CREEKSIDE GOLF COURSE

Site No. 9-15-123

RECORD OF DECISION

Prepared by:

New York State

Department of Environmental Conservation

MARCH 1991

15 (12-75)

New York State Department of Environmental Conservation

MEMORANDUM

TO: Distribution
FROM: Thomas R. Christoffel, Bureau of Western Remedial Action
SUBJECT: Creekside Golf Course

DATE: February 5, 1991

Attached for your information is a copy of the final Proposed Remedial Action Plan (PRAP) for the Creekside Golf Course. The PRAP is based on information contained in the Phase II Investigation Report and the Remedial Alternatives Assessment for the site, prepared by Occidental Chemical Corporation (OCC). A copy of this PRAP has been sent to OCC.

The public comment period on the PRAP begins February 6, 1991 and will end on March 8, 1991. A public meeting will be held on February 20, 1991 at the Amherst Town Hall, to discuss the plan. It is anticipated that a Record of Decision will be signed by March 31, 1991.

If you have any questions on the PRAP please contact me at (518) 457-5636.

Distribution

E. Sullivan
M. O'Toole
C. Goddard
E. Belmore
C. Jackson
J. Harrington ✓
D. Mayack
J. Sciascia/J. Hyden, Region 9
J. Ryan, DEE, Region 9
A. Wakeman, NYSDOH

Attachment

15 (12-75)

New York State Department of Environmental Conservation

MEMORANDUM

TO: Distribution List
FROM: Thomas R. Christoffel, Technical Support Section, BWRA
SUBJECT: Creekside Golf Course: Record of Decision

DATE:

Attached for your information and files is an executed copy of the Record of Decision (ROD) for the Creekside Golf Course site. If you have any questions regarding this site please contact me at (518) 457-5636.

Distribution

C. Jackson
J. Harrington
M. Podd, LCPOI (2)
J. Ryan, DEE, Buffalo
J. Sciascia/J. Hyden, Region 9
A. Wakeman, NYSDOH

I PROBABLY ALREADY HOW WAS LIMIT OR EXCAVATION SET?

Record of Decision

Creekside Golf Course Remedial Action Plan

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DECLARATION STATEMENT - RECORD OF DECISION

Creekside Golf Course
Amherst, New York
Site No. 9-15-123

STATEMENT OF PURPOSE

This Record of Decision (ROD) sets forth the selected Remedial Action Plan for the Creekside Golf Course Site. This Remedial Action Plan was developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and the New York State Environmental Conservation Law (ECL). The selected remedial plan complies to the maximum extent practicable with the National Oil and Hazardous Substance Pollution Contingency Plan, 40 CFR Part 300, of 1990.

STATEMENT OF BASIS

This decision is based upon the Record of the New York State Department of Environmental Conservation (NYSDEC) for the Creekside Golf Course site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A copy of all pertinent documents is on file at the Amherst Public Library, 350 John James Audubon Parkway, West Amherst, New York and a the NYSDEC Love Canal Public Information Office, 9820 Colvin Boulevard, Niagara Falls, New York and 50 Wolf Road, Albany, New York. A bibliography of the documents included as a part of the Record is included in Appendix 1.

DESCRIPTION OF SELECTED REMEDY

The selected remedial action plan provides for the protection of human health and the environment by removing contaminants from the site. The Remedial Plan is technically feasible and it complies with statutory requirements. Briefly, the selected remedial action plan includes the following:

- Approximately 600 barrels ($\pm$ 200) containing phenol and phenolic polymers

will be removed from the south bank of Tonawanda Creek. These barrels will be placed in secure, watertight containers (eg. overpack drums) and disposed at a licensed hazardous waste facility.

- The barrels on the bottom of Tonawanda Creek (minimum, approximately 50) will be removed from the creek bottom, placed in secure, watertight containers (eg. overpack drums) and disposed at a licensed hazardous waste facility.

- The contaminated sediments adjacent to the site (approximately 300 cubic yards) will be dredged, placed in watertight bulk containers and disposed at a licensed hazardous waste facility.

- The site will be restored to conditions that will allow return to present land use without restrictions

DECLARATION

This selected Remedial Action Plan is protective of human health and the environment. The remedy selected will meet the substantive requirements of Federal and State laws, regulations and standards that are applicable or relevant and appropriate to the remedial action. The remedy will satisfy, to the maximum extent practicable, the preference for remedies that reduce toxicity, mobility or volume. This preference will be met by removing the barrels, contaminated soils and sediments from the site, thereby eliminating the volume of contaminants with a direct pathway to Tonawanda Creek. The potential long term environmental and human health threats associated with the site will be eliminated with the removal and disposal of the barrels and contaminated soils and significantly reduced by removal and disposal of the contaminated sediments.

3/22/91
Date

Edward O. Sullivan
Deputy Commissioner
Office of Environmental Remediation
New York State Department of Environmental Conservation

Section 1 - Site Location and Description:

The Creekside site is located adjacent to Tonawanda Creek, along the north edge of the third fairway at the former Creekside Golf Course (now known as the Evergreen Golf Course), in the Town of Amherst, Erie County, New York. The site is approximately 700 feet long and extends from the top of the creek bank to approximately 30 feet into the creek. This section of Tonawanda Creek is maintained as part of the New York State Barge Canal System and is periodically dredged. To the north, across the creek, is the Niagara County West Canal Park and also private property with several houses. (See Figures 1 and 2) The site location is suburban and sparsely populated. There are no known drinking water supplies in the immediate vicinity of the site.

Section 2 - Site History:

The golf course was developed by Mr. Tennis Schreckengost from his farm along the banks of Tonawanda Creek. In order to stop erosion of soil into the creek, Mr. Schreckengost placed metal drums along the creek bank, probably in the early to mid-1950's. Mr. Schreckengost was also a scrap dealer, who among other activities, hauled waste for local industrial facilities, including the Occidental Chemical Corporation (OCC) Durez Division plant in North Tonawanda, New York. Mr. Schreckengost has testified that he directed that the drums obtained from OCC-Durez be placed along the creek bank. The number of drums placed was not recorded, but recollections of Schreckengost's and his employees, place the number in the range of 35 to 1,200. Some of the drums rolled down the bank into the canal and were the subject of complaints to Schreckengost by the State. The drums were not removed from the canal.

In August 1982 the U.S. Geological Survey (USGS) installed three monitoring wells at the site. Soil and groundwater from these wells were sampled and analyzed for priority and non-priority pollutants. No significant concentrations of contaminants were found in either the soil or groundwater. (See Appendix A-1 of the Remedial Alternatives Assessment (RAA))

The New York State Department of Environmental Conservation (DEC) has since performed two rounds of groundwater sampling from the USGS wells. In October 1984 the groundwater was analyzed for organic priority pollutants. Phenol, at a concentration of 11 parts per billion (ppb), was the only chemical detected. In March 1985 samples were again collected from the USGS wells and analyzed for volatile and semi-volatile compounds. None of these compounds were detected. (See Appendix A-6 of the RAA)

In February 1985 OCC sampled the contents of four drums exposed on the Creek bank. These samples were split with DEC. The drums contained a mixture of phenolic polymers and phenol. The concentration of total phenolics ranged from 3.8 to 100% (See Appendix A-5 of the RAA). The DEC analytical results revealed the presence of Dibenzofurans at concentrations ranging from 125 to 162 parts per million (ppm) and the dioxin isomer 2,3,7,8-TCDD at an average concentration of 0.37 parts per billion (ppb).

OCC's consultant, Dunn GeoScience, conducted a brief magnetometer survey, in February 1985, to delineate the extent of buried ferrous metal. Results of this survey indicated that buried metal was concentrated along and adjacent to the creek bank and did not extend inland.

In June 1985 the New York State Department of Transportation (NYSDOT) sampled and analyzed creek bottom sediments from eight locations in Tonawanda Creek adjacent to the site. Dredge spoils from four upland dredge disposal sites were also sampled. The creek bottom samples were taken from the middle of the channel. None of the chemicals analyzed for were detected in the sediment or dredge spoils samples. (See Appendix A-7 of the RAA)

In November 1985 the DEC contracted to have the surficial barrels removed from the creek bank. Approximately 175 intact or partially decomposed drums visible on the creek bank were removed. The drums were placed in overpacks, catalogued and placed in storage trailers at the site. Areas where drums were removed from the bank were backfilled with crushed stone. The drum removal was financed through the State Superfund. OCC has since reimbursed the State for the costs of this project and designated it the Phase I Removal Action.

Chemical wastes observed in the surficial drums removed in 1985 ranged from soft, stringy tar to a brittle, black solid. DEC sampled the waste in eight of the removed drums and aqueous liquid from one additional drum. Analyses of these samples revealed the presence of bis(hydroxylphenyl) methane, cresol, 2,4-dimethyl phenol, diphenyl ether and phenol. (See Appendix A-9 of the RAA)

In 1986 the site was added to the New York State Registry of inactive hazardous waste sites because of the contents of the drums and their method of disposal. The site is listed as a Class 2 site. A Class 2 site is one that presents a significant threat to the public health or environment and requires action.

Section 3 - Current Status:

A more comprehensive investigation of the site, designated Phase II, was undertaken by OCC beginning in March 1986. This investigation was performed under a Consent Order between DEC and OCC. The purpose of this investigation was to determine the quantity of drums remaining at the site after the initial removal by DEC and to determine the extent of contamination present in soils, sediments and groundwater in the vicinity of the drums or chemical wastes. The results of this investigation were used in the evaluation of remedial alternatives in the Remedial Alternatives Assessment (RAA) (Note: Although designated RAA by OCC, this is the equivalent of a Feasibility Study). A summary of each investigation and its findings are listed below. (See Figure 3 for all sampling locations)

A. Geology:

Soil at the creek bank is comprised of fill overlying native clay. The fill is variable and irregularly layered. Contents of the fill range from crushed stone, used to fill the Phase I drum removal, to silty topsoil. The fill is relatively permeable and free draining. It is within this fill that the creek bank drums are buried.

The clay beneath the fill is divided stratigraphically into three sub-units. The top unit is 6 to 10 feet thick and consists of a stiff, brown clay and silt.

The middle unit is 0.5 to 5 feet thick and consists of a "soupy" grey silty layer with very fine sand seams. The bottom unit is a soft, reddish grey to reddish brown silty clay. The native clay soil below the fill has a very low permeability and acts as a barrier to groundwater movement.

Tonawanda Creek is part of the New York State Barge Canal. The water in the creek adjacent to the site gradually deepens to 8' at a distance of 30' from the shore. Beyond this distance the creek bottoms drops off due to the dredging that is part of the maintenance of the Barge Canal. (See Figure 4 for the bathymetry of the creek) The sediments in the creek adjacent to the site consist primarily of clays, silts and fine sands. These are overlain by a layer of organic material (approximately 2 to 3 inches) consisting of leaves and sticks. The depth to the underlying glaciolacustrine clay ranges from 7" to 1.5 '.

B. Hydrogeology:

Groundwater at the site tends to flow toward the creek. Flow rates and volumes in the clay tend to be low, due to its low permeability. Flow rates in the fill were not determined, but are thought to be fairly high during rain and snowmelt events due to its free draining nature.

C. Geophysical:

Detailed geophysical surveys were conducted to define, by indirect methods, the areal extent, relative concentrations and approximate depth of metallic materials at the site and in the creek. Geophysical techniques employed included resistivity sounding, proton precession magnetometry, metal detection and terrain conductivity profiling. Results of the survey are as follows:

1. Creek Bank

The survey indicated that there are four principal zones of buried metallic objects along the creek bank. These four zones are generally limited to within five feet of the creek bank. (See Figure 5) Trenches were excavated near the four (4) zones of buried metallic objects to confirm the geophysical finding,

determine stratigraphic and hydrogeological characteristics of the soil, investigate the distribution of buried drums and wastes, and collect soil samples for chemical analysis. The trenches confirmed that the drums are confined to the immediate area of the creek bank. No significant amount of groundwater seepage into the trenches was observed. Chemical analysis of soils from the trenches determined that the soils did not contain detectable quantities of phenolic compounds (See Appendix A-10 of the RAA).

2. Creek Bottom

In December 1989 an underwater survey was performed in Tonawanda Creek adjacent to the site. The purpose of this survey was to determine the number and condition of drums on the creek bottom. The survey was performed by divers using scuba gear. An underwater metal detector, a magnetometer and visual sighting were used to determine the location of the drums. The survey determined that there are 38 positively identified drums and 146 magnetic anomalies on the creek bottom that may be drums, reinforcing steel bars or other metallic objects. Underwater surveys have determined that rip rap is present on the creek bottom up to a distance of 30' from the shore. (See Figure 6) (Note: Rip rap is a foundation of stones placed on a creek bank or bottom in random order to prevent erosion)

D. Drums:

Based on the findings of the geophysical surveys it is estimated that 450 to 750 drums remain buried at the site. The best estimate of the actual number of drums is 600. This number, $\pm$ 150 will be used as the basis for evaluating remedial alternatives.

The condition of the drums buried within the creek bank is unknown, but there is no reason to believe that they are different from those previously excavated. The distribution of these drums is limited to four areas within a 700 foot long strip along the creek bank. Generally, the drums are within five feet of the top of the bank. Based on the test trenches the bottom-most layer of drums rests in various orientations on the original creek bank. It is estimated that there are a maximum of three layers of drums placed against the original bank and extending

creekward. (See Figure 5 for drum disposal locations) The condition of the drums ranges from completely intact with lids to deteriorated with holes and product visible inside the drum .

The underwater survey determined that there are drums present on the bottom of Tonawanda Creek. Based on this survey 38 drums were positively identified and located. An additional 146 magnetic anomalies were also located on the creek bottom. The contents of these anomalies could not be determined because rip rap had been placed over them. The rip rap extends roughly 20 feet from the shore (See Figure 6). For the purposes of remedial planning, it has been estimated that there are 100 drums on the creek bottom.

E. Analytical Results:

1. Groundwater

Groundwater samples were taken from the monitoring wells installed on-site. Two rounds of sampling and analysis were performed. Results of these analyses indicated that chemicals from the barrels are not present in the groundwater at the site. (See Appendix A-11 of the RAA)

2. Creek Bottom Sediment

In December 1982 the NYSDEC collected two sediment samples from Tonawanda Creek adjacent to the site. This sampling was performed as part of the Niagara River Toxics Program. The samples were taken approximately 15 feet from the south creek bank at the following locations: 200 feet upstream (i.e. east) of the marina boat dock; and directly across from the boat ramp at West Canal Park. The samples contained trace concentrations of PCBs (<1 ppm) and BHCs (<0.1 ppm). (See Appendix A-2 of the RAA)

In June 1985 the New York State Department of Transportation (NYSDOT) collected sediment samples from eight locations in Tonawanda Creek and dredge spoils from four upland disposal sites. One of the creek bottom samples was taken adjacent to the Creekside site. A composite of eight discrete samples were taken from four locations (i.e. 2 samples/location). One sample was taken from the

mid-channel point and the other was taken between the mid-channel and the south creek bank. The second sample was taken from the disposal area for dredged creek bottom sediments. The samples were analyzed for priority pollutants. None of the chemicals analyzed for were reported at or above the detection limit in either sample (See Appendix A-7 of the RAA).

Creek bottom sediment, within 11 feet of the creek bank, was sampled by OCC in May and June 1986 at five locations. Phenolic compounds were detected at two of the locations. Concentrations of these compounds ranged from ND (at 1 ppm) to 235 ppm (See Appendix A-12 of the RAA).

In June 1987 NYSDOT collected a sediment sample from the creek bottom 45 feet north of the southern creek bank near the location of Trench B. The sampling was performed as part of an assessment for planning future dredging activities. The sample was analyzed for 2,3,7,8 TCDD, chlorophenols and chlorobenzenes. None of the chemicals analyzed for were detected above the method detection limit (See Appendix A-13 of the RAA).

In July 1990 the DEC collected sediment samples from six locations adjacent to the site. Analytical results of these samples showed low level concentrations of dibenzofuran, Polycyclic Aromatic Hydrocarbons and chlorinated dioxins and dibenzofurans. (See Appendix A-15 of the RAA)

In December 1991 OCC sampled the sediments in the creek at three locations. The purpose of this sampling was to refine the area of sediments that will be removed. Analytical results for these samples revealed the presence of dibenzofuran adjacent to the barrel disposal area. (See Appendix A-16 of the RAA)

3. Drums

Samples were taken from 14 drums during three rounds of drum sampling, prior to the Phase II Investigation. Analytical results indicate the waste samples are predominately phenolic polymers with small, but varying amounts of phenol and phenol derivatives. Additionally, cresols were detected in these samples, and dioxin was found in the part per trillion range. (See Appendices A-3, A-5 and A-9 of the RAA)

Section 4 - Enforcement Status

A Consent Order exists between the DEC and OCC to investigate the extent of contamination at the site. OCC will be afforded the opportunity to perform the remedial design and construction of the chosen remedial alternative. A new Consent Order will be required to implement this ROD.

Section 5 - Goals for the Remedial Actions

The Creekside site is located along the third fairway of an active golf course. Approximately 400 people play this course every day during the golf season (April to October). In addition, the adjacent Tonawanda Creek/Erie Canal waterway is used for boating and fishing. The remedial action implemented must eliminate the potential for exposure to the chemical wastes at the site by those who use the golf course or the waterway (i.e. boating, fishing). The remedial action must also comply with all State Standards, Criteria and Guidelines (SCGs)

Based upon the discussion above, the following remedial action objectives have been established for the Creekside site:

1. Remove the potential exposure of the chemical wastes to people who use the golf course or the waterway.
2. Remove the exposure to the aquatic environment by removing availability of the chemical wastes to Tonawanda Creek
3. Dispose of the waste in a manner consistent with all State and Federal ARARs.
4. Restore the site to a condition allowing unrestricted use.

Section 6 - Description and Evaluation of the Alternatives

Drums along the creek bank that were visible were removed by the DEC in 1985. The drums and soil that contained visible evidence of contamination were placed in overpack drums and secured in dedicated on-site trailers. OCC has reimbursed DEC for the costs of the 1985 removal and will provide for transport and disposal of these drums.

Remedial alternatives, ranging from no action to drum excavation and disposal, were evaluated in the Evaluation of Remedial Alternatives section of the RAA. These alternatives were evaluated for each of three operable unit (OU) at the site. The three operable units for the site are as follows: creek bank drums and associated soils; creek bottom drums; and creek bottom sediments.

The remedial alternatives for each operable unit are discussed below relative to the evaluation criteria. The evaluation criteria discussed below are self explanatory, with the exception of "Compliance with SCGs." SCGs are the New York State Standards, Criteria and Guidelines that are appropriate for the site. There are three general categories for SCGs (modeled after the Federal ARARs - Applicable or Relevant and Appropriate Requirements): Chemical specific, location specific and action specific. Chemical specific SCGs would include surface and groundwater standards for the chemicals of concern at the site. Location specific SCGs would deal with any special requirements that may be necessary due to the location of the site on a navigable waterway (e.g. Army Corps of Engineer permits). Action specific SCGs would be any requirements that would have to be met during implementation of the remedy.

Operable Unit 1 - Creek Bank Drums and Soils:

Option 1A - No Action Alternative

This alternative consists of permanently leaving the drums in place, as they are now, with no access control, removal or other remediation.

Short-Term Impacts and Effectiveness: Since no construction is required to implement this alternative, there is no added short term threat to the community, environment or workers.

Long-Term Effectiveness and Permanence: This alternative is neither an effective nor permanent remedy. The drums, and the chemical wastes inside them, could be exposed to the environment due to deterioration, barge canal maintenance or erosion, and therefore represent a potential long term threat.

Reduction in Toxicity, Mobility and Volume of Hazardous Waste: This alternative does not reduce the toxicity, mobility nor the volume of hazardous waste at the site.

Implementability: The no action alternative is easily implemented compared to the other alternatives. However, it fails to provide a reliable remedy to the problem. Moreover, it does not provide any means for monitoring contaminant levels or mobility. The potential need for future remedial action is not addressed under this alternative.

Compliance with SCGs: This alternative will not produce compliance with chemical-specific SCGs due to the presence of drums on the bank.

Overall Protection of Human Health and the Environment: This alternative will do nothing to alleviate the potential threat to human health or the environment posed by the contaminants at this site.

Option 1B - Containment Alternative:

Containment is a method of controlling the source of chemicals by isolating the waste within an engineered structure. This method reduces mobility and minimizes or prevents the migration of chemicals from the site. The following types of containment systems were considered:

- Hydraulic Barriers: Installation of an impervious structure upstream of the site to divert groundwater around the barrels.

- Shoreline Bulkhead: The bulkhead would be of relatively water-tight sheet piling structure, installed along the Tonawanda Creek shoreline. The bulkhead prevents and/or minimizes erosion and exposure to the drums and migration of chemicals into the creek.

- Cover/Revetment: This refers to the placement of impervious, erosion-resistant material(s) directly on the creek bank. Among the methods available are: clay cap with crushed stone; geomembrane with geotextile and crushed stone; and concrete revetment.

- Complete Encasement: This would be a combination of the containment methods cited above. This method will be used to assess how containment satisfies the evaluation criteria.

Short-Term Impacts and Effectiveness: Installation of the complete encasement containment alternative could result in contaminant migration (i.e. if a drum(s) was punctured during construction) and thus create short term risks. Effective mitigative measures can be implemented to prevent migration and control this potential threat.

Long-Term Effectiveness and Permanence: Complete encasement would isolate the drums from the environment and could reduce potential migration of chemicals from the site. Long-term maintenance would be required to ensure that the remedy remains reliable. This alternative would be incompatible with the maintenance and dredging of the barge canal and would make future removal of the drums more difficult and costly than if done now.

Reduction in Toxicity, Mobility and Volume of Hazardous Waste: This alternative would reduce the potential for migration of chemicals from the site. There would be no reduction of contaminant toxicity or volume of chemicals at the site.

Implementability: Installation of a complete encasement remedy would be difficult, particularly for the cover/revetment option, given the slope of the bank and the proximity of the creek. Dewatering of the creek adjacent to the site would be required for construction. Weather would be a significant factor in scheduling the work.

Compliance with SCGs: This alternative would result in compliance with chemical-specific SCGs by preventing migration of chemicals from the drums. Special considerations and permits may be required for action and location specific SCGs.

Overall Protection of Human Health and the Environment: This alternative would be the most effective non-removal remedy identified because it reduces the potential for exposure from chemical migration through drum deterioration or erosion. The potential threat to human health and the environment would be reduced and continued use, albeit restricted, of the site would be likely.

Option 1C - Removal of Creek Bank Drums and Associated Soil Alternative:

This alternative would involve the excavation and disposal of all of the drums from the creek bank. The best estimate for planning suggests that there are 600 ± 150 drums in this area. The best estimate of the volume of soil that would also need to be removed, based on chemical residues in the soil, is approximately 300 cubic yards (this would be the maximum amount of soil expected to be removed). The drums and soils would be placed in secure containers and brought to a licensed hazardous waste facility for disposal.

The removal alternative would involve several stages of operation. These stages would include the following activities: installation of a temporary drum staging area near the excavation area; installation of sediment and runoff controls; removal and staging of the drums; site restoration; and disposal. These stages are described below.

o Construction of a Drum Staging Area: A drum staging area would be constructed for the temporary storage of the drums prior to their removal from the creek bank. The staging area would have restricted access and would comply with the substantiative requirements of applicable regulations for temporary storage of chemicals.

o Installation of Sediment and Runoff Control: Temporary containment would be installed in the creek to prevent siltation and spills from the removal activities. This containment will be achieved by a floating absorbent boom with a weighted curtain. The floating boom would not be required in the areas where a cofferdam will be installed for drum removal.

o Removal and Staging of Drums: The drums would be removed with a backhoe operating from the golf course adjacent to the creek bank. As the drums are removed they would be placed into secure, watertight containers to facilitate handling and prevent spills from deteriorated drums. The drums will be placed temporarily at the on-site staging area during the removal operations. Any soils that are removed will be placed in overpacks, supersacks or in bulk containers, whichever is considered most appropriate.

o Site Restoration: Areas along the creek bank where drums are removed would be backfilled with clean fill and seeded as appropriate. Rip rap would be replaced on the bank slope to prevent erosion.

o Disposal of Drums and Associated Soils: The drums and associated soils removed from the creek bank would be disposed at a permitted hazardous waste facility. Disposal at the hazardous waste facility would be under permit and subject to all protective conditions to protect human health and the environment.

Short-Term Impacts and Effectiveness: The removal operation would increase the short term potential of exposure to chemicals for the workers and environment. This potential would be minimized by compliance with an approved health and safety plan and installation of a cofferdam adjacent to the site.

Long-Term Effectiveness and Permanence: Removal of the drums and associated soils should effectively and permanently eliminate the potential for human or environmental exposure to the chemicals.

Reduction in Toxicity, Mobility and Volume of Hazardous Waste: By removing the drums and associated soils the volume and mobility of chemicals at the site would be permanently reduced.

Implementability: This alternative can be implemented fairly easily, using readily available technology and techniques. In addition, the work can be scheduled so as to have a minimum impact on use of the golf course or waterway.

Compliance with SCGs: This alternative would result in compliance with chemical-specific SCGs. Special considerations and permits may be required to comply with action and location-specific SCGs.

Overall Protection of Human Health and the Environment: This alternative would effectively remove the potential threat to human health and the environment by removing the source of the threat.

Operable Unit 2 - Creek Bottom Drums:

Visual (i.e. underwater) and geophysical inspections have determined that approximately 38 drums and 146 metallic anomalies from the site are present in the creek bottom.

Option 2A - No Action Alternative:

Short-Term Impacts and Effectiveness: No construction is required to implement this alternative. There would be no added short term threat to the community, environment or workers.

Long Term Effectiveness and Permanence: This alternative is neither an effective nor permanent remedy to address the potential threat posed by the drums on the creek bottom.

Reduction of Toxicity, Mobility and Volume of Hazardous Waste: This alternative will not reduce the toxicity, mobility or the volume of hazardous waste at the site.

Implementability: This alternative is easily implemented compared to the removal alternative. However, it fails to provide a reliable remedy to the problem. In addition, it does not provide any means by which to monitor contaminant levels or mobility.

Compliance with SCGs: Implementation of this alternative could result in a violation of chemical-specific SCGs, particularly if a drum were to deteriorate and release chemicals into the creek.

Overall Protection of Human Health and the Environment: If this alternative were implemented the potential threat to human health and the environment posed by the drums would remain.

Option 2B - Removal of Creek Bottom Drums Alternative:

Under this alternative, all drums found on the creek bottom would be removed. As part of the removal operation each magnetic anomaly would be investigated to determine if it was a drum. A silt curtain with a boom would be installed in the creek, adjacent to the area where work is being performed for those barrels located outside of the cofferdam installed for the creek bank work. Drums located outside of the cofferdam would be removed under wet conditions by divers.

Short-Term Impacts and Effectiveness: There would be a short term increase in the threat of potential exposure to chemicals because of drum disturbance and possible leakage, spillage and mobilization of chemicals. This threat can be minimized by containing the work areas of the removal. Two methods of containment are expected to be used: floating absorbant booms with a weighted silt curtain for removing drums from the deeper water and a temporary cofferdam(s) for the shallower area where sediments and drums will be removed.

Long-Term Effectiveness and Permanence: Removal of the drums would effectively and permanently reduce or eliminate the potential threat to human health or the environment posed by the creek bottom drums.

Reduction of Toxicity, Mobility and Volume of Hazardous Waste: Removal of the drums from the creek bottom would reduce the mobility and volume of chemicals at the site.

Implementability: Implementation of this alternative can be accomplished using existing technologies and techniques. Removal can be performed using on-shore (eg. Backhoe or crane with clamshell bucket) or off-shore (eg. mechanical bucket) dredge methods. Navigation on the canal may be affected, depending on when the removal is performed.

Compliance with SCGs: The drum removal would have to comply with any action or location-specific SCGs, such as a NYSDOT Temporary Use and Occupancy of the Canal permit.

Overall Protection of Human Health and the Environment: If this alternative is implemented, the potential threat to human health and the environment posed by the chemicals in the drums would be removed.

Operable Unit 3 - Creek Bottom Sediments:

Sampling of the sediments adjacent to the site has revealed the presence of dioxins, dibenzofuran, polycyclic aromatic hydrocarbons and phenolic compounds. These compounds are consistent with the wastes present in the drums on-site.

Option 3A - No Action:

Short-Term Impacts and Effectiveness: Construction is unnecessary to implement this alternative. Therefore, there would be no added short term threat to the community, environment or workers.

Long-Term Effectiveness and Permanence: The sediments may pose a long term threat to human health and the environment. The chemicals present in the sediment can bioaccumulate in fish and be consumed by humans or piscivourous (i.e. fish eating) wildlife.

Reduction of Toxicity, Mobility and Volume of Hazardous Waste: There would be no reduction of toxicity, mobility or volume of the chemicals in the sediment if this alternative is implemented.

Implementability: The no action alternative is easily implemented compared to the other alternatives.

Compliance with SCGs: Implementation of this alternative will not result in compliance with chemical-specific SCGs, nor any appropriate agency advisories, guidelines or criteria.

Overall Protection of Human Health and the Environment: If this alternative is implemented the potential threat to human health and the environment posed by the chemicals in the sediment would remain.

Option 3B - Containment Alternative:

Containment of the creek bottom sediments would consist of placing an impervious, durable cap on the creek bottom to prevent mixing of chemicals with surface water. Possible containment methods include a clay or geomembrane cap with crushed stone cover or tremie place concrete.

Short-Term Impacts and Effectiveness: It is possible that contaminated sediments could be disturbed during placement of the containment cover. This possibility would be prevented by performing the work inside booms with silt curtains or a cofferdam.

Long-Term Effectiveness and Permanence: Containment would reduce the possibility of potential exposure by removing the migration pathway. However, it would be difficult to inspect and maintain. In addition, the cap could be compromised by future dredging in the creek. Long term monitoring would be necessary to ensure that migration of chemicals has stopped.

Reduction of Toxicity, Mobility and Volume of Hazardous Waste: Containment would reduce the mobility of the chemicals in the sediment. It would not reduce the toxicity or volumes of the chemicals.

Implementability: This alternative could be implemented using existing technologies and techniques. The area to be covered would have to be dewatered to ensure proper placement. Any debris in the area(s) of concern would have to be removed prior to cover placement.

Compliance with SCGs: This alternative would not be expected to be in compliance with all chemical-specific SCGs, agency advisories, guidance and objectives. Special considerations and permits may be required to circumvent action and location-specific SCGs.

Overall Protection of Human Health and the Environment: This alternative would remove the migration pathway of the chemicals in the sediment. The potential threat to human health and the environment would also be reduced.

Option 3C - Removal of Creek Sediments Alternative:

Removal of creek sediments would be implemented based on the limit of contamination in the sediments as shown on Figure 7.

Short-Term Impacts and Effectiveness: It is possible that during removal operations contaminated sediments could be re-suspended and be transported beyond the area to be cleaned. This possibility can be avoided through the use of a temporary cofferdam and dewatering of the sediments prior to removal.

Long-Term Effectiveness and Permanence: Removal of the contaminated sediment would permanently remove its potential threat to human health and the environment.

Reduction of Toxicity, Mobility and Volume of Hazardous Waste: Implementation of this alternative will result in the elimination of the potential mobility of chemicals from the sediments.

Implementability: Implementation of this alternative could be completed using existing construction technology. The area being dredged would have to be dewatered and the water generated during removal would require treatment.

Compliance with SCGs: This alternative would result in compliance, to the maximum extent practicable, with applicable chemical specific SCGs as well as agency advisories, guidance and criteria. Special considerations and permits may be required to comply with action and location specific SCGs.

Overall Protection of Human Health and the Environment: This alternative would eliminate the potential threat the chemicals in the sediment pose to human health and the environment.

Section 7 - Summary of the Government's Decision

Upon review of the site data and evaluation of available alternatives, the State has identified the remedial action plan for this site. The selected remedial for each operable unit is listed below:

Operable Unit 1 - Creek Bank Drums and Associated Soil

The selected remedy for this operable unit is Option 1C. All of the drums located in and along the creek bank will be removed, placed in secure watertight containers (eg. overpack barrels) and disposed at a fully licensed disposal facility. In addition, the soils with chemical residues surrounding these drums will be excavated, also placed in secure containers and disposed. Prior to removal a temporary cofferdam will be installed in the creek adjacent to most of the work area. (See Figures 8 and 9) For any areas along the creek bank where a cofferdam will not be placed, other measures, such as a boom with a silt curtain, will be utilized to control sediment and runoff. Geophysical methods (i.e. magentometer) will be used, after the removal, to ensure that all the barrels have been removed from the creek bank.

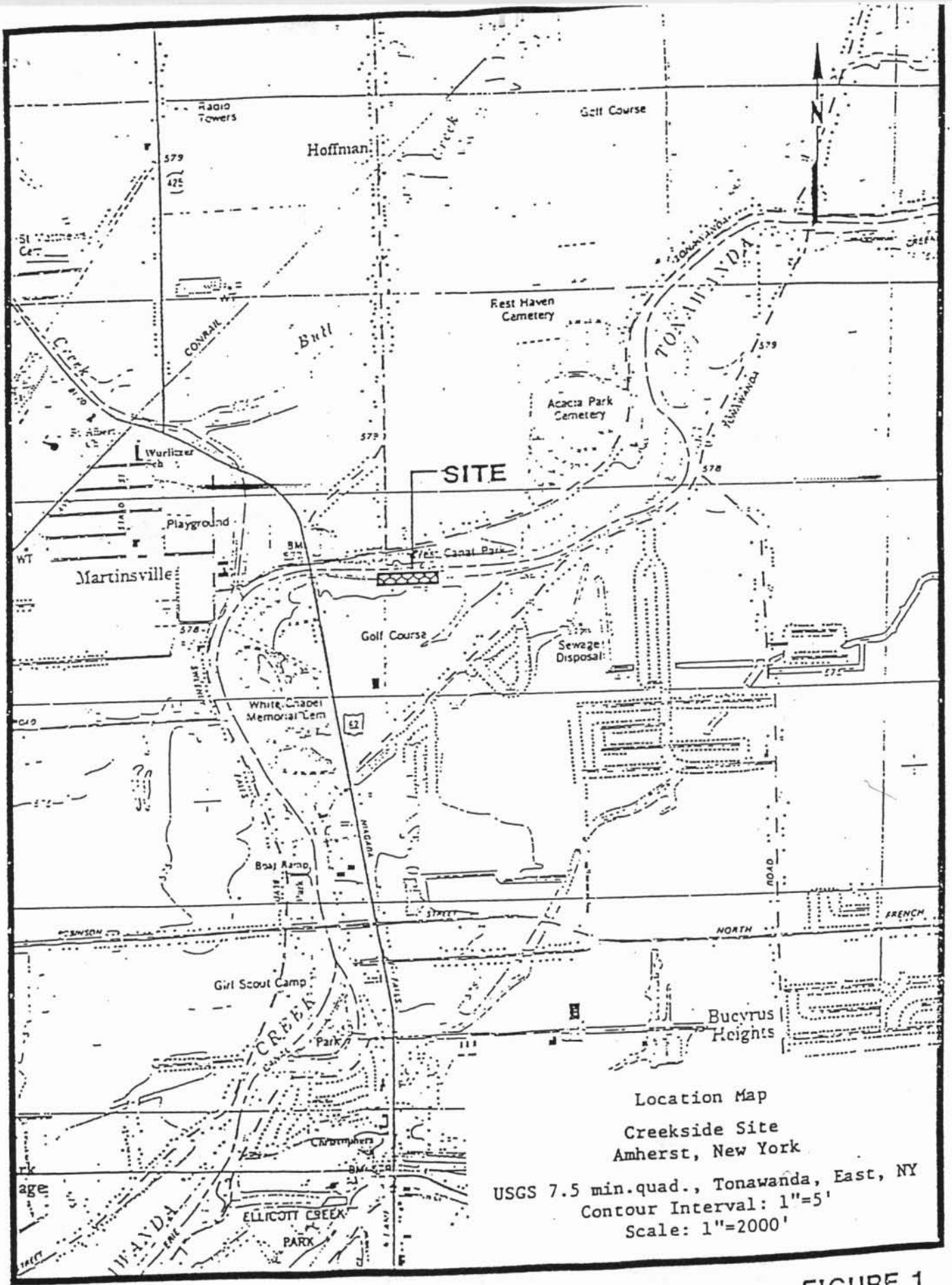
The site will be restored after the drums and soil are removed. All excavated areas will be backfilled and seeded as appropriate. Rip rap will be replaced on the creek bank slope to prevent erosion.

Operable Unit 2 - Creek Bottom Drums

The selected remedy for this operable unit is Option 2B. Drums currently on the creek bottom will be removed and disposed with the creek bank drums. Sediment immediately adjacent to the drums, containing chemical residues will also be removed and disposed. The drums will be removed in a manner to prevent the adjacent sediments and wastes in the drums from moving into the creek. For most of the creek bottom work, a watertight cofferdam will be installed and the area will be dewatered to assure that all drums and adjacent sediments are properly removed. For drums in the deeper water, outside of the cofferdam, a weighted silt curtain with a boom would be employed.

Operable Unit 3 - Creek Bottom Sediments

The selected remedy for this operable unit is Option 3C. The sediments in Tonawanda Creek containing site contaminants will be removed. The sediments will be disposed at a licenced hazardous waste facility along with the barrels from the site. The areas of this removal are noted on Figure 7. This removal will take place inside the area of a cofferdam to be constructed to facilitate sediment and creek bottom drum removal. (See Figures 8 and 9) Water generated during sediment removal would require treatment.



Location Map

Creekside Site
Amherst, New York

USGS 7.5 min.quad., Tonawanda, East, NY
Contour Interval: 1"=5'
Scale: 1"=2000'

FIGURE 1

August 4, 1988

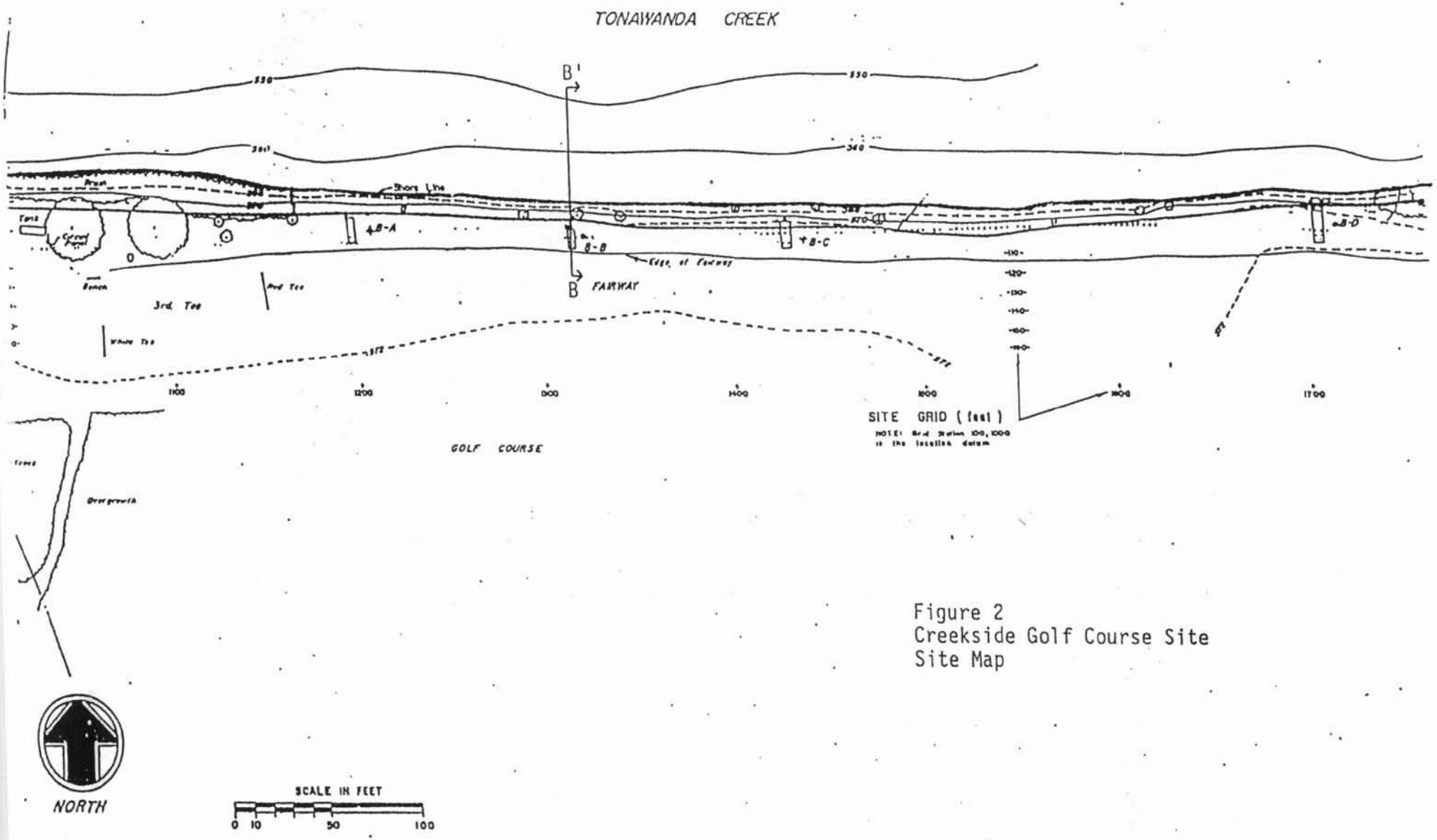


Figure 2
Creekside Golf Course Site
Site Map

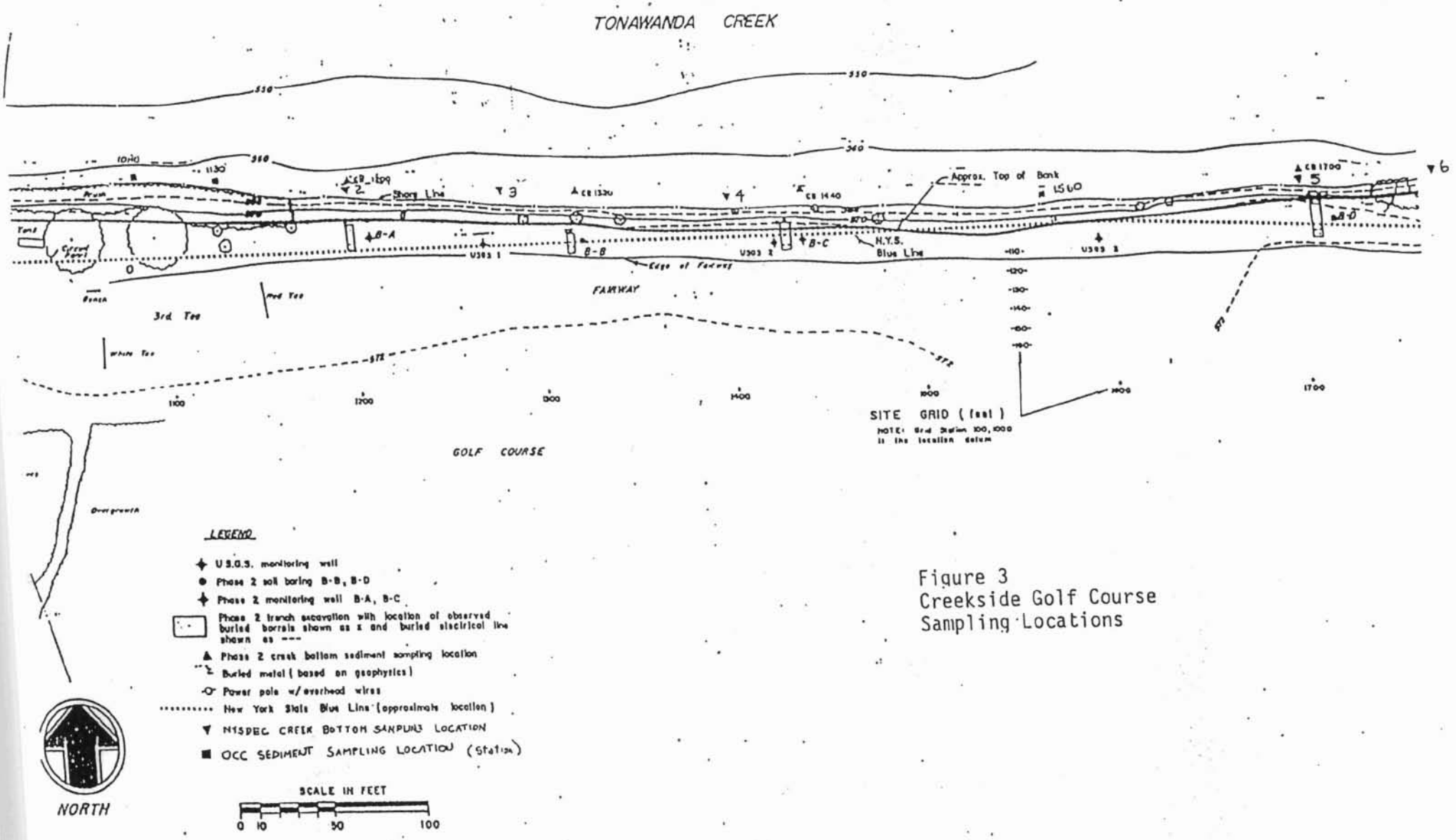


Figure 3
Creekside Golf Course
Sampling Locations

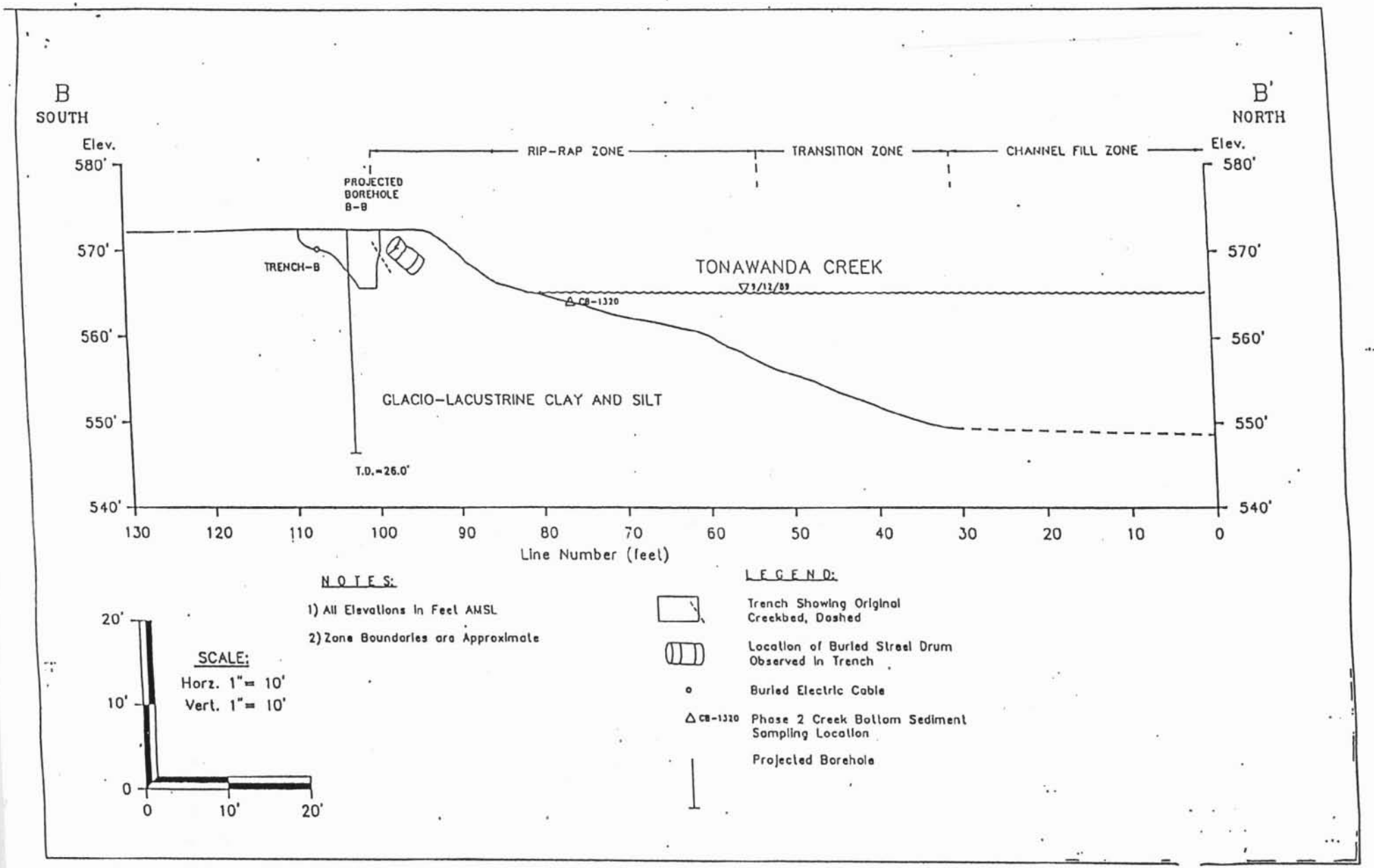


Figure 4
Creekside Golf Course
Cross-Section B-B'

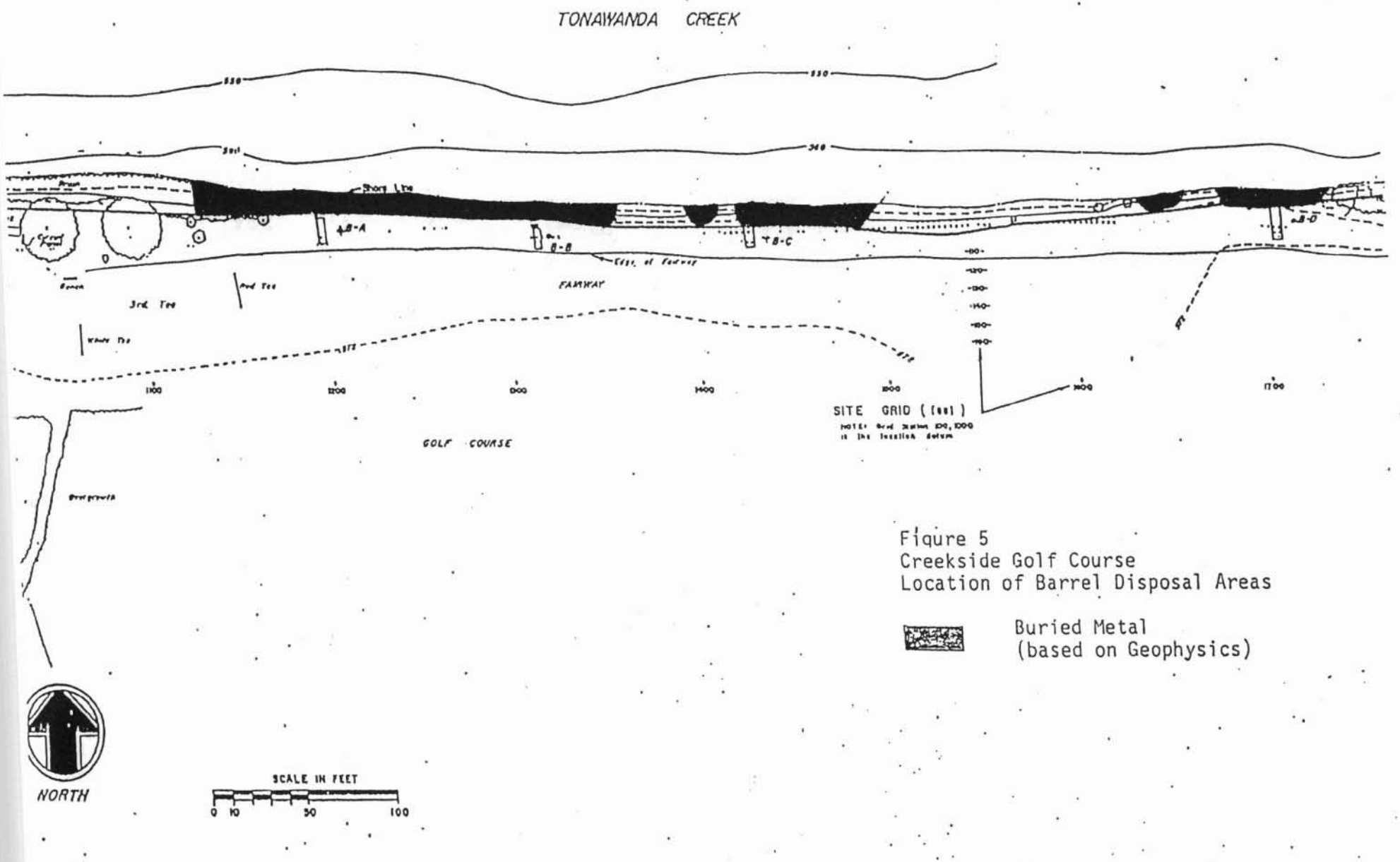


Figure 5
Creekside Golf Course
Location of Barrel Disposal Areas

Buried Metal
(based on Geophysics)

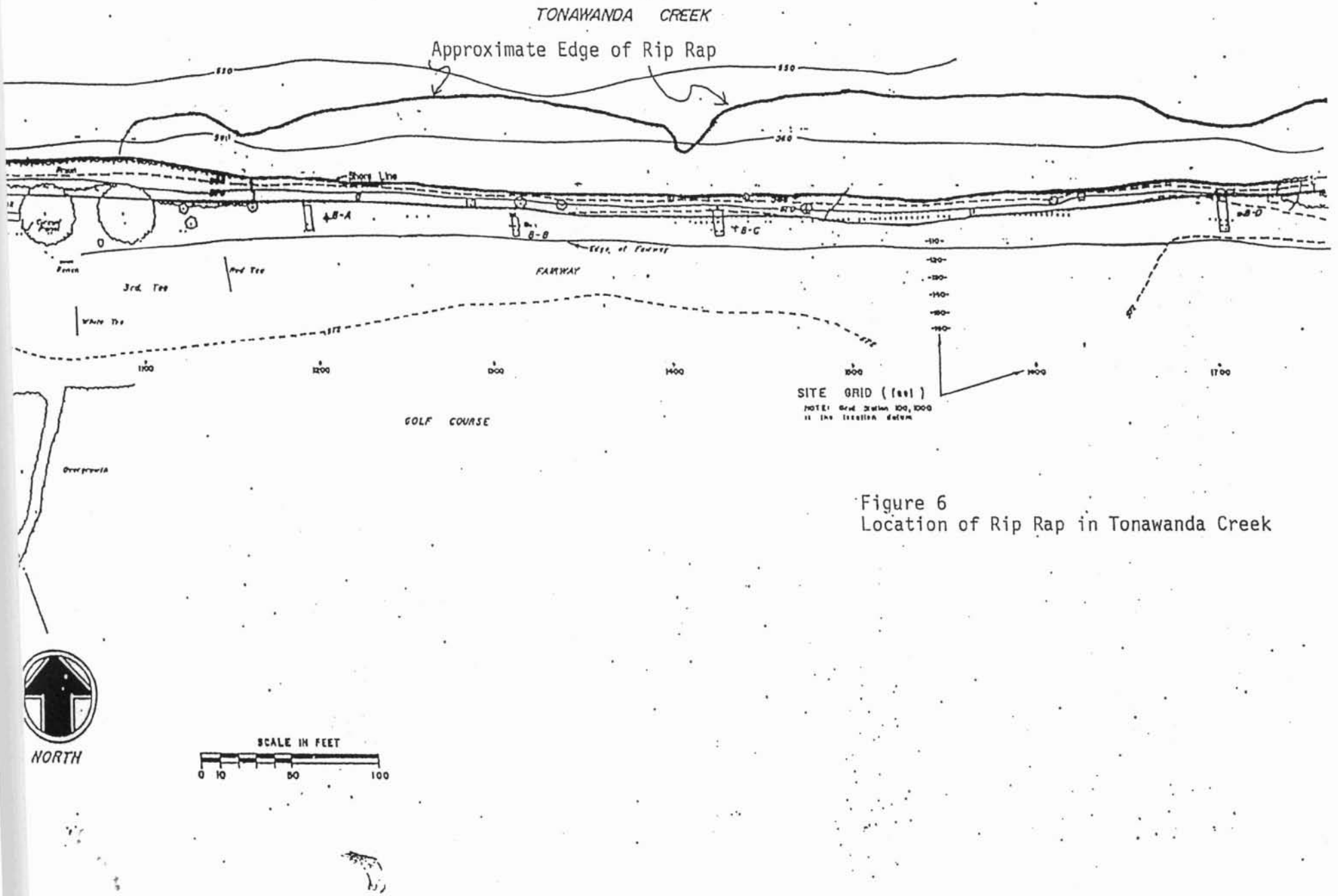


Figure 6
Location of Rip Rap in Tonawanda Creek

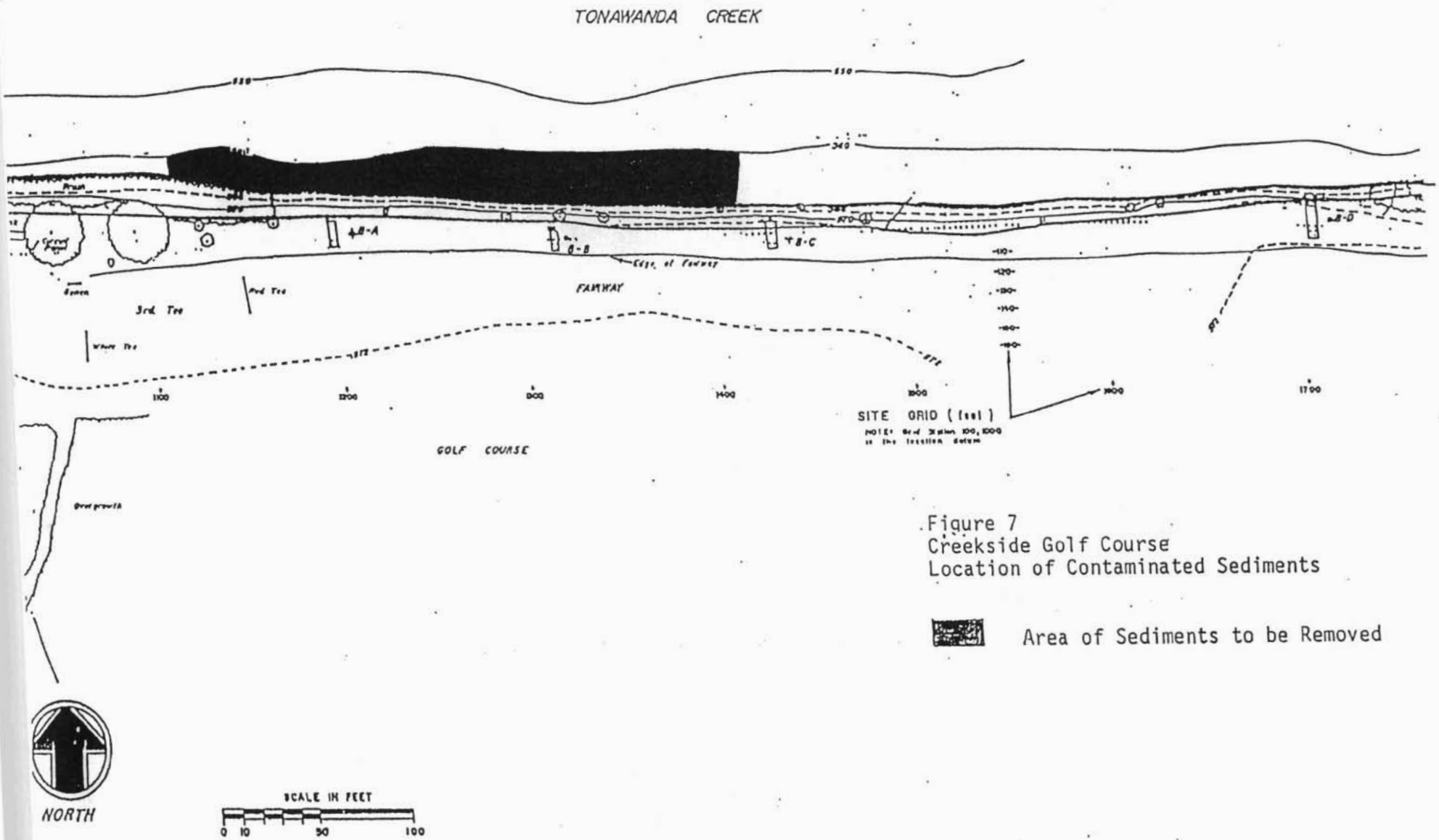


Figure 7
Creekside Golf Course
Location of Contaminated Sediments

Area of Sediments to be Removed

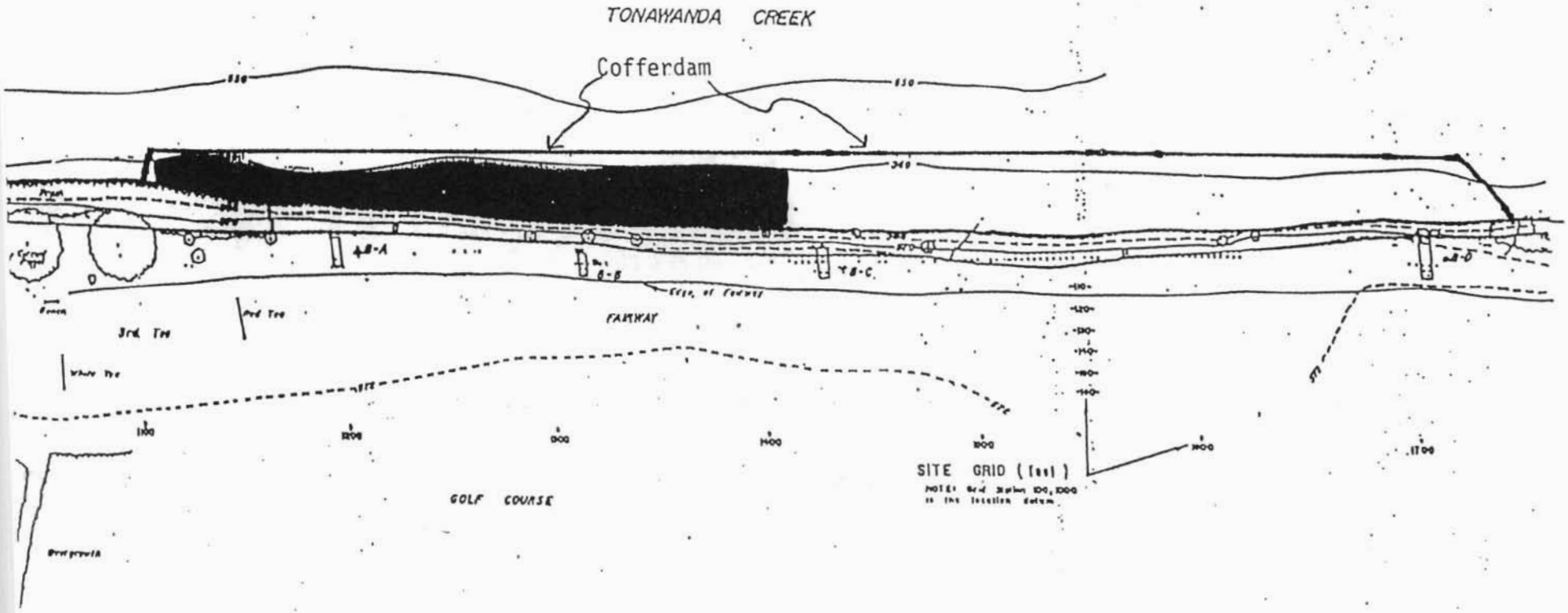


Figure 8
Creekside Golf Course

Area of Sediments to be Removed

Approximate location of Cofferdam

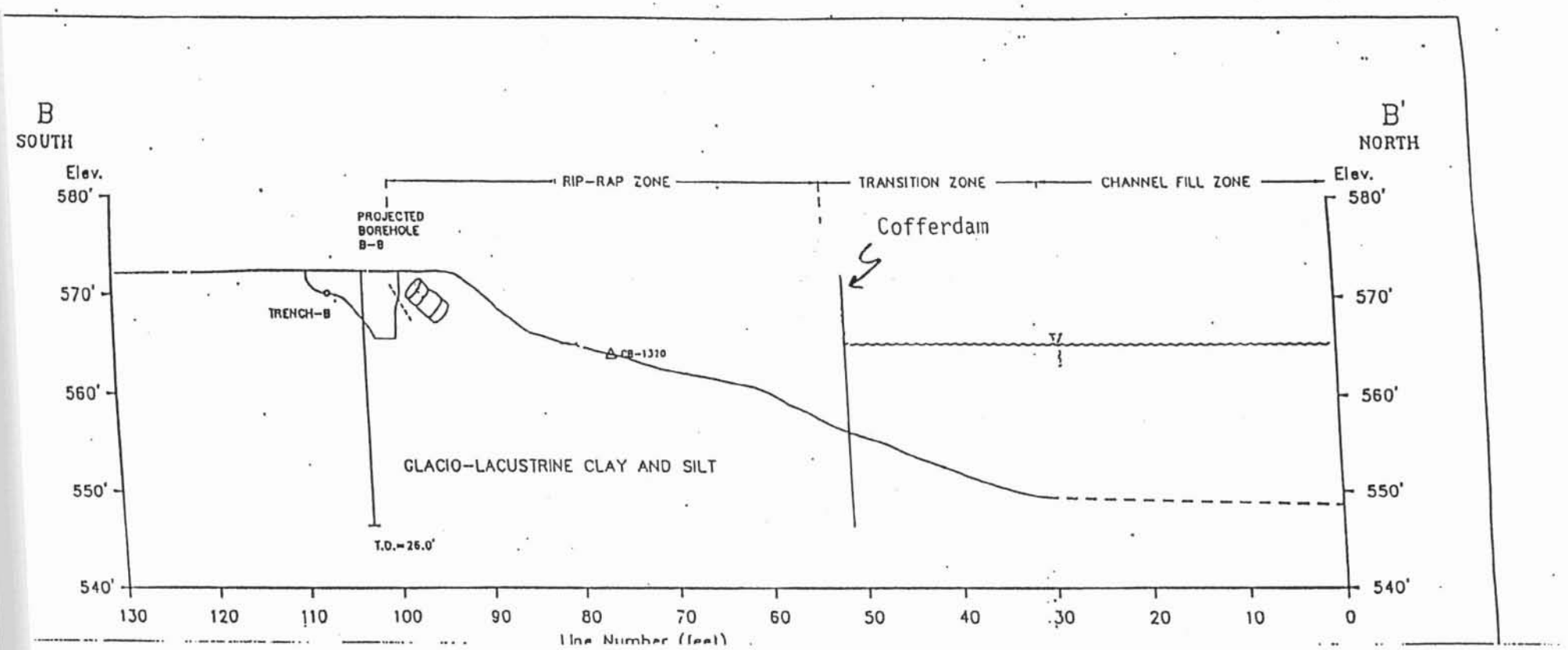


Figure 9
Creekside Golf Course
Cross-section of Cofferdam in Creek

Appendix 1

Administrative Record

Phase I Investigation, New York State Department of Environmental Conservation, October 1985

Phase II Investigation, Occidental Chemical Corporation, Durez Division, August 1986

Site Inspection Report, United States Environmental Protection Agency, May 1989

Citizen Participation Plan, New York State Department of Environmental Conservation, October 1990

Remedial Alternatives Assessment, Occidental Chemical Corporation, Durez Division, February 1991

Proposed Remedial Action Plan, New York State Department of Environmental Conservation, February 1991

Transcript of Public Meeting, February 1991

Appendix #2

RESPONSIVENESS SUMMARY FOR COMMENTS RECEIVED DURING PUBLIC COMMENT PERIOD FOR THE CREEKSIDE GOLF COURSE PROPOSED REMEDIAL ACTION PLAN

A public meeting was held on February 20, 1991 to present the Creekside Golf Course Proposed Remedial Action Plan (PRAP). The public comment period on the PRAP ran from February 6, 1991 to March 8, 1991. During that time no letters commenting on the PRAP were received. This responsiveness summary addresses the concerns and questions raised during the public meeting. A transcript of the public meeting is part of the Administrative Record for this Record of Decision.

1. The Lockport Water Department superintendent requested notification when work starts at the site. An emergency water intake for the town of Lockport is located on Tonawanda Creek, approximately 11 miles east of the site.

   This notification shall be provided by OCC prior to the start of work at the site.

2. Will there be an air quality problem at the site if a drum is punctured during the removal?

   No. The material in the barrels is non-volatile. Puncturing a barrel should not result in a violation of air quality standards.

3. Will the cofferdam contain all of the hazardous material that will be dredged from the site?

   Yes. The cofferdam will be installed around the area of the sediments to be removed. The cofferdam will not necessarily enclose all of the drums in the creek that will be removed. Some other type of containment, such as a boom with a weighted silt curtain, will be used when these barrels are removed.

4. Does the site create any problem with the water quality of Tonawanda Creek, adjacent to the site?

   No. The material in the barrels has a low solubility. If the material were to leak from the barrels it would not readily dissolve and would not result in a water quality problem. If any phenol had leaked from a barrel it has long since dissolved and left the area of the site.

5. What is the time table for removal of the drums from the site after they are removed?

   The drums will be staged in a secure area after removal. When enough drums have been accumulated to constitute a load, they will be transported to the disposal facility. It is anticipated that work will begin in the fall of 1991, provided that the Consent Order governing the work and the design stage have been completed.

6. Is there any reaction between the chemicals in the barrels and the effluent from the North Amherst Sewage Treatment Plant?