

# COMMUNITY & ENVIRONMENTAL DEFENSE SERVICES

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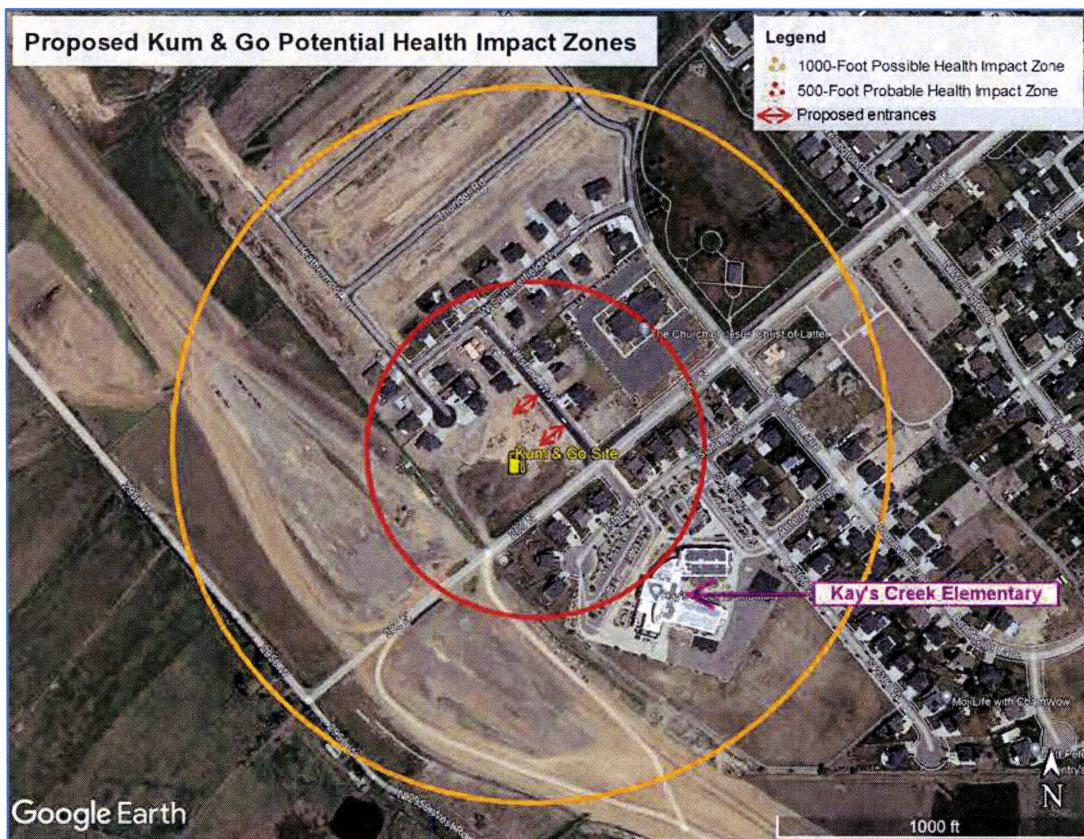
February 15, 2023

Blake Montgomery  
218 North Westgate Lane  
Kaysville, Utah 84037

## RE: Potential Neighborhood & School Impacts - Proposed Kum & Go Gas Station

Dear Mr. Montgomery:

As requested by you and many of your neighbors, I have reviewed the Kum & Go gas station proposed for 2356 West 200 North and 2368 West 200 North. The applicants - Kum & Go and Perry Land Investments, LLC - have requested Preliminary Plat approval.



As shown in the aerial above, there are a hundred or so existing and future homes within a thousand feet of the site. Kay's Creek Elementary school is also within a thousand feet. Of the 19 Kaysville area public schools, none are within a thousand feet of a gas station. As documented by

the scientific research presented in this letter, these nearby residents as well as Kay's Creek Elementary students and faculty may be at risk due to:

- The adverse health impact caused by benzene and other harmful compounds released to the air,
- A substantial increase in traffic making local streets more dangerous for children walking or biking to school,
- An increase in crime due to alcohol sold for carry out, and
- An increase in childhood obesity by making unhealthy foods more available.

Measures that might resolve these impacts are not available as potential Preliminary Plat conditions. For example, the only measure that can reliably resolve the health impact is to guide new gas stations to locations that are 500-feet from the nearest home and at least 1,000 feet from a school.

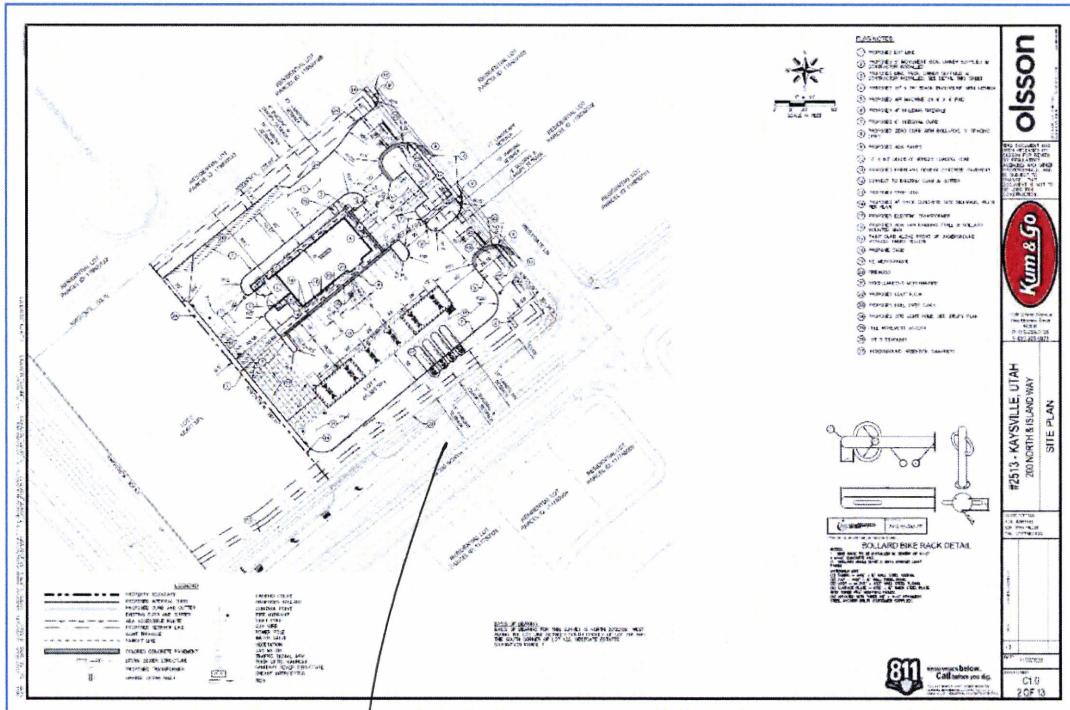
Because of these impacts, the project does not meet City of Kaysville Subdivision [Section 19-3-3](#) Preliminary Plat Requirement #11, which calls for:

“Buffer zones where non-compatible uses adjoin a proposed subdivision.”

The buffer between the nearest homes and the school is far less than 1,000 feet. Therefore, the buffer is **NOT** compatible with adjoining uses and the City Council must deny Preliminary Plat approval.

## PROPOSED KUM & GO STATION

The Site Plan for the proposed Kum & Go gas station is shown below.



While I am not an attorney, my layman's read of the City of Kaysville Subdivision regulations, [Section 19-3-3 Preliminary Plat Requirements](#)<sup>1</sup>, indicates that the project cannot be approved because it does not meet Requirement #11: *Buffer zones where non-compatible uses adjoin a proposed subdivision.*

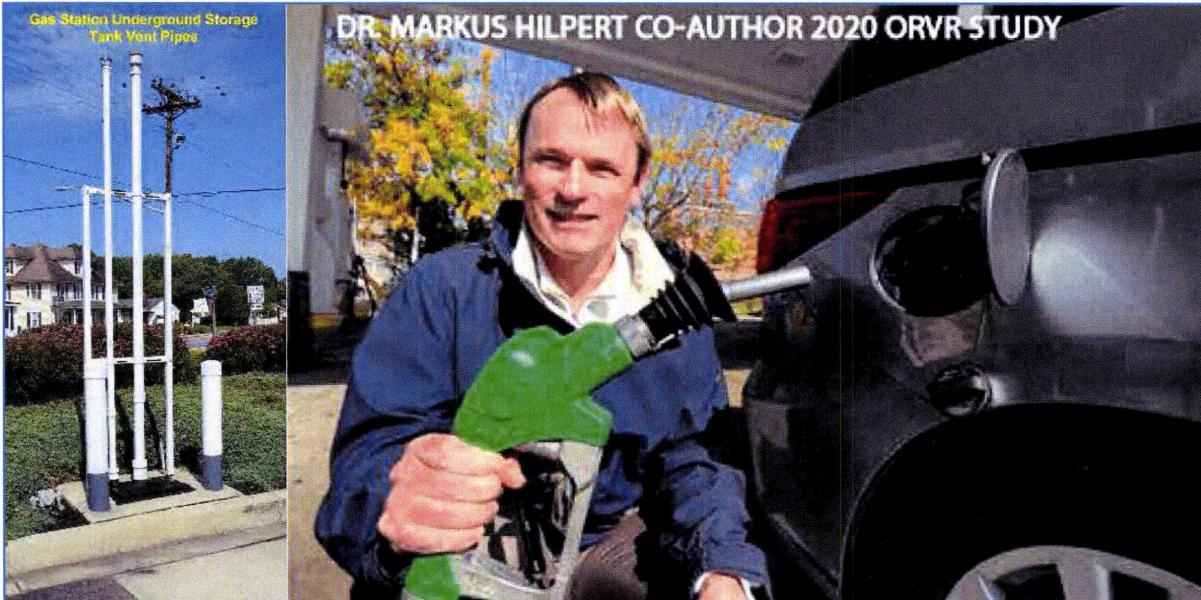
The lack of compatibility results from the adverse health effects of benzene and other compounds released from the gas station which poses a threat to those living or learning within 1,000 feet. The project also poses a threat to Kay's Creek Elementary student safety due to:

- Increased traffic on local streets and the danger posed to students walking to schools,
- The increased crime associated with alcohol sold for carry out as proposed by the applicant, and
- The increased availability of sweets and other unhealthy food available which could exacerbate childhood obesity.

The research documenting these adverse health effects is presented in the remainder of this letter.

#### FUEL DISPENSING STATIONS & BENZENE HEALTH EFFECTS

A number of compounds injurious to human health are released from gas stations and other fueling facilities. These compounds include: [benzene, toluene, ethyl benzene, and xylene](#)<sup>2</sup>. Of these, benzene is the gasoline constituent most harmful to human health. Gas station benzene releases occur at the pump and from the underground storage tank vents pictured in the following photos.



The scientific studies and other documents cited in this letter are attached.

<sup>1</sup> See: [https://kaysville.municipalcodeonline.com/book?type=code#name=Chapter\\_3\\_Preliminary\\_Plat](https://kaysville.municipalcodeonline.com/book?type=code#name=Chapter_3_Preliminary_Plat)

<sup>2</sup> See: <https://www.ncbi.nlm.nih.gov/pubmed/26435043>

Adverse health effects of benzene include cancer, anemia, increased susceptibility to infections, and low birth weight. According to the [World Health Organization Guidelines for Indoor Air Quality](#)<sup>3</sup>, there is no safe level for benzene. Measures to reliably resolve these adverse health effects are not routinely employed at new gas stations in Utah.

In 2005, the California Air Resources Board became the first agency in the U.S. to recommend a minimum public health safety zone between new gas stations and "sensitive land uses such as **residences, schools**, daycare centers, playgrounds, or medical facilities." This recommendation appeared in the [Air Quality and Land Use Handbook: A Community Health Perspective](#)<sup>4</sup>. The State of California is widely recognized as having some of the most effective air pollution control requirements in the nation. Yet even with California controls a minimum separation between a gas station and homes is still needed to protect public health.

The U.S. Environmental Protection Agency echoed concerns about the health risk associated with gas station emissions in their [School Siting Guidelines](#)<sup>5</sup>. The USEPA recommended screening - but not excluding - school sites for potential health risk when located within 1,000 feet of a gas station.

The safety zone distances were prompted by the large and growing body of research showing that adverse health effects are found to extend further and further from gas stations with each new study.

A seminal 2015 study, [Hydrocarbon Release During Fuel Storage and Transfer at Gas Stations: Environmental and Health Effects](#)<sup>6</sup>, contained the following summary regarding the health implications of living near a gas station:

*"Health effects of living near gas stations are not well understood. Adverse health impacts may be expected to be higher in metropolitan areas that are densely populated. Particularly affected are residents nearby gas stations who spend significant amounts of time at home as compared to those who leave their home for work because of the longer period of exposure. Similarly affected are individuals who spend time close to a gas station, e.g., in close by businesses or in the gas station itself. Of particular concern are children who, for example, live nearby, play nearby, or attend nearby schools, because children are more vulnerable to hydrocarbon exposure."*

A 2019 study, [Vent pipe emissions from storage tanks at gas stations: Implications for setback distances](#)<sup>7</sup>, of U.S. gas stations found that benzene emissions from underground gasoline storage tank vents were sufficiently high to constitute a health concern at a distance of at least 524-feet. Also, the researchers noted:

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<sup>3</sup> See: <https://www.ncbi.nlm.nih.gov/books/NBK138708/>

<sup>4</sup> See: <https://ww3.arb.ca.gov/ch/handbook.pdf>

<sup>5</sup> See: [https://www.epa.gov/sites/production/files/2015-06/documents/school\\_siting\\_guidelines-2.pdf](https://www.epa.gov/sites/production/files/2015-06/documents/school_siting_guidelines-2.pdf)

<sup>6</sup> See: <https://www.ncbi.nlm.nih.gov/pubmed/26435043>

<sup>7</sup> See: <https://www.sciencedirect.com/science/article/pii/S0048969718337549>

*"...emissions were 10 times higher than estimates used in setback regulations [like that in the California handbook] used to determine how close schools, playgrounds, and parks can be situated to the facilities [gas stations]."*

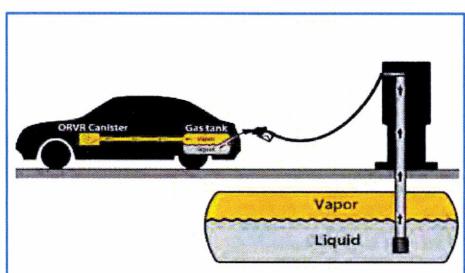
Prior to the 2019 study it was thought that most of the benzene was released at the pump during fueling.

### Control Measures Will Not Resolve Benzene Health Threat

The two most common control measures for gas stations are [Stage II Vapor Recovery](#)<sup>8</sup> and [Onboard Refueling Vapor Recovery](#)<sup>9</sup> (ORVR).

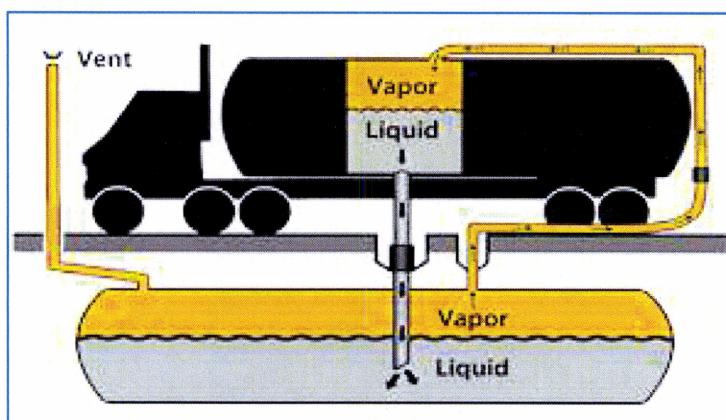
A decade ago, most gas pump nozzles were designed to capture vapors released during refueling. The vapors were then sent to the 10,000- to 20,000-gallon underground tanks where gasoline is stored. These Stage II vapor recovery systems were phased out beginning in 2012 as a result of the widespread use of Onboard Refueling Vapor Recovery (ORVR) systems.

As the name implies, Onboard Refueling Vapor Recovery systems are built into new cars. The system captures vapors during refueling which are then stored in canisters within the vehicle.



A 2020 study, [Gasoline Vapor Emissions During Vehicle Refueling Events in a Vehicle Fleet Saturated With Onboard Refueling Vapor Recovery Systems: Need for an Exposure Assessment](#)<sup>10</sup>, by Dr. Markus Hilpert and others examined the effectiveness of Onboard Refueling Vapor Recovery systems, like that shown in the figure to the left from the 2020 study. The researchers found that 88% of vehicles monitored released vapors during refueling despite the presence of Onboard Refueling Vapor Recovery systems.

Federal regulations require that the release of benzene and other compounds be controlled while underground storage tanks are being filled. As shown in the figure to the right, which is from the 2019 study<sup>11</sup>, vapors from an underground tank are captured and pumped back into the truck storage reservoir. However, federal regulations and those of most



<sup>8</sup> See: <https://www3.epa.gov/region1/airquality/gas.html>

<sup>9</sup> See: [https://en.wikipedia.org/wiki/Onboard\\_refueling\\_vapor\\_recovery](https://en.wikipedia.org/wiki/Onboard_refueling_vapor_recovery)

<sup>10</sup> See: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7020915/>

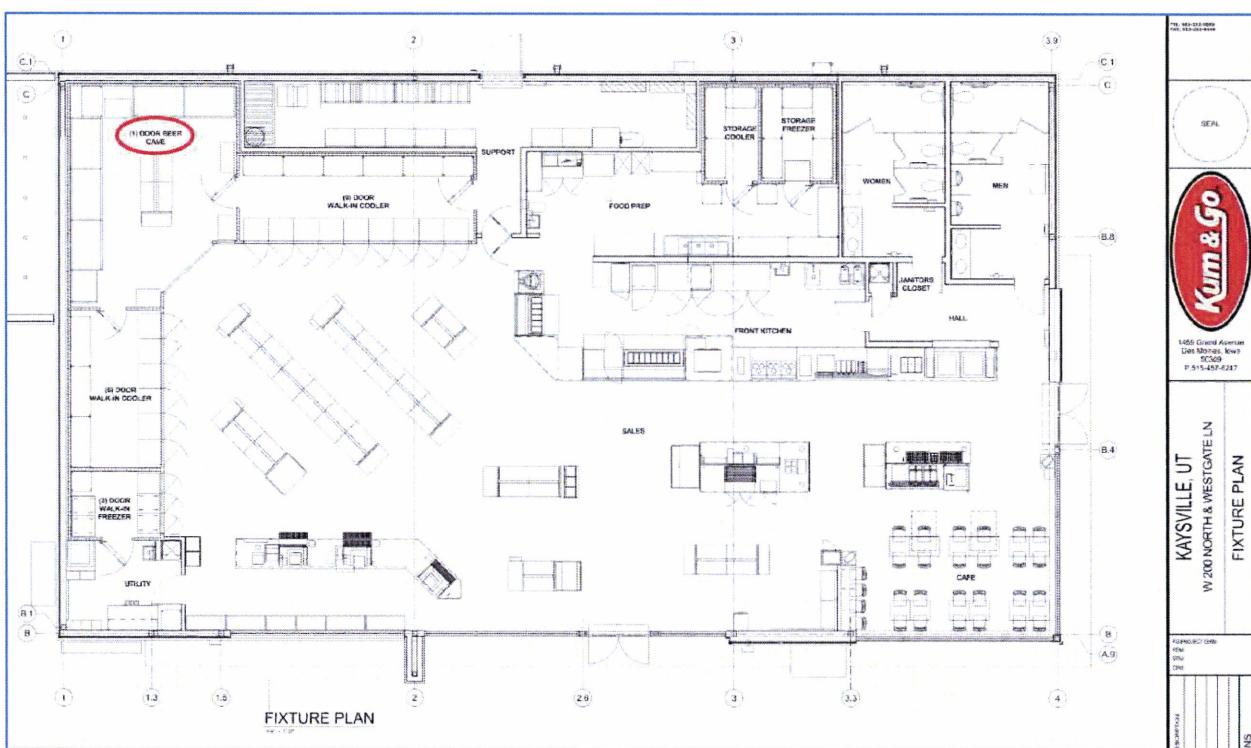
<sup>11</sup> See: <https://www.sciencedirect.com/science/article/pii/S0048969718337549>

states **DO NOT** require control of vapor (benzene) release during the 99% of time when storage tanks are not being filled.

The 2019 study cited previously in this letter addressed the release of benzene from underground gasoline storage tank vents and documented that the amount of benzene released was substantial and could be detected at a distance of up to 524 feet. Measures to safeguard the health of those living nearby. It is for the reasons outlined above that a fuel dispensing station should not be located within 500- to possibly 1,000-feet of homes or schools.

## CONVENIENCE STORE ALCOHOL SALES & CRIME

The following Floor Plan from the applicant's PUD Development Plans for the proposed Kum & Go show a "beer cave" for carry-out alcohol sales.



CEDS compiled a review of scientific studies relevant to the potential effect of convenience stores with carry-out (to be consumed elsewhere) alcohol sales on crime and public health. The review can be downloaded at: <https://ceds.org/wp-content/uploads/2012/09/Crime-Alcohol-Studies.pdf>.

These studies show a positive relationship between crime as well as adverse health effects and the number outlets selling alcohol for consumption elsewhere (off-sale) in a given area. The gist of the research is that allowing off-sale of alcoholic beverages at a proposed convenience store may

<sup>12</sup> See: <https://ceds.org/wp-content/uploads/2020/09/Crime-Alcohol-Studies.pdf>

increase crime and other adverse health effects, [especially if the store is open 24/7](#).<sup>13</sup> [One study](#)<sup>14</sup> indicated that the presence of an off-sale, 24/7 establishment: “may attract people at increased risk for involvement with violent crime.”

In [another study](#)<sup>15</sup>, researchers concluded: “Children with an alcohol outlet on the route to school were more likely to be offered alcohol, tobacco, and other drugs as well as be exposed to drug selling and seeing people using drugs.”

Of course, the proposed Kum & Go is near Kay’s Creek Elementary School and a number of children attending the school will pass by the proposed convenience store.

## **CONVENIENCE STORES, PROXIMITY TO SCHOOLS & CHILDHOOD OBESITY**

The proposed Kum & Go convenience will likely meet the definition of a “food swamp.” Food Swamps are outlets offering few healthy, nutritional foods.

Following are examples of adverse health effects associated with convenience stores, especially those located near a school, as the proposed Kum & Go will be near Kay’s Creek Elementary.

- A higher rate of obesity was associated with the presence of [convenience stores within a 10-minute walk of a school](#),<sup>16</sup> and
- A [California study](#)<sup>17</sup> noted a 50% increase in smoking among adolescents exposed to tobacco advertising during weekly visits to small grocery, convenience or liquor stores.

## **INCREASED TRAFFIC & SAFE ROUTES TO SCHOOLS**

The primary reference for estimating the amount of traffic generated by a specific land use is the [Trip Generation Manual](#)<sup>18</sup> by the Institute of Transportation Engineers or ITE. According to the ITE manual, a convenience store with gas pumps generates 838 vehicles trips per day for every one thousand feet of floor space. From the applicant’s plans it appears the Kum & Go will have about 3900 square feet of floor space, which means it count generate about 3300 car or truck trips per day.

Given the rather isolated location, the proposed Kum & Go is likely to result in a considerable increase in traffic volume on local streets. And given the close proximity of Kay’s Creek Elementary school it is likely many students walk, bike, or scooter along these streets. The Kum & Go could transform streets that are presently [Safe Routes To School](#)<sup>19</sup> into a more hazardous journey.

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<sup>13</sup> See: <https://pubmed.ncbi.nlm.nih.gov/29227232/>

<sup>14</sup> See: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6679806/>

<sup>15</sup> See: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3778110/>

<sup>16</sup> See: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3041661/pdf/1471-2458-11-68.pdf>

<sup>17</sup> See: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1448595/>

<sup>18</sup> See: <https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>

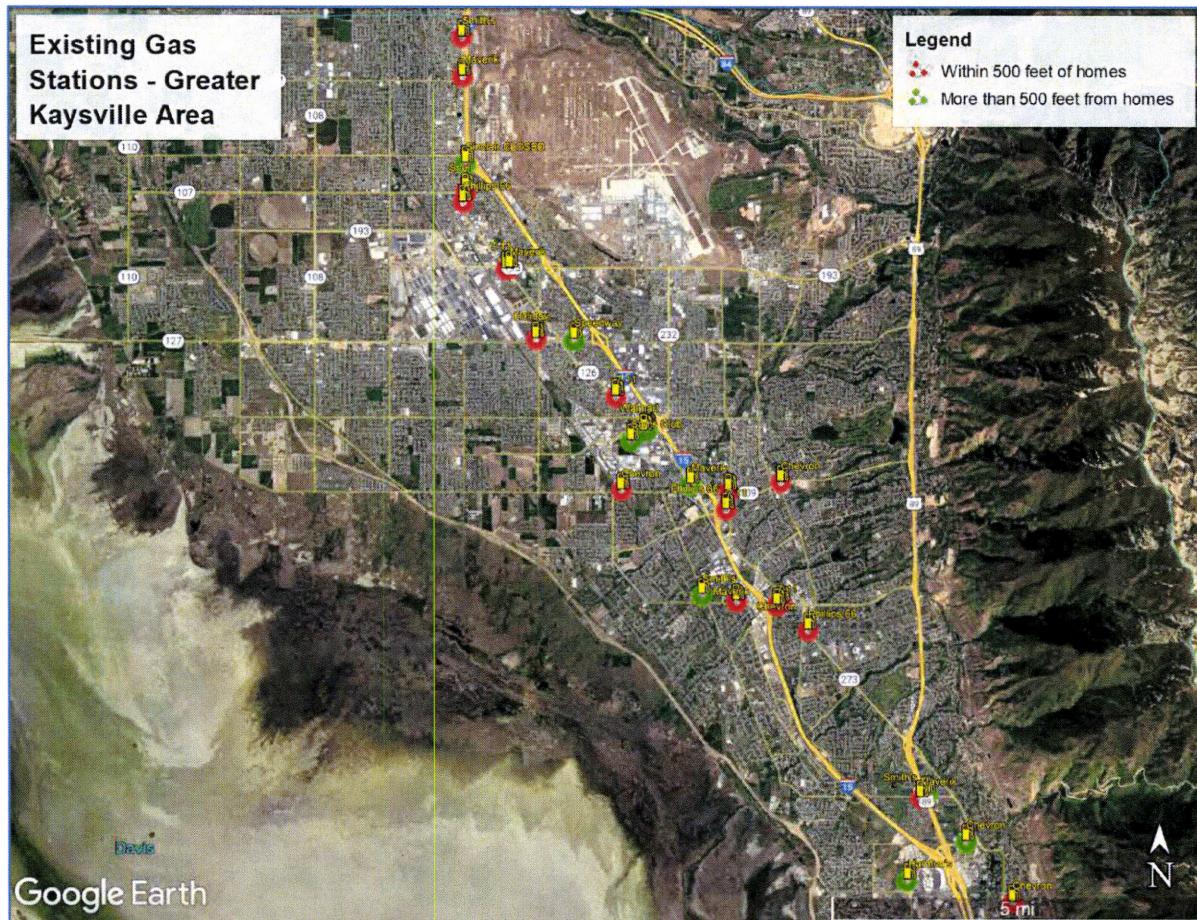
<sup>19</sup> See: <https://saferoutes.utah.gov/>

## PROXIMITY TO HOMES PRECEDENT & FUTURE GAS STATIONS

Occasionally, a concern will arise that denying approval for a proposed gas station because the site is within 500- to 1,000 feet of homes or schools will preclude any new fuel dispensing facility within a jurisdiction like the City of Kaysville. Of course, the U.S. is headed towards phasing out gasoline powered vehicles so the need for new gas stations should decline in the coming decade.

For reasons explained in the video at the following address, new gas stations tend to locate near existing ones: <https://www.youtube.com/watch?v=u4cKzGj58q4>. As a result, applying a 500- to 1,000-foot setback to existing gas stations is a valuable method for determining if the public health safety zone will unduly restrict new gas stations in a jurisdiction.

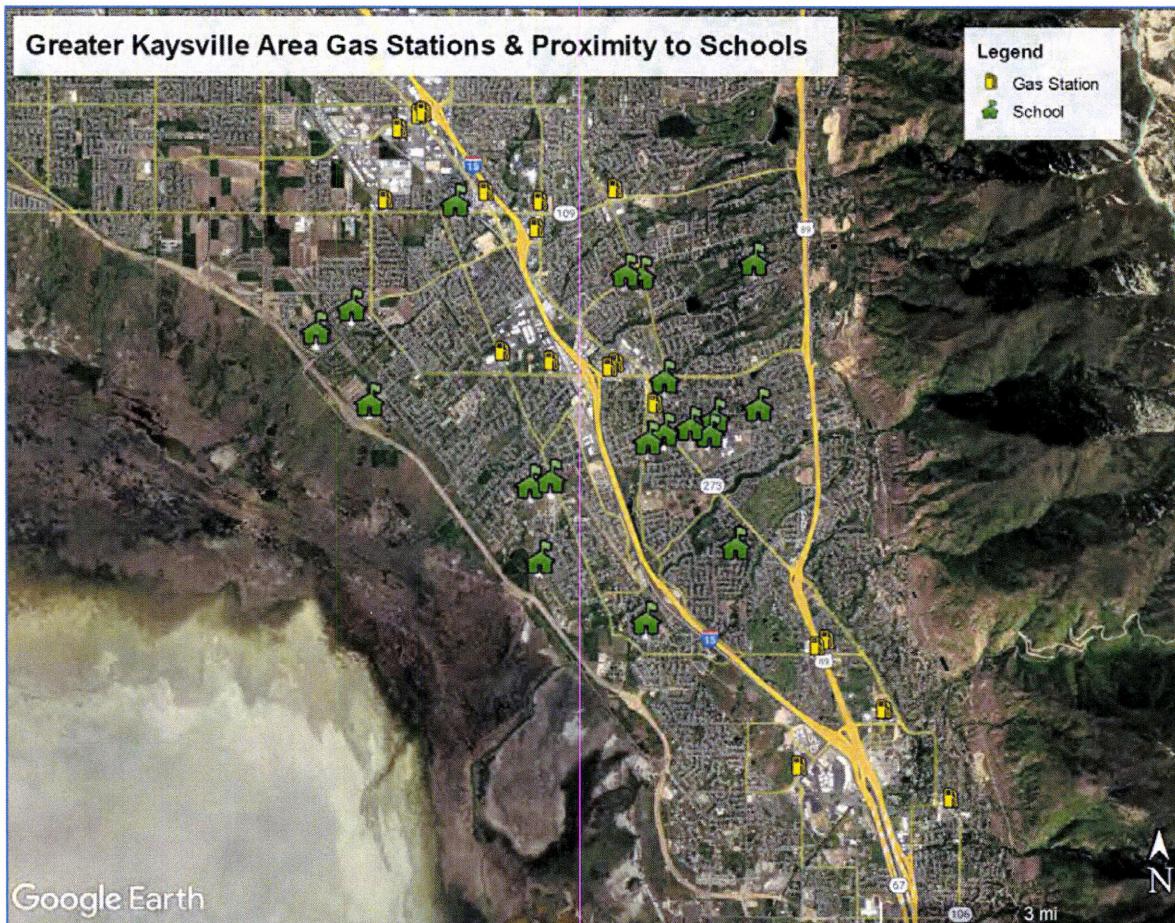
The aerial below shows the location of 28 existing gas stations in the greater Kaysville area. Stations with **red** circles are within 500 feet of a home. Those with **green** circles are more than 500 feet from the nearest home.



Of the 28 stations, 10 (36%) are more than 500 feet from the nearest home. Given that more than a third of existing stations would easily meet the 500-foot setback, it is unlikely that denying approval for the proposed Kum & Go would set a precedent precluding new gas stations in the City of Kaysville. Instead, new stations would be guided to sites where the benefits are gained without jeopardizing public health.

## EXISTING GAS STATIONS ARE FAR FROM SCHOOLS

As stated earlier, the U.S. Environmental Agency [School Siting Guidelines](#)<sup>20</sup> recommended screening - but not excluding - school sites for potential health risk when located within 1,000 feet of a gas station. The aerial below shows the location of schools and gas stations in the greater Kaysville area. **Note that there are no existing gas stations within 1,000 feet of the 19 existing Kaysville area schools.**



The proposed Kum & Go gas station would be less than 500 feet from Kay's Creek Elementary school. Therefore, denying Preliminary Plat approval for the proposed Kum & Go because it is within 1,000-feet of a school would not set a precedent precluding new gas stations elsewhere in the City of Kaysville. I can be reached at 410-654-3021 or [Rklein@cds.org](mailto:Rklein@cds.org) if you have any questions.

Sincerely,



Richard D. Klein

<sup>20</sup> See: [https://www.epa.gov/sites/production/files/2015-06/documents/school\\_siting\\_guidelines-2.pdf](https://www.epa.gov/sites/production/files/2015-06/documents/school_siting_guidelines-2.pdf)