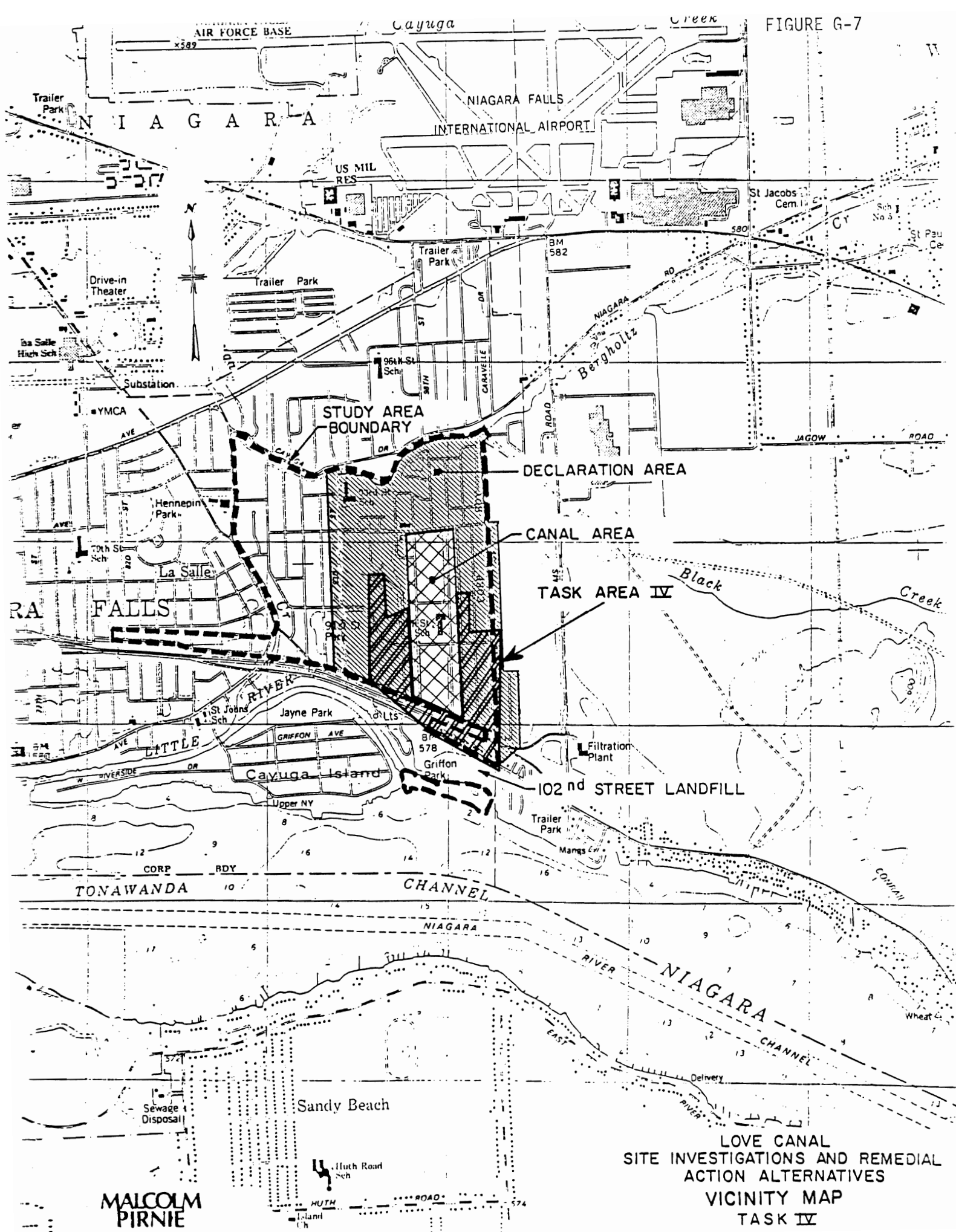
LOVE CANAL
 FIVE ENGINEERING STUDIES
 BERCHOLTZ & BLACK CREEK
 SAMPLE LOCATION POINTS
 TASK III

FIGURE G-6



LOVE CANAL
FIVE ENGINEERING STUDIES
CAYUGA CREEK
TASK III

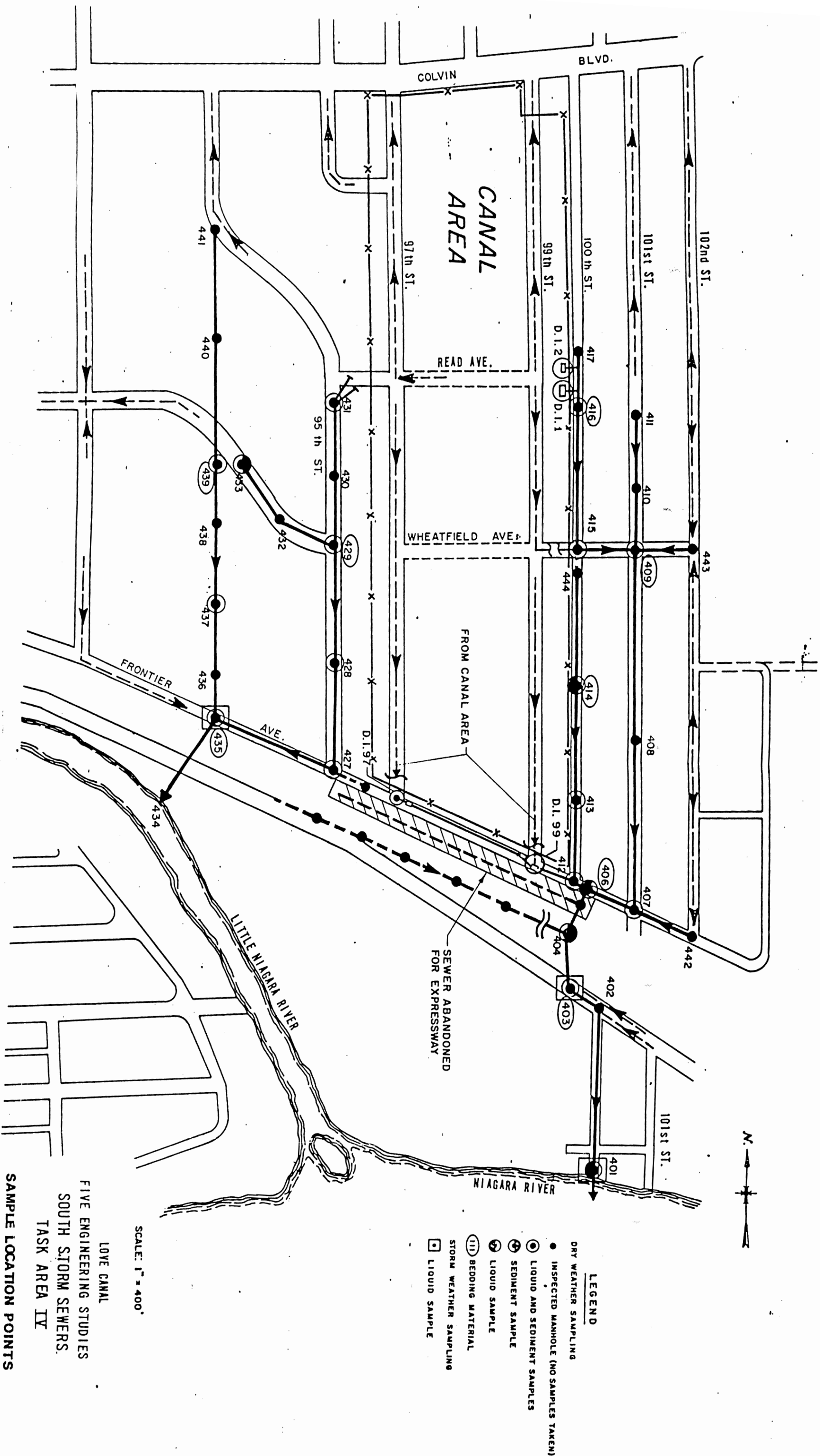
SAMPLE LOCATION POINTS



LOVE CANAL
 SITE INVESTIGATIONS AND REMEDIAL
 ACTION ALTERNATIVES
 VICINITY MAP
 TASK IV

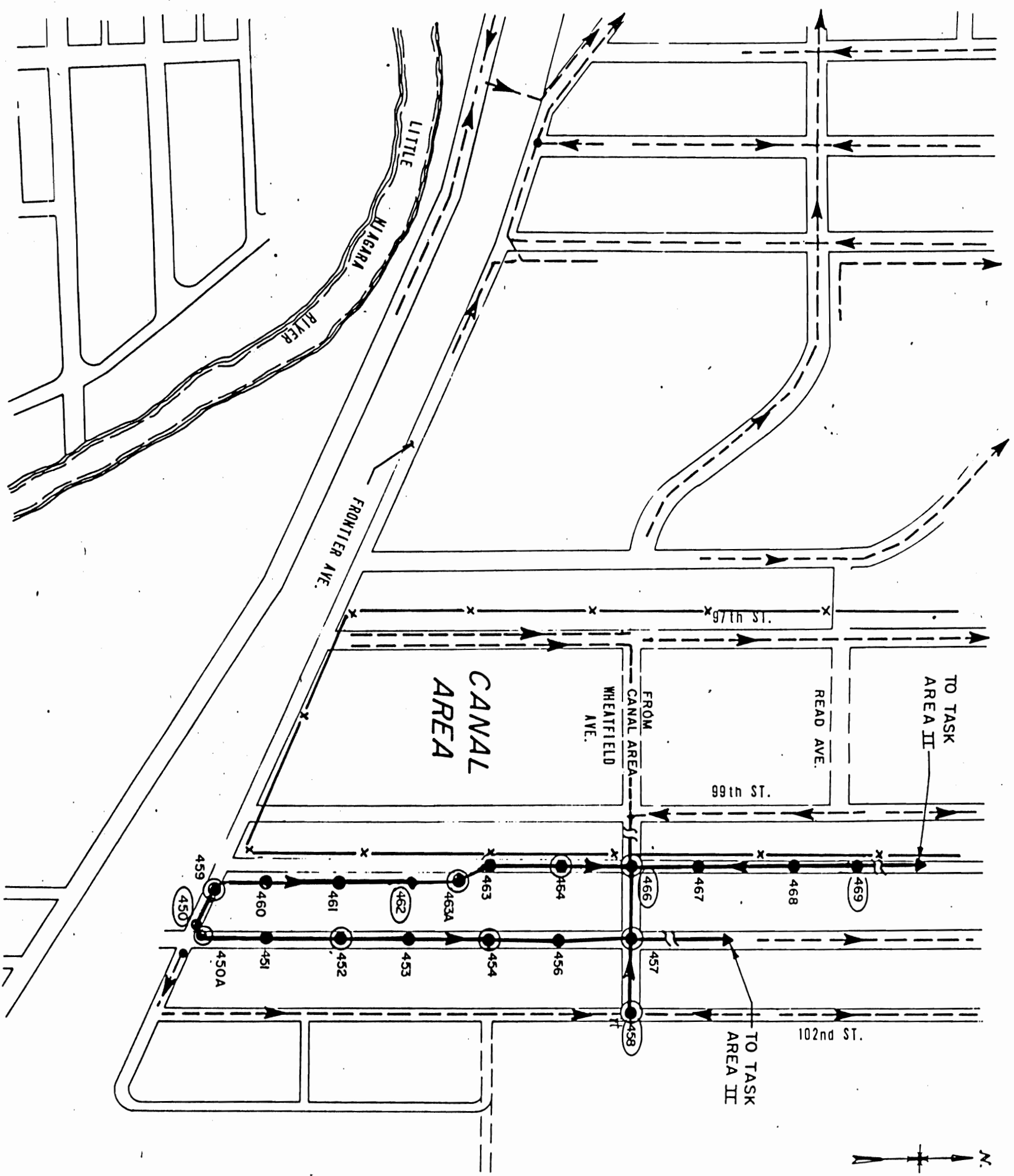
MALCOLM
 PIRNIE

FIGURE G-8



LOVE CANAL
 FIVE ENGINEERING STUDIES
 SOUTH STORM SEWERS.
 TASK AREA IV
 SAMPLE LOCATION POINTS

FIGURE G-9

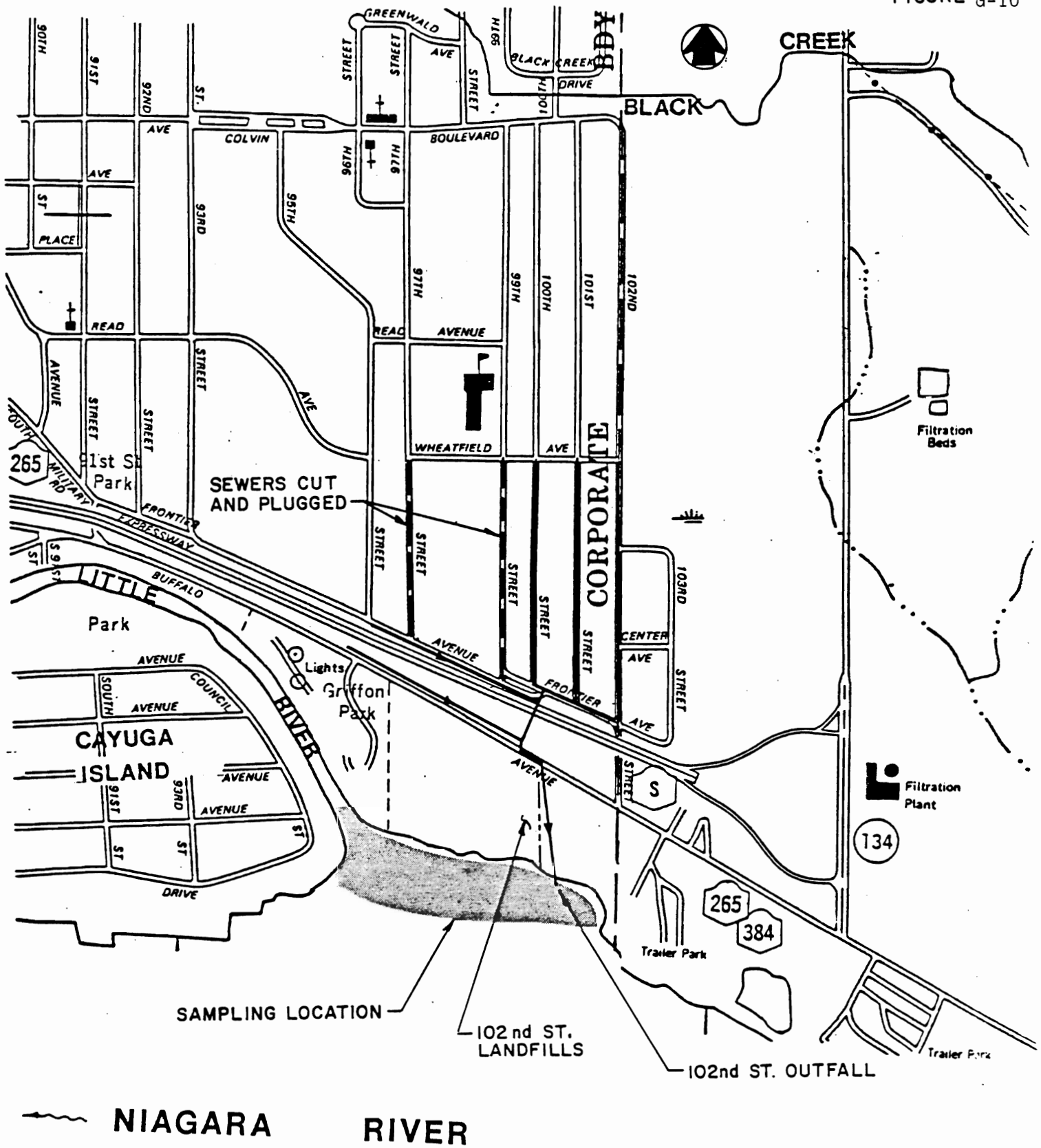


- LEGEND**
- DRY WEATHER SAMPLING
 - INSPECTED MANHOLE (NO SAMPLES TAKEN)
 - ⊙ LIQUID AND SEDIMENT SAMPLES
 - ⊕ SEDIMENT SAMPLE
 - ⊖ LIQUID SAMPLE
 - Ⓜ BEDDING MATERIAL
 - ⊖ STORM WEATHER SAMPLING
 - LIQUID SAMPLE

SCALE: 1" = 400'

LOVE CANAL
 FIVE ENGINEERING STUDIES
 SOUTH SANITARY SEWERS
 TASK AREA IV

SAMPLE LOCATION POINTS



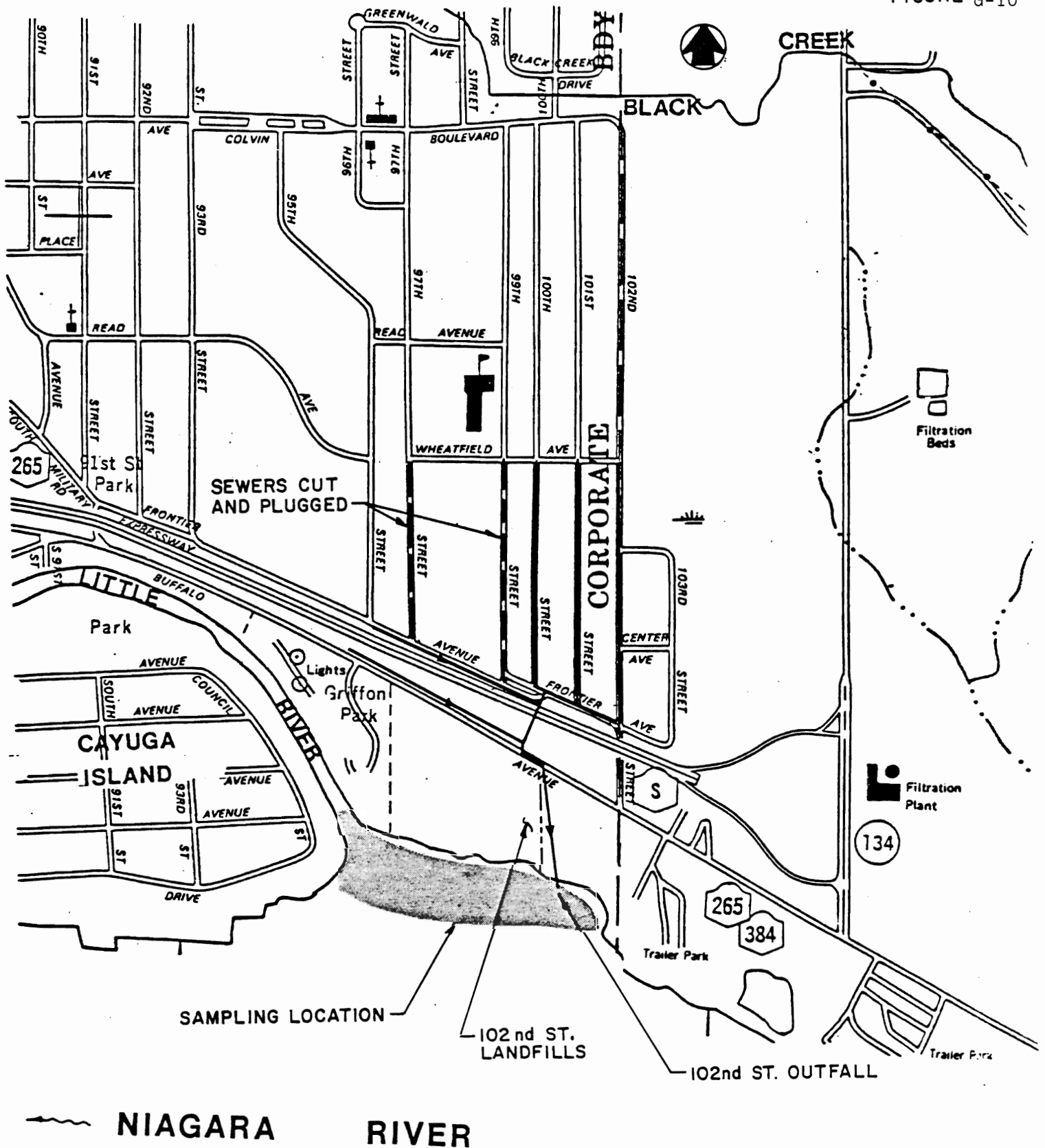
SAMPLING LOCATION

102nd ST. LANDFILLS

102nd ST. OUTFALL

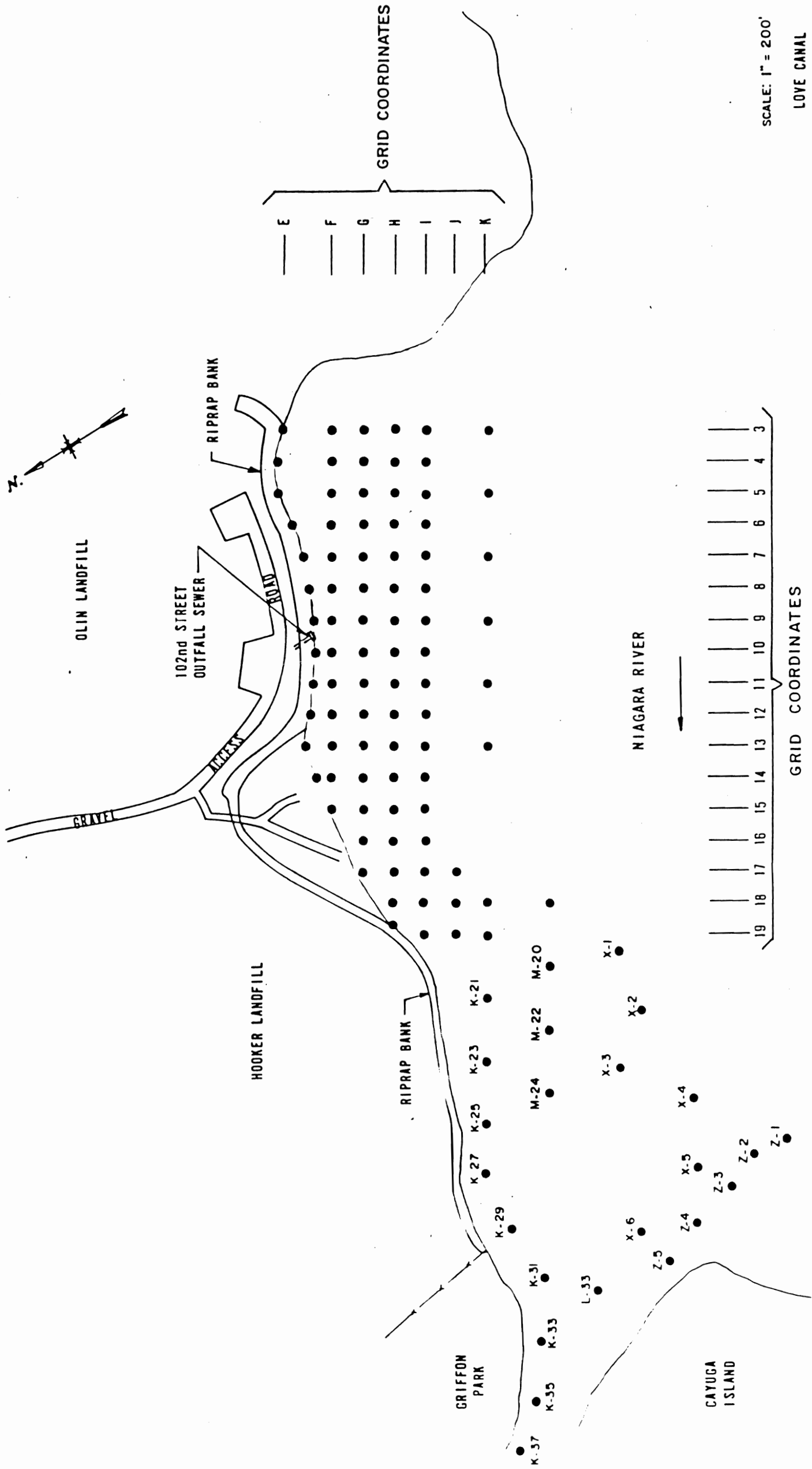
NIAGARA RIVER

LOVE CANAL
 FIVE ENGINEERING STUDIES
102nd ST. OUTFALL
TASK VI
 VICINITY MAP



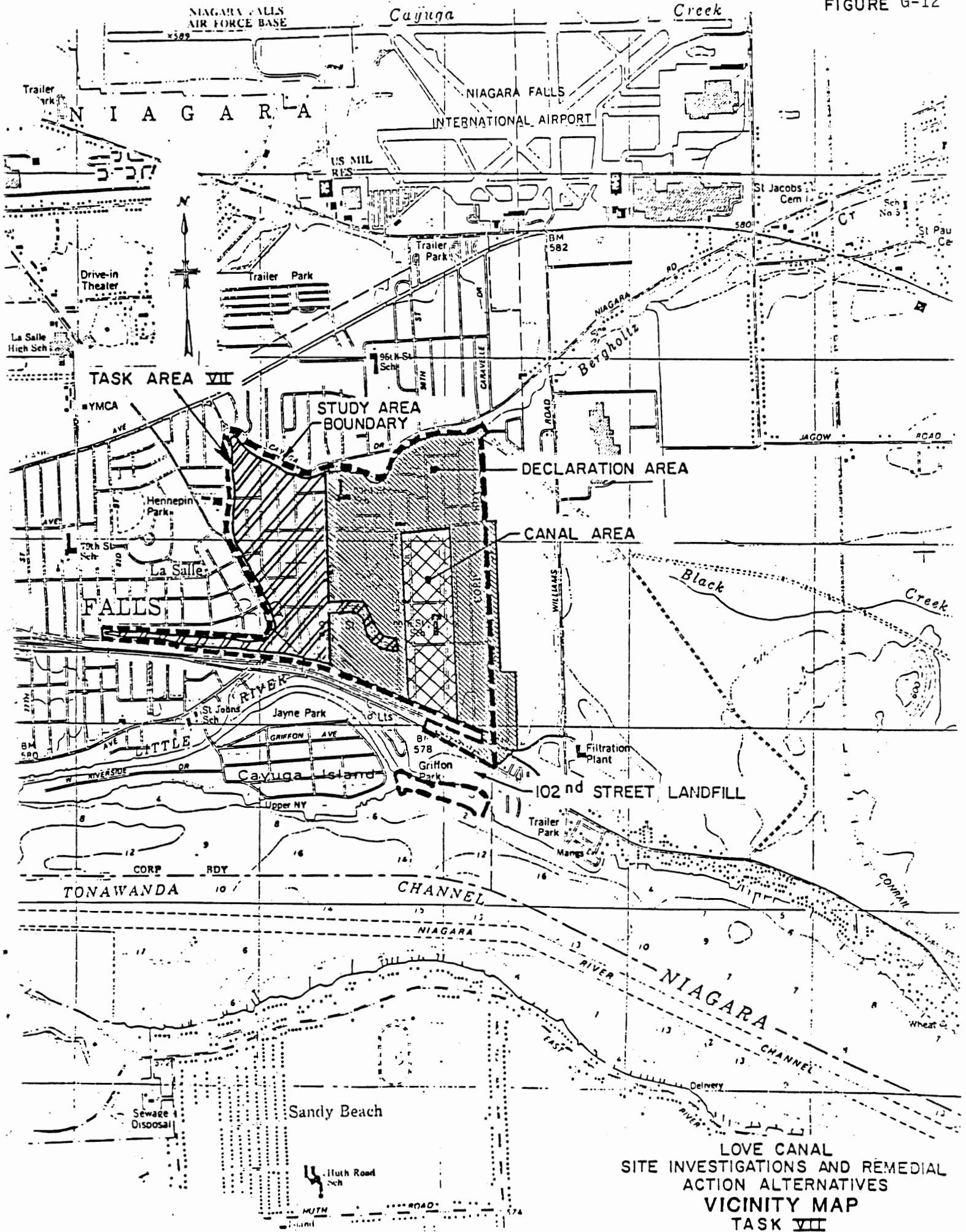
LOVE CANAL
 FIVE ENGINEERING STUDIES
**102nd ST. OUTFALL
 TASK VI**
 VICINITY MAP

FIGURE G-11



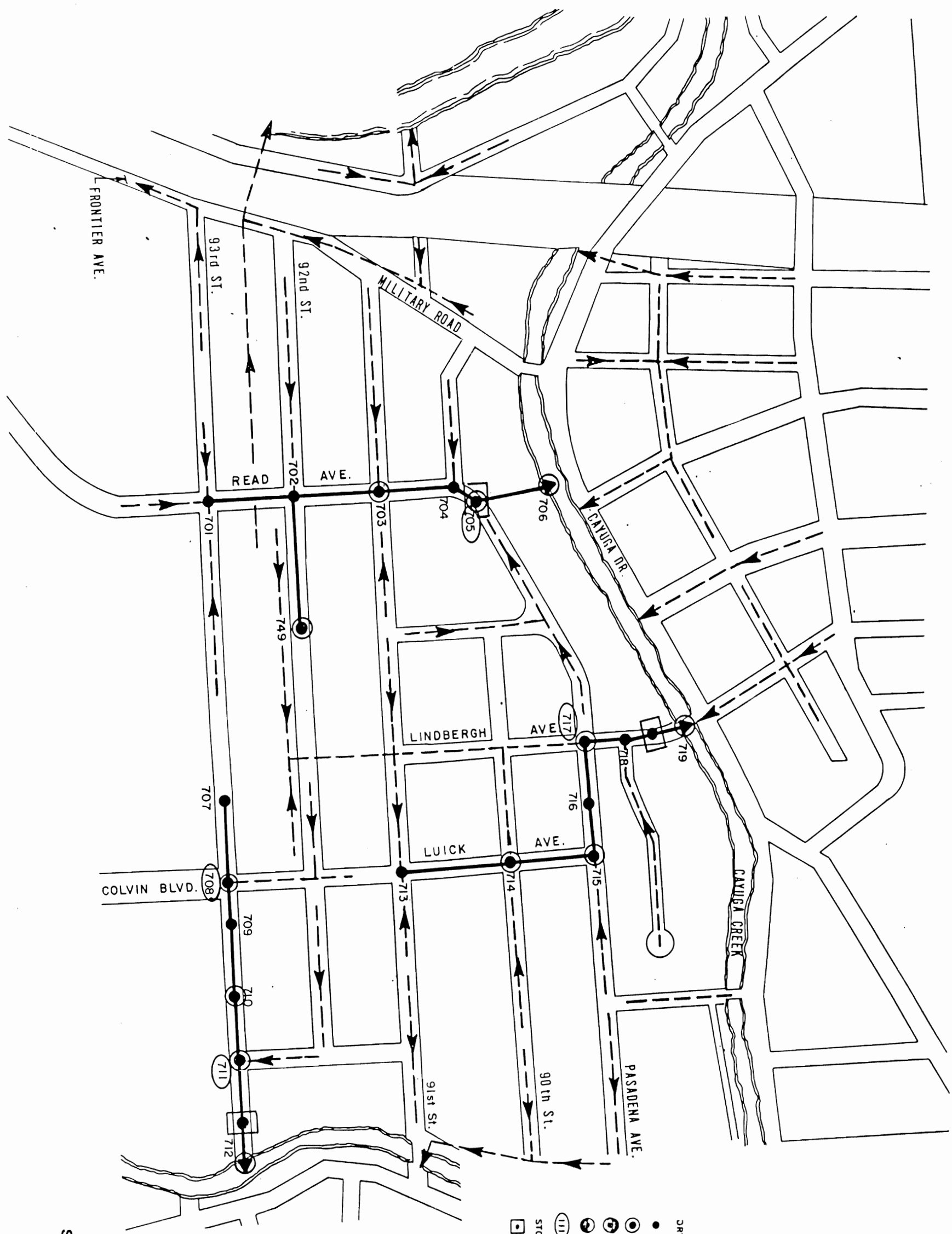
SCALE: 1" = 200'

LOVE CANAL
FIVE ENGINEERING STUDIES
102nd STREET OUTFALL
TASK VI
SAMPLING LOCATION POINTS



LOVE CANAL
 SITE INVESTIGATIONS AND REMEDIAL
 ACTION ALTERNATIVES
 VICINITY MAP
 TASK VII

FIGURE G-13



- LEGEND**
- DRY WEATHER SAMPLING
 - INSPECTED MANHOLE (NO SAMPLES TAKEN)
 - ⊙ LIQUID AND SEDIMENT SAMPLES
 - ⊗ REGIMENT SAMPLE
 - ⊖ LIQUID SAMPLE
 - ⊖(H) BEDDING MATERIAL
 - ⊖(S) STORM WEATHER SAMPLING
 - LIQUID SAMPLE

SCALE: 1" = 400'

LOVE CANAL
 FIVE ENGINEERING STUDIES
 WEST STORM SEWERS
 TASK AREA VIII

SAMPLE LOCATION POINTS

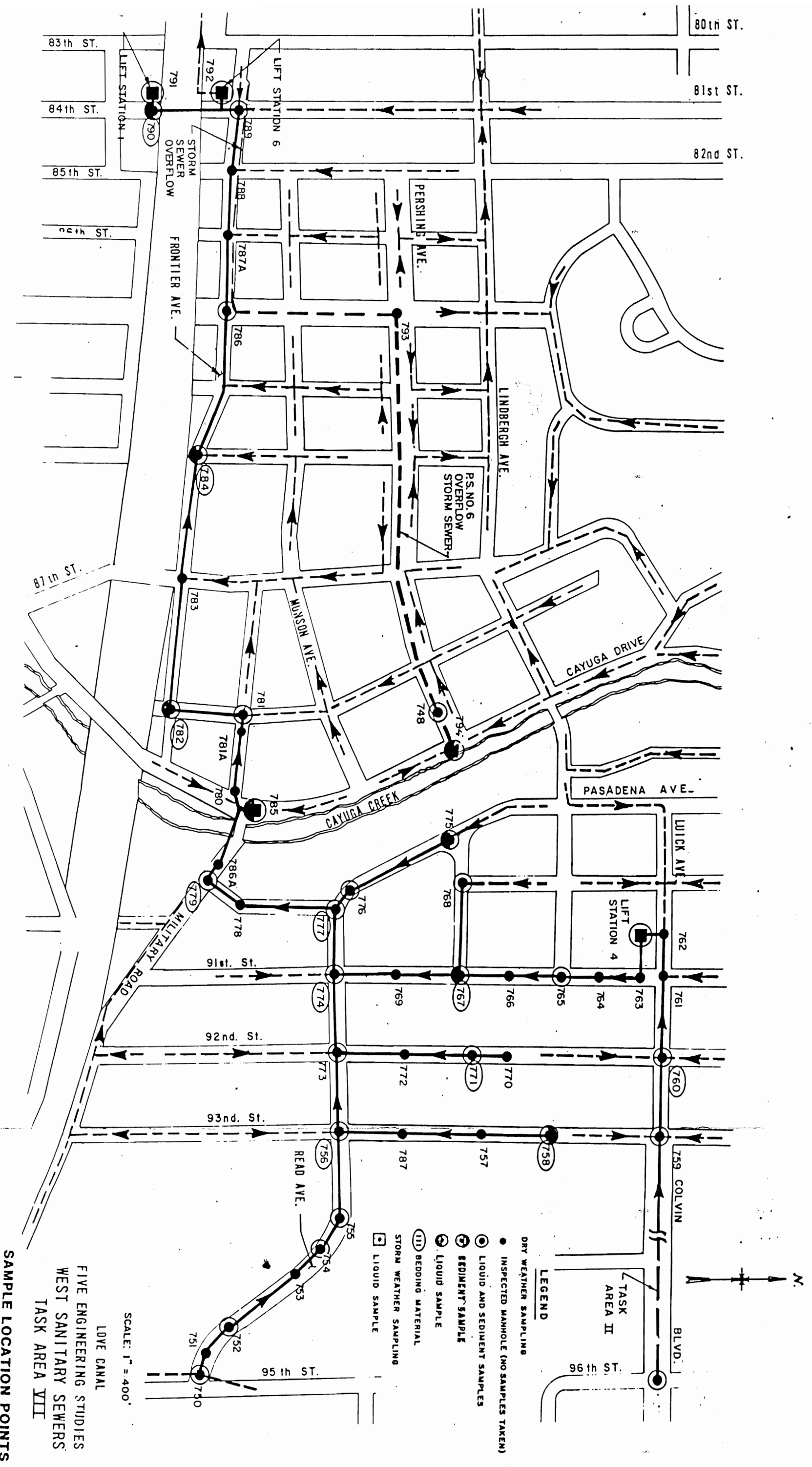


FIGURE G-14

