Fields of Opportunities

TERRY E. BRANSTAD, GOVERNOR
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STATE OF IOWA

DEPARTMENT OF NATURAL RESOURCES
CHUCK GIPP, DIRECTOR

March 7, 2014

Wayne Johnson
Construction Maintenance Manager
Polk County Conservation
11407 NW Jester Park Dr.
Granger, Iowa 50109

Subject: Variance Request from Design Standards Section 14.2.3.e
Jester Park Conservation Center
Granger, Iowa
IDNR Project No. S2014-0116

Dear Mr. Johnson:

After careful and thorough consideration, the Department has ***disapproved*** your December 29, 2013 request for a variance from Iowa Administrative Code Subrule 567-64.2(3)c and Chapter 14 of the Iowa Wastewater Facilities Design Standards, Section 14.2.3.e, which sets the separation requirements between wastewater treatment systems and lakes or public impoundments. Based on the documentation presented by your Engineer, it is the determination of this Department that satisfactory justification has not been presented to warrant the granting of a variance for the construction of a sand-mound treatment system at a distance of 320 feet from a lake because of the public recreation use of the lake. The requested variance is not deemed to be reasonable and necessary pursuant to the Iowa Code section 455B.181.

Pursuant to Iowa Code Section 455B.181, and 561 Iowa Administrative Code (IAC) 7.4(1), as adopted by reference by 567 IAC Chapter 7, a written notice of appeal to the Environmental Protection Commission may be filed within 30 days of receipt of this letter. The notice of appeal is required to be filed with the Director of the Department, and must identify the specific portion or portions of the variance denial that are being appealed and include a short and plain statement of the reasons for appeal. A contested case hearing will then be commenced pursuant to Iowa Code Chapter 17A, 561 IAC Chapter 7, and 567 IAC Chapter 7.

If you have any questions, please call Marty Jacobs at 515-242-6148.

Sincerely,

Shelli Grapp
Water Quality Bureau Chief

cc: Jim Carroll, P.E., Jim Carroll Consulting
IDNR Field Office #5
IDNR Sewage File # 6-77-00-9-23
DNR Legal Services - Diana Hansen

502 EAST 9th STREET / DES MOINES, IOWA 50319-0034
PHONE 515-281-5918 FAX 515-281-8895 www.iowadnr.gov

VARIANCE REQUEST
Iowa Department of Natural Resources

1.	Date:	March 5, 2014	14.	Decision:
2.	Reviewer/Engr.:	Marty Jacobs		Date:
3.	Date Received:	January 10, 2014		
4.	Facility Name:	Jester Park Conservation Cnt		
5.	Facility Number:	6-77-00-9-23		
6.	County Number:	77 (Polk)	15.	Appealed:
7.	Program Area:	CP (Wastewater)		Date:
8.	Facility Type:	C05(Biological Treatment)		
9.	Subject Area:	308 (Site Separation)		
10.	Rule Reference:	567-64.2(9)a		
11.	Design Std. Ref.:	14.2.3.e		
12.	Consulting Engr.:	Jim Carroll		
13.	Variance Rule:	567-64.2(9)c		

16. Description of Variance Request:
Polk County Conservation is requesting variance from the Iowa Wastewater Facilities Design Standards Chapter 14 – Wastewater Treatment Works (Separation Requirements) for the construction of an on-site wastewater treatment mound system 320 feet from a lake.

17. Applicant's/Consulting Engineer's Justification:
The engineer's review indicates that a soil dispersal system is the only feasible alternative. He offered the following six reasons why this system will not affect water quality in the lake:

a. Wayne Johnson, the Polk County Maintenance manager has stated that the lake is only 4-5 feet deep. The lake water is used to irrigate the golf course. One person previously worked at the golf course back in 1980 and now works for the county park and is familiar with the history of the lake. He has observed the lake at 3-4 feet down from normal lake level, almost dry. He stated that he has never seen any seepage along the shores. They fill the lake with Saylorville Lake water to irrigate the golf course in dry years. The lake is not filled by groundwater as stated by park staff.

b. Between the proposed site and the lake is a large maintenance building as seen in the attached drawing. This building was cut into the hillside and will help divert any groundwater to the north away from the lake.

c. There is a deep ravine northwest of the proposed treatment area. This ravine is also north of the lake. The ravine is about 350 feet from the treatment area. The depth of the ravine will act as a drain for the groundwater in the area and will create a groundwater flow towards the ravine. This potential groundwater flow direction would direct any groundwater between the treatment area and the lake away from the lake.

d. About one third of the proposed treatment system will be within the 400-foot setback. A third of the treatment system has a flow of about 1,500 gallons based on the peak day design flow of 4,300 gallons. The setback requirements for an on-site soil dispersal system using Chapter 69 standards of 1,500 gallons or less is 100 feet from a lake. The amount of wastewater proposed to be discharged into the soils between 320 to 400 feet from the lake can be limited to 1,500 gallons.

e. Studies have shown that soils around soil dispersal systems treat the wastewater to a very high degree within a short distance of the dispersal point. The wastewater will be highly treated and will not affect the lake water quality.

f. We plan to install a tile line on the west side of the maintenance drive shown on the attached drawing. The tile lien will drain to the ravine and will lower the groundwater in the area. The tile line will be a minimum of 10 feet away from the soil dispersal

system. Chapter 69 has a minimum separation distance of 10 feet for tile lines.

18. Department's Justification:
Recommend variance ***disapproval***.
A site investigation by Field Office #5 requested on 1/24/14 and completed on 1/29/14 verified that the lake is located 320 feet from the closest part of the proposed soil dispersal system. Subsequent investigation has shown that lake is located on public property and that people fish in the lake. This activity creates a potential for public exposure to the water in the lake. Fishing is allowed at the site, and the park staff has observed people fishing the lake. Options for other locations and/or connection to existing systems may not have been adequately addressed.

19. Precedents Used:

No precedents could be found for separation of soil-discharging systems from lakes.

20. Staff Reviewer: [signature] Env Health Date: 3-5-14

21. Supervisor: Satya Chennupati Date: 3/5/2014

22. Authorized by: Shelli Shapp Date: 3-7-14

32014-0116

December 29, 2013

Director Iowa Department of Natural Resources
Attention: Satya Chennupati, PE, Wastewater Engineering Section Supervisor
IDNR Wastewater Engineering Section
Wallace Office Building
502 E. 9th St
Des Moines, IA 50309

Marty Jacobs, PE, Environmental Engineer
IDNR Wastewater Section
Wallace Office Building
502 E. 9th St
Des Moines, IA 50309

RE: Wastewater Treatment System- Variance Request
Polk County Conservation
Jester Park Conservation Center

Dear Satya and Marty:

Polk County Conservation is planning to construct a Conservation Center on the western side of Jester Park. We have evaluated several alternatives for wastewater treatment and disposal and have determined there is only one viable alternative. This alternative is a mound system. We evaluated potential sites on the park property and determined that only one site is suitable. However, this site does not meet the setback requirement of 400 feet from a lake. We are therefore requesting a variance from the Design Standards to a setback distance of 320 feet from a lake.

Attached is a variance request pursuant to 561 IAC Chapter 10. As required the technical and engineering justification in the request is certified and sealed by James Carroll, a professional engineer licensed in Iowa, and the request is signed by the requesting petitioner, Polk County Conservation.

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The numbering system matches the DNR Guidance document procedures section numbers.

1. The name, address and telephone number of the entity or person for whom a waiver or variance is requested.

Wayne Johnson
Construction Maintenance Manager
Polk County Conservation
Office 515-323-5367
Cell 515-250-7317
wayne.johnson@polkcountyiowa.gov

2. A description and citation of the specific rule from which a waiver or variance is requested.

567—64.2(3) I.A.C.

Iowa Department of Natural Resources Wastewater Facilities Design Standards Chapter 14.2.3.e

The following separation distances from treatment or lagoon water surface shall apply:

e. 400 feet from lakes and public impoundments.

3. The specific waiver or variance requested, including the precise scope and operative period that the waiver or variance will extend.

Requesting the separation distance be reduced to 320 feet from the proposed treatment system. The proposed treatment system is a soil mound disposal system.

4. The relevant facts that the petitioner believes would justify a waiver or variance. The factual statement is to include a signed statement from the petitioner attesting to the accuracy of the facts provided in the petition and a statement of reasons that the petitioner believes will justify a waiver or variance.

In order to understand the reasons for the variance request we will present the design evaluation and alternatives considered.

The project is a new Polk County Conservation Center. The facility will provide office space for staff, education and meeting rooms. The capacity sizing is listed below. The design water use flows were taken from Chapter 69 Private sewage Disposal Systems Appendix A, Estimates of Nonhousehold Domestic Sewage Rates.

There are no kitchens planned for this facility.

Design flows from Chapter 69:
Commercial/Industrial office 18 gpd each employee
Schools- per student 17gpd each student

Current staff 20 people flow 18 gpd each Design flow = 360 gpd
Potential future staff growth 30 people 18 gpd each Design flow = 540 gpd
The facility is planned to be open Monday through Friday for staff.

Meeting and education rooms 200 people peak capacity
200 people at 17 gpd each Design flow = 3,400 gpd

Total design flow 4,300 gallons per day

The education and meeting rooms will be available Monday through Friday with an estimated 1-2 times a month use on weekend day.

The wastewater flows will fluctuate from 0 gallons on some weekends to peak day design flow of 4,300 gallons on a full capacity day. There will be periods of very limited use with no activities planned. This fluctuation in flows is a challenge in operating and maintaining a biological treatment system, and will need to be considered in evaluating alternatives.

Treatment system Alternatives considered.

Lagoon. We reviewed the area maps for a suitable location for a lagoon. The golf coarse, park areas, campgrounds, animal pens, steep ravines, treed areas, and existing homes to the west all contributed to the determination that there is no suitable location for a lagoon on the property. The homes to the west and south will require a 1,000 foot setback as shown on the attached drawings.

Mechanical treatment system. The only discharge location is into a dry drainage ditch. This drainage area is also used by the park and campground visitors. In reviewing the discharge limits of the existing office building on the far eastern side of the park a low ammonia limit will most likely be required. With the expected daily fluctuations in wastewater flows maintaining a consistent flow for ammonia treatment will be impossible. We evaluated flow equalization tanks, however there will be periods of low or no flows for weeks at a time making tanks not feasible.

Soil based dispersal system. We evaluated mound and drip irrigation systems. With these types of systems the flow variations are not critical. We reviewed the maps of the area and determined there is one location that appears suitable for a soil dispersal

system. We noted the homes to the west and south and the lake to the east. We completed a soil evaluation on this site and determined the soils are suitable for either a mound or drip system.

Given the flow fluctuations, siting and operating issues, a soil based dispersal system is the best choice for this facility. The attached drawings show setbacks and other restrictions around the proposed dispersal site. This includes the 1,000-foot house setback, the golf coarse, and the 400-foot lake setback. The amount of surface area needed to disperse all of the estimated peak day flow would need to extend into the 400 foot setback of the lake to the east. We have determined that we will need to place a portion of the system within 320 to 400 feet of the lake. This amounts to about 30 percent of the treatment system.

We have 6 reasons the soil dispersal system will not affect the lake water quality.

a.
Wayne Johnson, the Polk County Construction Maintenance Manager has stated that the lake is only 4-5 feet deep. The lake water is used to irrigate the golf coarse. One person previously worked at the golf coarse back in 1980 and now works for the County Park and is familiar with the history of the lake. He has observed the lake at 3-4 foot down from normal lake level, almost dry. He stated he has never seen any seepage along the shores. They do fill this lake with Saylorville Lake water to irrigate the golf coarse in dry years. The lake is not filled by ground water as stated by park staff.

b.
Between the proposed site and lake is a large maintenance building as seen in the attached drawing. This building was cut into the hillside and will help divert any ground water to the north away from the lake.

c.
There is a deep ravine northwest of the proposed treatment area. This ravine is also north of the lake. The ravine is about 350 feet from the treatment area. The depth of the ravine will act as a drain for ground water in the area and will create a ground water flow towards the ravine. This potential ground water flow direction would direct any ground water flow between the treatment area and the lake away from the lake.

d.
About one third of the proposed treatment system will be within the 400-foot setback. A third of the treatment system has a flow of about 1,500 gallons based on the peak day design flow of 4,300 gallons. The setback requirements for an onsite soil dispersal system using Chapter 69 standards of 1,500 gallons or less is 100 feet from a lake. The amount of wastewater proposed to be discharged into the soils between 320 to 400 feet from the lake can be limited to 1,500 gallons.

e.
Studies have shown that soils around soil dispersal systems treat the wastewater to a very high degree within a short distance of the dispersal point. The wastewater will be highly treated and will not affect the lake water quality.

f.
We plan to install a tile line on the west side of the maintenance drive as shown on the attached drawing. The tile line will drain to the ravine and will reduce any ground water in the area. The tile line will be a minimum 10 feet away from the soil dispersal system. Chapter 69 has a minimum separation distance of 10 feet for tile lines.

David Venhuizen, P.E, "An Analysis of the Potential Impacts on Groundwater Quality of On-Site Wastewater Management Using Alternative Management Practices", Copyright 1995, David Venhuizen.

Chen-Peng Chen and John M. Harkin, "Transformation and Transport of N-Based Fixed Nitrogen from Septic Tanks in Soil Absorption Systems and Underlying Aquifers" *On-Site Wastewater Treatment*, Proceedings of the Eithth National Symposium on Individual and Small Community Sewage Systems, ASAE Publication Volume 8, 03-98, 1998, pp. 293-305.

The purpose of the setback requirement is to protect the water quality in a lake. The lake setback requirement does not take into account that the ground water flows away from the lake or the high degree of treatment that the soil provides in the proposed treatment method. The soil dispersal system will provide a treatment system with no surface discharges and a more reliable treatment and dispersal system than available alternatives. We request that the Department consider all of the unique circumstances of this project as explained above. We request that the setback requirement be reduced to 320 feet from the lake.

5. The history of prior contacts between the Department and the petitioner for the past five years. The history must include a description of each affected permit held by the petitioner and any notices of violation, administrative orders, contested case proceedings, and lawsuits involving the Department or the petitioner.

This is a proposed new project and there are no permits or actions by the DNR. The only contacts the petitioner and project engineer have had are discussing the proposed project.

6. Any information known to the petitioner regarding the Department's treatment of similar cases.

We are not aware of any similar cases.

7. The name, address, and telephone number of any public agency or political subdivision of the state or federal government which also regulates the activity in question, or might be affected by the granting of a waiver or variance.

We are not aware anyone that also regulates this variance request.

8. The name, address, and telephone number of any person or entity that would be adversely affected by the granting of the petition.

We are not aware of any person or entity that would be adversely affected by granting this variance.

9. The identity of those having knowledge of relevant facts concerning the variance.

See number 10 below.

10. Signed releases authorizing persons with factual knowledge concerning the request to furnish the Department with information relevant to the waiver or variance. Variances must be signed by the petitioner or authorized representative and a professional engineer licensed in Iowa preparing the engineering and technical justification of the petition.

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

James Carroll DATE: 12-29-13

JAMES A. CARROLL, P.E.

LICENSE NO. 11328. MY LICENSE RENEWAL DATE IS DECEMBER 31, 2015.

PAGES WITH THIS REPORT __

James A. Carroll, PE
1549 NW 92 St
Clive, IA 50325
515-250-2103
Email: snickerjc@mchsi.com

I, Wayne Johnson, am the authorized representative for this project and request for a variance. I state the facts in this request are correct to the best of my knowledge.

Wayne Johnson Date 12/27/13

Wayne Johnson

Wayne Johnson
Construction Maintenance Manager
Polk County Conservation
Office 515-323-5367
Cell 515-250-7317
wayne.johnson@polkcountyiowa.gov

Download
JPEG Base Map
JGW World File
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Click on the map to
Recenter
Zoom IN
Zoom OUT

Select an overlay map service
Transportation, Highways, Roads
Rivers, Streams, Lakes
Township Range Section Lines
NRCS Soil Map Units (1-20m zoom levels)

Select a base map layer
Andreas Atlas 1875
Summer 2013 Orthophotos - USDA (natural color)
Summer 2011 Orthophotos - USDA (natural color)
Summer 2011 Orthophotos - USDA (color (* Current layer)

Select a zoom level
900m pixels
500m pixels
200m pixels
100m pixels
50m pixels
20m pixels
10m pixels
5m pixels *
2m pixels
1m pixels
(* Current zoom level)

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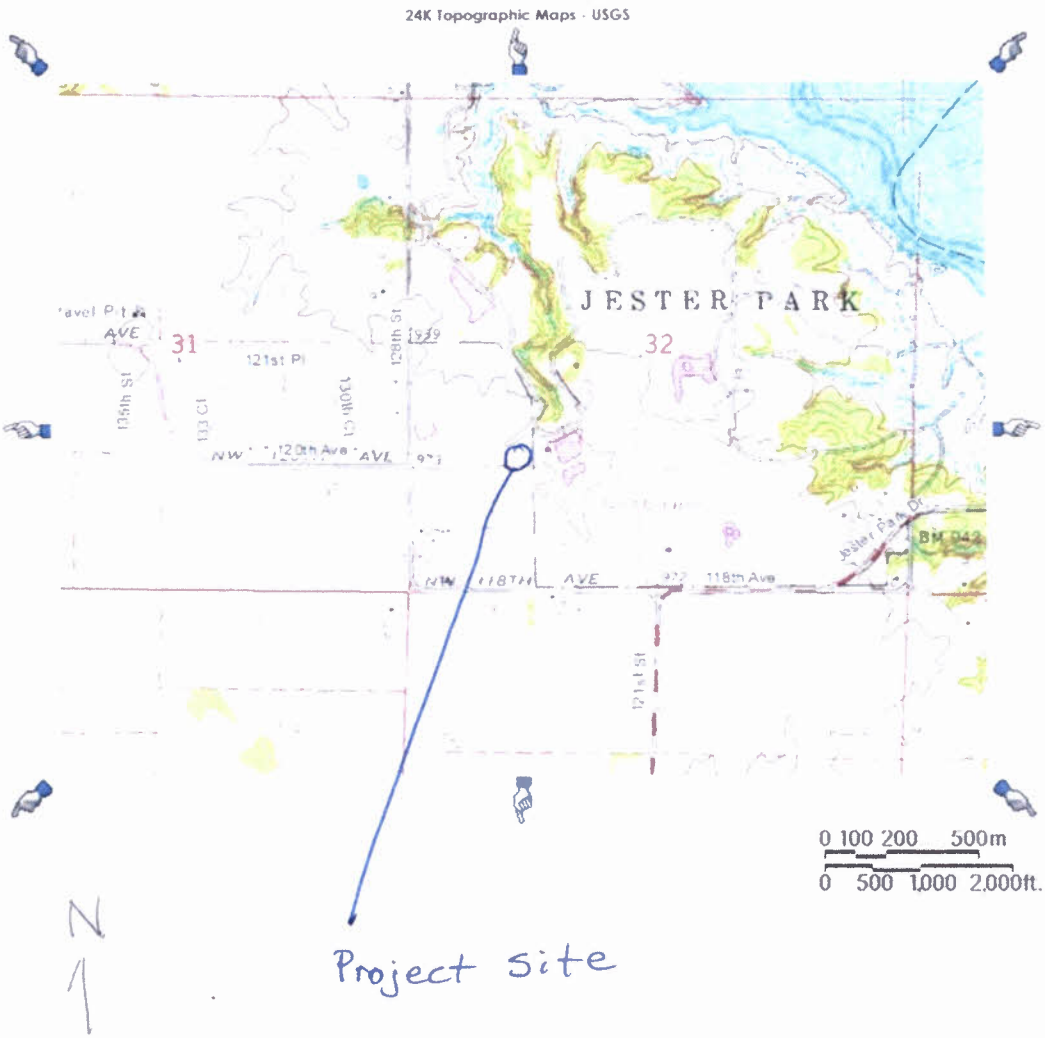
Height: 450 pixels
Refresh Map



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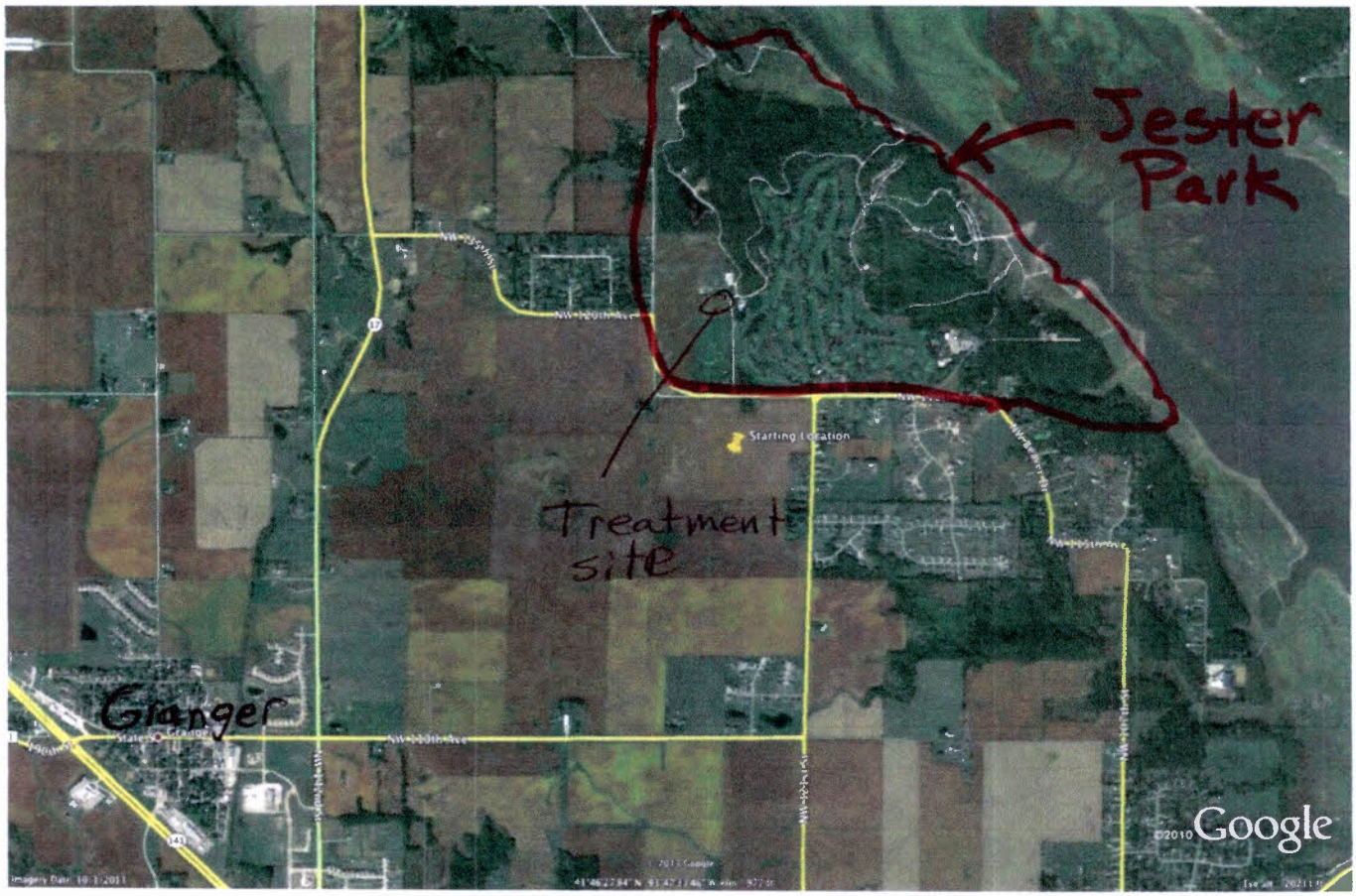
Jester Park
Starting Location
Treatment site
Granger
©2010 Google

N

Treatment site

N


Tile line
Ravine
1000'
house setback
400'
Treatment Area
Golf Coarse driving range
400'
N
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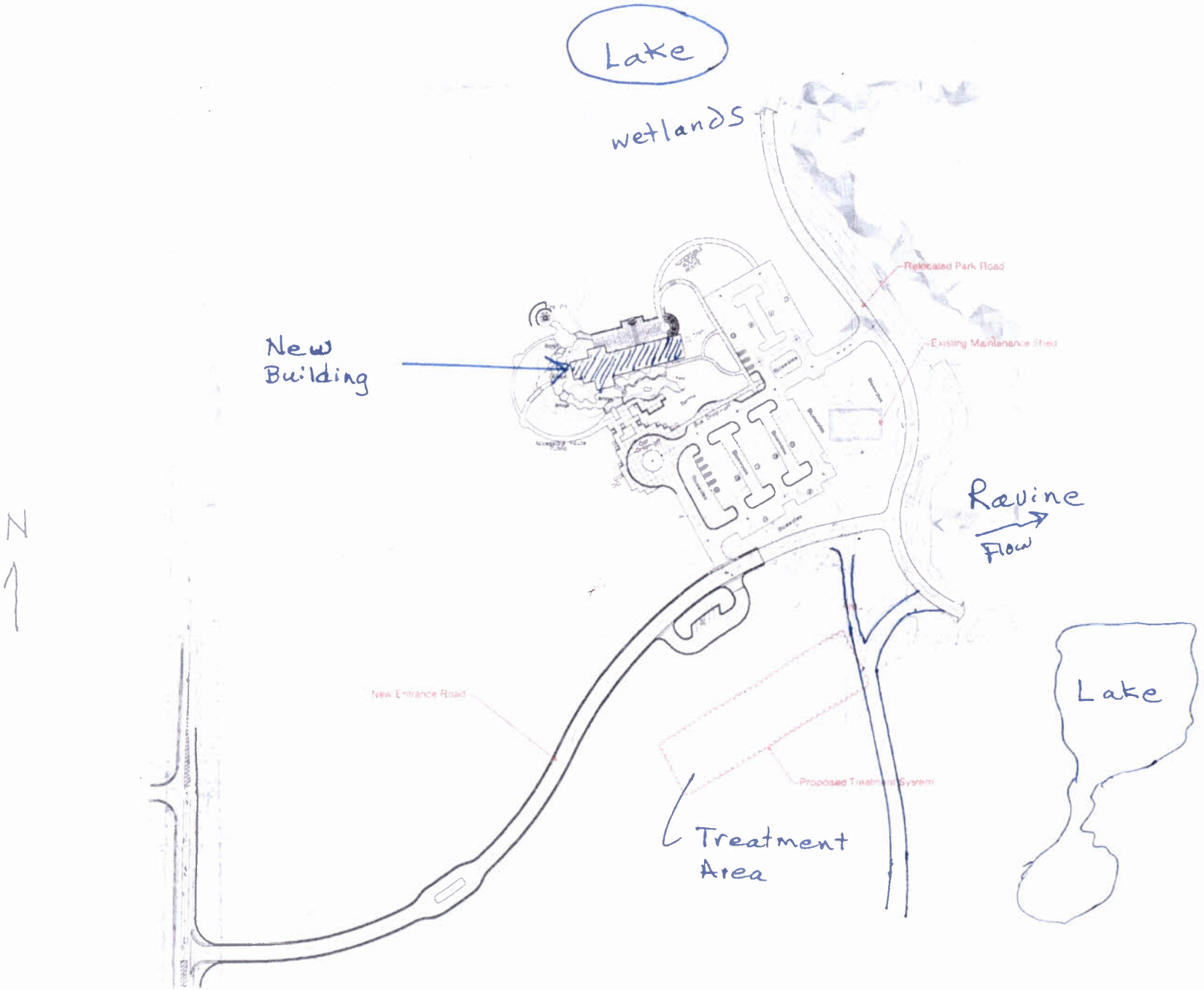
Lake
wetlands
New Building
Relocated Park Road
Existing Maintenance Shed
Ravine
Flow
N
New Entrance Road
Proposed Treatment System
Treatment Area
Lake