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| **Water Supply Tactical Options** | Related Policies: Accountability Procedures; SCBA; Rapid Intervention Teams; ICS; Operations at Structure Fires |
| *This policy is for internal use only and does not enlarge an employee’s civil liability in any way. The policy should not be construed as creating a higher duty of care, in an evidentiary sense, with respect to third party civil claims against employees. A violation of this policy, if proven, can only form the basis of a complaint by this department for non-judicial administrative action in accordance with the laws governing employee discipline.* |
| Applicable KY Statutes: |
| NFPA Standard: 1500, 1561 |
| Date Implemented: | Review Date: |

1. **Purpose:** to establish guidelines for selecting the appropriate tactical option for water supply at emergency incidents, including structure fires, vehicle fires, hazardous materials incidents, and wildland fires.
2. **Scope:** This guideline applies to all personnel responding to emergency incidents.
3. **Hoselay Operations**
4. When fire hydrants are available and provide adequate capacity for the needs of an incident, they are usually the best tactical option for providing water supply. Where possible the pumping engine should be located close to the hydrant selected to feed it. Otherwise, one of the following options must be selected.
5. STRAIGHT/FORWARD LAY – hose is laid by the feeding engine from the hydrant to the fire scene. This method contributes to scene congestion in front of the fire building, and places the feeding engine's apparatus in a poor position to relay pump. The advantage is that the feeding engine's tank water may easily be supplied to the first in engine while the hydrant hookup is being made.
6. REVERSE HOSE LAY - hose is laid by the feeding engine from the fire scene to the hydrant. This method places the feeding engine's apparatus at the hydrant, reducing congestion in front of the fire building. Reverse hose lays also place the feeding engine in a good position to relay pump if necessary to improve water supply.
7. COMBINATION LAY – hose is laid by both the first arriving engine and the feeding engine. Combination lays are useful for incidents on narrow, dead-end or limited access streets, or structures set back from the street via a long driveway. The first arriving engine at a fire on a narrow, dead-end, limited access street, or long driveway where no hydrants are located, should drop feeder lines at the entrance to the street, and lay their own feeders in to the fire scene. The feeding engine company would then only have to lay from the end of the street to the nearest hydrant. This would allow better access for ladder companies in front of the fire building, and permit the feeding company to be in a better position to pump the hydrant or relay pump.
8. RURAL HITCH (Rural Hydrant Hitch) – a variation of the combination lay commonly used in rural areas where the first arriving engine leaves a clappered siamese, gated wye, or like appliance attached to the end of the supply line as it proceeds up a driveway or narrow street. The apparatus feeding the first arriving engine then has two or more possible ports through which to provide a water supply.
9. Each of the above hose lay options may also be used in non-hydrant areas, to be supplemented by either series pump operations, relay pumping options, tanker shuttle operations, or some combination of them.
10. **Series Pump Operations**
11. Series pump operations are an option for fires where relatively small quantities of water are required. Generally the maximum capacity for series pump operations is 750 gpm flow, and 10,000 gallons total.
12. In series pump operations, additional pumpers and/or tankers will provide their tank water through hose lines to the pumping engine.
13. Placement of a large capacity tanker/tender adjacent to the pumping engine allows the tanker to serve as a temporary water supply as other units arrive and offload their water. In this regard the tanker/tender serves an analogous function to a folding dump tank, and is often referred to as a ***Nurse Tanker***.
14. **Relay Pumping Operations**
15. Relay pumping is when one or more pumpers are used in series to pump water from a water source to a pumper over long distances.
16. Relay pumping should always be considered as a tactical option at fires that have extended beyond contents and into a structure.
17. If feeders are longer than 500 feet in length, or in areas where there is known to be a water supply problem, a relay pumper should be utilized.
18. Relay pumpers should be positioned between the water supply source and the fire scene at distances between 500 and 1,500 feet apart depending upon conditions, water supply needs, elevations, and hose diameter.
19. As a general rule, relay operations that would involve hose layouts of 4,000 feet or greater should be avoided in favor of tanker shuttle operations. This is not an absolute figure, but a guideline.
20. **Tanker Shuttle Operations**

Tanker shuttle operations should be employed when more than 10,000 gallons of water is required and the distance between the water source (static source or fire hydrant) makes relay pumping impractical.

1. The first arriving tanker/tender shall deploy its folding dump tank in a tactically appropriate location given the circumstances present at the scene. Based upon the immediate needs of the situation, this tanker should either:
2. Provide its water supply directly to the first in pumper or
3. Fill the dump tank
4. Unless the tanker/tender’s pump is needed at the fire scene, the tanker should then proceed to the water supply source to be refilled.
5. The second arriving tanker should similarly deploy its drop tank adjacent to the first drop tank. This tanker should either:
6. Provide its water supply directly to the first in pumper or
7. Fill the drop tank
8. A transfer siphon/venturi system shall be established between the drop tanks.

**Editor’s Note:** Some departments make it a practice to leave a complete venturi set up whenever a unit leaves a folding dump tank. The set up consists of the venturi, hard suction, and an appropriate sized hoseline to feed the venturi. The eliminates the risk that one or more of the various components necessary to create the venturi will not be available.

1. Further decision making shall be made by the Water Supply Group Supervisor based on the needs of the incident.
2. **Water Supply Group Supervisor**
3. Early into a relay pumping or tanker shuttle operation, the Incident Commander should appoint a Water Supply Group Supervisor to oversee and manage water supply. The title Water Supply Group Supervisor is the NIMS compliant terminology for this position, but the position is commonly referred to as the Water Supply Officer or Water Boss. The radio designation for the Water Boss shall be: Water Supply Group.
4. The purpose of the Water Supply Officer/Water Boss is to take concerns about water supply off the shoulders of the Incident Commander. There are innumerable decisions that must be coordinated for relay and shuttle operations to run smoothly, and the Water Boss is the one to make those decisions so the Incident Commander can focus on the needs of the incident.
5. The Water Boss will supervise and coordinate all aspect of the water supply operation including selecting fill sites, dump or unload sites, tanker traffic patterns, and pumping assignments for fill and pump sites. The Water Boss will coordinate with the Incident Commander to ensure that tactical water supply needs are met, or that tactical objectives are limited to those that available water can supply.
6. All tankers/tenders, fill site pumpers, dump site pumpers, and associated personnel should be assigned to the Water Supply Group.
7. **Fill Site Operations**
8. Whether drafting water from a static source or using a hydrant, fill site operations must be organized so as to minimize apparatus maneuvering time, minimize hook up time, and maximize the water refill rate. This can best be accomplished by:
9. Selecting a fill site which permits a smooth “fill and go" traffic pattern with minimum apparatus backing or turning
10. Having adequate personnel at the fill site
11. Positioning a reliable and appropriately sized pumper at a static water source
12. Filling the tanker/tender apparatus one at a time, using two or more lines

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1. The minimum crew required to efficiently handle a fill site operation is an officer and three fire fighters. One firefighter will operate the pumper, and two firefighters will attend to the fill lines. Additional personnel should be utilized to direct tanker/tender traffic. If possible an assistant safety officer should be assigned to manage the risk associated with heavy truck traffic at the fill site.

**Lesson Learned:** When drafting from a small moving water source (such as a stream or brook) that passes under a bridge, consider drafting from the upstream side. The upstream side can often be dammed at the bridge as necessary to ensure an adequate depth of water to draft, whereas damming may not be an option on the downstream side.

1. **Dump Site Operation**
2. Like the fill site operation, dump site operation must be conducted so as to minimize maneuvering time, and maximize the refill rate of the dump tanks.
3. Efficiency can be improved by having a minimum of two sides of the dump tank accessible for dumping.
4. The backing of apparatus should be avoided whenever possible for both safety and efficiency purposes.
5. A dump site operation requires an officer, and a minimum of two firefighters. One firefighter must be available to operate any manually actuated dump valves on the tankers, and the other serves as a pump operator for the supply pumper. Additional manpower should be assigned as to direct incoming and departing tankers. The sign of a well manned and well coordinated dump site operation is when the tanker/tender driver does not have time to leave the cab of his apparatus.
6. When the dump site is remote from the location where the Incident Safety Officer is operating, an assistant safety officer should be assigned to manage the risk associated with heavy truck traffic at the dump site.