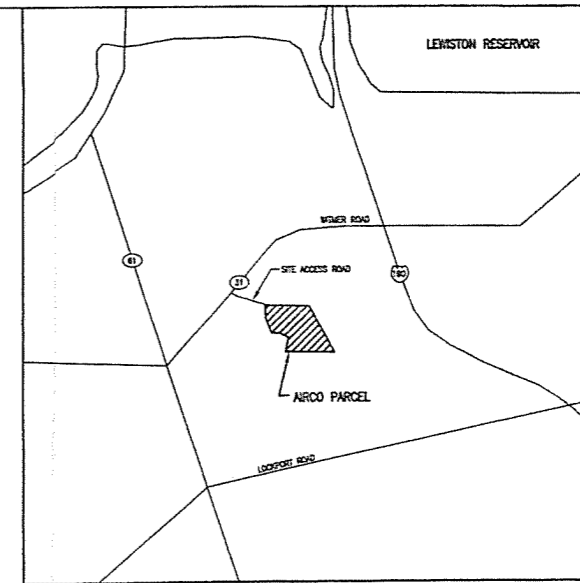


**VICINITY MAP**  
APPROXIMATE SCALE: 1"=4 MILES



**LOCATION MAP**

# AIRCOCO PARCEL GROUNDWATER TREATMENT SYSTEM NIAGARA FALLS, NEW YORK

<u>DRAWING NUMBER</u>	<u>SHEET NUMBER</u>	<u>DRAWING TITLE</u>
T-1	1 OF 6	TITLE SHEET
G-1	2 OF 6	EXISTING SITE PLAN
G-2	3 OF 6	PROPOSED SITE PLAN
G-3	4 OF 6	PROCESS DESIGN PLAN
G-4	5 OF 6	MISCELLANEOUS DETAILS
G-5	6 OF 6	CROSS-SECTIONS AND CIVIL DETAILS

NO.	DATE	BY	DESCRIPTION



**AIRCOCO PARCEL**  
**GROUNDWATER TREATMENT SYSTEM**  
 NIAGARA FALLS, NEW YORK

TITLE SHEET



**EA ENGINEERING, P.C.**  
 AND ITS AFFILIATE  
**EA SCIENCE AND TECHNOLOGY**  
 3 Washington Center  
 Newburgh, New York 12550  
 (845) 565-8100

DATE	APRIL 2003
DESIGNED BY	SJR
DRAWN BY	JAP
CHECKED BY	SER
PROJECT MANAGER	CEM
PROJECT NUMBER	12040.83
SCALE	AS SHOWN
FILE NAME	T-1.dwg
DRAWING NUMBER	T-1
SHEET NUMBER	1 OF 6

WARNING: IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW, ARTICLE 145, SECTION 7209, SPECIAL PROVISION 2, FOR ANY PERSON UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER OR LAND SURVEYOR SHALL AFFIX TO THE ITEM HIS SEAL AND NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

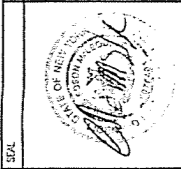


**LEGEND**

- 610 — MAJOR CONTOUR LINE
- 620 — MINOR CONTOUR LINE
- - - - - EDGE OF STONE ROAD
- \* \* \* \* \* CHAIN LINK FENCE
- - - - - PROPERTY LINE
- - - - - CAP TERMINATION
- [Pattern] 40-MIL TEXTURED LLDPE PANEL LAYOUT
- MW-8B ⊕ MONITORING WELL

**GENERAL NOTES:**

- 1.) HORIZONTAL DATUM: NEW YORK STATE PLANE COORDINATE SYSTEM NAD 1983, NEW YORK WEST ZONE
- 2.) VERTICAL DATUM: NGVD 1929
- 3.) VERTICAL AND HORIZONTAL DATUMS TIED INTO 1991 CITY OF NIAGARA FALLS GIS CONTROL PROJECT MONUMENTS SMC 20A AND SMC 45
- 4.) ALL UNITS MEASURED IN U.S. SURVEY FEET
- 5.) BASE MAP GENERATED FROM WENDEL-DUCHSCHERER SURVEY COMPLETED OCTOBER 2000



**AIRCO PARCEL  
GROUNDWATER TREATMENT SYSTEM  
NIAGARA FALLS, NEW YORK**

**EXISTING SITE PLAN**

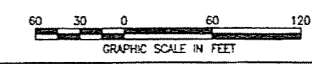


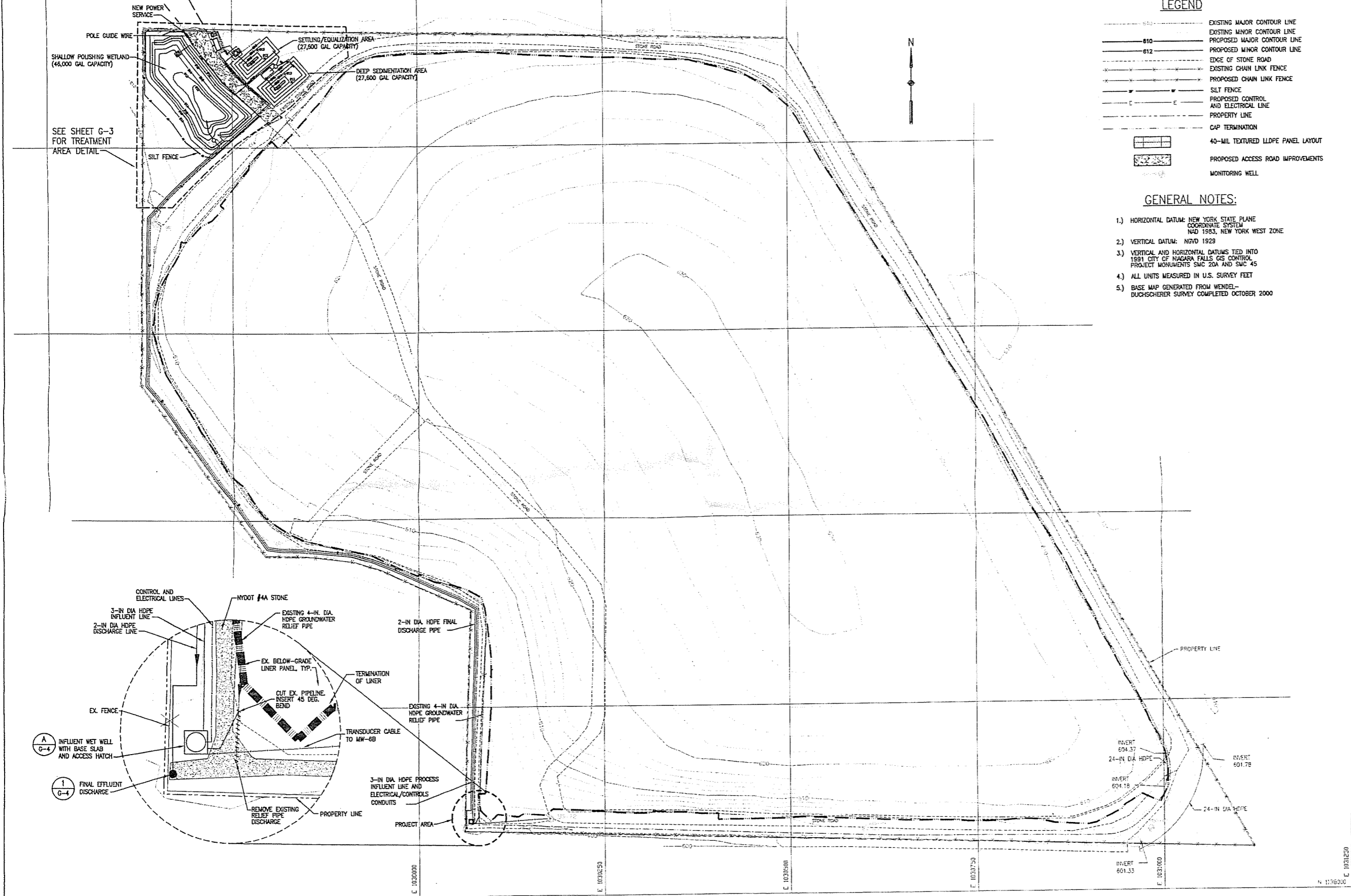
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PROJECT NUMBER	12040.83
SCALE	AS SHOWN
FILE NAME	G-1.dwg
DRAWING NUMBER	G-1
SHEET NUMBER	2 OF 6

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**LEGEND**

---	EXISTING MAJOR CONTOUR LINE
---	EXISTING MAJOR CONTOUR LINE
---	PROPOSED MAJOR CONTOUR LINE
---	PROPOSED MINOR CONTOUR LINE
---	EDGE OF STONE ROAD
---	EXISTING CHAIN LINK FENCE
---	PROPOSED CHAIN LINK FENCE
---	SILT FENCE
---	PROPOSED CONTROL AND ELECTRICAL LINE
---	PROPERTY LINE
---	CAP TERMINATION
---	40-MIL TEXTURED LLDPE PANEL LAYOUT
---	PROPOSED ACCESS ROAD IMPROVEMENTS
---	MONITORING WELL

- GENERAL NOTES:**
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  - 4.) ALL UNITS MEASURED IN U.S. SURVEY FEET
  - 5.) BASE MAP GENERATED FROM WENDEL-DUCHSCHERER SURVEY COMPLETED OCTOBER 2000

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	4/16/03	cm	Revise Power Flow



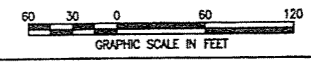
**AIRCO PARCEL  
GROUNDWATER TREATMENT SYSTEM  
NIAGARA FALLS, NEW YORK  
PROPOSED SITE PLAN**

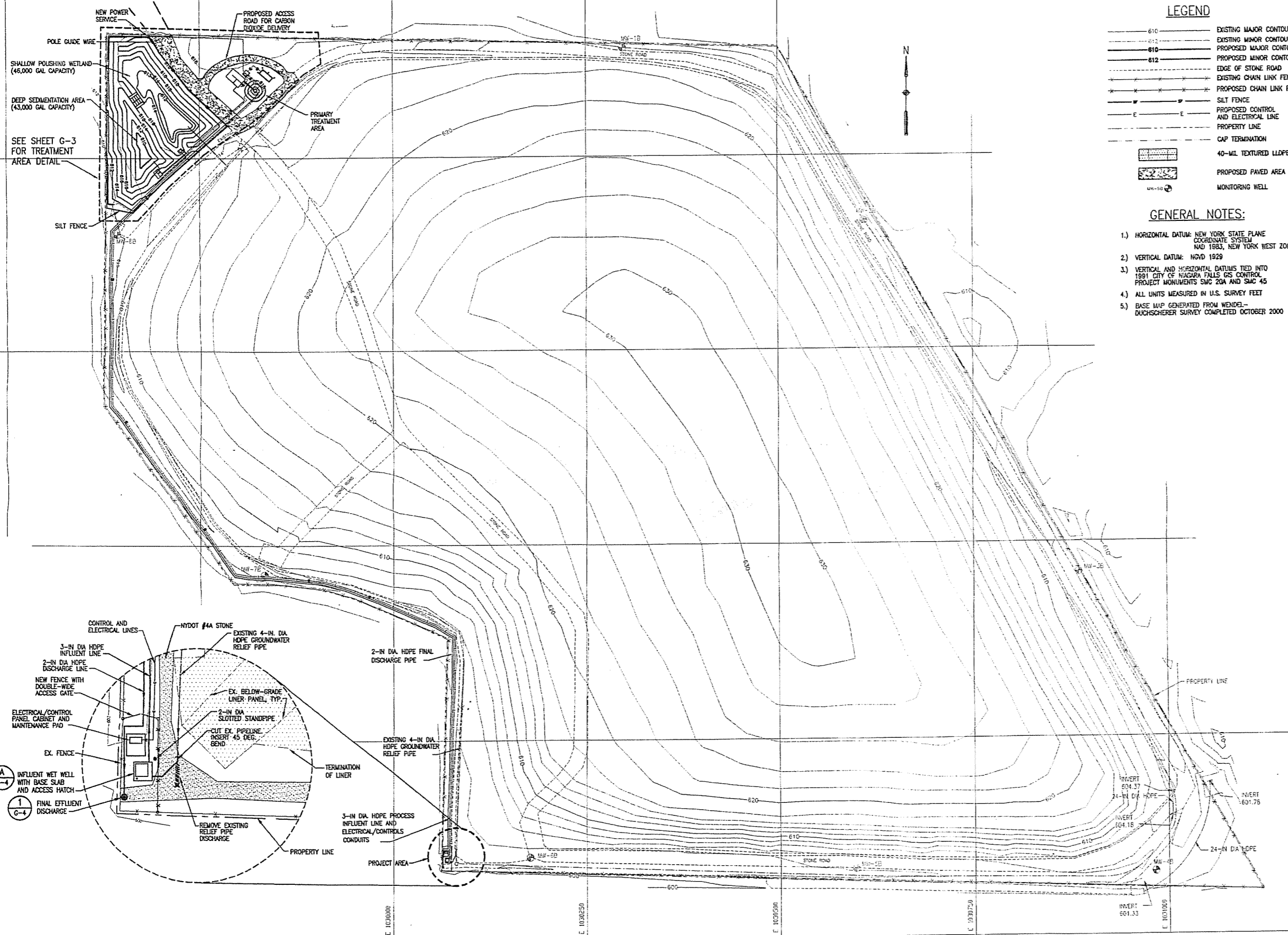


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DATE	APRIL 2003
DESIGNED BY	SJR
DRAWN BY	JAP
CHECKED BY	SER
PROJECT MANAGER	CEM
PROJECT NUMBER	12040.83
SCALE	AS SHOWN
FILE NAME	G-2.dwg
DRAWING NUMBER	G-2
SHEET NUMBER	3 OF 6

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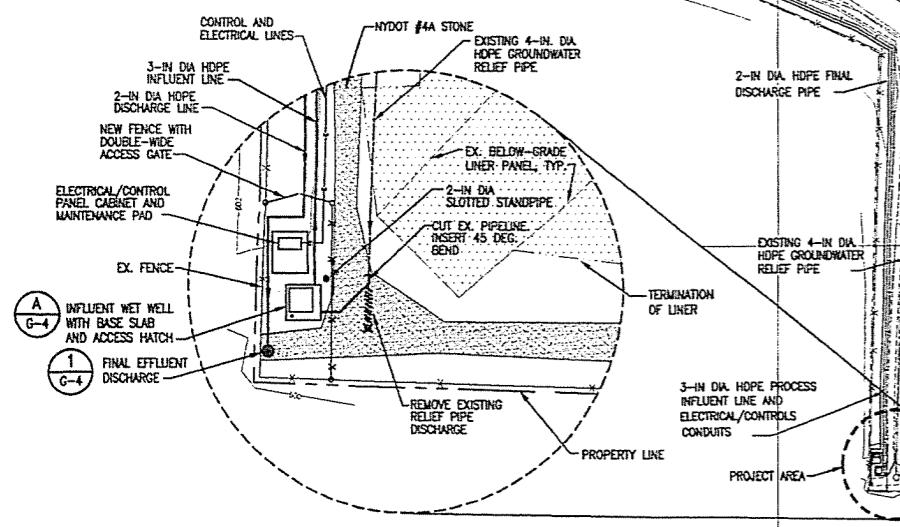


**LEGEND**

- 610 — EXISTING MAJOR CONTOUR LINE
- 611 — EXISTING MINOR CONTOUR LINE
- 612 — PROPOSED MAJOR CONTOUR LINE
- 613 — PROPOSED MINOR CONTOUR LINE
- - - - - EDGE OF STONE ROAD
- - - - - EXISTING CHAIN LINK FENCE
- - - - - PROPOSED CHAIN LINK FENCE
- - - - - SILT FENCE
- - - - - PROPOSED CONTROL AND ELECTRICAL LINE
- - - - - PROPERTY LINE
- - - - - CAP TERMINATION
- [Pattern] 40-MIL TEXTURED LLDPE PANEL LAYOUT
- [Pattern] PROPOSED PAVED AREA
- [Symbol] MONITORING WELL

**GENERAL NOTES:**

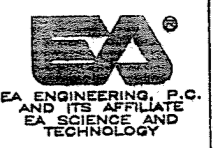
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- 4.) ALL UNITS MEASURED IN U.S. SURVEY FEET
- 5.) BASE MAP GENERATED FROM WENDEL-DUCHSCHERER SURVEY COMPLETED OCTOBER 2000



REVISIONS	DESCRIPTION
NO.	DATE
BY	



*Revised*  
**AIRCO PARCEL**  
**GROUNDWATER TREATMENT SYSTEM**  
 NIAGARA FALLS, NEW YORK  
**PROPOSED SITE PLAN**



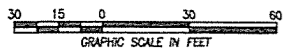
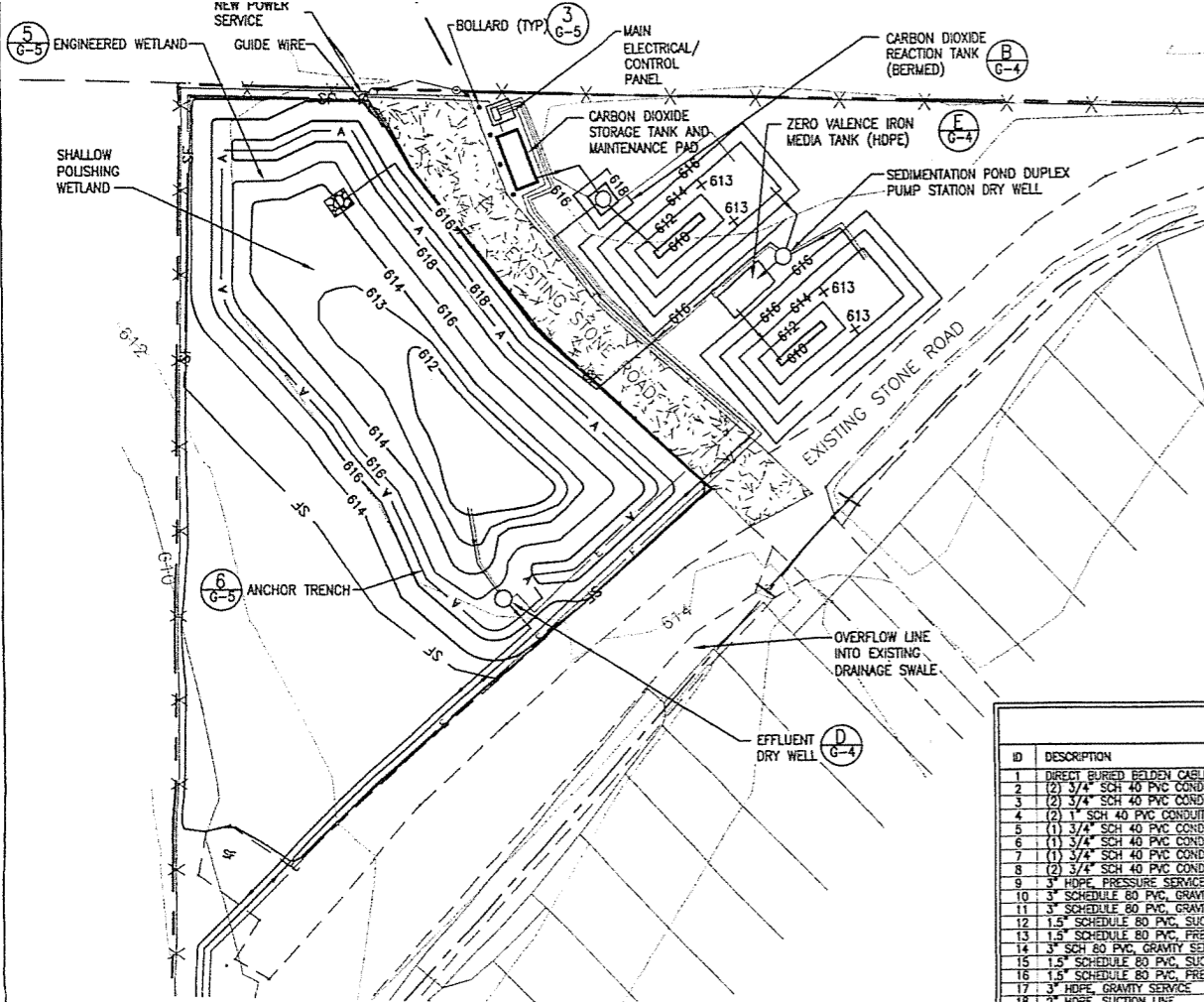
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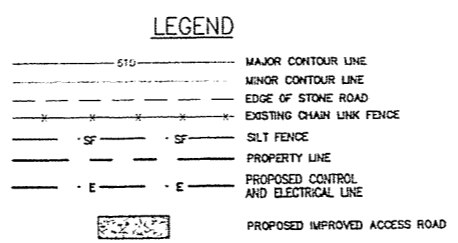
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SCALE	AS SHOWN
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DRAWING NUMBER	G-2
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SITE PLAN  
SCALE: 1" = 30'



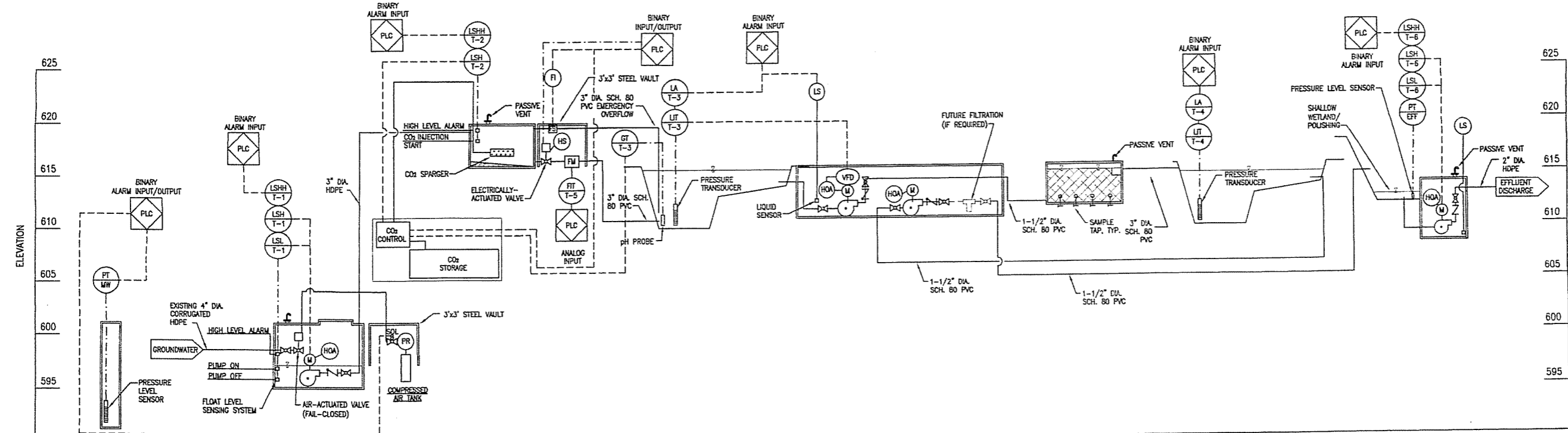
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1. INFORMATION PRESENTED HEREIN IS INTENDED TO IDENTIFY THE RECOMMENDED LOCATION/CONFIGURATION OF EQUIPMENT, VALVES, TANKS, PIPING, VALVES, ELECTRICAL REQUIREMENTS, INSTRUMENTS AND APPURTENANCES. WHERE DISCREPANCIES EXIST BETWEEN THE PAID AND THE DETAIL DRAWINGS, THE PAID SHOULD GOVERN.
2. ALL DIMENSIONS SHALL BE FIELD-VERIFIED PRIOR TO FABRICATION AND INSTALLATION.
3. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL HEALTH AND SAFETY REGULATIONS (E.G. CONFINED SPACE, SAFE DG, ETC.) WHERE APPLICABLE.
4. ALL DISTURBED AREAS SHALL BE RESTORED TO AS GOOD OR BETTER THAN PRE-CONSTRUCTION CONDITIONS, AS DETERMINED/APPROVED BY THE ENGINEER.
5. THE GROUNDWATER TREATMENT SYSTEM AND ASSOCIATED CONSTRUCTED WETLAND SHALL BE INSTALLED IN ACCORDANCE WITH DETAILS OUTLINED IN THE DESIGN DRAWINGS AND DESIGN DESCRIPTION PROVIDED IN THE WORK PLAN. A COMPLETE REVIEW OF BOTH DOCUMENTS IS REQUIRED TO FULLY UNDERSTAND ALL WORK REQUIREMENTS.
6. PACKAGED SYSTEMS UTILIZED MUST BE STANDARD AND COMPLETE PRODUCTS OF MANUFACTURERS REGULARLY ENGAGED IN THE MANUFACTURE OF SUCH SYSTEMS, WITH COMPONENTS OF THE SYSTEMS OF A SIMILAR MATERIAL, DESIGN AND WORKMANSHIP. THE WHOLE SYSTEMS MUST HAVE BEEN IN SATISFACTORY COMMERCIAL OR INDUSTRIAL USE FOR TWO (2) YEARS PRIOR TO INSTALLATION. THE TWO-YEAR-USE MUST INCLUDE APPLICATIONS OF EQUIPMENT AND MATERIALS UNDER SIMILAR CIRCUMSTANCES AND OF SIMILAR SIZE. THE SYSTEMS MUST HAVE BEEN FOR SALE ON THE COMMERCIAL MARKET THROUGH ADVERTISEMENTS, MANUFACTURER'S CATALOGS, OR BROCHURES DURING THE TWO-YEAR PERIOD.
7. FOLLOWING COMPLETE INSTALLATION OF THE INDIVIDUAL EQUIPMENT, INCLUDING POWER CONNECTION AND SIGNAL INTERFACE WITH THE FACILITY PLC, THE VENDOR MUST PROVIDE THE SERVICE OF A REPRESENTATIVE OF THE MANUFACTURER. THIS REPRESENTATIVE IS TO SUPERVISE START-UP, PROVIDE OPERATIONAL ADJUSTMENTS AS REQUIRED AND TO TRAIN THE OWNER'S OPERATOR IN THE OPERATIONS AND PROPER MAINTENANCE OF THE EQUIPMENT.
8. WHERE POSSIBLE, EQUIPMENT OR MATERIAL OF THE SAME TYPE OR CLASSIFICATION, USED FOR THE SAME PURPOSE, SHALL BE PRODUCTS OF THE SAME MANUFACTURER.
9. EQUIPMENT, VALVES, PIPING, AND INSTRUMENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
10. GRAVITY PIPING SHALL BE INSTALLED WITH A MINIMUM 2% SLOPE.
11. PIPING, ELECTRICAL CONDUIT, AND CONTROL CABLES ROUTED BELOW ACCESS ROADS SHALL BE INSTALLED WITHIN PROTECTIVE SLEEVE/CARRIER PIPE SUFFICIENT TO SHIELD PIPING FROM DAMAGE RESULTING FROM HEAVY TRAFFIC.
12. WHERE ELECTRICAL AND CONTROL CONDUIT ARE INSTALLED TOGETHER, PROVIDE MINIMUM 8-INCHES OF SEPARATION. ELECTRICAL AND CONTROL CONDUIT SHALL BE ROUTED TO ALLOW NO MORE THAN 360 DEGREE BENDS (TOTAL).
13. EQUIPMENT, MANUAL VALVES, INSTRUMENTATION, AND OTHER APPURTENANCES TO BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. ALIGN, LEVEL, AND ADJUST FOR SATISFACTORY OPERATION. PROVIDE EASY ACCESS FOR INSPECTION, OPERATION, MAINTENANCE, AND REPAIR.
14. INSTALL NONMETALLIC NONSHRINK GROUT FOR MECHANICAL EQUIPMENT BASE BEARING SURFACES, PUMP AND OTHER EQUIPMENT BASE PLATES, AND ANCHORS. MIX AND INSTALL GROUT ACCORDING TO MANUFACTURER'S INSTRUCTIONS.
15. HANGERS, PIPE SUPPORTS, AND PIPING CONNECTIONS MUST BE SPACED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
16. INSTALLATION OF REQUIRED POWER SUPPLY AND DISTRIBUTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL CODES.
17. COORDINATION WILL BE NECESSARY BETWEEN THE PACKAGED SYSTEM VENDORS AND THE PLC DESIGNER/VENDOR FOR EFFECTIVE INSTRUMENTATION MONITORING AND CONTROL CAPABILITIES.
18. WATER, POTABLE OR NON-POTABLE, IS NOT AVAILABLE AT THE SITE AND MUST BE PROVIDED FROM OFF-SITE SOURCES.
19. NEW PERIMETER FENCE TO BE INSTALLED TO SECURE 3 AREAS, THE WETLAND, THE TREATMENT AREA, AND THE INFLUENT WET-WELL AREA. LAYOUT TO BE ENGINEER APPROVED.
20. MAINTENANCE PAD FOR CARBON DIOXIDE STORAGE TANK SHALL BE SIZED AND INSTALLED PER STORAGE TANK MANUFACTURER'S RECOMMENDATIONS.

ID	DESCRIPTION	FROM	TO
1	DIRECT BURIED BELDEN CABLE AND DIRECT BURIED #2 AWG COPPER USE	INFLUENT WET-WELL	MAIN ELECTRICAL/CONTROL PANEL
2	(2) 3/4" SCH 40 PVC CONDUIT - 8" SEPARATION	MAIN ELECTRICAL/CONTROL PANEL	CO2 STORAGE TANK
3	(2) 3/4" SCH 40 PVC CONDUIT - 8" SEPARATION	MAIN ELECTRICAL/CONTROL PANEL	CO2 REACTION TANK
4	(2) 1" SCH 40 PVC CONDUIT - 8" SEPARATION	MAIN ELECTRICAL/CONTROL PANEL	DUPLEX PUMP STATION
5	(1) 3/4" SCH 40 PVC CONDUIT	MAIN ELECTRICAL/CONTROL PANEL	SEDIMENTATION POND NO. 1
6	(1) 3/4" SCH 40 PVC CONDUIT	MAIN ELECTRICAL/CONTROL PANEL	SEDIMENTATION POND NO. 2
7	(1) 3/4" SCH 40 PVC CONDUIT	MAIN ELECTRICAL/CONTROL PANEL	ZVI TANK
8	(2) 3/4" SCH 40 PVC CONDUIT - 8" SEPARATION	MAIN ELECTRICAL/CONTROL PANEL	EFFLUENT DRY WELL
9	3" HOPE PRESSURE SERVICE	INFLUENT WET-WELL	CO2 REACTION TANK
10	3" SCHEDULE 80 PVC GRAVITY SERVICE	CO2 REACTION TANK	SEDIMENTATION POND NO. 1
11	3" SCHEDULE 80 PVC GRAVITY SERVICE	CO2 REACTION TANK	SEDIMENTATION POND NO. 2
12	1.5" SCHEDULE 80 PVC SUCTION LINE	SEDIMENTATION POND NO. 1	DUPLEX PUMP STATION P-3A
13	1.5" SCHEDULE 80 PVC PRESSURE SERVICE	DUPLEX PUMP STATION P-3A	ZVI TANK
14	3" SCH 80 PVC GRAVITY SERVICE	SEDIMENTATION POND NO. 2	SEDIMENTATION POND NO. 2
15	1.5" SCHEDULE 80 PVC SUCTION LINE	SEDIMENTATION POND NO. 2	DUPLEX PUMP STATION P-3B
16	1.5" SCHEDULE 80 PVC PRESSURE SERVICE	DUPLEX PUMP STATION P-3B	SHALLOW POLISHING WETLAND
17	3" HOPE GRAVITY SERVICE	SHALLOW POLISHING WETLAND	EXISTING DRAINAGE SWALE
18	2" HOPE SUCTION LINE	SHALLOW POLISHING WETLAND	EFFLUENT DRY-WELL
19	2" HOPE PRESSURE SERVICE	EFFLUENT DRY-WELL	FINAL DISCHARGE LOCATION

NOTE: QUANTITIES ARE SHOWN IN PARENTHESES.



- I-1 INFLUENT WET WELL FIBERGLASS 5 FT #
- P-1 INFLUENT PUMP SUBMERSIBLE PUMP STATION KSB MODEL KR740-160/22X 3 H.P. - 3/60/230-460 VAC
- I-2 CO2 REACTION TANK FIBERGLASS 500 GAL. MINIMUM WORKING VOLUME
- I-3 SEDIMENTATION POND NO. 1 27,600 GAL. SEDIMENT POND LINED WITH 40-MIL HDPE
- P-3A SEDIMENTATION POND NO. 1 TRANSFER PUMP VARIABLE FREQUENCY DRIVE GOULDS MODEL SSM/BSH 1 H.P. - 3/60/230-460 VAC
- I-4 SEDIMENTATION POND DUPLEX PUMP STATION DRY WELL FIBERGLASS
- I-5 ZERO VALENCE IRON MEDIA TANK HDPE 480 FT3 MINIMUM IRON WORKING VOLUME (8 FEET WIDE, 16 FEET LONG, 4 FT TALL)
- P-4B SEDIMENTATION POND NO. 2 TRANSFER PUMP GOULDS MODEL SSM/BSH 1 H.P. - 3/60/230-460 VAC
- I-6 SEDIMENTATION POND NO. 2 27,600 GAL. SEDIMENT POND LINED WITH 40-MIL HDPE
- I-7 EFFLUENT DRY WELL FIBERGLASS 5 FT #
- P-7 EFFLUENT DISCHARGE PUMP HORIZONTAL CENTRIFUGAL PUMP GOULDS MODEL SSM/BSH 1 H.P. - 3/60/230-460 VAC

PROCESS AND INSTRUMENTATION DIAGRAM

REVISIONS

NO.	DATE	BY	DESCRIPTION
1	3/16/03	cm	Revised Process Flow

EA ENGINEERING, P.C.  
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3 Washington Center  
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DATE: APRIL 2003  
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DRAWN BY: JAP  
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PROJECT MANAGER: CEH  
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SCALE: AS SHOWN  
FILE NAME: G-3.dwg  
DRAWING NUMBER: G-3  
SHEET NUMBER: 4 OF 6

AIRCO PARCEL  
GROUNDWATER TREATMENT SYSTEM  
NIAGARA FALLS, NEW YORK  
PROCESS DESIGN PLAN