JENSEN HUGHES

1661 Worcester Rd | Suite 501
Framingham, MA 01701 USA
jensenhughes.com
+1 508-620-8900
Fax: +1 508-620-0908

# G&URR LPG TRANSFER FACILITY FIRE SAFETY ANALYSIS EVALUATION GRAFTON, MA

**- DRAFT -**

Prepared For:

Town Administrator on behalf of the Board of Selectmen
30 Providence Road
Grafton, MA 01519

**December 16, 2015**

## TABLE OF CONTENTS


1. BACKGROUND ..... 1
   1.1. Project History ..... 1
   1.2. Project Scope ..... 1
2. APPLICABLE CODES ..... 3
3. MAJOR FIRE PROTECTION AND LIFE SAFETY REQUIREMENTS ..... 4
   3.1. Storage and Use of LPG ..... 4
   3.2. Aboveground Storage Tank Requirements of 502 CMR ..... 14
   3.3. NFPA 1600 Disaster/Emergency Management Plan Requirements ..... 16
4. LITERATURE REVIEW ..... 18
5. RECOMMENDATIONS ..... 20
   5.1. Additional / Revised Information Required ..... 20
   5.2. Conflicts Identified on FSA Checklist ..... 23

APPENDIX A – SURFACE TRANSPORTATION BOARD DOCKET NO. FD35752 ..... 26
APPENDIX B – INCIDENT DAMAGE AREA OVERLAY ..... 27
APPENDIX C – US DOT EMERGENCY RESPONSE GUIDE FOR LPG ..... 28
APPENDIX D – EVACUATION ZONE MAP ..... 29
APPENDIX E – GRAFTON MA GIS INFORMATION ..... 30


DRAFT

# 1. BACKGROUND

The Town of Grafton has retained JENSEN HUGHES to provide fire protection and life safety code consulting services related to the proposed liquefied petroleum gas (LPG) facility at the Grafton and Upton Railroad (G&URR) facility located on Westboro Road in Grafton, MA. It is our understanding that this facility will receive LPG from railcars into four, 80,000-gallon storage tanks and distribute LPG from the tanks to commercial cargo trucks. Thus, the facility meets the definition of an LPG bulk plant (NFPA 58, 3.3.10). It is our understanding that the facility only handles liquefied LPG, that is, there are no vaporizers and no transfer of LPG in gaseous form. This report serves as the third party review of the hazard analysis prepared by the G&URR.

The information in this report is based on the following:

- Various project related discussions between JENSEN HUGHES and the Town of Grafton.
- Fire Safety Analysis Report prepared by EBI Consultants dated June 17, 2015
- Surface Transportation Board (STB) Decision docket No. FD35752, “Grafton & Upton Railroad Company – Petition for Declaratory Order” dated September 17, 2014
- Miscellaneous supplemental information provided by G&URR to the Grafton Fire Department (GFD), including hydraulic calculations, updated site plans, and electrical classification plan

## 1.1. Project History

The Town of Grafton became aware of the G&URR plans to build a 320,000-gallon propane facility on the property located at 42 Westboro Road in late October 2012. On December 12, 2012, the Building Inspector served a Cease and Desist Order to the owner of the G&URR, preventing construction and delivery of the 80,000-gallon tanks. The case went to Federal Court where Judge Timothy Hillman of the U.S. District Court ruled that it lacked federal jurisdiction over the civil action on May 17, 2013 and directed the matter to state court. On May 30, 2013, Worcester Superior Court Judge John S. McCann issued an injunction at the request of the Town, enjoining G&URR from delivering the tanks pending consideration of the preemption issue by the STB, to which he referred that matter. A decision by the Surface Transportation Board (STB; see Appendix A) was issued on September 17, 2014. Within this decision it was ruled that, unless applied in a discriminatory manner, provisions of 527 CMR and 502 CMR that fit within the local police power exception to federal preemption, as described below, would be applicable to this project.

## 1.2. Project Scope

The STB found that state and local permitting and preclearance requirements, including zoning requirements and the aboveground storage tank construction permit requirement of 502 CMR, are preempted with regard to the construction and operation of the facility; therefore, these are not within the scope of this review. However, the STB found that “states and towns may exercise their traditional police powers over the development of rail facilities like the one at issue here to the extent that the regulations:

- Protect public health and safety;
- Are settled and defined;
- Can be obeyed with reasonable certainty;

- Entail no extended or open-ended delays;
- Can be approved (or rejected) without the exercise of discretion on subjective questions."

Thus, such qualifying requirements of 527 CMR and 502 CMR are within the purview of Town regulation, and therefore form the basis of this review.

DRAFT

## 2. APPLICABLE CODES

In accordance with the above ruling the primary codes applicable to this project include:

**Table 1 – List of Applicable Codes**

| Code Type | Applicable Code |
|---|---|
| Building | Massachusetts State Building Code (780 CMR), 8th Edition, which is an amended version of the 2009 International Building Code |
| Fire Prevention | 527 CMR – Massachusetts Comprehensive Fire Safety Regulations which is an amended version of the 2012 edition of NFPA 1, *Fire Code* |
| Electrical | NFPA 70, 2014 Edition, *National Electrical Code* as amended by 527 CMR 12.00 |
| Mechanical | 2009 International Mechanical Code (IMC) as amended by 780 CMR 28 |
| Plumbing | 248 CMR – Massachusetts Fuel Gas and Plumbing Code |
| Other | 502 CMR – Permit and Inspection Requirements of Aboveground Storage Tanks of more than 10,000 Gallons Capacity<br>National Fire Protection Association (NFPA) Standards, as referenced by 527 CMR, including:<br>NFPA 58, 2011 Edition, *Liquefied Petroleum Gas Code*<br>NFPA 1600, 2013 Edition, Standard on Disaster/Emergency Management and Business Continuity Programs |

DRAFT

## 3. MAJOR FIRE PROTECTION AND LIFE SAFETY REQUIREMENTS

The following subsections provide an overview of major requirements applicable to the G&URR LPG facility. A review of the LPG Fire Safety Analysis (FSA), prepared by EBI and dated June 17, 2015, was conducted and comments regarding the review are included in Section 0 of this report. Many of the comments included in Section 0 are cross referenced by the major requirements listed in this section. **As noted previously, the scope of this review is narrow to issues concerning public health and safety which are enforceable by the Town of Grafton and/or Commonwealth of Massachusetts, pursuant to the STB ruling referenced in Appendix A.**

It should be noted that the FSA was primarily based on the NFPA/National Propane Gas Association (NPGA) FSA Manual for LP-Gas Storage Facilities, which is based on a portion of the 2011 NFPA 58. However, that manual specifically excludes the transportation of LP-gas by either rail tank cars or by cargo tank trucks (Section 1.2). Hazards associated with these practices are not addressed by the FSA. See Recommendation 5.1.1.

### 3.1. Storage and Use of LPG

The storage, use, and handling of liquefied petroleum gases (LPG) shall comply with the requirements 527 CMR Chapter 69, Section 60.1 through 60.4 and NFPA 58 (527 CMR 69.1.1.1). The majority of the requirements provided in Chapter 69 of 527 CMR are duplicate from NFPA 58. As such, for clarity, where 527 CMR and NFPA 58 include duplicate references, only the NFPA 58 reference is provided herein.

#### 3.1.1. General Requirements

A. The planning for the response to incidents including the inadvertent release of LP-Gas, fire, or security breach shall be coordinated with local emergency response agencies. Planning shall include consideration of the safety of emergency personnel, workers, and the public (NFPA 58, 6.25.2). The modes of fire protection for LPG installations with an aggregate water capacity of more than 4,000 gallons shall be specified in a written FSA. The FSA shall be an evaluation of the total product control system (such as the emergency shutoff and internal valves equipped for remote closure and automatic shutoff using thermal / fire actuation, pull-away protection where installed, and the optional requirements of NFPA 58, 6.26 (NFPA 58, 6.25.3.1, 6.25.3.2 and 6.25.3.5). **The FSA does not address planning for response to such incidents, which may exceed the design LPG spills assumed in FSA Table 7.1. Specifically, the following items should be addressed:**

   <u>Response to inadvertent release of LP-Gas; consideration of safety of emergency personnel, workers and public during this event:</u> All plausible emergency scenarios should be included, not limited to unignited LPG leak from tank, truck or rail car, unignited LPG leak during transfer operation, and long duration LPG leak (not immediately detected).

   - The submitted material includes a plan with four (4) flammable gas detectors, Dräger Polytron Model 8310. While this detector is capable of sensing propane and butane, it appears to only be capable of responding to concentrations of 100% of the Lower Explosive Limit (LEL) or higher. The industry standard for explosion control is detection at 25% of the LEL (NFPA 69, 2008 Edition, Section 8.3.1 as referenced by

780 CMR 414.5.1 and 527 CMR 63.2.8). **A different model capable of sensing propane/butane at concentrations of 25% LEL or less should be selected.** Additionally, design of gas detector systems should be by a registered fire protection engineer and gas detectors should be located to achieve the objectives identified in the Emergency Action Plan (EAP) noted in Recommendation 5.1.1.

- The FSA Section 5.3 indicates that "where a gas leak results in imminent danger, immediate verbal notification must be provided to the head of the fire department, and followed by written notification within 24-hours of verbal notification documenting the date, time, and the location of discovery and status of such event." **There is no documentation as to how "imminent danger" will be determined and how the fire department will be notified. Grafton's 911 dispatch center shall be notified, not the head of the fire department.**
- The United States Department of Transportation (US DOT) / Pipeline and Hazardous Materials Safety Administration (PHMSA) Emergency Response Guide is accepted and used throughout the United States as guidance for first responders during the initial phase of a hazardous materials transportation incident. The Emergency Response Guide (See Appendix C) indicates a 0.5-mile downwind initial evacuation zone for large propane leaks, and a 1-mile in all directions initial evacuation for any large tank or railcar fire. Grafton emergency departments do not appear to have the resources available to attempt to mitigate the hazard, secure the area, and simultaneously evacuate these recommended initial areas. An elementary school and library are located within the 0.5-mile zone. Many homes and businesses are located within the 0.5-mile and 1-mile zones (see Appendix D). **G&URR should provide a to-scale plot of the 0.5-mile and 1-mile zone, and indicate the number of businesses, homes, schools, etc. in these zones and address what resources would be capable of carrying out the evacuation.**

<u>Response to fire; consideration of safety of emergency personnel, workers and public during this event:</u> All plausible emergency scenarios should be included, not limited to: ignited LPG leak at tank, ignited LPG leak at transfer operation, ignited pool and jet fire scenarios at tank, rail car and truck locations as applicable.

- **FSA Form 8.3 identifies that only 3 of the 4 tanks will be protected by the water cannons at any given time; however, all 4 tanks are required to be protected.**
- **FSA Section 6.3 indicates that the rail cars and truck loading areas will also be protected by the water cannons. Identify what areas would be cooled by each water cannon in each design fire scenario. Demonstrate that the proposed water cannon configuration is adequate for all plausible fire scenarios. (Also see Section 3.1.2A for additional information required pertaining to the fire protection system.)**
- **With one of the water cannons being on the other side of the railroad tracks, a rail car may obstruct the flow of water from this water cannon on the 4 storage tanks. Verify that the design accounts for potential obstruction of this cannon.**
- If additional apparatus are determined to be required beyond what would normally be expected for an emergency response in this part of Grafton, validate that the existing infrastructure (e.g. roads, bridges) are capable of supporting the proposed increased weight of expected emergency response vehicular traffic. If modifications are needed to support the proposed response team, indicate what upgrades are required.

<u>Response to security breach; consideration of safety of emergency personnel, workers and public during this event:</u> All plausible emergency scenarios should be included, not limited to: breach of rail car fence gate, intentional vehicular or personnel breach of

perimeter gate. It is anticipated that the response to this item would be covered in the facility's Department of Homeland Security (DHS) Chemical Facility Anti-Terrorism Standard (CFATS) vulnerability assessment / security plan.

**The design intent of how the facility will respond to such events shall be provided in a written EAP and coordinated with local emergency response agencies as required by NFPA 58, 6.25.2.2. See Recommendation 5.1.1.**

B. Containers shall be designed, fabricated, tested, and marked (or stamped) in accordance with the regulations of the U.S. Department of Transportation (DOT); the ASME Boiler and Pressure Vessel Code, Section VIII, "Rules for the Construction of Unfired Pressure Vessels"; or the API-ASME Code for Unfired Pressure Vessels for Petroleum Liquids and Gases, except for UG-125 through UG-136. (NFPA 58, 5.2.1.1)

C. Stationary ASME containers shall be marked with the information listed in NFPA 58 Section 5.2.8.3.

D. When LPG storage containers with water capacity over 2000 gal are used, the systems or components assembled to make up the systems shall be approved (NFPA 58, 4.1). Approval applies to the following (See Recommendation 5.1.22) :

   i. Container valves
   ii. Container excess-flow valves, backflow check valves, or alternate means of providing this protection such as remotely controlled internal valves
   iii. Container gauging devices
   iv. Regulators and container pressure relief devices

E. Repairs or alteration of a container shall comply with the regulations, rules, or code under which the container was fabricated. Repairs or alteration to ASME containers shall be in accordance with the National Board Inspection Code. (NFPA 58, 5.2.1.6)

F. Field welding shall be permitted only on saddle plates, lugs, pads, or brackets that are attached to the container by the container manufacturer. (NFPA 58, 5.2.1.7)

3.1.2. Fire Protection

A. Fire protection shall be provided for installations of more than 4,000 gallons and the modes of fire protection shall be specified in the FSA (NFPA 58, 6.25.3.1 & 6.25.3.2). (See Recommendations 5.1.2, 5.2.4 and 5.2.5). **FSA Section 6.3 indicates that water cannons are to be provided for tank cooling and fire suppression in satisfying this section; however, the following information must be provided to demonstrate adequate protection is provided:**

- The proposed water cannons are intended for use with foam-water firefighting operations. Foam is not a recommended fire-fighting agent for LPG fires (see Appendix C), nor is foam concentrate proposed on site. **A water cannon intended for use with water only should be selected in lieu of National Foam Model PC-60.**
- **It is unclear what fire flow (water flow during a fire event) is adequate. Based on the fire scenarios outlined in the EAP, G&URR should coordinate with GFD to determine necessary fire flows for each emergency scenario, including**

**water provided to fixed cannons and water intended for manual fire department response operations. A secondary water supply may be required depending on the calculated flow/pressure requirements.**

- Alternate modes of fire protection may be more advantageous when considering available water supply and emergency response goals. Such alternate solutions may include providing a fixed water spray (deluge) system to cool the tanks (in accordance with NFPA 15), or providing insulation for protection from fire in accordance with NFPA 58, 6.25.5.1 and 6.25.5.2.
- **The provided hydraulic calculations indicate insufficient flow/pressure are available while flowing all four water cannons simultaneously.** Provide updated hydraulic calculations for the fire suppression strategy including how many water cannons are expected to be used during each plausible fire scenario, allowance for manual firefighting operation water flow (hose stream), piping friction losses, and intended nozzle operating pressures. If necessary, provide new hydraulic calculations if an alternative solution is proposed (e.g. fixed water spray system).

B. Roadways or other means of access for emergency equipment, such as fire department apparatus, shall be provided which comply with 527 CMR 18 (NFPA 58, 6.25.4.1). The proposed fire access lanes must be at least 20-feet wide and turnarounds must be provided where dead ends exceed 150-feet. The layout of fire lanes must include an analysis and evaluation of fire apparatus maneuvering clearance by swept path analysis (See Recommendation 5.1.26).

C. If water spray fixed systems and monitors are used, they shall comply with NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection (NFPA 58, 6.25.6.1).

D. Where water spray fixed systems and monitors are used, they shall be automatically actuated by fire-responsive devices and shall also have a capability for manual actuation (NFPA 58, 6.25.6.2). (See Recommendation 5.2.11)

E. Where monitor nozzles are used, they shall be located and arranged so that all container surfaces that can be exposed to fire are wetted (NFPA 58, 6.25.6.3). **The hydraulic calculations shall be updated accordingly; see Recommendation 5.1.2.**

F. Each bulk plant shall be provided with at least one approved portable fire extinguisher having a minimum capacity of 18 lb of dry chemical with a B:C rating (NFPA 58, 6.25.4.2). **The FSA Section 3.7 indicates fire extinguishers will be provided, but it is unclear where they will be located.**

3.1.3. Container Installation

A. Horizontal ASME containers designed for permanent installation in stationary service above ground of more than 2000 gal water capacity shall be provided with concrete or masonry foundations formed to fit the container contour or, if furnished with saddles in compliance with Table 6.6.3.3(A), shall be placed on flat-topped foundations. (NFPA 58, 6.6.3.1 (C))

B. Where saddles are used to support the container, they shall allow for expansion and contraction and prevent an excessive concentration of stresses. Where structural steel supports are used, they shall comply with NFPA 58, Section 6.6.3.3 (NFPA 58, 6.6.3.1 (A) & (B)). (See Recommendation 5.1.19)

C. Where necessary to prevent flotation due to possible high flood waters around aboveground or mounded containers, containers shall be securely anchored (NFPA 58, 6.6.1.6). (See Recommendation 5.1.24)

3.1.4. Odorization

All LP-Gases shall be odorized prior to delivery to a bulk plant by the addition of a warning agent of such character that the gases are detectable, by a distinct odor, to a concentration in air of not over one-fifth the lower limit of flammability (NFPA 58, 4.2.1). Odorization shall not be required if it is harmful in the use or further processing of the LP-Gas or if such odorization will serve no useful purpose as a warning agent in such further use or processing (NFPA 58, 4.2.2). (See Recommendation 5.2.3). **Based on the proposed facility's location in proximity to several residences and an industrial facility with a hot work permit (EarthWorks), odorization will serve a useful purpose as a warning agent.**

A. All containers that contain unodorized LP-Gas products shall be marked NOT ODORIZED. The marking shall have a contrasting background surrounded by a rectangular border in red letters and red border in the sizes shown in Table 5.2.8.5. The markings shall be on both ends or on both sides of a container or on both sides and the rear of cargo tanks (NFPA 58, 5.2.8.5). (See Recommendation 5.1.20)

3.1.5. Container Service Pressure & Pressure Relief (See Recommendations 5.1.17, 5.1.18 and 5.1.23)

A. ASME containers of more than 2000 gal water capacity shall have an opening for a pressure gauge. (NFPA 58, 5.2.5.5) Pressure gauges shall be attached directly to the container opening or to a valve or fitting that is directly attached to the container opening. (NFPA 58, 5.7.6.1)

B. The maximum allowable working pressure (MAWP) for ASME containers shall be in accordance with NFPA 58, Table 5.2.4.2. As the MAWP of the ASME containers is 250 psig, the maximum vapor pressure permitted is 215 psig at 100°F. **Verify the MAWP will not be exceeded.**

C. ASME containers for LP-Gas shall be equipped with direct spring-loaded pressure relief valves conforming to the applicable requirements of ANSI/UL 132, *Standard for Safety Relief Valves for Anhydrous Ammonia and LP-Gas*, or other equivalent pressure relief valve standards. For containers over 40,000 gal or more water capacity, a pilot-operated pressure relief valve may also be used. (NFPA 30, 5.7.2.5). Pressure relief valve connections that have direct communication with the vapor space of the container shall be provided (NFPA 58, 5.2.5.6)

D. Pressure relief valves shall be plainly and permanently marked in accordance and shall be designed to minimize the possibility of tampering. (NFPA 58, 5.7.2.9 & 5.7.2.11) Externally set or adjusted valves shall be provided with an approved means of sealing the adjustment. (NFPA 58, 5.7.2.12)

E. Pressure relief valve discharge on each container of more than 2000 gal water capacity shall be directed vertically upward and unobstructed to the open air (NFPA 58, 6.7.2.7)

F. Relief valves for aboveground ASME containers shall relieve at not less than the flow rate specified in 5.7.2.6 before the pressure exceeds 120 percent of the minimum permitted start-to-leak pressure setting of the device, excluding the 10 percent tolerance in Table 5.7.2.5(A). (NFPA 58, 5.7.2.7)

G. Shutoff valves shall not be installed between pressure relief devices and the container unless a listed pressure relief valve manifold meeting the requirements of 6.7.2.9 is used. (NFPA 58, 5.7.2.10)

3.1.6. Overfill Protection (See Recommendation 5.1.23)

A. ASME containers to be filled on a volumetric basis shall be fabricated so that they can be equipped with a fixed maximum liquid level gauge(s) that is capable of indicating the maximum permitted filling level(s) in accordance with 7.4.2.3. (NFPA 5.2.5.7)

3.1.7. Container Appurtenances and Regulators (See Recommendation 5.1.21). **It is presumed the facility complies with this section based on the FSA using the NFPA/NPGA checklist.**

A. Container appurtenances and regulators shall be fabricated of materials that are compatible with LP-Gas, shall be resistant to the action of LP-Gas under service conditions, and shall comply with Sections 5.7 and 5.8 of NFPA 58. (NFPA 58, 5.7)

B. ASME containers over 4000 gal water capacity shall be equipped in accordance with NFPA 58 Table 5.7.4.2.and with the following (NFPA 58, 5.7.4.2):

C. Liquid withdrawal openings shall be equipped with an internal valve that is fitted for remote closure and automatic shutoff using thermal (fire) actuation where the thermal element is located within 5 ft. of the internal valve (NFPA 58, 5.7.4.2(B)).

D. Liquid inlet openings shall be equipped with either of the following (NFPA 58, 5.7.4.2(F)):

i. An internal valve that is fitted for remote closure and automatic shutoff using thermal (fire) actuation where the thermal element is located within 5 ft. of the internal valve

ii. A positive shutoff valve that is located as close to the container as practical in combination with a backflow check valve that is designed for the intended application and is installed in the container

E. Internal Valves and Emergency Shutoff Valves shall be installed in accordance with Section 6.11 and 6.12 of NFPA 58.

F. ASME containers over 4000 gal water capacity shall also be equipped with the following appurtenances (NFPA 58, 5.7.4.4) (Recommendation 5.1.23):

i. An internal spring-type, flush-type full internal pressure relief valve, or external pressure relief valve
ii. A fixed maximum liquid level gauge

iii. A float gauge, rotary gauge, slip tube gauge, or a combination of these gauges
iv. A pressure gauge
v. A temperature gauge

G. All container openings except those used for pressure relief devices, liquid level gauging devices, pressure gauges, double-check filler valves, combination backflow check and excess-flow vapor return valves, actuated liquid withdrawal excess-flow valves, and plugged openings shall be equipped with internal valves or with positive shutoff valves and either excess-flow or backflow check valves (NFPA 58, 5.7.8.1).

3.1.8. Piping

A. Piping (including hose), fittings, and valves shall comply with Section 5.9 of NFPA 58 (527 CMR 69.2.3).

B. The Piping installation, material, size and the physical state and pressure at which LPG is transmitted through piping systems shall be in accordance with NFPA 58 Section 6.9.

C. Piping that can contain liquid LP-Gas and that can be isolated by valving and that requires hydrostatic relief valves, as specified under Section 6.13, shall have an operating pressure of 350 psig or a pressure that is equivalent to the maximum discharge pressure of any pump or other source feeding the fixed piping system if it is greater than 350 psig. (NFPA 58, 9.9.4)

3.1.9. Location of LP-Gas Systems Installations

A. Outdoor containers shall be located with respect to the adjacent containers, important building, group of buildings, or line of adjoining property that can be built upon, in accordance with Table 6.3.1, Table 6.4.2, Table 6.4.5.8, and 6.3.2 through 6.3.11. (NFPA 58, 6.3.1)

B. In accordance with Table 6.3.1, the separation distance between containers of 80,000 gallon capacity shall be at minimum one-fourth of the sum of diameters of adjacent containers. **The facility appears to comply with this requirement, but detailed dimensions should be provided by G&URR as JENSEN HUGHES was not permitted on site.** The separation distance between aboveground containers of 80,000 gallon capacity and important buildings, and line of adjoining property that can be built upon shall be at minimum 100 feet. **The westernmost tank is located less than 100-feet from the property line.** (See Recommendation 5.1.6 and 5.1.9)

C. The minimum separation distances specified in Table 6.3.1 between containers and buildings of other than wood frame construction devoted exclusively to gas manufacturing and distribution operations shall be reduced to 10 ft. (NFPA 58, 58:6.3.5 & 527 CMR 69.3.3.5). **No such buildings are located within this zone.**

D. The distance measured horizontally from the point of discharge of a container pressure relief valve to any building opening below the level of such discharge shall be no less than 5-feet (NFPA 58, 6.3.8). **No such buildings are located within this zone.**

E. The distance measured in any direction from the point of discharge of a container pressure relief valve, vent of a fixed maximum liquid level gauge on a container, and the container filling connection to exterior sources of ignition, openings into direct-vent (sealed combustion system) appliances, and mechanical ventilation air intakes shall be not less than 10-feet (NFPA 58, 6.3.9). **The compressor and other electrical equipment within 10-feet of the noted appurtenances should be verified to be explosionproof in accordance with NFPA 70, or relocated outside of the classified electrical zone so as to not serve as a potential ignition source. It does not appear that any other ignition sources are proposed within 10-feet of the tanks.**

F. Loose or piled combustible material and weeds and long dry grass shall be separated from containers by a minimum of 10 ft. (NFPA 58, 6.4.5.2)

G. The area under containers shall be graded or shall have dikes or curbs installed so that the flow or accumulation of flammable liquids with flash points below 200°F is prevented. (NFPA 58, 6.4.5.3). **It is unclear whether flammable or combustible liquids will be stored on site (e.g. methanol for drying operations). Flammable liquids appear to be present based on the response in FSA Form 6.4 Row 10. If so, the site should be graded/curbed accordingly.**

H. LP-Gas containers shall be located at least 10 feet from the centerline of the wall of diked areas containing flammable or combustible liquids. (NFPA 58, 6.4.5.4) **It is unclear whether flammable or combustible liquids will be stored on site (e.g. methanol for drying operations). Flammable liquids appear to be present based on the response in FSA Form 6.4 Row 10. If so, the site should be graded/curbed accordingly.**

I. The minimum horizontal separation between aboveground LP-Gas containers and aboveground tanks containing liquids having flash points below 200°F shall be 20 feet (NFPA 58, 58:6.4.5.5). **It is unclear whether flammable or combustible liquids will be stored on site (e.g. methanol for drying operations). Flammable liquids appear to be present based on the response in FSA Form 6.4 Row 10. If so, the site should be graded/curbed accordingly.**

J. An aboveground LP-Gas container and any of its parts shall not be located within 6 feet of a vertical plane beneath overhead electric power lines that are over 600 volts, nominal. (NFPA 58, 6.4.5.12)

K. LP-Gas containers and systems shall be protected from damage from vehicles (NFPA 58, 6.6.1.2). **Vehicular impact protection is not currently indicated on the plans.** (See Recommendation **Error! Reference source not found.**)

L. The minimum separation between LP-Gas containers and oxygen or gaseous hydrogen containers shall be in accordance with NFPA 58 Table 6.4.5.8, and minimum separation distance between LPG containers and liquefied hydrogen containers shall be in accordance with NFPA 55, *Compressed Gases and Cryogenic Fluids Code.* (NFPA 58, 6.4.5.10 & 6.4.5.11). **It is our understanding that oxygen and hydrogen are not proposed on site; thus this requirement does not apply.**

3.1.10. Transfer Operations

A. Liquid shall be transferred into containers, including containers mounted on vehicles, only outdoors or in structures specially designed for such purpose. (NFPA 58, 6.5.1)

B. The transfer of liquid into containers mounted on vehicles shall not take place within a building but shall be permitted to take place under a weather shelter or canopy. (NFPA 58, 6.5.1.1) **No indoor operations or weather shelter/canopy are proposed; thus, this requirement does not apply.**

C. The point of transfer for filling of containers located outdoors in stationary installation shall be at the container, or shall be located in accordance with NFPA 58, Table 6.5.3 (NFPA 58, 6.5.2 & 6.5.3). Such separations include 5-feet from unrelated driveways, 10-feet from unrelated containers, 10-feet from flammable and Class II combustible liquid dispensers and container fill connections and 20-feet from such liquid containers, 25-feet from nonrated buildings, public ways, mainline railroad track centerlines and property lines, and 50-feet from outdoor places of public assembly. **The required separations appear to be provided.**

D. Transfer operations shall be conducted by qualified personnel and in accordance with Chapter 7 of NFPA 58. (See Recommendation 5.1.7)

E. During the time railroad tank cars are on sidings for loading or unloading, the following shall apply (NFPA 58, 7.2.3.6) (See Recommendation 5.1.27):

   i. A caution sign, with wording such as “STOP. TANK CAR CONNECTED,” shall be placed at the active end(s) of the siding while the car is connected, as required by DOT regulations.

   ii. Wheel chocks shall be placed to prevent movement of the car in either direction.

F. Public access to areas where LP-Gas is stored and transferred shall be prohibited, except where necessary for the conduct of normal business activities (NFPA 58, 7.2.3.1). **The site security plan appears to satisfy this requirement.**

G. Sources of ignition shall be turned off during transfer operations, while connections or disconnections are made, or while LP-Gas is being vented to the atmosphere (NFPA 58, 7.2.3.2).

H. Hose assemblies shall be observed for leakage or for damage that could impair their integrity before each use. Inspection of pressurized hose assemblies shall be conducted at least annually (NFPA 58, 7.2.4.1 & 7.2.4.1)

I. The maximum permitted volume of LP-Gas in a container shall be in accordance with NFPA 58 Tables 7.4.2.2 and 7.4.2.3(b), which set maximum fill limits by weight (44-56% of the container’s water capacity, depending on the specific gravity of LPG) and by volume (75-99% of the container’s volume, depending on the liquid temperature and specific gravity of LPG). (See Recommendation 5.1.28)

DRAFT

3.1.11. Vehicular Transportation (See Recommendation 5.1.29)

A. Each truck or trailer transporting portable containers in accordance with 9.3.2 or 9.3.3 shall be equipped with at least one approved portable fire extinguisher having a minimum capacity of 18 lb. dry chemical with a B:C rating (NFPA 58, 9.3.5).

B. Each cargo tank vehicle or trailer shall utilize a wheel stop, in addition to the parking or hand brake, whenever the cargo tank vehicle is loading, is unloading, or is parked (NFPA 58, 9.4.8)

C. Transfer to cargo tank vehicles used for the transportation of LP-Gas as liquid cargo shall be made by a pump or compressor mounted on the vehicle or by a transfer means at the delivery point (NFPA 58, 9.4.1.2)

D. Cargo tank liquid hose of 1½-in. (nominal size) and larger and vapor hose of 1¼-in. (nominal size) and larger shall be protected with an internal valve that is fitted for remote closure and automatic shutoff using thermal (fire) actuation (NFPA 58, 9.4.2.3).

E. Piping, Fitting and Valves shall comply with NFPA 58 Section 9.4.3 and shall be protected in accordance with Section 9.4.5.

F. All LP-Gas cargo tank vehicles, whether used in interstate or intrastate service, shall comply with the applicable portion of the U.S. Department of Transportation Hazardous Materials Regulations of the DOT Federal Motor Carrier Safety Regulations (49 CFR, Parts 171–180, 393, 396, and 397) and with any added requirement

3.1.12. Operation and Maintenance (See Recommendations 5.1.25 and 5.1.31)

A. Each facility shall prepare and maintain in a common location or locations written operating procedure manuals that contain the written operating procedures (NFPA 58, 14.2.1.5 & 14.2.2.1 )

- The general operating procedures shall include the following (NFPA 58, 14.2.2.2):
    - General procedures
    - Combustible material
    - Sources of ignition
    - Signage and markings
    - Containers
    - Security and access
    - Fire response

- Loading and unloading procedures shall include the following (NFPA 58, 14.2.2.3):
    - Hose
    - Chocks
    - Fire Extinguishers
    - Sources of Ignition
    - Personnel
    - Containers
    - Signage

- Security and access
- Fire response
- Ammonia concentration

B. Operating procedures shall include operator actions to be taken if flammable concentrations of flammable liquids or gases are detected in the facility using fixed detectors, portable detectors, operating malfunctions, or the human senses. (NFPA 58, 14.2.1.2)

C. Written maintenance procedures shall be the basis for maintaining the mechanical integrity of LP-Gas systems. The written procedures shall address the following requirements, where applicable (NFPA 58, 14.3.1.4):

- Corrosion Control
- Physical protection
- Hose
- Piping
- Appurtenances
- Containers
- Cylinders

D. Maintenance manuals shall be maintained at the facility and shall include routine inspections and preventative maintenance procedures and schedules. Maintenance manuals shall be made available to the authority having jurisdiction (NFPA 58, 14.3.2)

E. Facilities shall prepare and implement a maintenance program for all plant fire protection equipment.

i. Water-based automatic fire-extinguishing systems shall be maintained in accordance with NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems* (NFPA 58, 14.3.3.3)
ii. Portable fire extinguishers shall be maintained in accordance with NFPA 10*, Standard for Portable Fire Extinguishers* (NFPA 58, 14.3.3.4)

### 3.2. Aboveground Storage Tank Requirements of 502 CMR

Although the STB ruling indicates that this facility does not require an aboveground storage tank permit issued by the State Fire Marshal, 502 CMR requires the following documentation be provided to the local emergency responders in the interest of the protection of public health and safety:

A. A dike plan, including (502 CMR 5.04(2c)):

1. Calculations showing volume of area;
2. Slope and height;
3. Top width (if applicable);
4. Floor and drainage;
5. Distance from other tanks both within the dike and within adjacent diked areas including those of abutters;
6. The total combined gallon capacity;
7. The existence of intermediate diking; and

8. Any penetration of the dike wall.

**This plan was not provided. Confirm whether a dike is required based on the presence of flammable / combustible liquids.**

B. A fire safety analysis for tanks containing a flammable gas, conducted by means of an engineering evaluation and application of sound fire protection and process engineering principles, which shall include (502 CMR 5.04(2e)):

1. Analysis of the fire and explosion hazards;
2. Analysis of emergency relief from the tank(s), taking into consideration the properties of the materials used and the fire protection and control measures taken;
3. Analysis of local conditions, such as exposure to and from adjacent properties;
4. Analysis of the emergency response capabilities of the local fire department or responding agency; and
5. Analysis of applicable requirements under reference flammable gas codes and standards.

**As noted in Report Section 3.1.1A, the FSA is required to have additional information and analysis. The reported firefighter response is not reflective of the actual condition (in Form 8.1, the average number of firefighters available for response actually ranges from zero to 65, as all are on-call; further, in Form 8.2, the response time is much slower than reported in the form). Discrepancies in the FSA form are addressed in this Report, Section** Error! Reference source not found.**.**

C. If the proposed tank to be installed has been previously used, a detailed inspection, investigation, and suitability assessment shall be conducted by an Engineer, concluding that the proposed tank is fit to be re-used and such report shall state any conditions associated with its reuse (502 CMR 5.04(2g)). **The hydrostatic test report dated November 27, 2015 indicates that the tanks are suitable for reuse.**

D. Testing of LP-gas tanks shall comply with the provisions of 527 CMR and the following (502 CMR 5.04(6a):

1. Upon completion of the tank, the tank shall be hydrostatically tested in accordance with 502 CMR 5.04. **As noted above, the tanks have been hydrostatically tested.**
2. Within 48 hours of filling the tank with LP-gas, the tank shall be tested and comply with 527 CMR 1.00: Massachusetts Comprehensive Fire Safety Code.
3. The tank shall be tested per 527 CMR 1.00: Massachusetts Comprehensive Fire Safety Code for a second time within 30 days of the initial LP-gas filled tank test.
4. If any test fails, the Marshal shall be notified and may set further testing requirements.

**Additional hydrostatic testing of the tanks shall be performed in accordance with the schedule noted in (2) and (3) above.**

E. The tank owner shall ensure that a qualified tank inspector certifies that the inspector has verified the inspections required under the Approved Standard have been completed, such as but not limited to: visual, internal, ultrasonic thickness and certified integrity inspections. The inspector shall conduct a thorough inspection of the aboveground storage tank for compliance with 502 CMR 5.00 and certify that the tank can be used safely (502 CMR 5.05(4)).

**The G&URR should verify that the certification program for storage tanks is in accordance with this requirement.**

### 3.3. NFPA 1600 Disaster/Emergency Management Plan Requirements

Emergency plans shall be provided for facilities storing or handling materials covered by 527 CMR 60 (including liquefied flammable gases) (527 CMR 10.9.1). The G&URR shall develop and implement a training and education curriculum in order to support the program, to create awareness and enhance the knowledge, skills and abilities required to implement, support and maintain the program. The scope of the curriculum and frequency of instruction shall be identified. Personnel shall be trained in the G&URR incident management system and other components of the program to the level of their involvement. Records of training and education shall be maintained. The curriculum shall comply with applicable regulatory and program requirements (527 CMR, 10.9.3.1 through 10.9.3.6). Additionally, emergency responders shall be trained to be competent in the actions to be taken in an emergency event (527 CMR 60.5.1.4.4).

Emergency plans shall include the following (527 CMR 10.9.2.1):

A. Procedures for reporting of emergencies
B. Occupant and staff response to emergencies
C. Evacuation procedures appropriate to the facility, its occupancy and emergencies
D. Design and conduct of fire drills
E. Type and coverage of fire protection systems

Items to be considered in preparing an emergency plan should include the following (527 CMR A.10.9.2.1):

- Purpose of plan
- Facility description
- Appointment, organization, and contact details of designated building staff to carry out the emergency duties
- Identification of events (man-made and natural) considered life safety hazards impacting the facility
- Responsibilities matrix (role-driven assignments)
- Policies and procedures for those left behind to operate critical equipment
- Specific procedures to be used for each type of emergency
- Procedures for accounting for employees
- Training of staff, emergency response teams, and other occupants in their responsibilities
- Documents, including diagrams, showing the type, location, and operation of the facility emergency features, components, and systems
- Practices for controlling life safety hazards
- Inspection and maintenance of features that provide for the safety of occupants
- Conducting fire and evacuation drills
- Interface between key building management and emergency responders
- Names or job titles of persons who can be contacted for further information or explanation of duties

DRAFT

- Post-event (including drill) critique/evaluation, as addressed in 5.14 of NFPA 1600, *Standard on Disaster/Emergency Management and Business Continuity Programs*
- Means to update the plan, as necessary

**A public education program shall be implemented to communicate potential hazard impacts, preparedness information, and information needed to develop a preparedness plan (527 CMR, 10.9.3.7). Information that should be included in public outreach and awareness efforts include regulatory disclosures such as those required by the Emergency Planning and Community Right-to-Know Act (EPCRA), the Community Awareness Emergency Response (CAER), and the Clery Act. Other non-regulatory examples of awareness that might be included in public education include severe weather outreach and alerts, shelter-in-place, and evacuation. See also A.6.8 of NFPA1600 (527 CMR, A.10.9.3.7). See Recommendation 5.1.3.**

DRAFT

## 4. LITERATURE REVIEW

Failures and accidents involving LPG transport, trans-loading and storage pose serious risks for property and life safety within LPG facilities and surrounding areas. This section summarizes a literature review of historical LPG tank incidents and overlays the approximate extent of damage from those incidents to the proposed facility. The purpose of this exercise is to provide a frame of reference of potential consequences based on actual fire/explosion incidents at other LPG facilities.

Accidents involving fire and explosion in LPG storage systems usually start with the leakage or release of LPG from the storage tanks or the distribution system. Liquefied petroleum gas vapor is colorless and 1.9 times heavier than air. In the initial phase, LPG dispersion from a tank or pipeline leak occurs close to the ground. All obstacles such as technological infrastructure, buildings or vegetation cause an increasing turbulence causing LPG to mix with air and in case of ignition provide a path for flame acceleration. Such processes decrease resultant air density, causing the emergence of vertical cloud propagation (Rozwoj, 2013). Ignition of a flammable vapor cloud could lead to:

- Formation of pool fire and jet fire
- Weakening of tank wall due to rise in temperature
- Bursting of tank due to rise in internal pressure (Boiling Liquid Evaporating Vapor Explosion, BLEVE)
- Spray release of additional, un-vaporized LPG
- Ignition of released gases leading to enlarging fire ball causing shock waves and heat radiation (Gautam & Saxena, 2001).

The largest fire/explosion incidents involving LPG facilities include San Juan, Mexico (1984) and Feyzin, France (1966) (Mannan, 2008). These facilities had 3 million gallons or more (water capacity) of stored LPG; the proposed facility will have a maximum storage capacity of 320,000 water gallons, thus these incidents are not directly applicable in comparison to this facility.

Various other LPG incidents were studied in order to estimate the potential area of impact which could result from an LPG leakage/ignition scenario (Rozwoj, 2013). **It is important to note that the safety considerations required by 527 CMR, 502 CMR, NFPA 58 and the NFPA/NPGA FSA Manual are intended to reduce the likelihood of such release/ignition scenarios**

DRAFT

**Table 2 –Summary of Propane Tank Incidents**

| | Location | LPG Storage Capacity (water gallons) | Cause | Damage (Fireball) Diameter | Phenomena associated w/ Explosion |
|---|---|---|---|---|---|
| 1. | San Juan Ixhuatepec, Mexico | Initial explosions included two tanks, min. 212,000 gal each | Leakage of large amount of LPG. | 985 ft. (300m) | BLEVE Fireball |
| 2. | Crescent City, IL (Burke, 2010) | 12 Railcars Derailed, each contained 34,000 gal (408,000 gal total) | Train derailment, puncture of cistern and gas leakage | 886 ft. (270m) | BLEVE Fireball |
| 3. | Kingman, Arizona | 33,500 gal | Leaking LPG tank | 394 ft. (120m) | BLEVE Fireball |
| 4. | Sydney, Australia | 15,850 gal | Electrical spark; opened floodgate propagated a fire | 493 ft. (150m) | BLEVE |
| 5. | Albert City, Iowa (CSB) | 18,000 gal | Driver carelessness | 100 ft. (30m) | BLEVE |
| 6. | Lynchburg, Virginia (CCPS) | 4,000 gal released (actual tank size not specified) | Gas leakage after disturbance to the tank | 394 ft. (120m) | BLEVE Fireball |
| 7. | Nijmegen, Netherlands (ARIA) | Storage Tank Remained intact (Truck tank assumed to be 3,500 gal, small transport tank) | Leakage during refueling | 132 ft. (40m) | BLEVE of truck tank Fireball |
| 8. | Modeling Results from FSA Manual | Up to 1,000 gal | N/A | Up to 148 ft. fireball, 574 ft. explosion | N/A |

The initial San Juan explosions and the Crescent City LPG Railcars that derailed involved 424,000 gal and 408,000 gal of LPG respectively, which represent totals higher than are proposed in Grafton. The damage zone reported from each of these incidents is overlaid (centered) on each LPG transfer point at the proposed Grafton facility, as a means to visualize potential consequences. The resultant figures are provided in Appendix B.

# 5. RECOMMENDATIONS

JENSEN HUGHES has reviewed the Fire Safety Analysis (FSA) Report prepared by EBI Consulting dated June 17, 2015 with respect to the applicable code requirements stated above, and applicable supporting documentation provided by G&URR to GFD. Of particular focus is a review of the key assumptions, process components, qualitative risk criteria, hazard identification and characterization, emergency control measures, impact to neighbors / offsite consequence analysis, and recommended protective features. The noted deficiencies and design review comments are as follows:

## 5.1. Additional / Revised Information Required

**TIER ONE – HIGHEST PRIORITY**

These recommendations should be addressed first as they have the highest impact on the safe design of the facility.

5.1.1. Provide a written Emergency Action Plan (EAP) in coordination with the GFD and other Grafton emergency response agencies for all plausible emergency scenarios including inadvertent release of LP-Gas, fire, or security breach. See specific items to be provided in Report Section 3.1.1A. Some of the required information may be in the OSHA Process Safety Management Plan referenced in FSA Section 5.1. FSA Section 7.0 indicates that this plan “will be developed.”

5.1.2. Revise the tank/railcar/truck fire protection submittal to address adequacy of water supply, specify water cannons suitable for service with water only, and review appropriateness of fire protection strategy in consultation with GFD. See Report Section 3.1.2A for more detail. Adequacy of GFD capabilities can then be compared to the updated fire-fighting plan.

5.1.3. Emergency responders shall be trained to be competent in the actions to be taken in an emergency event; such actions are determined by the response plan formulated by G&URR. A public education program shall be implemented to communicate potential hazard impacts, preparedness information, and information needed to develop a preparedness plan. See specific information required in Report Section 3.3.

5.1.4. FSA Form 7.2 omits the exposure #2, metal cutting, welding, and metal fabrication. This exposure may be present at EarthWorks (which holds a current hot work permit), and is within the vapor dispersion distance indicated in Model #2e in FSA Table 7.1. This exposure is confirmed by FSA Form 4.3 which acknowledges industrial activity including metal cutting, welding or metal fabrication. In accordance with the FSA Manual, new facilities with a “yes” checked in Column C must implement the actions indicated in Chapter 9. Form 9.2 Row 7.2 Column E should indicate “2.” Thus, procedures to monitor neighboring activity should be implemented and/or means should be installed in the adjacent plant (EarthWorks) to shut down the G&URR LPG plant in case of emergency at EarthWorks.

5.1.5. Verify that the ASME storage containers have not been used to store anhydrous ammonia (NFPA 58, 5.2.1.5). If the storage tanks have previously been used to store anhydrous ammonia they may not be converted to LPG service (See Recommendation 5.1.5).

**TIER TWO – INTERMEDIATE PRIORITY**

These recommendations should be addressed following resolution of Tier One items.

5.1.6. The westernmost tank is less than 100 feet from the lot line, violating NFPA 58, Table 6.3.1. See PDF of Grafton, MA GIS information (Appendix E). To be considered one lot, the property owner would need to go through the process of legally joining the parcels.

5.1.7. Provide documentation specifying the minimum qualification requirements for personnel transferring LPG and a continued education program plan for all personnel including proper LPG handling procedures (refresher training required at least every 3 years). (NFPA 58, 4.4 and 7.2.1)

5.1.8. Provide documentation specifying how and when to test for ammonia contamination within the system. (NFPA 58, 4.5)

5.1.9. Verify the minimum separation distance between LPG tanks is in compliance with NFPA 58, 6.3.1. Individual 80,000 gallon tanks are required to be separated by one-fourth the sum of diameters of adjacent containers, which appears to be satisfied by the facility layout.

5.1.10. Review and provide electrically classified areas around the truck loading pad at all potential release points. (NFPA 58, Table 6.22.2.2, 9.2). Verify that all electrical equipment within electrically classified zones is appropriately rated for service.

5.1.11. Prepare and provide written operational procedure manuals addressing: (NFPA 58, 14.2.1 and 14.2.2)
- General LPG transfer procedures (including inspection, disconnection, and vehicle safety procedures),
- Combustible material,
- Sources of ignition,
- Signage and markings,
- Containers,
- Security and access,
- Ammonia contamination,
- Operational response if an abnormal condition, LPG leak, or fire is detected.

5.1.12. FSA Report 3.4 and Form 6.7 identify that the tanks will be protected from vehicular impact; however, vehicle protection measures are not shown on the site drawings. Identify the location and type of the vehicle protection barriers.

5.1.13. FSA recommendation 2 indicates emergency back-up power needs to be provided. Please provide information regarding the system that will furnish this requirement.

5.1.14. FSA recommendation 3 indicates a fire prevention plan will be prepared. Please provide a copy of this plan if available.

5.1.15. FSA recommendation 6 indicates an LPG detection/alarm system will be provided. Provide information regarding the design basis for the detection system. Including thresholds upon which the subsystem will alarm and who will be notified.

DRAFT

**TIER THREE – LOWER PRIORITY**

These recommendations are verification/clarification type comments.

5.1.16. Update the FSA Report to identify the applicable editions of each code referenced. (NFPA 58, 6.25.3)

5.1.17. Verify that LPG service pressures will not exceed the maximum service pressure rating of system components (NFPA 58 Sections 5.2.4 and 5.17.1.1).

5.1.18. Verify that each ASME container greater than 2,000 gal water capacity is provided with an opening for a pressure gauge. (NFPA 58, 5.2.5.5, 5.7.8.7)

5.1.19. Verify that the support structure provided for each container complies with NFPA 58, 5.2.7 and 6.6.3.

5.1.20. Verify that container nameplate contents comply with NFPA 58, 5.2.8.3C, and if not odorized, additional markings are provided in accordance with NFPA permanent marking provided on each container complies with NFPA 58, 5.2.8.5.

5.1.21. Verify that the appurtenances and regulators provided on each container comply with materials of construction, material compatibility, minimum melting point temperatures and service pressure requirements of NFPA 58, 5.7.1.

5.1.22. Provide documentation and specifications for the tanks, pressure relief valves, emergency shutoff valves, backflow check valves, excessive flow valves, internal valves, piping, fittings, pressure regulators, compressors (and associated motors), and vapor meters to ensure compliance with NFPA 58 Sections 5.7, 5.8, 5.9, 5.12, 5.13, 5.17.1.3, 5.17.3, 5.17.5, 5.17.6, 6.7, 6.8, 6.9, 6.10, and 6.17.

5.1.23. Verify that the following appurtenances are provided on each container (NFPA 58, 5.7.4.4):
- An internal spring-type, flush-type full internal, or external pressure relief valve,
- A fixed maximum liquid level gauge (in compliance with NFPA 58, 5.7.5),
- A float gauge, rotary gauge, slip tube gauge, or a combination of these gauges,
- A pressure gauge (NFPA 58, 5.7.6),
- A temperature gauge.

5.1.24. Due to the facility's proximity to Big Bummet Brook, the high water table should be reviewed to determine if additional anchor supports are required to prevent flotation. (NFPA 58, 6.6.1.6)

5.1.25. Provide a maintenance, inspection, and testing plan for all equipment at the facility including all tanks, valves, hoses, pumps, compressors. (NFPA 58, 6.12.9 and 7.2.4)

5.1.26. Review the fire department access lanes with the GFD and whether the proposed paved access drives are sufficiently wide and provides for adequate vehicular turn-around (NFPA 58, 6.25.4.1)

5.1.27. Verify that appropriate signage must be provided on the active end(s) of the train siding while the rail car is connected indicating "STOP. TANK CAR CONNECTED." Wheel

chocks must also be provided and used during loading or unloading of rail cars. (NFPA 58, 7.2.3.6)

5.1.28. Verify the filling procedures involve checking and complying with maximum filling limits by weight and volume for each LPG container in accordance with NFPA 58 Tables 7.4.2.2 and 7.4.2.3(b), respectively, depending on the temperature and specific gravity of the LPG mixture to be filled.

5.1.29. Verify cargo tank vehicle requirements are in accordance with NFPA 58 Section 9.4 including DOT compliance, internal valves/backflow check valves on all hoses 1½" or greater, placarding/marking, wheel stops, fire extinguishers, smoking prohibition, and all piping/hose, fitting, valves, and equipment requirements.

5.1.30. Provide additional information regarding the "control room" referenced in the FSA Report Section 2.1 including size, use, NFPA 58 Chapter 10 compliance, location on the facility.

5.1.31. Prepare and provide written maintenance procedure manuals addressing: (NFPA 58, 14.3)
- Corrosion control,
- Physical protection,
- Hoses/piping/appurtenances,
- Fire protection equipment.

5.1.32. FSA Section 9.0 indicates the requirements associated with OSHA and EPA are addressed under separate plans. Please provide these plans for further review.

### 5.2. Conflicts Identified on FSA Checklist

5.2.1. All of the Forms reference the 2008 Edition of NFPA 58 whereas the applicable code edition is the 2011 edition. (Example: Column E on Forms 5.1 and 5.2, Column G on Forms 5.3 and 5.4, and Column F on Forms 5.5 thru 6.1). The applicable 2011 Edition shall be referenced.

5.2.2. Section 3.6 of the FSA is titled "Assessment of Sources of Ignition and Adjacent Combustible Materials but does not address sources of ignition, such as electrical components or the hot work being performed at the adjacent EarthWorks property.

5.2.3. Section 5.3 of the FSA is unclear as to which type of odorant will be used; the proposed method should be identified.

5.2.4. Section 6.1 and Form 8.3 of the FSA indicate that there are three (3), 80,000 gallon tanks to be cooled in the event of a fire. However, there are four (including the original tank assumed to be leaking/ignited). The form and report should be updated accordingly.

5.2.5. Section 6.1 of the FSA compares the available flow at 20 psi residual pressure with the water demand at 100 psi residual pressure; however, the resulting flows are different at the noted pressures. The FSA should be correlated accordingly.

5.2.6. Form 4.3 Line (c) should indicate the facility is in a Suburban Area.

5.2.7. Form 4.3 states that there is always staff presence (24/7) whereas Section 3.2 states that the facility will only be staffed 24-hours a day 5-days a week. Per discussion with

G&URR, the facility will not operate weekends or holidays. Update Form 4.3 to indicate "Other" and explain accordingly.

5.2.8. Form 5.4 Column D indicates configuration numbers of inlets and outlets which do not match the FSA manual (there are 5 inlet and 3 outlet configurations). Revise Form 5-4 to clarify configuration of inlets/outlets in order to verify compliance with NFPA 58, 5.7.4.2 and 5.7.8.

5.2.9. Forms 5.9 and 9.5 in the FSA should be the same; however, the responses for Items 3 and 4 are different.

5.2.10. Form 6.3 Row 4 indicates that the tanks are at least 100-feet from property lines that can be built upon. This is not the case for the westernmost tank.

5.2.11. Clarify in the FSA Report Section 6.3 and FSA Appendix E how the water monitors are activated. They are required to be automatically activated by fire-responsive devices and also have the capability for manual actuation. (NFPA 58, 6.25.6.2)

5.2.12. Forms 6.6 and 9.7 in the FSA should be the same; however, the responses for Item 2 are different.

5.2.13. Form 6.4 requires Column C to be checked identifying when an exposure is present. Column C Rows 2, 4, 5, 6b, 7, 8 and 10 should be checked.

5.2.14. In Form 7.1, the hazard distance for Model 2e is shown as 284 where it should be 287 feet. Form 7.1 on page A-19 also indicates "Model # 23" but should be Model #2e.

5.2.15. With the exception of one position during the day Monday through Friday only, GFD does not have any firefighters on-duty. In Form 8.1, Item #4 identifies that there are 65 firefighters "on duty at any time". The intent of the form is to identify firefighters at the station able to respond immediately (therefore the Form 8.1, Item #4 value could be zero), consideration should be given to the options discussed below Form 9.3.

This would include:

- Discuss the needs of the LP-Gas facility and the capability and training of the GFD with GFD.
- Consider developing a cadre of personnel within the LP-Gas facility to respond to emergencies (e.g. fire brigade).
- Consider instituting additional special protection measures (passive or active) as discussed in Form 9.6 and Form 9.7. (Note that the water cannon system is considered an additional special protection system)

Additionally, the "average" response is not a fair estimate (Form 8.1, Item #5) because the actual response could be significantly lower. G&URR should submit a "test case" version of the analysis with the low end of the response data to get a more realistic picture of the local emergency resources.

5.2.16. Coordinate response for Form 8.4 Item #2 with GFD. The Form indicates that there are nearby water sources to draw from; however, the noted water supply is not acceptable to the fire department (the form also does not specify the time to set up the relay or the rate or duration of delivery available). Also coordinate Item #3 which indicates that mobile water tanker shuttle operations are not available whereas most fire departments can supply mobile water tankers.

If there are any questions, please contact us at 508-620-8900.

Submitted by JENSEN HUGHES,

Prepared By:

Mariela Qirici

Mariela Qirici
Associate

Reviewed By:

Brian Merrifield

Brian Merrifield
Associate

Reviewed By:

Jeremy Lebowitz, P.E. (MA)
Director – Development

Enclosures

DRAFT

# APPENDIX A – SURFACE TRANSPORTATION BOARD DOCKET NO. FD35752

DRAFT

43910
EB

SERVICE DATE – SEPTEMBER 19, 2014

SURFACE TRANSPORTATION BOARD

DECISION

Docket No. FD 35752

GRAFTON & UPTON RAILROAD COMPANY—PETITION FOR DECLARATORY ORDER

Digest:[1] This decision finds that federal law preempts state and local preclearance regulations and other requirements that would prohibit or unreasonably interfere with the Grafton & Upton Railroad Company's construction and operation of a liquefied petroleum gas transload facility in Grafton, Mass.

Decided: September 17, 2014

On July 24, 2013, Grafton & Upton Railroad Company (G&U) filed a petition seeking a declaratory order to clarify that a liquefied petroleum gas (propane) transload facility it plans to construct and operate on a five-acre parcel adjacent to its existing rail yard in Grafton, Mass., constitutes transportation by rail carrier and, therefore, is shielded from most state and local laws (including zoning laws) by 49 U.S.C. § 10501(b).[2] In reply, the Town of Grafton (the Town or Grafton) asked the Board to institute a declaratory order proceeding.[3] G&U then filed a petition

---

[1] The digest constitutes no part of the decision of the Board, but has been prepared for the convenience of the reader. It may not be cited to or relied upon as precedent. Policy Statement on Plain Language Digests in Decisions, EP 696 (STB served Sept. 2, 2010).

[2] The Board previously determined that G&U's construction and operation of a new rail yard and storage tracks on the parcel (as opposed to the transload facility that is the subject of this proceeding) was entitled to § 10501(b) preemption. See Grafton & Upton R.R.—Pet. for Declaratory Order (Grafton I), FD 35779 (STB served Jan. 27, 2014).

[3] The American Short Line and Regional Railroad Association filed a letter in support of the petition for declaratory order on August 12, 2013, and the Commonwealth of Massachusetts Department of Fire Services (DFS) filed a letter in support of the institution of a declaratory order proceeding on August 23, 2013. See Grafton & Upton R.R.—Pet. for Declaratory Order, FD 35779 (STB served Mar. 28, 2014) (corrected decision clarifying DFS' position). Also on August 23, 2013, the Massachusetts Department of Environmental Protection (DEP) filed a reply, asking the Board to deny G&U's petition for declaratory order insofar as it pertains to DEP. In the petition, G&U states that "DEP issued a unilateral administrative order determining that G&U failed to apply for permits in order to perform site work at the yard and prohibiting further work" and that DEP might contend that "G&U must obtain certain state and local permits prior to construction and operation of the transloading facility." Pet. for Declaratory Order at 3,

(continued . . . )

for leave to file a supplement to its declaratory order petition (along with the supplement), and the Town filed a reply in opposition. In the interest of a complete record, the supplement and reply will be accepted into the record.

The Board, in a decision served on January 27, 2014, instituted this declaratory order proceeding. At that time, the Board determined that the record was not clear as to whether G&U itself would finance, own, and operate the proposed transload facility, and the Board therefore directed G&U to submit additional information. See Grafton & Upton R.R.—Pet. for Declaratory Order, FD 35779, slip op. at 2 (STB served Jan. 27, 2014). G&U submitted additional information on February 28, 2014, the Town filed a reply on March 20, 2014, and G&U filed a motion for leave to file a reply (as well as the reply) on April 1, 2014.[4] After examining the record in this case, including the information submitted in response to the January 2014 decision, we find that G&U's activities at its planned transload facility would be part of G&U's rail transportation operations. Therefore state and local permitting and preclearance requirements, including zoning requirements, are preempted with regard to the construction and operation of the facility pursuant to 49 U.S.C. § 10501(b).

BACKGROUND

G&U owns and operates a rail line (the Line), extending 16.5 miles between its connection with a CSX Transportation, Inc. (CSXT) line in North Grafton and another CSXT line in Milford, Mass. The parcel at issue is located in North Grafton immediately adjacent to G&U's Line and existing rail yard. G&U states that it intends to construct a transload facility on the parcel and use it to transfer propane received by tank car in North Grafton first to storage tanks and then to trucks for delivery to propane dealers across New England. Pending the completion of the transload facility construction project, G&U intends to use portable equipment to transload the propane.

In December 2012, G&U notified the Town that four 80,000 gallon propane storage tanks were about to be delivered to its rail yard to be used in connection with the construction of the transload facility. Citing its municipal zoning and permitting ordinances, the Town issued a cease and desist order requiring G&U to halt construction and filed a complaint in the Superior Court for Worcester County, Mass. (Superior Court), arguing that construction of the transload facility would violate the Town's zoning laws. The state court case was removed by G&U to the United States District Court for the District of Massachusetts (District Court), which determined that it lacked jurisdiction. The District Court remanded the case back to the Superior Court

---

(. . . continued)

20. In its reply, DEP advises that it has entered into a settlement agreement with G&U regarding claims involving the Massachusetts Wetlands Protection Act, and asserts that this renders moot G&U's request that the Board declare DEP's administrative order preempted. Given the parties' settlement agreement, it is unnecessary to address whether DEP's original administrative order would be preempted under § 10501(b).

[4] G&U's motion for leave to file a reply was not opposed and will be granted in the interest of a more complete record.

without addressing any preemption issues. The Superior Court subsequently entered two orders on June 12, 2013, which: (1) enjoined the delivery of the storage tanks, (2) directed G&U to comply with the Town's cease and desist order, (3) stayed court proceedings pending a determination by the Board concerning whether 49 U.S.C. § 10501(b) preempts the Town's application of its permitting and preclearance requirements to the facility, and (4) directed G&U to file a petition for declaratory order with the Board on the preemption issue.

In its petition, G&U describes the history of its acquisition of the parcel and its plans for the transload facility. G&U states that it bought the parcel in January 2012 following discussions with consultants, CSXT, and propane dealers in the New England area, and initially retained LPG Ventures, Inc. (LPG) (a firm specializing in propane transload facilities) to design and build the facility. To complete construction, estimated at $5 million, G&U planned to invest $1.8 million of its own funds and to raise capital for the remainder of the cost.

G&U further states that in October 2012 it entered into agreements with four companies for the financing, construction, and operation of the transload facility: Spicer Plus, Inc. (Spicer),[5] and three other companies formed and equally owned by Spicer and NGL Supply Terminals Co. (NGL), a Canadian propane supplier and wholesaler. The three other companies were: All American Transloading, LLC, which was to perform the transloading as a subcontractor; GRT Financing, LLC (GRT), which was to purchase the storage tanks and other equipment and lease them to G&U; and Patriot Gas Supply, LLC, which would guarantee the delivery of a certain volume of rail cars containing propane.[6]

Following the Superior Court's order directing G&U to comply with the Town's cease and desist order, G&U states that it decided to build and operate the transload facility by itself. G&U states that it terminated its arrangements with the Propane Companies by issuing notices of termination on July 15, 2013. G&U then entered into new agreements on August 14, 2013, that included: (1) an Equipment Purchase Agreement Assignment of Contracts & Termination Agreement, between G&U and the Propane Companies, which, among other things, transferred title to the propane storage tanks and other equipment from GRT to G&U in a bill of sale; (2) a nonrecourse equipment note from G&U to GRT, financing the sale of the storage tanks and other equipment; and (3) a security agreement by G&U, giving GRT a first security interest in the storage tanks and other equipment. Three contracts relating to the construction of the transload facility, including a contract between GRT and LPG, were assigned to G&U.[7]

---

[5] Spicer, a Connecticut propane dealer, does business as Spicer Advanced Gas Inc.

[6] Spicer and the three other companies it formed with NGL are collectively referred to as "the Propane Companies."

[7] Copies of the four notices of termination, as well as the new agreements and contracts, were appended to the supplement to the petition for a declaratory order that G&U filed on September 9, 2013.

G&U also submitted verified statements from Jon Delli Priscoli (G&U's owner, president, and chief executive officer) and Lawrence Chesler (president of Spicer), both of whom attest to the termination of all of the previous agreements.[8] According to G&U, these statements conclusively demonstrate that the Propane Companies no longer have any role in the financing, construction, and operation of the facility.

The Town contends that G&U's new plans to finance, construct, and operate the transload facility on its own are neither credible nor feasible. The Town questions whether G&U will actually own and operate the transload facility, asserting that the agreements with the Propane Companies were canceled only after G&U realized during the District Court proceedings that state and local permitting and preclearance requirements likely would not be found to be preempted for the facility based on the rail carrier's original plans with the Propane Companies. The Town also points to the fact that G&U's executives suggested in their District Court testimony that participation by the Propane Companies was necessary for the construction and operation of the facility. The Town further takes issue with G&U's statements that it has the financial ability to build, and the knowledge and experience to operate, the facility.

In response, G&U asserts that it will in fact be the owner and operator of the transload facility, that it has the financial ability to complete the project on its own, and that it can and will hire the people with the necessary expertise to properly operate the facility.

## DISCUSSION AND CONCLUSIONS

The Board has discretionary authority under 5 U.S.C. § 554(e) and 49 U.S.C. § 721 to issue a declaratory order to eliminate a controversy or remove uncertainty.[9] We have received evidence and argument on the reach of federal preemption in connection with the proposed facility. The parties do not dispute that the actions of the Town constitute local permitting and preclearance actions that are generally preempted with regard to facilities under the Board's jurisdiction. The parties, however, disagree as to whether the proposed transload facility would be part of G&U's transportation by rail carrier entitled to federal preemption, or rather a third-party transload operation run by non-railroads that may be regulated by states and localities. In

---

[8] Priscoli's verified statement was submitted with G&U's petition for a declaratory order. Chesler's verified statement was submitted with G&U's February 28, 2014 filing. In his verified statement at 9, Priscoli states as follows:

> As a result of the Termination Agreements, G&U has eliminated any participation or role of the Propane Companies in the construction or operation of the transload facility. The equipment lease is not in effect, and the financing to be provided by one of the subsidiaries of the Propane Companies will not be provided. The subcontract pursuant to which an affiliate of the Propane Companies would have operated the facility on behalf of G&U has been terminated, and the transportation contract providing for minimum volumes has also been voided.

[9] See Bos. & Me. Corp. v. Town of Ayer, 330 F.3d 12, 14 n.2 (1st Cir. 2003); Delegation of Auth.—Declaratory Order Proceedings, 5 I.C.C. 2d 675 (1989).

addition, DFS requests that we clarify that G&U's construction, maintenance, and operation of the transload facility is subject to Massachusetts' fire safety code[10] and relevant provisions of Massachusetts' aboveground storage tank construction codes.[11] We issue this declaratory order to provide guidance to the parties.

Preemption. The Board has jurisdiction over "transportation by rail carrier." 49 U.S.C. § 10501(a). Section 10501(b), as modified by Congress in the ICC Termination Act of 1995, Pub. L. No. 104-88, 109 Stat. 803, expressly provides that, where the Board has jurisdiction over transportation by rail carriers, which includes the carriers' facilities,[12] that jurisdiction is "exclusive" and state and local laws are generally preempted. The Board and the courts have found that federal preemption shields railroad operations that are subject to the Board's jurisdiction from local zoning and permitting laws, and laws that have the effect of managing or governing rail transportation.[13] To qualify for federal preemption under § 10501(b), the activities at issue must constitute "transportation," and must be performed by, or under the auspices of, a "rail carrier."[14]

Whether a particular activity is considered part of transportation by rail carrier under § 10501 is a case-by-case, fact-specific determination. See City of Alexandria, Va.—Pet. for Declaratory Order (City of Alexandria), FD 35157, slip op. at 2 (STB served Feb. 17, 2009). In determining whether transloading activities (i.e., the transfer of material to or from rail at a transloading facility) come within the Board's jurisdiction or are part of an independent business, the Board and the courts have considered factors including, but not limited to: (1) whether the rail carrier holds itself out as providing transloading service; (2) whether the rail carrier is contractually liable for damage to the shipment during loading or unloading; (3) whether the rail carrier owns the transloading facility; (4) whether any third party that performs the physical transloading receives compensation from the rail carrier or the shipper; (5) the degree of control

---

[10] 527 CMR 1.00, et seq.

[11] M.G.L. Ch. 148, § 37; 502 CMR 5.00, et seq.

[12] The statute defines "transportation" expansively to encompass any property, facility, structure or equipment "related to the movement of passengers or property, or both, by rail," and "services related to that movement, including receipt, delivery, . . . transfer in transit, . . . storage, handling, and interchange of passengers and property." 49 U.S.C. § 10102(9).

[13] See Green Mountain R.R. v. Vermont (Green Mountain), 404 F.3d 638, 643 (2d Cir. 2005); N.Y. Susquehanna & W. Ry. v. Jackson, 500 F.3d 238, 252-55 (3d Cir. 2007); Norfolk S. Ry. v. City of Alexandria, 608 F.3d 150, 158 (4th Cir. 2010); Grafton I; New England Transrail, LLC—Construction, Acq. & Operation Exemption—in Wilmington & Woburn, Mass., FD 34797 (STB served July 10, 2007) (addressing the scope of §10501(b) preemption).

[14] See Hi Tech Trans LLC—Pet. for Declaratory Order—Newark, N.J. (Hi Tech), FD 34192 (Sub-No. 1), slip op. at 5 (STB served Aug. 14, 2003). A rail carrier is a "person providing common carrier railroad transportation for compensation . . . ." 49 U.S.C. § 10102(5).

retained by the rail carrier over the third party; and (6) other terms of the contract between the rail carrier and the third party.[15]

Here, the Town focuses chiefly on the degree of control retained by G&U and the terms of the former contracts between G&U and the Propane Companies. The Town advances a number of arguments as to why the transload facility would not be part of G&U's rail transportation, but fails to demonstrate that, under the current proposal, an entity other than G&U will be financing, constructing, and/or controlling operations at the facility. The Town points out that G&U's original proposal delegated control of the facility to the Propane Companies. While G&U does not dispute this point, it does provide evidence that those arrangements have been terminated and that G&U now plans to construct and control the facility and the activities to be conducted there, and buttresses this evidence with verified statements from the principals involved. The Town does not dispute the legality of the termination agreements and the new contracts submitted by G&U. Rather, the Town alleges that there must be an undisclosed vehicle that subverts the proffered agreements and maintains control of the facility in the hands of the Propane Companies. To support this allegation, the Town cites Priscoli's testimony in the District Court, which describes the benefits of the previous agreements. However, the Town's unsupported allegation is insufficient to support the declaration it seeks. G&U had the right to revise its initial plans by terminating its agreements with the Propane Companies and assuming control over the proposed facility and any transload operations conducted there.

The Town's argument, that G&U restructured its plans for financing, constructing, and operating the facility to qualify for preemption of the Town's permitting and preclearance requirements, may be correct. But parties are free to structure their transactions to meet their needs, and the Board generally examines proposals as they currently exist when determining whether they are part of rail transportation.

---

[15] Compare Green Mountain, 404 F.3d at 640, 642 (transloading and temporary storage of bulk salt, cement, and non-bulk foods by a rail carrier found to be part of rail transportation); City of Alexandria (ethanol transloading service conducted by third party was an integral part of the railroad's operations and therefore qualified for federal preemption); Lone Star Steel Co. v. McGee, 380 F.2d 640, 647 (5th Cir. 1967), and Ass'n of P&C Dock Longshoremen v. Pittsburgh & Conneaut Dock Co., 8 I.C.C.2d 280, 290-95 (1992) (when the service in question is part of the total rail common carrier service that is publicly offered, the agent providing it for the offering rail carrier is deemed to hold itself out to the public) with Town of Milford, Mass.—Pet. for Declaratory Order, FD 34444, slip op. at 3-4 (STB served Aug. 12, 2004) (Board lacked jurisdiction over noncarrier operating a rail yard where it transloaded steel pursuant to an agreement with the rail carrier, but the transloading services were not being offered as part of common carrier services offered to the public); Hi Tech, slip op. at 7 (no STB jurisdiction over truck-to-truck transloading prior to commodities being delivered to rail); and Town of Babylon & Pinelawn Cemetery—Pet. for Declaratory Order, FD 35057, slip op. at 5 (STB served Feb. 1, 2008) (Board lacked jurisdiction over activities of a noncarrier transloader offering its own services directly to customers).

The Town argues that NGL did not sign a termination agreement and therefore may still be involved in activities related to the facility. G&U explains, however, that NGL was not a party to the original agreements. Rather, NGL was a co-owner with Spicer in three of the companies that signed the agreements. Because NGL never cosigned the original agreements, there is no reason it should have signed any of the termination agreements. The Town also thinks it suspicious that NGL, "one of the biggest propane companies in the country . . . would agree to terminate its involvement and abandon its investments of time and money in the facility."[16] However, the Town has not presented any evidence to suggest that NGL may still be involved in the project.

The Town also challenges the ability of the rail carrier and its owner, Mr. Priscoli, to finance the project. The financial structure underlying a facility can be relevant to determining whether the facility is controlled and operated by a rail carrier or its agent, and therefore is entitled to federal preemption, or whether the facility instead is a third-party independent business fully subject to state and local regulation. Here, however, G&U has provided evidence that the rail carrier and its owner intend to finance the project. Moreover, the Town provides no evidence that another entity will in fact finance the facility's construction.

In contrast, there is substantial evidence in the record demonstrating that Priscoli has sufficient assets to finance the project as it is currently planned. Priscoli's verified statement demonstrates that he has sufficient assets. In addition, the record contains evidence that the sale of propane in New England is expected to be profitable and that the demand for propane is both significant and increasing. Furthermore, G&U has submitted evidence rebutting the Town's claims that Priscoli's assets are too heavily encumbered to complete the project.[17]

The Town further argues that the proposed facility would be the largest of its kind in Massachusetts but asserts that G&U has no knowledge of, or experience in, handling propane or dealing with the regulations of the Pipeline and Hazardous Materials Safety Administration of

---

[16] Grafton March 20, 2014 Reply at 4-5.

[17] For example, in response to a claim by the Town that G&U is obligated on a $6 million mortgage in favor of First Colony Development Co. (First Colony), G&U argues that Priscoli owns First Colony, and so the mortgage should not be considered debt to an outside party. As to three properties the Town claims are over-leveraged, G&U contends that the Town's analysis is based on incomplete and inaccurate public information, which the Town either misunderstood or misinterpreted. According to G&U, the property on Crowley Drive is appraised by the bank holding the mortgage "at a value substantially in excess of the assessed value for property tax purposes and of the amounts advanced pursuant to the construction loan [and that this does not include] the additional 19.74 acres of commercially zoned land on Crowley Drive that Mr. Delli Priscoli owns in a different entity." G&U April 1, 2014 Reply at 2-3. With regard to the properties on Brigham Street, G&U claims that "a nationally recognized real estate brokerage firm [recognized that] the equity in [these properties] is substantial [and] generates substantial cash flow over and above the amount needed to service the debt." Id. at 3. G&U adds that traditional commercial financing should be available once the transload facility begins to generate the anticipated income stream.

the United States Department of Transportation, and that Priscoli admitted as much in his testimony before the District Court. G&U, however, adequately responds that it can and will hire the people with the necessary expertise to properly operate the facility on its own.

In short, the evidence of record now before the Board demonstrates that G&U's current plans call for the transloading facility to be an integral part of its operations as a rail carrier. Therefore, operation of the facility will constitute "transportation by rail carrier" within the meaning of the statute, and as such it comes within the Board's jurisdiction and qualifies for federal preemption under § 10501(b). See, e.g., City of Alexandria, slip op. at 5.

Fire safety and aboveground storage tank construction. The Town argues that G&U submitted to the State Fire Marshall's Office a Fire Safety Analysis (FSA) that: (1) contained a conceptual drawing that was several months out of date, (2) significantly overstated the number of available first responders, (3) relied on safety measures not included in the FSA, and (4) referenced a different version of the National Fire Protection Association Standard 58 Liquefied Petroleum Gas Code than the one Massachusetts uses. DFS requests that we clarify that, even if G&U is not required to apply for a construction permit under Massachusetts' aboveground storage tank construction codes, G&U's construction, maintenance, and operation of the transload facility is nevertheless subject to Massachusetts' fire safety code and relevant other provisions of the aboveground storage tank construction codes. These codes require, among other things, the production of documents, including plans, drawings, and test results, and provide for the inspection of the tank construction.

Massachusetts' aboveground storage tank construction permit requirement is categorically preempted by § 10501(b) with respect to the facility at issue here, as it constitutes a permitting or preclearance requirement. See, e.g., Green Mountain, 404 F.3d at 643. That does not mean, however, that all state and local regulations affecting rail carriers are preempted with respect to the facility in question. State and local regulation is appropriate where it does not interfere with rail operations. Localities retain their reserved police powers to protect public health and safety as long as their actions do not discriminate against rail carriers or unreasonably burden interstate commerce. Id. Thus, the Board has stated that it is reasonable for states and localities to request that rail carriers: (1) share their plans with the community when they are undertaking an activity for which another entity would require a permit; (2) use state or local best management practices when they construct railroad facilities; (3) implement appropriate precautionary measures at the railroad facility, so long as the measures are fairly applied; (4) provide representatives to meet periodically with citizen groups or local government entities to seek mutually acceptable ways to address local concerns; and (5) submit environmental monitoring or testing information to local government entities for an appropriate period of time after operations begin. See Joint Pet. for Declaratory Order—Bos. & Me. Corp. & Town of Ayer, 5 S.T.B. 500, 511 (2001). State and local electrical, plumbing, and fire codes typically have been found to be applicable even when preemption applies. See Green Mountain, 404 F.3d at 643. State and local action, however, must not have the effect of foreclosing or unduly restricting the rail carrier's ability to conduct its operations or otherwise unreasonably burden interstate commerce. See CSX Transp. Inc.—Pet. for Declaratory Order, FD 34662, slip op. at 5 (STB served May 3, 2005).

Thus, states and towns may exercise their traditional police powers over the development of rail facilities like the one at issue here to the extent that the regulations "protect public health and safety, are settled and defined, can be obeyed with reasonable certainty, entail no extended or open-ended delays, and can be approved (or rejected) without the exercise of discretion on subjective questions." See Green Mountain, 404 F.3d at 643. Accordingly, unless applied in a discriminatory manner, id., provisions of the Massachusetts fire safety code and the above-ground storage tank construction codes that fit within the local police power exception to federal preemption, as described above, would be applicable to this project, notwithstanding our finding that the facility will constitute transportation by rail carrier entitled to federal preemption under § 10501(b).

This action will not significantly affect either the quality of the human environment or the conservation of energy resources.

It is ordered:

1. G&U's request for leave to file a supplement to the petition for declaratory order is granted and the supplement is accepted into the record.

2. G&U's motion for leave to file a reply is granted and the reply is accepted into the record.

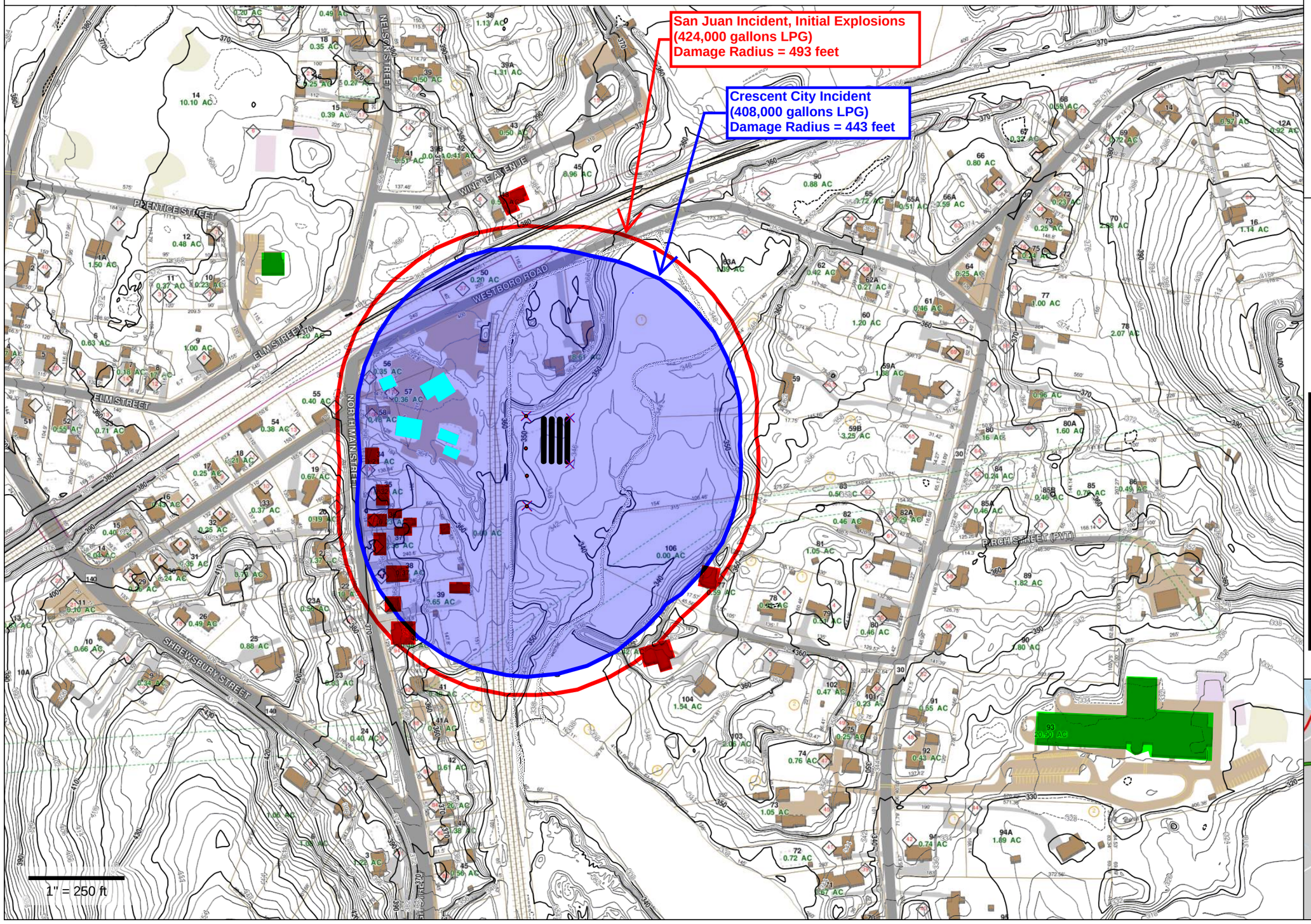
3. The petition for declaratory order is granted to the extent discussed above.

4. This decision is effective on the date of service.

By the Board, Chairman Elliott, Vice Chairman Miller, and Commissioner Begeman.

# APPENDIX B – INCIDENT DAMAGE AREA OVERLAY

DRAFT




**Property Information**

**Property ID** 110/011.0-0000-0063.0
**Location** 42 WESTBORO ROAD
**Owner** GRAFTON & UPTON RAILROAD

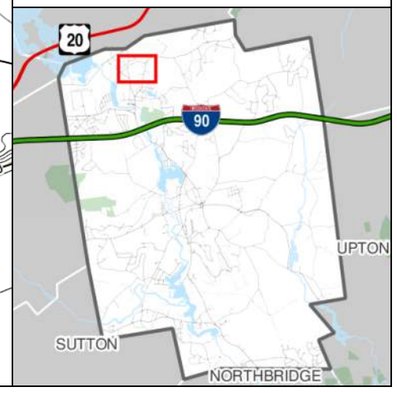
MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

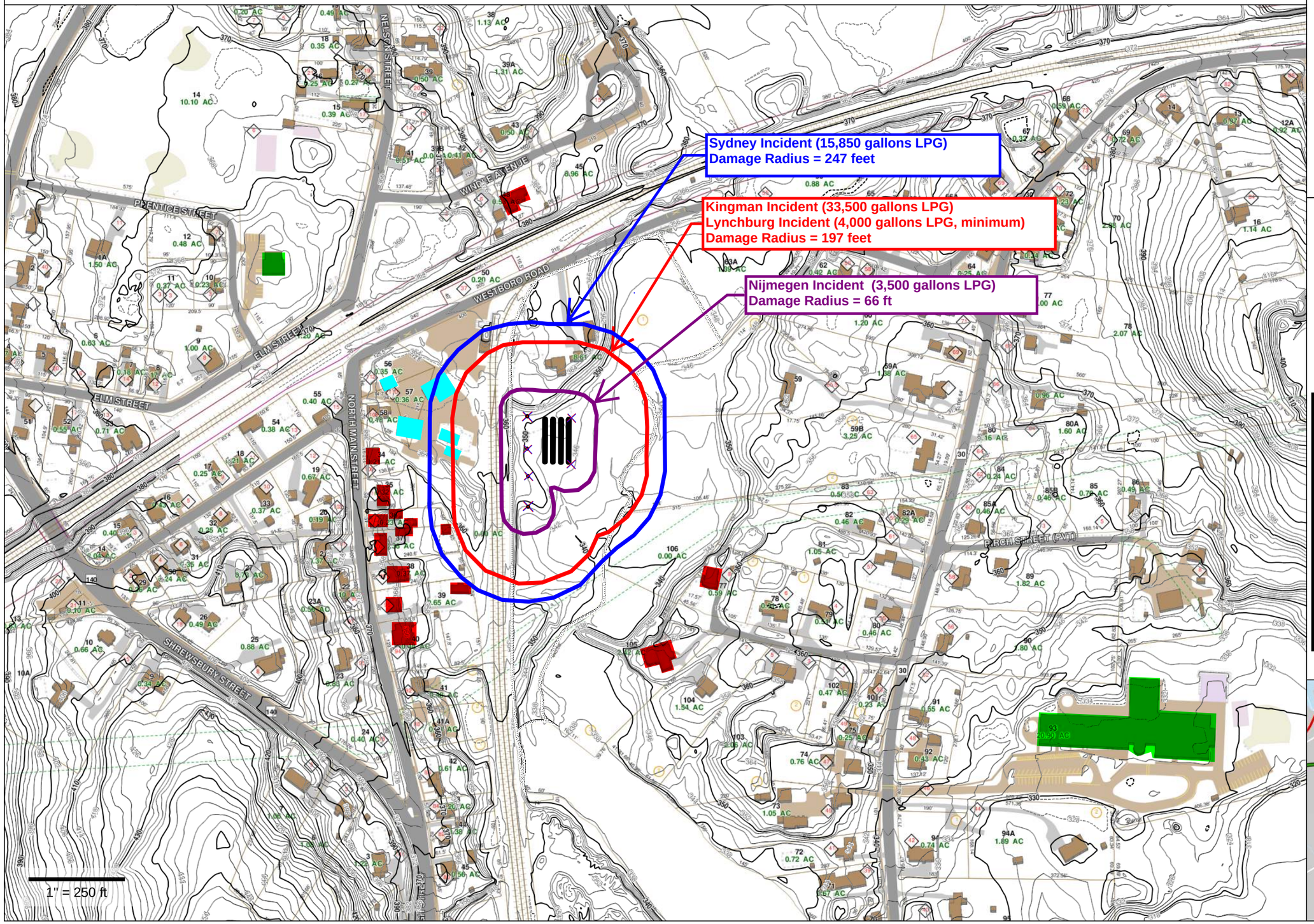
The Town makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Parcels updated December 31, 2013

**LEGEND**

- Assembly Occupancy
- Residential Occupancy
- Industrial Occupancy
- Storage Tanks
- Refueling Points
- Points from where Damage Radius is Measured






**Property Information**

**Property ID** 110/011.0-0000-0063.0
**Location** 42 WESTBORO ROAD
**Owner** GRAFTON & UPTON RAILROAD

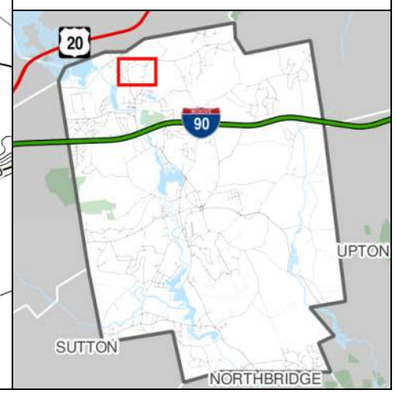
MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

The Town makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Parcels updated December 31, 2013

**LEGEND**

- Assembly Occupancy
- Residential Occupancy
- Industrial Occupancy
- Storage Tanks
- Refueling Points
- Points from where Damage Radius is Measured



# APPENDIX C – US DOT EMERGENCY RESPONSE GUIDE FOR LPG

DRAFT

## POTENTIAL HAZARDS

### FIRE OR EXPLOSION

- **EXTREMELY FLAMMABLE.**
- Will be easily ignited by heat, sparks or flames.
- Will form explosive mixtures with air.
- Vapors from liquefied gas are initially heavier than air and spread along ground.

**CAUTION: Hydrogen (UN1049), Deuterium (UN1957), Hydrogen, refrigerated liquid (UN1966) and Methane (UN1971) are lighter than air and will rise. Hydrogen and Deuterium fires are difficult to detect since they burn with an invisible flame. Use an alternate method of detection (thermal camera, broom handle, etc.)**

- Vapors may travel to source of ignition and flash back.
- Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

### HEALTH

- Vapors may cause dizziness or asphyxiation without warning.
- Some may be irritating if inhaled at high concentrations.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating and/or toxic gases.

## PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.

### PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

### EVACUATION

**Large Spill**

- Consider initial downwind evacuation for at least 800 meters (1/2 mile).

**Fire**

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

## EMERGENCY RESPONSE

### FIRE

- **DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.**

**CAUTION: Hydrogen (UN1049), Deuterium (UN1957) and Hydrogen, refrigerated liquid (UN1966) burn with an invisible flame. Hydrogen and Methane mixture, compressed (UN2034) may burn with an invisible flame.**

**Small Fire**

- Dry chemical or $CO_2$.

**Large Fire**

- Water spray or fog.
- Move containers from fire area if you can do it without risk.

**Fire involving Tanks**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

### SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- Prevent spreading of vapors through sewers, ventilation systems and confined areas.
- Isolate area until gas has dispersed.

**CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.**

### FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Clothing frozen to the skin should be thawed before being removed.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

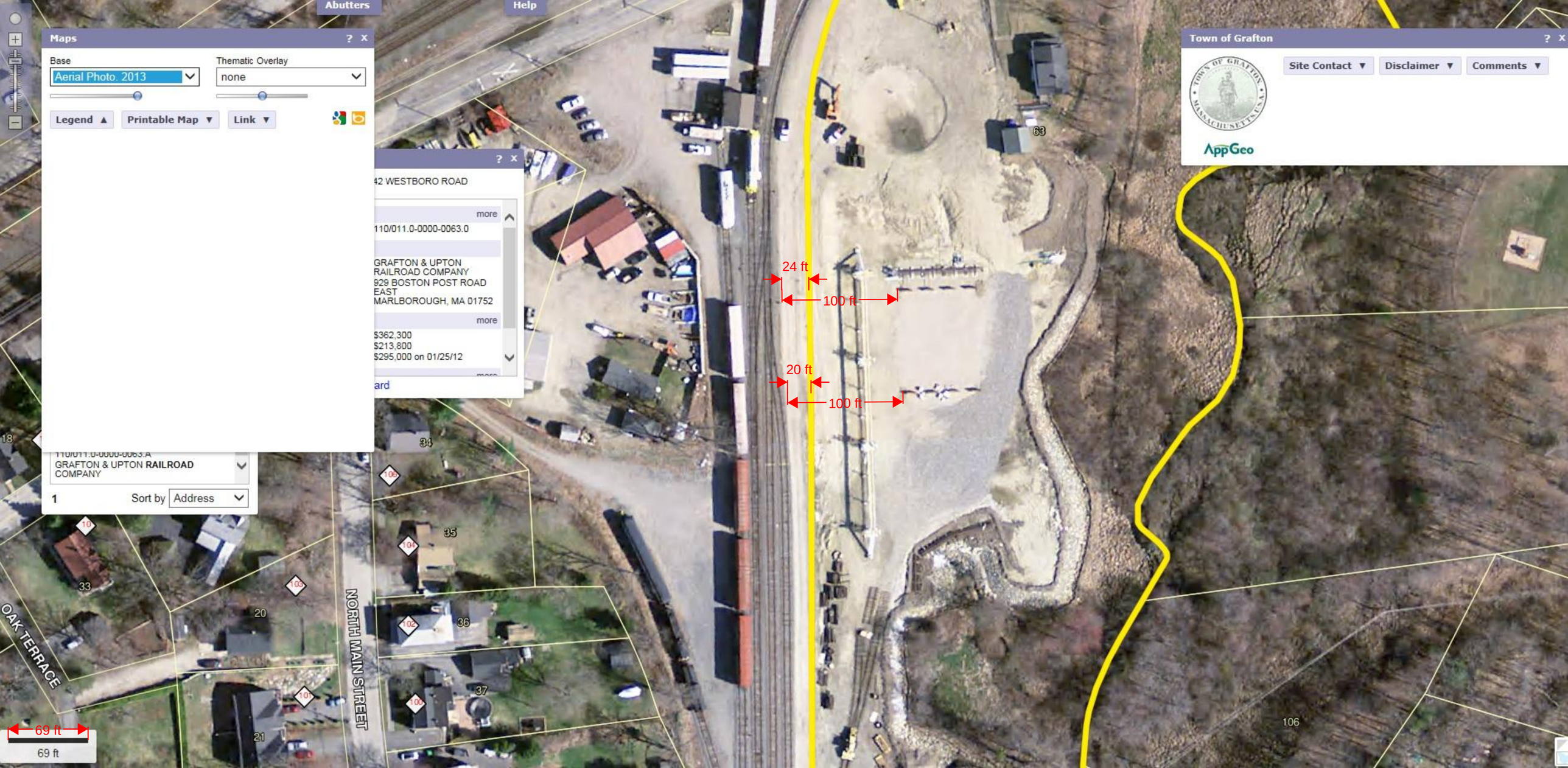
# APPENDIX D – EVACUATION ZONE MAP

DRAFT

Flynn's Truck Stop
Stonehill Wine & Liquors
Imperial/ Worldwide, Inc
UPS Plant Engineering & Costumer Center
Tri State Truck Center
Pete's Tire Barns
Sullivan Tire Commercial Truck Center
Xtra Lease Automotive Storage Facility
Praxair Inc.
(Gas-industrial/med-cylinder & Bulk)
MBTA Commuter Rail -
Worcester Line
Cummings
School of
Veterinary
Medicine at...
Nelson Park (Baseball Field)
North Grafton Public Library
Dana Transport Facility
North Grafton
Elementary School
St. Andrews Episcopal Church
St. Mary's Parish Church
US Post Office
Post Office Pub Restaurant
North Grafton United Methodist Church
Roney Funeral Home
Washington Mills North Grafton, Inc.
Dana
Google
Map
2,000 ft
Imagery ©2015 Google, Map data ©2015 Google
Terms
Privacy
Send feedback
2000 ft

# APPENDIX E – GRAFTON MA GIS INFORMATION

DRAFT


Abutters
Help
Maps
Base
Aerial Photo. 2013
Thematic Overlay
none
Legend
Printable Map
Link
42 WESTBORO ROAD
more
110/011.0-0000-0063.0
GRAFTON & UPTON
RAILROAD COMPANY
929 BOSTON POST ROAD
EAST
MARLBOROUGH, MA 01752
more
$362,300
$213,800
$295,000 on 01/25/12
ard
110/011.0-0000-0063.A
GRAFTON & UPTON RAILROAD
COMPANY
1
Sort by
Address
Town of Grafton
Site Contact
Disclaimer
Comments
AppGeo
24 ft
100 ft
20 ft
100 ft
63
34
35
36
37
33
20
21
18
106
OAK TERRACE
NORTH MAIN STREET
69 ft
69 ft