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PHMSA Location Classifications and HCA's

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DOT/PHMSA 49-CFR-192.5 Class Locations

- PHMSA requires area locations with pipelines containing hazardous material to be classified base on the surrounding human population, drinking water sources and unusually sensitive ecological resources.

- PHMSA defines the following Classifications:

  - Class 1 – Any location within 220 yards of either side of a 1 mile length of a pipeline containing 10 or fewer dwellings.

  - Class 2 – Any location within 220 yards of either side of a 1 mile length of a pipeline containing more than 10 or and fewer than 46 dwellings.

  - Class 3 - Any location within 220 yards of either side of a 1 mile length of a pipeline containing more than 46 -or- an area where the pipeline lies within 100 yards of building with the intent of human dwelling or a well defined outside area (such as playgrounds, recreational areas, outdoor theaters, or place of assembly) that is occupies by 20 or more people on at least 5 days a week for 10 weeks in any 12-month period. (The days and weeks need not be consecutive.)

  - Class 4- Any location within 220 yards of either side of a 1 mile length of a pipeline where building with four or more stories above ground are prevalent.

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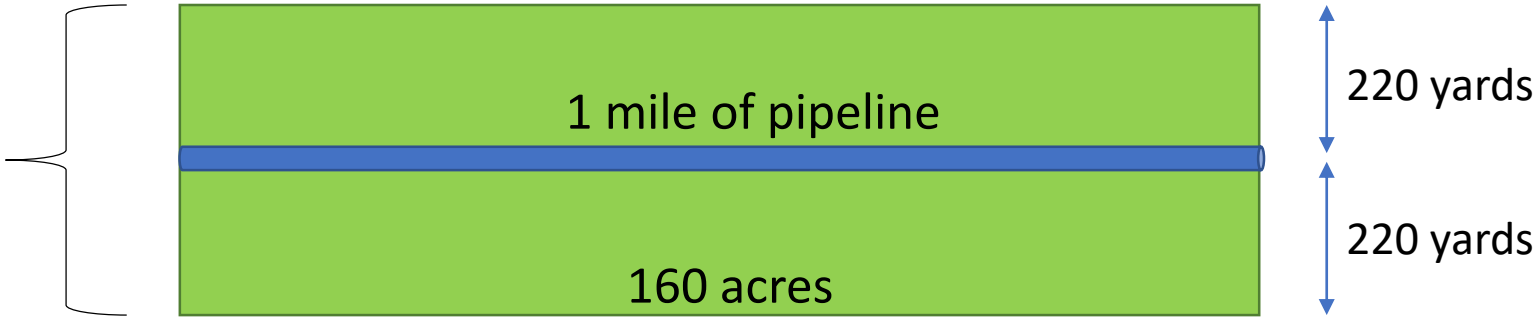
Class Locations – Area of Interest

Area of Interest in determining Classifications.



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DOT/PHMSA - High Consequence Areas (HCA's)

- The US DOT uses the term "High Consequence Areas" (HCAs) to identify pipelines that are subject to ongoing pipeline integrity assessments.

- HCAs are defined using a ***variable distance*** from the pipeline that contain 20 or more buildings intended for human occupancy, or specific sites where 20 or more people gather (beaches, playgrounds, hospitals, etc…) on at least 5 days a week for 10 weeks in any 12-month period. (The days and weeks need not be consecutive.)

- The variable distances is calculated using a combination of pipeline specific properties (e.g. pressure, outside diameter) in contrast to the ***fixed distances*** used for Location Classification.

- HCAs for natural gas transmission pipelines focus solely on *populated areas*. (Environmental and ecological consequences are usually minimal for releases involving natural gas.)

- HCAs for hazardous liquid pipelines focus on *populated areas, drinking water sources*, and *unusually sensitive ecological resources*.

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PHMSA 49 CFR 192 – HCA's

HCAs for natural gas transmission pipelines:

- An equation has been developed based on research and experience that estimates the distance from a potential explosion at which death, injury or significant property damage could occur. This distance is known as the "***Potential Impact Radius***" (or PIR), and is used to depict potential impact circles.

$$r = 0.69 * (\sqrt{(p * d^2)})$$ where *r = Impact Radius in Feet*
p = MAOP in PSI
d = Nominal pipe diameter in Inches

- Pipeline Operators must calculate the Potential Impact Radius for all points along their pipelines and evaluate corresponding impact circles to identify what population is contained within each circle.

- Potential impact circles that contain 20 or more structures intended for human occupancy; buildings housing populations of limited mobility; buildings that would be hard to evacuate (e.g., nursing homes, schools); or buildings and outside areas occupied by more than 20 persons on at least 5 days a week for 10 weeks in any 12-month period **are defined as HCAs**.

- HCAs are further defined as:
  - Any Class 3 or Class 4 locations
  - Any Class 1 or Class 2 locations where the PIR is >660 ft and the Potential Impact Circle contains 20 or more building intended for human occupancy.

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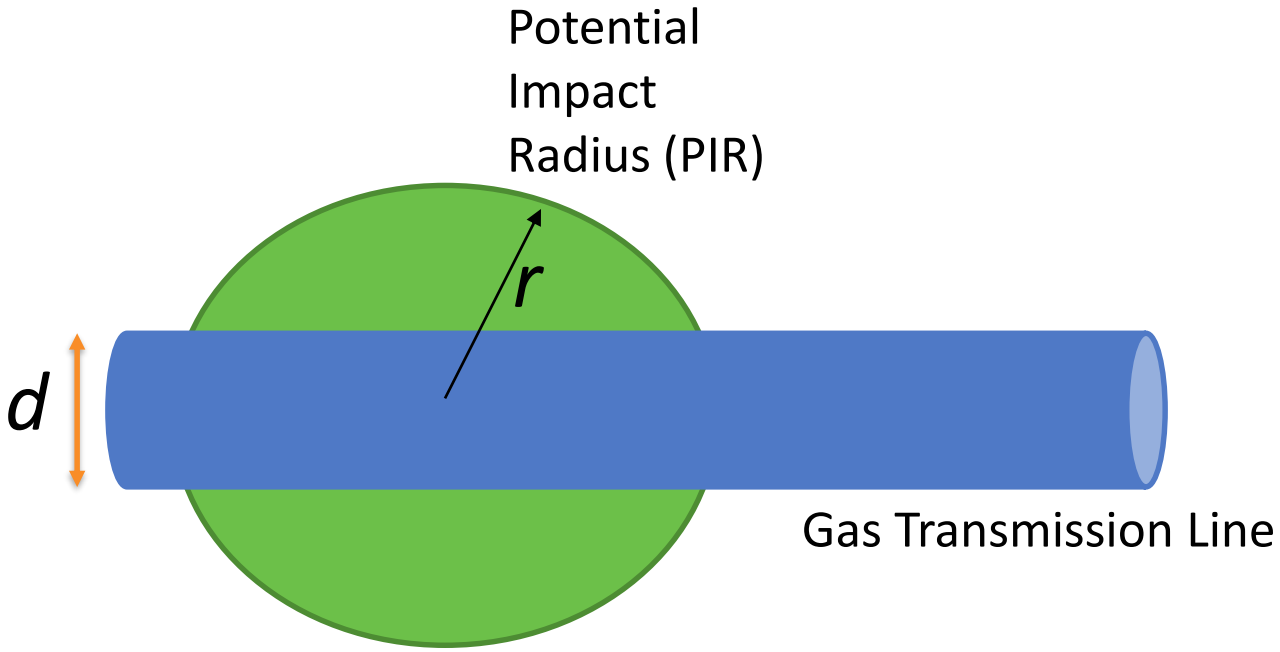
DOT PHMSA 49 CFR 192



$r = 0.69 * (\sqrt{(p * d^2)})$ where *r = Impact Radius in Feet*
p = MAOP in PSI
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PHMSA 49 CFR 192 – Leak Survey

- All transmission pipelines must have a leak survey perform at intervals not to exceed 15 month but at least once per calendar year.

- Pipelines in Class 3 and Class 4 areas are further restricted if they are not odorized.

Class Locations			
Class 1	Class 2	Class 3	Class 4
Survey interval not to exceed 15 months but at least once per calendar year.	Survey interval not to exceed 15 months but at least once per calendar year.	If odorized, survey interval not to exceed 15 months but at least once per calendar year. If not odorized, survey interval must be perform at least every 7 ½ month but at least 2 times per calendar year.	If odorized, survey interval not to exceed 15 months but at least once per calendar year. If not odorized, survey interval must be perform at least every 4 ½ month but at least 4 times per calendar year.

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