MALCOLM PIRNIE

MALCOLM PIRNIE, INC.
ENVIRONMENTAL ENGINEERS, SCIENTISTS & PLANNERS

September 30, 1994

Mr. Michael J. DiPietro
Engineering Geologist
Bureau of Western Remedial Action
Division of Hazardous Waste Remediation
New York State Department of
Environmental Conservation
50 Wolf Road
Albany, New York 12233

**RE:** Feasibility Study Report
Miller Brewing Company/Reynolds Can Plant, Fulton, New York
Site #738029

Dear Mr. DiPietro:

Per your September 28, 1994 letter to Miller Brewing Company and our previous phone conversations, enclosed are five complete copies, four bound and one unbound, of the revised Feasibility Study Report (Final FS Report) for the Reynolds Can Plant site, Fulton, New York. Modifications have been made to the report based on the comments contained in your August 30, 1994 comment letter on the Draft FS Report. This report was originally submitted to the State during July 1994.

Also included are four sets of modified pages and those pages which have been stamped by a Professional Engineer. These revised pages are to be inserted into the four original draft copies of the report which were forwarded to you in July. By replacing the affected pages in that report with the revised ones included with this letter, the reports will be complete and brought up to date. Each set of modified pages includes:

- a revised cover
- stamped inside cover page
- page 3-8
- page 3-9
- page 5-16
- page 6-22
- page 6-23
- Figure 3-4
- stamped Figure 5-2
- stamped Figure 5-3
- stamped Figure 5-4
- Ground Water & Surface Water SCGs/ARARs table from Appendix A

7481 HENRY CLAY BOULEVARD LIVERPOOL, NY 13088-3511 315-457-4105 FAX 315-457-4959

Copies of the sets of modified pages are also being sent to the undersigned for insertion into their copies of the FS Report. Please contact me if you have any questions.

Very truly yours,

MALCOLM PIRNIE, INC.

David W. Knutsen
Project Engineer

jml

Enclosures

cc: Charles Branagh, NYSDEC (w/2 enclosures)
G. Anders Carlson, NYSDOH (w/1 enclosure)
Mary Nyiri, NYSDEC (w/1 enclosure)
Ronald Heerkens, NYSDOH (w/1 enclosure)
Evan Walsh, Oswego County Health Department (w/1 enclosure)
Garrett Reich, Miller Brewing Company (w/1 enclosure)
Dan Barthold, Miller Brewing Company (w/2 enclosures)
Kathy Kinton, Miller Brewing Company (w/1 enclosure)
Barry Kogut, Bond, Schoeneck, & King (w/1 enclosure)

1028-258

PREPARED FOR

# MILLER BREWING COMPANY

## Reynolds Can Plant Site
## Fulton, New York

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# FEASIBILITY STUDY REPORT

MALCOLM PIRNIE

JULY 1994
REVISED SEPTEMBER 1994

# FEASIBILITY STUDY REPORT

**REYNOLDS CAN PLANT**
**FULTON, NEW YORK**
**NYSDEC SITE NO. 7-38-029**

**Prepared For: Miller Brewing Company**

**JULY 1994**
**REVISED SEPTEMBER 1994**

STATE OF NEW YORK
PAUL H. WERTHMAN
57626
LICENSED PROFESSIONAL ENGINEER


MALCOLM PIRNIE, INC.

7481 Henry Clay Boulevard
Liverpool, New York 13088

102 Corporate Park Drive
White Plains, New York 10602


1028-258

### 3.2.1 Soil

Presently, there is little risk associated with the contaminated unit of soil at the Can Plant site which requires remediation. In the Human Health Risk Assessment, no pathways of concern were identified as possible exposure scenarios for the southern operable unit soil. Thus, the objective for remediation of the soil is to prevent the release of contaminants which would result in ground water or surface water contaminant levels in excess of SCGs/ARARs. The NYSDEC January 24, 1994 TAGM on the determination of soil cleanup objectives and levels was used to determine appropriate soil cleanup goals. These values are listed in Appendix A, and represent concentrations which would be protective of ground water/drinking water quality for its best use (based on each compound's affinity to adsorb onto soil organic material).

If the soil is excavated and treated, hazardous constituent concentrations will have to be brought down to action level concentrations in order for the medium to be classified as non-hazardous. This assumes that the soil contains hazardous constituents from listed hazardous waste identified in 6 NYCRR Part 371. Action level concentrations are defined in the NYSDEC November 30, 1992 TAGM, "Contained-In" Criteria for Environmental Media, and are listed in Appendix A.

### 3.2.2 Ground Water

The remedial action objectives for the contaminated ground water at the site are: 1) to reduce remaining VOC levels in ground water to their respective SCGs/ARARs (drinking water MCLs/Class GA values) and 2) to minimize the migration of contaminants beyond the site boundary at levels in excess of applicable SCGs/ARARs. The latter objective is based on the NYSDEC's requirement of providing comprehensive plume containment/control (June 21, 1994 letter).

If, during remedial action implementation, it is determined that reducing ground water contaminant levels at the site to their respective SCGs/ARARs is not feasible, the design and scope of the ground water extraction system will first be reevaluated. Specifically, a reevaluation will be performed if, after pumping the ground water for an extended period of time, contaminant levels in the ground water at the site are no longer being reduced by an appreciable amount. If no further improvement in ground water quality is observed, it may be attributable to the size or capacity of the recovery system and/or the presence of continuing sources of contamination, such as nonaqueous phase contamination. The reevaluation may involve determining whether recovery well pumping rates should be increased or whether an additional recovery well should be installed.

However, if it is found that the leveling off of the VOC removal rate is not related to the design of the system itself, the goal of reducing ground water contaminant levels at the site to their respective SCGs/ARARs will be reevaluated. These contingencies will be addressed during the remedial design process.

If the ground water is extracted and treated as part of a selected remedial action, several action-specific SCGs/ARARs may apply, depending on the point of discharge. State Pollutant Discharge Elimination System (SPDES) standards for surface discharge to the Oswego River (a Class B stream), or Class GA ground water effluent standards for reapplication to ground water not under the influence of recovery well pumping may be applicable. If the ground water is discharged to the POTW, sewer use standards will apply. The SCGs/ARARs for Class GA ground water and Class B surface water can be found in Appendix A.

The SPDES discharge limits would be determined based on the Class B stream standards and expected discharge volumes. The exact details of the SPDES limits would be discussed with the Division of Water during the remedial design process. However, the SPDES discharge limits established by the NYSDEC for discharge from the 1 MGD City of Fulton Water Treatment Facility (WTF) to the Oswego River have been used throughout this FS for purposes of preliminarily determining the level of ground water treatment that will be required at the site prior to discharge to the river. Most of the compounds detected at the site are listed on the City of Fulton WTF SPDES Permit. The discharge limit for the compounds on the Permit is 10 ug/l. If the selected remedial alternative includes discharge to the Oswego River under a SPDES Permit, when VOC contaminant levels in the extracted ground water fall below the required SPDES discharge limitations, direct discharge without treatment to the River should be possible.

It should be noted that the classification of the Oswego River in the vicinity of the Can Plant site is proposed to be changed from B to A as part of the Oswego River Basin reclassification being undertaken by the State; however, it has been communicated to Miller by a NYSDEC representative that the SPDES discharge limits for the City of Fulton WTF will not probably change even if the reclassification occurs.

## 3.3 GENERAL RESPONSE ACTIONS

General response actions were identified for each of the contaminated media at the Can Plant site. These actions address the site contamination problems so that the specified remedial action objectives will be met. The response actions developed for each medium are listed below.

It is not certain, however, if the sanitary sewer would have adequate capacity to accept the flow. In addition, the water may actually be too clean for the WWTP to accept at the estimated flow. BOD levels in the treated water would be expected to be low, and discharging to the sewer may dilute the WWTP influent BOD. Coordination with both the NYSDEC and City of Fulton would also be required to revise the existing wastewater discharge permit requirements. This process could be lengthy.

**Discharge to the Oswego River**

Discharging to the Oswego River would require the installation of more pipe than the option of sanitary sewer discharge. However, the river could accept the flow, and there would tend to be less-complex permitting requirements. There would be less coordination with other agencies. In addition, since the remedial work would be performed under an Order on Consent, SPDES requirements would have to be met, but the actual permitting process would be minimized. The difference in capital costs between discharging to the sanitary sewer and discharging to the Oswego River would most likely be reduced due to the costs incurred through sanitary sewer discharge permitting and coordination.

Based on MPI's analysis of the ground water discharge options, surface water discharge will be included as the discharge option in the combined alternatives evaluated in the next section.

## 5.3 COMBINED ALTERNATIVES

Based on the ground water recovery modeling and evaluation of treatment and discharge options, the ground water extraction/treatment/discharge options will be defined as follows for the detailed evaluation:

- ground water extraction using 13 recovery wells - four installed in the southern operable unit and nine installed in the northern operable unit
- ground water treatment at a central treatment facility located in the southern area of the site, employing air stripping with carbon on the air and water effluent (and on-site regeneration of the vapor phase carbon)
- treated ground water discharge to the Oswego River

operation (while soil flushing is being implemented). Annual O&M costs for the ground water pump and treat system after that time would be expected to be approximately $394,200. This would be the most cost effective action alternative since very little construction, in addition to the ground water treatment facility, would be necessary. Also, operation, and maintenance of the soil flushing system would be minimal.

Ground water extraction/treatment/discharge with vapor extraction would be the next most cost effective alternative. Construction costs would be higher than the soil flushing alternative, as would maintenance and monitoring costs. The 30 year present worth cost of this alternative was estimated to be $5,985,502.

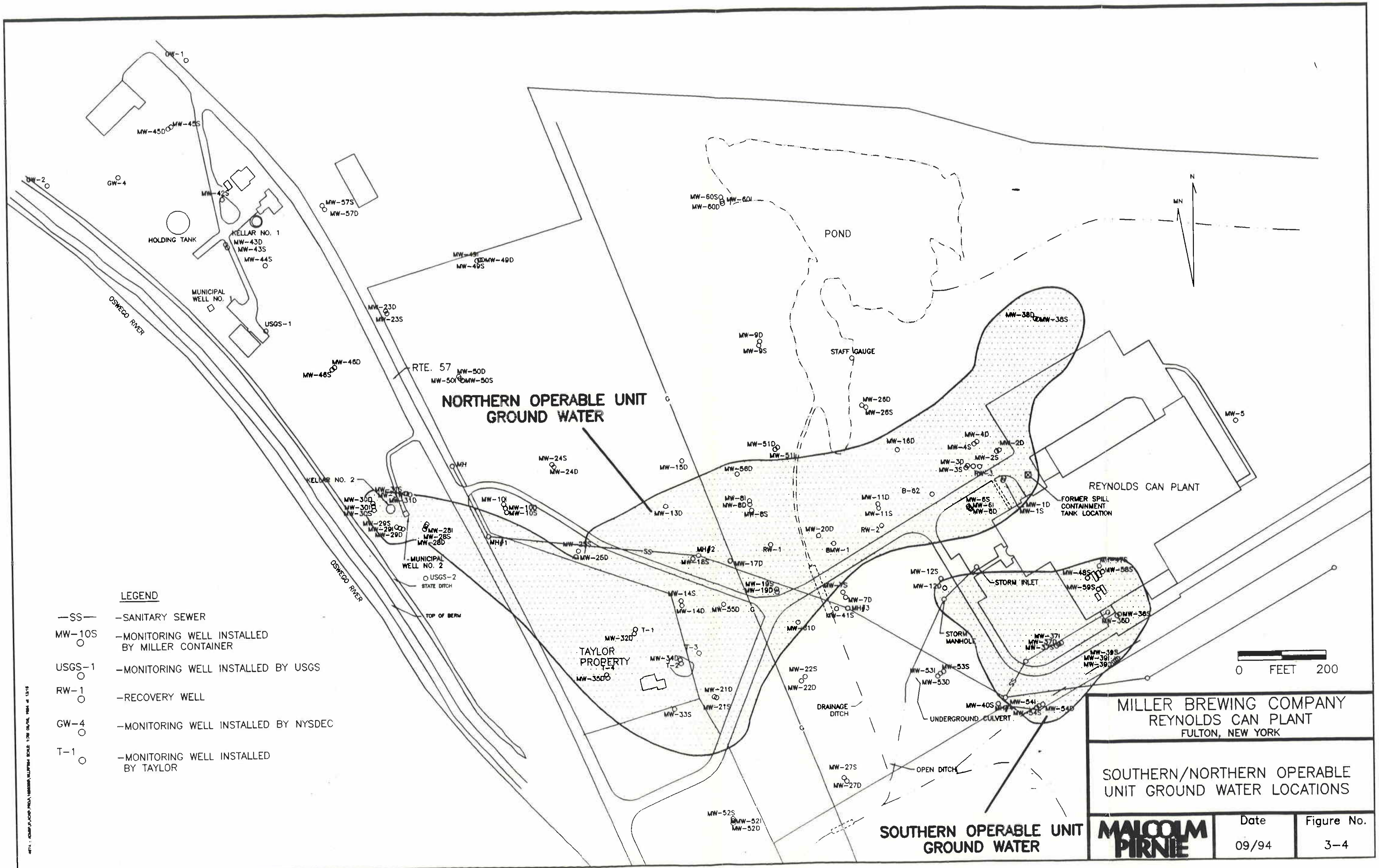
The relatively high costs associated with the initial studies and testing required for bioremediation make this combined alternative less cost effective than vapor extraction. The 30 year present worth cost would be approximately $6,248,835.

It appears that the air sparging alternative would be the most costly to implement, with a 20 year present worth cost of $7,062,065. Capital costs of $2,081,400 would be expected. Annual O&M costs of $672,300 would be incurred during the first five years of system operation. Following the completion of air sparging, O&M costs for the ground water pump and treat system would be approximately $394,200. This alternative would have the highest capital and O&M costs of the alternatives analyzed.

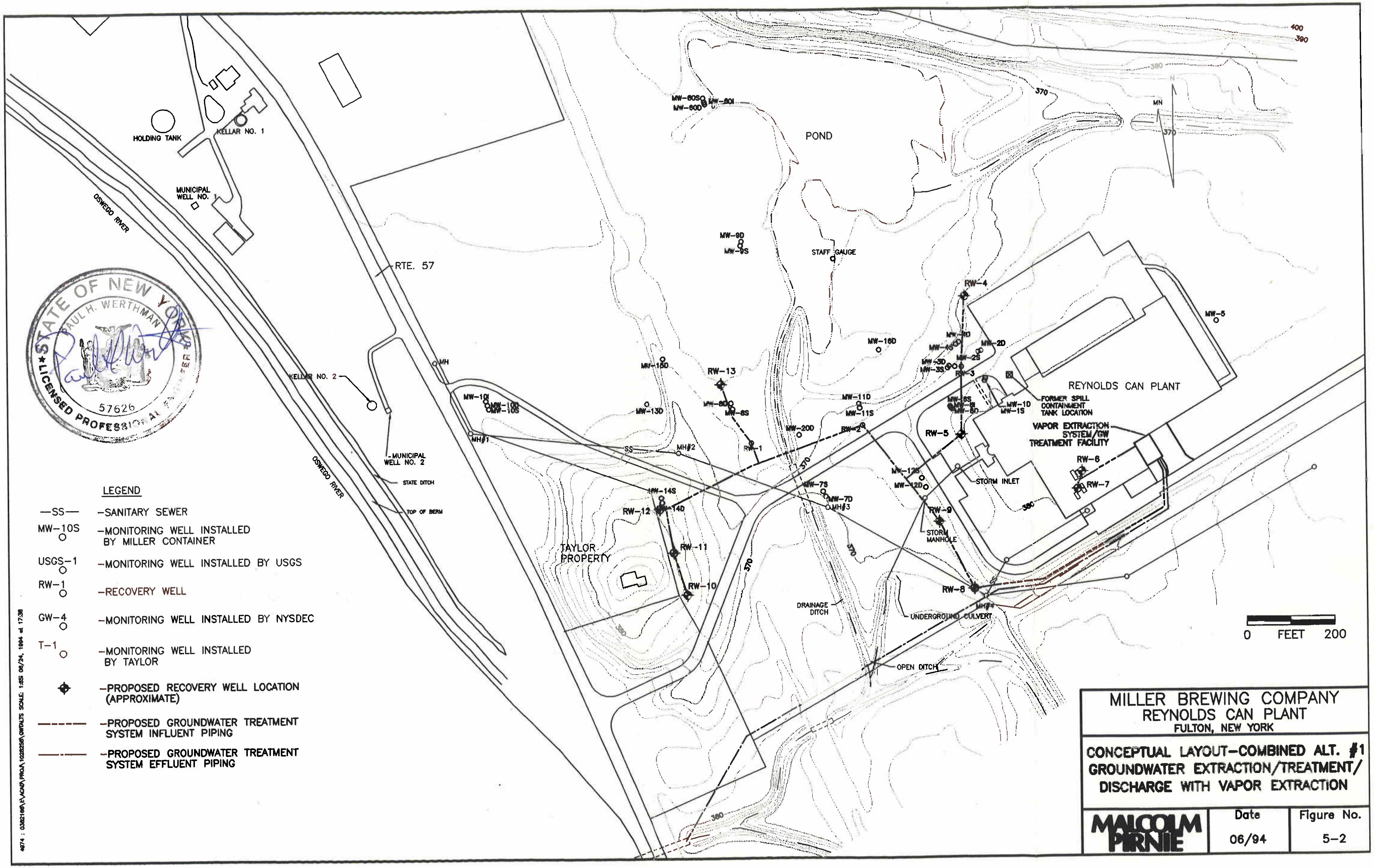
**Recommended Remedial Action:** Based on the results of the detailed analysis of alternatives for the remediation of the Can Plant site, the recommended alternative is ground water extraction/central treatment/direct discharge, and vapor extraction treatment of the southern operable unit soils. Although this alternative would be slightly more costly than the combined alternative of soil flushing, it would be expected to be more effective and implementable, as previously described.

The effectiveness of the ground water recovery system implemented as part of this alternative would be verified through the collection of ground water level data at regular intervals before and after the system is turned on. In addition, monitoring points for ground water quality would be established. Ground water quality at the site could then be monitored during remediation, and contaminant levels could be compared to baseline concentrations. These baseline concentrations would be obtained through a comprehensive round of ground water sampling conducted prior to full-scale design of the remedial action.

A monitoring program which would be implemented to confirm that the remedial action is achieving plume capture, outlining exact monitoring points and frequencies for sampling and obtaining water level measurements, would be detailed during the remedial design process.



NORTHERN OPERABLE UNIT
GROUND WATER
SOUTHERN OPERABLE UNIT
GROUND WATER
POND
REYNOLDS CAN PLANT
TAYLOR PROPERTY
OSWEGO RIVER
RTE. 57
HOLDING TANK
KELLAR NO. 1
KELLAR NO. 2
MUNICIPAL WELL NO. 1
MUNICIPAL WELL NO. 2
STAFF GAUGE
FORMER SPILL CONTAINMENT TANK LOCATION
STORM INLET
STORM MANHOLE
UNDERGROUND CULVERT
DRAINAGE DITCH
OPEN DITCH
STATE DITCH
TOP OF BERM
0 FEET 200
N
MN
LEGEND
—SS— -SANITARY SEWER
MW-10S -MONITORING WELL INSTALLED BY MILLER CONTAINER
USGS-1 -MONITORING WELL INSTALLED BY USGS
RW-1 -RECOVERY WELL
GW-4 -MONITORING WELL INSTALLED BY NYSDEC
T-1 -MONITORING WELL INSTALLED BY TAYLOR
MILLER BREWING COMPANY
REYNOLDS CAN PLANT
FULTON, NEW YORK
SOUTHERN/NORTHERN OPERABLE UNIT GROUND WATER LOCATIONS
MALCOLM PIRNIE
Date 09/94
Figure No. 3-4


POND
STAFF GAUGE
MW-60S
MW-60D
MW-60I
MW-9D
MW-9S
RW-4
MW-5
MW-16D
MW-2D
MW-2S
MW-3D
MW-3S
RW-3
RW-13
MW-15D
MW-13D
MW-8D
MW-8S
RW-1
MW-11D
MW-11S
MW-20D
RW-2
MW-1D
MW-1S
FORMER SPILL CONTAINMENT TANK LOCATION
REYNOLDS CAN PLANT
VAPOR EXTRACTION SYSTEM/GW TREATMENT FACILITY
RW-5
RW-6
RW-7
STORM INLET
MW-12S
MW-12D
MW-7S
MW-7D
MH#3
RW-9
STORM MANHOLE
RW-8
MH#4
UNDERGROUND CULVERT
DRAINAGE DITCH
OPEN DITCH
MW-14S
MW-14D
RW-12
RW-11
RW-10
TAYLOR PROPERTY
MH#2
MH#1
SS
MW-10I
MW-10D
MW-10S
MH
KELLAR NO. 2
MUNICIPAL WELL NO. 2
STATE DITCH
TOP OF BERM
RTE. 57
OSWEGO RIVER
HOLDING TANK
KELLAR NO. 1
MUNICIPAL WELL NO. 1
MN
N
400
390
380
370
0 FEET 200
STATE OF NEW YORK
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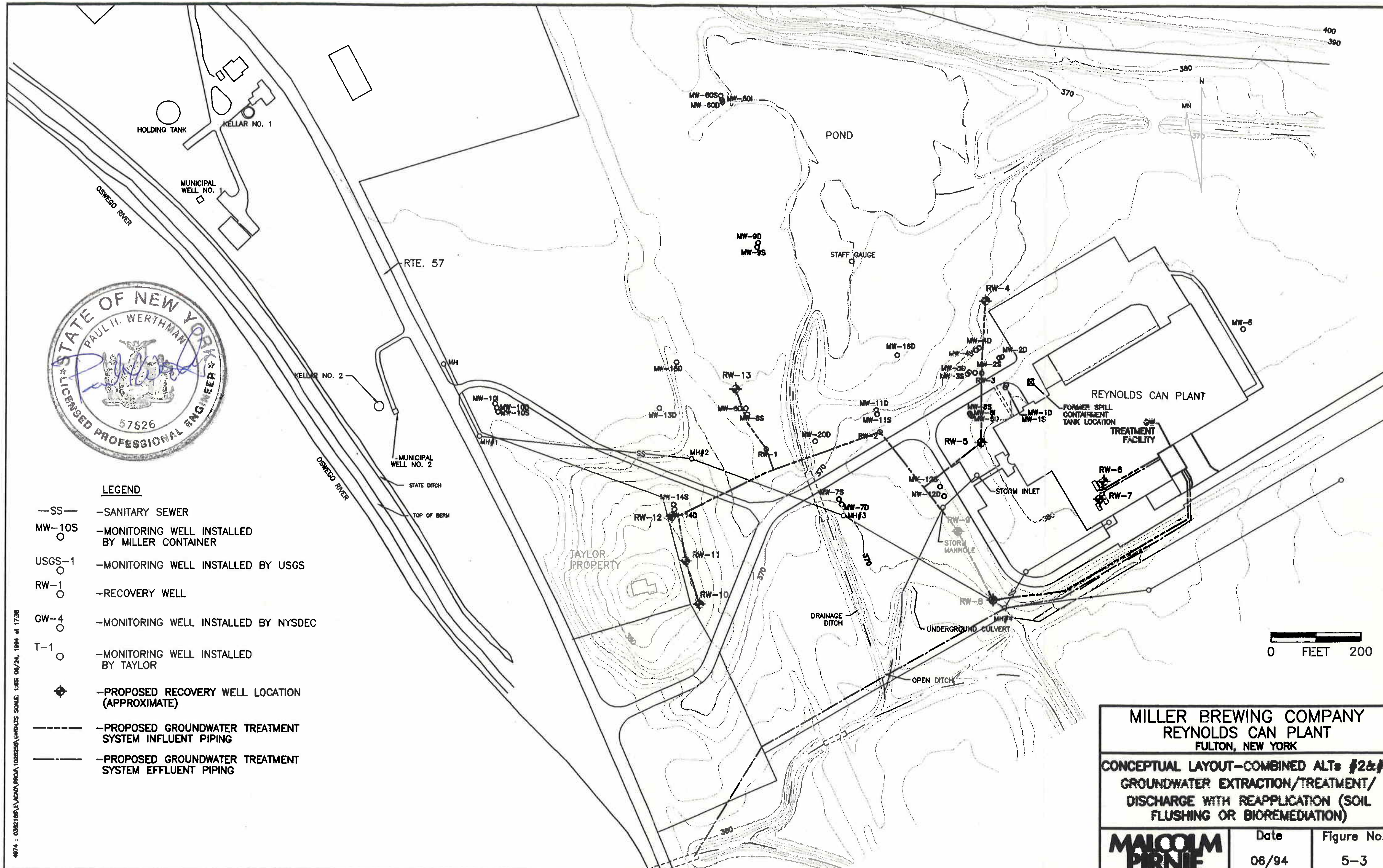
LEGEND
—SS— -SANITARY SEWER
MW-10S -MONITORING WELL INSTALLED BY MILLER CONTAINER
USGS-1 -MONITORING WELL INSTALLED BY USGS
RW-1 -RECOVERY WELL
GW-4 -MONITORING WELL INSTALLED BY NYSDEC
T-1 -MONITORING WELL INSTALLED BY TAYLOR
-PROPOSED RECOVERY WELL LOCATION (APPROXIMATE)
-PROPOSED GROUNDWATER TREATMENT SYSTEM INFLUENT PIPING
-PROPOSED GROUNDWATER TREATMENT SYSTEM EFFLUENT PIPING
MILLER BREWING COMPANY
REYNOLDS CAN PLANT
FULTON, NEW YORK
CONCEPTUAL LAYOUT-COMBINED ALT. #1 GROUNDWATER EXTRACTION/TREATMENT/ DISCHARGE WITH VAPOR EXTRACTION
MALCOLM PIRNIE
Date 06/94
Figure No. 5-2


HOLDING TANK
KELLAR NO. 1
MUNICIPAL WELL NO. 1
OSWEGO RIVER
RTE. 57
KELLAR NO. 2
MUNICIPAL WELL NO. 2
STATE DITCH
TOP OF BERM
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MH
MH#1
MH#2
MH#3
MH#4
SS
POND
STAFF GAUGE
TAYLOR PROPERTY
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FORMER SPILL CONTAINMENT TANK LOCATION
GW TREATMENT FACILITY
STORM INLET
STORM MANHOLE
DRAINAGE DITCH
UNDERGROUND CULVERT
OPEN DITCH
MW-60S
MW-60D
MW-60I
MW-9D
MW-9S
MW-16D
MW-15D
MW-13D
MW-10I
MW-10D
MW-10S
MW-8D
MW-8S
MW-11D
MW-11S
MW-20D
MW-14S
MW-14D
MW-7S
MW-7D
MW-12S
MW-12D
MW-4D
MW-4S
MW-3D
MW-3S
MW-2D
MW-2S
MW-1D
MW-1S
MW-5
RW-1
RW-2
RW-3
RW-4
RW-5
RW-6
RW-7
RW-8
RW-9
RW-10
RW-11
RW-12
RW-13
370
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STATE OF NEW YORK
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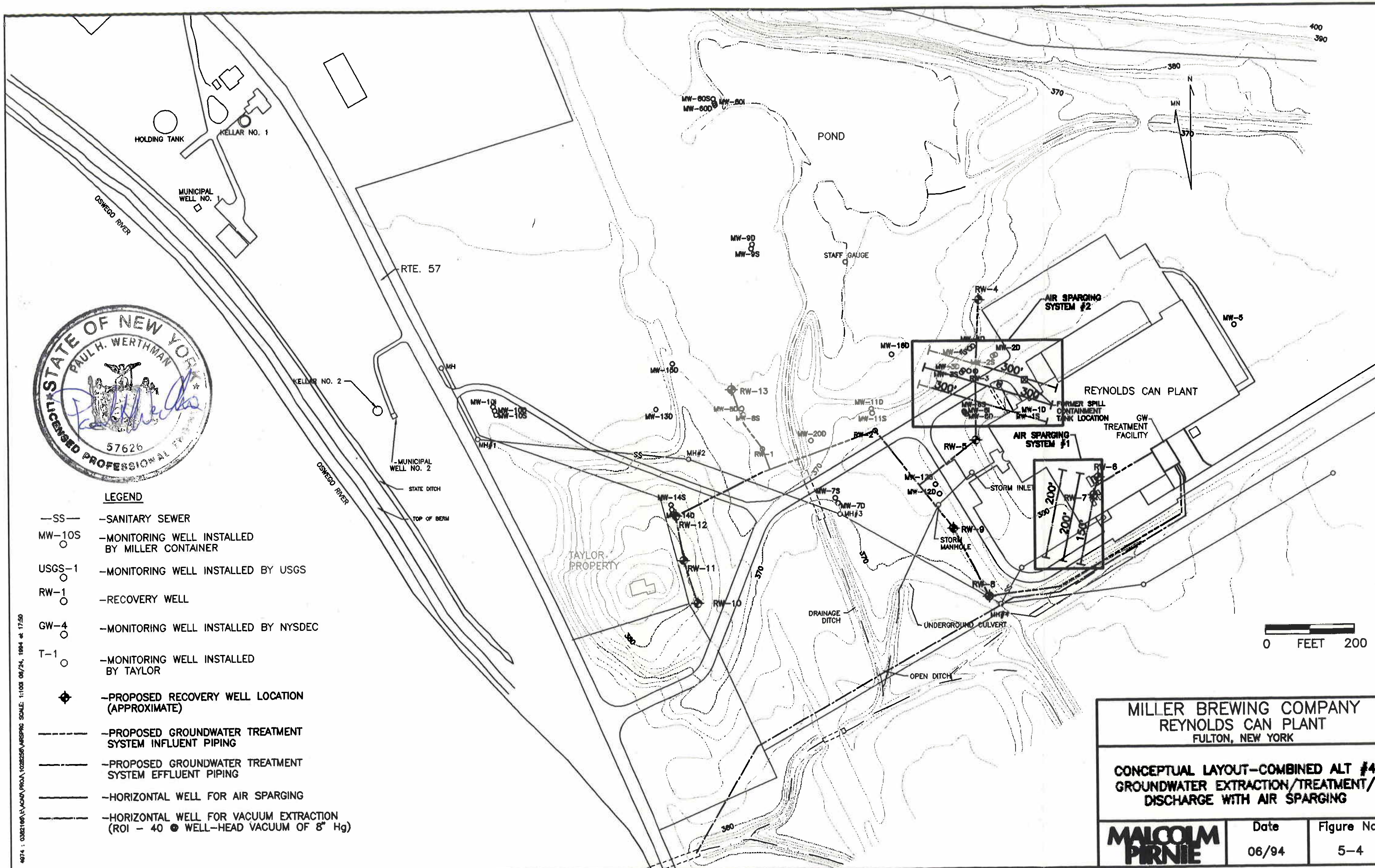
LEGEND
—SS— —SANITARY SEWER
MW-10S —MONITORING WELL INSTALLED BY MILLER CONTAINER
USGS-1 —MONITORING WELL INSTALLED BY USGS
RW-1 —RECOVERY WELL
GW-4 —MONITORING WELL INSTALLED BY NYSDEC
T-1 —MONITORING WELL INSTALLED BY TAYLOR
—PROPOSED RECOVERY WELL LOCATION (APPROXIMATE)
—PROPOSED GROUNDWATER TREATMENT SYSTEM INFLUENT PIPING
—PROPOSED GROUNDWATER TREATMENT SYSTEM EFFLUENT PIPING
MILLER BREWING COMPANY
REYNOLDS CAN PLANT
FULTON, NEW YORK
CONCEPTUAL LAYOUT-COMBINED ALTs #2&#3
GROUNDWATER EXTRACTION/TREATMENT/DISCHARGE WITH REAPPLICATION (SOIL FLUSHING OR BIOREMEDIATION)
MALCOLM PIRNIE
Date 06/94
Figure No. 5-3



STATE OF NEW YORK
PAUL H. WERTHMAN
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LICENSED PROFESSIONAL ENGINEER

## LEGEND

—SS— –SANITARY SEWER

MW–10S –MONITORING WELL INSTALLED BY MILLER CONTAINER

USGS–1 –MONITORING WELL INSTALLED BY USGS

RW–1 –RECOVERY WELL

GW–4 –MONITORING WELL INSTALLED BY NYSDEC

T–1 –MONITORING WELL INSTALLED BY TAYLOR

–PROPOSED RECOVERY WELL LOCATION (APPROXIMATE)

–PROPOSED GROUNDWATER TREATMENT SYSTEM INFLUENT PIPING

–PROPOSED GROUNDWATER TREATMENT SYSTEM EFFLUENT PIPING

–HORIZONTAL WELL FOR AIR SPARGING

–HORIZONTAL WELL FOR VACUUM EXTRACTION (ROI – 40 @ WELL–HEAD VACUUM OF 8" Hg)

MILLER BREWING COMPANY
REYNOLDS CAN PLANT
FULTON, NEW YORK

**CONCEPTUAL LAYOUT–COMBINED ALT #4 GROUNDWATER EXTRACTION/TREATMENT/ DISCHARGE WITH AIR SPARGING**

MALCOLM PIRNIE

| Date | Figure No. |
|---|---|
| 06/94 | 5-4 |

# REYNOLDS CAN PLANT SITE
## GROUND WATER AND SURFACE WATER SCGs/ARARs

| | Maximum Ground Water Concentration Detected (µg/l) | | Standards, Criteria and Guidelines | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Drinking Water | | Ground Water | | | Surface Water | | | | | |
| | | | | | | | | Class A | | Class A, B, C | | | |
| Compound | Southern Operable Unit | Northern Operable Unit | USEPA MCL | NYSDEC MCL | NYSDEC GA-S | NYSDEC GA-G | NYSDEC DIS-GA | NYSDEC AWQ-S | NYSDEC AWQ-G | NYSDEC AWQ-S | NYSDEC AWQ-G | USEPA FAC-AT | USEPA FAC-CT |
| Methylene chloride | 2,800 | 4,200 | — | 5 | 5 | — | — | — | 5 | — | — | — | — |
| 1,1-Dichloroethylene | 1,100 | 3,200 | 7 | 5 | 5 | — | — | — | 0.07 | — | — | 11,600L | — |
| 1.1-Dichloroethane | 3,000 | 1000 | — | 5 | 5 | — | — | — | 5 | — | — | — | — |
| 1,1,1-Trichloroethane | 11,000 | 42,000 | 200 | 5 | 5 | — | — | — | 5 | — | — | — | — |
| Trichloroethylene | 2,000 | 810 | 5 | 5 | 5 | — | 10 | — | 3 | — | 11 | 45,000L | 21,900L |
| Tetrachloroethylene | 1,200 | 14,000 | 5 | 5 | 5 | — | — | — | 0.7 | — | 1 | 5,280L | 840L |
| c-1,2-Dichloroethylene | 52,000 | 690 | 70 | 5 | 5 | — | — | — | 5 | — | — | 11,600L | — |
| t-1,2-Dichloroethylene | 21 | 110 | 100 | 5 | 5 | — | — | — | 5 | — | — | 11,600L | — |
| 1,2-Dichloroethane | 14 | 13 | 5 | 5 | 5 | — | — | 0.8 | — | — | — | 118,000L | 20,000L |
| Carbon tetrachloride | 410 | — | 5 | 5 | 5 | — | 5 | — | 0.4 | — | — | 35,200L | — |
| 1,1,2-Trichloroethane | — | 30 | 5 | 5 | 5 | — | — | 0.6 | — | — | — | — | 9,400L |
| 1,2-Dichloropropane | — | 4 | 5 | 5 | 5 | — | — | 0.5 | — | — | — | 23,000L | 5,700L |
| Chloroform | — | 40 | 100+ | 100+ | 7 | — | 7 | 7 | — | — | — | 28,900L | 1,240L |
| Dibromochloromethane | — | 59 | 100+ | 100+ | — | 50 | — | — | 50 | — | — | — | — |
| Benzene | — | 4 | 5 | 5 | 0.7 | — | 0.7 | 0.7 | — | — | 6 | 5,300L | — |
| Toluene | 110 | 420 | 1000 | 5 | 5 | — | — | — | 5 | — | — | 17,500L | — |
| Ethylbenzene | 150 | 2.1 | 700 | 5 | 5 | — | — | — | 5 | — | — | 32,000L | — |
| Xylenes, total | 200 | 1500 | 10,000 | 5* | 5* | — | — | — | 5* | — | — | — | — |
| Acetone | 5,600 | — | — | 50 | 50 | — | — | — | 50 | — | — | — | — |
| Methyl isobutyl ketone | 2,400 | 89 | — | 50 | — | — | — | — | — | — | — | — | — |
| Methyl ethyl ketone | 25 | — | — | 50 | — | 50 | — | — | 50 | — | — | — | — |
| Vinyl chloride | 5.9 | 59 | 2 | 2 | 2 | — | 5.0 | — | 0.3 | — | — | — | — |
| Dichlorodifluoromethane | — | 26 | — | 5 | 5 | — | — | — | 5 | — | — | — | — |
| Bromodichloromethane | — | 1 | 100+ | 100+ | — | 50 | — | — | 50 | — | — | — | — |

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NOTES:

All concentrations in ug/l.
— = indicates no concentration is available.
+ = Limit for total trihalomethanes
L = Insufficient data to develop criteria. Value presented is the L.O.E.L. – Lowest Observed Effect Level.
* = Value listed applies to each isomer individually.
The basis for the standard or guidance value of Class A waters is for the protection of human health.
The basis for the standard or guidance value for Class A, B, C, and D waters is for protection of aquatic life.
Water classes:

A – Drinking water source
A, B, C – Fishing and fish propagation
D – Fishing and fish survival

References used:

Drinking Water – 10 NYSCRR Part 5-1.50 through 5-1.55 (NYS Maximum Contaminant Levels in Drinking Water)
– 40 CFR 141.11 and 40 CFR 141.61 through 141.62 (EPA Maximum Contaminant Levels in Drinking Water)
Ground Water – 6 NYSCRR Part 703.5 (NYSDEC GA – Standard)
– 6 NYSCRR Part 703.6 (NYSDEC Ground Water Discharge – GA Standard)
Surface Water – 6 NYSCRR Part 703.5 (NYSDEC Class C AWQ – Standard)
– EPA 440/5-86-001 (EPA Quality Criteria for Water 1986)

MCL = Maximum Contaminant Level
GA-S = Class GA Ground Water Standard
GA-G = Class GA Ground Water Guidance Value
DIS-GA = Class GA Ground Water Effluent Standard

AWQ-S = Ambient Water Quality Standard
AWQ-G = Ambient Water Quality Guidance Value
FAC-AT = Fresh Water Acute Criteria – Acute Toxicity
FAC-CT = Fresh Water Acute Criteria – Chronic Toxicity