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Land Use Department

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CIVIL ENGINEERING - LAND DEVELOPMENT - SITE PLANS - STORMWATER MANAGEMENT

Engineering Report
For Land Use Commissions Submittals
Kineo Estates Subdivision, 939 Long Cove Road
Ledyard, Connecticut

November 3, 2025

EXISTING CONDITIONS: Reference is made to the following Plan Set: "Plan Showing Kineo Estates Subdivision Prepared for Mt. Kineo Builders Property of John Hale Almy II and Marcy Zerling Almy 939 Long Cove Road, Ledyard, Connecticut" Scales as Shown, September 2025, By Dieter & Gardner, Gales Ferry, CT. The property is located on the east side of Long Cove Road south of Hyde Park Drive. The property is wooded and drains to the south.

METHODOLOGY: The Rational Method was used for analyzing runoff rates per Part III of the Town of Ledyard's *Ordinance Regulating the Management of Stormwater Runoff*. The descending leg of the hydrographs are increased by a factor of 2.5 to provide additional stormwater volume. Driveway culverts are designed for a 25-year storm event. Intensity-Duration-Frequency (IDF) Curves were downloaded from the NOAA Atlas 14 web site. The proposed 15-inch and 18-inch driveway culverts were sized by verifying the inlet control headwater was no more than 1.5 times the pipe diameter. (HW/D). Calculations are attached to this report.

STORMWATER MANAGEMENT: The proposed development will not change the existing drainage patterns. Proposed house locations for 943 and 963 Long Cove Road are outside of regulated areas. Controls such as silt fence, haybales or are proposed between soil disturbance and environmentally sensitive areas.

CONCLUSION: The proposed development will not have adverse effects on down-gradient properties and is in keeping with the policies and goals of the Ledyard Planning and Zoning Commission.

Submitted by:
LBM Engineering, LLC
John R Martucci
John R. Martucci, P.E.

Summary for Subcatchment 1A: 1A

Runoff = 3.42 cfs @ 0.25 hrs, Volume= 5,373 cf, Depth= 0.34"
Routed to Pond 3P : 15" INLET

Runoff by Rational method, Rise/Fall=1.0/2.5 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
GALESFERRY 25-yr Duration=15 min, Inten=4.88 in/hr

Area (ac)	C	Description	Land Use
4.400	0.25	LIGHT UNDERBRUSH	Meadow
4.400		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.8	100	0.0200	0.08		**Sheet Flow, SHEET FLOW** Woods: Light underbrush n= 0.400 P2= 3.40"
2.4	100	0.0200	0.71		**Shallow Concentrated Flow, SHALLOW CONCENTRATED** Woodland Kv= 5.0 fps
0.6	150	0.0200	4.41	13.24	**Channel Flow, CHANNEL FLOW** Area= 3.0 sf Perim= 6.0' r= 0.50' n= 0.030 Earth, grassed & winding
23.8	350	Total			

Summary for Pond 3P: 15" INLET

Inflow Area = 191,664 sf, 0.00% Impervious, Inflow Depth = 0.34" for 25-yr event
Inflow = 3.42 cfs @ 0.25 hrs, Volume= 5,373 cf
Outflow = 3.42 cfs @ 0.25 hrs, Volume= 5,373 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.42 cfs @ 0.25 hrs, Volume= 5,373 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 164.15' @ 0.25 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	163.00'	**15.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 163.00' / 162.50' S= 0.0167 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.40 cfs @ 0.25 hrs HW=164.15' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 3.40 cfs @ 2.88 fps)

Summary for Subcatchment 2A: 1A

Runoff = 8.43 cfs @ 0.25 hrs, Volume= 13,268 cf, Depth= 0.35"
Routed to Pond 3P : 18" INLET

Runoff by Rational method, Rise/Fall=1.0/2.5 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
GALESFERRY 25-yr Duration=15 min, Inten=4.88 in/hr

Area (ac)	C	Description	Land Use
10.500	0.25	LIGHT UNDERBRUSH	Meadow
10.500		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0250	0.09		**Sheet Flow, SHEET FLOW** Woods: Light underbrush n= 0.400 P2= 3.40"
2.4	100	0.0200	0.71		**Shallow Concentrated Flow, SHALLOW CONCENTRATED** Woodland Kv= 5.0 fps
1.5	400	0.0200	4.41	13.24	**Channel Flow, CHANNEL FLOW** Area= 3.0 sf Perim= 6.0' r= 0.50' n= 0.030 Earth, grassed & winding
23.0	600	Total			

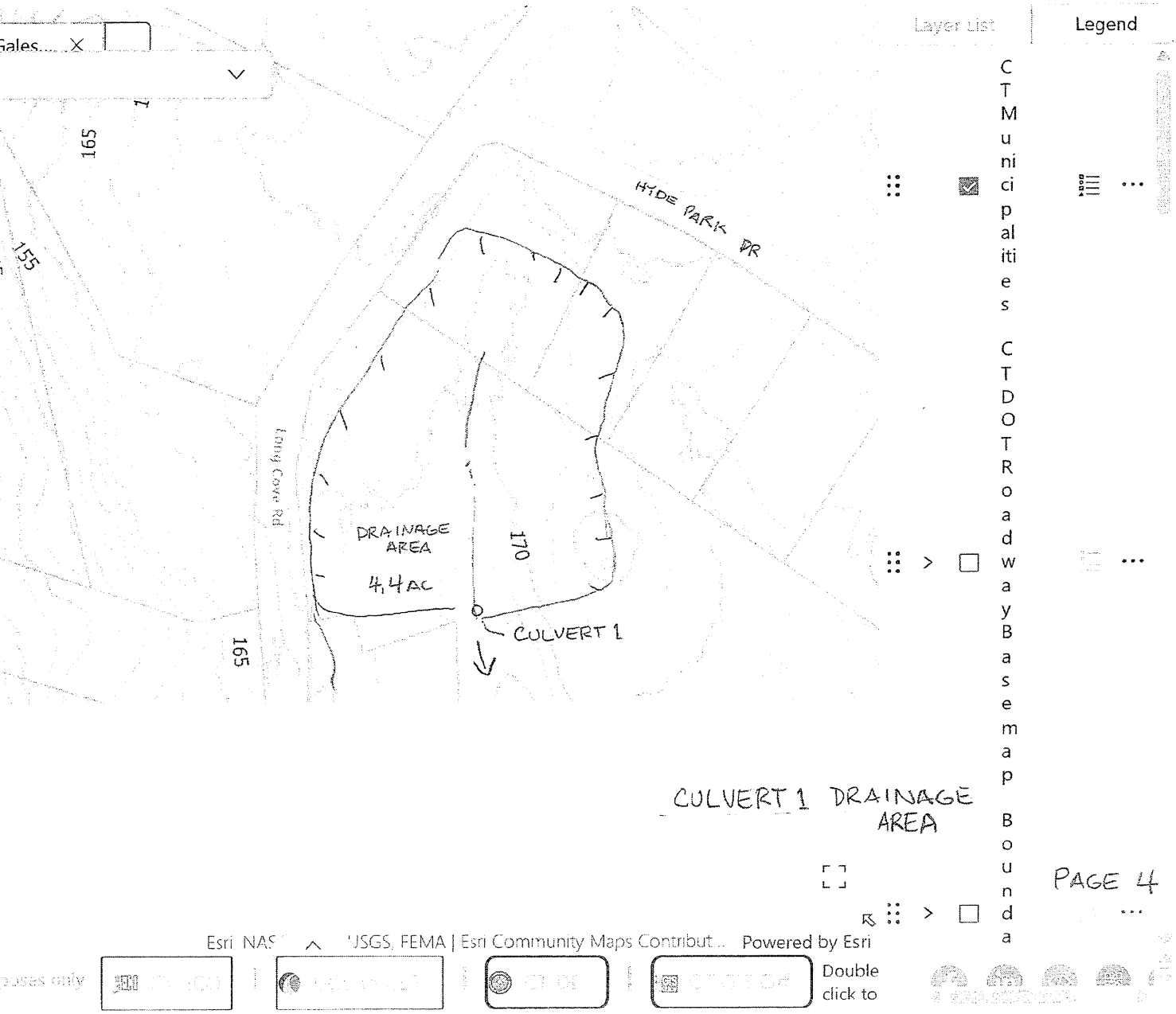
Summary for Pond 3P: 18" INLET

Inflow Area = 457,380 sf, 0.00% Impervious, Inflow Depth = 0.35" for 25-yr event
Inflow = 8.43 cfs @ 0.25 hrs, Volume= 13,268 cf
Outflow = 8.43 cfs @ 0.25 hrs, Volume= 13,268 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.43 cfs @ 0.25 hrs, Volume= 13,268 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 145.33' @ 0.25 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	143.00'	**18.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 143.00' / 142.00' S= 0.0333 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.40 cfs @ 0.25 hrs HW=145.31' (Free Discharge)
└**1=Culvert** (Inlet Controls 8.40 cfs @ 4.75 fps)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155
CULVERT 1
CULVERT 1 DRAINAGE AREA
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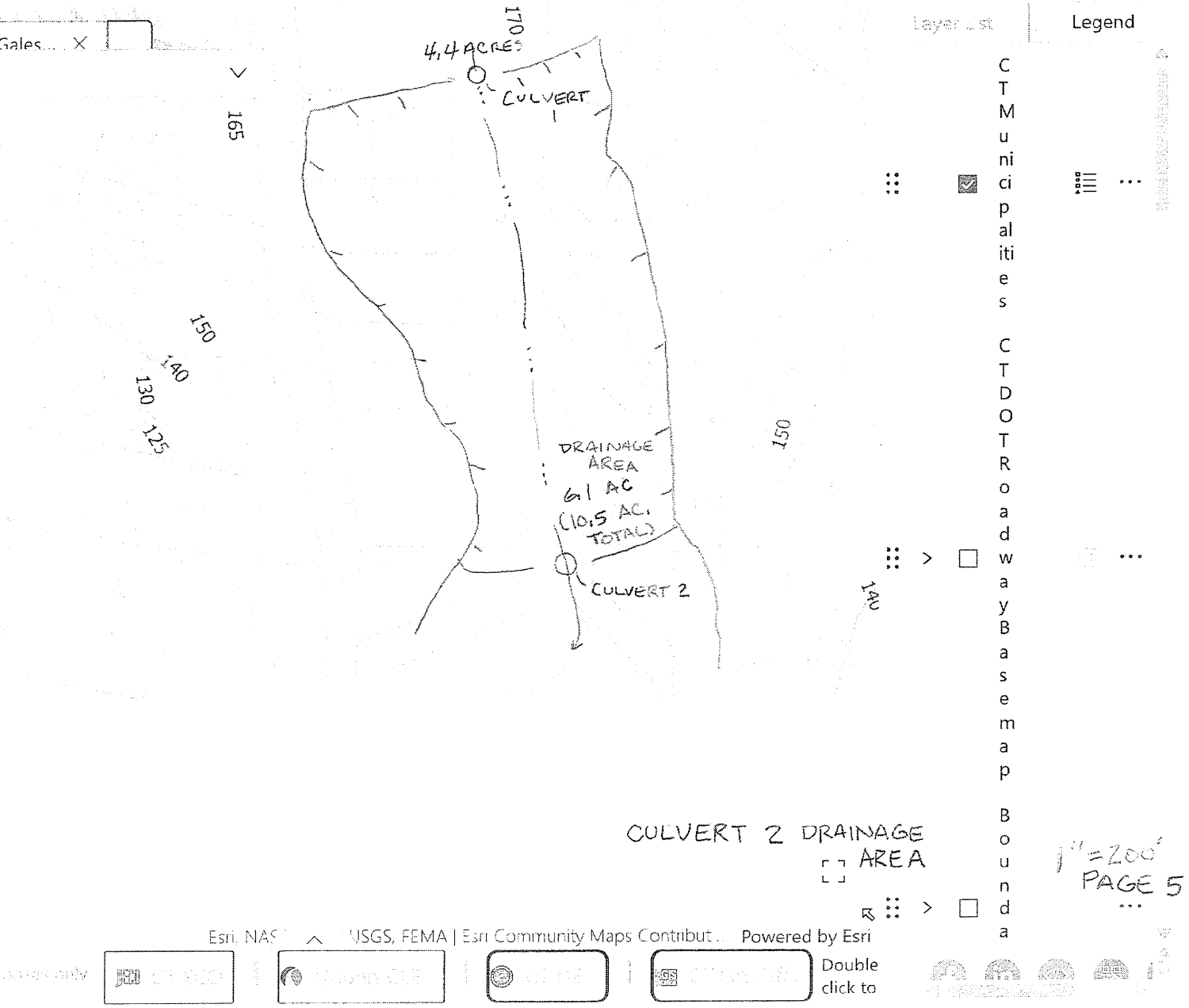
4.4 ACRES
CULVERT
DRAINAGE AREA
6.1 AC
(10.5 AC. TOTAL)
CULVERT 2
CULVERT 2 DRAINAGE AREA
1" = 200'
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