KANSAS GEOLOGICAL SURVEY

1930 Constant Ave., Campus West
The University of Kansas
Lawrence, Kansas 66047-3726
Phone: 785-864-3965
Fax: 785-864-5317

Donna J. Crawford, Project Coordinator
Governmental Assistance Services
905 Joseph Drive
Lawrence, KS 66049

July 28, 2005

Dear Ms. Crawford,

I am writing to you concerning the city of Winchester wastewater facility upgrades. Based on the information provided to me all of the proposed work appears adequate to address the current facility problems. The site appears to be located on the flood plain. As long as potential leakage issues are addressed using liners suitable to the soils and geology and the berm construction is sufficient to prevent overflow during high precipitation events the project should be satisfactory.

The evaluation of this project is based only on the information provided to me with the request and that available at my office.

Sincerely,

Margaret A. Townsend

Margaret A. Townsend
Hydrogeologist

Governmental Assistance Services
905 Joseph Drive
Lawrence, Kansas 66049
785-832-2141 • Fax 785-832-1111
Toll Free 888-832-3335
e-mail: gasdonnaa@aol.com

July 6, 2005 Margaret Townsend

Dr. William Harrison
KS Geological Survey
University of Kansas
1930 Constant Ave.-Campus West
Lawrence, KS 66047

RE: Environmental Review – Winchester, KS – Sanitary Sewer System

Dear Dr. Harrison:

The City of Winchester, Kansas is proposing to upgrade the city's sanitary sewer treatment & collection system. Proposed recommendations are attached. Please comment on all expected upgrade improvements. The estimate of cost is attached with project location maps and existing site layout.

As noted on the maps, improvements lie in the NE corner, SE ¼ of Section 27, Township 85, Range 19E.

Please submit all comments to Governmental Assistance Services, 905 Joseph Dr., Lawrence, KS 66049.

If you have questions please call me at 888-832-3335 or Jerry Baker, McAfee, Henderson & Strick, Inc. at 913-782-7744.

Sincerely,

Donna J. Crawford
Project Coordinator

Enc/ Eng. Report Info
Site Layout Map

SECTION 6 - RECOMMENDATIONS

6.1 RECOMMENDATION

Based on the results of this evaluation and analysis it is the conclusion of this report that the option to upgrade the existing facility is the best and most cost effective alternative. Once improvements and upgrades are completed the facility will be able to serve a population equivalent of just over 1,300 which in exceeds the 2025 P.E. projection of 832. This will allow the City some additional capacity for residential, commercial and industrial growth opportunities that may develop during the 20-year design life.

6.2 UPGRADE IMPROVEMENTS

The improvements planned to upgrade the existing facility to meet the current permit discharge limits, correct the existing sewage leak and meet the capacity needs of the City of Winchester until 2025 and possibly beyond include:

1. Modify the current internal distribution to the Cell D to Cell A to Cell B and then into Cell C. Cell C would be enlarged some and deepened.
2. Internal control piping would be replaced so that any of the four cells could be taken out of service for maintenance and repair. This would be an initial step in the construction so that individual cells could be taken out of serve for individual upgrade work.
3. Cells A, B and C would be drained and sludge removed. The existing clay liners would be reconstructed and distribution piping replaced and relocated. Interior side slopes for each lagoon would be regarded to repair erosion, allow safer mowing operations and rip rap would be installed on the eastern and northern face (at a minimum) of each lagoon. Previous berm penetrations (abandoned piping, etc0 would be removed and or sealed.
4. An on site emergence generator would be installed at the lift station site. The existing lift station valve pit would require a sump pump and the existing valves should be replaced.
5. The area along the eastern berm of Cell B would be raised approximately 1.5-2.0 feet to divert storm water from entering into Cell B from the adjacent drainage ditch. The entrance to the site would also be reconstructed to further divert off site drainage.
6. Internal access roads (gravel type) would be constructed to allow maintenance access to cells.
7. Aeration equipment would be installed in Cell D to allow the operator to counter periodic reductions in DO levels that have previously threatened to turn the cell septic.
8. Measure to reduce I&I into the collection system would also be a part of this upgrade project. Reductions to I&I are an integral part of improving the hydraulic and treatment performance of the lagoon facility. At a minimum the primary influent outfall into the plant will be replaced and redirected to match the new operational scheme of the four cells. A map of proposed I&I efforts is located in the Appendix.
9. It is also recommended that the City purchase testing equipment, i.e. DO monitor to assist the Operator in optimizing the performance of the facility.

9.0 FINDINGS AND RECOMMENDATIONS

9.1 FINDINGS

The City of Winchester, Kansas operates an existing 4-cell wastewater treatment facility that has reached its useful operational life without major upgrades or replacement. The facility has consistently struggled to meet its permit required effluent standards, has a non-permitted discharge due to leakage into a drainage ditch, an inefficient operation system and has been at times unreliable during power failures and hydraulic overloads. The hydraulic overloads and short circuiting of the treatment process are due to excessive inflow and infiltration from the existing collection system and the location of lagoon inflow and outflow locations.

Without the necessary upgrades to the treatment facility and collection system the community will continue to violate its discharge permit requirements, contribute to a dangerous situation with an uncontrolled leak of untreated sewage and face a variety of treatment system failures and excessive operation, maintenance and repair cost that the community simple cannot afford.

9.2 RECOMMENDATIONS

It is the recommendation of this report that the City of Winchester undertakes an upgrade and improvements program as identified in this report. Should the economics of acceptable rate increase not allow the overall program to be constructed then a modified program would need to be undertaken to address the absolute minimum improvements.

Financing should be pursued using a combination of CDBG funds ($400,000) and KDHE State Revolving Funds to effect the improvements.

The City should immediately pursue funding from KDHE to start the detailed surveying and engineering design phase of the project so that construction bid documents are completed prior to the application date for the CDBG program.

General distribution funds based on completing the entire program

KDHE SRF LOAN FUNDS

Construction (including contingency cost)	$ 637,935.00
Engineering Report	$ 10,050.00
Engineering Design Service (10%)	$ 99,305.00
Legal, Financing, etc. (5%)	$ 45,120.00
TOTAL SRF ALLOCATION	$ 792,410.00

CDBG Funds

Construction (including contingency cost)	$ 264,610.00
Construction Administration & Inspection (15%)	$ 135,390.00
TOTAL CBGD ALLOCATION	$ 400,000.00

TOTAL UPGRADE AND IMPROVEMENT PRGRAM $ 1,192,410.00

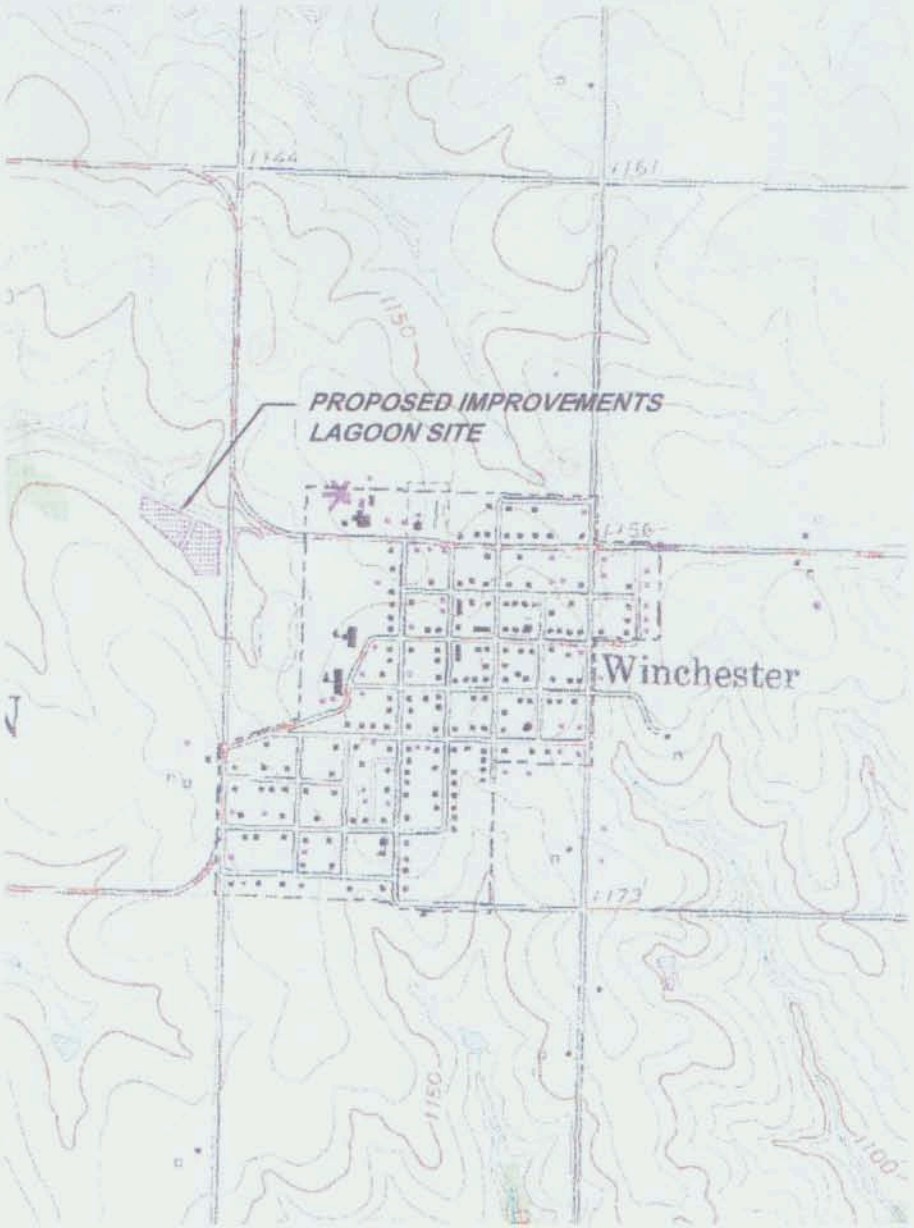
WINCHESTER KANSAS
JEFFERSON COUNTY
N.E. COR., S.E. 1/4 OF
SECTION 27, T 8S, R 19E

1000 0 1000
scale feet
1" = 1000'

N

ENGINNERING REPORT
CITY OF WINCHESTER, KANSAS
WASTEWATER SYSTEM UPGRADES

McAFEE, HENDERSON & STRICK, INC.
Civil Engineering + Land Surveying
1290 W. 151st St. Suite 200 Olathe, KS 66061
Ph (913) 780-7744 Fax (913) 390-9965



WINCHESTER KANSAS
JEFFERSON COUNTY
N.E. COR., S.E. 1/4 OF
SECTION 27, T 8S, R 19E

ENGINEERING REPORT
CITY OF WINCHESTER, KANSAS
WASTEWATER SYSTEM UPGRADES

McAFEE, HENDERSON & STRICK, INC.
Civil Engineering + Land Surveying
1290 W. 151st St. Suite 200 Olathe, KS 66061
Ph: (913) 782-7744 Fax: (913) 390-9865

SECTION 7 – OPINION OF PROBABLE COSTS

7.1 OPINION OF PROBABLE CONSTRUCTION COSTS

ITEM	Estimated Quantities	Unit Cost	Extension of Costs
WASTEWATER TREATMENT FACILITY UPGRADES			
1. Mobilization	Lump Sum	$ 30,000.00	$30,000.00
2. Demolition & Clearing	Lump Sum	5,000.00	5,000.00
3. Dewater Lagoons A, B & C	Lump Sum	21,000.00	21,000.00
4. Remove Sludge – 3 cells	Lump Sum	40,000.00	40,000.00
5. Replace Clay Liner – 2 cells	4.5 Acres	5,000.00	22,500.00
6. Cell Sterilization – 3 cells	6.4 Acres	500.00	3,200.00
7. Cell C Excavation & Liner	Lump Sum	45,500.00	45,500.00
8. Earthwork/Grading – 2 cells	6,500 CY	2.25	14,520.00
9. Internal Transfer Piping	800 L.F.	35.00	28,000.00
10. Distribution Box	3 EA	6,000.00	18,000.00
11. Flow Control Structures	3 E.A.	5,000.00	15,000.00
12. Pond Piping	600 L.F.	50.00	30,000.00
13. Splash Blocks	3 E.A.	500.00	1,500.00
14. Riprap	600 C.Y.	45.00	27,000.00
15. Level Indicators – 4 cells	4 E.A.	1,000.00	4,000.00
16. Road Surfacing	1,600 S.Y.	6.00	9,600.00
17. Culverts & Entrance	Lump Sum	12,000.00	12,000.00
18. Fencing	1,800 L.F.	6.00	10,800.00
19. Aeration Cell D	Lump Sum	20,000.00	20,000.00
20. 12' Gate	2 E.A.	600.00	1,200.00
21. Valves & Sump Pump	Lump Sum	8,500.00	8,500.00
22. Emergency Generator & Enclosure	Lump Sum	$ 20,000.00	$ 20,000.00
23. Seeding	Lump Sum	6,000.00	6,000.00
Sub-Total			**$ 393,320.00**
COLLECTION SYSTEM UPGRADES			
1. In Situ Form Sanitary Mains	2,000 L.F.	45.00	90,000.00
2. Replace Sanitary Mains	2,200 L.F.	55.00	121,000.00
3. Sewer Point Repairs	10 E.A.	1,650.00	16,500.00
4. Manhole Rehabilitation	30 E.A.	2,200.00	66,000.00
5. Manhole Replacement	11 E.A.	4,000.00	44,000.00
6. Service Connections	30 E.A.	750.00	22,500.00
7. Remove/Replace Paving	1,000 S.Y.	12.00	12,000.00
8. Partial Video Tape System	10,000 L.F.	1.20	12,000.00
9. Smoke Testing	Lump Sum	4,000.00	4,000.00
10. Seeding & Restoration	Lump Sum	3,500.00	3,500.00
Sub-Total			**$ 391,500.00**

7.2 OPINION OF PROBABLE PROJECT COSTS

Wastewater Treatment Facility Upgrades

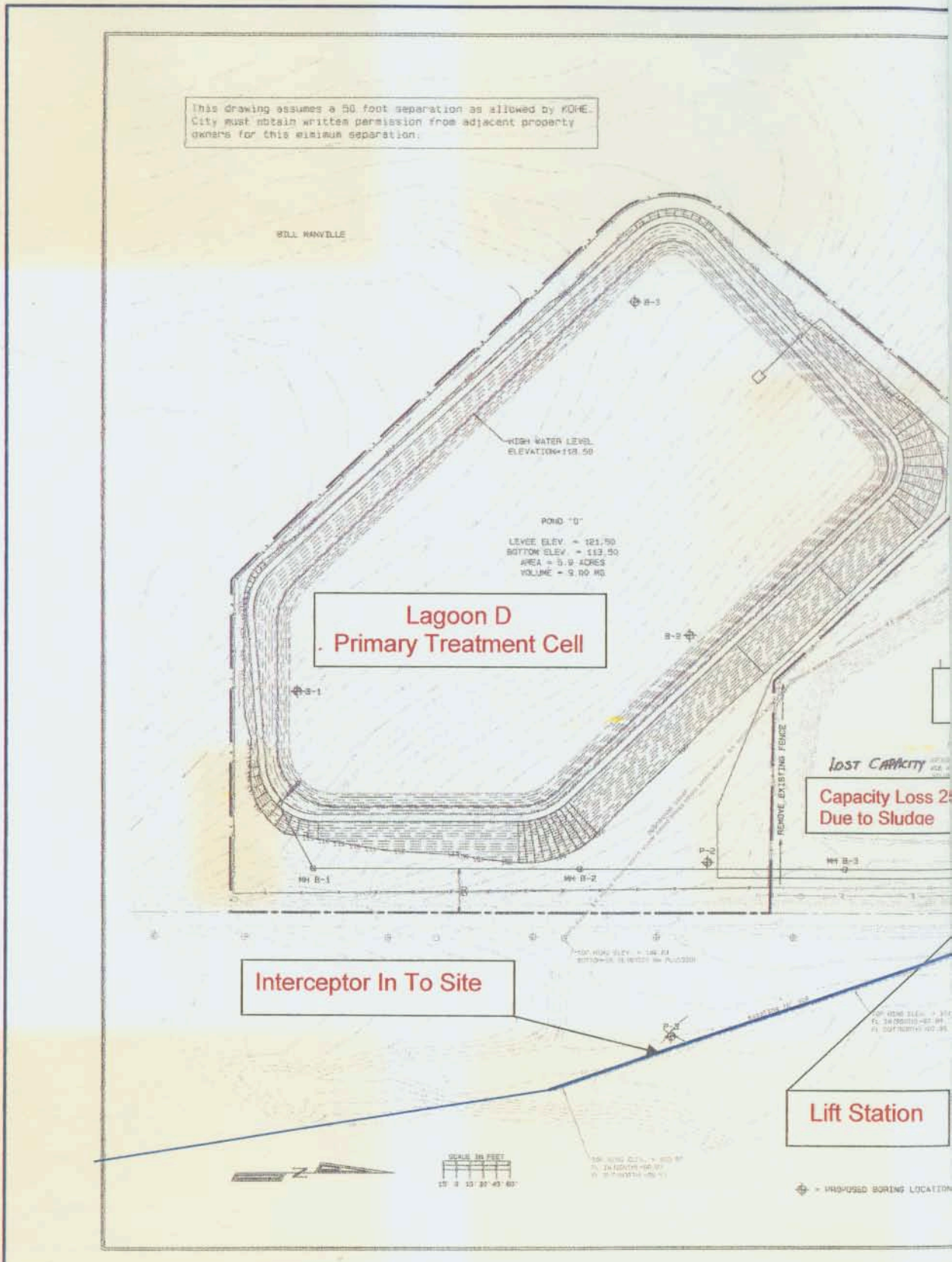
Estimated Construction Costs	$ 393,320.00
15% Contingency Cost	59,000.00
Total Construction Costs	$ 452,320.00
Engineering Report (1%)	$ 5,025.00
Engineering Design Service (12%)	$ 54,280.00
Construction Administration & Inspection (15%)	$ 67,850.00
Legal, Financing, etc. (5%)	$ 22,610.00
Land Costs	Not Required
Total Project Costs	$ 601,085.00

Wastewater Collection Systems Upgrades

Estimated Construction Costs	$ 391,500.00
15% Contingency Cost	58,725.00
Total Construction Costs	$ 450,225.00
Engineering Report	$ 5,025.00
Engineering Design Service (10%)	$ 45,025.00
Construction Administration & Inspection (15%)	$ 67,540.00
Legal, Financing, etc. (5%)	$ 22,510.00
Land Costs	Not Required
Total Project Costs	$ 590,325.00

Combined Wastewater & Collection Systems Upgrades

Estimated Construction Costs	$ 784,820.00
15% Contingency Cost	117,725.00
Total Construction Costs	$ 902,545.00
Engineering Report	$ 10,050.00
Engineering Design Service (10%)	$ 99,305.00
Construction Administration & Inspection (15%)	$ 135,390.00
Legal, Financing, etc. (5%)	$ 45,120.00
Land Costs	Not Required
Total Project Costs	$ 1,191,410.00


This drawing assumes a 50 foot separation as allowed by KDHE. City must obtain written permission from adjacent property owners for this minimum separation.
MILL MANVILLE
HIGH WATER LEVEL ELEVATION=118.50
POND "D"
LEVEE ELEV. = 121.50
BOTTOM ELEV. = 113.50
AREA = 5.9 ACRES
VOLUME = 9.00 MG
Lagoon D
Primary Treatment Cell
B-1
B-2
B-3
MH B-1
MH B-2
MH B-3
REMOVE EXISTING FENCE
LOST CAPACITY
Capacity Loss 25
Due to Sludge
Interceptor In To Site
Lift Station
SCALE IN FEET
PROPOSED BORING LOCATION

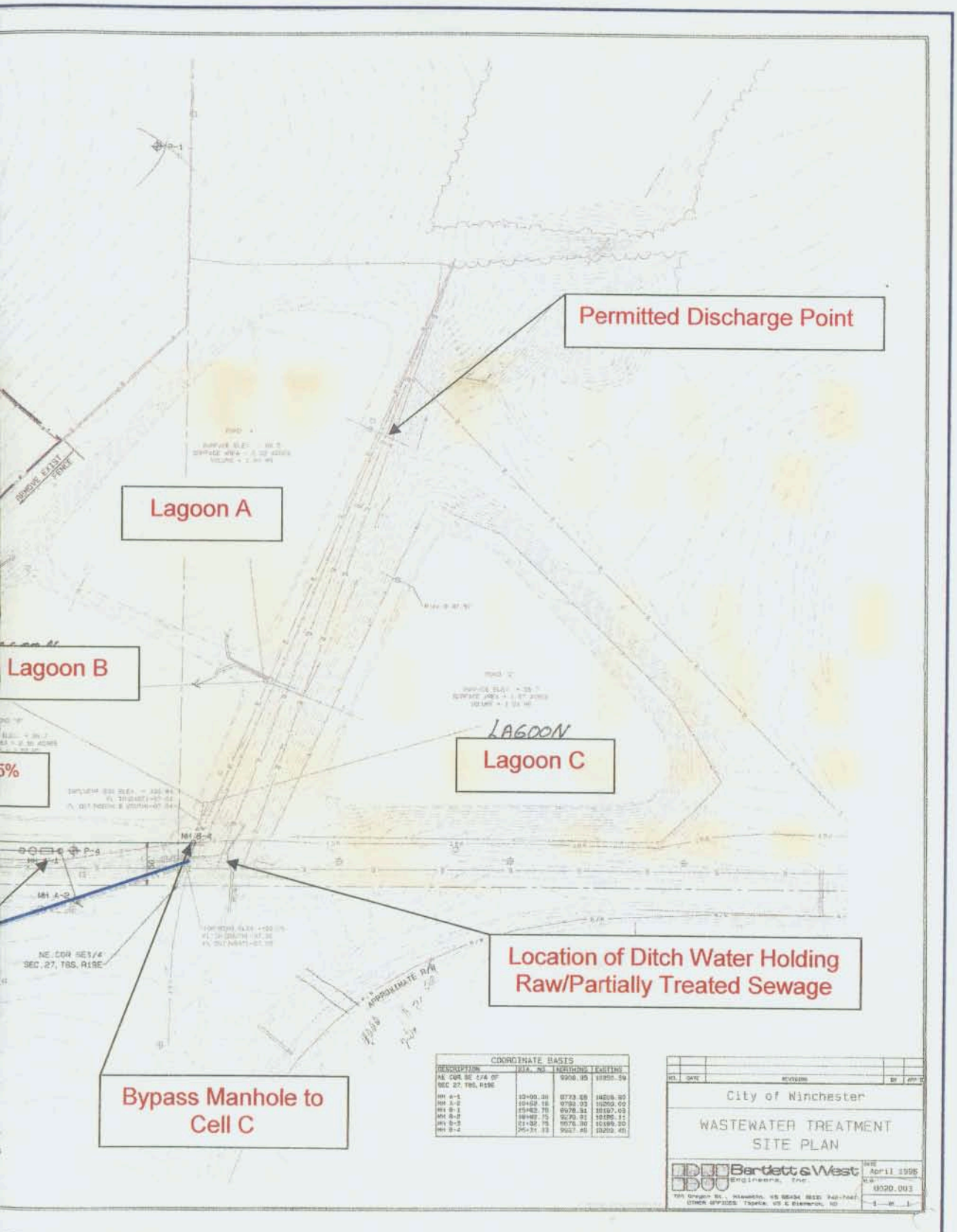


Exhibit D – Existing Site Layout