Finally, I would like to express my appreciation for the opportunity to speak. I hope you will ~~make the necessary changes to your regulations to allow~~ this important project to go forward.

MS approve this Proposal & allow

Thank you.

Tony Sheridan

Tony Sheridan
President & CEO
Chamber of Commerce of Eastern Connecticut

EXHIBIT #170

"**~~make the necessary changes to your regulations to allow~~** this important project to go forward."

SECTION 25 - ENVIRONMENTAL PROTECTION

25.1 EARTH PRODUCTS EXTRACTION, GRADING AND FILLING (Amended 4/5/18)

The **permanent** extraction, processing, or manufacturing of rock, stone, gravel, aggregate, minerals, sand, soil, loam, topsoil, clay, and peat, including mining, **crushing, and quarrying, and the permanent import or export of material is prohibited in all Zone Districts in the Town of Waterford**. The **temporary** extraction,processing, or manufacturing of rock, stone, gravel, aggregate, minerals, sand, soil, loam, topsoil, clay, and peat, including mining, crushing, and quarrying, and the import or export of material may be permitted as authorized in Section 25.1.1.

25.1.1 Zoning Compliance Permit Required for **Temporary** Activities:

The Zoning Enforcement Officer may allow the **temporary** extraction, processing, or manufacturing of rock, stone, gravel, aggregate, minerals, sand, soil, loam, topsoil, clay, and peat, including mining, crushing, and **quarrying for a period not to exceed eighteen months** from the date of the start of work, provided all applicable conditions in Section 25.1.2 of these regulations are met. An application to conduct the temporary activity shall be submitted on a form provided by the Zoning Enforcement Officer.

25.1.2 Temporary Activities Subject to Zoning Compliance Permit:

The following activities may be permitted by Zoning Compliance Permit:

a. **Temporary** extraction or processing, of rock, stone, gravel, aggregate, minerals, sand, soil, loam, topsoil, clay, and peat, including crushing, and quarrying, when found by the Planning and Zoning Commission during the approval process for a Site Plan, Special Permit, or Subdivision, to be **necessary in the implementation of the approved development**.

b. Excavation, earth removal, grading or filling that is clearly essential to the **construction or alteration** of a building, structure, pool, septic system, driveway, road, parking area, landscape feature, or stormwater facility, where a building permit, health permit, and/or zoning compliance permit has been issued. c. Incidental excavation, earth removal, grading, or filling in connection with **property maintenance or landscaping**, where the activity is in conformance with Section 25.5 of these regulations

d. Excavation, extraction, grading, or filling in connection with the installation or maintenance of support facilities associated with **public utilities** including water, sewer, drainage facilities, roads, flood storage, natural gas, buried electrical or the maintenance of a public water supply.

October 10, 2024:

And I would point out to the Commission that about 14 months ago, you approved the Baldwin Hill **excavation**.

And so obviously, in doing so, you made an interpretation that the **non-conflicting** provisions of section 8.16 I, section 9.2 C and section 11 point. ……

8.16 D. The purpose of these regulations is to **insure** the following:

1. the landscape is **not** needlessly **marred** during and after operations;
2. the work will **not** be a source of **dust**, **pollution**, and/or **siltation**;
3. the site will **not** be generally characterized by **unsightliness** as evidenced by **open pits**, rubble or other indications of completed digging operations which would have a **deteriorating influence on nearby property values**;

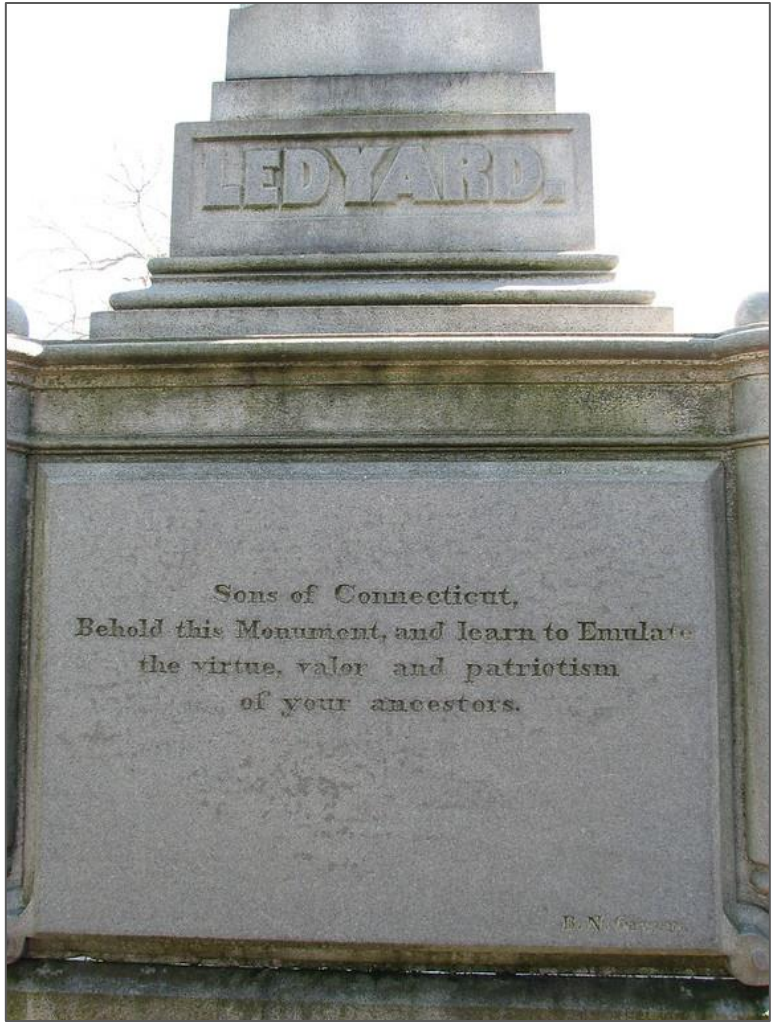
We submit to the Commission that that parameter in your regulations is not consistent with the requirements of Public Act 21-29, which was adopted by the Connecticut Legislature in 2021.

Subsection D says zoning regulations adopted pursuant to subsection A of this section shall not be applied to deny any land use application, including for any site plan approval, special permit, special exception, or other zoning approval on the basis of A, a district character, unless such character is expressly articulated in such regulations by clear and explicit physical standards for site work and structures, which clearly is not, there is no, articulation of those parameters for

The next criteria is that **the character of the immediate neighborhood would be preserved in terms of scale, density, intensity of use, existing historic natural assets, features, and archeological design**. We submit to the Commission that that parameter in your regulations is not consistent with the requirements of Public Act 21-29, which was adopted by the Connecticut Legislature in 2021. **October 10, 2024**

Public Act 21-29, adopted by the Connecticut Legislature in 2021, is a law that aims to make Connecticut more affordable, sustainable, and economically dynamic. It includes several key provisions, such as:

- Accessory dwelling units (ADUs): Requires cities and towns to allow ADUs by-right on lots with single-family homes. However, towns can opt out and set their own requirements or not allow them at all.
- Parking minimums: Requires a reduction in the number of parking spaces required for ADUs.
- Zoning regulations: Requires zoning regulations to affirmatively further fair housing and prohibits towns from discriminating based on income or other immutable characteristics.
- Training: Requires ongoing training for various land use commissioners.
- Municipal affordable housing plans: Requires municipalities to develop affordable housing plans.
- Commission on Connecticut's Development and Future: Creates a commission on Connecticut's development and future.



Sons of Connecticut,
Behold this Monument, and
learn to Emulate the virtues,
valor and patriotism
of your ancestors.

- Alabama
- Arkansas
- Georgia
- Illinois
- Iowa
- Indiana
- Kentucky
- Michigan
- Mississippi
- Nebraska
- New York
- Ohio
- Texas
- Tennessee
- Washington
- Wisconsin

16

- Decatur County, Georgia
- Decatur County, Indiana
- Decatur County, Iowa
- Decatur County, Kansas
- Decatur County, Tennessee
- Decatur County, Alabama
- Decatur County, Missouri

This is a site specific application which requires the Commission to evaluate the application based on probative evidence and the administrative hearing record.

It is not to be evaluated based on conjecture, hyperbole, or **internet research**.

Blue Camp CT, LLC, et al.

v.

Town of Preston Planning and Zoning Commission

May 2024

The credibility of the witnesses and the determination of issues of fact are matters solely within the province of the [commission]

The Commission was acting within its authority and was permitted to rely on the testimony of the residents

The Committee was **not obligated to believe the expert that the berm would reduce noise levels**. "**Lay members of the commissions may rely on their personal knowledge concerning matters readily within their competence**." Welch v. Zoning Board of Appeals, 158 Conn. 208, 214, 257 A.2d 795 (1969). **An administrative agency is not required to believe any of the witnesses, including expert witnesses**.

Manor Development Corporation v. Conservation Commission, 180 Conn. 692, 697, 433 A.2d 999 (1980).

amphitheater (n.)

amplify (v.)

"to enlarge, expand, **increase**,"

from Latin *amplificare* "to enlarge,"

"**augment in volume** or amount"

December 14, 2023:

“Sound will be buffered to the southerly half of Allyn’s Hill;

To the west by the embankment to the westerly side of excavation.”

8.16 EXCAVATION
(FILLING OR REMOVAL OF SOIL, GRAVEL AND STONE)

D. **The purpose of these regulations** is to insure the following:

1. **the landscape is not needlessly marred** during and after operations;
2. the work **will not be a source of dust, pollution, and/or siltation**;
3. the site will **not** be generally characterized by **unsightliness as evidenced by open pits, rubble or other indications of completed digging operations** which would have a **deteriorating influence on nearby property values**; and


745.62 ft
Total: 745.62 ft

1.3 PURPOSE: The purpose of these regulations is to:

(A) **lessen congestion in the streets**;
(B) **secure safety** from fire, panic, flood and other dangers;
(C) **promote health and the general welfare**;
(D) **provide adequate** light and **air**;
(E) **protect the state's historic, tribal, cultural and environmental resources**;
(F) facilitate the adequate provision for **transportation**, **water**, sewerage, schools, parks and other public requirements;
(G) consider the **impact of permitted land uses on contiguous municipalities**

- **Bill of Rights**
- **Connecticut Constitution**
- **POCD**
- **Zoning Regulations**

POCD

SECTION 3 — Executive Summary

Goals:

Preserve Open Space - **Acquisition and protection of high value open space** to protect and sustain habitats, natural resources, and recreation areas.

SECTION 5 — Utilities

B. Public Water and Water Supply Source **Protection**

Knick v the Township of Scott - 2019

the standard for litigating such claims will now tilt decidedly back toward property owners . . . . State and local governments will now have to defend against these claims in federal court. . . .

JIM KELLY:
Somebody's going to get sued here. From everything that I've seen, I'd rather have it GFI suing the town than having the residents suing the town because I think we have a much stronger case and they have a much weaker case.

17-647 Knick v. Township of Scott (06/21/2019)

- A property owner acquires a right to compensation **immediately** upon an uncompensated taking because the taking itself violates the Fifth Amendment.

- A property owner has an actionable Fifth Amendment takings claim when the government takes his property without paying for it.

- The “general rule” is that plaintiffs may bring constitutional claims under **§1983** “without first bringing any sort of state lawsuit . . .”

Interrogatories & Responses

*G. that all proposed uses and structures would be **consistent with** future development as identified and envisioned in these Regulations and the Ledyard **Plan of Conservation and Development**.* — **November 16, 2023**

. . . This project **satisfies the economic development goals** enunciated in **Section VII** of the 2020 Plan of Conservation and Development by creating prime industrially zoned land shovel ready for future development. — **January 9, 2024**

EDC Vision Statement
1998 Mullin Plan

A Sense of Vision

Ledyard citizens want their town to **remain a safe rural community** but want to encourage business development that **improves the quality of life for all**. It is a community where family values, local culture and the environment are respected and protected. Residents have repeatedly stated at public meetings that they **want economic development only if it does not degrade the quality of life in Ledyard.**

Within this context, the Ledyard Economic Development Commission . . . recognizes that the citizens want a community that **insures** that **residential life is maintained, that the environment is respected and where community life is improved.**

https://www.ledyardct.org/DocumentCenter/View/8261/EDC-Vision-Statement-1998-Mullin-Plan

Section 7 — Economic Development

4. Support **Appropriate** Retail/Commercial Expansion

- Retail development **that does not alter the character of the town** and which **improves the quality of life** for residents should be encouraged.

- The challenge will continue to be to **encourage commercial** and mixed-use **development <u>where appropriate</u>**, **while protecting the quality of life, property values, and the environment** of the **<u>existing residents</u>**.

- . . . there must continue to be an emphasis on efforts to **limit** . . . **traffic congestion**, **protect residential areas from incompatible forms of development**

- The quest to increase the commercial tax base should also include the **encouragement of land uses that preserve open space.**

B. Any use marked “SUP” is a use that requires a Special [Use] Permit and subject to standards governing Special Permits in the regulations and to **conditions necessary to protect the public**

- **health,**
- **safety,**
- **convenience,**
- **and property values**.

2013: Ordinance #130 "**Town of Ledyard Blight Ordinance**" was adopted after several years of work and debate. The intent of the Ordinance is **to protect property values** by providing the town with another tool to deal with problem properties in town . . .

Example of a HVDC Converter Station

Example of Commercial Battery Storage

2. Confidentiality:

b) Goman+York will:

1) Sign an appropriate Confidentiality Agreement as provided by the Town and/or the Gales Ferry Intermodal LLC ("Developer"), if requested.
2) Will not create any public record without the express agreement of the Town and the Developer.
3) Will not disclose the Town or Developer's interest or any details of this assignment to external parties without the express agreement of the Town and the developer.

11.3.3 Proceedings:

A. An **incomplete Special Permit application** may be denied in accordance with §11.6.3.

11.6.3 Incomplete Applications:

A. . . . **The Commission shall have the final discretion to determine whether an application is substantially complete**.

B. It is the responsibility of the applicant to provide a complete application, and failure to do so is **grounds for denial** of the application. The Commission may deny an incomplete application

11.3.4 Special Permit Criteria:

the applicant shall have the **burden to prove**:

B. that transportation services would be adequate and that the uses would not cause traffic congestion or undue traffic generation that would have a deleterious effect on the welfare or the safety of the motoring public;

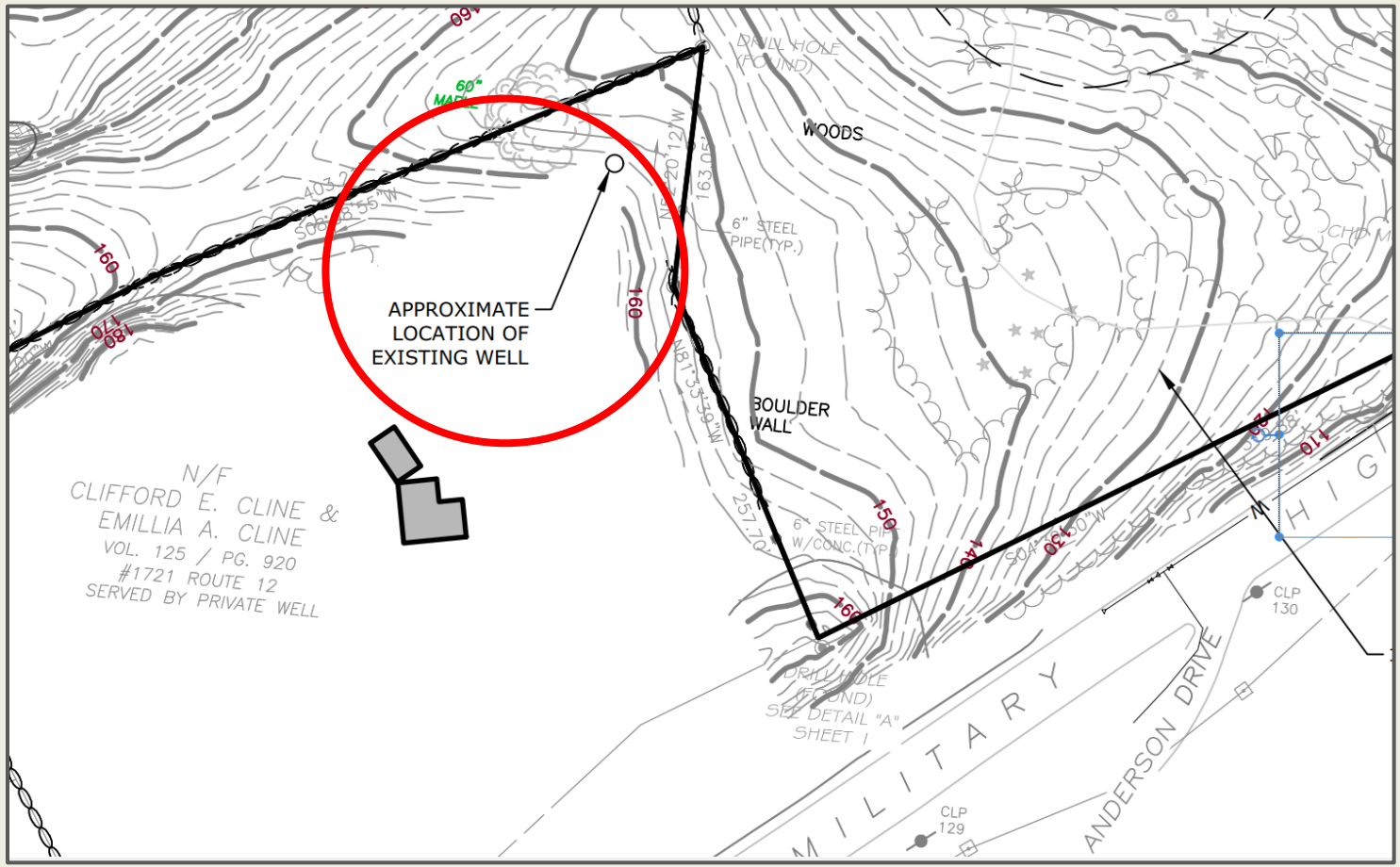
C. . . . that the use(s) would not be noxious, offensive, or detrimental to the area by reason of odors, fumes, **dust, noise, vibrations, appearance, or other similar reasons**;

D. that no adverse effect would result to the **property values or historic features** of the immediate neighborhood;

E. that **the character of the immediate neighborhood would be preserved in terms of scale, density, intensity of use, existing historic/natural assets/features and architectural design;**

F. In accordance with CGS §22a-19, that the proposed uses would not cause any **unreasonable pollution, impairment or destruction of the air, water and other natural resources of the state**;

REVISED: JANUARY 9, 2024



December 14, 2023
10:28 am

We received the plans yesterday afternoon and GU Staff, including our consultant engineer, met with very short notice in order to provide you with initial comments in time for your public hearing this evening.

Per the GU (Ledyard WPCA) Statement below, we'd request additional data and time to fully evaluate this project.

Exhibit #27

Groton Utilities, which operates the Ledyard WPCA Water System, is concerned with the proposed activities at the Gales Ferry Intermodal site along Route 12. And, **due to the short notice** with respect to the review of plans and any accompanying reports, would ask that additional time be provided for us to fully evaluate potential impact to nearby water utility infrastructure. On a preliminary basis and **at a minimum, we would require a leak detection survey within a one mile radius** of the site to be included within any pre-blast survey to be conducted. **Not knowing the full details of the proposed excavation, construction methodology and the underlying geologic conditions**, this radius may change or vary based on more specific information.

Note that **there is significant infrastructure within the one mile radius**, including residential, commercial and industrial activity. In addition, there is a regional water supply interconnection passing **beneath the Thames River**, **fully within the one mile radius**. Clearly, this interconnection is a vital link to several communities and must be protected from any adverse impact. Thus, **we request additional data and time** to fully evaluate this project.

Maine

Title 38, §490-Z: Performance standards for quarries

8. **Erosion and sedimentation control**. A working pit must be naturally internally drained at all times unless a variance is obtained from the department. Stockpiles consisting of topsoil to be used for reclamation must be seeded, mulched or otherwise temporarily stabilized.

A. **Sediment may not leave the parcel or enter a protected natural resource**.

12. **Dust**. Dust generated by activities at a quarry, including **dust associated with traffic to and from a quarry, must be controlled by sweeping, paving, watering or other best management practices** for control of fugitive emissions. Dust control methods may include **calcium chloride** as long as the manufacturer's labeling guidelines are followed. The department may not grant a variance from the provisions of this subsection. Visible emissions from a fugitive emission source may not exceed an opacity of 20% for more than 5 minutes in any one-hour period.

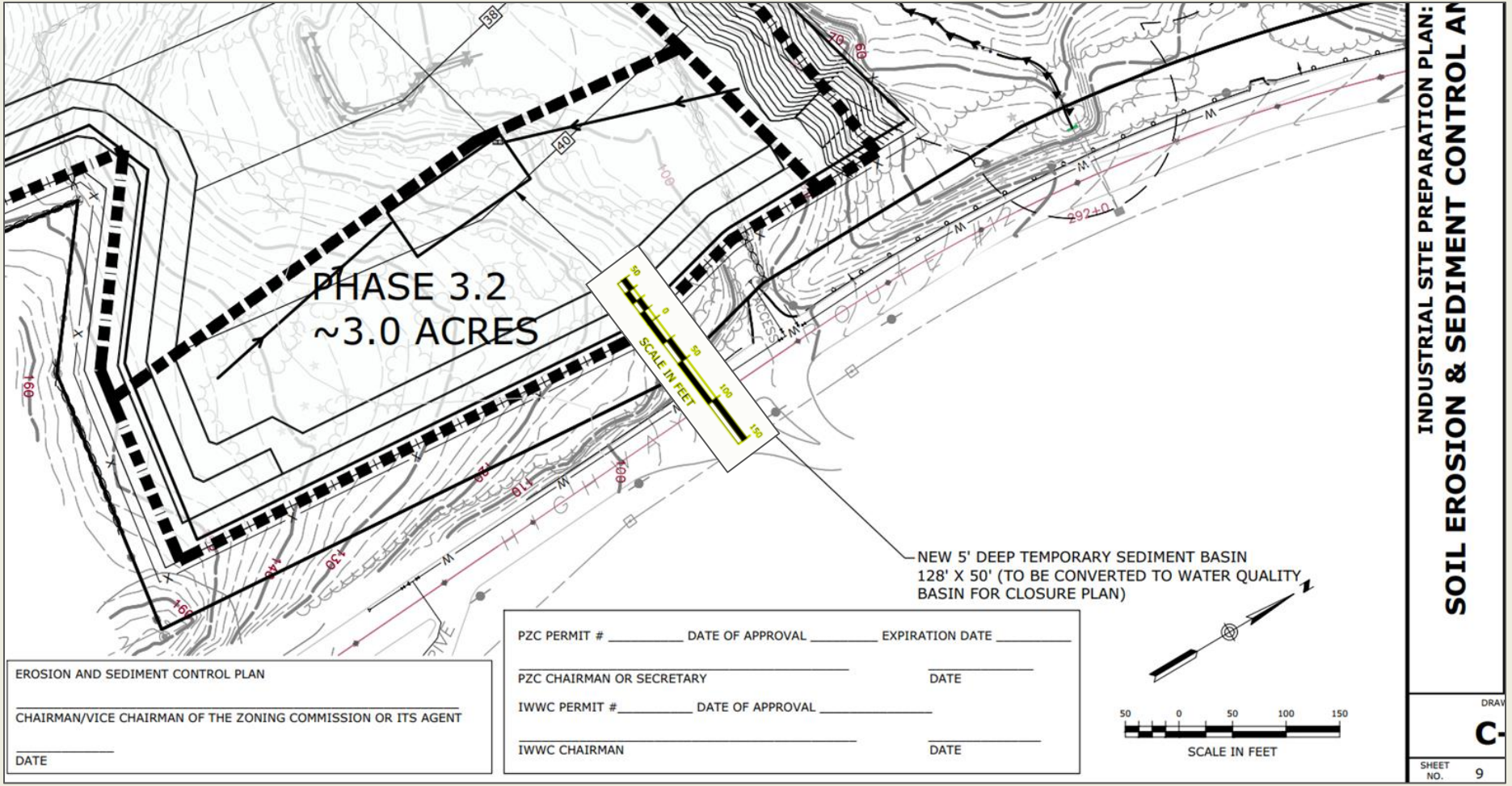
F. A **preblast survey** is required for all production blasting and must extend a **minimum radius of 1/2 mile from the blast site**. The preblast survey must document any preexisting damage to structures and buildings and any other physical features within the survey radius that could reasonably be affected by blasting. Assessment of features such as **pipes, cables, transmission lines and wells** and other water supply systems must be limited to surface conditions and other readily available data, such as well yield and water quality.

L. **A record of each blast, including seismographic data, must be kept for at least one year** from the date of the last blast, must **be available for inspection** at the development or at the offices of the owner or operator if the development has been closed, completed or abandoned before the one-year limit has passed and must contain at a minimum the following data:

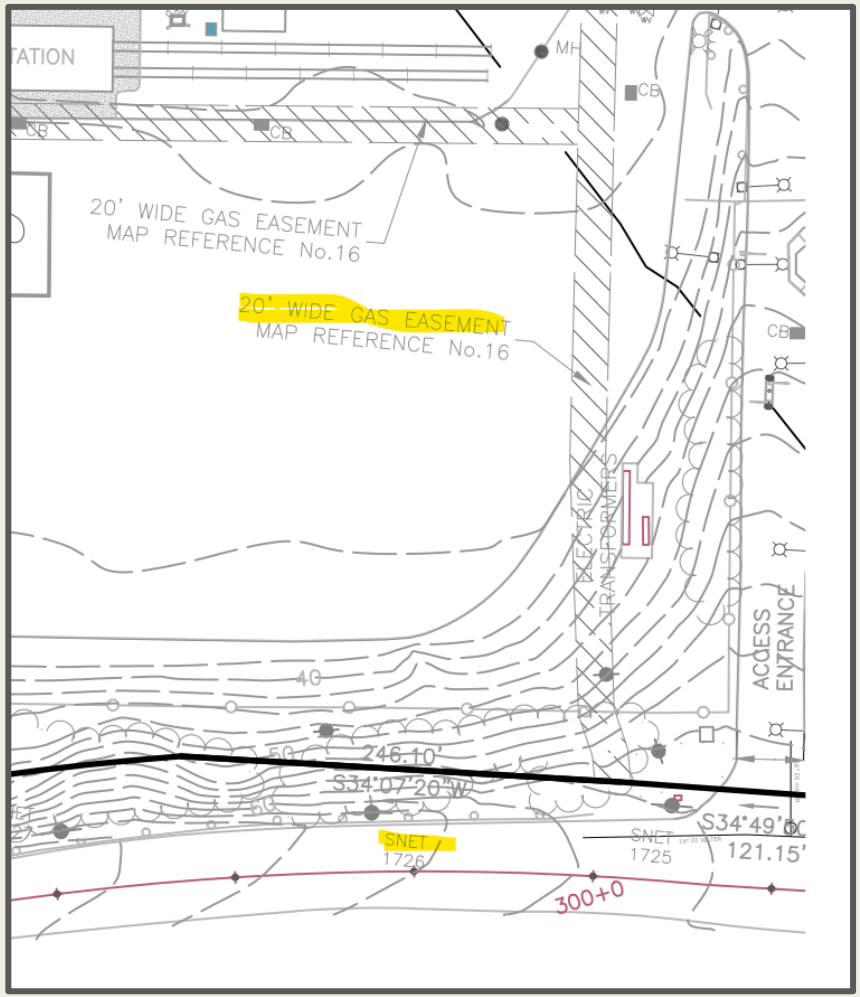
M. All field seismographs must record the full analog wave form of each of the 3 mutually perpendicular components of motion in terms of particle velocity. All seismographs must be capable of sensor check and must be calibrated according to the manufacturer's recommendations.

N. If any blasting activity exceeds the standards in this subsection, the department must be notified within 48 hours of the blast event. Notification must include the name of the blasting operator, the location, date and time of the blasting event and a description of the specific occurrence that is in noncompliance with this subsection. Use of explosives at the quarry may be suspended by the department until the cause of the noncompliance is identified and appropriate steps are implemented to reduce, prevent or eliminate reoccurrence.

O. Prior to blasting, the owner or operator shall develop and implement a plan that provides an opportunity for **prior notification of a planned blast for all persons located within 1,000 feet** of the blast site. Notification may be by telephone, in writing, by public notice in a newspaper of general circulation in the area affected or by other means identified in the plan. The plan must be in writing and available for inspection by the department.


PHASE 3.2
~3.0 ACRES
SCALE IN FEET
NEW 5' DEEP TEMPORARY SEDIMENT BASIN
128' X 50' (TO BE CONVERTED TO WATER QUALITY
BASIN FOR CLOSURE PLAN)
EROSION AND SEDIMENT CONTROL PLAN
CHAIRMAN/VICE CHAIRMAN OF THE ZONING COMMISSION OR ITS AGENT
DATE
PZC PERMIT # DATE OF APPROVAL EXPIRATION DATE
PZC CHAIRMAN OR SECRETARY
DATE
IWWC PERMIT # DATE OF APPROVAL
IWWC CHAIRMAN
DATE
50 0 50 100 150
SCALE IN FEET
INDUSTRIAL SITE PREPARATION PLAN:
SOIL EROSION & SEDIMENT CONTROL AN
C-
SHEET NO. 9


.2
RES
SCALE IN FEET
0
50
100
150
ACCESS



16.) COMPILATION PLAN MAP SHOWING EASEMENT AREA TO BE GRANTED TO THE YANKEE GAS SERVICES COMPANY ACROSS THE PROPERTY OF DOW CHEMICAL COMPANY (ALLYN'S POINT PLANT) #1761 ROUTE 12 GALES FERRY–LEDYARD CONNECTICUT SCALE: 1"=60' SHEET 1 OF 1 DATE: 03–04–2010 YANKEE FILE #E0048, BY CME ASSOCIATES, INC. ON FILE AS MAP #2629.

Pre-blast surveys are valid for one (1) year from the date of completion. If MDB is contracted for a long-term and/or multi-year project, the pre-blast surveys shall be reoffered to the property owners on an annual basis.

Post-blast surveys will be conducted only if required by town/city blasting ordinances, as stated on the blasting contract, or if damage is claimed due to blasting activities. Water testing and radon testing will be conducted only if required by town/city blasting ordinances or as stated on the blasting contract.

Setting Earth-Shattering Standards Since 1966

Roadway traffic is also controlled if deemed necessary.

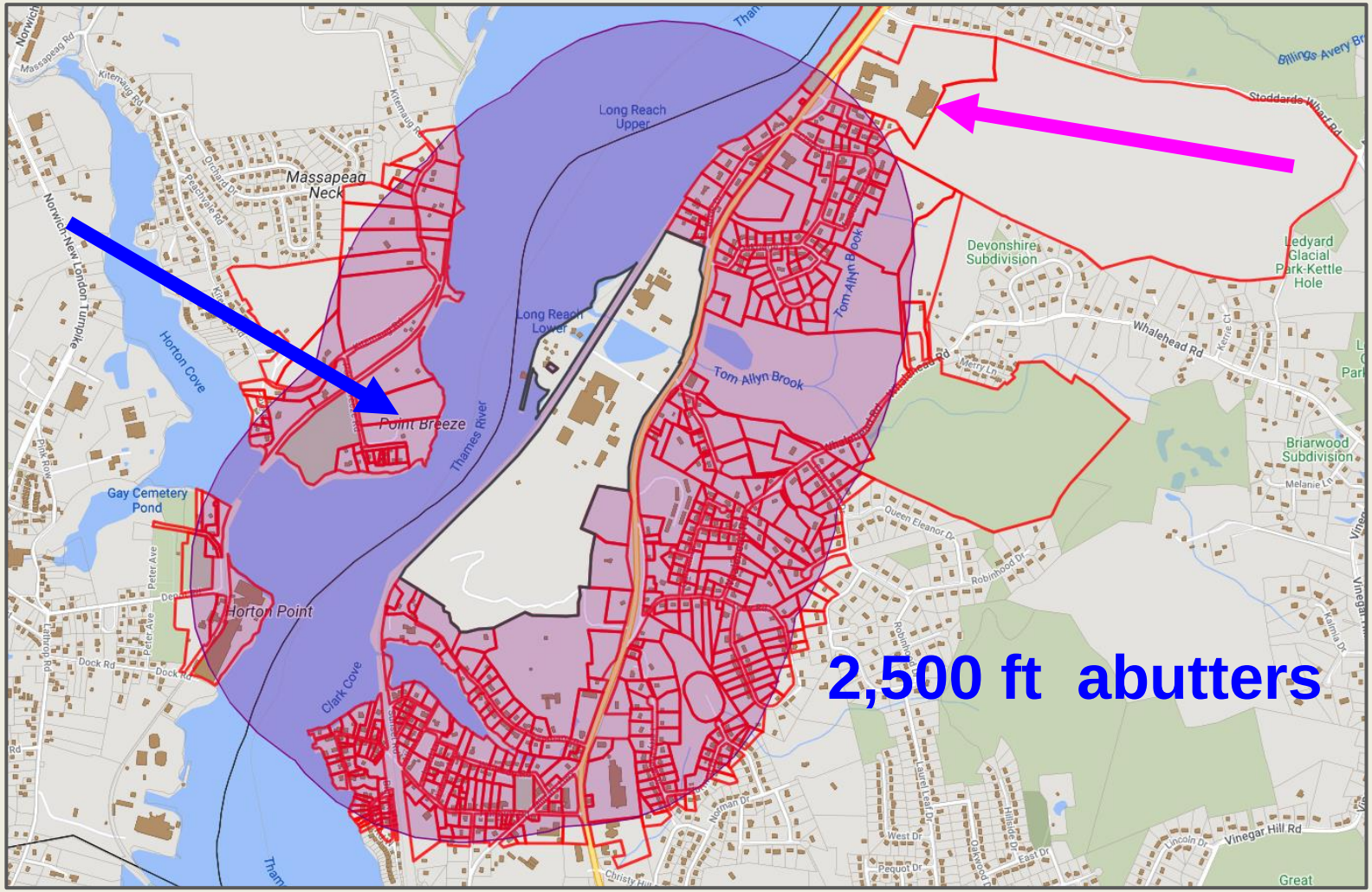
The radius matters

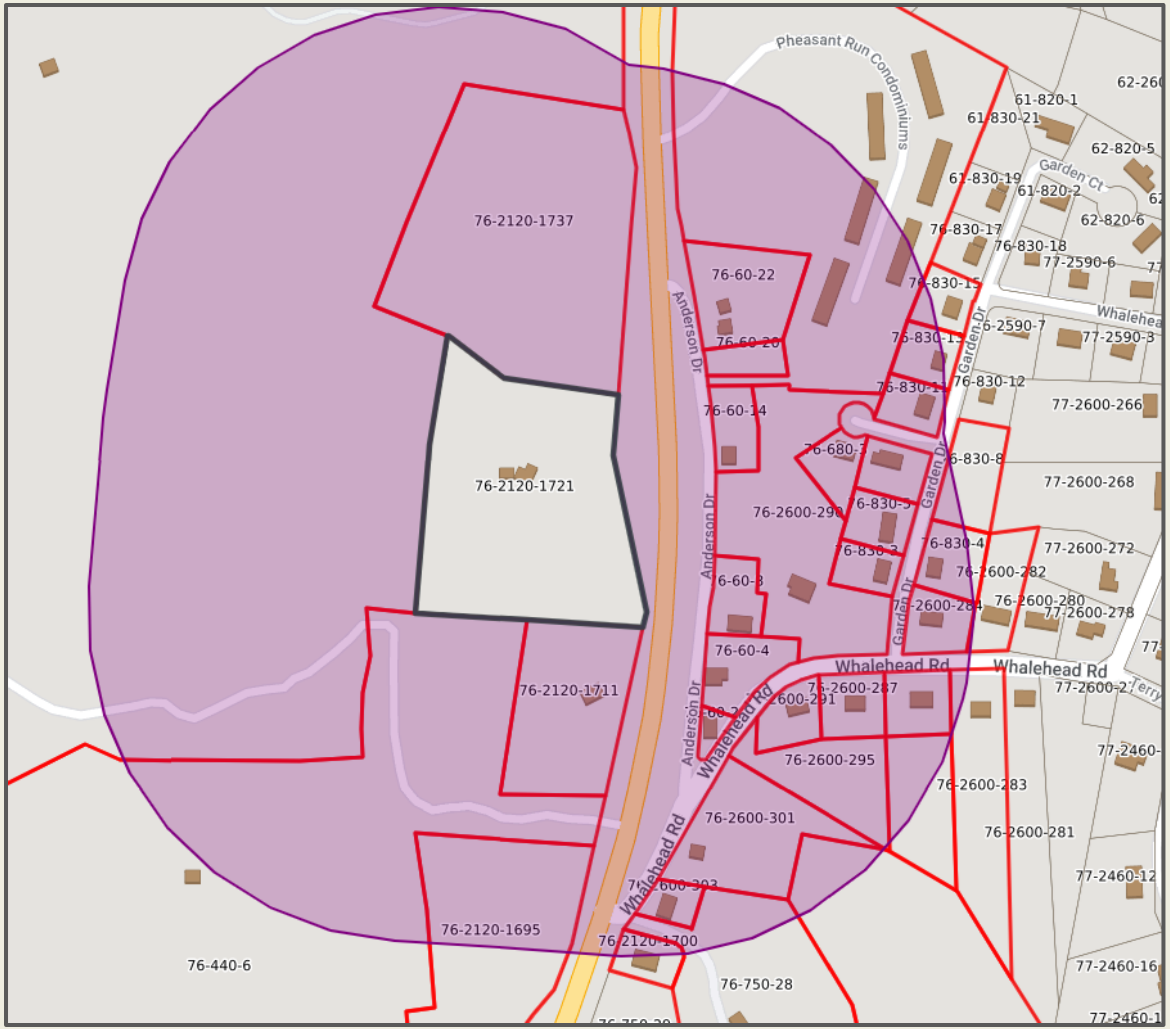
GFI: 750 ft = 0.063 sq mile

Maine & GU: 0.5 mile = 0.785 sq mile

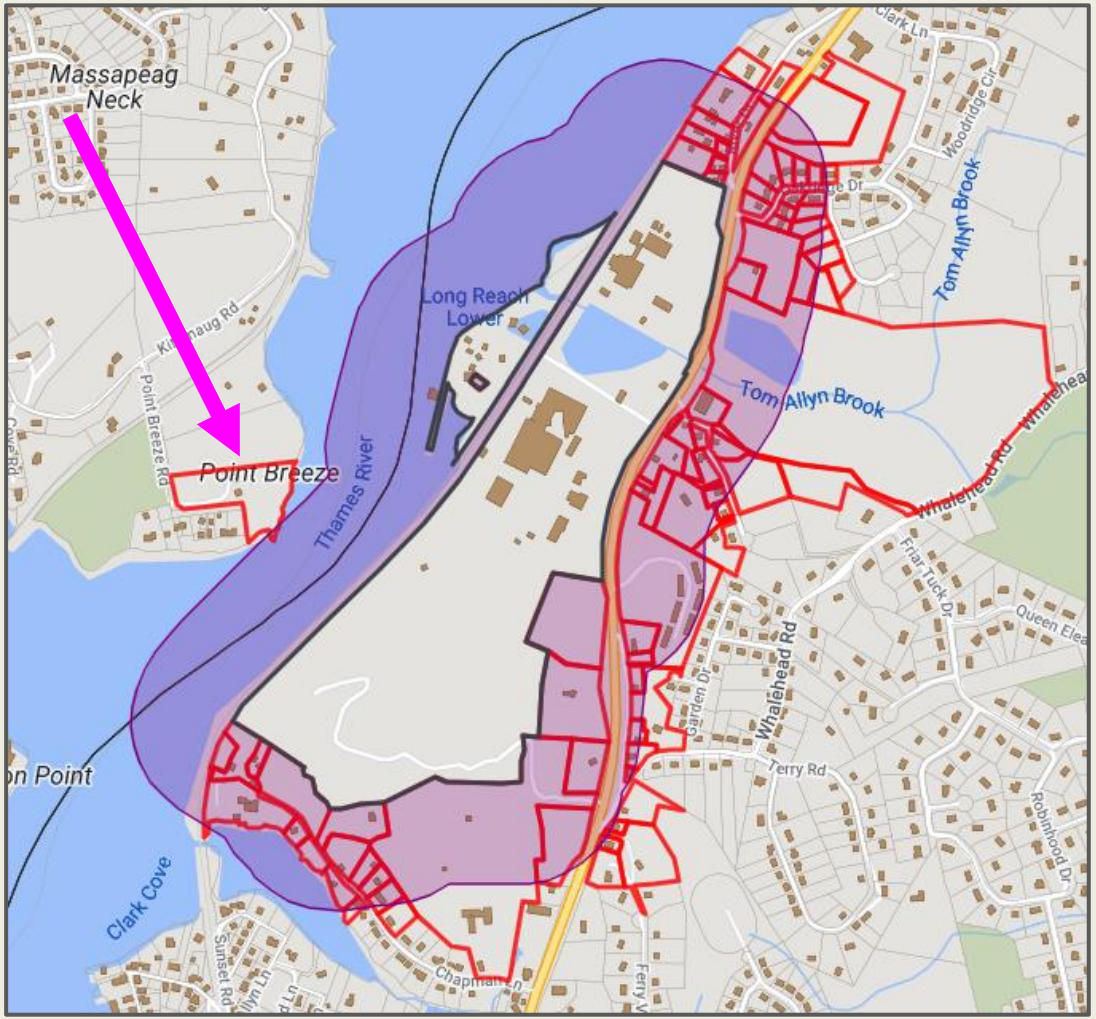
Groton Utilities = 12.5 x GFI

$$\pi \times r^2$$

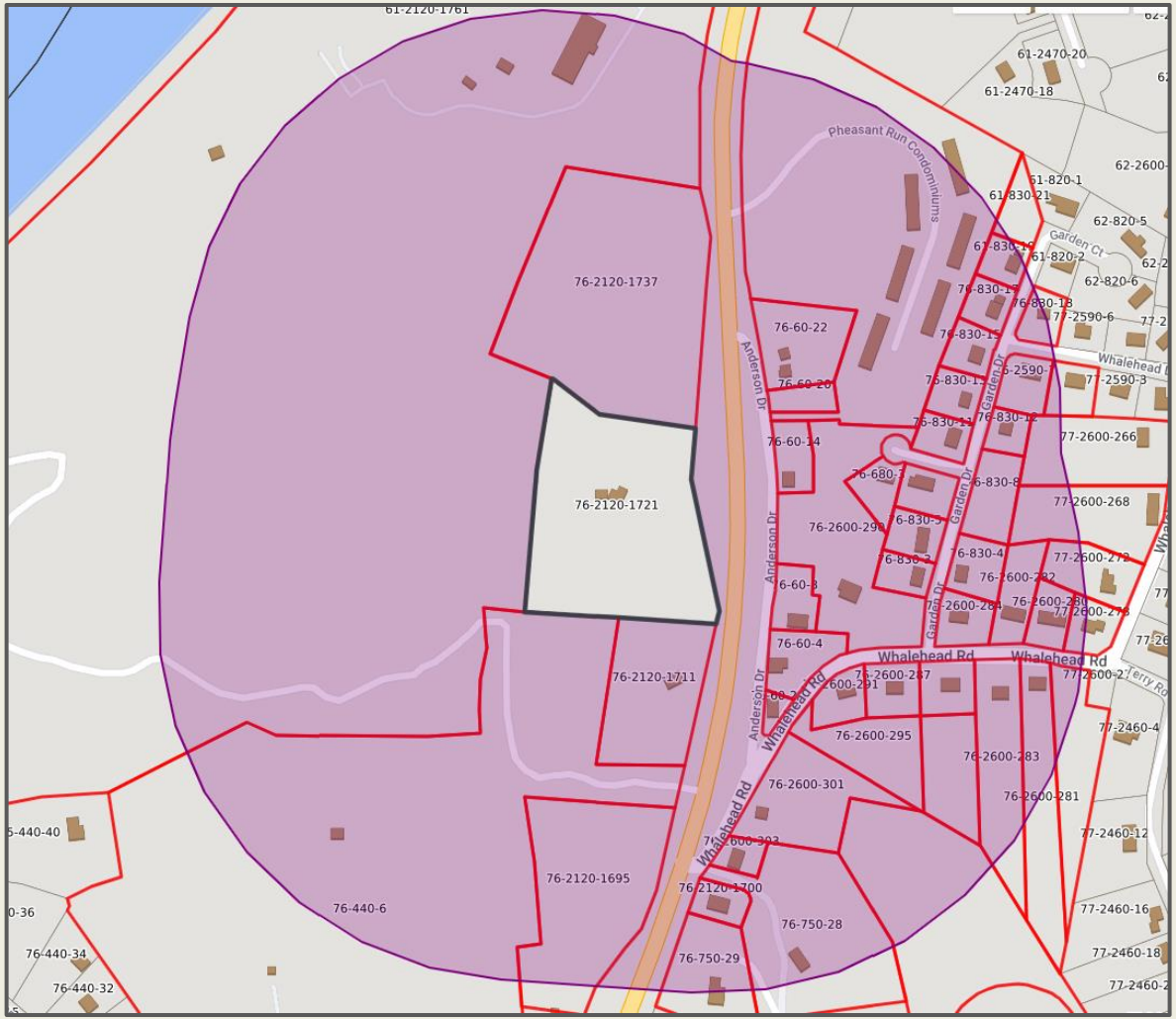

Long Reach Upper
Massapeag Neck
Norwich-New London Turnpike
Horton Cove
Point Breeze
Thames River
Long Reach Lower
Tom Allyn Brook
Devonshire Subdivision
Ledyard Glacial Park-Kettle Hole
Whalehead Rd
Briarwood Subdivision
Gay Cemetery Pond
Horton Point
Clark Cove
Vinegar Hill Rd
2,500 ft abutters



750 ft abutters



750 ft abutters



1,000 ft abutters

. . . the fact cannot be ignored that anyone residing in the “immediate area” purchased with the **constructive knowledge** of the industrial operations on the GFI property.

. . . this project will create **no further impacts** to the “immediate **neighborhood**” than those which it has encountered over the last 70 years from the **heavy industrial use** of the GFI Property.

CONSTRUCTIVE

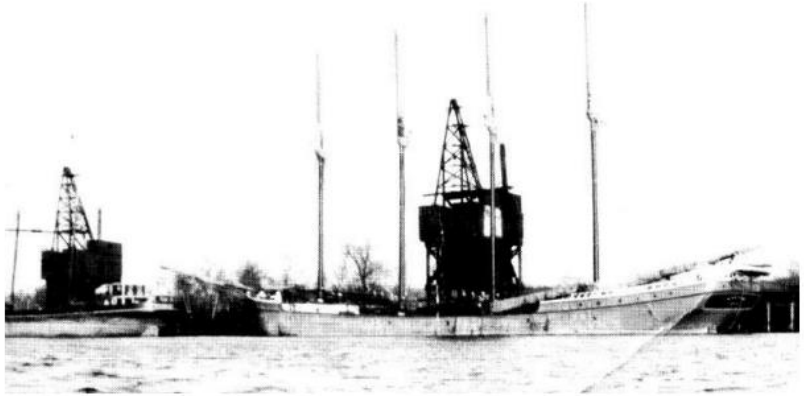
- derived by inference;
- implied by operation of law;
- not obvious or explicit.
- "constructive liability"

adj.: a **legal fiction** for treating a situation as if it were actually so

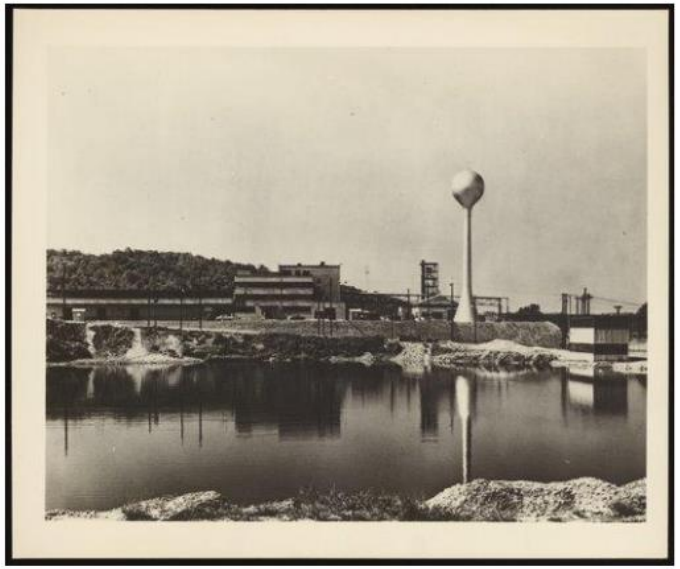
Constructive **legal fiction**: Something that is **not actually true** but is considered true in the eyes of the law.

Constructive means something is legally declared, even if **not technically true** in a given case.

Past Uses and Current Status of the Property



Gales ferry terminal 1850s coal pier

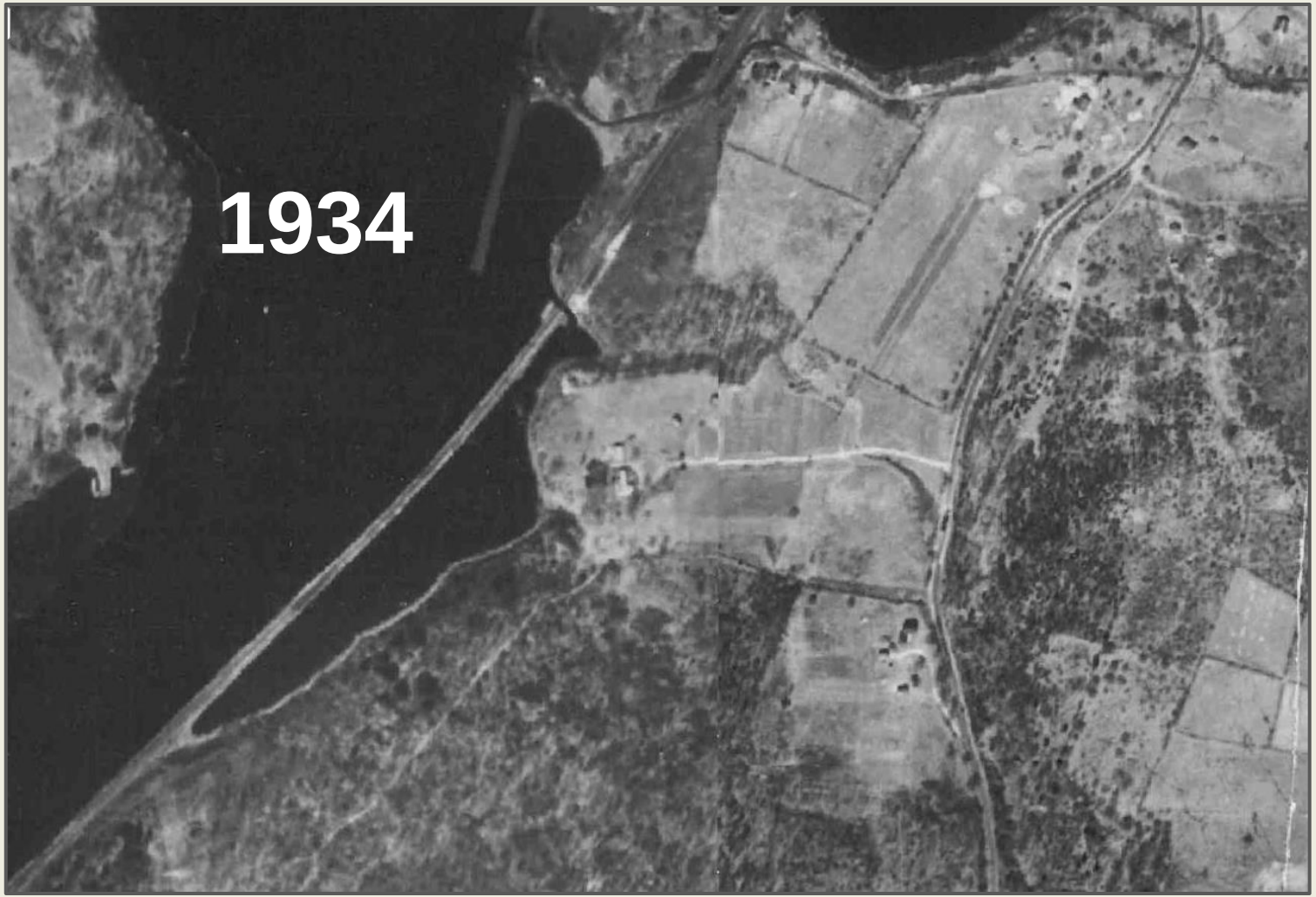


Dow operated from 1950s to 2011

Past Uses and Current Status of the Property

Site circa 1950 prior to Dow Chemical

Site under development as Dow Chemical Plant


1934

Fire Breaks Out at AmSty's Plant in Gales Ferry

Published November 1, 2017 •


SQUAD 67
PROTECTING THOSE WHO DEFEND AMERICA
U.S. NAVY
SQ-67
00068


PROCOR

The Town of Ledyard Connecticut

Search our site....

Doing Business | Our Community | Our Town | Departments | Hc

- Allyn's Point +
- Ledyard Public Schools
- Shelter In Place Instructions
- Transportation +

Home › Departments › Emergency Services › Emergency Management Department › Hazardous Materials

A A

Hazardous Materials

Allyn's Point

Styron, Americas Styrenics and the Dow Chemical Company are located on an industrial complex at 1761 Route 12 in Gales Ferry (formerly the Dow Chemical Company Allyn's Point Plant).

Ledyard Public Schools

In the event of a release of hazardous materials, the school district will activate its shelter-in-place procedures.

Shelter In Place Instructions

Hazardous Materials

Allyn's Point

Styron, Americas Styrenics and the Dow Chemical Company are located on an industrial complex at 1761 Route 12 in Gales Ferry (formerly the Dow Chemical Company Allyn's Point Plant).

Ledyard Public Schools

In the event of a release of hazardous materials, the school district will activate its shelter-in-place procedures.

Shelter In Place Instructions

Sheltering in place is the act of protecting yourself by sealing your home or car to keep clean air in and bad air out.

Transportation

It is important to recognize that a hazardous materials emergency can occur along

Evacuation Instructions for Allyn's Point

The Ledyard LEPC has determined that for the worst case scenario an evacuation distance of 1 mile from the Allyn's Point Complex could be required in the unlikely event this situation occurred.

Who is affected?

Residents living on the following streets in Ledyard would be affected:

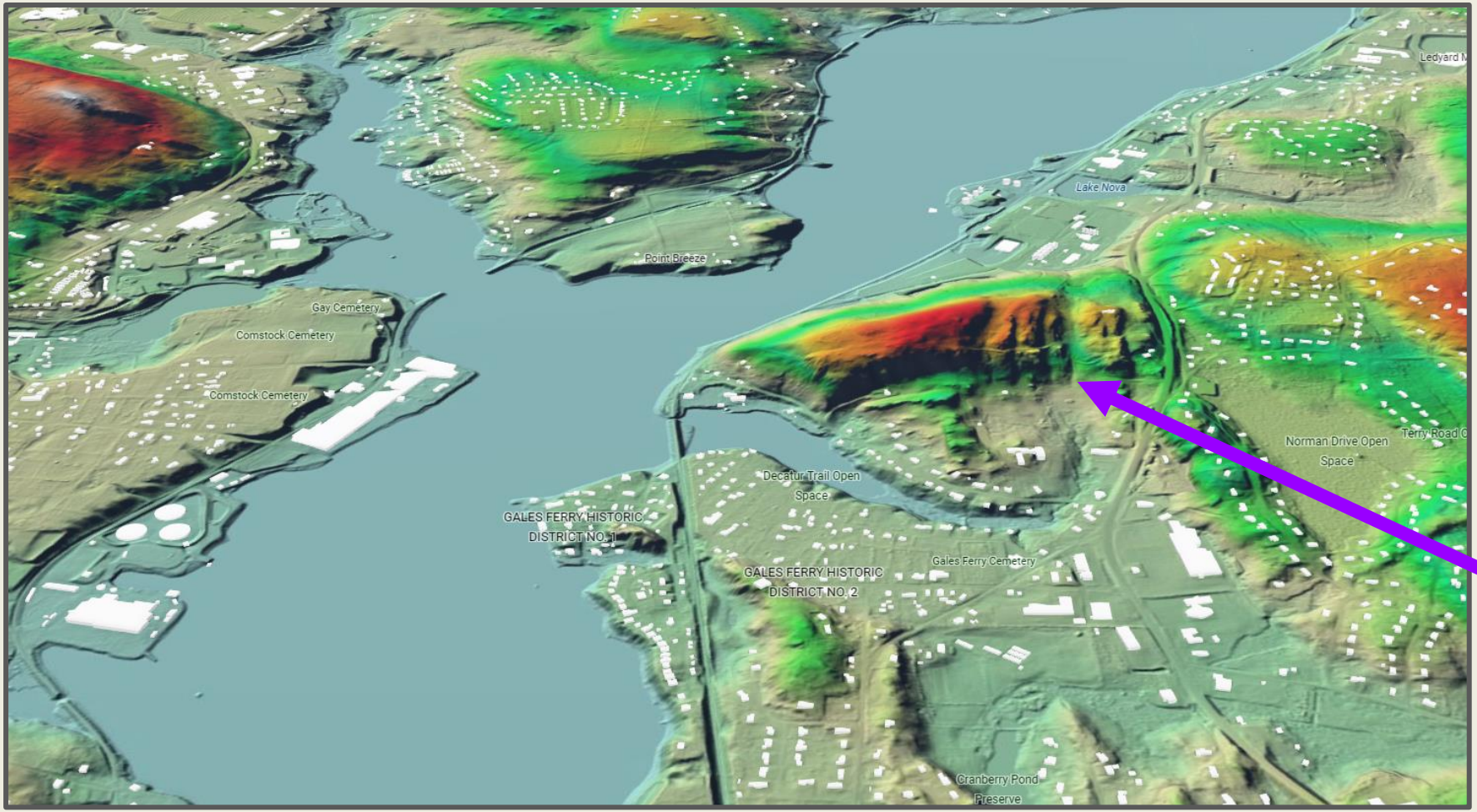
- Allyn Lane
- Anderson Drive
- Bluff Road West
- Bluff Road
- Clark Lane

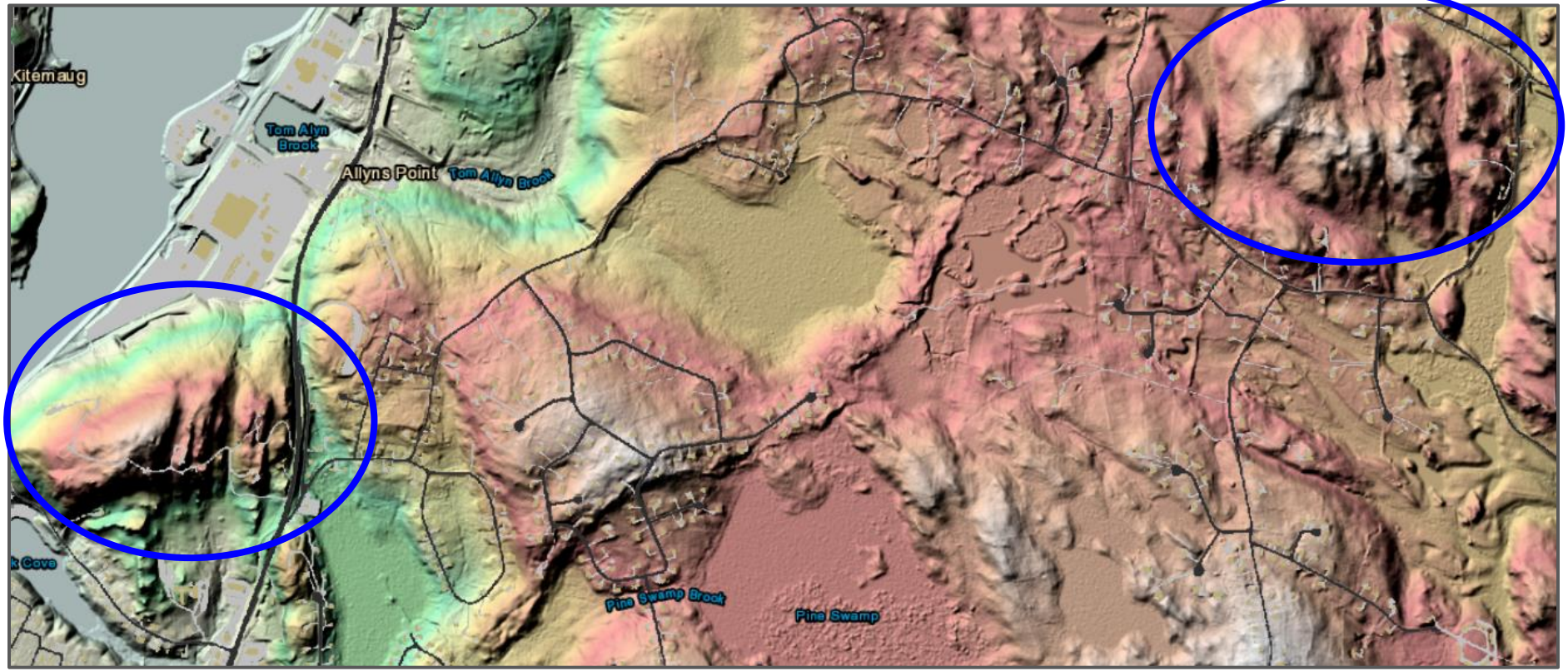
Who is affected?

Residents living on the following streets in Ledyard would be affected:

- Allyn Lane
- Anderson Drive
- Bluff Road West
- Bluff Road
- Clark Lane
- Decatur Trail
- Devonshire Drive
- Edwards Court
- Ferry View Drive from Nutmeg to the end
- Friar Tuck Drive
- Garden Drive
- Hurlbutt Circle
- Hurlbutt Road
- Ledyard Road
- Library Lane
- Little John Court
- Merry Lane
- Military Highway from Hurlbutt Road to Route 12
- Norman Drive from Nutmeg to the end
- Nottingham Court
- Nutmeg Drive
- Oakridge Drive
- Old Quarry Lane
- Pheasant Run Condominiums
- Queen Eleanor Drive
- Ravenwood Court
- River Road
- Riverside Place
- Robin Hood Drive
- Route 12 from Route 214 to Hurlbutt Road
- Spring Street
- Terry Road
- Thames View Pentway
- Whalehead Drive
- Whalehead Road from Devonshire Drive to Route 12
- Winthrop Drive
- Woodridge Circle

74 x 31 feet


Lake Nova
Point Breeze
Gay Cemetery
Comstock Cemetery
Comstock Cemetery
Norman Drive Open Space
Decatur Trail Open Space
GALES FERRY HISTORIC DISTRICT NO. 1
GALES FERRY HISTORIC DISTRICT NO. 2
Gales Ferry Cemetery
Cranberry Pond Preserve


Kitemaug
Tom Alyn Brook
Allyns Point
Tom Allyn Brook
Pine Swamp Brook
Pine Swamp

Available online at www.sciencedirect.com
SCIENCE DIRECT®
ELSEVIER
Safety Science 43 (2005) 739–750
SAFETY SCIENCE
www.elsevier.com/locate/ssci

Flyrock phenomena and area security in blasting-related accidents

Vladislav Kecojevic *, Mark Radomsky

The College of Earth and Mineral Sciences, Mining Engineering Program, The Pennsylvania State University, 154 Hosler Building, University Park, PA 16802, USA

Received 10 November 2004; accepted 12 July 2005

https://www.researchgate.net/publication/223729221_Flyrock_phenomena_and_area_security_in_blasting-related_accidents

- The rock structure and rock properties **may vary considerably** from location to location **even within the same blast area**.
- **Discontinuity** in the geology and rock structure causes a mismatch between the explosive energy and the resistance of the rock.
- Existence of **fissures**, **joints**, **weaknesses**, and **voids** are likely to assist in the **creation of flyrock**.

https://www.researchgate.net/publication/223729221_Flyrock_phenomena_and_area_security_in_blasting-related_accidents

Blast hurled rocks almost 700 feet

Jun 12, 2008 Updated Jul 10, 2013

In his report, federal inspector Zane Burke said 25 rocks from the mine blast were found scattered from Pine Crest Trailer Park to the Morrisville town garage; some had been flung almost 700 feet.

The rocks “were **measured to be 4 to 11 inches long**,” Burke said, and were found on the lawns of several mobile homes, in front of parked vehicles there, and even on top of the town garage roof, hundreds of feet away.

“**Blasting mats were not used to prevent the fly rock**. This condition allows for a fatal accident to occur,” Burke wrote.

In his notes, Burke said **Maine Blasting officials told him blasting mats were not used “because it wasn’t bid for mats.”**

https://www.vtcng.com/stowereporter/archives/blast-hurled-rocks-almost-700-feet/article_9c3f1729-96a8-5398-95a5-c5ca9f1610a4.html

According to Burke's notes, Mark Billings, the superintendent from **Maine Blasting** in charge at the Percy Mine, claims Percy told him "price was an issue." . . .

Green said the blast was designed to shoot rock into a large open face in the quarry, but **because of unseen vertical "seams," or cracks in the rock, the rocks didn't shoot forward into the rock face as expected, but up into the air**.

Green said **Maine Blasting employees were stationed at the entrance of the mine**, on Cochran Road in front of the trailer park, and at the town highway garage, **and traffic on the road had been stopped.**

"The fact that our people were standing right in front of the park, securing the area, supports the conclusion that **the design we put together was safe,"** Green said.

The rock structure and rock properties may vary considerably from location to location even within the same blast area. **Discontinuity in the geology and rock structure** causes a mismatch between the explosive energy and the resistance of the rock. **Existence of fissures, joints, weaknesses, and voids are likely to assist in the creation of flyrock.** . . .

A much more in-depth analysis of geologic characteristics can be achieved through modeling. Realistic representation of geological domain requires a form of a spatially referenced database that provides means for **modeling a 3-D body from all geological and geophysical data.**

Faults = Fractures

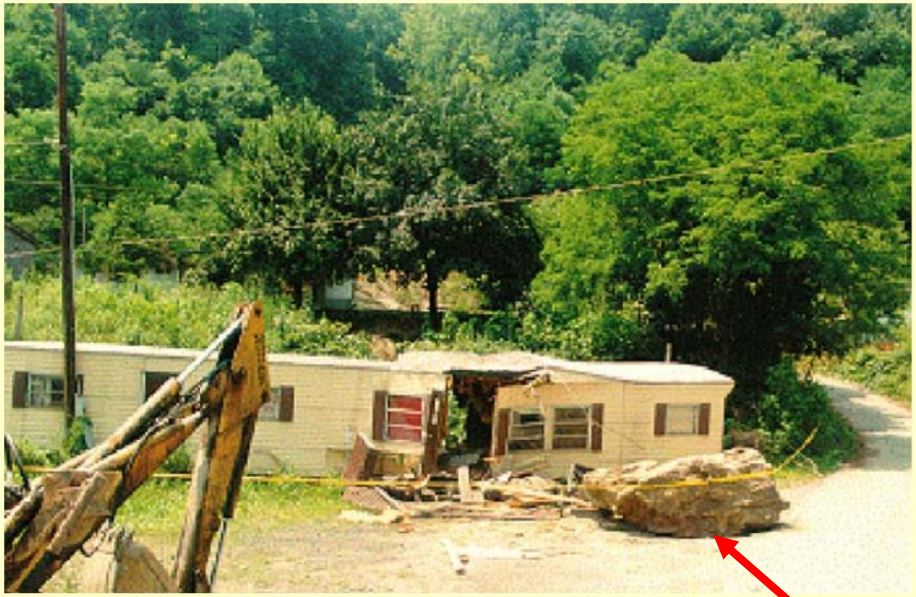
Fractures ≠ Faults

Fractures = Joints

Module 8 - Controlling the Adverse Effects of Blasting

Office of Surface Mining Reclamation and Enforcement,U.S. Department of the Interior

In areas of steep slopes, a rock set in motion by the explosive energy may roll hundreds of feet. In this instance the rock rolled through a trailer down slope from the mine. Children were playing in the front yard at the time. Fortunately no one was injured.



https://www.osmre.gov/sites/default/files/inline-files/Module8.pdf

Causes of Flyrock

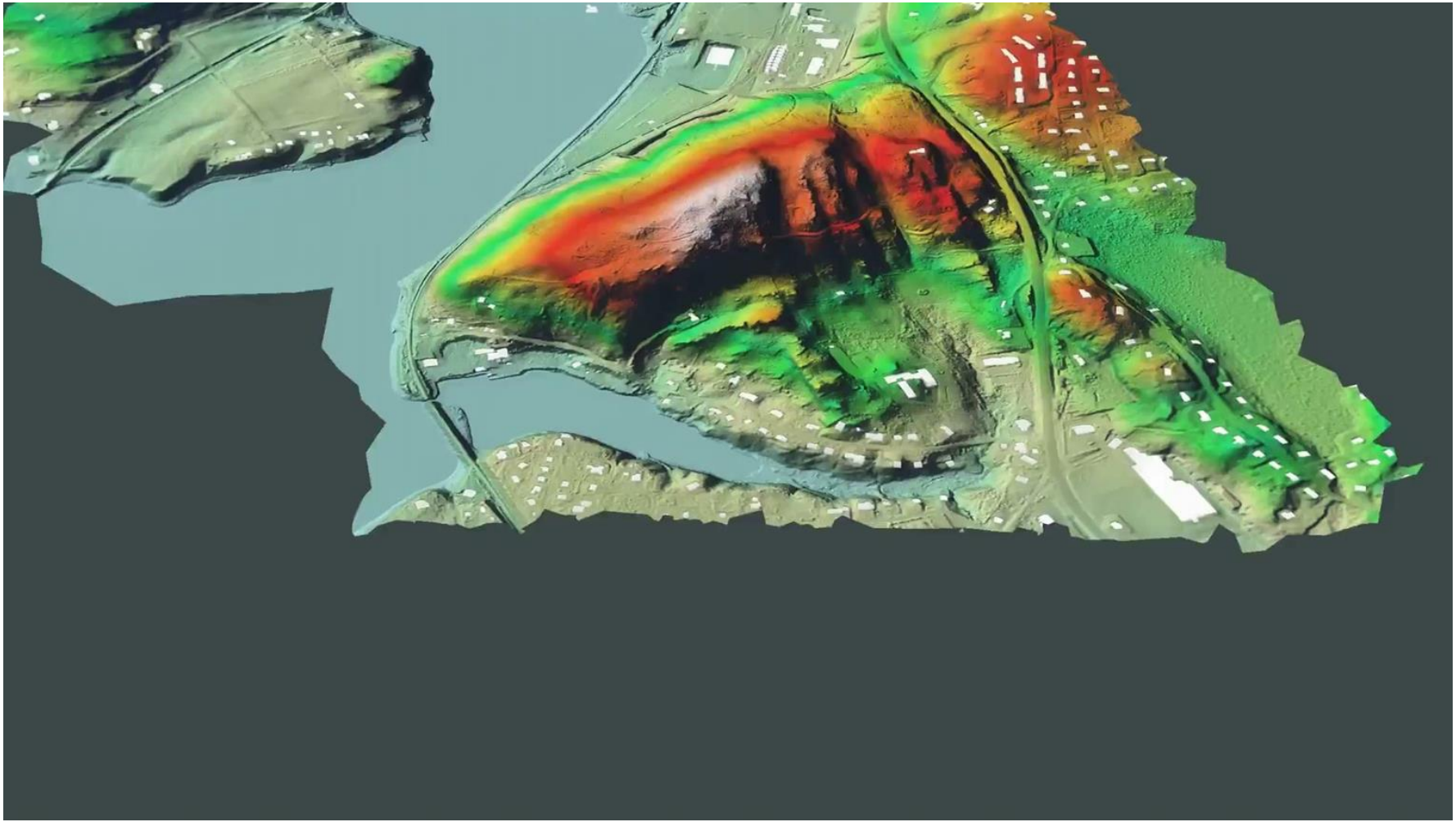
Often, the factors that cause excessive airblast and ground vibrations have the potential to cause flyrock as well. Flyrock is the number two killer in mining operations. For this reason, it is crucial that blasters understand and control the factors that can create flyrock. Some of the common causes of flyrock are:

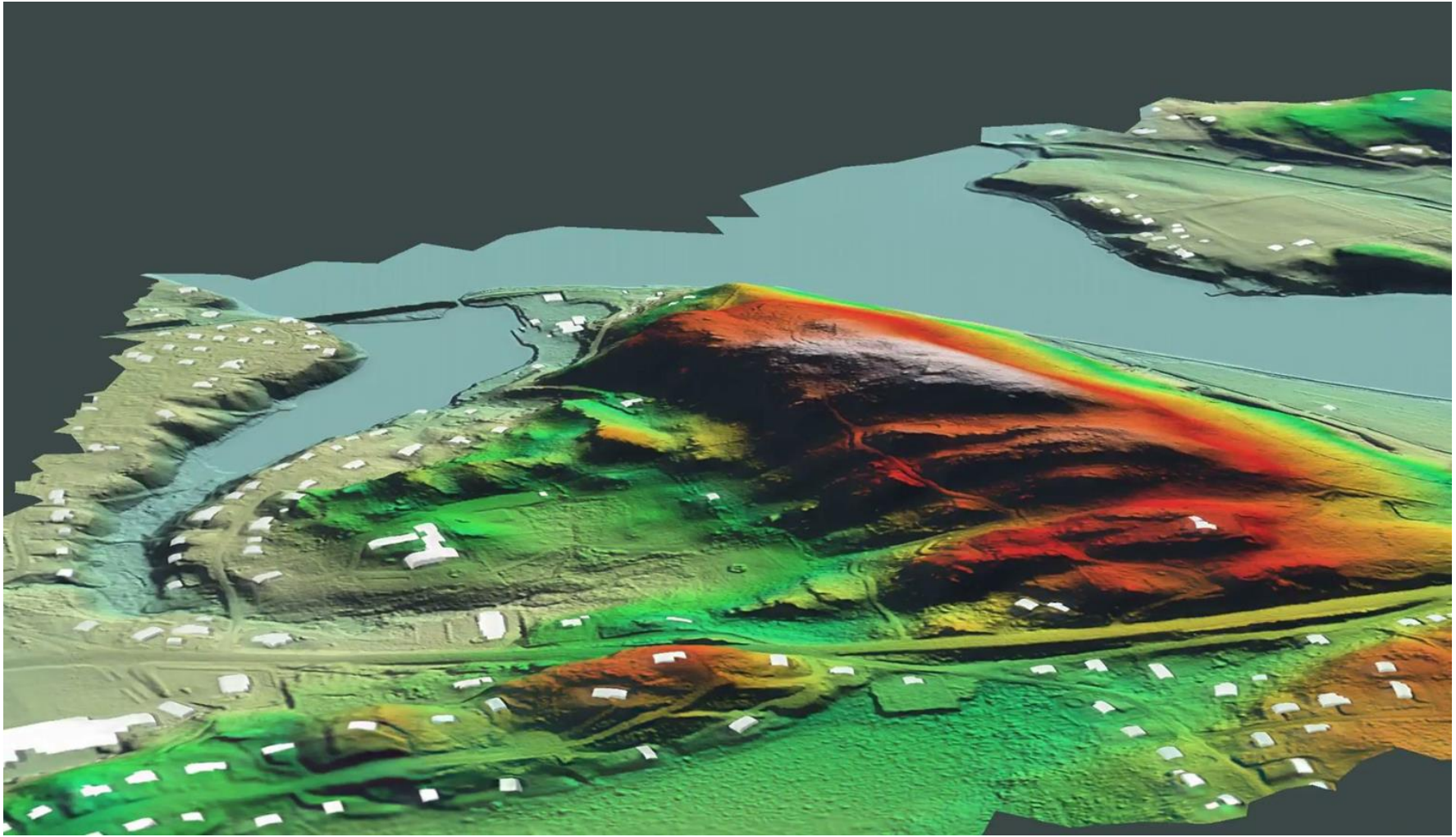
1. Overloaded blastholes with excessive amounts of explosives
2. Heavily confined charges or the lack of relief (eg. lift blasts)
3. Explosives loaded into incompetent materials (eg. mud seams, fractures, and/or voids)
4. Insufficient front-row burden, causing front-face blowouts
5. Burdens and spacings too close together (resulting in high powder factors)
6. Inadequate/insufficient stemming material
7. Inadequate delay between holes in the same row or between rows; detonators firing out of sequence
8. Deviation of blast hole detonation from the intended sequence
9. Changing geology or rock type
10. Spacing and burden exceeds borehole depth
11. Angled boreholes
12. Secondary blasting
13. Human error, improperly loaded blasts

- **Fly rock can be cast thousands of feet from a blast**.
- **The most dangerous source is ejection from a crack** or weak zone in the highwall face where gases violently vent.
- This action is akin to a rifle where the expanding gases **eject a projectile**.
- Frequently the ejection of stemming out of the top of a blast hole is called **rifling**.


Justin Dube
?


Justin Dube





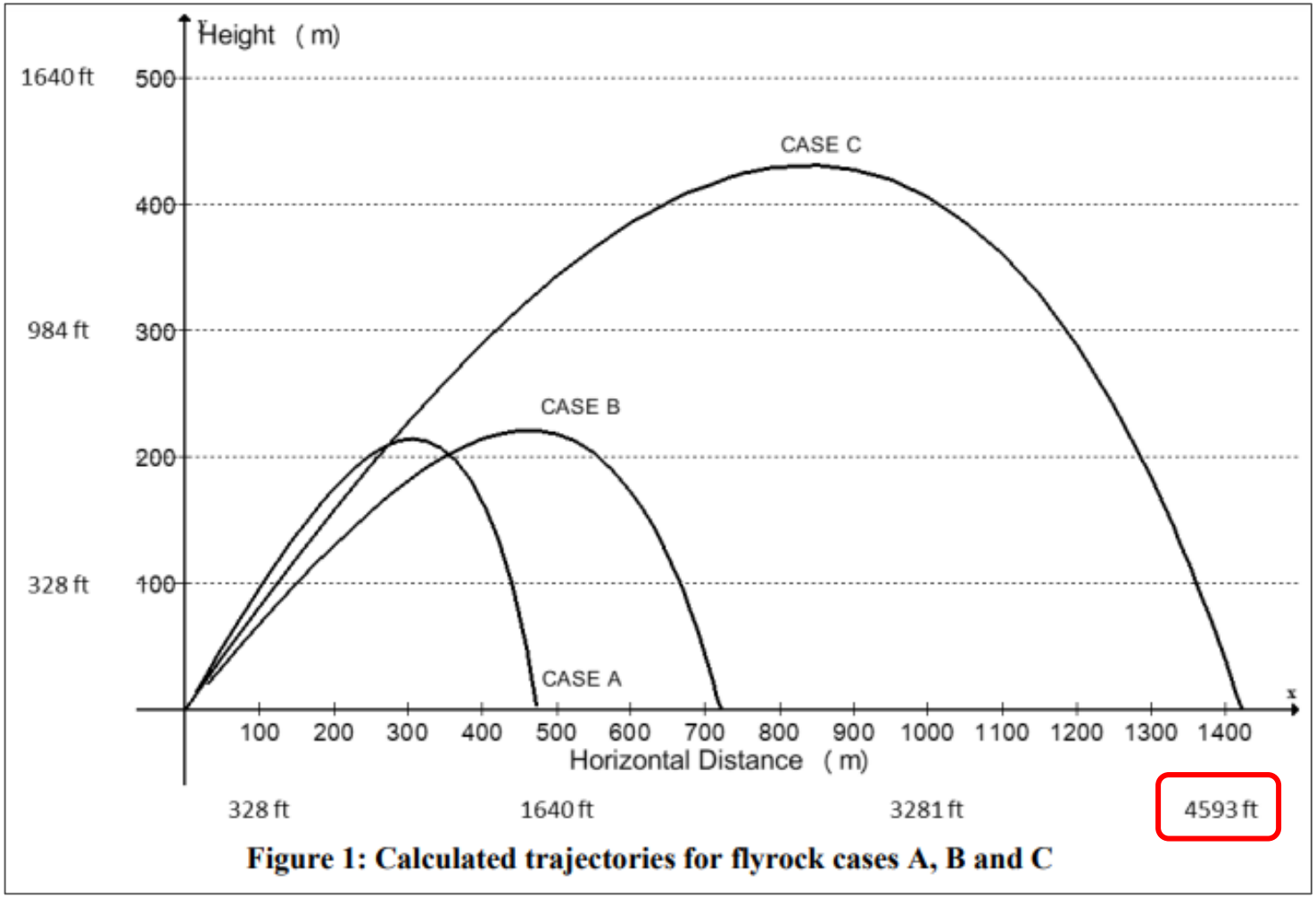
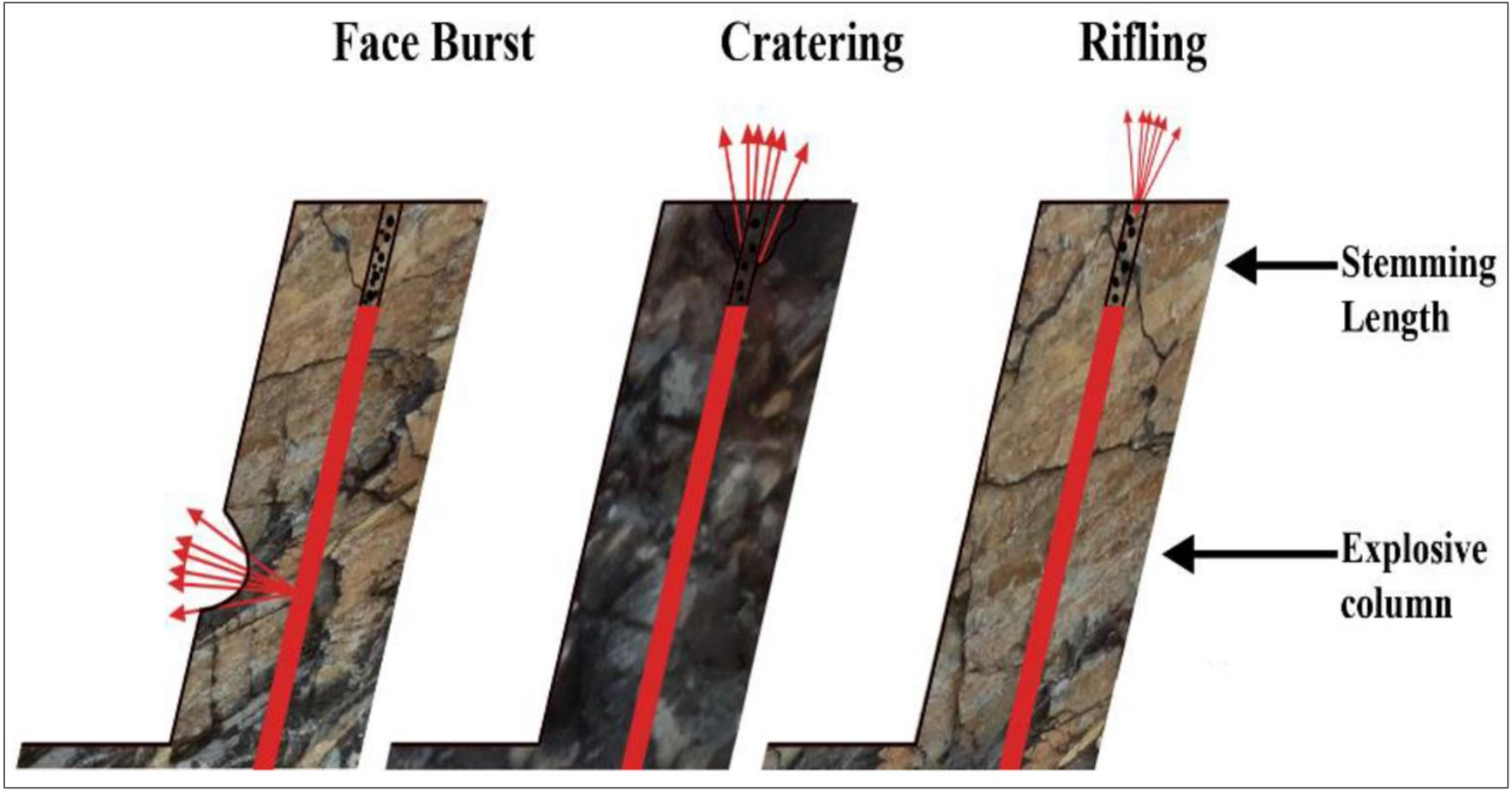


Figure 1: Calculated trajectories for flyrock cases A, B and C


Face Burst
Cratering
Rifling
Stemming Length
Explosive column

Maine contractor charged with fraud over forged signature

Feb 12, 2010

FORT EDWARD -- A Maine-based contracting company has been indicted on charges that accuse it of **submitting a forged contract to a Supreme Court justice** in a lawsuit over a construction Bill. **Maine Drilling & Blasting LLC.**, which has an office in Hartford, faces four charges, including **felony counts of forgery and offering a false instrument for filing**. **It also faces misdemeanor counts of falsifying business records and offering a false instrument for filing**. . . .

That led to a Washington County grand jury investigation and subsequent **criminal charges that accuse Maine Drilling & Blasting of fraud**.

https://poststar.com/news/local/maine-contractor-charged-with-fraud-over-forged-signature/article_f3381d9a-1823-11df-b2fa-001cc4c03286.html

Blocker v. Maine Drilling Blasting, 2006 Ct. Sup. 15942

. . . The plaintiffs further **allege** that the **defendant's actions caused boulders, rocks and debris to strike the plaintiffs' home while the plaintiffs were inside**. Finally, the plaintiffs **allege** that the defendant's activities caused the plaintiffs to suffer fear and emotional distress, for which the defendant is strictly liable. . . .

On December 27, 2002, the plaintiffs were occupying their residence at 15 James Vincent Drive in **Clinton, Connecticut.** The defendant was engaging in the blasting of rock by use of explosives across the street from the plaintiffs' residence as part of the construction of a residential home.

As testified to by Todd Barrett, the defendant's divisional manager, "something went wrong" with the blasting, which resulted in rocks and debris being hurled approximately 400 feet across the street and striking the plaintiffs' residence. The percussion of the blast, along with the rocks striking the front and top of the house, **caused the house to shake and the ceiling to crack in at least one place. Some of the debris hit the house forcefully enough to lodge in sections of the siding and gutter.**

https://casetext.com/case/blocker-v-maine-drilling-blasting-no-mmx-cv04-4001329-s-aug

#117

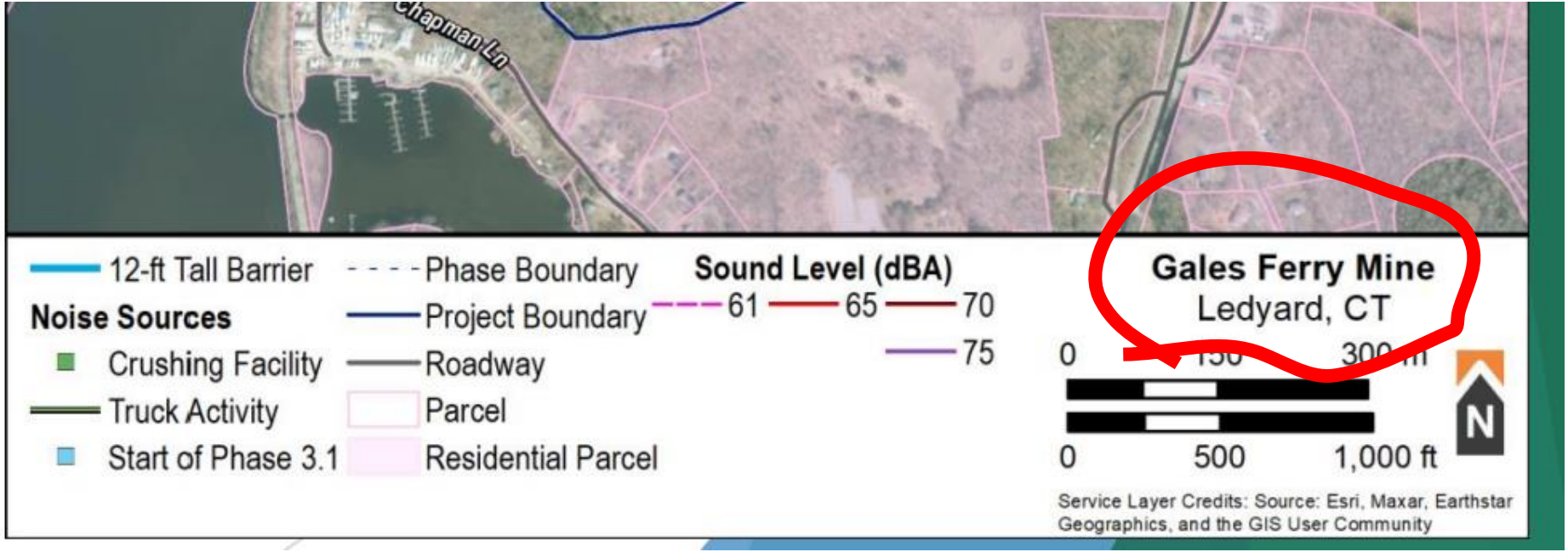
Geotech Information

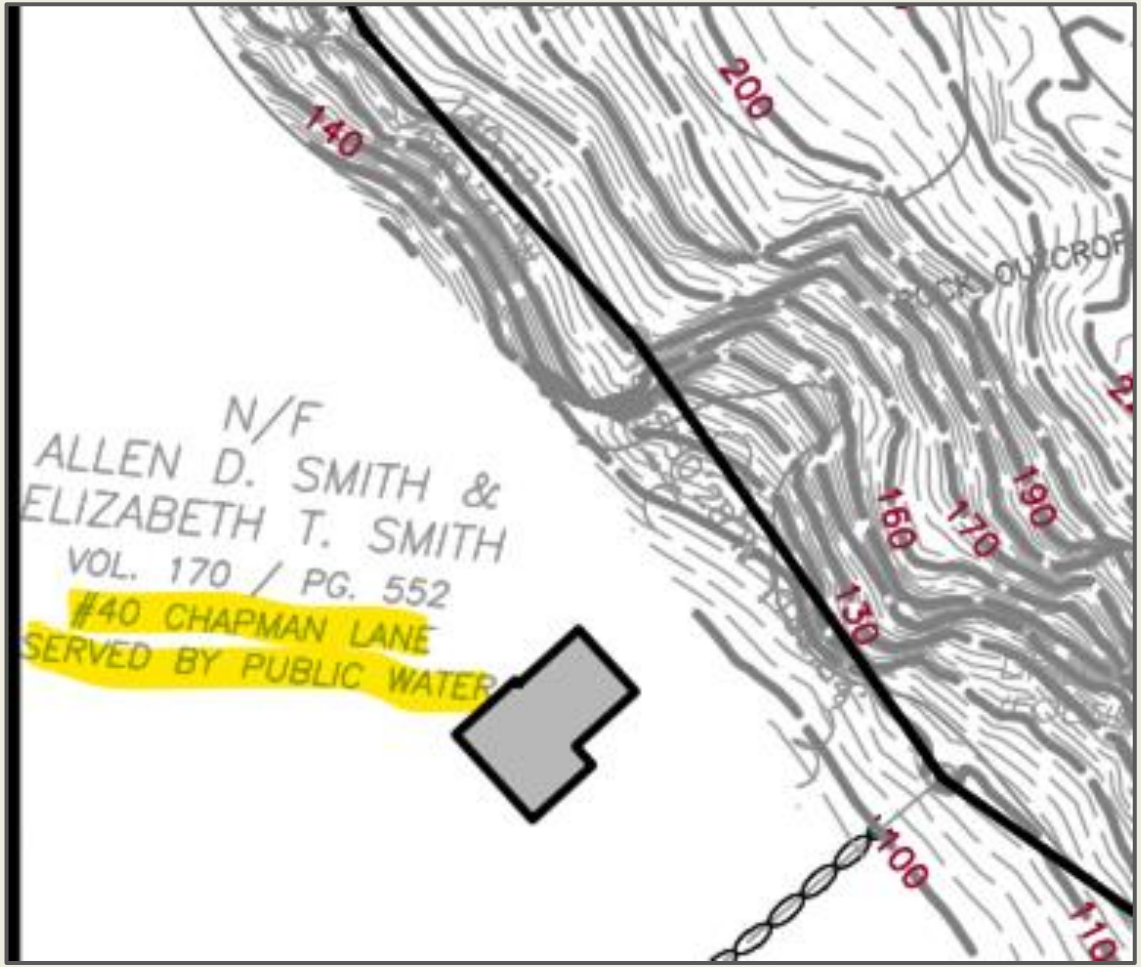
- Four 200’ depth core holes drilled to determine the type of rock present in the area to be excavated.
- Drilling confirmed two types of granite present.
- Bedrock present exhibits extremely low yield of groundwater.
- Hydrogeology of the Site limits the contribution of groundwater to the regional water table from the northern half of the Allyn Mountain is limited by the hydrogeology of the site.
- No significant water bearing zones or faults present.
- Core samples show the rock type and Rock Quality Designation are favorable for development of a stable rock cut face.
- No pyrrhotite or chalcopyrite present in the rock to support acid rock drainage – nothing present in any of the core samples.

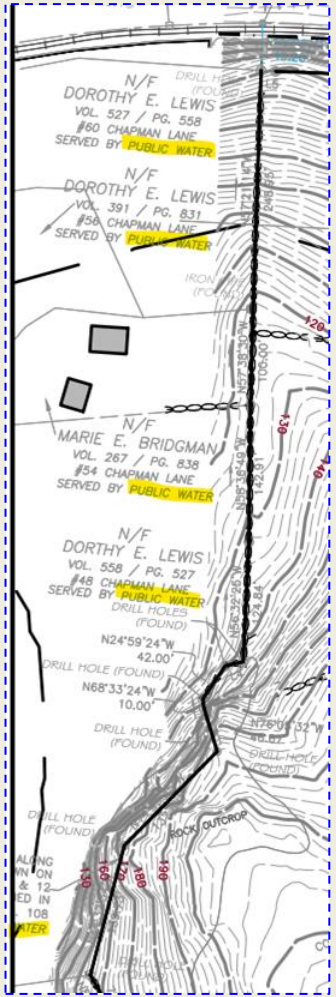
- Drilling confirmed two types of granite present.
- Bedrock present exhibits extremely low yield of groundwater.
- Hydrogeology of the Site limits the contribution of groundwater to the regional water table from the northern half of the Allyn Mountain is limited by the hydrogeology of the site.
- No significant water bearing zones or faults present.

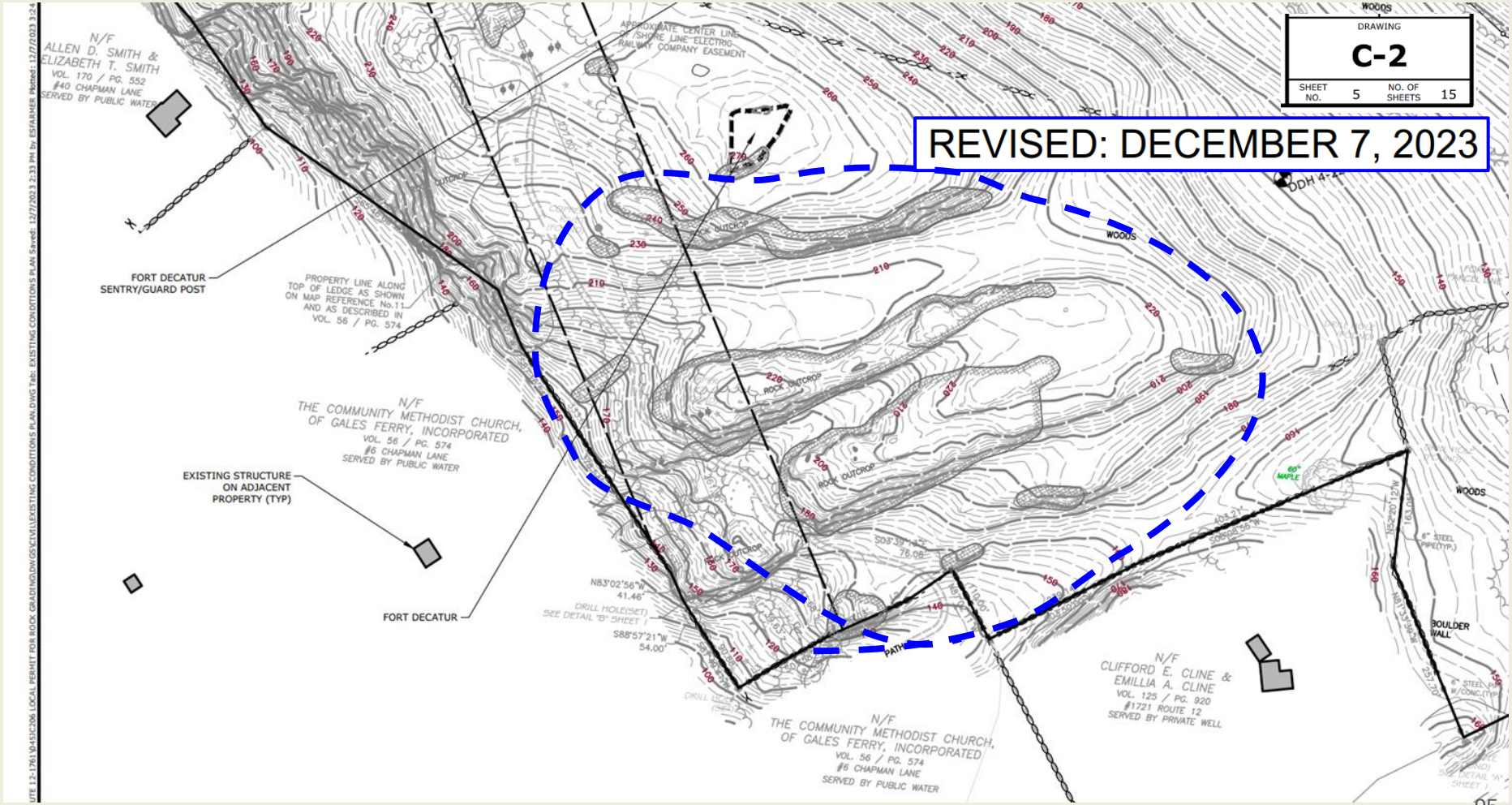
	PPM							
IDENT	V	Cr	Co	Ni	W	Cu	Zn	As
GFI-1C	11	107	< 10	< 10	< 10	< 10	14	< 20
Quality Control								
GFI-1C(R)	< 10	100	< 10	< 10	< 10	< 10	15	< 20
GSP-2-XRF	36	11	< 10	< 10	< 10	55	105	23
GSP-2-known	52	20	7	17	--	43	120	--

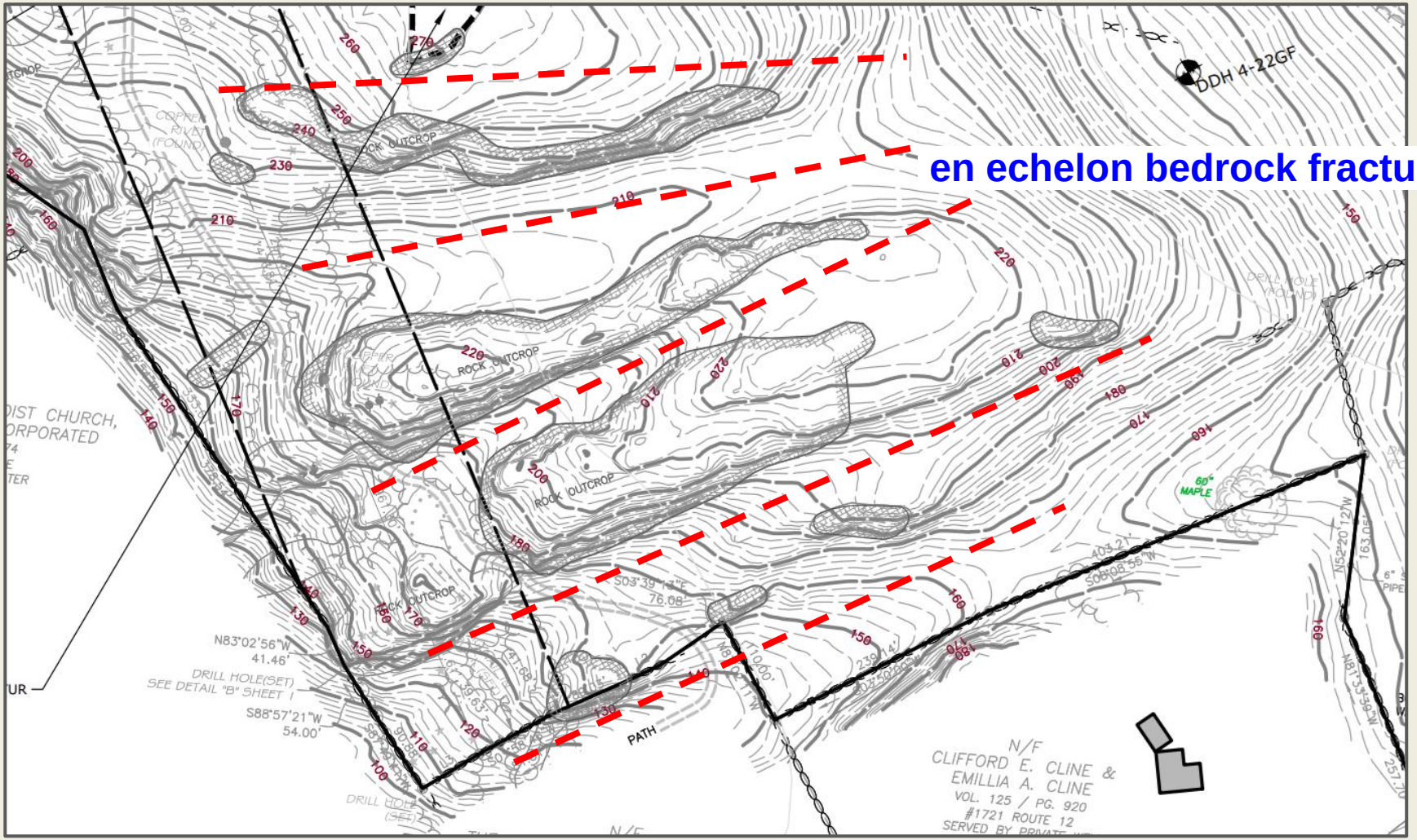
- This is a site specific application and the physical characteristics of the site are critical to that evaluation.
  - Presence of rail and deep water for material transport.
  - Southerly ½ of Allyn's Hill which will be left undisturbed.
  - Characteristics of the stone to be extracted.
  - Change in elevation from Route 12 to the material handling and processing area.
  - Lack of visibility of the site.
  - Lack of contributing groundwater.

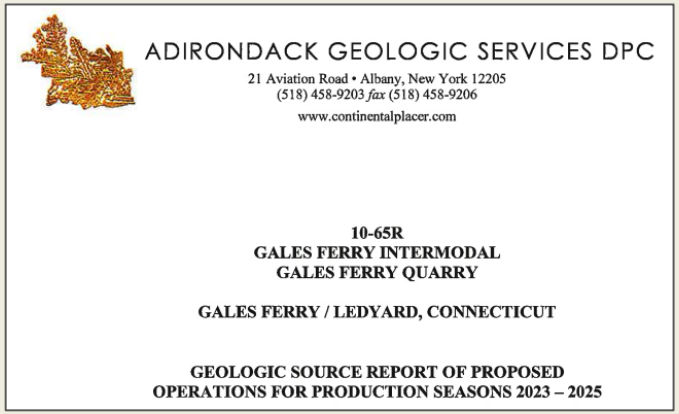

Chapman Ln
12-ft Tall Barrier
Noise Sources
Crushing Facility
Truck Activity
Start of Phase 3.1
Phase Boundary
Project Boundary
Roadway
Parcel
Residential Parcel
Sound Level (dBA)
61
65
70
75
Gales Ferry Mine
Ledyard, CT
0
300 ft
0
500
1,000 ft
N
Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community


N/F
ALLEN D. SMITH &
ELIZABETH T. SMITH
VOL. 170 / PG. 552
#40 CHAPMAN LANE
SERVED BY PUBLIC WATER
140
200
160
170
190
130
100
ROCK OUTCROP


N/F
DOROTHY E. LEWIS
VOL. 527 / PG. 558
#60 CHAPMAN LANE
SERVED BY PUBLIC WATER
N/F
DOROTHY E. LEWIS
VOL. 391 / PG. 831
#56 CHAPMAN LANE
SERVED BY PUBLIC WATER
N/F
MARIE E. BRIDGMAN
VOL. 267 / PG. 838
#54 CHAPMAN LANE
SERVED BY PUBLIC WATER
N/F
DORTHY E. LEWIS
VOL. 558 / PG. 527
#48 CHAPMAN LANE
SERVED BY PUBLIC WATER
DRILL HOLES (FOUND)
N24°59'24"W
42.00'
DRILL HOLE (FOUND)
N68°33'24"W
10.00'
DRILL HOLE (FOUND)
DRILL HOLE (FOUND)
ROCK OUTCROP


DRAWING
C-2
SHEET NO. 5
NO. OF SHEETS 15
REVISED: DECEMBER 7, 2023
N/F
ALLEN D. SMITH &
ELIZABETH T. SMITH
VOL. 170 / PG. 552
#40 CHAPMAN LANE
SERVED BY PUBLIC WATER
FORT DECATUR
SENTRY/GUARD POST
PROPERTY LINE ALONG
TOP OF LEDGE AS SHOWN
ON MAP REFERENCE No.11
AND AS DESCRIBED IN
VOL. 56 / PG. 574
N/F
THE COMMUNITY METHODIST CHURCH,
OF GALES FERRY, INCORPORATED
VOL. 56 / PG. 574
#6 CHAPMAN LANE
SERVED BY PUBLIC WATER
EXISTING STRUCTURE
ON ADJACENT
PROPERTY (TYP)
FORT DECATUR
APPROXIMATE CENTER LINE
SHORE LINE ELECTRIC
RAILWAY COMPANY EASEMENT
OUTCROP
ROCK OUTCROP
WOODS
DDH 4-21
60" MAPLE
BOULDER WALL
PATH
DRILL HOLE(SET)
SEE DETAIL "B" SHEET
N83°02'56"W
41.46'
S88°57'21"W
54.00'
S05°39'15"E
76.08'
N/F
CLIFFORD E. CLINE &
EMILLIA A. CLINE
VOL. 125 / PG. 920
#1721 ROUTE 12
SERVED BY PRIVATE WELL
N/F
THE COMMUNITY METHODIST CHURCH,
OF GALES FERRY, INCORPORATED
VOL. 56 / PG. 574
#6 CHAPMAN LANE
SERVED BY PUBLIC WATER


en echelon bedrock fractures
DDH 4-22GF
ROCK OUTCROP
PATH
N/F
CLIFFORD E. CLINE &
EMILLIA A. CLINE
VOL. 125 / PG. 920
#1721 ROUTE 12
SERVED BY PRIVATE
60" MAPLE
N83°02'56"W
41.46'
DRILL HOLE(SET)
SEE DETAIL "B" SHEET
S88°57'21"W
54.00'
S03°39'13"E
76.08'



Shortly after the collision ended at the beginning of the Mesozoic Era or about 235 million years ago, plate tectonics processes reversed. **Pangea began to break apart**, initiating the **opening of the Atlantic Ocean** and leaving Avalonia welded to North America. In the early stages of this breakup, rift basins formed along and on both sides of the zone where the Atlantic Ocean finally opened. **The Thames River basin in is the eroded remnant of one of these rift basins.**

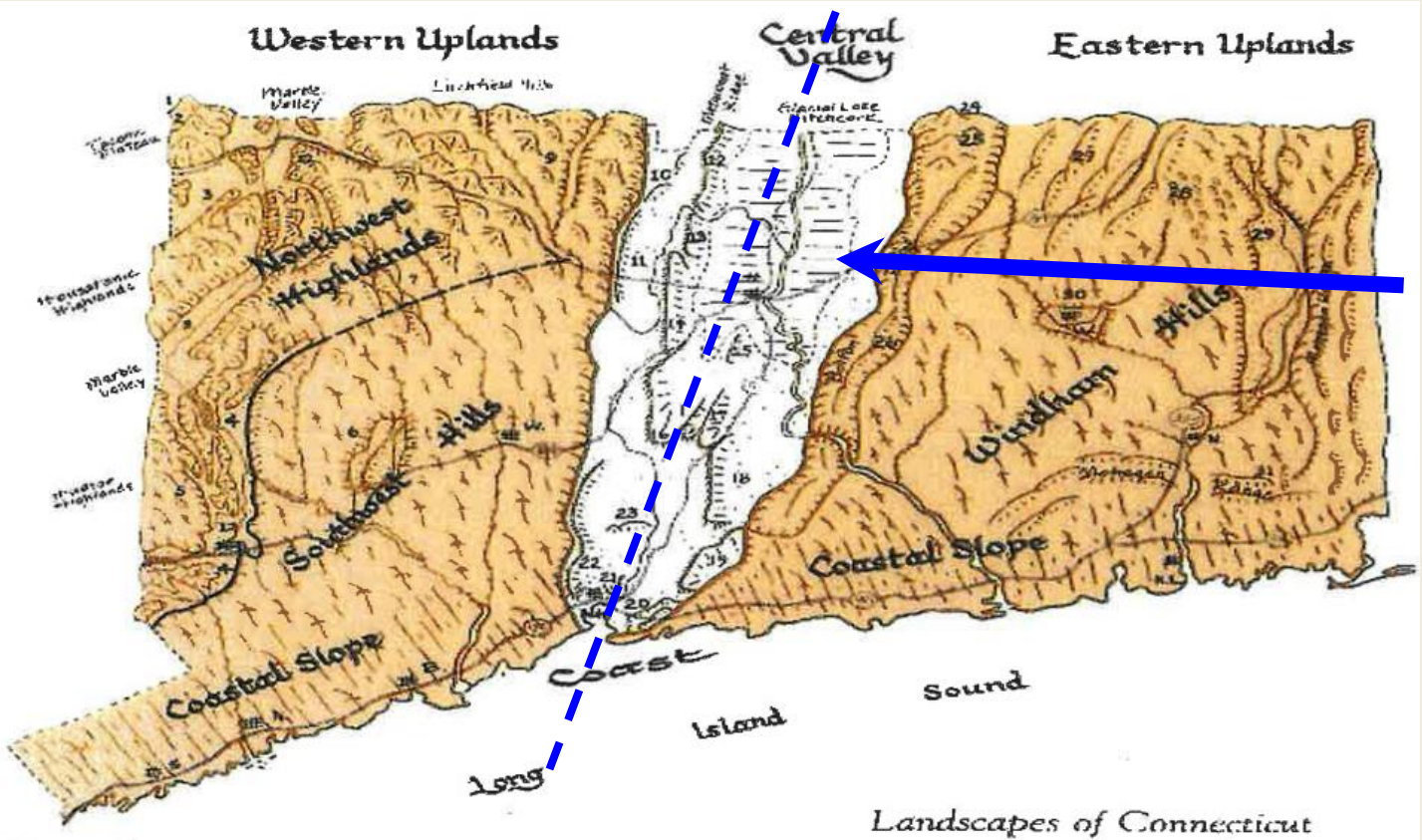
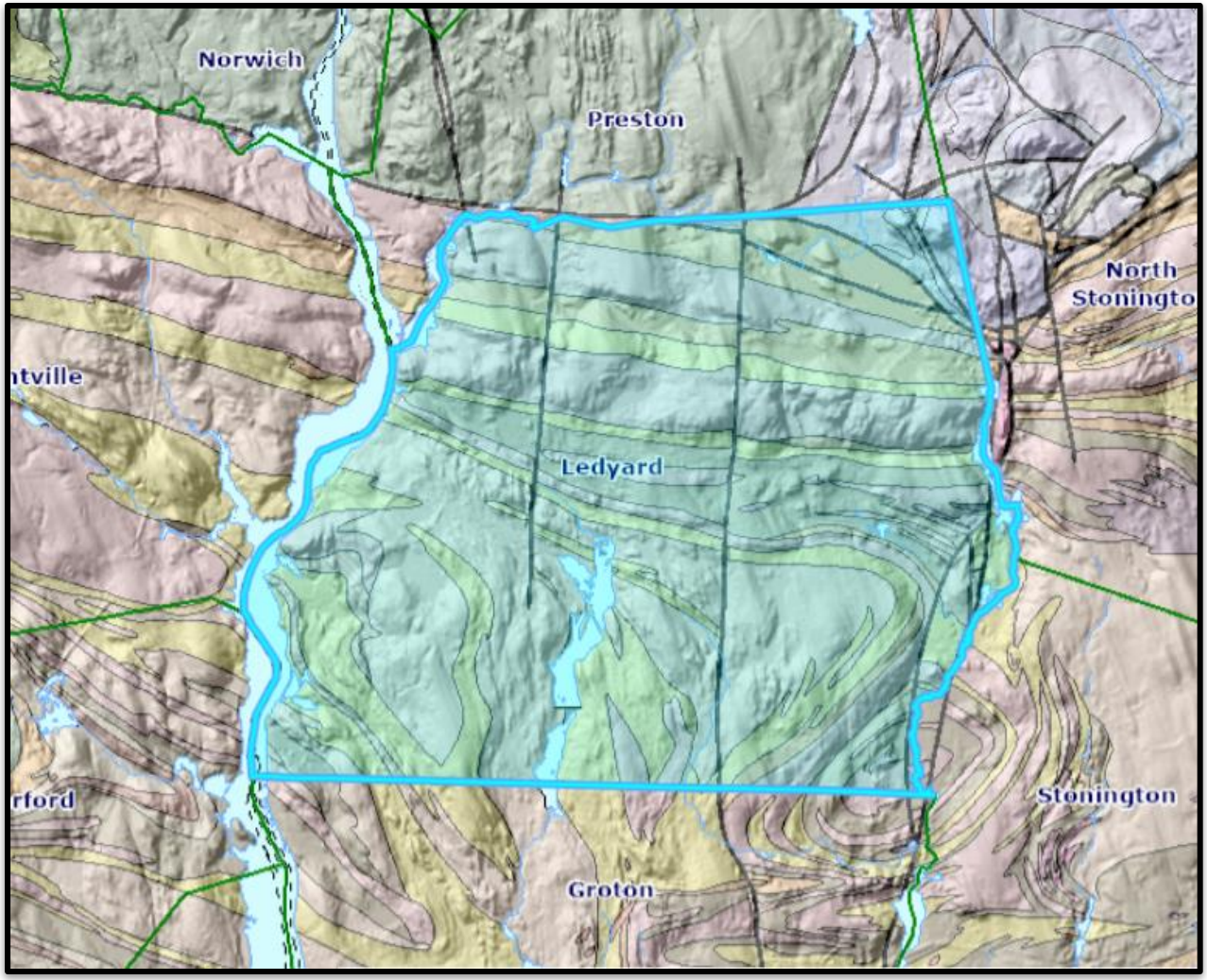


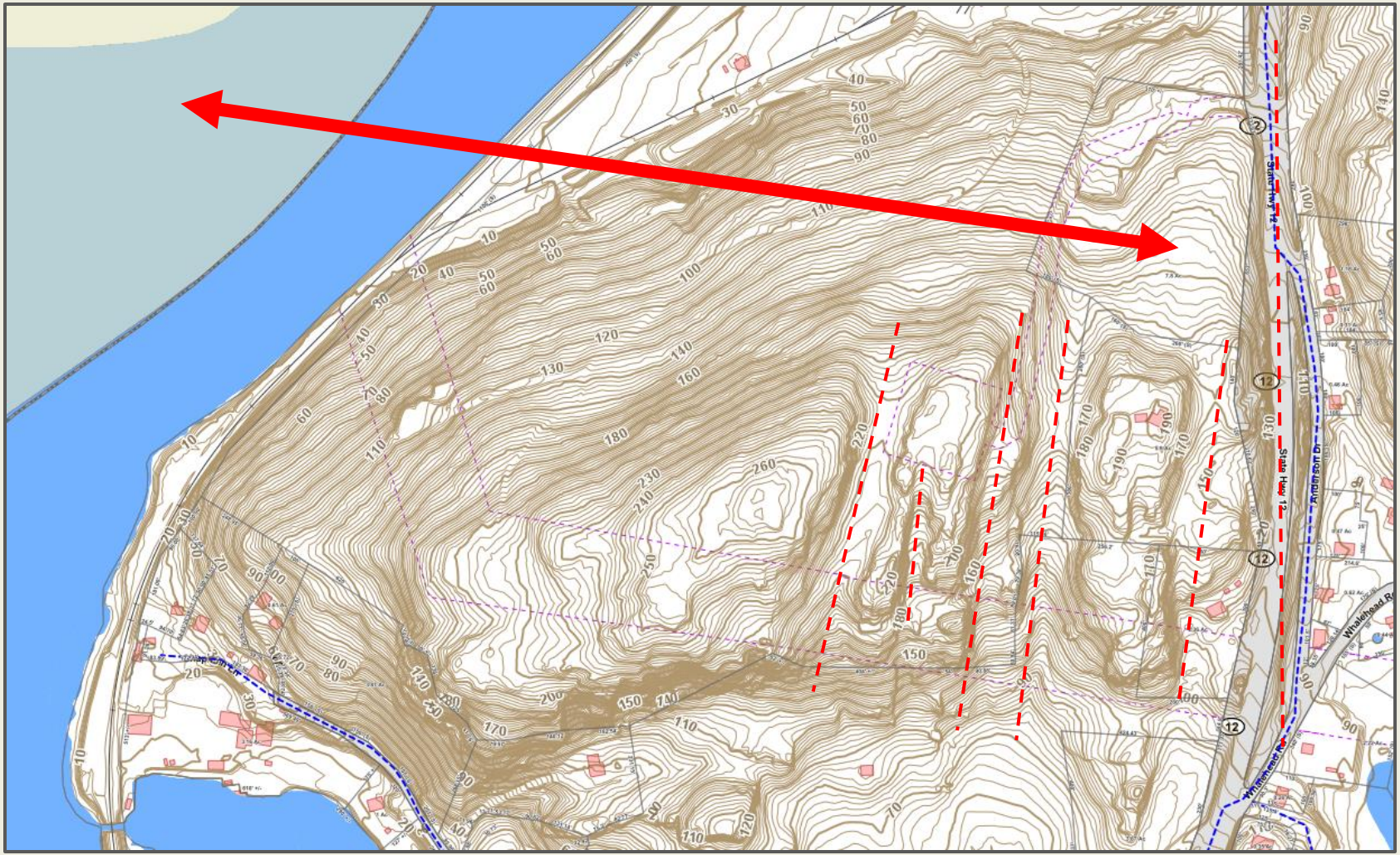
Figure 1
The Face of Connecticut: People, Geology and the Land. State Geological and Natural history survey of Connecticut, Bulletin 110 Michael Bell 1985

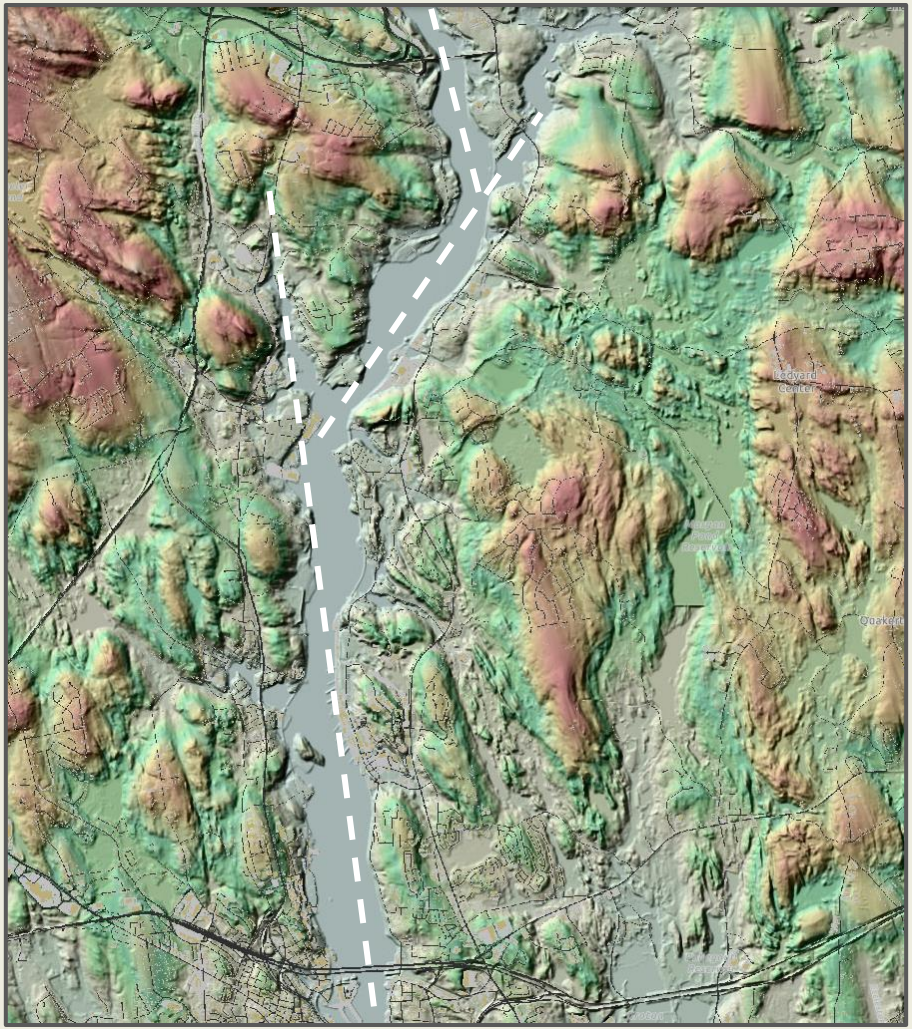
Figure 3: Physiographic Provinces Connecticut

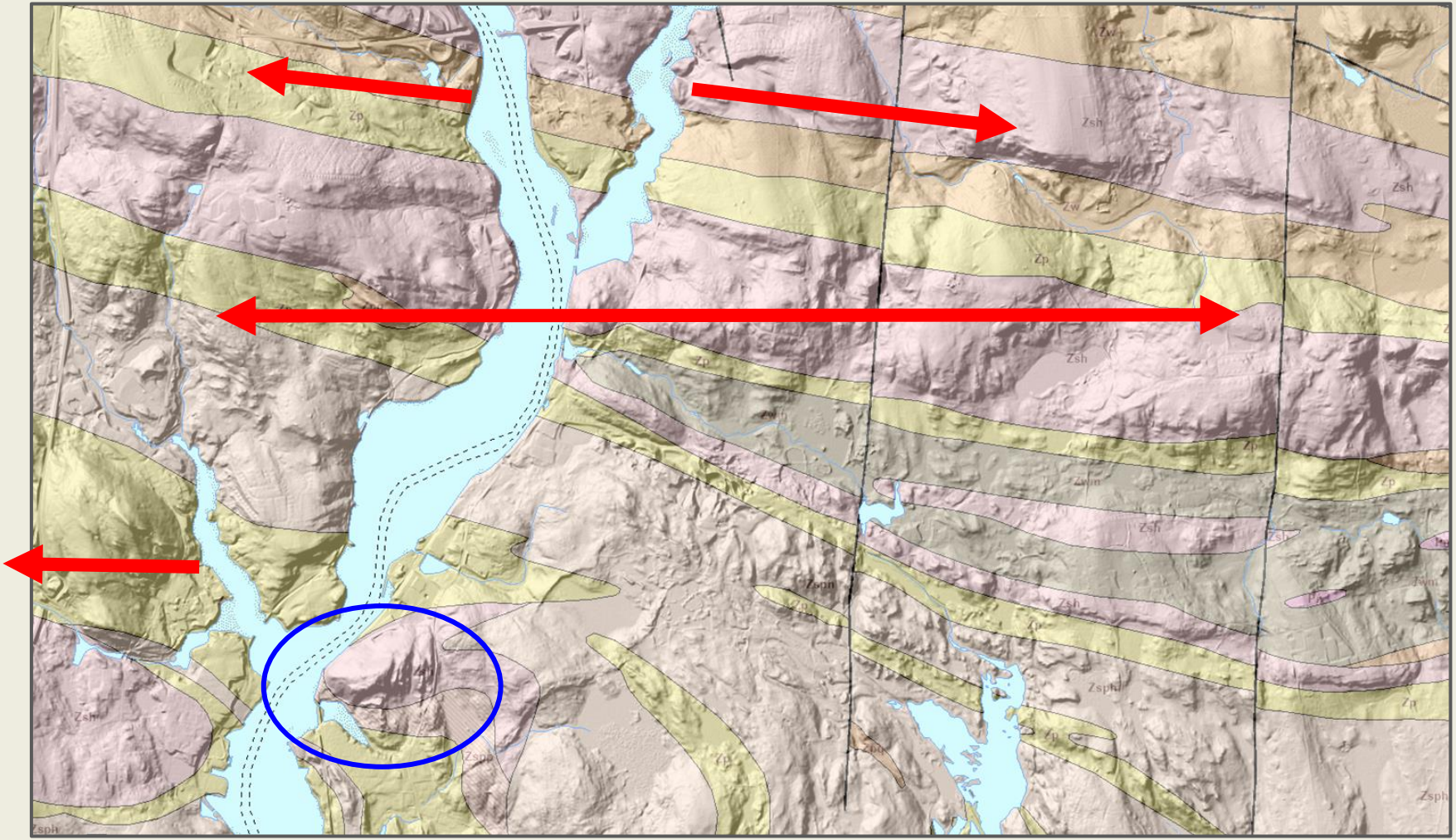
Lantern Hill Fault

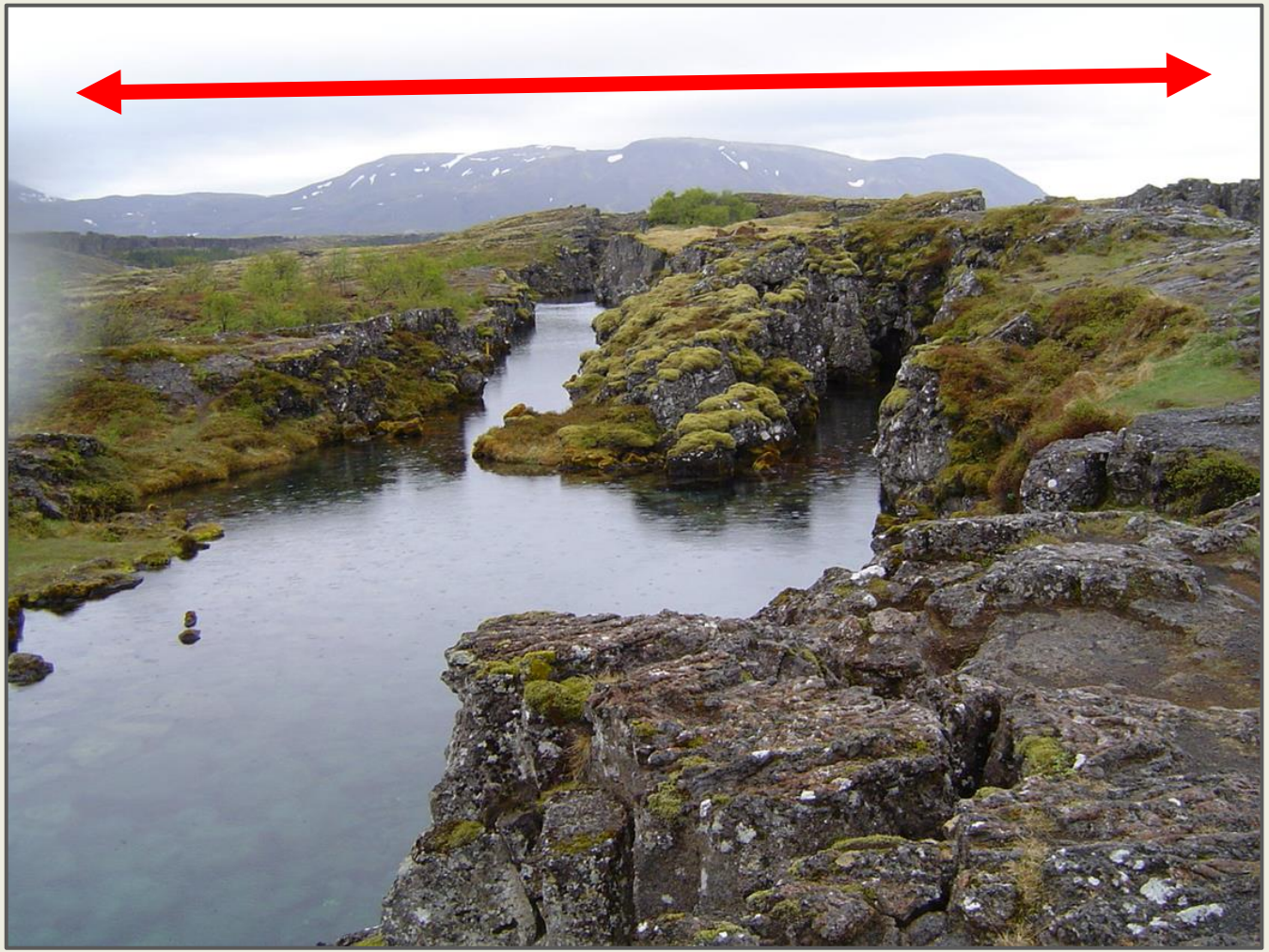
The Lantern Hill fault system is a zone of north-south trending **brittle fracture**

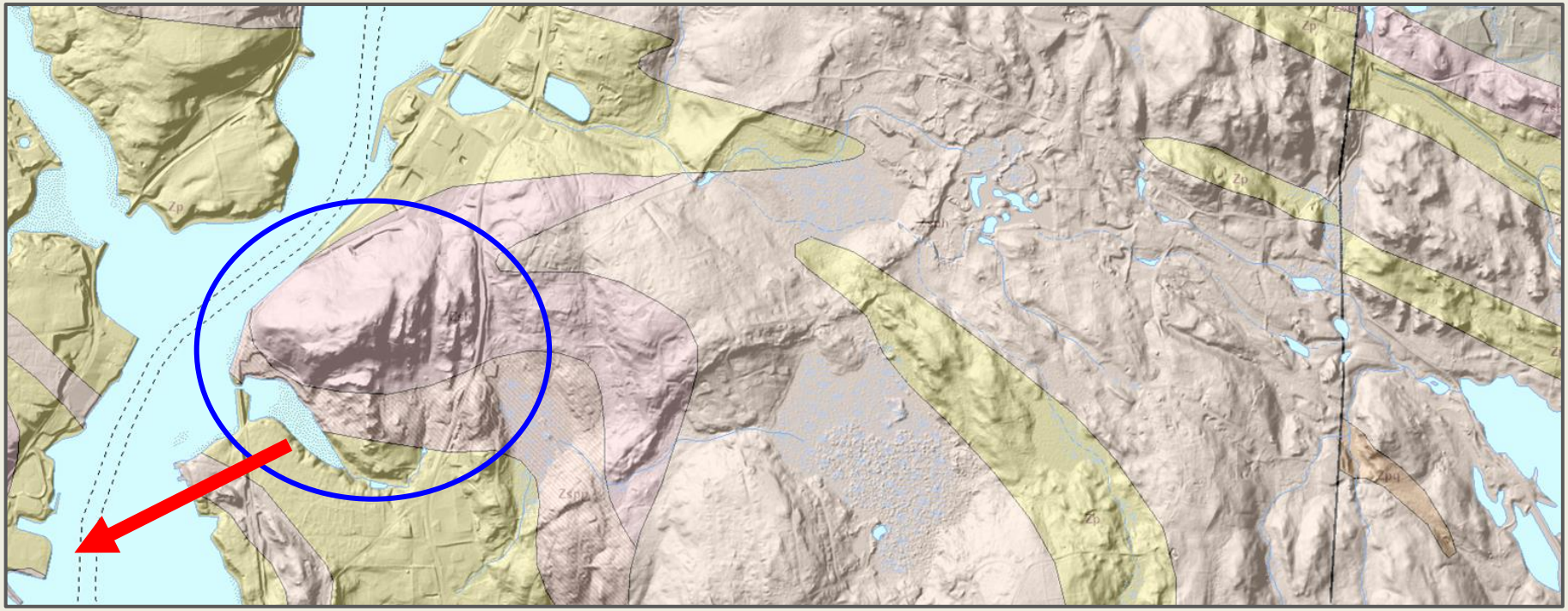

Norwich
Preston
North
Stoningto
ntville
Ledyard
rford
Stonington
Groton

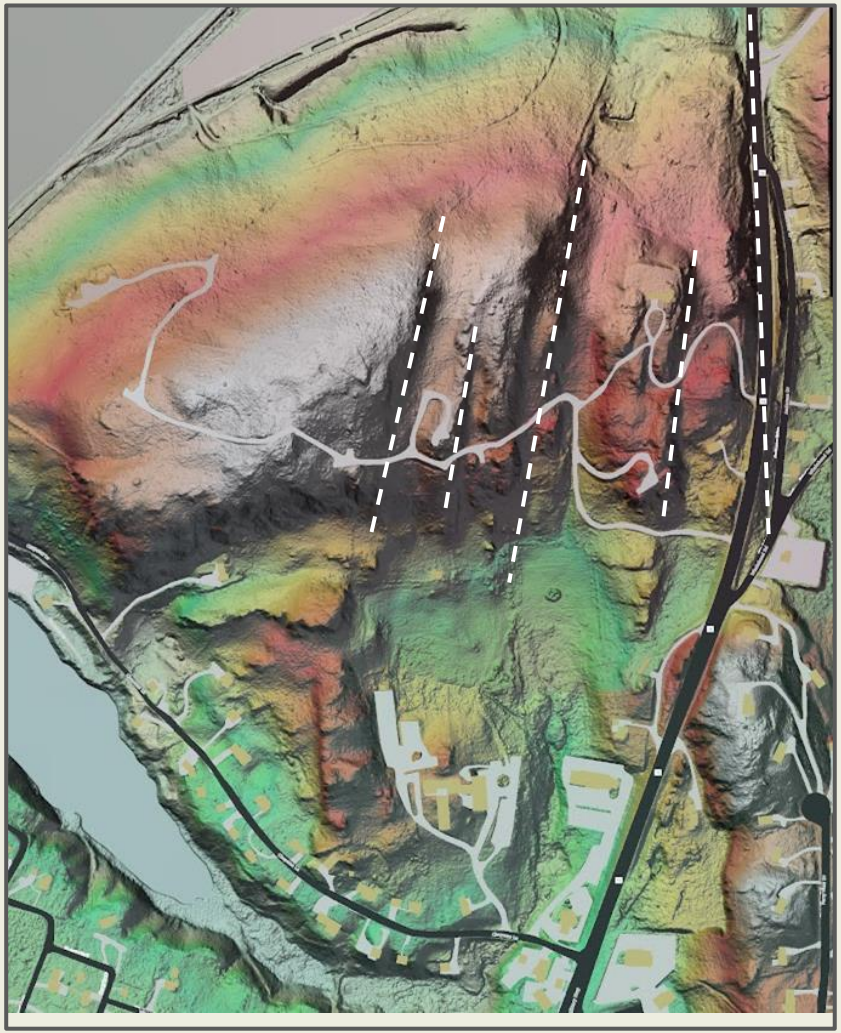

State Hwy 12
Whatcheer Rd
Whatcheer Rd


Ledyard Center

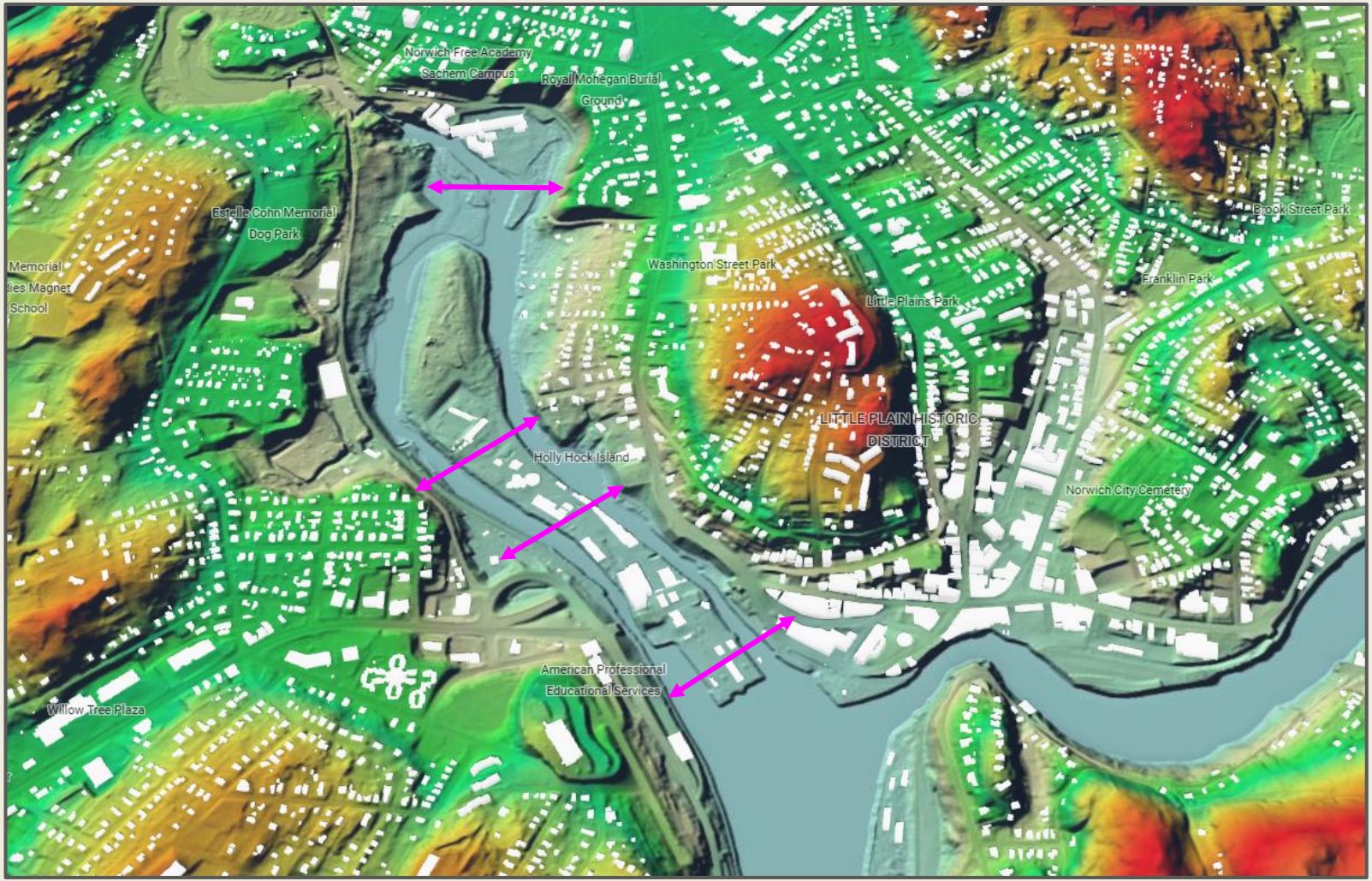

Zp
Zsh
Zw
Zwm
Zsph

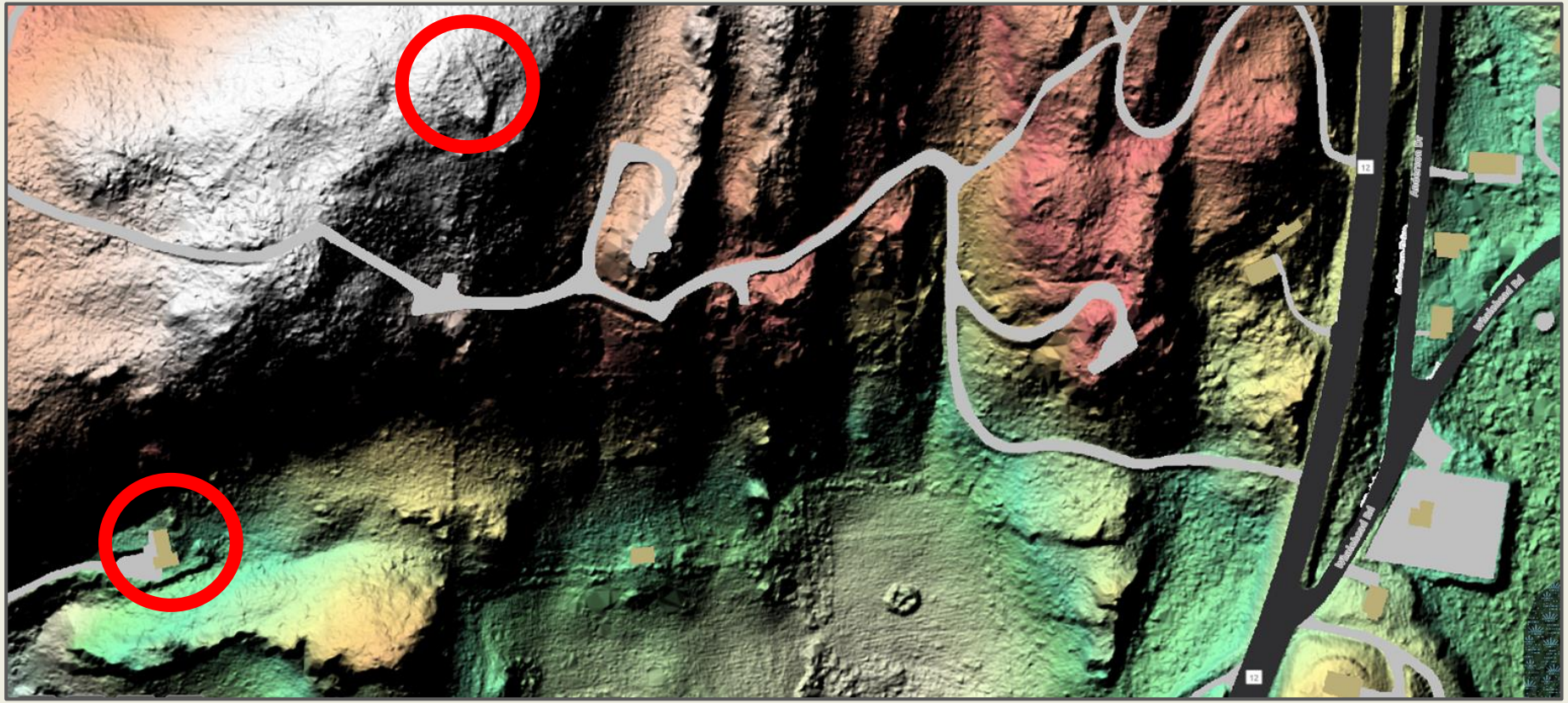


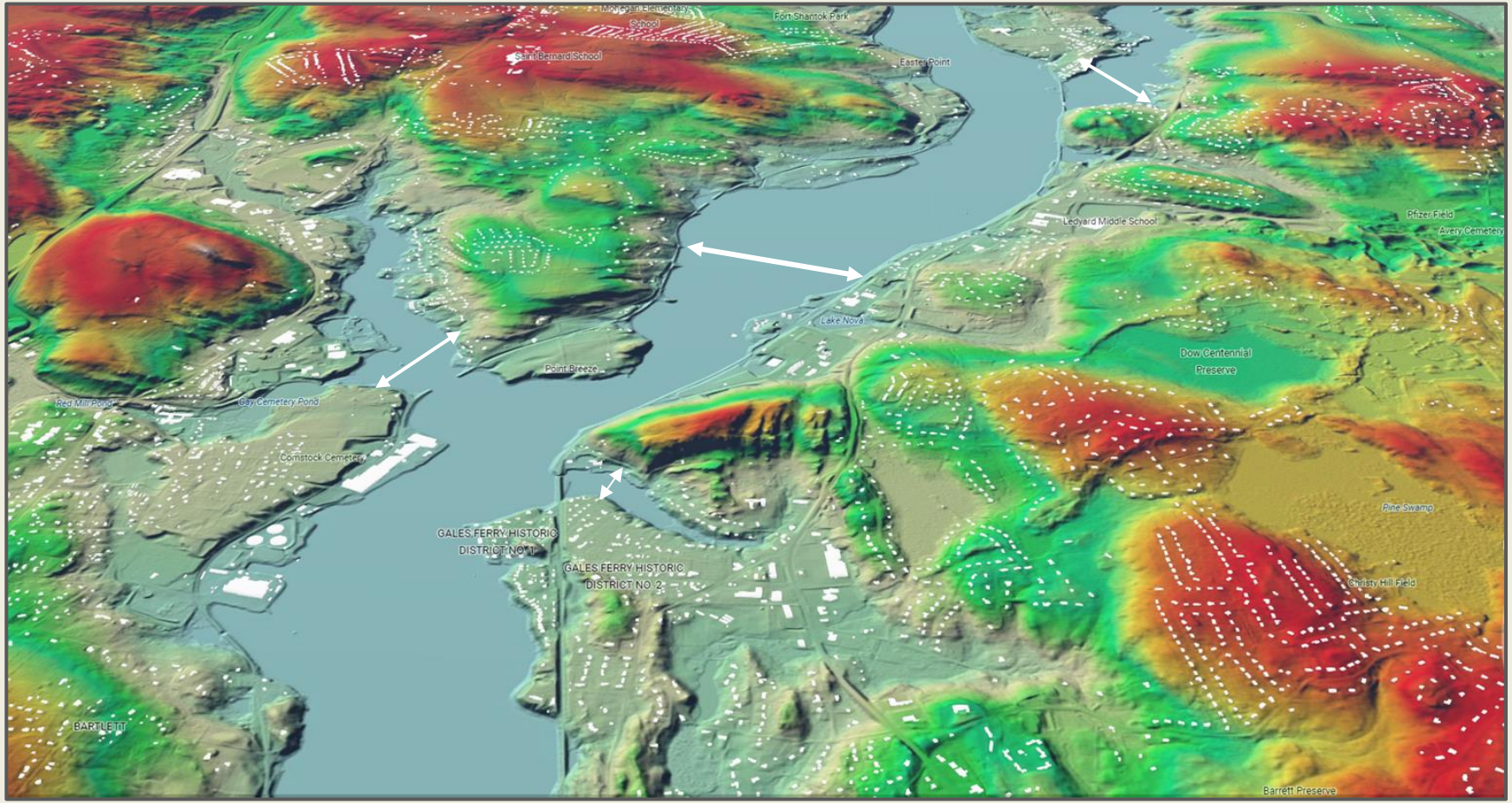

Zp
Zp
Zp
Zp
Zpu
Zpu



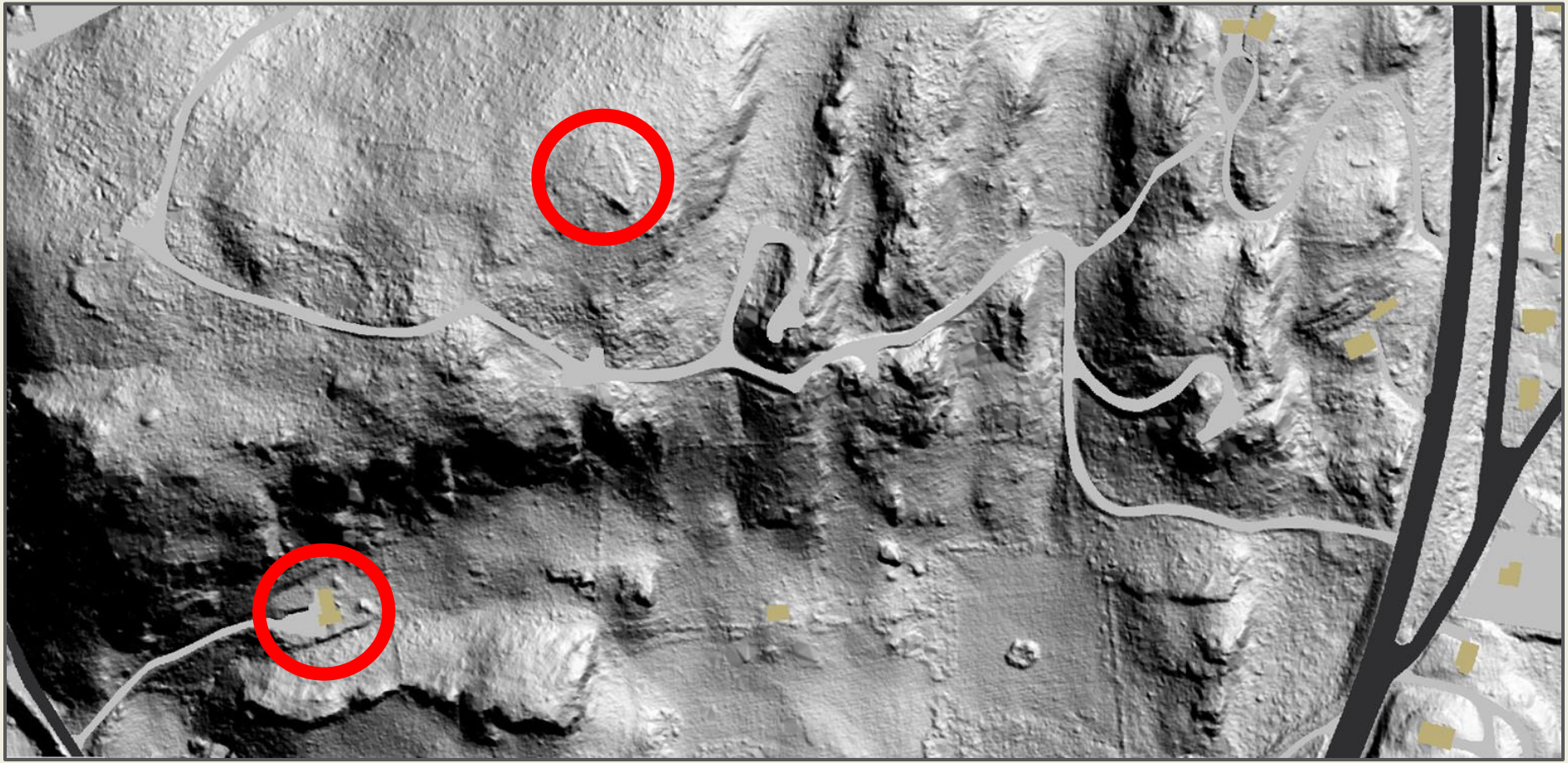
- **How did they get there?**
- **Blasting implications?**
- **Hydrological import?**


Norwich Free Academy
Sachem Campus
Royal Mohegan Burial
Ground
Estelle Cohn Memorial
Dog Park
Brook Street Park
Memorial
ies Magnet
School
Washington Street Park
Franklin Park
Little Plains Park
LITTLE PLAIN HISTORIC
DISTRICT
Holly Hock Island
Norwich City Cemetery
American Professional
Educational Services
Willow Tree Plaza

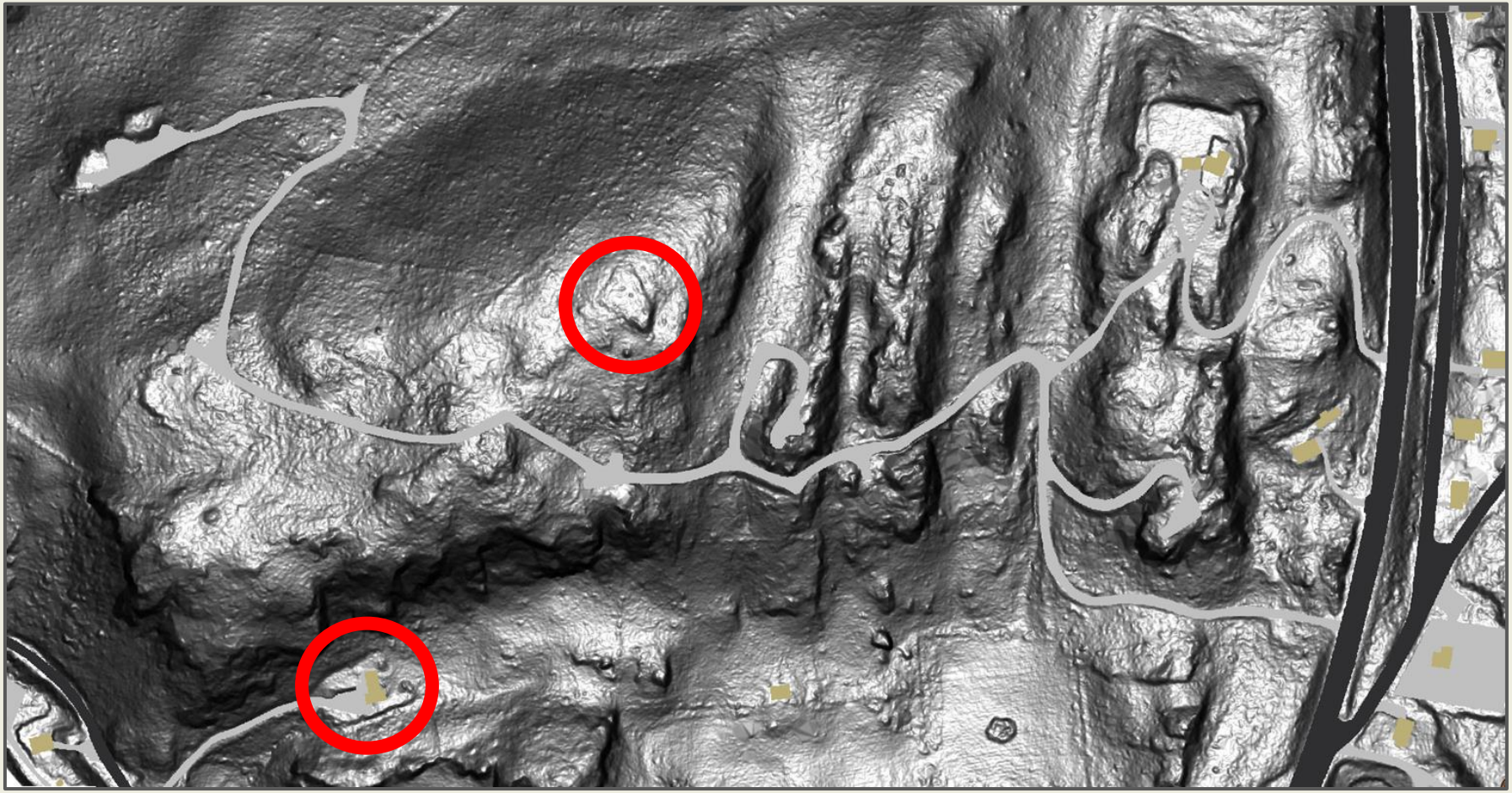

12
12

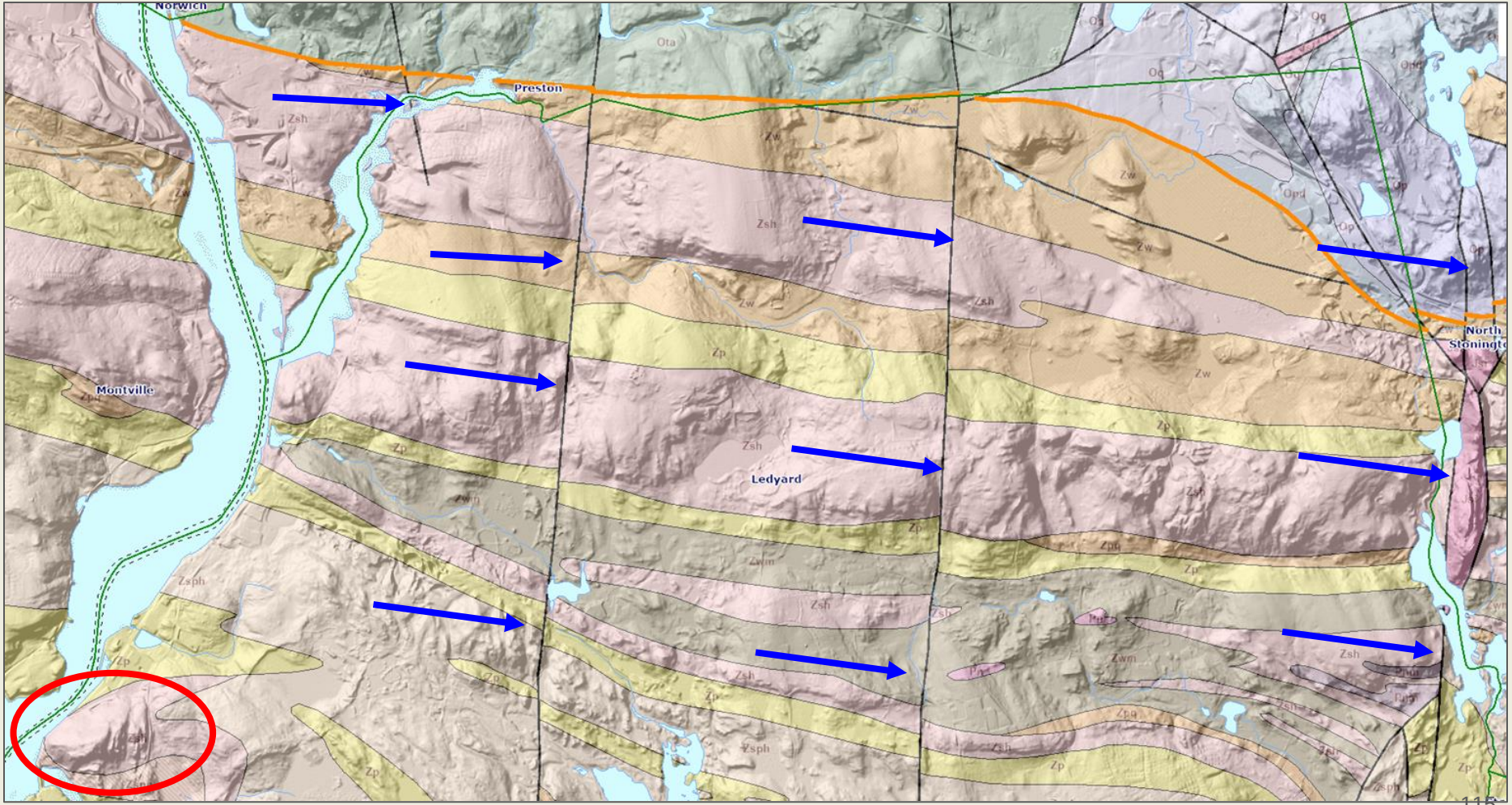

Fort Shantok Park
Saint Bernard School
Eastern Point
Ledyard Middle School
Pfizer Field
Avery Cemetery
Lake Nova
Point Breeze
Dow Centennial Preserve
Red Mill Pond
Gay Cemetery Pond
Comstock Cemetery
GALES FERRY HISTORIC DISTRICT NO. 1
GALES FERRY HISTORIC DISTRICT NO. 2
Pine Swamp
Christy Hill Field
BARTLETT
Barrett Preserve

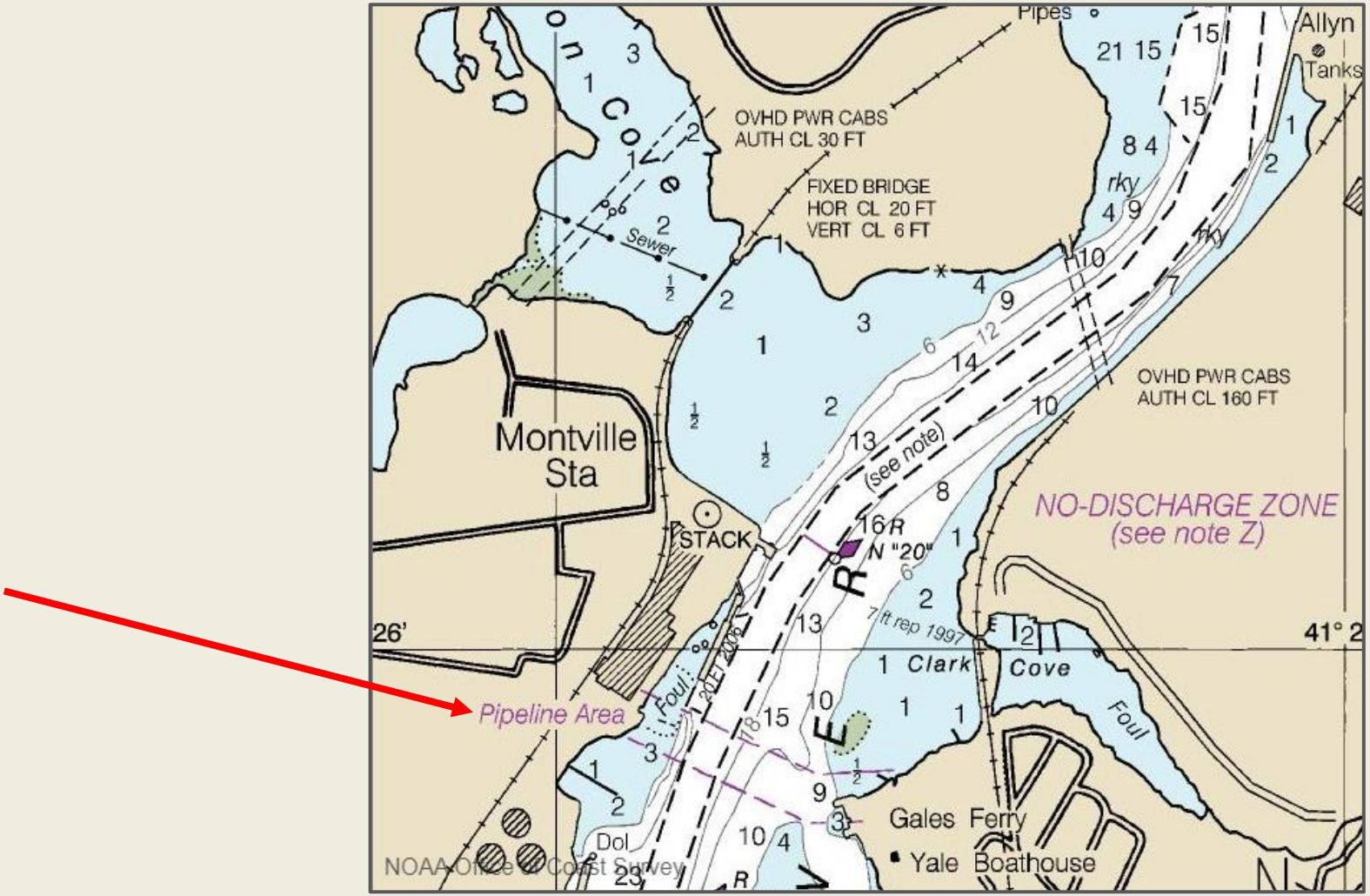

SITE VISIT
40 CHAPMAN LN



Location	Min Distance (ft)	Max/Delay (lbs)	PPV (in/sec)
22 Anderson Drive	260	105.11	0.91
40 Chapman Lane	562	105.11	0.26
89 Point Breeze Road	1018	105.11	0.10




Norwich
Preston
Ota
Montville
Ledyard
North Stoningto
Zsh
Zw
Zp
Zwm
Zsph
Opd
Op
Oq
Pzp
Zpq


Pipes
Allyn
Tanks
OVHD PWR CABS
AUTH CL 30 FT
FIXED BRIDGE
HOR CL 20 FT
VERT CL 6 FT
Sewer
OVHD PWR CABS
AUTH CL 160 FT
Montville
Sta
STACK
(see note)
NO-DISCHARGE ZONE
(see note Z)
16R
N "20"
7ft rep 1997
Clark
Cove
Foul
Foul
Pipeline Area
Gales Ferry
Yale Boathouse
Dol
26'
41° 2
NOAA Office of Coast Survey

THE GREAT RIFT VALLEYS OF PANGEA IN EASTERN NORTH AMERICA

TECTONICS, STRUCTURE, AND VOLCANISM

VOLUME ONE

EDITED BY

PETER M. LETOURNEAU
AND PAUL E. OLSEN

F. In accordance with CGS §22a-19, that the proposed uses would not cause any unreasonable pollution, impairment or destruction of the air, water and other natural resources of the state; and More information is needed about the activities occurring to make a determination of compliance. What will the potential impact be to existing structures and tanks on site, ***surrounding wells, and Latex Landfill area?*** *An enormous amount of material is being removed. Also* ***See DEEP Blasting Guidance****.* ***Really no discussion on impacts to the groundwater at all.*** — **November 16, 2023**

Parenthetically, it should be noted that the practices required to protect these structural resources will, in and of themselves, provide much greater protection from any adverse operational impacts from dust, noise, vibration or fumes to the more remote residential neighbors located in the "immediate neighborhood". With respect to odors, fumes and gasses, we call your attention to the testimony of Tim Harmon at the continued public hearing held on this application on December 21, 2023. The **DEEP Blasting Guidance is inapplicable** to this excavation because the Applicant's geologist has definitively established by site investigation that the constituents of concern do not exist in the granite present within the project area. — **January 9, 2024**

As noted previously the Gales Ferry site lies within the Avalon geologic terrane of southeastern Connecticut, Rhode Island and Massachusetts. This belt of rocks is characterized by plutonic granitic, metasedimentary and metavolcanic rocks that have been strongly deformed by multiple generations of folding and contains duplicate lithotectonic units.

and 3-22, lithologically is a medium to dark gray, medium crystalline, banded gneiss. The material is composed primarily of the minerals feldspar, quartz, augite and some biotite mica, feldspar and quartz makes up approximately 70% to 75% of the rock.

DEEP Blasting Guidance

. . . quarries where significant earth removal and/or **blasting** activities are likely to occur. Because of those types of activities, there is concern for possible negative impacts to the **quality** and **quantity** of water in neighboring drinking water wells . . .

… there is an **elevated risk for mobilizing** . . . which may adversely affect groundwater and drinking water quality. In addition, **increased mobilization of arsenic**, **uranium and/or radon** can occur in areas where these naturally-occurring minerals are present in the bedrock formation.

DEEP Blasting Guidance

After identifying all drinking water wells within a 500-foot radius of the area to be disturbed by proposed construction activities, the Applicant's Environmental Professional should evaluate which drinking water wells need to be sampled in order to establish baseline drinking water quality conditions prior to any active earth work or blasting activity. Consideration should be given to factors such as: well type and construction details; the **nature**, **geologic structure**, and **mineral make-up of the underlying bedrock**; and blasting/rock removal techniques.

The town's land-use office, as part of the permit application review process, or as part of the pre-blast survey if blasting is necessary, should also require that the Applicant **document the yield and capacity of the wells** before the site work or blasting commences. Testing the raw water quality (prior to any water treatment devices) of nearby drinking water wells prior to construction or blasting activities will establish a baseline for comparing post-project test results, in the event a property owner makes a complaint that the project activities negatively impacted their well.

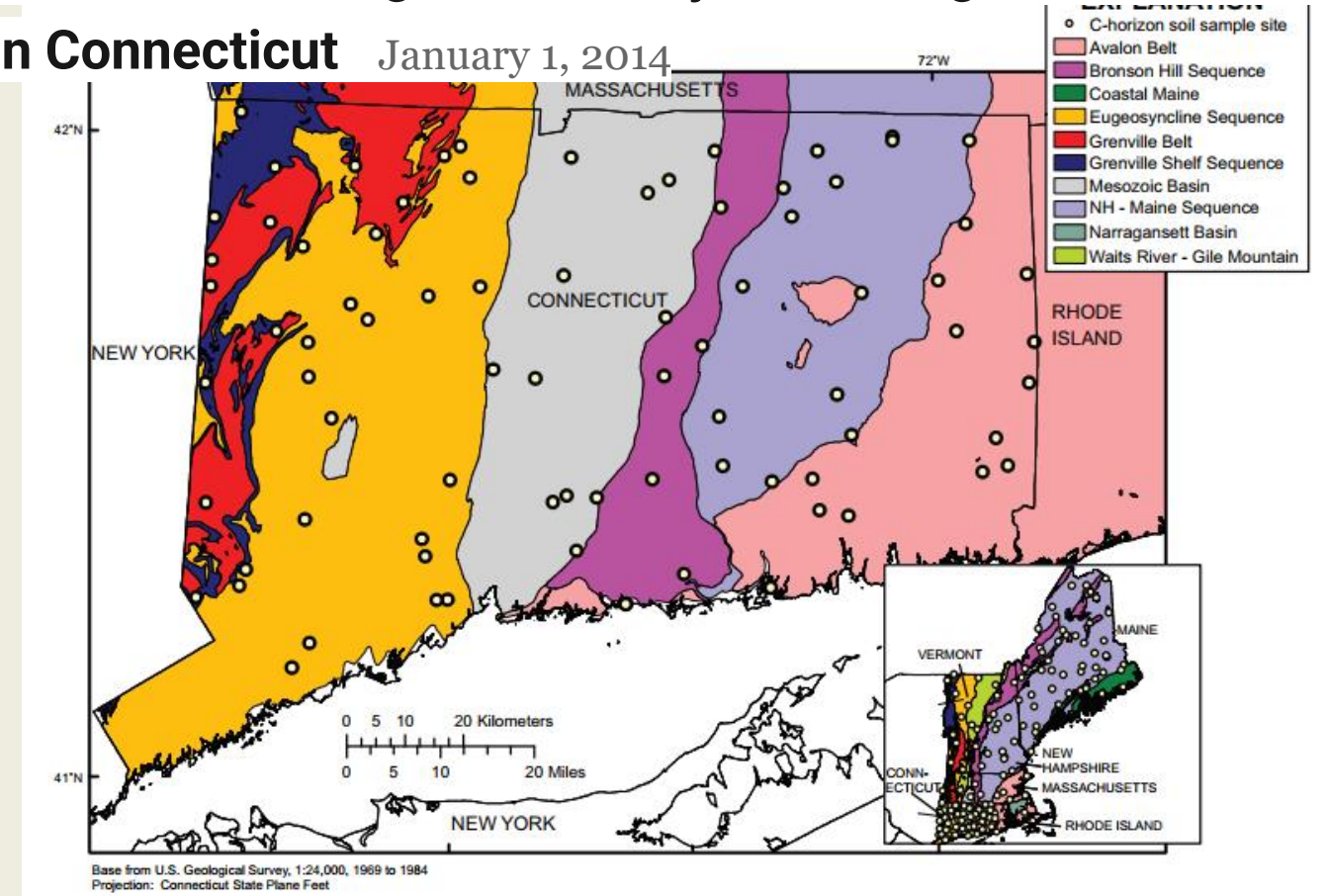
DEEP Blasting Guidance

Major site work that significantly alters infiltration rates, diverts surface water flow, or **creates deep rock cuts or fractures may seriously deplete the volume of water in nearby overburden or drilled bedrock drinking water wells**.

Wells accessed for purposes of water level monitoring will require the well to be properly disinfected prior to being reactivated following the Department of Public Health's Publication #27: **Disinfection Procedure** for Private Wells

Major and trace element geochemistry and background concentrations for soils in Connecticut

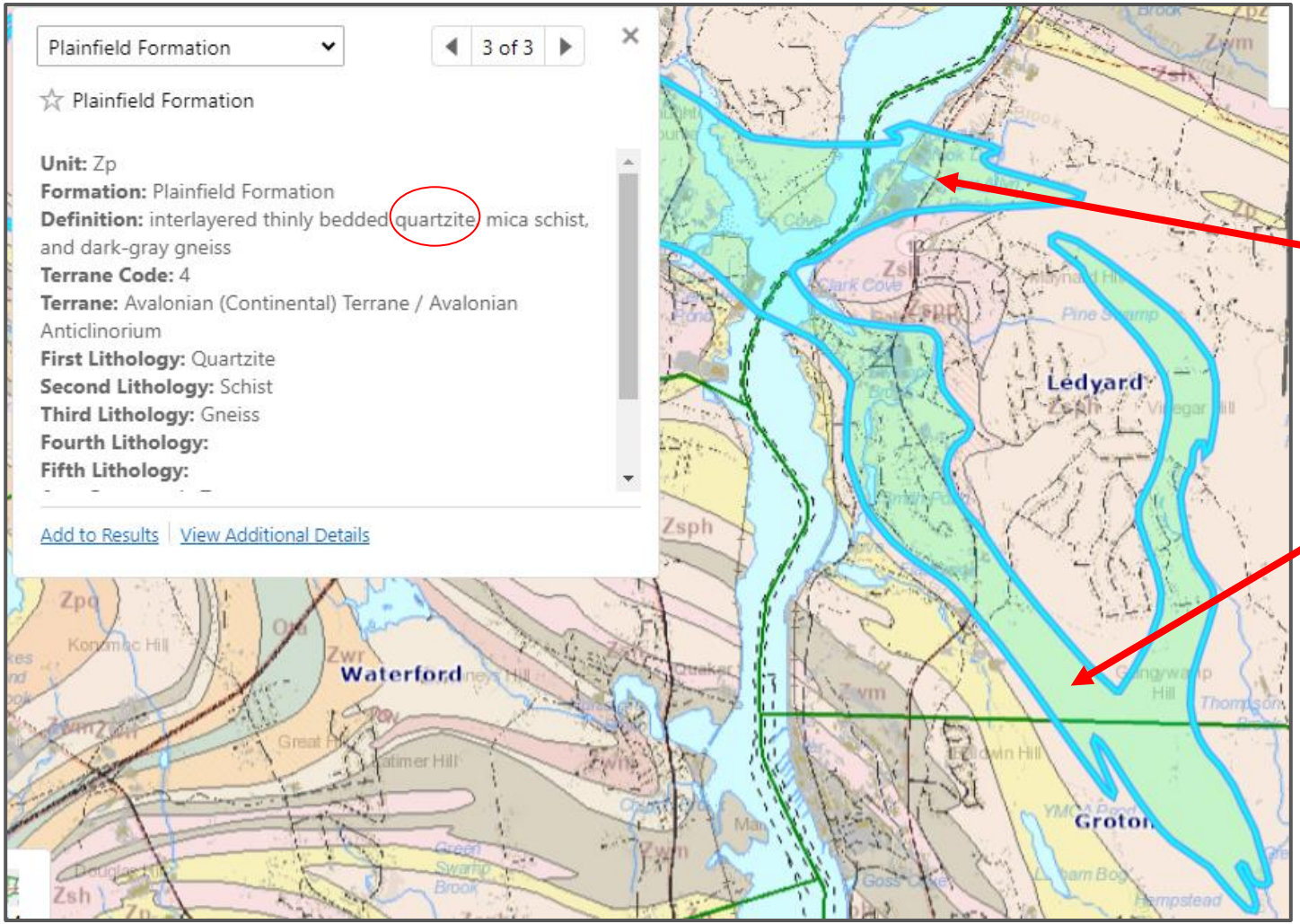
January 1, 2014




Allyns Point
Providence & Worcester
Whitehead Rd
Maynard Hill
Friar Tuck Dr
Anderson Dr
Garden Dr
Chapman Ln
Allyn Ln
Hurlbutt Rd
Military Hwy
Ferry View Dr
Nutmeg Dr
Laurel Leaf Dr
Oakwood


RECEIVED
SEP 1 2 2024
Land Use Department


#Uncasville-1
Gales Ferry
85 yds, 223°
Longitude -72.08333
Latitude 41.43468
Altitude 121 ft
Heading 339
Speed 0.0 mph
Accuracy 14 ft


Plainfield Formation
3 of 3
Plainfield Formation
Unit: Zp
Formation: Plainfield Formation
Definition: interlayered thinly bedded quartzite mica schist, and dark-gray gneiss
Terrane Code: 4
Terrane: Avalonian (Continental) Terrane / Avalonian Anticlinorium
First Lithology: Quartzite
Second Lithology: Schist
Third Lithology: Gneiss
Fourth Lithology:
Fifth Lithology:
Add to Results
View Additional Details
Ledyard
Waterford
Groton
Zsph
Zwr
Zvm
Zwn
Zsh
Zp


MARCH 2023


MARCH 2023


?
6/27/2024


Feet
Measurement Result
394.7 Feet

9.2.C restricts concerns to the “Zoning District in which they are proposed to be situated”

Third, the material handling protocol specified in the Erosion and Sediment Control Narrative and public hearing testimony including **continuous misting** of site travel lanes, drilling equipment which captures fugitive dust during drilling operations, wetting blasts, Planning & Development Dept. January 9, 2024 Page 8 of 11 **mist bars on crushing jaws** and utilization of **covered conveyors for material transport to ship** will be effective to prevent the escape of fugitive dust. **These procedures significantly exceed those approved by the Commission in its approval of the Terra-Firma application.** Sound emissions are regulated by regulations adopted by DEEP and must be complied with by the Applicant.

In CT, **U concentration** means were significantly higher in C-horizon **soils** overlying **Avalonian granites**, and U concentrations ranged **as high as 14 mg/kg**, compared to those in C-horizon soil samples collected from other New England states, which ranged as high as 6.1 mg/kg in a sample in NH overlying the NH-ME Sequence

Among other factors, the occurrence of feldspar appears to center around the **affinity of silicon** to alter as a silicate with a wide variety of available elements. it combines with O, AL, K, NA, CA, Mg, Fe, SR, Ti, BA, Pb, and Ce, to form in either the monoclinic or triclinic system. The most important of these combinations are with O, AL, K, NA, CA, and BA.

https://www.gamineral.org/writings/feldspars-eldridge.html

DEEP Blasting Guidance

The town's land-use office, as part of the permit application review process, or as part of the pre-blast survey if blasting is necessary, should also require that the Applicant **document the yield and capacity of the wells** before the site work or blasting commences.

The Department recommends a minimum of **annual monitoring** of water levels and water quality of the closest drinking water well until the development project is completed and the site has been stabilized.

- pH
- odor
- color
- turbidity
- nitrate
- nitrite
- coliform bacteria
- **arsenic**
- **uranium**
- **radon**

State of Connecticut
Department of Public Health
Drinking Water Division

Keeping Connecticut Healthy
www.dph.state.ct.us

Revised: April 6, 2004

Commissioner J. Robert Galvin, M.D.

Disinfection of a Well Water Supply

INTRODUCTION:

All new or repaired wells should be disinfected prior to use of the water system. A water system should also be disinfected following plumbing repairs or modifications, as internal piping may have been exposed to contamination.

In case of a new well, it is helpful that there be coordination between the well driller and pump installer and the contractor-plumber (if applicable). In this way, the disinfection can be combined with pressure and leakage tests of the entire water system; and the required bacteriological test for assuring safety of the drinking water supply can be performed at the same time. The chance of contamination is less likely to occur if there is no long delay between the time the well is drilled and the time the pump installer completes the connection from the well to the house plumbing along with the disinfection treatment.

Prior to disinfection, it is expected that the entire well and piping system has been running clear and clean – purged of any sediment, foreign matter, or other materials (due to incomplete development, unsanitary construction, or long idleness of the well). These substances react with the chlorine and decrease its effectiveness in destroying harmful bacteria and organic materials.

APPLICATION:


RM

EXTERNAL INFORMATION:
How do you control dust in a crushing plant? (abcdust.net)
Operations related to the extraction of mineral ore such as blasting, transportation, grinding, and crushing can release large amounts of dust into the atmosphere. This is particularly true in a crusher plant where the demolition of stones, an operation that generates vast amounts of dust, is a daily procedure.

Dust can generate a series of problems for industrial operations. Not only can dust cause health problems, but it can also reduce the productivity of a mining site by limiting visibility and increasing wear-and-tear on equipment.

What is crusher dust?
Crusher dust is a type of fine dust, which contains very small 0-5mm aggregate particles as well as sand. It is formed as a by-product from mining operations and is often recycled for different applications such as construction.

Whenever rocks are crushed by rock crushing equipment, tiny PM 1, PM 2.5 and PM 10 dust particles spread through the air. This byproduct of rock crushing may cause harm to the health of workers and nearby communities and damage the durability of equipment, leading to bearing failure, lubricant contamination, and increased risk of fire autoignition.

Particles coming from high compressive strength rocks (hardness), with a higher mosh index and angularity (sharp edges) cause the greatest damages, such as silica, quartz and diamond dust.

Sec. 22a-69-3.1. General prohibition

No person shall cause or allow the emission of excessive noise beyond the boundaries of his/her Noise Zone so as to violate any provisions of these Regulations.

Maine contractor charged with fraud over forged signature

2023-11-06

FORT EDWARD -- A Maine-based contracting company has been indicted on charges that accuse it of submitting a forged contract to a Supreme Court justice in a lawsuit over a construction Bill. Maine Drilling & Blasting LLC., which has an office in Hartford, faces four charges, including felony counts of forgery and offering a false instrument for filing. It also faces misdemeanor counts of falsifying business records and offering a false instrument for filing

Falsus in uno, falsus in omnibus

Should require that the results of the pre-blast survey - including test results from ***all the wells*** *on* ***abutting properties*** *(baseline drinking water quality and yield capacity) be provided prior to the start of the operations, though that information would be valuable now as well.* **November 16, 2023**

The Applicant proposes a pre-blast survey of all wells and structures within **750'** of the exterior limits of the excavation site. This survey will be conducted prior to the commencement of any project operations by Maine Drilling and Blasting. The results of the pre-blast survey will be provided to the Land Use Office **and each landowner** whose property was surveyed. **January 9, 2024**


mapsonline.net/ledyardct/
Forbidden
You don't have permission to access /ledyardct/ on this server.
Apache/2.4.7 (Ubuntu) Server at www.mapsonline.net Port 443


750ft PREBLAST
SURVEY RADIUS
750' Radius

I think with respect to particulate emission, the elephant in the room is **silica dust**. I didn't hear you mention that in your presentation. So to what extent is your **modeling** relevant or directed specifically towards the **dispersion of silica dust**?

September 26, 2024

Is this a dust dispersion/air modeling question, or is it a geological question?

I think with respect to particulate emission, the elephant in the room is **silica dust**. I didn't hear you mention that in your presentation. So to what extent is your modeling relevant or directed specifically towards the **dispersion of silica dust**?

September 26, 2024

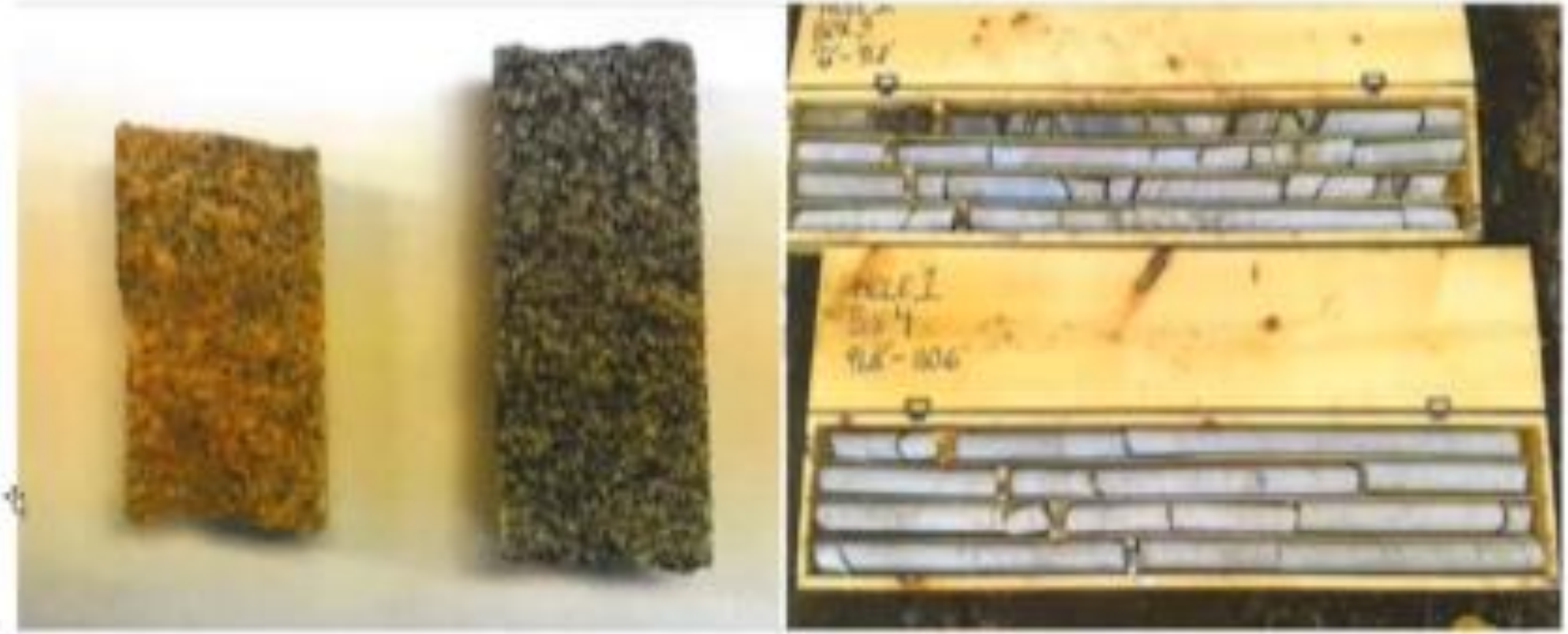
Again, for the record, Harry Heller, **silica dust was addressed by Jeff Slade in his presentation of September 12th. Suzanne Paisano is a professional engineer. Her specialty is air modeling, not geology. And the silica issue was addressed by the geologist.**

Geotech Information

- Four 200’ depth core holes drilled to d[illegible] the type of rock present in the area to be excavated.
- Drilling confirmed two types of granite present.
- Bedrock present exhibits extremely low yield of groundwater.
- Hydrogeology of the Site limits the contribution of groundwater to the regional water table from the northern half of the Allyn Mountain is limited by the hydrogeology of the site.
- No significant water bearing zones or faults present.
- Core samples show the rock type and Rock Quality Designation are favorable for development of a stable rock cut face.
- No pyrrhotite or chalcopyrite present in the rock to support acid rock drainage – nothing present in any of the core samples.

December 21,2023

Core samples from the site

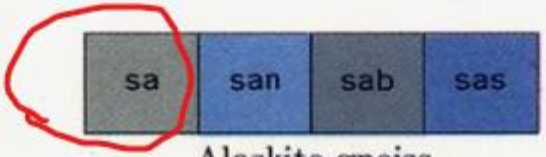



ps
psq
sa
Conrail
Conrail
Conrail
Conrail
Route 12
Edwards Dr
Garden Dr
Wheelabrator Rd
Friar Tuck Dr
Robinwood Dr
Wheelabrator Rd
May

1967

Sterling Plutonic Group

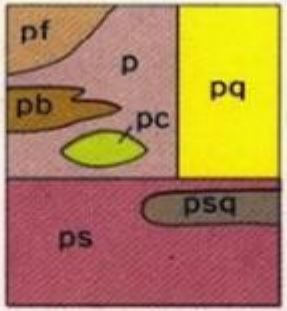
Orange-pink, gray to white, locally reddish granite gneiss; foliation typically marked by parallelism of alternate flat lenses of gray quartz and feldspars, as well as by parallelism of biotite flakes where present; biotite tends to be concentrated on boundaries of lenses. Magnetite with ilmenite and hematite, and biotite are the common accessory minerals



Alaskite gneiss

sa, *orange-pink to light-gray, fine- to medium-grained, equigranular gneissic granite composed of about equal amounts of quartz, microcline, and albite to sodic oligoclase, and about 1 percent magnetite or as much as 2 percent magnetite and biotite*

1967



1985

Plainfield Formation

pf, *gray thin-bedded quartzite and schistose quartzite; thin-bedded micaceous feldspathic quartzite; garnet-sillimanite-biotite schist; white to greenish-white quartzite and diopsidic quartzite; light- and dark-green calc-schist containing tremolite and diopside; local amphibolite*

p, *dark-green hornblende-biotite-quartz-plagioclase gneiss, in part diopsidic; dark biotite-quartz-plagioclase gneiss with variable amounts of microcline; garnet-biotite-quartz-feldspar schist and gneiss; amphibolite; light-gray sugary textured biotite-feldspar-quartz gneiss; thin gray quartzite, rare thick white quartzite*

pb, *biotite-microcline-quartz-oligoclase or andesine gneiss*

pc, *calc-silicate quartzite and gneiss*

pq, *quartzite*

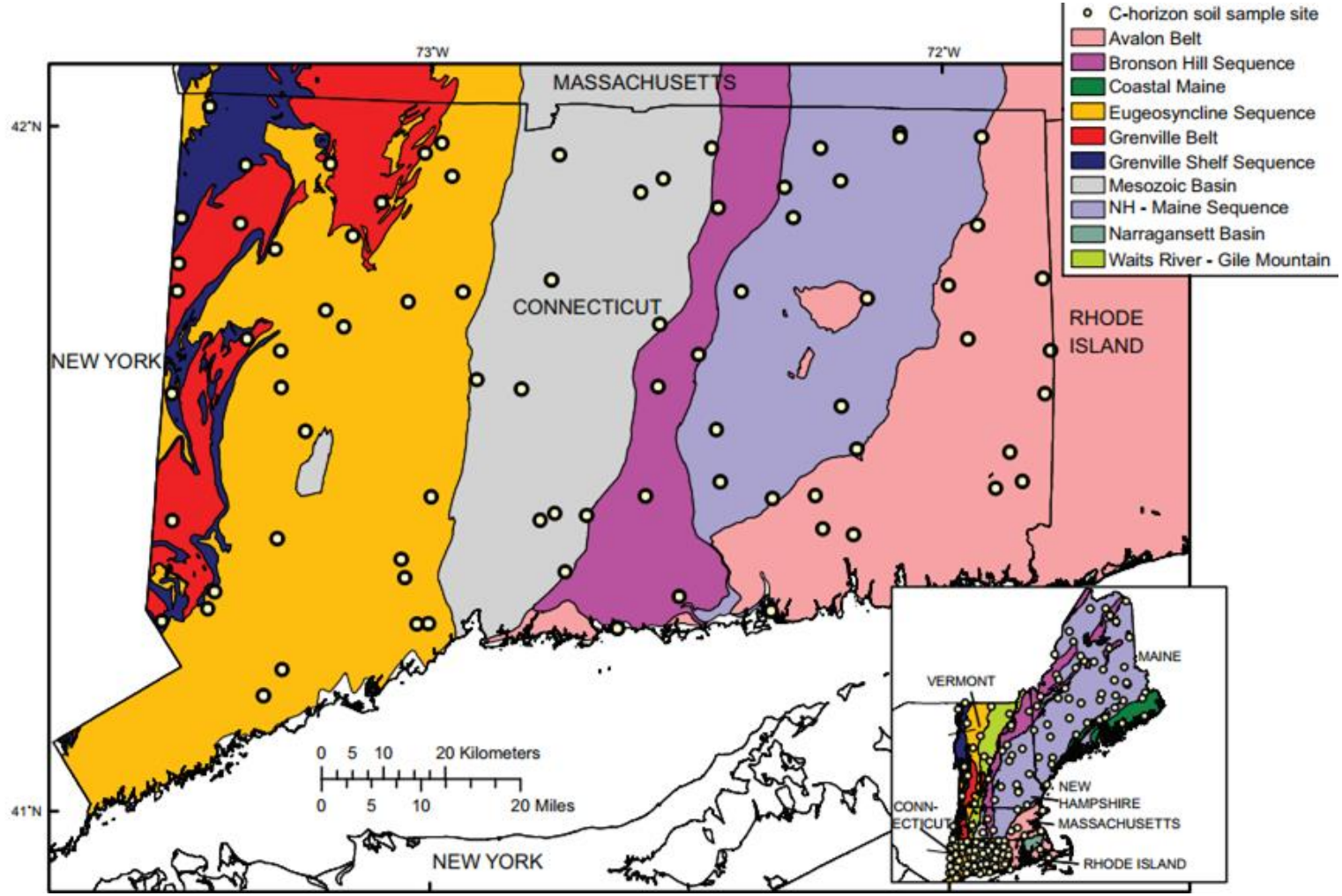
ps, *garnet-sillimanite-biotite-quartz-feldspar schist and gneiss; garnet-biotite-quartz-feldspar gneiss; biotite-quartz-feldspar gneiss; minor biotite-quartz-andesine gneiss with diopside and colorless amphibole; thin-bedded quartzite, locally pyritic*

NORTHEASTERN GEOSCIENCE
Volume 32

MAJOR AND TRACE ELEMENT GEOCHEMISTRY AND BACKGROUND CONCENTRATIONS FOR SOILS IN CONNECTICUT

Craig J. Brown[1] and Margaret A. Thomas[2]

1 - U.S. Geological Survey New England Water Science Center, 101 Pitkin Street, East Hartford, CT 06108
2 - Connecticut Geological Survey, Department of Energy & Environmental Protection, 79 Elm Street, Hartford, CT 06106


C-horizon soil sample site
Avalon Belt
Bronson Hill Sequence
Coastal Maine
Eugeosyncline Sequence
Grenville Belt
Grenville Shelf Sequence
Mesozoic Basin
NH - Maine Sequence
Narragansett Basin
Waits River - Gile Mountain
73°W
72°W
42°N
41°N
MASSACHUSETTS
CONNECTICUT
RHODE ISLAND
NEW YORK
0 5 10 20 Kilometers
0 5 10 20 Miles
NEW YORK
MAINE
VERMONT
NEW HAMPSHIRE
CONN-ECTICUT
MASSACHUSETTS
RHODE ISLAND

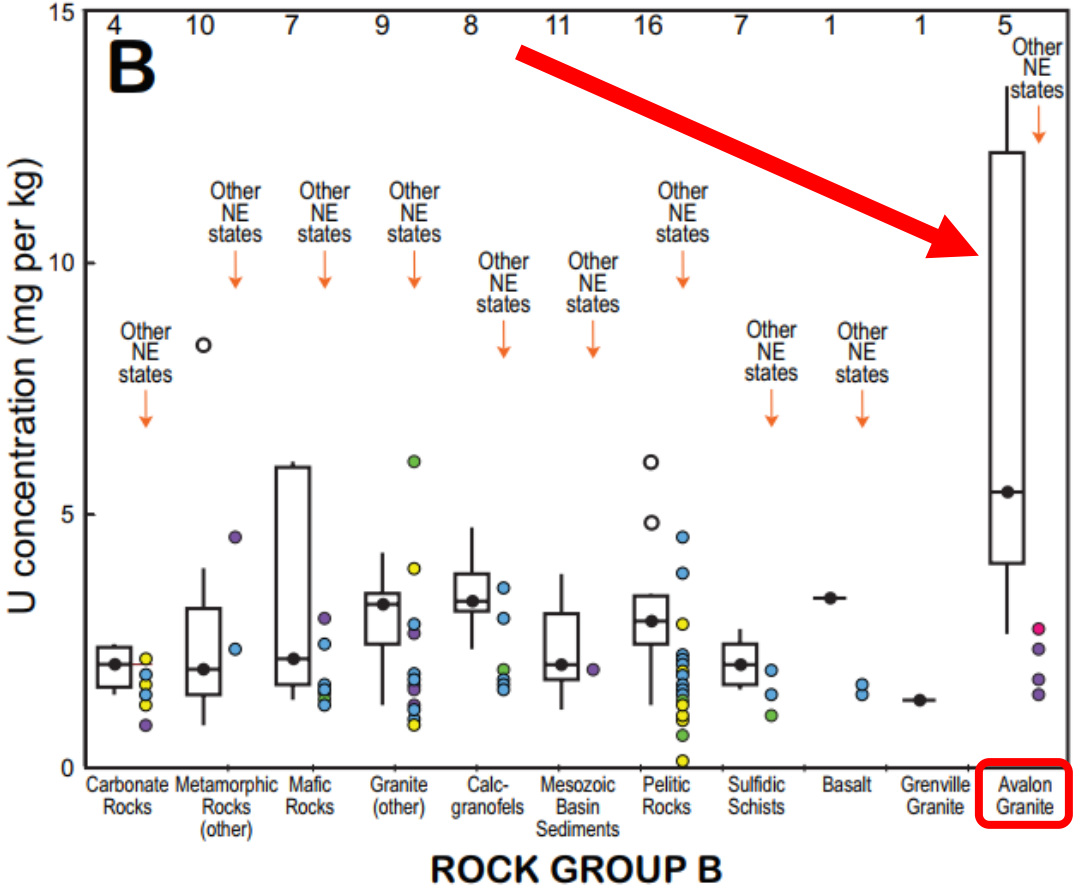


Figure 11. Distributions of U concentrations in C-horizon soils grouped by (A) geologic province, and (B) rock group B in Connecticut, and New England.

In CT, **U concentration means were significantly higher in C-horizon soils overlying Avalonian granites,** and U concentrations ranged as high as 14 mg/kg, compared to those in C-horizon soil samples collected from other New England states, which ranged as high as 6.1
mg/kg in a sample in NH overlying the NH-ME Sequence.

J. Slade, **December 14, 2023:**

Taking a look at the image of the core samples, you can see the two rock types.

You can see the two rock types you got the alaskite gneiss is the pink colored rock on the left and the one on the right is more of a granitic gneiss. You can see on the image, again, on the right hand side, you can see some of the cores.

The pinkish granite on the left shows the abundance of the mineral feldspar. That's the pinkish color that you have. **You also have quartz there.** And you have maybe three to five percent of dark mafic minerals. The dark color is probably a mineral called either hornblende or biotite mica. There are pretty common minerals when you're looking at granites. It's important to take note, **the relatively low percentage of quartz** that's here. And this is important to look at - you know - this rock is going to be processed and crushed. I'm sure that somebody's going to bring up the concern over crystalline silica. And **quartz is silica**.

BEDROCK GEOLOGIC MAP OF THE OLD MYSTIC AND PART OF THE MYSTIC QUADRANGLES, CONNECTICUT, NEW YORK AND RHODE ISLAND

By Richard Goldsmith

TABLE 1.—Selected modal analyses[1] of rocks from the Old Mystic quadrangle, Connecticut

	Preston Gabbro							Sterling Plutonic Group						
Rock unit	Pnp	Pqm	Spg	Spg	Spd	Spqd	Spgd	Zhv	Zhv	Zhvf	Zhv	Zhvf	Zph	Zph
Field number	(1203)	(1422)	(1139)	(1106)	(1042)	(1084)	(1051)	(1063)	(1301)	(1488)	(1418)	(1266)	(1299)	(1365)
Sample number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Quartz	26	16	—	0.2	<5	8	32	36	38	30	36	35	38	34
Plagioclase	35	39	31	40	43	59	41	35	32	42	31	33	32	32
Microcline	30	40	—	—	—	—	12	25	38	25	27	27	25	25

TABLE 2.—Selected modal analyses [1] of rocks from the Mystic quadrangle, Connecticut

Rock unit	Zmb	Zmb	Zmg	Zmb[2]	Zmhb	Zmhb	Zmhb[3]	Zma	Zhv	Zhv
Field number	(800b)	(815a)	(847)	(762)	(843d)	(837a)	(896)	(852)	(853)	(845)
Sample number	1	2	3	4	5	6	7	8	9	10
Quartz	35	29	29	35	23	32	27	5	40	44
Plagioclase	50	48	65	35	54	45	37	38	32	29
Microcline	1	8	2	23	8	12	30	—	25	26
Biotite	13	10	3	6	8	7	5	—	2	0.8
Hornblende	—	3	—	—	5	2	—	53	—	—

1 **Each mode is based on one thin section. Over 1,100 points counted per thin section.**

Looking at that rock right there, you probably got about **15 to 20% of quartz** there to provide material for crystalline **silica**. When this rock is crushed, one of the things you have to also realize is **grain size plays an important part here**. **When you have coarse grained rock you probably have a better potential for liberating quartz or silica.** Here we have a super fine grained rock, so when this stuff is crushed, **the quartz grains are probably going to adhere to feldspar grains**, which are adjacent to it **and you're going to have less potential for crystalline silica**.

The other item to look at is granite, due to its tight interlocking grain structure, has very little primary porosity. This is important to take into account when you're looking into potential for water. Obviously, if you don't have any space for groundwater, or water, in the rock, again, if I was looking at this to put a **well** in, you're going to have extremely low yield for water in this bedrock. So again, **the groundwater flow in massive granite bodies, such as what we have here, is limited to secondary porosity or cracks.**

This means that the granite bodies that underlie the GFI site will exhibit extremely low groundwater yield. Based upon the observation of the core samples, and the core drilling program, **no water bearing zones or <u>faults</u>** were observed. Furthermore, looking at the **regional setting and topography**, of the Gales Ferry Intermodal site, probably the most … pull up [slide] 27.

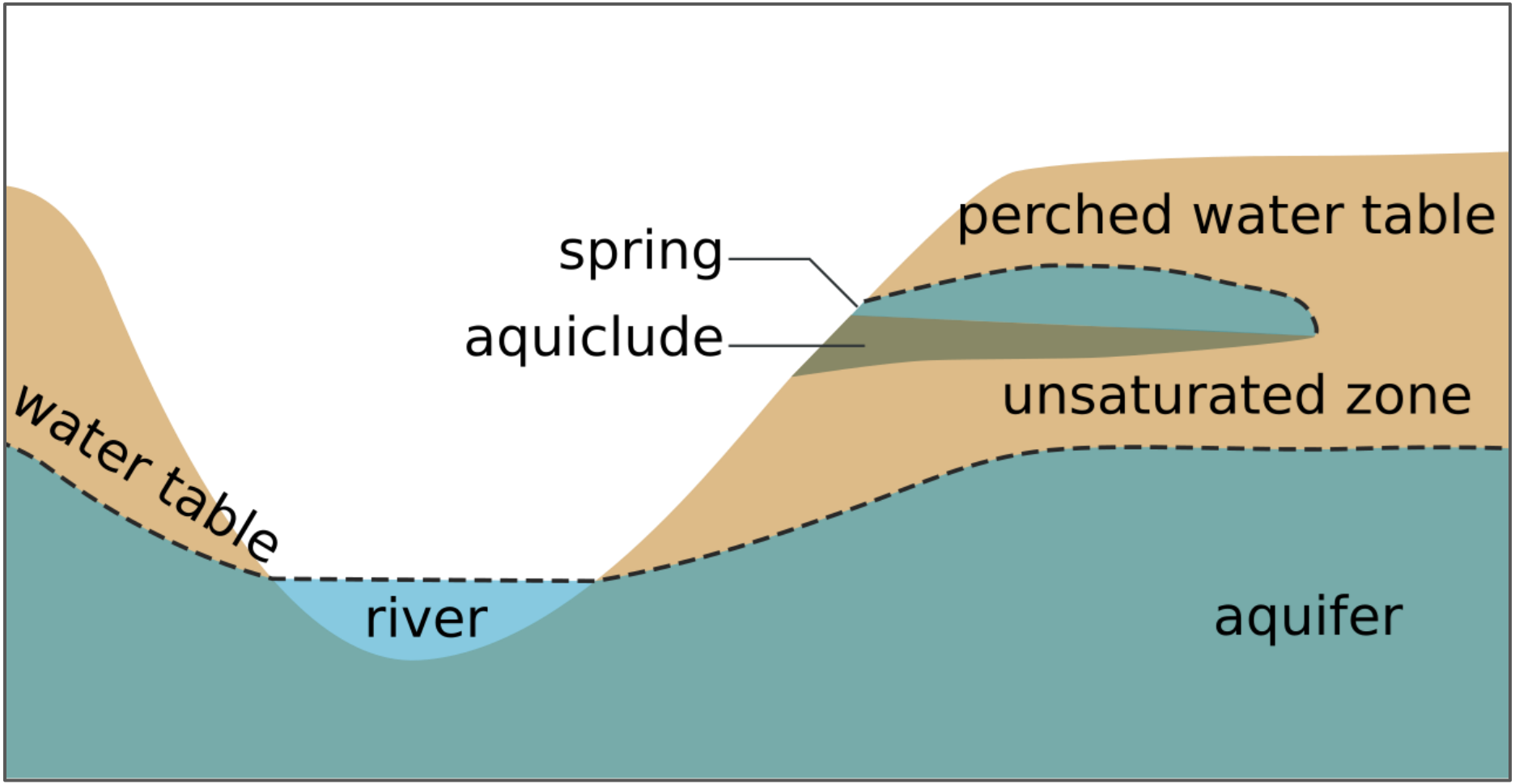
Just looking at this again, the thing that comes up here in my mind here, is **where's the regional water table?** The thing that dominates the site is the Thames River. So the most obvious answer to that is where the regional groundwater table is, it's going to be **close to the same elevation as the Thames River**. Also the other thing that's important here is to **look at the topography.** Obviously we have a mountain here for several hundred foot high topographic relief here. And **that ridge is a groundwater divide**, as well as a surface water divide form. Look at where the powerline right of way runs across there. The site is divided along that line. **So groundwater flow to the north of the powerline right of way is going to be to the north**.

Along that [powerline] right of way, at the highpoint of topography, to the south of that **you’re also going to get water flow, groundwater flow, to the south**.

DEFINITION

The **water table** is an underground boundary between the soil surface and **the area where groundwater saturates spaces between sediments** and cracks in rock.

The **water table** is the boundary between two underground zones: the zone of aeration (located above the water table) and the zone of saturation (found below the water table).


perched water table
spring
aquiclude
unsaturated zone
water table
river
aquifer

That's a what's going to be considered a two feldspar granite. So the pink that's there is a mineral called feldspar. As well as **there are small grain supports there that is a silicate mineral.**

September 12,2024

04:03:02:01 - 04:03:25:53
The gray rock that's there again is another granite. The other thing to take note of is, **how fine grained this material is.** Okay. Or the crystalline size of this. So again, that has some impact. **When this material is crushed down, things want to crush down to those natural grain sizes.** Okay. And that's as far down as they go.

04:03:25:58 - 04:03:52:31
You're going to hear testimony from, a dust expert, the size of dust, operable dust, is going to be much, much, you know, size wise is much smaller. Okay. **So this material is going to want to crush down to that the size of those grains that are there**

So, **the water that's going to be there is going to be in fractures, okay. It's going to be in faults, those types of things, no faults or any significant water bearing zones were encountered in any of the drilling that was done.**

And if you look at the, the chemical analysis, which is in the bottom part of the page, you're going to see SiO_2. **The total silica is 72.8%.** Okay. So that's total silica. Now, when you're talking about rest for both silica or crystal and silica, we need to take a look at two things. What is the free silica that is going to be available okay.

So, you know, there's nothing there that stands out to me, you know, where there's **hardly any** nickel, copper, zinc, **arsenic**, **lead is low**. And again, one of the things to take into consideration here is that the first line on these is the sample that was run. They run two different, you know, they replicate the sample.

USGS
science for a changing world

Prepared in cooperation with the Connecticut Department of Public Health

Arsenic and Uranium in Private Wells in Connecticut, 2013–15

Table 3. Arsenic and uranium concentrations that exceed maximum contaminant levels from 674 private wells in Connecticut, by geologic unit and major bedrock category, 2013–15.

[Geologic unit names are the Connecticut Department of Energy and Environmental Protection preferred names as modified from Rodgers (1985). Bedrock categories (subheadings) are modified from Robinson and Kapo (2003). Color shadings indicate the percentage of wells with exceedances above concentration thresholds in ranges of , no data (—); , less than (<) 1 percent; , 1 to 10 percent; , more than (>) 10 to 20 percent; , >20 to 30 percent; and , >30 percent. MCL, U.S. Environmental Protection Agency maximum contaminant level enforceable for public water supplies; µg/L, microgram per liter; NA, not available]

Geologic unit name	Geologic unit code	Number of samples		MCL, percentage[1] of water samples with concentrations, in micrograms per liter		Percentage of study area underlain by geologic unit[2]
		Arsenic	Uranium	Arsenic >10 µg/L	Uranium >30 µg/L	
Avalon granite						
"Scituate" Granite Gneiss	Zss	1	1	0	0	0.7
Hope Valley Alaskite Gneiss	Zsh	5	3	20.0	0	2.1
Plainfield Formation	Zp	3	2	0	0	1.4
porphyritic phase of Potter Hill Granite Gneiss	Zspp	1	1	0	0	<0.2