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April 22, 2015

Texas Department of Housing and Community Affairs
Attention: Jean Latsha
221 East 11th Street
Austin, Texas 78701

RE: Response to Challenge of Application #15159 Abbington Commons of Whitewright

Dear Ms. Latsha,

Arx Advantage, LLC is the consulting firm representing the Abbington Commons of Whitewright ("Abbington") proposed development. We appreciate the opportunity to respond to the challenge set forth by Mr. Shackleford, who is representing the Courtyard Apartments. The challenge alleges violations of §10.101(a)(3)(D) and (J) of the Uniform Multifamily Rules pertaining to undesirable site features.

Specifically, the challenge states "located within 2 miles of the proposed site for the Abbington Commons is an ammonium nitrate ("AN") storage facility which constitutes a potentially hazardous use and potentially exposes the residents to an environmental factor that may adversely affect the health and safety of the residents. Located within 960 feet of the Abbington Commons site is the El Dorado Chemical Company."

Section 10.101(a)(3)(D) pertains to "Development Sites located within 2 miles of potentially hazardous uses such as nuclear plants or large refineries (*e.g.* oil refineries producing more than 100,000 barrels of oil daily)." There are 2 nuclear plants and 24 oil refineries currently operating in Texas and none are within 2 miles of the development site. The Abbington site is neither a nuclear plant nor a large refinery; therefore, this subsection should not even be a consideration. The challenge clearly states that the El Dorado is a Chemical Plant. This would be more readily compared to a manufacturing plant or fuel storage facility that is referenced in §10.101(a)(3)(C) of the Uniform Multifamily Rules. The separation distance is 500 feet from these facilities. As stated in the challenge, the Abbington site is located well beyond the 500-foot separation distance and is actually situated 1,000 feet from the storage warehouse.

There are actually two chemical plants located near the High School, Walmart, and our development site. Helena Chemical Company operates the largest of the two,

occupying an approximate 14.8-acre site which contains all of the large above ground storage tanks. There are no hazardous, explosive, or flammable substances stored at this facility. El Dorado Chemical Company, occupying a 4.4-acre site, consists of a storage shed and several out buildings. El Dorado does store and use ammonium nitrate, a strong oxidizer that can become explosive under certain circumstances, in the large storage shed located at the back of its property. Several existing properties are located the same approximate 1,000 foot distance from this storage shed as the development site, including Whitewright High School and a new Walmart Neighborhood Market (Appendix A).

The challenge does give some alarming statistics and calculations and having the West tragedy still fresh in the minds of most Texans, this weighs heavy on the emotional side of a decision. Let's step back and look at the real facts though.

This development team went into this development and design with eyes wide open. Our team conducted a thorough investigation of the risk from El Dorado before proceeding to full application. As a result of the West incident, we required more due diligence from our environmental team in research information and data on the El Dorado plant. The plant was not listed in (or flagged) in any of the environmental databases under hazards or incidents. The team was fully aware of the long term implications as owners and financial partners should an accident occur and did not move forward with this development lightly.

The presence of ammonium nitrate at El Dorado and its area of potential effect in relation to the Development Site were identified and discussed in the Phase 1 Environmental Site Assessment, prepared by Phase Engineering, and the Feasibility Study, prepared by Cole Engineering (excerpt of findings in Appendix B). Both of these studies (submitted with the application) found the Development Site to be located outside the area of potential effect per HUD calculations and guidelines and neither report recommended any mitigation or further study. Given these findings, there was no negative site or neighborhood area features to discuss in the development narrative at the time the application was submitted.

As a part of the environmental review, Phase Engineering referred the Development Site and its research on the El Dorado facility to Nelson Rivera, the chief HUD environmental impact engineer at the Washington DC office. Based upon the maximum storage capacity of ammonium nitrate, which is stored on site in an unpressurized solid state, Mr. Rivera calculated the maximum area of potential effect at a 600-foot radius from the warehouse facility based on thermal radiation effects and throw distance associated with flying debris (Appendix C). Upon receipt of this information, the Development Site was adjusted westward to provide a 1,000-foot separation distance from the warehouse.

Included with this response are the results of our discussions with the City of Whitewright, the Whitewright Independent School District (ISD), our property management agent, our insurance company, and our syndicator - all of which supported our environmental engineer's and civil engineer's determination of conformance with separation requirements from the El Dorado facility (Appendix D). Each was contacted

separately before full application submittal, apprised of the proximity of a facility storing ammonium nitrate approximately 1,000 feet from our Development Site, provided the same information we had on the El Dorado facility, and asked to provide us their assessment of the risk to the development and its residents as well as their concerns to overall project viability.

The City of Whitewright was supportive of the proposed project location from the beginning. The Development Site offered numerous advantages to other locations considered due to its close proximity and walking distance to important amenities such as the public schools, child care, and parks. The site was reviewed by the City's emergency services director who saw minimal risk to the apartment development from the El Dorado facility. They also pointed out that the Whitewright High School and Walmart did separate research and found the risk from El Dorado to be low enough to locate their facilities within a similar separation distance from the storage warehouse. Whitewright emergency response personnel have also implemented findings from the West fire into their own disaster response plan. One of the contributing factors in West was that their first responders had not received training on dealing with an ammonium nitrate fire.

Steve Arthur, Superintendent of the Whitewright ISD, said the El Dorado plant has been in operation for many years without incident and there have never been problems with dust or odor at the High School adjacent to our site since they are located upwind from the plant. The High School was built within 1,000 feet of the fertilizer plant ten years after El Dorado began operations. After the accident in West, Whitewright ISD conducted a review of the risks, posed to the schools and has been satisfied that the plant is in compliance with required codes and regulations. There are 765 students and 100 staff located at the elementary, middle, and high school complexes and there is an evacuation plan in place should an incident occur in the future.

Our syndicator, City Real Estate Advisors (CREA), referred the matter to their own environmental engineer at EFI Global. EFI separately concluded there would be no impact to the Development Site from a potential blast at the El Dorado facility.

We also asked CJ Thomas, our insurance agency, to review the matter from a risk standpoint. CJ Thomas referred the information to Chubb, the proposed permanent insurance carrier. Chubb reviewed the information and determined the risk to the property to be insignificant at the proposed Development Site.

Alpha-Barnes Real Estate Services, the proposed management agent for Abbington Commons, was also contacted to assess the safety and lease-up risk. They were very familiar with the community and fertilizer plant, having managed the existing Waterford Apartments in the mid late 1990s. Waterford is located approximately 2,200 feet from the El Dorado facility. Alpha Barnes did not see any negative impact to lease up or long-term safety at Abbington Commons.

When the team received the challenge, the first response from the team was the same as probably anyone's reading the challenge, which was "why are we doing this?" Then

once we got over the shock of the challenger's figures and calculations we were able to review the facts to find the truth and get beyond the exaggeration and misinformation.

The challenger's engineer used a calculation based on overpressure to establish a blast radius for the El Dorado facility of 2,468 feet. Typically, overpressure applies to the detonation of a substance in a liquid or gaseous state that is under pressure, such as the pressurized anhydrous ammonium that contributed to the explosion at West, Texas. The AN material stored at the El Dorado facility is in solid state form and not pressurized. The El Dorado facility does not store pressurized substances. In response to the challenge, we referred this overpressure calculation back to Nelson Rivera at HUD for additional guidance and to other engineering experts.

Mr. Rivera's response to the challenger's assertion was that HUD guidelines do not consider the effects of blast overpressure unless evaluating the explosion of a pressurized liquid or gas. According to HUD, the relevant impact area for El Dorado should be calculated based on thermal radiation (heat) and thrown debris, and not overpressure, since the ammonium nitrate stored at the Whitewright facility is in a solid state and is not stored under pressure. Mr. Rivera reaffirmed his prior assessment at a maximum impact radius of 600 feet for both thermal impacts and flying debris and determined the site was in full compliance with Section 51C and that no mitigation was required.

As a practical matter, Mr. Rivera as a precautionary measure stated this situation is more in the lines of site suitability than what a regulation entails and as such mitigation efforts would be recommended. With this recommendation, Mr. Rivera calculated a blast overpressure to be 1.5 psi (worst case) at the Development Site. This calculation puts the pressure above HUD's threshold of 0.5 psi but well below the challenger's assertions of 3-5 psi at the Development Site.

Mr. Rivera additionally stated with this recommendation that a variety of on-site design improvements to the building orientation and site design could mitigate the smaller level of risk associated with the 1.5 psi. Physical structures (small berm, netting) could be employed on site to mitigate the potential risk. A small wall barrier on the El Dorado facility grounds would also mitigate the potential risk. Mitigation employed on-site at El Dorado would also mitigate the risks to the Whitewright High School, Walmart, and numerous other homes and businesses that have located the same distance from the El Dorado facility as the Abbington Development Site.

Cole Engineering assessed HUD's mitigation measures and determined several options existed for cost-effective mitigation of overpressure effects at the development site (Appendix E). These options ranged from relocating the garages to the east side of the site, on-site or off-site earthwork and vegetative buffers (approximate cost of $20,000), or a blast wall constructed off site near the El Dorado warehouse (approximate cost of $30,000). This amount is well within the funds available in the development budget for construction contingency and additional deferred developer fee (if needed).

The El Dorado facility in Whitewright has operated as a fertilizer plant since 1965 without incident. The current ownership by El Dorado has been in place since 1988 and has operated since that time as a fertilizer plant that stores ammonium nitrate on site. There have been no violations or citations reported at the facility. The Whitewright Elementary School and Whitewright Middle School have been at the current locations since 1964. The Whitewright High School, adjacent to the Development Site and within 1,000 feet of El Dorado, was constructed in 1998 (ten years after El Dorado took ownership and began its ongoing operations). Walmart opened a Neighborhood Market approximately 1,200 feet from the El Dorado storage warehouse earlier this year.

City Emergency Services, Whitewright ISD, Walmart, HUD, and all the major partners of our development team separately evaluated the risk posed by the El Dorado facility to our development site prior to our application submittal. The unanimous consensus was that the activities at El Dorado did not pose a significant risk to the Abbington Commons Development Site or other sites located a similar distance from the storage warehouse.

The Development Team has been open and vigilant in bringing the issues affecting this development to the attention of the appropriate entities. Due diligence was conducted upfront with the experts on the team. Information was supplied in the third-party reports to TDHCA. Guidance was sought from HUD before submitting the application and then again after receipt of the challenge. All financial partners were consulted for their input and approval.

Additionally, the challenger included §10.101(a)(3)(J) which states "Any other Site deemed unacceptable, which would include, without limitation, those with exposure to an environmental factor that may adversely affect the health and safety of the residents and which cannot be adequately mitigated." Mr. Shackleford conveniently left out an important part of this last subsection in his challenge, "which cannot be adequately mitigated."

Mr. Zdenek Hejzlar, Senior Managing Consultant with Engineering Systems, Inc., has provided his expert opinion (Appendix F) confirming the blast overpressure estimates in the range of 1.5 psi can be readily mitigated on or near the development site through a variety of methods that have been discussed previously in this response. He further states that the possibility of an incident is highly unlikely and would require a failure of multiple safety systems.

Included in this response, we have shown that the Abbington Commons of Whitewright development complies with the 2015 Uniform Multifamily Rules, QAP and HUD Guidelines. This proposed development is situated well beyond the 500 foot separation distance of a chemical plant. This application was submitted in good faith. HUD has determined over pressure calculations to not apply to their location requirements and that if any effects were identified outside of their requirements, those effects could be "adequately mitigated" in accordance with the rules; therefore, allowing the development to remain in compliance with the rules and guidelines.

Should the Department wish for the Applicant to seek additional environmental studies or review, we believe that could be appropriate. However, this application should not be penalized and the community of Whitewright deprived of needed affordable housing when the application, applicant and Development Site have complied with existing rules. Any adverse effects outside of the rules can be easily mitigated. If there needs to be a change in the rules, that should be done during the rule making process in future rules and not during an application cycle.

The Applicant/Owners and financial partners are concerned about the health and safety of their future tenants and the community. This is also a financial business decision. They would not put their $7.7 million asset in a danger zone if they believed there was a significant risk to the development.

Sincerely,

Robbye G. Meyer
Principal

Cc: Bill Rea
Eric Buffenbarger
Sean Brady
Ginger McGuire

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Appendix A
Community Map
Chemical Plant Comparison

Community Map of Whitewright, TX

Nuclear Plant (Located in Region 3 Rural)

El Dorado Chemical Plant (Whitewright, TX)

Oil Refinery

El Dorado Chemical Plant (Whitewright, TX)

Helena Chemical Plant (Whitewright, TX)
NO HAZARDOUS MATERIALS STORED PER PHASE 1 SITE ASSESSMENT

El Dorado Chemical Plant (Whitewright, TX)

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Appendix B

Excerpt of Phase 1 Environmental Site Assessment (February 24, 2015)
Excerpt of Feasibility Study (February 27, 2015)

Databases	Radius Searched (miles)		Sites Found
	Chemicals of Concern (COC)	Petroleum Hydrocarbon COC	
Leaking Underground Storage Tank Sites (LUST)	0.33	0.10	**One (1)**
Underground Storage Tanks (UST)	Subject Property Only	Subject Property Only	None
State / Tribal Institutional Control / Engineering Control Registries	Subject Property Only	Subject Property Only	None
Brownfield	0.33	0.10	None

Sites identified during the regulatory database search that may pose a VEC include the following:

Address / Approximate Distance to Nearest Building* / Gradient Direction	Chemical of Concern	Status
Highway 69 and Bond Street / 460' Southeast / Down/cross-gradient	Petroleum Hydrocarbons (Gasoline / Diesel)	Inactive / Closed LUST

*Proposed or Existing Building

No sites identified during the regulatory database search appear to pose a VEC to the subject property due to distance and regulatory status with the exception of a site located at Highway 69 and Bond Street, otherwise known as Texas New Mexico Power Company. According to topographic maps, this facility is topographically down-gradient from / cross-gradient to the subject property, therefore contamination migration via groundwater to the subject property is unlikely.

Based on resources reviewed, it is the opinion of Phase Engineering, Inc. there is no evidence of a VEC that included presence or likely presence of COC vapors in the subsurface of the target property caused by a release of vapors from contaminated soil or groundwater or both either on or near the target property (TP) as identified by the Tier 1 VES procedures. Additional Vapor Encroachment Screening procedures are not warranted at this time.

15.19 Noise Study

Phase Engineering, Inc. has conducted a noise survey for the subject property using the Noise Assessment Guidelines provided by the U.S. Department of Housing and Urban Development (HUD). Noise Assessment Locations (NALs) were selected on the property based on closest proximity to the noise sources and identified on the Noise Sources Map provided in Appendix V.

The closest noise sources to the subject property is an active TNER railroad within 1,000 feet to the east. There are no major roadways within 1,000 feet or major (listed) airports located within 15 miles of the subject property. The combined Day/Night Noise Level (DNL) for each NAL was calculated based on the effective distance from each of the noise sources and provided in the below table.

Noise Assessment Location (NAL)	Combined Projected DNL (dB)
NAL #1 – Northeast corner	50.7

HUD allows for a 1-decibel grace in completing noise surveys due to inaccuracies of the calculations. The calculated noise value falls below 65 dB, and is therefore considered "acceptable" based on the HUD guidelines. See Noise Study Results in Appendix V.

15.20 Explosive and Flammable Hazards

Under Section 2 of the Housing Act of 1949 (42 U.S.C. 1441) and the subsequent Housing and Community Development Acts of 1968, 1969, and 1974, the Department of Housing and Urban Development is mandated to assure the goal of a "decent home and a suitable (safe and healthy) living environment." The Regulation, "Siting of HUD-Assisted Projects Near Hazardous Operations Handling Petroleum Products or Chemicals of an Explosive or Flammable Nature" (24 CFR Part 51 Subpart C) and the Guidebook represent another step by the Department toward the objective. Although the Regulation and Guidebook apply

specifically to all HUD-assisted projects, the application of these standards can be used by anyone concerned with the safe siting of new residential development.

Per 24 CFR Part 51, a *hazard* is defined as any stationary container which stores, handles or processes hazardous substances of an explosive or fire prone nature. The term ''hazard'' does not include pipelines for the transmission of hazardous substances, if such pipelines are located underground or comply with applicable Federal, State and local safety standards.

Also excepted are: (1) Containers with a capacity of 100 gallons or less when they contain common liquid industrial fuels, such as gasoline, fuel oil, kerosene and crude oil since they generally would pose no danger in terms of thermal radiation of blast overpressure to a project; and (2) facilities which are shielded from a proposed HUD-assisted project by the topography, because these topographic features effectively provide a mitigating measure already in place.

Two fertilizer processing facilities are located within ¼ mile to the east of the subject property. The Helena Chemical Company, located at 1110 South Bond Street maintains several large aboveground storage tanks (ASTs). According to the Tier II Emergency and Hazardous Chemical Inventory report provided from the city fire marshal, the chemicals stored at the facility and within the ASTs are non-hazardous materials and do not present an explosive or flammable hazard to the subject property.

The second facility, El Dorado Chemical Company, is located at 1102 South Bond Street. According to the 2013 Tier II Emergency and Hazardous Chemical Inventory report, all chemicals stored at the facility are non-hazardous with the exception of Ammonia Nitrate. Ammonia Nitrate is a strong oxidizer and explosive if contaminated with organic matter, heated under confinement, or subjected to severe shocks. Phase Engineering, Inc. interviewed Mr. John Carber, president of the facility's parent company, USD EDC AG Products Company, to obtain more information on the handling practices of Ammonia Nitrate at the facility. Mr. Carber explained that all the Ammonia Nitrate material is stored in the warehouse building near the railroad tracks and includes an approximate 135-foot by 52-foot storage area or total 7,020 square feet.

Although Ammonium Nitrate is not listed as a hazardous substance in 24 CFR 51.201, it is considered a Special Circumstance under 51.207 due to the explosive potential. Phase Engineering, Inc. consulted with Mr. Nelson Rivera, the HUD Environmental Engineer, regarding the calculation of the Acceptable Separation Distance (ASD) from this nearby hazard. Mr. Rivera provided a calculated blast radius of 600 feet based on the total 7,020 square foot storage area. Since the subject property is over 1,000 feet from the storage building, it is outside the calculated ASD and thus in compliance with the standard for thermal radiation for people, in outside environments and no further mitigation is required. See the ASD Drawing included in Appendix V.

15.21 Coastal Zone Management

The subject property is not located within the Texas Coastal Management Zone according to the Texas Coastal Management Program (TCMP) Map.

15.22 Air Quality

The subject property is not located in an area designated with a Nonattainment Status of National Ambient Air Quality Standards as determined by the EPA.

15.23 Farmlands Protection

The intent of the Farmland Protection Policy Act (FPPA) is to minimize the impact of federal programs on the conversion of farmland to nonagricultural uses. Farmland as defined by the FPPA, includes prime farmland, unique farmland, and land of statewide or local importance. The FPPA does not apply to properties already committed to urban development by zoing or historic use. The subject property is not located in an Urban Area as defined by the US Census Bureau, thus is subject to the FPPA.

The soils underlain the subject property include Austin silty clay, 1 to 3 percent slopes and Fairlie and Houston Black clays, 1 to 3 percent slopes. These soils are classified as Prime Farmland as identified by the US Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). A request for evaluation has been sent to the NRCS using Form AD-1006, Farmland Conversion Impact Rating. If the proposed development will be federally funded, then the resulting rating will be used to make a determination on if the farmland conversion is consistent with the FPPA. A response from the NRCS has not been received.

PHASE ENGINEERING, INC.
ENVIRONMENTAL CONSULTANTS
335 West 21st Street Houston, Texas 77008 Office 713.476.9844 Toll Free 800.419.888 Fax 713-476-9797 www.PhaseEngineering.com

RECORD OF COMMUNICATION

Job #: 201501031, Abbington Commons of Whitewright

Job Address: Echols Lane and west of Bond Street, Whitewright, Texas

Contact: John Carber, President of LSB Industries, parent company of EDC AG Projects Company AKA El Dorado Chemical Company

Comments:

Phase Engineering Inc. interviewed Mr. John Carber by phone. Mr. Carber informed Phase Engineering, Inc. of the following:

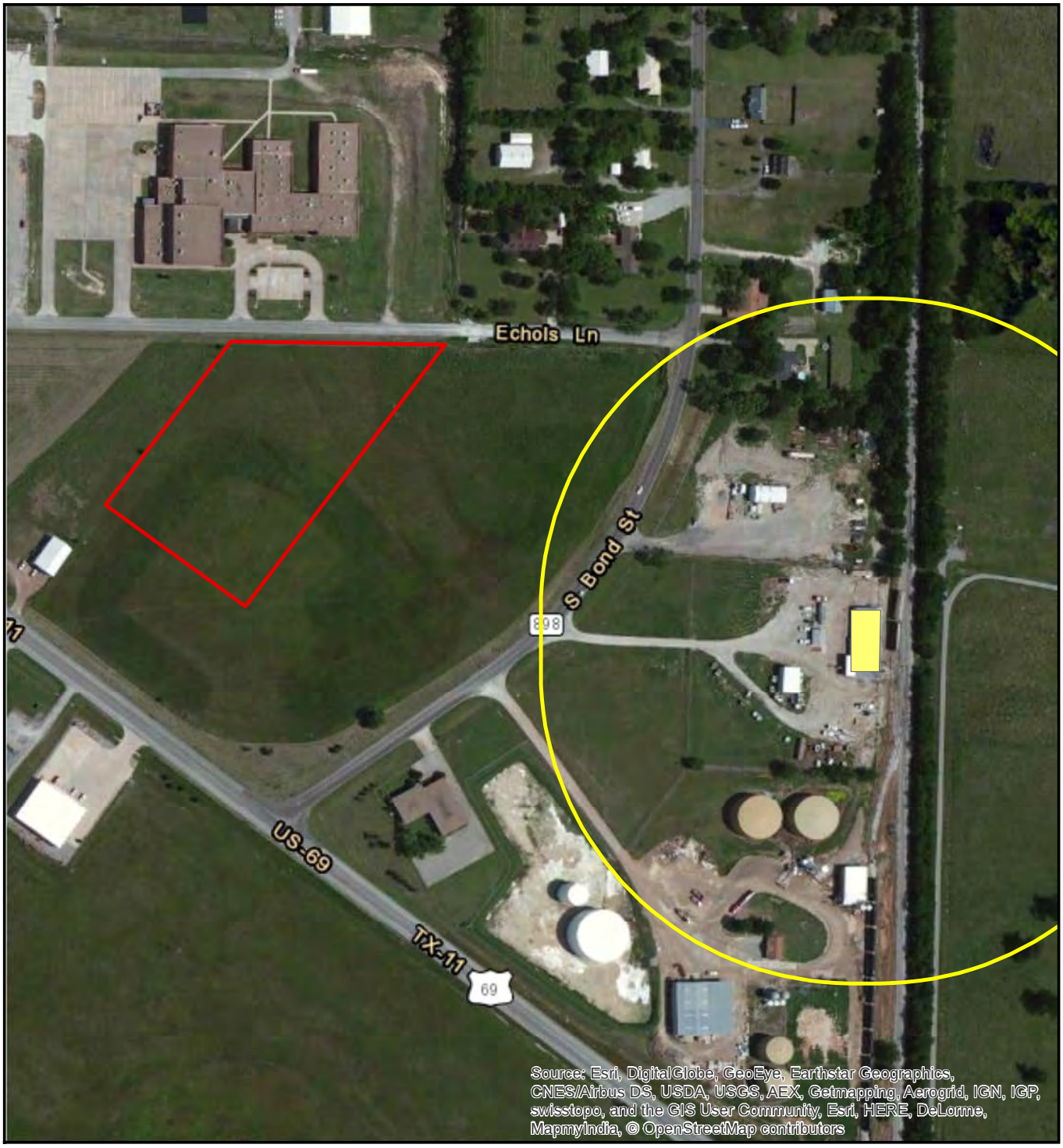
Mr. Carber is responsible for the safety and compliance requirements of the El Dorado Chemical Company facility located to the east of the subject property. He explained that the quantities of hazardous and non-hazardous chemicals managed, stored, or generated at the facility are reported to the EPA each year via a Tier II Emergency and Hazardous Chemical Inventory report which can be obtained from the local fire marshal. The 2013 report would be the most recent copy available since a new inventory must be filed by March of each year. Although due to confidentiality concerns, the actual daily maximum and minimum quantities are not reported on the Tier II report. Instead, a range of total daily volume is reported. According to the 2013 report, 1,000,000 – 10,000,000 pounds of Ammonium Nitrate (500-5,000 Tons) is stored at the facility each day. Mr. Carber clarified that the actual range is most likely closer to the lower end of the range (500 tons) versus the higher end. According to Mr. Carber, all the Ammonium Nitrate is stored in multiple three-sided bins within the wooden warehouse building at the facility in Whitewright. The approximate total storage capacity is 135 feet by 52 feet or 7,020 square feet. In addition, the company is not planning on expanding the facility anytime in the foreseeable future.

Tracy D. Watson

Date: 1/22/15

Inspected By: Tracy Watson
Phase Engineering, Inc.
5524 Cornish Street, Houston, Texas 77007

Tracy@phaseengineering.com
210-997-4056



source: ESRI, TX RRC

0 0.015 0.03 0.06 0.09 0.12 Miles

1:4,000

Explosive and Flammable Operations

Subject Property

El Dorado Fertilizer Storage Building

ASD for People

PHASE ENGINEERING, INC.
ENVIRONMENTAL CONSULTANTS

JOB: 201501031

Note: Property location and boundary are representative only.

EXECUTIVE SUMMARY

I. PROJECT OVERVIEW

The purpose of this report is to review the site conditions and development requirements for the proposed Abbington Commons of Whitewright project. This report has been prepared in accordance with §10.205(5) of the 2015 Uniform Multifamily Rules issued by the Texas Department of Housing & Community Affairs (TDHCA). See References in Appendix for a list of officials and websites that were conferred in the preparation of this report.

Abbington Commons will consist of 48 units in 3 buildings along with a clubhouse building, common amenities, parking areas and appurtenances. Per ordinance, no more than seven dwelling units can be attached in one continuous row or group. A variance will be pursued to allow for the proposed arrangement. The project will be located on 4.11 acres in Whitewright, Texas. The site is situated on Echols Lane and north of US 69 within the City limits of the City of Whitewright in Grayson County, Texas. Whitewright High School is located across the street from the site. See Site Location Map in Appendix.

The Abbington Commons Parcel is currently vacant farm land which may be accessed from Echols Lane. The site is open field which gradually slopes from southwest to northeast. The site is located in Flood Hazard Zone X (areas determined to be outside the 0.2% annual chance floodplain) with a portion of the site in Flood Hazard Zone A (areas determined to be inside the 1% annual chance floodplain with no base flood elevations determined) according to Flood Insurance Rate Map 48181C0450F, effective date September 29, 2010 (refer to Appendix).

In regards to off-site costs, water and sanitary sewer will need to connect to the existing infrastructure across Echols Lane by boring or open pavement cuts implemented with the appropriate traffic control measures. These costs are identified in the cost estimates.

The north property boundary is situated along the pavement edge of Echols Lane. According to the city code, the city would need 60 feet of right-of-way. In order to obtain this 60 feet, it is estimated that 25 feet of right-of-way would need to be dedicated from the Abbington Commons parcel (refer to Appendix).

The site is located near two chemical storage facilities: El Dorado Chemical and Helena Chemical. The distance from the property to the closest storage facility is approximately 1,000 feet with the closest site amenity being more than 1,000 feet away. As part of our diligence in working with the HUD environmental engineer, Nelson Rivera, in Washington, DC, and the two plant managers, it is our understanding that the distance from the site to these facilities meets the requirements of HUD and TDHCA. Mr. Rivera determined the site to be located outside the area of effect from both chemical plants and saw no adverse effect to the development site. This is addressed in more detail in the *Phase 1 Environmental Site Assessment* prepared by Phase Engineering, Inc., dated February 24, 2015, Section 15.20.

II. DUE DILIGENCE STATEMENT

This report was compiled based on information ascertained in a field survey, meeting with City officials, and internet research.

III. PROPERTY IDENTIFICATION NUMBERS

Grayson County Property ID: 129758

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Appendix C

Phase Engineering Summary of Research before Application Submittal and After Receipt of Challenge

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April 22, 2015

Texas Department of Housing and Community Affairs
Attention: Jean Latsha
221 East 11th Street
Austin, Texas 78701

Re: ***Response to Challenge of Tax Credit Application No. 15159***
Proposed Abbington Commons of Whitewright
Approximately 4.10606 Acres Located along Echols Lane
Whitewright, Grayson County, Texas 75491

Dear Ms. Latsha:

Phase Engineering, Inc. has re-evaluated the impact of nearby Explosive and Flammable Hazards to the above referenced property (subject property) known as Abbington Commons of Whitewright multifamily development proposed to be located along Echols Lane Whitewright, Grayson County, Texas 75491. This evaluation is in response to a challenge letter presented to the Texas Department of Housing and Community Development (TDHCA) regarding the Tax Credit application submitted for the subject property. Phase Engineering, Inc. prepared a Phase I Environmental Site Assessment (ESA) of the subject property in accordance with the ASTM Standard Practice E 1527-13 for Environmental Site Assessments, the EPA Rule on All Appropriate Inquiries, and the TDHCA 2015 Real Estate Analysis rules as codified in Chapter 10, Subchapter D, §§10.301 - 10.307 Underwriting and Loan Policy of the Uniform Multifamily Rules, "Section 10.305: Environmental Site Assessment Rules and Guidelines."

During the completion of the Phase I ESA, Phase Engineering, Inc. evaluated potential Explosive and Flammable Hazards within proximity to the subject property, which included the El Dorado Chemical Company fertilizer facility located at 1102 South Bond Street. According to the 2013 Tier II Emergency and Hazardous Chemical Inventory report, all chemicals stored at the facility are non-hazardous with the exception of Ammonia Nitrate (AN). Ammonium Nitrite is a strong oxidizer and explosive if contaminated with organic matter, heated under confinement, or subjected to severe shocks.

Ammonium Nitrite is a solid substance and not specifically listed in United States Department of Housing and Urban Development's (HUD's) standard as a hazardous substance in 24 CFR §51 Subpart C, Appendix I which only includes hazardous liquids and gases. However, §51.207 of the regulation allows for Special Circumstances to be considered when a substance not listed in Appendix I would create thermal or overpressure effect in excess to the applicable HUD standard. Phase Engineering, Inc. consulted Mr. Nelson Rivera, Environmental Engineer for HUDs Environmental Planning Division Office of Environmental and Energy in Washington, D.C. Mr. Rivera specializes in compliance with Part 51C Hazards and agreed that although AN does not exhibit combustible or flammable properties, the substance should be considered a Special Circumstance based on HUD's mission to provide safe and suitable living environments for HUD-assisted projects.

HUD's response to the impact calculations.

Phase Engineering, Inc. requested additional guidance on appropriate protocols to evaluate hazards with constructing a residential development in close proximity to a fertilizer facility given that the guidelines presented in HUD's Acceptable Separation Distance Guidebook are not applicable to unpressurized solid substances. Mr. Rivera explained that the effects of Thermal Radiation to buildings and people and flying debris should be evaluated for the proposed project location. When we first consulted with Mr. Rivera in January 2015, he advised that the ASD for blast-overpressure is not applicable in this case, due to the fact that the material of concern is not stored under pressure and is not in a gaseous form.

Thermal Radiation

The HUD parameter standard of maximum acceptable level of Thermal Radiation for people in open spaces where people congregate, such as parks and playgrounds, is 450 BTU/ft^2-hr. The standard is based on the time it would take for a person to react and find protection from a fire hazard. In addition, the parameter standard of Thermal Radiation for buildings is 10,000 BTU/ft^2-hr.

We requested Mr. Rivera to calculate the thermal heat flux potential at the proposed project location, given a worst case scenario at the El Dorado facility. For this purpose, a worst case scenario would entail a fire of all AN material, if at full capacity. We reached out to Mr. John Carber, Vice President and Environmental and Safety Compliance manager of LSB Industries (parent company of El Dorado Chemical Company) for specific information on the operations and design of the El Dorado facility. Mr. Carber explained that all the AN material is stored in bulk on a concrete surface within bins inside a warehouse building near the facility's eastern boundary. All of the bins make up a total area of approximately 7,020 ft^2.

The proposed project location is approximately 1,000 feet from the El Dorado warehouse facility. So, Mr. Rivera determined that if the 7,020 ft^2 storage area was at full capacity of AN, a massive fire of the material would create a thermal heat flux of 14.63 BTU/ft^2-hr at a distance of 1,000 feet. Based on the calculated rating, the proposed project location ***is in compliance*** with the standard of thermal heat flux for people and buildings.

Flying Debris

In regards to flying debris, Mr. Rivera provided the following guidance by email:

> *Most of incidents where there is debris-throw events involving grain elevators, or similar energetics involving similar debris, the separation distance is rated at 600 feet from the source of the debris and the energetics being evaluated to the proposed location for development.*

Since the proposed project location is at a distance of 1,000 feet, it ***is in compliance*** and outside the standard separation distance for impact from potential flying debris in the case of a major fire or explosion at the warehouse storage building.

Hazardous Fumes or Emissions

Our evaluation of potential impacts to the proposed multifamily development in the case of a fire or explosion incident of the El Dorado facility also included concerns of exposing residents to hazardous fumes or emissions. Mr. Rivera provided the following response:

> *In lieu of hazardous fumes or emissions for site evaluation, several incident reports for grain elevator*

explosion incidents and for grain fire incidents in which there was the potential for grain elevator explosion to occur indicated that emergency responders ordered mandatory evacuation of residences in the vicinity of the grain elevator to protect residents from the potential hazards of the explosion. Evacuation distances reported ranged from approximately 0.25 miles to 0.3 miles. Based on data presented in this inquiry, a general separation distance at the approximate magnitude of 0.25 miles (1,320 feet) to 0.3 miles (1,580 feet), is applicable to fertilizer plants as well.

The 2012 Emergency Response Guidebook, published by the US Department of Transportation, provides emergency response personal with guidance on how to respond to an incident depending on the chemical hazard involved. According to Guide No. 140 from the guidebook, which relates to oxidizers such as AN, emergency responders will isolate or consider an initial evacuation of 0.5 miles in all directions. In addition, Mr. Jason Wall, the Director of Emergency Services for the City of Whitewright has confirmed that the city has a response plan in place which includes evacuation of homes and businesses within 0.5 mile radius of the El Dorado facility in the event of an incident. The properties affected would not only include the proposed project location, but also the high school, middle school, elementary school, Walmart, and numerous other business and residences. Since, there are emergency planning procedures in place for protecting the community against potential fumes and emissions, the proposed project location ***is in compliance*** with the general separation distance.

Peak Positive Blast Over-pressure

In April, we inquired with Mr. Rivera on the information presented in the FM Global Property Loss Prevention Data Sheet 7-89, dated October 2013 regarding AN and mixed fertilizers containing AN to determine how HUD would incorporate the recommendations in their assessment. Specifically, Section 2.2.1.2 (d) of the data sheet which states, “The explosion overpressure rings and damage effects should be calculated using the TNT equivalency method discussed in Data Sheet 7-0, Section 11.0”. The referenced calculation uses the Hopkinson-Cranz Scaling Law, which states that the blast wave energy decays at a rate proportional to the cube root of the distance from the explosion. Mr. Rivera explained that although FM Global recommends that the scaling law be applied to explosions involving AN, it is not applicable to the HUD standard since the material is not in a gaseous form or stored under pressure. The proposed project location ***is in compliance*** with 24 CFR Part 51 Subpart C, and ***no mitigation is required*** because the regulation does not cover the type of hazard presented from AN.

Site Suitability beyond the HUD regulations

The project development team’s desire to construct a safe residential community, despite meeting the HUD regulations, has prompted a more thorough investigation. Mr. Rivera calculated at 1,000 feet from the El Dorado facility, the proposed project location would be impacted by a peak positive incident pressure (blast over-pressure) of 1.5 psi. Although not required by the regulations, mitigation measures may be warranted to lessen the potential of impact from pressure effects. Further study to determine the level and type of mitigation is needed. Examples of appropriate measures may include a barrier wall either on the proposed project location or preferably at the El Dorado facility. An explosive barrier constructed at the El Dorado facility would have a greater impact on protecting not only the proposed project location but the surrounding community as well.

Facility and Site compliance with the OSHA, TDHCA, and HUD guidelines

Phase Engineering, Inc. reviewed the document titled, "Chemical Advisory: Safe Storage, Handling, and Management of Ammonium Nitrate", jointly issued by the US Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), and the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF). According to the document, there are several steps that facility owners and operators should take in order to reduce the hazards of AN during storage and handling such as storing combustible materials away from the bulk AN, install sprinkler systems, and periodically move the piles in order to prevent caking.

To determine the current practices and safety measures of the El Dorado facility, interviews were conducted with Mr. Carber of the El Dorado facility, and Mr. Wall with the City of Whitewright. Mr. Jason Wall, Emergency Services Director for the City of Whitewright, provided the 2013 Tier II Chemical Inventory report for the El Dorado facility in January 2015, and provided additional information via telephone interview on April 14, 2015.

Recommendations for storage of bulk AN was obtained from the chemical advisory notice with associated interview responses in italics) are as follows.

1) Bins for storing bulk AN should be kept clean and free of materials, which could contaminate the material. Bins should not be constructed of galvanized iron, copper, lead or zinc unless suitably protected. Aluminum or wooden bins should be protected against impregnation by AN.

   Mr. Carber explained that the bulk AN material is stored in multiple wooden bins within a wooden warehouse with a concrete floor. The bins consist of three sides open to an alleyway so the operators are able to scoop up the desired amount of material. Since the release of the chemical advisory notice, the wooden bins were replaced with a wood coated with a material to prevent AN impregnation.

2) Piles or bins must be adequately sized, arranged and moved periodically to minimize caking. Height or depth of piles shall be limited by pressure-setting tendency of the product, but in no case should pile be higher than 36 inches below roof or supporting beams.

   According to Mr. Wall's knowledge of the operations of the El Dorado facility in Whitewright, almost all, if not all, the AN material handled at the facility is received in and transported out on a daily basis. Since the solid material is unlikely to remain in piles for an extended amount of time, the potential for caking is minimized.

3) Do not store AN with organic chemicals, acids, or other corrosive materials, materials that may require blasting during processing or handling, compressed flammable gases, flammable and combustible materials or other contaminating substances. AN stores should be separated from incompatible substances by using separate buildings or 1 – hour fire resistant walls, or a minimum separation distance of 30 feet.

   All of the El Dorado Chemical Company locations, according to Mr. Carber, require that no combustible materials or otherwise incompatible substances be stored within 30 feet of the solid AN material.

4) Suitable fire control devices such as hoses and appropriate portable fire extinguishers (AN is an oxidizer and not all fire extinguishers are appropriate) shall be provided throughout the warehouse and loading areas. Water supplies and fire hydrants should be available.

   AN is a strong oxidizer and the most effective extinguishing agent is water. Although the warehouse building where the AN material is stored is not equipped with a sprinkler system, Mr. Carber explained that appropriate portable fire extinguishers are available in the building.

In addition, Mr. Carber stressed that the El Dorado Company is determined to remain in compliance with all required federal, state, and local regulations. If revisions to the regulations on the storage and handling of AN are published upon final review of the West, Texas incident, Mr. Carber explained that their company will make all required measures to remain in compliance.

TDHCA Undesirable Site Features (Sec. 10.101(a)(3)(D&J)

The challenger to the applicant has argued that the proximity of the proposed project location to the El Dorado fertilizer facility constitutes an undesirable site feature under TDHCA Sections 10.101(3)(D) and (J). For further explanation, the description of these two undesirable site features per TDHCA regulations are as follows:

- **Item D:** Development Sites located within 2 miles of potentially hazardous uses such as nuclear plants or large refineries (e.g. oil refineries producing more than 100,000 barrels of oil daily)
- **Item J:** Any other Site deemed unacceptable which would include, without limitation, those with exposure to an environmental factor that may adversely affect the health and safety of the residents and which cannot be adequately mitigated.

Facilities described in Item D, include very large complexes with potentially significant hazardous risk to the surrounding community. A review of operating nuclear power reactors reported by the U.S. Nuclear Regulatory Commission indicated only two nuclear power plants currently operate in Texas. The facilities are located near the cities of Glen Rose and Bay City, respectively. Neither of these facilities are located within 2 miles of Whitewright, Texas. The U.S. Energy Information Administration published a list of U.S. refineries operating in 2014. According to the list, 24 oil refineries currently operate in Texas, whereas only 17 of these facilities produced an excess of 100,000 barrels a day. None of these refineries are located within 2 miles of Whitewright, Texas. There are no other facilities with potential hazardous risk to the magnitude of a nuclear plant or large oil refinery near either the City of Whitewright or the proposed property location. A list of oil refineries and map of nuclear plants is provided as an attachment.

The El Dorado facility may have been considered an undesirable site feature under Item J if the project location was not in compliance with the calculated acceptable separation distance or could not be adequately mitigated. However, based on the findings of this investigation and concurrence from the HUD Environmental Engineer, the proposed project location is in compliance with the Thermal Radiation standard and can be adequately mitigated for blast overpressure.

Record and interview information furnished to Phase Engineering, Inc., and contained in the report, were obtained from sources assumed to be reliable and believed to be true and correct. The U.S. Department of Housing and Urban Development (HUD) performed all calculations and analysis and provided all

opinions, and conclusions in this document. Phase Engineering, Inc. assumes no liability for any errors, omissions, or damages resulting from relying on this information for any reason.

Please contact me at tracy@phaseengineering.com or (210) 997-4056 with questions or request of additional information.

Respectfully,
Phase Engineering, Inc.

Tracy Watson
Environmental Scientist

Copies Submitted: (1) Rea Ventures Group, LLC (electronic)

References:

Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), and the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF), August 2013, *Chemical Advisory: Safe Storage, Handling, and Management of Ammonium Nitrate*.

FM Global Property Loss Prevention Data Sheets 7-89 (October 2013). Ammonium Nitrate and Mixed Fertilizers Containing Ammonium Nitrate.

FM Global Property Loss Prevention Data Sheets 7-0 (April 2013). Causes and Effects of Fires and Explosions

HUD Acceptable Separation Distance Guidebook, October 2011

Texas Department of Housing and Community Affairs (TDHCA), Multifamily Housing Rental Programs, 2015 Uniform Multifamily Rules.

U.S. Department of Transportation (USDOT), Emergency Response Guidebook, 2012

Mr. Nelson Rivera, US Housing and Urban Development (HUD), Nelson.A.Rivera@hud.gov, (202) 402-4455

Mr. John Carber, Vice President / Environmental and Safety Compliance Manager of LSB Industries (parent company of El Dorado Chemical Company), (405) 823-4778

Mr. Jason Wall, Emergency Services Director, City of Whitewright, (903) 267-7879

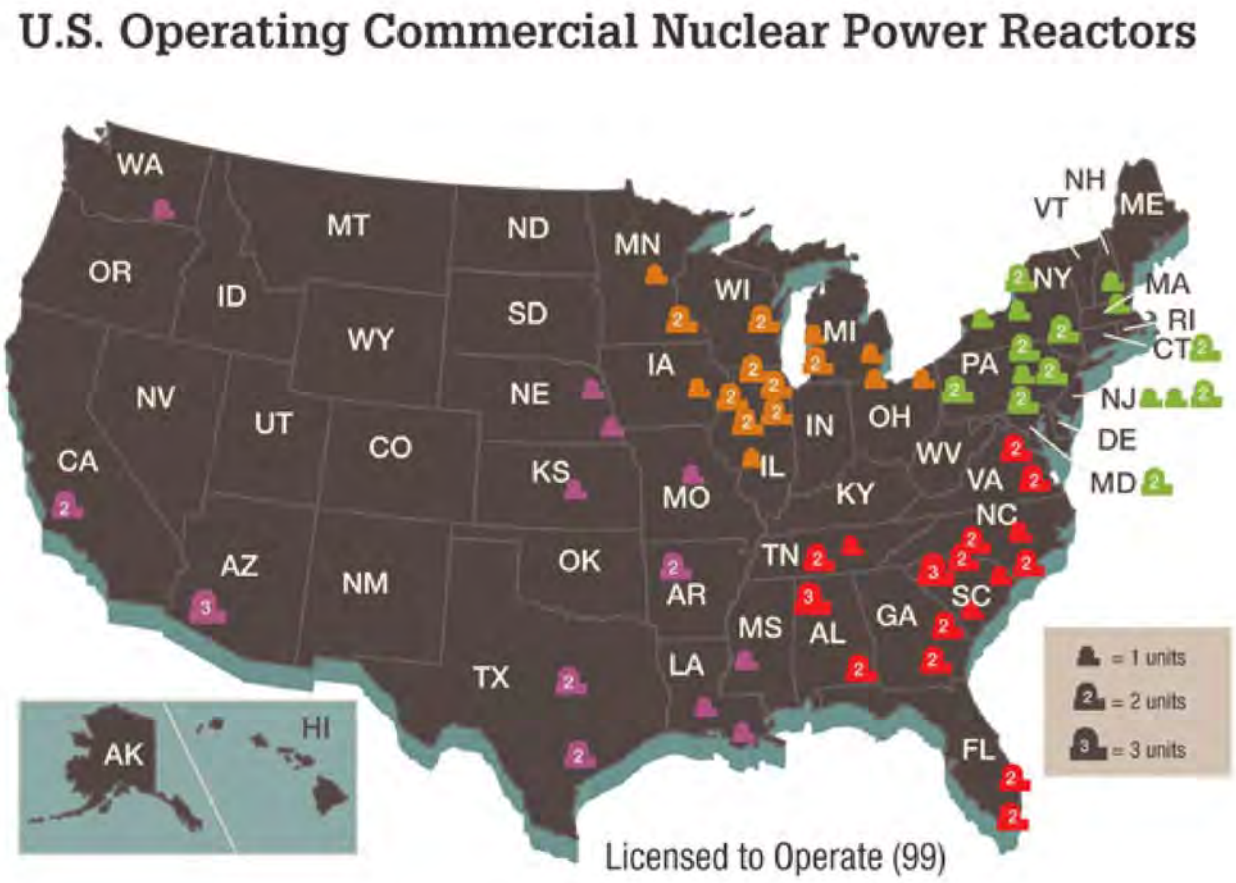
Attachments:

- Map of U.S. Operating Commercial Nuclear Power Reactors, U.S. Nuclear Regulatory Commission
- List of U.S. Refineries and Operable Capacity as of January 1, 2014, U.S. Energy Information Administration

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Map of Power Reactor Sites

List of Power Reactor Units



Page Last Reviewed/Updated Wednesday, February 18, 2015

U.S. Refineries, Operable Capacity as of January 1, 2014

Corporation	Company	State	Site	Barrels per Calendar Day
Motiva Enterprises LLC	Motiva Enterprises LLC	Texas	Port Arthur	600,250
Exxon Mobil Corp	Exxonmobil Refining & Supply Co	Texas	Baytown	560,500
Marathon Petroleum Corp	Marathon Petroleum Co LP	Texas	Galveston Bay	451,000
Exxon Mobil Corp	Exxonmobil Refining & Supply Co	Texas	Beaumont	344,600
Valero Energy Corp	Premcor Refining Group Inc	Texas	Port Arthur	330,000
Deer Park Refining Ltd Ptnrshp	Deer Park Refining Ltd Partnership	Texas	Deer Park	327,000
Koch Industries Inc	Flint Hills Resources LP	Texas	Corpus Christi	293,000
Access Industries	Houston Refining LP	Texas	Houston	263,776
Phillips 66 Company	Phillips 66 Company	Texas	Sweeny	247,000
Total SA	Total Petrochemicals & Refining USA	Texas	Port Arthur	225,500
Valero Energy Corp	Valero Refining Co Texas LP	Texas	Texas City	225,000
Valero Energy Corp	Valero Refining Co Texas LP	Texas	Corpus Christi	200,000
PDV America Inc	Citgo Refining & Chemical Inc	Texas	Corpus Christi	163,000
Valero Energy Corp	Valero Energy Corporation	Texas	Sunray	156,000
WRB Refining LP	WRB Refining LP	Texas	Borger	146,000
Western Refining Inc	Western Refining Company LP	Texas	El Paso	122,000
Petrobras America Inc	Pasadena Refining Systems Inc	Texas	Pasadena	100,000
Valero Energy Corp	Valero Energy Corporation	Texas	Three Rivers	93,000
Valero Energy Corp	Valero Refining Co Texas LP	Texas	Houston	88,000
Marathon Petroleum Corp	Marathon Petroleum Co LP	Texas	Texas City	84,000
Alon Israel Oil Company Ltd	Alon Usa Energy Inc	Texas	Big Spring	67,000
Delek Group Ltd	Delek Refining Ltd	Texas	Tyler	60,000
Calumet Specialty Products Partners, LP	Calumet Lubricants Co	Texas	San Antonio	16,112
Blue Dolphin Energy Co	Lazarus Energy LLC	Texas	Nixon	11,471

Arx Advantage, LLC
Robbye G. Meyer
8801 Francia Trail
Austin, Texas 78748
(512) 963-2555
robbyemeyer@gmail.com

Appendix D

Whitewright Emergency Management Services Risk Assessment Letter
Whitewright ISD Risk Assessment Letter
Syndicator (City Real Estate Advisors) Impact Assessment Letter
Insurance Agency (CJ Thomas) Risk Assessment Letter
Property Management Agent (Alpha Barnes) Impact Assessment Letter

City of Whitewright

P. O. Box 966
Whitewright, Texas 75491-0966
(903) 364-2219, Fax (903) 364-2766
city@whitewright.com
whitewright.com

April 17, 2015

Texas Department of Housing and Community Affairs
Attention: Jean Latsha
P O Box 13941
Austin, Texas 78711-3941

Re: Risk from Chemical Plant to Proposed Development Site
Abbington Commons Apartments, Echols Lane and South Bond Street,
Whitewright, TX 75491

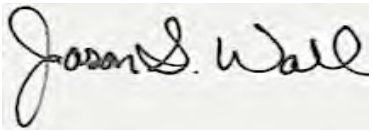
Dear Ms. Latsha,

As the director of emergency services for the City of Whitewright, I am familiar with the operations at the El Dorado fertilizer plant. It is the opinion of the City of Whitewright, that the risk is lower to the development site for Abbington Commons then what is being suggested. El Dorado has operated in its location since 1988, and the facility has been an active fertilizer plant under different ownership since 1965 without incident. El Dorado files their Tier II with the City of Whitewright Fire Department and Grayson County Emergency Management Office. The City of Whitewright is unaware of any violations against El Dorado fertilizer plant. It is our opinion, the Whitewright High School and Wal-Mart did research and found the risk low enough to build within 1,000 feet of the El Dorado warehouse.

Rea Ventures Group's design and engineering team met with the Mayor and me on January 12, 2015 to review their proposed development site. In addition to utilities and project design, we also reviewed the potential impact to the facility from El Dorado in the event of an accident. The City advised Rea Ventures it was our opinion the risk was low from the fertilizer plant, and that emergency responders for the City of Whitewright, did have a response plan in place in the event of an accident. Our primary concern in the event of an accident would be evacuation of surrounding homes and businesses within a half-mile radius to protect against possible fumes or smoke.

We have read the challenge to Abbington Common's location, and it is our opinion the numbers are exaggerated to the potential impact area of an accident at El Dorado. There were violations, storage of pressurized flammable gases, and outdated safety practices in West, Texas that are not present at the fertilizer plant in Whitewright. Whitewright supports the development site for Abbington Commons.

Sincerely,



Jason Wall
Emergency Services Director
City of Whitewright, Texas

Whitewright Independent School District

P.O. Box 888, Whitewright, TX 75491 - 903-364-2155

Steve Arthur, Superintendent • Reid Pittman, Assistant Superintendent

April 16, 2015

Texas Department of Housing and Community Affairs
Attention: Jean Latsha
P O Box 13941
Austin, Texas 78711-3941

Re: Impact Assessment of Chemical Plant
Abbington Commons Apartments, Echols Lane and South Bond Street, Whitewright, TX 75491

Dear Ms. Lathsa,

The El Dorado chemical plant has been in operation in Whitewright for many years without incident.

The Whitewright High School was built in its current location, adjacent to your proposed development site, in 1997. Together, the Whitewright Independent School District (ISD) has 765 students and 100 employees located at three adjacent facilities. Subsequent to the explosion in West, Texas we conducted an investigation of the facility and it's relative location to the school and found all legal and safety requirements to be within code. Further, the schools have not experienced any fume or odor problems since they are located upwind from the facility.

Whitewright ISD does have an evacuation plan in place in the event of a fire as a precaution, which will relocate all of our students and employees seven miles west to Tom Bean within a fifteen minute period. El Dorado has been a long-time feature of the Whitewright community and operated for many years in compliance with all state regulations.

Sincerely,

Steve Arthur
Whitewright ISD Superintendent

steve.arthur@wwisd.com FAX: 903-364-2839 reid.pittman@wwisd.com

CITY REAL ESTATE ADVISORS

April 16, 2015

Texas Department of Housing and Community Affairs
Attention: Jean Latsha
P O Box 13941
Austin, Texas 78711-3941

Re: Risk from Chemical Plant to Proposed Development Site
Abbington Commons Apartments, Echols Lane and South Bond Street, Whitewright, TX 75491

Dear Ms. Latsha,

City Real Estate Advisors (CREA) has served as the investor limited partner on four previous projects in Texas with Rea Ventures Group. CREA also provided Rea Ventures with a preliminary equity commitment letter for their proposed Abbington Commons of Whitewright project funding application. CREA is aware that the development site is located approximately 1,000 feet from a facility storing ammonium nitrate, has made a preliminary assessment of the risk, and expect to continue moving forward with this potential investment.

Rea Ventures Group brought the matter to CREA's attention in January 2015 during the due diligence process for Abbington Commons. CREA forwarded the matter to EFI Global for an assessment of the risk posed by the nearby fertilizer plant to the development site.

EFI Global determined there would not be any impact to the property from the potential blast radius. The greatest environmental concern in their assessment was noise coming from the highway to the south. CREA assumes that the noise issue was addressed in the Phase 1 Environmental Site Assessment by Phase Engineering and will require that any recommendations contained within that assessment regarding the noise levels and any other environmental conditions will be followed should this project move forward.

Sincerely,

CITY REAL ESTATE ADVISORS, INC.

By: K. Nicole Flores

Name: K. Nicole Flores
Title: Senior Vice President

THOMAS

C. J. Thomas Company
Insurance

9607 Gayton Road, Suite 201
Richmond, Virginia 23238
804-285-1128 Fax 804-285-3101

April 16, 2015

Texas Department of Housing and Community Affairs
Attention: Jean Latsha
P O Box 13941
Austin, Texas 78711-3941

Re: Risk from Chemical Plant to Proposed Development Site
Abbington Commons Apartments, Echols Lane and South Bond Street, Whitewright, TX 75491

Dear Ms. Latsha,

C.J. Thomas is the insurance agency that would place the builder's risk and premises general liability insurance coverage to Abbington Commons Apartments in Whitewright, Texas. We are aware of the development site's location in relation to an existing fertilizer plant which stores ammonium nitrate.

In January, 2015, Rea Ventures Group brought the matter to our attention for review as to the potential risk to Abbington Commons. We contacted Chubb Insurance Company, the proposed permanent insurance carrier, to bring the matter to their attention and seek additional guidance. Chubb reviewed the Phase Engineering and HUD assessment and their determination was that the safety risk outside of the 600-foot effect radius from the facility was acceptable to their underwriting review.

Based on the information provided to date, Chubb has agreed to provide permanent insurance for the proposed Abbington Commons property; and they are aware of its location approximately 1,000 feet from a facility storing ammonium nitrate. From an insurance risk standpoint, Chubb does not see a significant insurance risk to the property or residents from the proposed location of the development site.

Sincerely,

Erica Daigneau

C.J. Thomas Company

ALPHA - BARNES
REAL ESTATE SERVICES

April 16, 2015

Texas Department of Housing and Community Affairs
Attention: Jean Latsha
P O Box 13941
Austin, Texas 78711-3941

Re: Impact of Chemical Plant on Lease-Up and Operations
Abbington Commons Apartments, Echols Lane and South Bond Street, Whitewright, TX 75491

Dear Ms. Latsha,

Alpha-Barnes Real Estate Services would be the property manager of Abbington Commons if funded. Our firm has managed properties in Whitewright before, having managed the existing Waterford Apartments near the proposed Development Site in the mid late 1990's.

The fertilizer plant was in operation at the time, as it continues to be today. Rea Ventures Group brought the matter to our attention in January 2015 for guidance as to its potential effect on lease up and the ongoing safety of residents. Our response was that we saw no impact to lease up or long-term safety at Abbington Commons from its proximity to the fertilizer plant. The facility is well run and widely known in the community. We saw no negative impact when managing Waterford Apartments and we see no negative impact from the chemical plant on the future operations of Abbington Commons.

Alpha-Barnes would maintain an evacuation plan in the event of an emergency, as would be standard practice for all facilities within a half-mile of the facility such as the nearby schools. If you have any questions, please feel free to contact me at (972) 643-3205 or mclark@alpha-barnes.com.

Sincerely,

Mike Clark
Principal

12720 Hillcrest Road, Suite 400 Dallas, Texas 75230 972.643.3200 Fax 972.503.7569

Arx Advantage, LLC
Robbye G. Meyer
8801 Francia Trail
Austin, Texas 78748
(512) 963-2555
robbyemeyer@gmail.com

Appendix E

Engineer Assessment of Mitigation Options

cole®

ST. LOUIS
Power House at Union Station
401 S. 18th Street, Suite 200
St. Louis, MO 63103
314.984.9887 tel

ST. CHARLES
1520 S. Fifth Street
Suite 307
St. Charles, MO 63303
636.978.7508 tel

DALLAS
6175 Main Street
Suite 367
Frisco, TX 75034
972.624.6000 tel

PHOENIX
2701 E. Camelback Road
Suite 175
Phoenix, AZ 85016
602.795.4111 tel

April 22, 2015

Texas Department of Housing and Community Affairs
Attention: Jean Latsha
P O Box 13941
Austin, Texas 78711-3941

Re: Potential Mitigation Costs to Development Site
Abbington Commons Apartments, Echols Lane and South Bond Street
Whitewright, TX 75491 - TDHCA Project # 15159

Dear Ms. Latsha,

Cole prepared the February 27, 2015 Feasibility Study for Abbington Commons Apartments. In that original assessment, we evaluated and discussed the potential risk to the proposed Development Site from the El Dorado chemical plant. That original assessment determined the site to meet the distance requirements of HUD and TDHCA from the facility.

We reviewed the March 31, 2015 challenge submitted by John Shackelford as well as HUD's findings that the site remains in compliance with Section 51C, no mitigation is required, but that qualitatively mitigation may still be needed for over pressure effects. Blast over pressure can be effectively mitigated by the use of a number of physical barriers located between El Dorado and the development site.

Appropriate barriers may be created by one or a combination of the following elements:

- Relocation of the garages to the east side of the property such that they are situated between the plant and the residential buildings. There would be no increase in the construction budget for this measure.
- On- or off-site vegetative buffers, including living screening walls with trees, shrubs and other landscape elements, including potential earthen landscape berms. The estimated budget for this would be $20,000.
- A blast wall constructed off-site near the El Dorado warehouse. The estimated budget for this is $30,000 (300 LF at $100/ft).

Further analysis and coordination with the El Dorado facility will be performed as part of the final design process to determine the optimal location and type of mitigation measures that will provide the greatest benefit to the development site as well as the community. Please call if you have any questions or need additional information.

Sincerely,

Sandy Stephens, P.E.

S:\JOBS\Jobs2015\15-0018\PM\TDHCA Response Letter.doc

Arx Advantage, LLC
Robbye G. Meyer
8801 Francia Trail
Austin, Texas 78748
(512) 963-2555
robbyemeyer@gmail.com

Appendix F

Engineer Assessment of Mitigation Options and Accident Probability

12750 Commonwealth Drive
Fort Myers, FL 33913

April 22, 2015

Texas Department of Housing and Community Affairs
Attention: Jean Latsha
P.O. Box 13941
Austin, TX 78711-3941

Re: Assessment of Chemical Plant Risk to Development Site
Abbington Commons Apartments, Echols Lane and South Bond Street, Whitewright, TX 75491

Dear Ms. Latsha,

We were contacted by Rea Ventures Group to provide additional guidance on allegations raised in a March 31, 2015 challenge of the development site location. I am a Senior Managing Consultant for Engineering Systems Inc. In this capacity and with respect to this particular project I evaluate environmental risk and chemical hazards to properties and individuals. As part of my professional experience I was a task group leader for assessing risks and developing safety assessment standards for the department of defense. The standards were used to protect deployed troops from non-battle environmental exposure hazards. After developing the standards I personally trained the Navy health preventive teams that were being deployed to Iraq and Afghanistan in how to apply these standards and minimize the risk to deployed personnel.

I have reviewed the March 31st challenge and the calculations associated with blast overpressure. There are several considerations and assumptions related to this approach that warrant further consideration. The approach uses a simplistic classical approach that does not consider site-specific characteristics and factors. The approach clearly overstates the actual risk. If we use the challenger's calculation for 1 psi, which is double of the .5 requirement, the challenger states that the blast radius is 2,468 feet. If this approach accurately reflected the risk then the school, Wal-Mart store and much of the community is at risk. Examples of site-specific characteristics include specific storage details such as number of bins, separation of the bins, conditioning agents, density and any other impediments to a single large explosion. Any obstructions in the path of the blast can significantly reduce the pressure. The storage shed is at the back of the property with buildings that would block some of the blast. These factors are likely to mitigate the hazard and significantly reduce the potential pressure. Explosions with an associated blast overpressure effect typically require the detonation of a pressurized substance in either a liquid or gaseous form. No pressurized liquids or gases are stored or used at the El Dorado facility in Whitewright. Per Mr. Nelson Rivera, the development site is in compliance with 51C and no mitigation is required.

The Ammonium Nitrate (AN) hazard and explosions have been extensively studied by many experts including the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), and the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF). In 2013, these organizations collaborated in publishing an advisory on the subject. The complete advisory

is included as *Attachment A*. The challenger used this advisory as a reference but only selected to quote sections out of context that helped to overstate the risk. It should be noted that the advisory does not describe or recommend the calculation method as a way to avoid or mitigate the hazard.

With respect to risk, it is noteworthy that the advisory acknowledges that millions of tons of AN are produced annually in the US and yet the incidents involving AN are rare.

The advisory clearly documents that AN is a highly regulated material and the risk depends on many factors. The advisory also includes a number of mitigation steps to reduce hazards associated with AN. From the preliminary review of the materials it appears a number of these mitigation steps are utilized at the El Dorado plant. For example the advisory states (bold text):

"Pure" ammonium nitrate is stable and will explode only under extraordinary circumstances. However, the addition of combustible materials such as sugar, grain dust, seed husks or other organic contaminants, even in fairly low percentages, creates a dangerous combination and the ammonium nitrate mixture becomes far more susceptible to detonation. This characteristic of ammonium nitrate underlies most of the advice and recommendations for safe handling contained herein. Thus AN is at risk for explosion when stored near other material that can add fuel to the AN – such as grain, sugar, seeds, sawdust, and most especially petroleum fuels such as diesel. There is no evidence that this is a happening at the El Dorado plant. The AN is stored in a non-confining separate shed on the east side of the property.

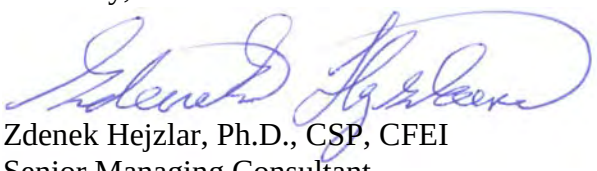
The density, particle size and concentration of solid AN in a material, as well as the presence of other additives, affects the hazard of the material. The technical grade of AN is a lower density (higher porosity) prilled material. Higher density prills are used as fertilizer. AN can be fused with ammonium sulfate fertilizer or amended with carbonate materials to reduce its explosive properties. More information on additives is discussed in Guidance for the Storage, Handling and Transportation of Solid Mineral Fertilizers found in the Reference section. Solid fertilizers are usually coated with an inorganic, non-combustible anti-caking compound to prevent sticking and clumping. The El Dorado plant reportedly uses prilled material and follows applicable and federal standards. This approach significantly reduces the risk and severity of explosion. El Dorado has located the storage shed containing ammonium nitrate away from other sources of combustible material.

Given the nature of the El Dorado facility, a blast overpressure estimates in the range of 1.5 psi can be readily mitigated on or near the development site through a variety of methods. Approaches can include planting a vegetative/tree barrier to buffer the site and reduce the pressure wave. On-site and off-site berms and netting or walls would also mitigate the effects of overpressure. Finally, a smaller wall segment/berm, built on-site at El Dorado could remove the overpressure risk to both the site and other community buildings at nominal cost.

Given the limited information at this time the possibility for a pressurized explosion of ammonium nitrate at the El Dorado plant cannot be ruled out. The possibility is highly unlikely and would require failure of multiple safety systems. It would require violation of federal and state regulation. Nonetheless due to the possibility further consideration to the issue appears appropriate.

Further study is needed to determine the specific overpressure effects, if any, that an accident at El Dorado plant would create at the development site. If the results identify that mitigation measures are needed, those measures could be implemented in a relatively simple and cost effective manner and would eliminate risk of overpressure to the development site.

Sincerely,



Zdenek Hejzlar, Ph.D., CSP, CFEI
Senior Managing Consultant

United States
Environmental Protection
Agency

Occupational Safety
and
Health Administration

Bureau of Alcohol,
Tobacco, Firearms
and Explosives

EPA 550-S-13-001 August 2013

Chemical Advisory: Safe Storage, Handling, and Management of Ammonium Nitrate

The Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), and the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) ("we") are issuing this advisory[1] as part of an ongoing federal effort to improve chemical risk management, and to advance safety and protect human health and the environment. This advisory contains information on recent and past accidents involving AMMONIUM NITRATE (commonly referred to as AN), on the hazards of AN, how to manage these hazards, and appropriate steps for community emergency planning and proper emergency response. It is focused primarily on safe handling and storage of higher density, solid AN pellets and prills (a prill is a small bead) used in fertilizers. This advisory is intended to broadly disseminate lessons learned from recent incidents involving AN so that such incidents can be prevented in the future. Also provided is a list of information resources, including relevant codes and standards, industry publications, and applicable statutes and regulations that will help facilities handling AN and first responders better understand the hazards so they can effectively manage the risks. The information provided is not intended to cover all the hazards, safe practices or technical challenges associated with the manufacturing of AN; liquid fertilizers containing AN; manufacturing, storage or use of explosives or blasting agents containing AN; or the transportation of AN. For these particular situations, please consult other sources including the appropriate references, standards and regulations, cited at the end of this document.

ACCIDENTS

In general, AN is manufactured for use as a fertilizer and to produce explosives and blasting agents.[2] There are several other uses in the chemical industry, such as the production of nitrous oxide. These other uses represent a small fraction of amount of AN used in the US.

Although pure AN is stable at ambient temperature and pressure under many conditions, the chemical itself does not burn. AN is a strong oxidizer[3] and it supports and accelerates the combustion of organic (and some inorganic) material, increasing the fire hazard and complicating the fire fighting challenges. AN may explode when exposed to strong shock or when subjected to high temperatures in confinement.

Millions of tons of AN are produced annually in the US. Incidents involving AN are rare, but as is shown in the accidents below, they can have severe consequences. Most recently, on April 17, 2013, a fire at a fertilizer storage and distribution facility in West, Texas, resulted in a detonation of AN fertilizer stored at the facility, killing 15 people, including some of the firefighters responding to the fire. That incident remains under investigation,[4] but much has been learned from other AN explosions.

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[1] The statements in this document are intended solely as guidance. This document is not a substitute for EPA, OSHA, ATF or other agencies' regulations, nor is it a regulation itself. It cannot and does not impose legally binding requirements on the agencies, states, or the regulated community. The measures described in this document may not apply to a particular situation based upon the circumstances. This guidance does not represent final agency action and may change in the future, as appropriate.

[2] A blasting agent is any material or mixture, consisting of a fuel and oxidizer, intended for blasting, not otherwise classified as an explosive and in which none of the ingredients are classified as an explosive, provided that the finished product, as mixed and packaged for use or shipment, cannot be detonated by means of a No. 8 test blasting cap when unconfined (see 29 CFR 1910.109(a)(1))

[3] An oxidizer is a material that readily yields oxygen or other oxidizing gas or that reacts readily to promote or initiate combustion of combustible materials.

[4] The precise quantity and form of AN has not been definitively established. We intend to update this advisory as we learn more about the incident and as we identify additional best practices.

- On October 2, 2003, a fire and explosion occurred in a double story farm warehouse in St. Romain en Jarez, France, involving 3 to 5 tons of AN stored in bags. This incident killed 26 people, 18 of whom were firefighters. In this incident, improper storage methods are thought to have played a role.

- On September 21, 2001, a massive explosion occurred in a warehouse at the Azote de France fertilizer factory in Toulouse, France, involving 200-300 tons of AN, which was stored in bulk in a hangar. The explosion resulted in the death of 30 people, 2500 injuries, the destruction of the factory, and an additional 10,000 buildings being heavily damaged. The exact cause of this accident remains unknown. Storage of incompatible material with AN is believed to have been a factor.

We have learned several key lessons as a result of these accidents and additions studies of AN, including:

The conditions of storage and the materials co-located with AN while in storage are crucial to the safety and stability of the AN.

Explosions of stored AN are responsible for some of the worst chemical disasters on record. Several of these incidents, including two in Germany in 1921, occurred during attempts to break up large piles of solidified or caked AN and ammonium sulfate mixtures using explosives. In both cases, the initial blast intended to break up solid AN initiated an unintended general detonation of the AN or ammonium sulfate mixture.

AN will self-confine under some conditions. Adding heat, such as a booster charge intended to break up clumps, can initiate a general detonation of the AN.

Other large explosions have been triggered by fires involving AN in confined spaces, including the 1947 explosion in Texas City, Texas, of two cargo ships. In that case, the first ship is thought to have exploded due to a fire in the hold involving AN fertilizer that had been manufactured with a wax coating and stored in paper bags. The wax would have been one potential source of fuel for mixing with the AN, thus creating an explosive situation. The second ship exploded some time later, likely due to a fire caused by the first explosion. These two explosions resulted in deaths of nearly 600, including all but one member of the Texas City Fire Department.

As a result of such accidents and subsequent studies of the properties of AN, caked AN is no longer broken up with explosive materials, and organic material such as wax coatings are no longer used for AN fertilizer.

Our intent in issuing this advisory is to identify actions that should be taken as a result of the lessons learned from the more recent accidents involving AN. Similar to the corrective steps taken following the 1921 and 1947 incidents, this advisory emphasizes the safe steps that should become common practice in the industry and emergency response community in order to prevent the catastrophic loss of life and property damage.

Here are some of the things we have learned from accidents involving AN:

AN will self-compress/self-confine under some conditions, becoming much more likely to explode.

AN is at risk for explosion when stored near other material that can add fuel to the AN – such as grain, sugar, seeds, sawdust, and most especially petroleum fuels such as diesel.

AN is a powerful oxidizer and a rich source of nitrate, which provides energy to an explosion. Thus, the presence of fuel and/or heat (and especially both) near AN is a very high hazard situation.

INFORMATION ON HAZARDS

Hazard Classification

For the purpose of transportation, AN that contains less than 0.2 percent combustible substances and AN fertilizers are classified by the U.S. Department of Transportation (DOT), as oxidizers**. AN with more than 0.2 percent combustible substances is classified by DOT as an explosive.**[5] (see box below).

The National Fire Protection Association (NFPA) assigns an instability rating of 3 (in a range of 0-4) to AN, meaning AN is capable of detonation, explosive decomposition, or explosive reaction, but that a strong initiating source or confinement in extreme temperatures is required. AN can explode under certain conditions by adding energy (heat, shock), especially when contaminants are present or it is under confinement.

"Pure" ammonium nitrate is stable and will explode only under extraordinary circumstances. However, the addition of combustible materials such as sugar, grain dust, seed husks or other organic contaminants, even in fairly low percentages, creates a dangerous combination and the ammonium nitrate mixture becomes far more susceptible to detonation. This characteristic of ammonium nitrate underlies most of the advice and recommendations for safe handling contained herein.

Decomposition Chemistry

AN melts at 337° F (170° C) and begins to undergo decomposition when molten. Hazardous scenarios with AN can involve simple thermal decomposition initiated by external fire or other heating, self-sustained decomposition also known as "cigar burning," and detonation.

Decomposition creates toxic gases containing ammonia and nitrogen oxides. The resulting nitrogen oxides will support combustion, even in the absence of other oxygen. The resulting heat and pressure from the decomposition of AN may build up if the reaction takes place in a confined space and the heat

[5] *Explosive* means any substance or article, including a device, which is designed to function by explosion (*i.e.,* an extremely rapid release of gas and heat) or which, by chemical reaction within itself, is able to function in a similar manner even if not designed to function by explosion (see 49 CFR 173.50(a)).

and gases created are not able to dissipate. As the temperature rises, the rate of decomposition increases. In a confined space, the pressure can reach dangerous levels and cause an explosion that will include the detonation of the AN.

When dealing with a large quantity of AN, localized areas of high temperature may be sufficiently confined by the mass of material to initiate an explosion. The explosion of a small quantity of AN in a confined space (e.g., a pipe) may act as a booster charge and initiate the explosion of larger quantities (e.g., in an associated vessel).

During a fire in a facility where AN is present, the AN can become hot and molten which makes the material very sensitive to shock and detonation, particularly if it becomes contaminated with incompatible material such as combustibles, flammable liquids, acids, chlorates, chlorides, sulfur, metals, charcoal, sawdust, etc. If a molten mass becomes confined (e.g., in drains, pipes or machinery), it can explode.

Most types of AN do not continue to decompose once a fire has been extinguished. However, some types of AN fertilizers containing a small percentage of chlorides (e.g., potassium chloride) undergo a smoldering (self-sustaining) decomposition that can spread throughout the mass to produce substantial toxic fumes, even when the initial heat source is removed. These fertilizers that can self-sustain decomposition, known as "cigar burners" are normally compound fertilizers that contain between 5% to 25% nitrogen from ammonium nitrate, up to 20% phosphate (as P_2O_5) and chloride (which may only be present as a small percentage).

Contaminants

AN mixed with oil or other sensitizing contaminants may explode or detonate when exposed to fire or shock. Organic materials (e.g., packing materials, seed, etc.) will increase the likelihood of an explosion and will make the AN explosion more energetic.

AN may also be sensitized by certain inorganic contaminants, including chlorides and some metals, such as aluminum powder, chromium, copper, cobalt, and nickel.

As AN solution becomes more acidic, its stability decreases, and it may be more likely to explode.

Solid AN readily absorbs moisture, which can lead to caking, self-compression and self confinement. This in turn increases susceptibility to explosion in a fire.

The density, particle size and concentration of solid AN in a material, as well as the presence of other additives, affects the hazard of the material. The technical grade of AN is a lower density (higher porosity) prilled material. Higher density prills are used as fertilizer. AN can be fused with ammonium sulfate fertilizer or amended with carbonate materials to reduce its explosive properties. More information on additives is discussed in *Guidance for the Storage, Handling and Transportation of Solid Mineral Fertilizers* found in the Reference section. Solid fertilizers are usually coated with an inorganic, non-combustible anti-caking compound to prevent sticking and clumping.

AN in undiluted or pure form has a higher degree of overall hazard than when it is mixed or blended with compatible or non-combustible materials that can reduce the concentration. In general for fertilizer blends containing AN, the more nitrogen they contain, the greater the explosion hazard they pose. Blended fertilizers containing AN and chloride compounds and blended fertilizers containing AN contaminated with combustible materials or incompatible substances pose increased explosion hazards. A large number of blended fertilizers are produced from basic primary fertilizer products (e.g., ammonium nitrate, urea, and mono-ammonium phosphate) and natural materials (e.g., rock phosphate, potassium chloride) which can introduce contaminants. All such materials are not necessarily compatible with each other and some may produce undesirable effects when mixed with others. These undesirable effects can include, for example, chemical reaction(s) and physical effects (e.g. stickiness which can cause handling difficulties, moisture migration giving rise to caking tendency). Facilities can consult *Guidance for Compatibility of Fertilizer Blending Materials* listed in the Reference section to assess potential incompatibility. The Safety Data Sheet (SDS – formerly MSDS) of the AN product should be used as one source of information to assess the overall hazard. The effects of added components can only be determined after careful review of the SDS and other available hazard literature.

Confinement and/or the addition of fuel to AN creates a real danger of explosion. The addition of heat when either of these conditions exists can lead to disaster. Accordingly, the responder should quickly assess if AN has been involved in the fire and whether the AN has been compromised in any of these ways, and plan the fire response accordingly.

HAZARD REDUCTION

What steps should facility owners or operators take to reduce the hazards of AN during storage and handling?

Storage/Process Conditions to Avoid

Persons engaged in the handling, management or emergency planning for AN must be aware of the hazards of AN and ensure that the conditions that may lead to an explosion are not present. Measures that facilities should take to ensure the safe storage, use and handling of AN include:

- Avoid heating AN in a confined space.
    - Processes involving AN should be designed to avoid this possibility.
    - Avoid localized heating of AN, potentially leading to development of high temperature areas (e.g., AN fertilizer should not be stored near sources of heat such as steam pipes, radiators, hot ducts, light bulbs etc.).
- Ensure that AN is not exposed to strong shock waves from explosives. AN storage near high explosives or blasting agents must conform to ATF's Table of Separation Distances, Title 22 of the Code of Federal Regulations, section 555.220 (22 CFR 555.220).

- Avoid contamination of AN with combustible materials or organic substances such as packing materials, dust, seed, oils, and waxes.
    - If possible, do not co-locate AN, especially bulk AN in bins, with dust-producing organics such as grains or seeds.
- Avoid contamination of AN with inorganic materials that may contribute to its sensitivity to explosion, including chlorides and some metals, such as aluminum powder, chromium, copper, cobalt, and nickel.
    - Pay attention to the materials used to build storage areas and cribs. Wood and aluminum or other metals must be specially treated to prevent impregnation if they are going to be in contact with AN. Metal materials can be treated with epoxy tar or chlorinated rubbers to prevent corrosion of the metal and contamination of the AN.
- Maintain the pH of AN solutions within the safe operating range of the process. In particular, avoid low pH (acidic) conditions.
    - If possible, do not co-locate acids in an AN storage area.
- Keep molten or solid AN out of confined spaces, especially sewers or drains where it can react with organic materials there.

Certain specific safety and handling instructions (required and recommended) apply for safe handling and storage of AN[6] under certain conditions:

OSHA's standard for Explosives and Blasting Agents at 29 CFR 1910.109(i) contains requirements for AN stored in the form of crystals, flakes, grains or prills including fertilizer grade, dynamite grade, nitrous oxide grade, technical grade, and other mixtures containing 60 percent or more of AN by weight. AN should also be handled in accordance with safe practices found in *NFPA 400 Hazardous Materials Code, Chapter 11*.

Building Design

- Store only in one-story buildings and buildings with no basements, unless the basement is open on one side.
- Use fire resistant walls within 50 feet of combustible building or materials.
- Flooring in storage and handling areas should be constructed of noncombustible material or protected from impregnation by AN.
- Avoid installing, or remove or close off any open drains, traps, tunnels, pits or pockets into which molten AN can flow and be confined in the event of fire.
- Buildings should be kept dry and free of water seepage through roofs, walls and floors.
- Have adequate ventilation or be constructed to self-ventilate in the event of a fire to avoid pressurization.
- Do not place AN into storage when the temperature of the product exceeds 130°F (54.4°C).

[6] AN-based materials that are DOT Hazard Class 1 sensitive (explosives or blasting agents) must be handled and stored in accordance with requirements of OSHA's Standard for Explosives and Blasting Agents (29 CFR 1910.109) and ATF's Table of Separation Distances of Ammonium Nitrate and Blasting Agents from Explosives or Blasting Agents (27 CFR 555.220) Facilities should also follow the NFPA 495- Explosive Materials Code, where applicable.

Storage in bags, drums or other containers

- Piles of bags, drums and other containers should be no closer than 36 inches below the roof or supporting beams.
- Bags should be stored no less than 30 inches from walls or partitions.
- Piles of bags, drums, and other containers should not exceed a height of 20 feet, width of 20 feet, and length of 50 feet, unless the building is of noncombustible construction or protected by automatic sprinklers.
- Maintain aisles of at least 3 feet width between piles.

Storage in bulk

- Bins for storing bulk AN should be kept clean and free of materials, which could contaminate the material. Bins should not be constructed of galvanized iron, copper, lead or zinc unless suitably protected. Aluminum or wooden bins should be protected against impregnation by AN.
- Piles or bins must be adequately sized, arranged and moved periodically to minimize caking. Height or depth of piles shall be limited by pressure-setting tendency of the product, but in no case should pile be higher than 36 inches below roof or supporting beams.
- Do NOT use dynamite, explosives or blasting agents to break up or loosen caked AN.
- Protect piles of AN from absorbing moisture from humid air by covering them with water-impermeable sheeting or using air conditioning.
- Do not store AN with organic chemicals, acids, or other corrosive materials, materials that may require blasting during processing or handling, compressed flammable gases, flammable and combustible materials or other contaminating substances. AN stores should be separated from incompatible substances by using separate buildings or 1 – hour fire resistant walls, or a minimum separation distance of 30 feet.

Fire Protection

- AN storage areas should be equipped with an automatic sprinkler system, or have an automatic fire detection and alarm system if the areas are not continuously occupied. This is especially important when the facility in question is close to the public surrounding the facility.
- Facilities should NOT store more than 2500 tons of bagged AN without an automatic sprinkler system.
- An automatic sprinkler system, if installed, should be provided in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems.
- Suitable fire control devices such as hoses and appropriate portable fire extinguishers (AN is an oxidizer and not all fire extinguishers are appropriate) shall be provided throughout the warehouse and loading areas. Water supplies and fire hydrants should be available.
- Store AN fertilizer in separate buildings or separated by approved fire walls from organic, combustible or reactive materials, such as grains, wood or other organic materials, urea and urea compounds, flammable liquids or gases, corrosive acids, chlorates, chromates nitrites, permanganates or finely divided metals or sulfur.

- AN fertilizer should NOT be stored in the same building with explosives or blasting agents unless conditions in ATF's Table of Separation Distances of Ammonium Nitrate and Blasting Agents from Explosives and Blasting Agents, 27 CFR 555.220, are met.
- Prohibit smoking in AN storage areas.

We recommend that AN be stored in purpose-built facilities/buildings of non-combustible construction. Dust-producing organic materials, such as grain, seeds and sugar, should not be stored near AN. Some metal powders such as aluminum powder are equally dangerous. AN should be stored so as to ensure it is not contaminated by gasoline, diesel or other fuels, and is not subject to high heat (even in one small area of a large stockpile) or water infiltration.

COMMUNITY EMERGENCY PLANNING

What should communities do to understand and develop a plan for the risk associated with AN?

AN is a hazardous chemical covered under the OSHA Hazard Communication Standard. Therefore, facilities that handle and store AN are required by law to submit information regarding chemical hazards (including AN) to their State or Tribal Emergency Response Commission (SERC or TERC), Local Emergency Planning Committee (LEPC), and local fire department. This information must include the following:

1) a Safety Data Sheets (SDS) providing the chemical's hazard information and emergency response guidelines and
2) a Hazardous Chemical Inventory form that provides the quantity, storage types and locations of the AN at their facility.

We recommend that fire services visit any facility reporting AN, and that the conditions of storage and manner of handling be reviewed by fire service personnel. Fire service and other emergency responders should take note of the specific location(s), amounts and packaging of stored AN. Conditions of storage should be reviewed with the facility operator in light of the information provided in this document.

The LEPC in conjunction with the fire department should use this information to develop an emergency plan, in case of a fire or explosion involving AN or any other hazardous substance. The facility should consult with the LEPC to provide them the necessary information to develop the emergency plan, the elements of which should include:

- Identification of facilities and transportation routes of hazardous substances
- Description of emergency response procedures, on and off site
- Designation of a community coordinator and facility emergency coordinator(s) to implement the plan

- Outline of emergency notification procedures
- Description of how to determine the probable area and population affected by releases
- Description of local emergency equipment and facilities and the persons responsible for them
- Outline of evacuation plans
- A training program for emergency responders (including schedules)
- Methods and schedules for exercising emergency response plans

LEPCs should also ensure that members of the community (which would include potentially affected populations) are aware of the emergency plan and the actions they need to take if an accident occurs.

Local fire departments should use the information to determine what precautions they may need to take in responding to an accident at the facility and ensure the first responders have the appropriate training to respond to incidents involving AN.

Owners and operators of facilities holding AN are required to report the AN hazard to local response officials under the Emergency Planning and Community Right-to-Know Act (EPCRA). Unfortunately, that obligation is not universally understood, and so some facilities may fail to report. Fertilizer-grade AN is typically found at those businesses that provide direct logistical support to agriculture. This may include crop service operations, farm co-ops, grange stores and similar operations.

In the interest of community safety, it is often necessary and appropriate for first response officials to reach out to facility owners and operators, and determine if unreported risks are present in their community. Helping a neighbor, facility operator, or employer to understand and meet his obligations to the community and to workers is in everyone's best interest

EMERGENCY RESPONSE

Owner/operators of storage facilities should develop a site emergency response plan which includes:

- Coordination with local first responders
- Joint training with first responders if possible
- Employee training
- Community outreach
- Analysis of what may be at risk in a serious accident and appropriate planning
- Signs that clearly mark high hazard areas, safe areas, emergency contact numbers, firefighting equipment, and other essential area during an emergency response
- A site and area evacuation plan

Owners and operators of facilities holding AN have an obligation to ensure their community's first responders are aware of the hazards associated with the AN. Reliance on a report may not always be sufficient. Owners and operators should take a pro-active approach to reaching out to the emergency response officials in their location and ensuring that the hazards of AN are understood by the responders.

What do firefighters need to know when responding to an accident or fire involving AN?

Before responding to a fire involving AN, firefighters should ensure the community emergency response plan includes:

- AN hazard information and emergency response guidelines
- Quantity, storage types, and locations of AN at facilities in their community
- Specific response procedures; including a decision process to determine under which conditions a fire should be fought or whether the fire should be allowed to burn
- Evacuation procedures for the community
- Training requirements for all response personnel
- A schedule for exercising the response plan related to AN accidents

When responding to a fire where AN is stored; firefighters should:

- First consider if they can safety fight the fire or whether they should just let it burn, move to a safe location, and focus on evacuating nearby residents and preventing further safety issues for the surrounding community.

To determine whether or not it makes sense to fight the fire or to let it burn, firefighters and emergency responders should consider the following information:

- Firefighters should not fight an AN fire and everyone, including fire fighters, should be evacuated to a safe distance if they observe any of the following:
  - A fire involving AN is judged to be out of control;
  - The fire is engulfing the AN; or
  - Brown/orange smoke is detected, indicating the presence of nitrogen dioxide (which is toxic); or
  - A rapid increase in the amount/intensity of smoke or fire in the area of AN storage.

- If firefighters consider it safe and appropriate to respond to a fire involving AN, then the following information should be considered:
  - AN fires should be fought from protected locations or maximum possible distance. Approach a fire involving or close to AN from upwind to avoid hazardous vapors and toxic decomposition products. Self-contained breathing apparatus (SCBA) of types approved by the National Institute for Occupational Safety and Health (NIOSH) should be used to protect personnel against gases.
  - Use flooding quantities of water from a distance as promptly as possible. It is important that the mass of AN be kept cool and the burning be quickly extinguished. Keep adjacent fertilizers cool by spraying with large amounts of water. When possible and appropriate, only use unmanned hose holders or monitor nozzles.

- Do NOT use steam, CO_2, dry powder or foam extinguishers, sand or other smothering agents.[7]
- Ensure maximum ventilation of the AN storage container as quickly as practical to prevent heat and pressure buildup. This is different than ensuring maximum ventilation of the entire building or structure where the AN is stored. Ventilation of the structure should be conducted only in a manner to limit fire spread and growth and should be minimized until a suppression water supply is established.
- If practicable and safe to do so, attempt to prevent AN from entering the drains where explosive confinement could occur. Remember AN may be washed into drains by fire water, but it can also melt and flow without impetus from water.
- Prevent or minimize contamination of water bodies or streams to reduce the potential for environmental effects.

INFORMATION RESOURCES

CODES AND STANDARDS

NFPA codes and Compressed Gas Association (CGA) standards are developed through a consensus standards development process approved by the American National Standards Institute. This process brings together volunteers representing various viewpoints and interests to achieve consensus on safety issues. These codes and standards are not binding but may be adopted by reference into laws or regulations. Users of the codes and standards should consult applicable federal, state and local laws and regulations.

NFPA has developed a code for storage of AN, including mixtures containing 60 percent or more by weight of AN, and a code for explosives that would apply to blasting agents and explosives containing AN. These codes are listed below:

NFPA 400 — Hazardous Materials Code, Chapter *11 - Ammonium Nitrate Solids and Liquids*. (2013). Also see Annex A.11 in this document and Annex E: Properties and Uses of Ammonium Nitrate and Fire-Fighting Procedures.

NFPA 495 — Explosive Materials Code (2013).

National Fire Protection Association
1 Batterymarch Park
PO Box 9101
Quincy, MA 02169-7471
Phone: 800-344-3555 (toll free)
Website: http://www.nfpa.org/freeaccess

[7] Keep in mind that ammonium nitrate is an oxidizer – that is – it provides its own oxygen and once combustion begins, it cannot be smothered. Moreover, the combination of heat and confinement will accelerate combustion, perhaps to the point of detonation.

Safe Practices for the Production of Nitrous Oxide From Ammonium Nitrate, CGA G-8.4 (January 2013). Compressed Gas Association, Inc., Chantilly, VA
http://www.cganet.com/customer/publication_detail.aspx?id=G-8.4

GENERAL REFERENCES

Storing and Handling Ammonium Nitrate, INDG230 (First published 8/96, Reprinted 11/04). Health and Safety Executive (HSE), United Kingdom http://www.hse.gov.uk/explosives/ammonium/

Safe Storage and Handling of Ammonium Nitrate (AN), Technical Note 60, (28/02/2006), SafeWork, South Australia. http://www.safework.sa.gov.au/uploaded_files/SSAN_Storage.T60.pdf

Safe Practice: Safe Storage of Solid Ammonium Nitrate. (2013). Resources Safety, Division of Mines and Petroleum, Government of Western Australia (WA), East Perth, WA.
http://www.dmp.wa.gov.au/documents/Code_of_Practice/DGS_COP__StorageSolidAmmoniumNitrate.pdf

Guidance for the Storage, Handling and Transportation of Solid Mineral Fertilizers. (2007). European Fertilizers Manufacturers Association, Brussels, Belgium, www.efma.org

Guidance for the Safe Handling and use of Non-conforming Fertilizers and Related Materials (Producers). (2003). European Fertilizers Manufacturers Association, Brussels, Belgium, www.efma.org

Guidance for the Safe Handling and Use of Non-conforming Fertilizers and Related Materials for Fertilizer Importers, Distributors and Merchants. (2004). European Fertilizers Manufacturers Association, Brussels, Belgium, www.efma.org

Guidance for the Storage of Hot Ammonium Nitrate Solution. (2005). European Fertilizers Manufacturers Association, Brussels, Belgium, www.efma.org

Guidance for Compatibility of Fertilizer Blending Materials. (2006). European Fertilizers Manufacturers Association, Brussels, Belgium, www.efma.org

The above five guidance documents from European Fertilizers Manufacturers Association can be found on the following webpage:

http://www.productstewardship.eu/site/index.php?id=259

Ammonium Nitrate and Mixed Fertilizers Containing Ammonium Nitrate, FM Global Property Loss Prevention Data Sheet 7-89. (April 2013). FM Global, Johnston, Rhode Island.
http://www.fmglobal.com/page.aspx?id=04010200 Free access with registration

Ammonium Nitrate Handling, (2013). Bunn Fertiliser, Ltd.
http://www.bunnfertiliser.com/infocentre/bunnhealthsafety/ammoniumnitratehandling/

Ammonium Nitrate, Industrial Grade, Technical Information. (2011) Dyno Nobel Inc. http://www.dynonobel.com/files/2010/04/1Ammonium_Nitrate_LomoDonora-Industrial.pdf

Ammonium Nitrate, Nutrient Source Specific (NSS) Fact Sheet, No. 22 International Plant Nutrition Institute, Norcross, GA http://www.ipni.net/publication/nss.nsf/0/67265A0AC9302CC5852579AF0076927A/$FILE/NSS-22%20Amm%20Nit.pdf

Fire Protection Guide to Hazardous Materials, 14th edition. (2010). National Fire Protection Association, Quincy, MA.

Guide No. 140 for Oxidizers , *Emergency Response Guidebook*. 2012. US Dept. of Transportation, Pipeline and Hazardous Materials Safety Administration. http://www.phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Files/Hazmat/ERG2012.pdf

EPA Chemical Accident Investigation Report, Terra Industries, Inc., Nitrogen Fertilizer Facility, Port Neal, Iowa. (January, 1996). U.S. Environmental Protection Agency, Region 7, Emergency Response and Removal Branch, Kansas City, KS. http://www.epa.gov/emergencies/docs/chem/cterra.pdf

West Fertilizer Explosion and Fire. (2013). U.S. Chemical Safety Board http://www.csb.gov/west-fertilizer-explosion-and-fire-/

The National Safety Council has a data sheet *Ammonium Nitrate Fertilizer, Data Sheet I-699.* (1991) that discusses the health hazards, properties, and precautions for safe storage and handling of AN fertilizer.

National Safety Council
1121 Spring Lake Drive
Itasca, IL 60143-3201
Phone: (800) 621-7269 (toll free) or (630)-775-2199 (Library)
Website: http://www.nsc.org

The Fertilizer Institute (TFI) possesses information on various fertilizer products, including AN, and their uses.

The Fertilizer Institute
425 Third Street, SW, Suite 950
Washington, DC 20024
Phone: (202) 962-0490
Website: http://www.tfi.org

ResponsibleAg (RA) is a Fertilizer Code of Practice management system that helps facilities establish basic Environmental, Health, Safety and Security (EHS&S) performance practices. ResponsibleAg is a joint venture of the Agricultural Retailers Association (ARA) and The Fertilizer Institute (TFI). ARA also has a *First Responder Guidance* for use by agricultural retailers, LEPCs and local first responders. For more information, contact:

Agricultural Retailers Association
1156 15th Street, NW
Suite 500
Washington, D.C. 20005
Phone: 202-457-0825
Website: www.aradc.org

For more detailed information on the safe handling practices for storage of explosive materials which may contain AN, please consult the following Safety Library Publications (SLPs) developed by the Institute of Explosive Makers (IME).

- *Construction Guide for Storage Magazines,* IME SLP No. 1 (September 2006).
- *The American Table of Distances*, IME SLP No. 2 . (October 2011).
- *Suggested Code of Regulations for the Manufacture, Transportation, Storage, Sale, Possession, and Use of Explosive Materials*, IME SLP No. 3. (October 2009).
- *Handbook for the Transportation and Distribution of Explosive Material,* IME SLP No. 14. (April 2007).
- *Safety in the Transportation, Storage and Use of Explosive Materials,* IME SLP No. 17 (October 2011).
- *Recommendations for the Transportation of Explosives, Division 1.5, Ammonium Nitrate Emulsions, Division 5.1, Combustible Liquids, Class 3, and Corrosives, and Liquids, Class 8 in Bulk Packaging*, IME SLP No. 23. (October 2011).
- *Explosives Manufacturing and Processing Guide to Safety Training,* IME SLP No. 25. (May 2011).

SLPs are available at http://www.ime.org/ecommerce/products.php?category_id=13

Institute of Makers of Explosives (IME)
1120 Nineteenth St. N.W. Suite 310
Washington, DC 20036-3605
Phone: (202) 429-9280
Website: www.ime.org

SAFEX International is an industry group whose members manufacture civil or military explosives or technical grade ammonium nitrate (TGAN). TGAN is generally in the form of porous prills and is used in the manufacture of commercial explosives. SAFEX has published a guide for safe storage of TGAN listed below that is available to its members. https://www.safex-international.org/_index.php

Good Practice Guide: Storage of Solid Technical Grade Ammonium Nitrate. (March 2011). International Working Group on Ammonium Nitrate, SAFEX International. SAFEX Good Explosive Practice Series, GPG 02 rev. 1

STATUTES AND REGULATIONS

Statutes and regulations applicable to the manufacture of or processes involving AN, are listed below.

Clean Air Act Accident Prevention- General Duty (EPA)

Section 112(r) of the Clean Air Act (CAA) focuses on prevention of chemical accidents. Under this provision of the CAA, all facilities with regulated substances or other extremely hazardous substances have a general duty to prevent and mitigate accidental releases. Under Section 112(r)(1), the general duty is :

> to identify hazards …using appropriate hazard assessment techniques, to design and maintain a safe facility taking such steps as are necessary to prevent releases, and to minimize the consequences of accidental releases which do occur.

This general duty applies to facilities producing, processing, handling or storing extremely hazardous substances. While not a regulated substance, AN may be considered extremely hazardous under certain circumstances.

Clean Air Act- Risk Management Program (EPA) and Process Safety Management (OSHA)

In 1990, amendments to the CAA authorized the EPA's Risk Management Program (RMP) Rule (40 CFR Part 68) under section 112(r), and required the Occupational Health and Safety Administration (OSHA) to issue the Process Safety Management Program (PSM) rule. Both rules serve to prevent chemical accidents. The RMP focuses on prevention and mitigation of accidental releases of listed toxic and flammable substances. Requirements under the RMP rule include development of a hazard assessment, a prevention program, and an emergency response program. While AN is not a listed substance subject to the RMP, chemicals used in the production of AN are included on the RMP list, making the process producing AN potentially subject to the RMP. Certain processes using AN may also involve RMP listed substances. For more information about RMP regulations, see http://www.epa.gov/emergencies/content/rmp/index.htm

OSHA's Process Safety Management (PSM) Standard establishes requirements intended to protect employees by preventing or minimizing the consequences of chemical accidents involving highly hazardous chemicals (29 CFR 1910.119). Although AN is not covered by the PSM standard, the production or use of AN may involve PSM listed chemicals in excess of thresholds. Manufacture of explosives, which may involve AN, is also covered by the PSM standard. For more information about OSHA's PSM standard see https://www.osha.gov/SLTC/processsafetymanagement/index.html

Emergency Planning and Community Right-to-Know Act (EPA)

The Emergency Planning and Community Right-to-Know Act (EPCRA), requires information on the presence of hazardous chemicals above designated threshold quantities at regulated facilities be provided to state and local emergency planning authorities. This information facilitates development of emergency response plans required by section 303 of EPCRA, enhances community awareness of

chemical hazards and help first responders to respond to chemical accidents. The chemicals covered under these requirements are a specific list of chemicals known as Extremely Hazardous Substances (EHSs) found at 40 CFR Part 355 Appendices A and B and any chemicals that meet the criteria as hazardous chemicals under OSHA's Hazard Communication Standard. AN is not an EHS but is considered a hazardous chemical (oxidizer) and therefore subject to the EPCRA provisions described below.

Section 311 of EPCRA requires facilities to submit Safety Data Sheets for the EHSs and hazardous chemicals to their State or Tribal Emergency Response Commission (SERC or TERC), Local Emergency Planning Committee (LEPC) and local fire department. Section 312 requires facilities to submit annually to their SERC or TERC, LEPC, and local fire department, Hazardous Chemical Inventory forms for these chemicals. The SDS provides the chemical's hazard information and emergency response guidelines and the Hazardous Chemical Inventory form provides the quantity, storage types and locations of the chemical at their facility. Regulations covering these requirements are found at 40 CFR Part 370.

Section 311(e)(5) of EPCRA does not include the following as a hazardous chemical: any substance used in routine agricultural operations or a fertilizer held for sale by a retailer to the ultimate customer. At fertilizer distributors, AN is commonly blended with other chemicals to produce a fertilizer mix according to customer specifications. Any AN that is mixed or formulated with other chemicals by facilities is not covered by the Section 311(e)(5) exemption. The exemption was intended to apply only to retailers of the substance, not to manufacturers and wholesalers – who typically have large quantities of fertilizers, and may use and manufacture a wide range of chemical compounds. These manufacturers and wholesalers can present significant risks that need to be addressed by emergency response authorities. For more information about EPCRA hazardous chemical reporting, see http://www.epa.gov/emergencies/content/epcra/index.htm

Environmental Protection Agency (EPA)
Phone: (800) 424-9346 or (703) 412-9810
Website: http://www.epa.gov

Explosives and Blasting Agents Standards (OSHA)

In addition to the PSM program described above, the Occupational Safety and Health Administration (OSHA) regulates the manufacture, keeping, having, storage, sale, transportation, and use of explosives and blasting agents under its Occupational Safety and Health Standards for explosives and blasting agents (29 CFR 1910.109). Blasting agents are frequently formulated with AN. For more information about OSHA's standards covering explosives and blasting agents, including ammonium nitrate and storage of all grades of ammonium nitrate, see https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=9755&p_table=STANDARDS

Hazard Communication Standard (OSHA)

OSHA's Hazard Communication Standard (HCS) at 29 CFR 1910.1200 requires chemical manufacturers and importers to evaluate the hazards of the chemicals they produce or import, and prepare labels and Safety Data Sheets (SDS) to convey the hazard information to their downstream customers. All

employers with hazardous chemicals in their workplaces must have labels and safety data sheets for their exposed workers, and train them to handle the chemicals appropriately. AN is a hazardous chemical covered under the HCS. The HCS is now aligned with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). Employers are required to train workers by December 1, 2013 on the new labels elements and safety data sheets format to facilitate recognition and understanding. For more information, see http://www.osha.gov/dsg/hazcom/index.html

Occupational Safety and Health Administration
Phone: (800) 321- OSHA (6742)
Website: http://www.osha.gov

Chemical Facility Anti-Terrorism Standards (DHS)

The Department of Homeland Security (DHS)'s Chemical Facility Anti-Terrorism Standards (CFATS) program applies to facilities that possess threshold quantities of certain types of ammonium nitrate. Facilities in possession of Chemicals of Interest (listed in 6 CFR Part 27 Appendix A) exceeding specific threshold quantities are required to complete a "Top-Screen" questionnaire to identify the types and quantities of Chemicals of Interest the facility possesses. For ammonium nitrate at any concentration (with more than 0.2% combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance) the Screening Threshold Quantity for risk of release is 5,000 pounds and for risk of theft is 400 pounds. This same form of ammonium nitrate is also classified by DOT as a Division 1.1 explosive. For solid ammonium nitrate, with a minimum concentration of 33% or greater and a nitrogen concentration of 23% nitrogen or greater, the Screening Threshold Quantity for risk of theft is 2,000 pounds. The CFATS program, first established under Section 550 of the 2007 DHS Appropriations Act, identifies and regulates high-risk chemical facilities to ensure they have security measures in place to reduce the risks associated with these chemicals. CFATS regulations are found in 6 CFR Part 27.

Based on the Top-Screen, if DHS initially determines the facility to be high-risk, the facility must complete and submit a Security Vulnerability Assessment, which is then reviewed by DHS to make a final determination on whether the facility is high-risk. Facilities receiving a final high-risk determination must develop and submit for DHS's review, a Site Security Plan (SSP), or alternatively, an Alternative Security Program, that describes the specific security measures the facility will utilize to meet the 18 applicable risk-based performance standards under CFATS. The agency must then conduct an inspection to help determine whether or not the facility's SSP should be approved. For more information about CFATS program, see http://www.dhs.gov/chemical-facility-anti-terrorism-standards

Hazardous Materials (DOT)

The Department of Transportation (DOT) regulates transportation of AN under its Hazardous Materials Regulations.

The following forms of ammonium nitrate are listing in the DOT Hazardous Materials Table (49 CFR 172.101) with their Hazard Class or Division:

Ammonium nitrate based fertilizer, 5.1
Ammonium nitrate based fertilizer, 9 (when transported by vessel or aircraft)
Ammonium nitrate emulsion or Ammonium nitrate suspension or Ammonium nitrate gel, intermediate for blasting explosives, 5.1
Ammonium nitrate-fuel oil mixture containing only prilled ammonium nitrate and fuel oil, 1.5D
Ammonium nitrate, liquid (hot concentrated solution), 5.1
Ammonium nitrate, with more than 0.2 percent combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance, 1.1D
Ammonium nitrate, with not more than 0.2% total combustible material, including any organic substance, calculated as carbon to the exclusion of any other added substance, 5.1

Explanation of Hazard Class numbers:
1.1 - Explosives (with a mass explosion hazard) A mass explosion is one which affects almost the entire load instantaneously.
1.5 - Very insensitive explosives; blasting agents
5.1 - Oxidizer
9 - Miscellaneous Hazard Material

DOT also requires security plans for persons offering for transportation or transporting any quantity of a Division 1.1 or 1.5 material containing ammonium nitrate or large bulk quantities (greater than 6,614 lbs or 792 gals) of ammonium nitrate, ammonium nitrate fertilizers, or ammonium nitrate emulsions, suspensions, or gels. The security plan must conform to requirements in 49 CFR 172.800.

Department of Transportation
Phone: (202) 366-5580 - Public Information
Website: http://www.dot.gov

Explosives Regulations (ATF)

The Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) of the Department of the Justice regulates the importation, manufacture, distribution, and storage of explosive materials including blasting agents and other explosive materials containing AN. ATF's explosives regulations, 27 CFR Part 555, can be located at http://www.atf.gov/regulations-rulings/regulations/index.html

Bureau of Alcohol, Tobacco, Firearms, and Explosives
Phone: (202) 648-7120
Website: http://atf.gov

For More Information, Contact:

The Superfund, TRI, EPCRA, Risk Management Program, and Oil Information Center
(800) 424-9346 or (703) 412-9810
TDD (800) 553-7672 or (703) 412-3323