



# **Never to Be Repeated**

## **A Report by the Propane Task Force**

**Serene Lakes Property Owners Association (SLPOA)**

**September 4, 2011**

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### **Preface**

In response to the tragic propane situation last winter, the Board convened a “Propane Task Force” with a mission to avoid a reoccurrence. Our community must never be subjected to the dangers, expenses and inconveniences we all endured last winter. The Task Force’s goals were quickly defined:

- **Education** for the community—and the propane vendors—safe and legal installations that meet our over-5000-foot elevation regulations
- **Inspection** of all tanks throughout the community—new or old—to ensure that they all meet current requirements;
- **Enforcement** by governmental agencies when it is essential to ensure compliance with safe propane practices
- **Regulations** that are clear, concise and accessible

The Task Force recognizes that these four goals will not be met immediately and that some of them, such as education, are a continuing process. However, the Task Force also believes that this effort has to start somewhere and the commitment, **Never to Be Repeated** is very important.

Toward this goal, SLPOA appointed this Task Force to interview governmental and vendor experts in order to develop recommended actions and educational materials on safe propane practices. The Task Force began their work in June 2011 and provides this report on Labor Day weekend. This report has to be considered as only one part of a long effort to ensure that the issues of 2011 are never repeated. This is a start, not an end.

In the course of researching and developing recommendations we met with many various individuals, public agencies and propane suppliers. We thank all of the agencies, individuals and vendors whose cooperation and willingness to work with our community made this report possible. It is noted that they are not responsible for anything contained in or implied by this report. This report contains independent community members' opinions and recommendations.

This report could not be possible without all of the countless hours and dedication of our task force members. A special thanks to the following Task Force members:

David Africa  
Doug Bibby  
Ed Bubnis  
Cliff Busby

Mike Dunn  
Doug Fredrick  
Ken Hall  
Charlie Houtz

George Lamson  
Steve McClelland  
Kathy Neuburger  
Bernard Pech

It has been a privilege to work with all of these dedicated individuals, vendors, and public agencies on this very important task. I look forward to continuing our efforts until we are confident - **Never to be Repeated!**

Sincerely,

Mike Wassermann, Chair of the Propane Task Force Committee

*Please provide any comments, questions or concerns to the Propane Task force at [AdminAssistant@slpoa.com](mailto:AdminAssistant@slpoa.com) or by mail at PO Box 669 Soda Springs, Ca 95728.*

**Liability Disclaimer:** This Task Force is composed of volunteer laypersons who believe that this issue must be addressed. While they offer suggestions or make recommendations in this report, all responsibility for safe propane practices are the responsibility of the homeowner or property owner and not SLPOA, the Propane Task Force, any member of the Task Force or any of the experts that have been interviewed for this report. These are suggestions and guidelines for the community to consider but those involved bear no liability for actions, inactions or incorrect information in any part of this report. Additionally, any enforcement of county or fire agency regulations are those of the governmental agencies involved and SLPOA has no authority or ability to take any enforcement actions.

## I. Introduction

In March, April and May 2011 the Serene Lakes community was hit by a continuous stream of storms that dumped record setting amounts of snow on the area. Approximately 700 of the structures in Serene Lakes are served by propane and the high snow levels led to one home explosion, 43 identified propane leaks, a voluntary evacuation order, a protective sheriff's patrol and a very anxious community. No lives were lost and there were no major injuries, but it was just luck that our community avoided human catastrophe.

The Serene Lake Property Owners Association (SLPOA) and this community have committed themselves to *Never To Be Repeated*. We must do what is necessary to avoid repeating the dangerous conditions that existed during the storms of 2011. The loss of property, the risk to life and the hundreds of thousands of dollars of governmental and private expenditures must never be repeated.

**Actions must be taken.** The Truckee Fire Department indicates that every break or leak in all 43 properties were installations that did not meet existing codes or regulations. Throughout the community, the Task Force found numerous examples of propane systems that do not meet current county regulations and state or national codes. Even as laypersons, the Task Force has been able to identify dozens of propane connections that are so dangerous it was a surprise they did not break during the storms of 2011.

**Consumer Responsibilities:** The consumer—the home or cabin owner—has to accept responsibility for having a basic understanding of safe and unsafe propane storage, to safeguard his/her family's lives and property. It is irresponsible and unrealistic to rely solely on others.

- Propane is heavier than air, so leaking gas hugs the ground and flows downhill, creating hazards for neighbors and their homes. Some of the high levels of propane in and around homes this past spring actually leaked from tanks of neighbors next door or up the street.
- A propane explosion not only blows up one house but also throws debris and personal belongings hundreds of yards. Someone walking on the other side of the street—far away from the cabin which blew up in April—would have been severely injured from debris flying everywhere.
- Homeowners need to make sure that their propane supplier is aware of and follows the unique requirements of high elevation installations. Homeowners cannot be expected to become propane experts. But it is reasonable that information and education empower cabin owners to conscientiously evaluate their tanks and connections and call experts to take a look if they have questions.
- The Truckee Fire Protection District Fire Marshall, Gene Welch, will inspect propane installations on request, by contacting him at (530) 582-7853.

**Vendor Responsibilities:** Serene Lakes is unique. Its 6,900 to 7,200 foot elevation requires unique methods for propane storage.

- Many of the surrounding communities—Colfax, Nevada City, Auburn and Reno—do not face this snow load and its unique requirements. A propane connection that works in Colfax may break in Serene Lakes. The Placer County Building Department, the Truckee Fire Prevention District and national authorities have regulations that are of a higher standard for those areas over 5,000 foot elevation.
- The Truckee Fire Prevention District has made it very clear that they must rely on the propane supplier to annually inspect propane connections, for compliance with existing regulations, and not fill a tank which does not meet the propane requirements for locations over 5,000 foot elevation.
- The Placer County Building Code makes it clear that “...no vendor shall provide LPG service to any non-conforming installations” and that “Safety inspection shall be made by the gas vendor of outside regulators, valves, meters and piping at least once each year” (Section 15.12.070). Additionally the vendor shall report any hazardous conditions to the consumer, the fire district and the building department.
- Vendors should be able to supply a copy of their inspection record for any Serene Lakes propane tank upon request.

**Governmental Responsibilities:** The California Fire Code, the NFPA 58 Liquefied Petroleum Gas Code, and the Placer County Building Code are the primary sources of regulations for propane in the Serene Lakes area.

- The Placer County Building codes indicate that the County does not have the responsibility to permit nor inspect propane tanks or the connections. They indicate that when a pipe extends beyond the structure, the responsibilities shift to other governmental agencies—in this case the Truckee Fire Protection District.
- The Fire District provides inspection services for all new propane installations whether above or below ground and per the Fire Code they are the agency for enforcement obligations. They also indicate that they do not have the resources to inspect existing tanks, except upon request, and that they rely on the vendors fulfilling their obligations to ensure that propane connections meet the required code provisions.
- The Task Force believes there should be clear and concise regulations with acceptance by a single agency for education, inspection and enforcement.

## **II. What happened? Why so many failures during the storms of 2011?**

Based on information from fire department officials, reports, and propane vendors:

- None of the installations that leaked met current code requirements
- The principal reason for propane leaks was failure of piping in all areas—cracks/breaks in schedule 40 pipe (the County Code has required schedule 80 piping since 1983) at threaded fittings and swing joints and in breaks in the risers. In addition, there were breaks in the pipes leading to second stage regulators.
- No above ground tanks themselves exploded or leaked, but some had significant movement. It seems that the higher the tank was set, the more potential for movement. Many tanks set on small blocks did not have problems, while others on higher supports moved. The cause would most likely be lateral snow pressure on one side of a tank only (adjacent to driveway or one side cleared) without the tank being anchored to a secure foundation.

*Photo 1: Only one swing joint, the riser pipe is too far from the tank and the bollards should be no closer than three feet from the tanks.*

*Photo 2: The vertical line should be secured along the concrete cradle.*

In some cases it appeared that trees may have prevented a lateral snow load. Some saddles were broken by snow.

- First stage regulators under the tank domes performed well.
- No underground tanks leaked.
- Installations from all vendors failed–no company was immune.
- There has been no conclusion as to the cause of the explosion at the Bales Road cabin.

*Photo 3: The concrete support and metal structure has failed.*

*Photo 4: Two 1000-gallon tanks closer than the required three-foot separation.*

**“All leaks were a result of connections that did not meet code.”**

**Truckee Fire Protection District, July 2011**

### III. Codes and Regulations for Propane Tanks

In 1983 Placer County established requirements for Liquefied Petroleum Gas Installations and Plumbing Requirements in Snow Areas. These 1983 code requirements remain in effect to this day. The California Fire Code, National Fire Protection Association (NFPA) 58 and other related codes along with the Placer County Code make up the requirements that must be followed when installing propane systems.

- **Homeowners are required to protect their tanks.** “All gas meters, valves, and equipment shall be protected from sliding, drifting, and impact snow and ice.” (PC 15.04.420 D).
- **Pipe risers** from the ground to tanks shall be schedule 80 piping located not more than 3” horizontally from walls of tank and swing joints shall be used above and below the tank level to provide for tank movement (PC 15.12.030 B).
- **Second Stage regulators** shall be installed on the gable end of the building, as close as practical to the building wall, unless this is not feasible due to structure or topographical constraints, in which case the riser and regulator will be installed in an approved designed recess with the approved covers. The regulator shall be identified with a sign installed on the house in a visible location and as high as practicable located directly above the shutoff valve (PC 15.12.030 C).
- **Protective Cover:** An approved protective cover shall be installed over the 2<sup>nd</sup> stage regulator and securely supported to the ground or diagonally to the building wall. When supported to the ground, the footing for the supports shall be founded 18” below finished grade (PC 15.12.030 D).
- **No Concrete by Riser.** The riser pipes for the yard piping shall not be embedded in concrete. Concrete placed around such riser shall be held back at least 3” from all sides of the pipe (PC 15.12.030 E). Asphalt, which can also impede the movement, should be back at least 3” on all sides of the riser.
- **Snow Stakes:** LPG tanks shall be permanently marked by the use of snow stakes. Stakes shall rise above the anticipated snow depth. Installation and maintenance of these stakes is the joint responsibility of the LPG vendor and LPG user (PC 15.12.030 G).

- **Design Plot Plan:** At the time of application by any person for any building permit which involves the installation of a LPG system, the applicant shall submit a LPG plot plan covering the issues of location and type of tank. The plot plan shall be approved by the fire protection agency.
- **Service by vendor** After October 15, 1984 no vendor shall provide LPG service to any non-conforming installation (PC 15.12.070 B).
- **Safety inspection** Safety inspections shall be made by the gas vendor of outside regulators, valves, meters and piping at least once each year. All hazardous conditions which have not been immediately corrected will be noted in a written report with a copy immediately to the consumer, a copy to the fire district, and a copy sent to the building department. All annual written reports will be submitted not later than November 1st of each calendar year, and submitted as noted above. An extension not to exceed twelve (12) calendar months may be granted for a portion of a vendor's customers upon approval of the building department and fire district. (PC 15.12.070 C)

The National Fire Protection Association (NFPA) Code Section 58 Installation of LP-Gas Systems also provides requirements for propane installations. When using more than one code, the code or section of code that is more stringent is the one that applies. The following are a few of the code sections that pertain to our situation:

- **Location** Above and underground containers of 1,000 gallons or less shall not be located closer than 10 feet from the property line of a parcel that can be built upon. Containers shall not be located closer than 5 feet from a driveway (NFPA 58, Tables 6.3.1 & 6.5.3).
- **Protection** All regulators for outdoor installations shall be designed, installed, or protected so their operation will not be affected by the elements (freezing rain, sleet, snow, ice, mud, or debris) (NFPA 58, 6.8.1.5).
- **Flex Risers** Flexible metallic connectors shall not exceed 5 feet in overall length when used with liquid or vapor piping on stationary containers of 2000 gallons water capacity or less (NFPA 58, 6.9.6.2).
- **Bollards required** Guard posts for tanks that are near vehicle areas must be installed to protect the tanks. Bollards (a four inch pipe filled with concrete) must be no more than four feet apart and three feet from the tank. (California Fire Code, section 312.2.). The Fire District will approve bollards closer than three feet from the tank if they are closer than four feet apart.

#### **IV. Recommendations for Maintenance of Existing Tanks**

The only way to prevent a reoccurrence of last winter is for each homeowner to take responsibility for his/her own tank. The cost of being proactive in making your propane service safer is minor in comparison to the cost of removing the contaminated snow as a “hazardous material” and complying with the County Environmental Health Departments stringent requirements. These costs can be upwards of \$12,000 in addition to the cost of having to repair the leak and correct the deficiencies with your installation. The simple steps below outline a process to help ensure the safety of everyone in Serene Lakes:

- **Keep It Cleared:** Every homeowner is responsible to keep their piping at their tank and second stage regulator cleared. Underground tanks must also be kept clear of snow for accessibility to the shut-off valve. This would prevent most if not all problems, but it is problematic on the summit, especially for those who are not full time residents. Local snow-removal services are available at reasonable cost if you are unable to do it yourself. Even periodic snow removal will significantly reduce the forces of snow and ice on the exposed piping and fulfill the need for the regulators to vent. Failure to keep your propane tank and piping clear might be considered as negligent by your homeowner’s insurance carrier and result in a lengthy and expensive legal battle to determine if any resulting damages, injuries or death would be covered. Installation of an engineered enclosure over the tank may assist dramatically in keeping snow and ice off the tank. See below for additional information on enclosures.
- **Shut It Off:** If the cabin will be unoccupied for an extended period of time, turning off the propane at the tank is a simple and very effective way to prevent leaks. Pilot lights must be relit when the gas is turned back on, but they are typically pretty easy to light. Most modern appliances have autopilots that do not require lighting. Homeowners who don’t know how or are uncomfortable relighting pilots can request that their supplier provide this service at no additional cost.
- **Bring It Up to Code:** As discussed above, per the Truckee Fire District, all of the leaks were due to improper installations. There is no “grandfather” clause that excuses non-code conforming installations but there have not been appropriate inspections of existing tanks to ensure that the installations are safe. All homeowners should request their propane supplier conduct the required annual inspection and provide a copy of their findings. Following are some of the critical components of a code compliant installation to make your existing tank safer:

- **Identify Your Shut-off Valve:** Code requires installation of a gas shutoff valve immediately upstream of the 2nd stage regulator and an identifier on the house in a visible location as high as practicable, located directly above the shutoff valve. Although these are code requirements, these signs are rarely in place. Having the required arrow can greatly assist the Fire department in the event of a suspected propane leak or fire to quickly locate and shut-off your propane.
- **Mark Your Tank:** Code also requires that all tanks be permanently marked by snow stakes, to “rise above the anticipated snow depth”. This obviously would require a much longer stake than practical. However, if the tank is kept clear, then the snow depth on the stake would not be a problem. During last winter’s leaks, most of the marking stakes were not visible causing delays and added expense to locate a tank. The stakes are to be yellow in color and placed on the side of the tank opposite the riser. The top 6” of the snow stake shall be painted in the suppliers designated color. The side of the stake indicating the tank location will be painted a minimum of 18” and will be opposite the shutoff valve on the propane storage tank. Installation and maintenance of these stakes is the joint responsibility of the propane supplier and the homeowner. Most propane suppliers provide and install the stakes at no cost to the homeowner.
- **Protect Your Second Stage Regulator:** The codes require a second regulator with shut-off valve and riser pipe to be installed on the gable end of the building, as close as practical to the building wall. The code further allows for optional locations if this is not feasible due to structure or topographical constraints. In any location, the second stage regulator, riser pipe and shut-off valve must be protected from sliding, drifting, and impact snow and ice. An approved protective cover is also required to be installed over the 2<sup>nd</sup> stage regulator and securely supported to the ground or diagonally to the building wall.

## V. Above Ground Tanks—Guidelines and Recommendations

### Inspect Your Tank Piping:

Placer County code requires all installations to be schedule 80 with swing-joints above and below the tank. The majority of the failures did not comply with this code requirement. Steel pipe comes in different thicknesses to accommodate different installation requirements. This is referred to as a pipe “schedule”. Schedule 80 piping is much thicker and therefore much stronger than schedule 40 pipes. Schedule 80 pipes offer extra

*Schedule 40 pipe*

*Schedule 80 pipe*

protection for flammable gas for holding up to the extreme forces at this elevation. Although the pipe and fittings may not indicate the schedule of piping, one can tell the difference by looking at the thickness of the fittings where they thread (see photo comparison.)

**Swing-joints** are a series of 90-degree fittings that allow for some movement in the tank and piping. The code requires swing joints “above and below the tank level to provide for tank movement” (see Photo 5). We have received clarification from Truckee Fire that the lower swing joint should be buried to protect the below grade piping. Without the ability for some movement, pipes would be subjected to forces through rigid connections that are subject to failure. The code also requires that this piping be no more than 3" as measured horizontally from the tank. There are many examples of piping that is

*Photo 5: As shown at the swing joint (red arrow) piping is seemingly Schedule 40 rather than Schedule 80.*

installed far off of the tank leaving the pipe unprotected, acting as a lever-arm and creating significant forces on the piping.

**Flex Risers.** An alternative to the rigid schedule 80 steel pipes with swing joints is heavy duty flexible rubber coated steel-mesh hose specifically designed for propane (see Photo 6). This fairly new product not only provides superior performance, but is also less expensive and easier to install. Flex piping accommodates movement in all directions,

*Photo 6: A flex riser allows for movement in all directions and is easy to install.*

eliminating lever arms that can add forces onto the piping. Flex pipe also eliminates the need for swing joints and all of the fittings required to contour rigid pipe to the tank, thus eliminating many potential leaks.

There already are several of these installations in the subdivision. Although this product has been installed and appears to be a better solution, the Placer County Code specifically requires the use of schedule 80 rigid steel pipe. This is probably due to the fact that the flex pipe was not available back when the code was written and the code has not been updated. NFPA 58 allows the use of flexible metallic connectors up to five-feet in length. In our adjoining communities in Placer County, flex piping has been accepted as the preferred installation by their local fire departments. However, Truckee Fire has asked that a manufacturer certify that their product is equal to or greater than Schedule 80 standards. So far, no manufacturer has provided the written certification. This issue needs to be resolved and will be part of the future work of the Propane Task Force.

**Secure Your Tank:** Although neither the Placer County Code nor NFPA 58 specifically describes how to properly secure a tank from movement, it does require tanks to be restrained from movement. A couple of the failures last winter were due to tank movement. It is critical that the tanks do not move when under the extreme forces from the snow. We all have seen the strength of the glaciating action from the melting snow and can image how the service pipe would fail from the movement. If the tank is not anchored to a concrete pad or stand with footings, this issue must be addressed with the propane supplier. Before incurring any significant costs to retrofit an above ground tank, there should be consideration of replacing it with an underground tank. (See below for additional information.)

**Tank Enclosure:** Most of us do not have an enclosure over our tanks and enclosures were not contributors to the failures. However, we have learned that Placer County and Truckee Fire Department will allow a structure to protect an above ground propane tank. The structure is required to be engineered and approved by both Placer County building department for the structure itself and by the Fire Department for safe propane storage. The existing code requires the structure to be open on one side and to be non-combustible construction. The Fire Department also will require that the relief valve be piped to outside of the structure. Most of the existing enclosures do not meet these requirements and there is a question as to whether or not they were permitted. The benefit of such a structure is that they reduce the amount of snow to be removed. However, before incurring any significant costs to retrofit or construct an enclosure for your above ground tank, there should be consideration of replacing it with an underground tank. (See below for additional information regarding other area systems and master plans.)

## VI Underground Tanks—Guidelines and Recommendations

**Underground tanks are safer:** Throughout the Task Force interviews it became clear that properly installed underground tanks are the safest recommended method for propane storage. The Chief of the Truckee Fire District and all propane companies interviewed recommend, without equivocation, placing propane tanks underground. Since the critical piping is buried,



*Photo 7: This is an install showing an underground tank protected by bollards (Concrete-filled posts)*

fewer things can go wrong with an underground tank.

### **Tanks should be rented, not owned.**

The Task Force recommends that tanks be rented from the propane company rather than owned by the property owner. We reached this recommendation based on the following:

- Maintenance and liability for tank integrity remains with the vendor.
- Vendors have the responsibility and the knowledge to provide the anode inspections that are essential to tank integrity.
- At least the initial cost for installation of lines and connections are borne by the vendor, not the homeowner.

Tanks are rented by the propane supplier with a contractual commitment that the consumer will continue to buy propane from their company for the term of the rent agreement. Since the tank is rented it is probable that the costs for installation and maintenance are covered through higher costs for propane. Property owners should make sure the contract includes some control on propane prices since the consumer is stuck by contract with a single vendor.

**Annual tank costs:** Rental costs for tanks vary based on the size of the tank but generally a 500 gallon tank is in the range of \$100 to 150 per year and a 1000 gallon tank is in the range of \$150-250 per year.

Some of the companies ask for an annual payment for a period of ten years and then the tank is customer owned while others indicate the tank will always be rented.

**Tank Installation Costs:** Consumers will bear the costs for the following items when installing a tank underground:

- Digging the tank hole and the trenching from the tank to the structure
- In high water areas, providing concrete at the bottom of the hole and metal strapping to ensure the tank does not float out of the hole
- Refilling the hole with sand after the tank is lowered, and making sure that the backfill does not contain rocks.
- In areas near the driveway, providing protection from any vehicle traffic with bollards (See Photo 7.)
- Unique obstacles to digging the hole, i.e.: removal of rocks, trees, necessary hand trenching, etc.
- If there are no unique issues, the costs of these services will range around \$1500-2000.

If the tank is rented, the companies we interviewed will also take care of the cost for the tank, the first stage regulator and hood, the piping to the structure and the installation of the 2<sup>nd</sup> stage regulator. Remember, however, it is possible that these costs are eventually paid by the renting consumer through higher propane costs.

If the tank is purchased, in addition to the hole costs noted above, all of the costs for the tank, first stage regulator, piping and 2<sup>nd</sup> stage regulator must be borne by the consumer and these costs will range between \$2000-2500.

Propane companies are generally willing to provide all services for an underground tank with one phone call. That is, they will arrange for digging the hole, sand, trenching, etc. and pass the costs through to the consumer.

**Cathodic Protection:** Any underground propane tank must have a protection system to control the corrosion of the metal surface. The simplest method to provide this protection is to insert another more easily corroded metal to act as the anode of the electrochemical cell. By accurately testing the anode, it can be determined if there is any danger of corrosion to the propane tank.

Twelve to seventeen pound sacrificial anode bags are placed at either end of the propane tank as it is being buried. The bags must then be tested in accord with the following schedule:

- Upon installation of the tank
- 12 to 18 months after the initial test
- At intervals not to exceed 36 months

Documentation of the results of the two most recent tests shall be retained. If the tank is rented, the anode test will be done by the propane supplier and they must retain those inspection records.

A customer should be able to ask for a copy of the test to ensure that it has been conducted. If the tank is consumer owned, the consumer must ensure that the inspection is done and keep records on hand of the inspection dates and conclusions.

Systems that fail the anode test shall be repaired as soon as practical but not more than 180 days after the failure. If an anode reading is negative, the owner of the tank—either the propane company or the homeowner—shall make the necessary corrections.

If the anode tests are acceptable the tank can remain in the ground. One propane company indicated that a local twenty five year old tank was recently pulled out and inspected and the tank was in excellent shape.

**Tank inspection at burial:** It is critical that the tank be properly protected in its entirety with a Mastic or similar protective substance to avoid corrosion. The Truckee Fire department is very conscientious in doing a physical inspection to ensure that the tank has no nicks or cuts in the Mastic that could lead to corrosion. In addition they inspect:

- Tank is bedded and level on 6” of sand
- Backfill is free of rocks
- Data plate is visible with a minimum working pressure of 250 psi
- Appropriate snow stake is installed identifying the LP vendor
- Tank is at least 18” below grade near driveways or protected by damage from vehicles and 6” below grade in other areas.
- First stage regulator and dome extends above the finished grade and water will drain away from the dome
- In areas where vehicle traffic is expected the dome is protected

Although some consumers would like the dome of the underground tank to be low and as invisible as possible, a low dome is not recommended. There is a cylinder-like structure under the dome going down to the tank. It is possible that the tube can be filled with water, freeze and in turn freeze the first stage regulator. If the dome is high, and the regulator is above the grade, the cylinder can not fill with water and the regulator is better protected.

**Removing snow from underground tank lids:** Just because a tank is underground, the homeowner is not relieved of the responsibility of digging out the tank lid during the winter. The crush of the snow has also crushed dome lids; at one tank the crushed lid had been pushed into the first stage regulator. The only way to turn off the propane tank is at the lid and there is no remote turn off system available. In case of a fire emergency, the Fire Department wants access

to that lid. They will not enter a burning structure unless they are sure there is no possibility of a propane explosion.

## **VII Emergency Preparedness**

During the storms of 2011 the Placer County Office of Emergency Service (OES) provided coordination and support for the emergency response teams. They indicate:

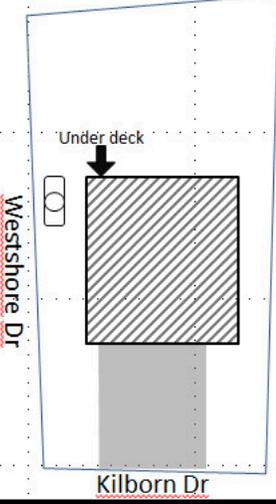
- All emergency responses are in accordance with California's Standardized Emergency Management System and the Incident Command System (SEMS and ICS).
- Truckee Fire Protection District and Placer County Sheriff's Department knew who was in charge from the start of the incident.
- A unified command was created between Truckee Fire and the County agencies of Emergency Services, Environmental Health and the Sherriff.
- A system is in place, it worked and critical public safety decisions (limiting access to the area, issuing the voluntary evacuation order, and ultimately lifting those restrictions) were made by public safety officials based on input from all who had a role in the response.
- County staff assisted by ensuring proper clean-up procedures (Environmental Health).

**Propane tank mapping in progress:** During the storms, the "first responders" had great difficulty in locating propane tanks. They often dug in the wrong places, missed the tanks by yards and spent precious hours on a wild goose chase trying to find a leaking tank.

One member of the Task Force is in the process of creating a binder for all first responder agencies on the location of all Serene Lakes tanks. These maps will be invaluable to the fire and emergency services agencies in case this ever occurs again. Can you imagine the task of plotting over 700 homes with propane tanks? Thank you George Lamson for taking on a herculean task!

Here is an example of what will be presented to the community's first responder agencies:

**3143 WESTSHORE DR** Parcel#: 069-410-033-000  
Owner: Lorna Dobrovlny & Craig Stotenburg Phone:



Tank Stats Cap.: 500 gal Type: Ground level Vendor: Suburban

Westshore Dr  
Kilborn Dr

 Cabin     Driveway     Propane Tank     Secondary regulator

## VII. Future Task Force Activities and Directions

Over the past few months, the task force has learned a lot. We have begun our primary goal of providing the community with useful information on how to make their propane service safer before next winter. However, we discovered that there are serious deficiencies with the code, its interpretations and enforcement of it. The task force will remain in action for however long it takes to get these and other propane safety issues resolved.

The task force has identified that work is needed on the following issues:

**Inspection** There needs to be a clear resolution to the apparent gap in inspection responsibilities between Placer County, Tahoe Truckee Fire Department, and Propane Suppliers. Also, it seems that the annual inspections should require the tanks to be tagged by the propane supplier indicating that the inspection has been performed and deemed compliant.

**Determining who is in charge:** In the interviews with governmental agencies, it was unclear who was in charge of ensuring all tanks meet local and national codes. The county makes it clear that they are not in charge but Truckee Fire has not made it clear that they *are* in charge. It is essential that this difference be addressed and resolved.

**Future Code Revisions:** We need to advocate for reasonable, clear, and timely code revisions and updates. Many confusing and conflicting requirements need to be clarified. In addition, the code should be expanded to address new technologies.

**Flex Piping:** The preferred product by other Placer County fire jurisdictions needs to be reviewed and accepted by Truckee Fire. We are working with the manufacturers and propane suppliers to help facilitate approval.

**Tank Enclosures:** Pre-engineered standard structures have been approved by other jurisdictions—Bear Valley, Mono County, Mammoth Lakes—and we should explore the potential to receive approval for a “master approved plan” for our community. An analysis will need to be made to determine if approved plans in other areas are applicable to the Serene Lakes high-snow-load area.

**Auto-Shut Off:** New technologies are available to automatically shutoff propane or at least notify the propane supplier and homeowner when large amount of propane is flowing through the first stage regulator of an underground tank signaling a potential leak. We want to learn more about their reliability and costs to retrofit.

**Closer to the Driveway:** Tanks closer to the driveway are much more likely to be dug out. With proper protection with bollards, it seems as if tanks could be closer than the current required five feet. The Task Force believes further evaluation of the driveway set back is very appropriate.

**Updating the first responder maps** The propane location maps are excellent but a process will need to be found to easily update the maps. Dozens of tank relocations are being completed during this summer (2011) and changes will continue in the future. A process needs to be designed to ensure the maps are continuously updated.

## **VIII. Summary**

SLPOA is hopeful this material is a good start for all our community to ensure that we never repeat the experiences of 2011. It was a very costly and disturbing experience for everyone involved. If these materials move the community to action, we will be very satisfied with our efforts.

Propane is a highly volatile gas and Serene Lakes property owners must be knowledgeable and vigilant in monitoring their propane storage. We are a unique area and as one local contractor indicated, houses in our area have to be built “so the Titanic can sit on top of them.”

That goes for propane tanks too!