RENNIA ENGINEERING DESIGN, PLLC

CIVIL & ENVIRONMENTAL ENGINEERING

6 Dover Village Plaza, Suite 5, P.O. Box 400, Dover Plains, NY 12522
Tel: (845) 877-0555 Fax: (845) 877-0556

January 8, 2013

New York State Department of Environmental Conservation
Division of Environmental Permits
21 South Putt Corners Road
New Paltz, NY 12561-1620

ATTN: Daniel Whitehead, Regional Permit Administrator

Re: Double JK Ranch Pond
39 NE Mountain Road
Town of Dover, NY
Parcel Id: 132600-7163-00-380110

Dear Mr. Whitehead,

The purpose of this letter is to submit a application for a Dam Safety Permit for the above noted project. The Double JK Ranch has developed an agricultural farm pond at 39 NE Mountain Road, Dover, NY, which is located within Dutchess County. Previously, a Stormwater Pollution Prevention Plan (SWPPP) has been submitted to the NYSDEC for this project. A NYSDEC letter of acknowledgement was received, dated June 14, 2012. Excavation of the pond described in the attached Assessment Report has been initiated, but construction of the pond has been suspended as the necessary approvals were not initially obtained. Upon receiving all appropriate approvals from both the NYSDEC and the Town of Dover, the pond control and drainage structures will be installed as shown on the construction plans.

For your review, please find three (3) copies each of the following:

- NYSDEC Joint Permit Application
- NYSDEC Application for Permit, Supplement D-1
- NYSDEC Permission to Inspect Property Form
- SEQR Short Environmental Assessment Form
- Agricultural Pond Assessment Report
- Stormwater Pollution Prevention Plan (SWPPP)

Please do not hesitate to contact me with any questions, (845) 877-0555.

Sincerely,

Richard Rennia, Jr., P.E.
Principal

EC: Town of Dover Planning Board
Michael Segelken, Town of Dover, Code Enforcement Officer
Jason Ginder, w/ encl.

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JOINT APPLICATION FORM

For Permits/Determinations to undertake activities affecting streams, waterways, waterbodies, wetlands, coastal areas and sources of water supply.

New York State

You must separately apply for and obtain separate Permits/Determinations from each involved agency prior to proceeding with work. Please read all instructions.

US Army Corps of Engineers (USACE)

APPLICATIONS TO

1. NYS Department of Environmental Conservation

Check all permits that apply:

- ☐ Stream Disturbance
- ☐ Excavation and Fill in Navigable Waters
- ☐ Docks, Moorings or Platforms
- ☑ Dams and Impoundment Structures
- ☐ 401 Water Quality Certification
- ☐ Freshwater Wetlands
- ☐ Tidal Wetlands
- ☐ Coastal Erosion Management
- ☐ Wild, Scenic and Recreational Rivers
- ☐ Water Supply
- ☐ Long Island Well
- ☐ Aquatic Vegetation Control
- ☐ Aquatic Insect Control
- ☐ Fish Control
- ☐ Incidental Take of Endangered/Threatened Species

☑ I am sending this application to this agency.

2. US Army Corps of Engineers

Check all permits that apply:

- ☐ Section 404 Clean Water Act
- ☐ Section 10 Rivers and Harbors Act
- ☐ Nationwide Permit(s) - Identify Number(s): _____ _____
- Preconstruction Notification - ☐ Y / ☐ N

☐ I am sending this application to this agency.

3. NYS Office of General Services

Check all permits that apply:

- ☑ State Owned Lands Under Water
- ☑ Utility Easement (pipelines, conduits, cables, etc.)
- ☐ Docks, Moorings or Platforms

☐ I am sending this application to this agency.

4. NYS Department of State

Check if this applies:

- ☐ Coastal Consistency Concurrence

☐ I am sending this application to this agency.

5. Name of Applicant (use full name)

Double JK Ranch

Mailing Address: 63 Sale Harbour Drive

Post Office City: New Fairfield

State: CT Zip Code: 06821

Telephone (daytime): 212-419-3995

Email: jkginder@aol.com

Applicant must be:

- ☑ Owner
- ☐ Operator
- ☐ Lessee

(check all that apply)

Taxpayer ID (If applicant is NOT an individual):

6. Name of Facility or Property Owner (if different than Applicant) Jason Ginder

Mailing Address: 39 NE Mountain Road

Post Office City: Town of Dover

State: NY Zip Code: 12522

Telephone (daytime): 212-419-3995

Email: jkginder@aol.com

7. Contact/Agent Name

Richard, A. Rennia, PE., Principle

Company Name: Rennia Engineering Design, PLLC

Mailing Address: 6 Dover Village Plaza

Post Office City: Town of Dover

State: NY Zip Code: 12522

Telephone (daytime): 845-877-0555

Email: rich@renniadesign.com

8. Project / Facility Name

Double JK Ranch

Property Tax Map Section / Block / Lot Number: 132600-7163-0-380110

Project Location - Provide directions and distances to roads, bridges and bodies of waters:

The project is located 100 feet east of the intersection of NE Mountain Road and Sand Hill Road within the Town of Dover.

Street Address, if applicable: 39 NE Mountain Road

Post Office City: Town of Dover State: NY Zip Code: 12522

Town / Village / City: Town of Dover

County: Dutchess

Name of USGS Quadrangle Map:

Stream/Water Body Name:

Location Coordinates: Enter NYTMs in kilometers, **OR** Latitude/Longitude

NYTM-E	NYTM-N	Latitude	Longitude
		620404	4620630

For Agency Use Only DEC Application Number: USACE Number:

JOINT APPLICATION FORM - PAGE 2 OF 2

Submit this completed page as part of your Application.

9. **Project Description and Purpose:** Provide a complete narrative description of the proposed work and its purpose. Attach additional page(s) if necessary. Include: description of current site conditions and how the site will be modified by the proposed project; structures and fill materials to be installed; type and quantity of materials to be used (i.e., square ft of coverage and cubic yds of fill material and/or structures below ordinary/mean high water) area of excavation or dredging, volumes of material to be removed and location of dredged material disposal or use; work methods and type of equipment to be used; pollution control methods and mitigation activities proposed to compensate for resource impacts; and where applicable, the phasing of activities. **ATTACH PLANS ON SEPARATE PAGES.**

Approximately 55,900 cubic yards (11, 291,073 gallons) will be removed from a rural farming operation to create a farm pond. The fill material is consistent with the type of soils identified on site and will distributed as needed to stablize the downstream banks of the pond. The pond surface elevation at the top of the pond (bermed area) is approximately 540'. The pond surface area at that elevation is approximately 2.4 acres. The stormwater controls for the pond are two (2) 48" culverts that are attached to two (2) collection boxes with dimensions of 6' by 6'. HydroCAD 10.0 was used to model the flow of the 100 year storm event. Results showed that the pond elevation staged up to 538.15'. This elevation was then used to set the crest elevation for the auxiliary spillway associated with this design. Based on a hazard classification of "A" for the project, the spillway is designed to control a 5 year storm over the 100 year storm. The HydroCAD 10.0 model showed the flow ove the spillway will be a maximum 538.95. As previously noted, the top of the berm of the pond is set at 540.0'. The stormwater model show that the design storms for the project will only stage up to a height of 538.95, leaving 1.05' of freeboard. Autodesk Storm 2012 is a modeling package that estimates the affect of an upstream release on structures that are located downstream of the farm pond. The model demonstrates that only two of the four houses that are located in the above described area will actually be affected by a pond failure.

Proposed Use: ☑ Private ☐ Public ☐ Commercial	Proposed Start Date: 1/31/2013	Estimated Completion Date: 1/1/2014
Has Work Begun on Project? ☐ Yes ☑ No If Yes, explain.		
Will Project Occupy Federal, State or Municipal Land? ☐ Yes ☑ No If Yes, please specify.		

10. List Previous Permit / Application Numbers (if any) and Dates:

NA

11. Will this project require additional Federal, State, or Local Permits including zoning changes? ☑ Yes ☐ No If yes, please list:

NYSDEC Dam permit is required and has been applied for.

12. **Signatures.** If applicant is not the owner, both must sign the application.

I hereby affirm that information provided on this form and all attachments submitted herewith is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law. Further, the applicant accepts full responsibility for all damage, direct or indirect, of whatever nature, and by whomever suffered, arising out of the project described herein and agrees to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from said project. In addition, Federal Law, 18 U.S.C., Section 1001 provides for a fine of not more than $10,000 or imprisonment for not more than 5 years, or both where an applicant knowingly and willingly falsifies, conceals, or covers up a material fact; or knowingly makes or uses a false, fictitious or fraudulent statement.

Signature of Applicant	Printed Name	Title	Date
	JASON GEINDER	OWNER	1-9-13
Signature of Owner	Printed Name	Title	Date
Signature of Agent	Printed Name	Title	Date

For Agency Use Only **DETERMINATION OF NO PERMIT REQUIRED**

_____ (Agency Name) has determined that No Permit is required from this Agency for the project described in this application. Agency Project Number _____

Agency Representative: Name (printed) _____ Title _____

Signature _____ Date _____

Supplement D-1

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
ALBANY, NEW YORK 12233

FOR DEPARTMENT USE ONLY
APPLICATION NO.
DAM NO.
WATERSHED

APPLICATION FOR PERMIT

FOR THE CONSTRUCTION, RECONSTRUCTION OR REPAIR OF A DAM OR OTHER IMPOUNDMENT STRUCTURE

Read instructions on reverse side of last sheet before completing this application. PLEASE TYPE OR PRINT CLEARLY IN INK

PROJECT DESCRIPTION

1. LOCATION On U.S. GEOLOGICAL SURVEY MAP — Name of Map | Latitude: 620404 | Longitude: 4620630

2. PROPOSED USE FOR IMPOUNDED WATER: Farm Pond

3. STATE THE HEIGHT ABOVE SPILLCREST OF THE LOWEST PART OF THE IMMEDIATE UPSTREAM ADJOINING PROPERTY OR PROPERTIES: _____ Feet

4. IS THIS PROPOSED POND OR LAKE PART OF A PUBLIC WATER SUPPLY? ☐ Yes ☑ No
If not, where is nearest downstream public water supply intake?

5. SIZE OF AREA DRAINING INTO POND OR LAKE (Acres or Square Miles): 80.6 acres

HEIGHT OF DAM ABOVE STREAM BED? _____ Feet

6. THE DRAINAGE AREA IS COMPOSED OF: (Total = 100%)
50 % Forest 10 % Cropland 25 % Pasture 15 % Other _____ % Swamp 100 % Suburban Lands _____ % Urban Lands

7. TYPE OF SPILLWAY
☑ Service Spillway - Auxiliary Spillway Combination ☐ Pip Riser ONLY
☐ Single Spillway ☐ Other _____

8. DESIGNER'S ESTIMATE OF CLASS OF HAZARD (As described in 6NYCRR Part 673)
☑ Class "A" ☐ Class "B" ☐ Class "C"
NOTE: Provide descriptive information on character of downstream area.

9a. SPILLWAY INFLOW DESIGN FLOOD
Frequency 100 year Flood Peak 201. cfs Runoff Volume 14 in.

9b. SERVICE SPILLWAY INFLOW DESIGN FLOOD
Frequency 5 year Flood Peak 82.4 cfs Runoff Volume 8.0 in.

10. THE SINGLE SPILLWAY OR AUXILIARY SPILLWAY IS COMPOSED OF:
☐ Vegetated Earth ☐ Concrete ☐ Timber ☑ Rock-filled Crib ☐ Masonry ☐ Other

11. MAXIMUM VELOCITY WITHIN THE SINGLE OR AUXILIARY SPILLWAY: 10.76 fps

12. SINGLE OR AUXILIARY SPILLWAY DISCHARGE AT DESIGN HIGH WATER: 82.41 cfs

13. TYPE OF ENERGY DISSIPATER PROVIDED ON SINGLE SPILLWAY
☐ Hydraulic Jump Basin ☑ Drop Structure ☐ Other _____

14. POND OR LAKE WILL BE DRAINED BY MEANS OF
Valve at toe of slope of dam will control an 8" drain pipe to pond

WATER WILL BE SUPPLIED TO RIPARIAN OWNERS DOWNSTREMA BY MEANS OF
gravity

15. AREA CAPACITY DATA — Answer 1, 2 and 3, OR 1, 2, 4, 5

	ELEVATION, Referred to Assumed Benchmark	SURFACE AREA	VOLUME STORED
1. Top of Dam	540.0 Feet	2.4 Acres	7.2 Acre-Feet
2. Design High Water	538.15 Feet	2.1 Acres	4.4 Acre-Feet
3. Single Spillway Crest	_____ Feet	_____ Acres	_____ Acre-Feet
4. Auxiliary Spillway Crest	538.95 Feet	2.2 Acres	6.6 Acre-Feet
5. Service Spillway Crest	_____ Feet	_____ Acres	540.0 Acre-Feet

16. TYPE OF ENERGY DISSIPATER AT OUTLET OF CONDUIT:
☐ Impact Basin ☐ Hydraulic Jump Basin
☐ Plunge Pool ☑ Other Rip Rap

IS RISER PROVIDED WITH AN ANTI-VORTEX DEVICE?
☐ Yes ☐ No

17. DRAWDOWN TIMES: Answer 1 and 2, OR 1, 3, and 4

	Yes	No
1. Has provision been made to evacuate 90% of the storage below the lowest spillway crest within fourteen days?	☑	☐
2. Can the single spillway evacuate 75% of the storage between the maximum design high water and the spillway crest within 48 hours?	☑	☐
3. Can the Service Spillway evauate 75% of the storage between the auxiliary spillway and the Service Spillway crest within seven days?	☑	☐
4. Can the Service Spillway and the Auxiliary Spillway in combination evacuate the storage between the design high water and the auxiliary spillway crest within 12 hours?	☑	☐

18. SOIL DATA - State the character of the bed and banks in respect to natural types of soil materials, hardness, perviousness, water bearing, effect of exposure to air and water, uniformity, etc.

The site is primarily 100 % type A soil. This soil drains and is compacted well.

If an earth dam, describe the material to be used in the embankment.

The embankment fill was primarily Charlton loam

What is the source of embankment fill material?

The embankment fill material was taken from the pond interior and spread.

Are there porous seams or fissures beneath the foundation of the proposed dam? ☐ Yes ☐ No

Method used to obtain the above soil data ☐ Soil Bearing ☐ Test Pits

19. DESIGN ENGINEER Name of agency or individual	P.E. License No. of Individual	20. CONSTRUCTION ENGINEER Name of agency or individual	P.E. License No. of Individual
Rennia Eng. Design,			
Address: 6 Dover Village Plaza, Dover Plains, NY		Address	
Title: Principle	Telephone No.: 845-877-0555	Title	Telephone No.

93-19-2 (2/77)

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New York State
Department of Environmental Conservation

PERMISSION TO INSPECT PROPERTY

By signing this permission form for submission with an application for a permit(s) to the Department of Environmental Conservation ("DEC"), the signer consents to inspection by DEC staff of the project site or facility for which a permit is sought and, to the extent necessary, areas adjacent to the project site or facility. This consent allows DEC staff to enter upon and pass through such property in order to inspect the project site or facility, without prior notice, between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday. If DEC staff should wish to conduct an inspection at any other times, DEC staff will so notify the applicant and will obtain a separate consent for such an inspection.

Inspections may take place as part of the application review prior to a decision to grant or deny the permit(s) sought. By signing this consent form, the signer agrees that this consent remains in effect as long as the application is pending, and is effective regardless of whether the signer, applicant or an agent is present at the time of the inspection. In the event that the project site or facility is posted with any form of "posted" or "keep out" notices, or fenced in with an unlocked gate, this permission authorizes DEC staff to disregard such notices or unlocked gates at the time of inspection.

The signer further agrees that during an inspection, DEC staff may, among other things, take measurements, may analyze physical characteristics of the site including, but not limited to, soils and vegetation (taking samples for analysis), and may make drawings and take photographs.

Failure to grant consent for an inspection is grounds for, and may result in, denial of the permit(s) sought by the application.

Permission is granted for inspection of property located at the following address(es):

39 NE Mountain Road, Dover NY

Parcel: 132600-7163-00-380110

*By signing this form, I affirm under penalty of perjury that I am authorized to give consent to entry by DEC staff as described above. I understand that false statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.**

JASON GINDER OWNER		1-8-13
Print Name and Title	Signature	Date

*The signer of this form must be an individual or authorized representative of a legal entity that:

- owns fee title and is in possession of the property identified above;
- maintains possessory interest in the property through a lease, rental agreement or other legally binding agreement; or
- is provided permission to act on behalf of an individual or legal entity possessing fee title or other possessory interest in the property for the purpose of consenting to inspection of such property.

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617.20

Appendix C
State Environmental Quality Review
SHORT ENVIRONMENTAL ASSESSMENT FORM
For UNLISTED ACTIONS Only

PART I - PROJECT INFORMATION (To be completed by Applicant or Project Sponsor)

1. APPLICANT/SPONSOR
Double JK Ranch

2. PROJECT NAME
Agricultural Pond Grading

3. PROJECT LOCATION:
Municipality Town of Dover County Dutchess

4. PRECISE LOCATION (Street address and road intersections, prominent landmarks, etc., or provide map)
NE 39 Mountain Road
Dover Plains, NY 12522

5. PROPOSED ACTION IS:
☑ New ☐ Expansion ☐ Modification/alteration

6. DESCRIBE PROJECT BRIEFLY:
Develop existing hay field into a 2.4 acre agricultural pond.

7. AMOUNT OF LAND AFFECTED:
Initially 4.8 acres Ultimately 2.4 acres

8. WILL PROPOSED ACTION COMPLY WITH EXISTING ZONING OR OTHER EXISTING LAND USE RESTRICTIONS?
☑ Yes ☐ No If No, describe briefly

9. WHAT IS PRESENT LAND USE IN VICINITY OF PROJECT?
☑ Residential ☐ Industrial ☐ Commercial ☑ Agriculture ☐ Park/Forest/Open Space ☐ Other
Describe:

10. DOES ACTION INVOLVE A PERMIT APPROVAL, OR FUNDING, NOW OR ULTIMATELY FROM ANY OTHER GOVERNMENTAL AGENCY (FEDERAL, STATE OR LOCAL)?
☑ Yes ☐ No If Yes, list agency(s) name and permit/approvals:
Town of Dover Erosion Control Permit
NYSDEC Dam Safety Permit

11. DOES ANY ASPECT OF THE ACTION HAVE A CURRENTLY VALID PERMIT OR APPROVAL?
☑ Yes ☐ No If Yes, list agency(s) name and permit/approvals:
NYS Stormwater GP-0-10-001

12. AS A RESULT OF PROPOSED ACTION WILL EXISTING PERMIT/APPROVAL REQUIRE MODIFICATION?
☐ Yes ☑ No

I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE TO THE BEST OF MY KNOWLEDGE
Applicant/sponsor name: Jason Ginder - Double JK Ranch Date: 1-9-13
Signature:

If the action is in the Coastal Area, and you are a state agency, complete the Coastal Assessment Form before proceeding with this assessment

Reset

PART II - IMPACT ASSESSMENT (To be completed by Lead Agency)

A. DOES ACTION EXCEED ANY TYPE I THRESHOLD IN 6 NYCRR, PART 617.4? If yes, coordinate the review process and use the FULL EAF.
☐ Yes ☑ No

B. WILL ACTION RECEIVE COORDINATED REVIEW AS PROVIDED FOR UNLISTED ACTIONS IN 6 NYCRR, PART 617.6? If No, a negative declaration may be superseded by another involved agency.
☐ Yes ☑ No

C. COULD ACTION RESULT IN **ANY** ADVERSE EFFECTS ASSOCIATED WITH THE FOLLOWING: (Answers may be handwritten, if legible)

C1. Existing air quality, surface or groundwater quality or quantity, noise levels, existing traffic pattern, solid waste production or disposal, potential for erosion, drainage or flooding problems? Explain briefly:

NO

C2. Aesthetic, agricultural, archaeological, historic, or other natural or cultural resources; or community or neighborhood character? Explain briefly:

NO

C3. Vegetation or fauna, fish, shellfish or wildlife species, significant habitats, or threatened or endangered species? Explain briefly:

NO

C4. A community's existing plans or goals as officially adopted, or a change in use or intensity of use of land or other natural resources? Explain briefly:

NO

C5. Growth, subsequent development, or related activities likely to be induced by the proposed action? Explain briefly:

NO

C6. Long term, short term, cumulative, or other effects not identified in C1-C5? Explain briefly:

NO

C7. Other impacts (including changes in use of either quantity or type of energy)? Explain briefly:

NO

D. WILL THE PROJECT HAVE AN IMPACT ON THE ENVIRONMENTAL CHARACTERISTICS THAT CAUSED THE ESTABLISHMENT OF A CRITICAL ENVIRONMENTAL AREA (CEA)?
☐ Yes ☑ No If Yes, explain briefly:

E. IS THERE, OR IS THERE LIKELY TO BE, CONTROVERSY RELATED TO POTENTIAL ADVERSE ENVIRONMENTAL IMPACTS?
☐ Yes ☑ No If Yes, explain briefly:

PART III - DETERMINATION OF SIGNIFICANCE (To be completed by Agency)

INSTRUCTIONS: For each adverse effect identified above, determine whether it is substantial, large, important or otherwise significant. Each effect should be assessed in connection with its (a) setting (i.e. urban or rural); (b) probability of occurring; (c) duration; (d) irreversibility; (e) geographic scope; and (f) magnitude. If necessary, add attachments or reference supporting materials. Ensure that explanations contain sufficient detail to show that all relevant adverse impacts have been identified and adequately addressed. If question D of Part II was checked yes, the determination of significance must evaluate the potential impact of the proposed action on the environmental characteristics of the CEA.

☐ Check this box if you have identified one or more potentially large or significant adverse impacts which **MAY** occur. Then proceed directly to the FULL EAF and/or prepare a positive declaration.

☐ Check this box if you have determined, based on the information and analysis above and any supporting documentation, that the proposed action **WILL NOT** result in any significant adverse environmental impacts **AND** provide, on attachments as necessary, the reasons supporting this determination

Name of Lead Agency	Date
Print or Type Name of Responsible Officer in Lead Agency	Title of Responsible Officer
Signature of Responsible Officer in Lead Agency	Signature of Preparer (If different from responsible officer)

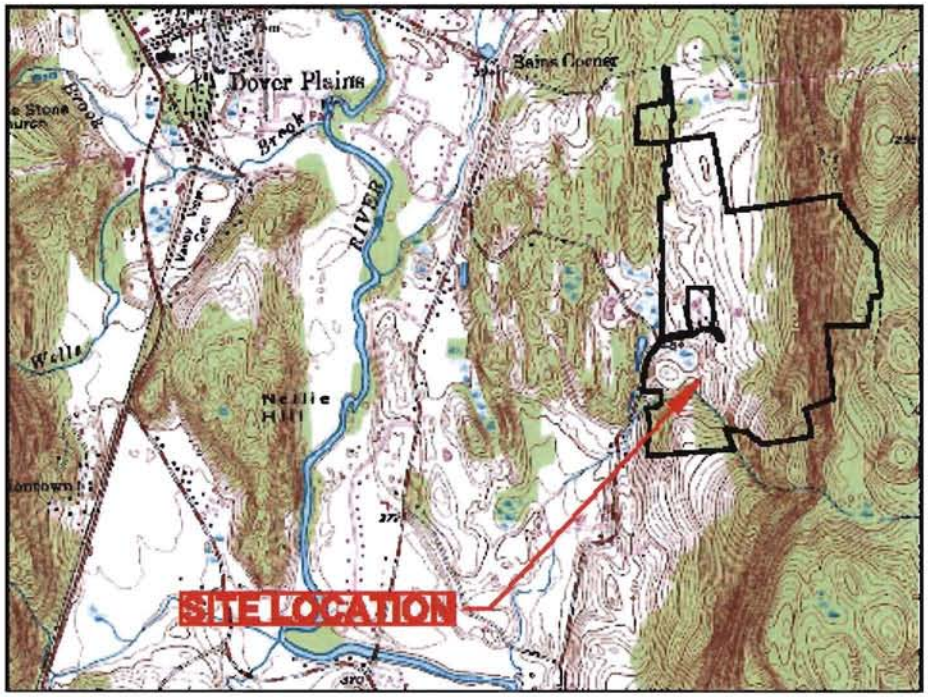
Reset

Double JK Ranch
Agricultural Pond Assessment Report
Town of Dover, Dutchess County

1.0 Introduction

This assessment report has been developed for the Double JK Ranch property in order to properly assess an earthen dam that has been installed as part of the creation of a farm pond. The parcel is located at 39 NE Mountain Road in the Town of Dover, Dutchess County, NY and is approximately 241.23 acres. Figure 1-1 Site Figure Location shows the location of the project.

Figure 1-1 Project Site Location



Of the 241.23 acres, approximately 4.8 acres of disturbance is required for by the construction of the farm pond. The pond consists of a 30 foot earthen berm on the west side of the pond area and is approximately 2.4 acres in surface area. It is estimated that the pond will contain just over 11.3 million gallons of water when completely full. This estimate is based on the relocation and re-grading of approximately 55,800 yds^3 of soils removed from the hillside to create the pond.

The stormwater management for this portion of the Double JK Ranch site is based on collection of runoff water from an 80.6 acre drainage area as it flows down a hillside following the natural topography of the site and into the proposed farm pond. This drainage area is shown on the Pre-Development Drainage Area, Sheet 1 of 1. This figure is attached to the end of this report and is also contained within the Stormwater Pollution Prevention Plan (SWPPP). In New York State, the majority of non-structural agricultural activities are exempt from stormwater point source permitting requirements. However, the NYSDEC regulatory criteria requires a dam safety permit and stormwater construction permit coverage for this project. Regulatory requirements are discussed in Section 2.0 below.

The hydrologic analysis for this site utilizes the methods stated in Technical Release # 55, Urban Hydrology for Small Watersheds, published by the U.S. Department of Agriculture, Soil Conservation Service. A Type III Dutchess County Rainfall Distribution was used to generate hydrographs for the 5-year and 100-year storm events, with respective 24-hour rainfall depths of 4.5 and 8.0 inches.

2.0 Regulatory Requirements

The first step in a dam design is the determination of the dam hazard classification as required by the NYSDEC dam permit approval process. This hazard assessment is based, in part, on the height of the dam wall, the volume of the reservoir and the number of structures and roads that may be affected by a failure of the dam. These requirements are included within the NYSDEC regulations, Chapter V-Resource Management Services Part 608.3. A dam safety permit is required if the dam:

- has a wall height of 15 feet or greater.
- stores one million gallons or more.
- has a drainage area of one square mile.

As noted above, the Double JK farm pond design will require a permit due to its height of 30' and a storage of over 11 million gallons of water.

3.0 Hazard Assessment

The NYSDEC Division of Water (DOW) has generated guidance for Dam Hazard Classification in the DOW TOGS 3.1-5. If flooding is up to 1 foot above the lowest occupied floor but 10 homes or less are likely to be damaged by a dam breach, the dam may generally receive a hazard classification of "Class A".

HydroCAD 10.0 was used to analyze a dam breach for this project. A "wet" analysis of the dam requires that the model calculate a dam breach during a storm event. The

modeling results are attached to this report. These results demonstrate that the downstream receiving stream has the capacity to accept the entire flow from the breach and the 100 year storm. The site is located in a rural area with less than 10 down-gradient homes that may be affected by a failure of the dam.

The Dam Outlet Receiving Stream, Exhibit-1, which is attached to this report, shows the approximate course of the stream and the adjacent houses that are of concern. Also shown on this exhibit is an approximate cross section of the stream bed, with an average area of 36 ft^2. The length of stream bed that would be affected by a dam failure is approximately 1,600 linear feet. The estimated volume of this channel is calculated at over 11.6 million gallons while flowing full. The modeling results show that the stream can accept both the volume of the pond and the flow from a 100 year design storm. Therefore, it is the opinion of this office that this dam should be a classified as a Class "A" Hazard for this project.

4.0 Dam Design Criteria

This spillway design is based on NYSDEC Guidelines for the Design of Dams. These design criteria are located within the New York State Stormwater Management Design Manual (NYSSWMDM), Appendix A. The design criteria utilized for this dam outfall design are shown in Table -1 New Dams Hydrologic Design Criteria. This table is located on page 9 of Appendix A of the NYSSWMDM.

Within Table -1, the hazard classification of "Class A" for a small dam requires that the primary spillway be designed using a 100 year storm in the hydrologic model and that a 5 year storm be used in the design of the auxiliary spillway that will convey stormwater runoff over the 100 year storm event. A layout of the control structure for the pond is included in The Pond Construction and Grading Plan, Sheet 1 of 3, and is attached to this report. Also attached to this report are the Erosion and Sediment Control Plan, Sheet 2 of 3, and the Site Details, Sheet 3 of 3. Calculations showing the hydraulic design results for the primary spillway and at three (3) locations within the auxiliary spillway are attached to this report.

Stormwater hydrographs were generated using the proposed drainage areas and the proposed stormwater management practices. The top of pond surface area is approximately 2.4 acres. Two (2) 36" culverts will convey stormwater runoff from two (2) 6' by 6' collection boxes. The design elevation for the boxes is set at 537.0'. The 100-year rainfall event volumetric flow rate for the drainage area was calculated at 201.33 cubic feet per second (cfs). The pond design outlet structure provides mitigation for the storm event and reduces this volumetric flow rate to 177.10 cfs. During the 100 year storm event, the outflow through the primary spillway will stage up to an elevation

of 538.27'. As required by the dam design criteria, the auxiliary spillway design is based on conveying the 5-year storm event with its outfall elevation set at 538.27'. The HydroCAD hydraulic model calculated a flow rate of 82.41 cfs from the 5 year storm event. The outfall from the auxiliary spillway was calculated to peek at a maximum of 539.07'. Also included in this design is the use of an 8" culvert that is installed as a drain mechanism. The inlet of this drain culvert is located near the bottom of the pond (approximately 514.0') with the outfall located below the outfalls for the 36" pipes (approximately 500'). Drawdown times for these controls have been assessed based on full flow within the culverts. It is estimated that the under drain for the 8" culvert will flow at approximately 5 cfs and will drain 90% of the pond volume below the lowest spillway crest of 538.27' in approximately 3.5 days. It is further shown by the outfall hydrograph that the 100 year design storm will drain completely within 26 hours from the onset of the storm and just over 12 hours after the storms peak flow rate.

As required by the NYSEDC, the earthen berm has been designed with a maximum slope of 1' vertical to 3' horizontal along the downstream slope. The top width of the berm is based in part on the height of the wall and must be a minimum of W = 0.2H +7. This calculation sets the berm width at a minimum of 13'. The grading plan shows that the top of the berm ranges in width from 25' to 40'.

5.0 Results and Conclusions

An Assessment Report has been developed for the Double JK Ranch property to request the issuance of a dam safety permit for the creation of a farm pond. Of the 241.23 acres on site, approximately 4.8 acres will be disturbed by the construction of a farm pond. The pond will consist of a 30' earthen berm on the west side of the pond. The surface area of the pond is estimated to be 2.4 acres. As previously noted, the Double JK Ranch farm pond design will require a dam safety permit due to its height of 30' (> 15' in height) and a storage of over 11 million gallons of water (> 3 MG in volume). The design includes two (2) 36" culverts that will convey stormwater runoff from two (2) 6' by 6' collection boxes and an auxiliary spillway that will convey runoff above the 100 year design.

A dam breach analysis was conducted for the worst case scenario where the dam wall failed during a 100 year storm event. The analysis demonstrated that the receiving stream can accept the cumulative flow from the pond volume and 100 year storm event volumetric runoff. The HydroCAD 10.0 results for the dam breach are attached to this report.

Attachments

Dam Outlet Receiving Stream, Exhibit-1

Pre-Development Drainage Area, Sheet 1 of 1

HydroCAD 10.0 modeling results

Pond Construction and Grading Plan, Sheet 1 of 3

Erosion and Sediment Control Plan, Sheet 2 of 3

Site Details, Sheet 3 of 3

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