

Category 9: Essential Resources

Essential resources are defined as those mandatory services or systems required for the agency's operational programs to function. They should be given the same value of importance as a primary program. Appropriate adjustments may be necessary in the self-analysis to adapt the typical components listed below to the local situation. For example, when reviewing a water supply system, the evaluation may not be limited to conventional resources, such as water lines and fire hydrants, but may include alternative resources, such as tankers (tenders), ponds, streams, lakes, cisterns, etc.

Criterion 9A: Water Supply

The water supply resources are reliable and capable of distributing adequate volumes of water and pressures to all areas of agency responsibility. All areas meet fire flow requirements in accordance with applicable fire flow criteria. An agency seeking prima facie for this criterion should refer to the Commission on Fire Accreditation International Interpretation Guide for the qualifying language.

Summary:

The City of Meridian Public Works Department maintains a robust water supply system with very few identified deficiencies. The most recent *Water Master Plan* was completed in 2018, with the next iteration, due in 2024, currently in progress. The Meridian Fire Department has a strong relationship with the public works department's water division, and together have created an exceptionally strong and reliable water supply system.

The City of Meridian's water supply system is divided into five zones with a total of 25 wells, two storage tanks with 2 million-gallon capacities, 6,725 fire hydrants, and multiple booster pumps in each zone. All zones are able to deliver the largest single fire flow requirement during peak demand with a pump out of service with high confidence ratings.

The City has adopted the 2018 International Fire Code and International Building Code. All fire hydrants in the city currently exceed the minimum fire flow requirements outlined therein and meet minimum distance requirements. All new developments are reviewed the fire marshal and water department and meet or exceed IFC requirements.

The department underwent an ISO evaluation in 2019 and scored a 35.5 out of 40 for its water system, including a 101% rating for fire hydrants.

Performance Indicators:

CC 9A.1 The agency establishes minimum fire flow requirements for new development in accordance with nationally and/or internationally recognized standards and includes this information in the fire risk evaluation and pre-incident planning process.

Description

The department establishes minimum fire flow requirements for new developments that meet or exceed the 2018 International Fire Code (IFC). The fire department works alongside with the public works department's water division to ensure that all new development proposals have adequate fire flows. The city contracts with Fire Code Consultants Northwest to handle plan reviews and inspections during the construction phase. Areas requiring higher fire flow requirements are determined according the 2018 IFC regulations for specific building types. In addition, the *Water Master Plan* identifies specific target hazards and identifies higher fire flow requirements for these occupancies per the fire department.

Appraisal

The fire department, the city, the public works department, the water division, and the city's contractor have verified that all new developments have adequate fire flows through successful partnerships and regular flow testing. The city has followed the International Fire Code for many years and has maintained a practice of adopting a new code edition every-other-cycle. The fire marshal has met with the public works department during triennial project upgrades to address any areas of the city that need improved fire flows, such as at dead-end hydrants. In 2019 the department received an ISO evaluation that included a 98% score of its water supply system.

Plan

The department will continue to work closely with the water division to monitor needed fire flow for existing and future developments. The department will continue to adopt the International Fire Code every other cycle and work with the water division to make any adjustments. The city will continue to contract with Fire Code Consultants Northwest for plan reviews and inspections, including ensuring that hydrant location and placement meet minimum fire flow requirements.

References

- City of Meridian *Water Master Plan*, pg. 5-8
- Meridian Code of Ordinances, Title 10, Chapter 4 Fire Code
- 2018 International Fire Code, Appendix B
- Fire Code Consultants Northwest Contract
- ISRB ISO Report 2019

CC 9A.2 An adequate and reliable water supply is available for firefighting purposes for identified risks. The identified water supply sources are adequate in volume and pressure, based on nationally and/or internationally recognized standards, to control and extinguish fires.

Description

The department has an adequate and reliable water supply available for fire department operations and target hazards. The water supply system is managed by the City of Meridian Public Works Department water division with input from the Meridian Fire Department deputy chief of community risk reduction. Hydrants are placed according to the 2018 International Fire Code (IFC), either at least 400 feet apart or closer depending on the occupancy type and fire flow requirements. Fire flow requirements are set according to the 2018 IFC, Appendix B. The City of Meridian obtains its water from an underground aquifer which is considered plentiful and unlikely to see significant supply issues in the next 50 years, according to the Meridian Water Master Planning presentation to council.

Appraisal

The water supply in the City of Meridian has proved adequate for firefighting purposes. All hydrants have met or exceeded 2018 IFC regulations. The water system has always been reliable, with multiple redundancies for supply, pressure, and access built in to all areas. Pressure and volume in the system can be supplemented if needed by multiple pump stations placed strategically in the water supply system. All areas with development in the city have been supplemented by hydrants. Some areas in the Meridian Rural Fire District have hydrants maintained by outside systems or do not have hydrants. The department has maintained a waterways map to identify water sources to draft from or can conduct mobile water supply operations from tenders or water relays.

Plan

The department will continue to maintain a harmonious relationship with the water department. As the city grows, the deputy chief of community risk reduction will work with the water department to continue to ensure that all new developments have adequate water supply systems through the pre-planning process. The deputy chief of community risk reduction and water

department manager will monitor and incorporate any future changes to IFC code dealing with water supply.

References

- 2018 International Fire Code, Appendix B, B-4 – B-5
- 2018 International Fire Code, Appendix C, C-1 – C-2
- Meridian Water Master Plan 2018, pg. 2-2, 2-9 – 2-12
- Meridian Water Master Planning PPT, slide 25
- Meridian Hydrant Map – All GPZs
- Meridian Waterways Map

9A.3 The agency has a contact list on file and maintains regular contact with the managers of public and private water systems to stay informed about available water supplies.

Description

The department has access to the City of Meridian Public Works Department water division contact list through a shared internal intranet. The deputy chief of community risk reduction meets regularly with the public works department and water division during community development planning meetings. All line personnel have access to the on-call and after-hours emergency water department numbers. A weekly on-call water emergency email is sent to all City of Meridian personnel with updated emergency and on-call numbers for that week. The public works department has standard operating procedures for all known and unknown water service interruptions that include a notification procedure for the fire department. In the event of a known water supply issue, the water division contacts the deputy chief of community risk reduction or the on-duty battalion chief directly, who is then able to pass along information to fire crews. In the event of a water supply emergency encountered by crews on scene, city water technicians are able 24/7 to respond to assess the situation. Any water supply issues that are identified during preplanning or fire inspections are relayed to the water department and handled in a timely manner.

Appraisal

The water division has consistently notified the fire department of any water supply issues or out of service hydrants. The water division has sent weekly emails with updated emergency contacts for the water department. In cases where an unscheduled water supply interruption has occurred outside of regular business hours, the on-duty battalion chief has been notified. The water department has responded in a timely manner to all emergency water service calls.

Plan

The fire department will continue to maintain regular contact with the water division of the public works department. The deputy chief of community risk reduction will be the primary point of contact for the fire department, along with shift battalion chiefs after hours. The water department will continue to update its emergency contact information and send regular weekly updates to the department and all employees. The department will consider including water supply updates in the Daily Log emails that are sent daily to all personnel.

References

- Water Weekly On-Call Email
- Public Works Water Emergency Contacts on Intranet Screenshot
- SOP PW-15 Water Service Interruptions for Capital Projects
- SOP PW-16 Water Service Interruptions for Construction Projects
- SOP PW-17 Unscheduled Water Service Interruption

9A.4 The agency maintains copies of current water supply sources and annually reviews fire hydrant maps for its service area to ensure they are accurate.

Description

All fire hydrants are checked for GIS accuracy when they are inspected on a rotating schedule every four years. New hydrants are added to the GIS data as they are constructed. The City of Meridian's GIS division sends updated GIS maps to Ada County monthly which includes any hydrant updates. That hydrant GIS data is then updated in the computer aided dispatch (CAD) system. All hydrants can be viewed on the city's internal ArcGIS *HydrantFind* system.

HydrantFind contains all hydrant GIS data along with the age of the hydrant, when it was last maintained/inspected, and if it has a Storz connection. Hydrant and waterways layers can be toggled on and off on the Mobile Data Terminals (MDTs) housed in each of the department's apparatus so that crews can easily locate the closest hydrant.

Appraisal

The public works department water division has been responsible for the inspection and maintenance of all Meridian Fire Hydrants, including updating and confirming their GIS location. All hydrants have been inspected and maintained at least every 4 years, and all updated data has been entered into the ArcGIS *HydrantFind* map. The GIS department has provided regular updates to Ada county for inclusion in the CAD maps.

Plan

The public works department water division will continue to inspect, maintain, and confirm GIS accuracy for the city's hydrants. The GIS department will regularly update the city's *HydrantFind* map and send regular updates to Ada County.

References

- ArcGIS *HydrantFind* Screen Shot
- Mobile Data Terminal Map Layer Hydrants Screen Shot

9A.5 Fire hydrant adequacy and placement are based on nationally and/or internationally recognized standards and reflect the hazards of the response area.

Description

The fire department and public works department water division adhere to the 2018 International Fire Code (IFC) guidelines. Accordingly, fire hydrants are strategically placed as per the code's specifications, approximately 400 feet apart in most areas or closer depending on the fire flow of the occupancy. The fire flow requirements for all occupancies meet or exceed the definitions outlined in the 2018 IFC. To ensure compliance with the code, the City of Meridian Public Works Department and Fire Code Consultants Northwest check hydrant fire flows and their placement during the building plan review, permit approval, and building inspections process. It's important to note that the specific requirements vary depending on the type of occupancy, and these codes are strictly enforced under the 2018 IFC, specifically appendix B and C.

Appraisal

The City of Meridian has diligently adhered to the 2018 IFC guidelines regarding the placement of hydrants and fire flows, which were tailored to match the specific occupancy types and construction designs. Hydrants in maximum risk or high/special risk areas adequately met the fire flow demands. The public works department water division collaborated closely with the community risk reduction division of the fire department to ensure strict adherence to all relevant codes and regulations.

Plan

The City of Meridian Public Works Department water division and the Fire Department will continue to work together to ensure compliance with the 2018 IFC for hydrant placement and adequacy.

References

- 2018 International Fire Code, Appendix B
- 2018 International Fire Code, Appendix C

9A.6 Public fire hydrants are inspected, tested, maintained, visible and accessible in accordance with nationally and/or internationally recognized standards. The agency's fire protection-related processes are evaluated, at least annually, to ensure adequate and readily available public or private water.

Description

All 6,725 fire hydrants in the city of Meridian are flow tested at a minimum of every four years, exceeding the standard set forth in National Fire Protection Association (NFPA) 291:

Recommended Practice for Fire Flow Testing and Marking of Hydrants. After hydrants are tested routine maintenance is performed and any visibility and accessibility issues are addressed. All hydrant testing follows NFPA 291 procedures.

Appraisal

The City of Meridian Water Department has regularly flow tested and maintained its hydrants according to NFPA 291 standards. Any hydrant that has failed to meet needed flow requirements has been flagged and addressed on a case-by-case basis. This has included adding lines to the hydrant if it is on a dead end main or increasing sprinkler requirements for buildings close to the hydrant. The deputy chief of community risk reduction has met with the public works department on a triennial basis to address how certain hydrants can be improved through other community development projects.

Plan

The water division will continue to be responsible for flow testing, inspecting, and maintaining all fire hydrants at least every 4 years. The water division will continue to communicate any out of service or low-flow hydrants to the fire department according to established procedures. The water division will evaluate the need for additional personnel as the number of hydrants in the city of Meridian increases.

References

- NFPA 291: *Recommended Practice for Fire Flow Testing and Marking of Hydrants*

9A.7 The agency identifies, plans and trains for the possibility of a water supply system failure, including fire hydrants with insufficient capacity and areas where fire hydrants are unavailable or inaccessible.

Description

The city's water supply system is designed with multiple redundancies to virtually eliminate the possibility of a catastrophic water supply failure. The water supply system is looped, can be fed from pumps and wells or from storage tanks, and has on call water operators able to respond 24/7/365 to address any issues. Fire hydrant placement ensures that multiple hydrants are available to fight commercial and residential fires. The training division addresses water supply training annually, including planning for hydrant failures and using alternate water supplies through relay operations, tender operations, nurse operations, or dump tanks. The department has identified areas in the Meridian Rural Fire District that are unhydranted, as well as areas that are available for drafting for water shuttle operations. The department owns one 3,000-gallon water tender and has mutual and automatic aid agreements with surrounding departments for additional mobile water supply responses.

Appraisal

The Meridian Fire response areas without hydrants have been identified. Hydrant map layers on the department's MDTs have been updated regularly. All certified driver/operators on the department have completed yearly training on job performance requirements (JPRs) for rural water supply operations including drafting, relay pumping, and water tender operations.

Plan

The department's training division will continue to be responsible for ensuring that all driver/operators meet annual JPR requirements for rural water supply operations. The Meridian Fire Operations block training calendar will include an annual review for all crew members and ranks on rural water supply, including identifying unhydranted areas.

References

- D-O JPR 10 – Water Supply – Drafting
- D-O JPR 12 – Relay Pumping

- D-O JPR 17 – Water Tender
- Mobile Data Terminal Map Layer Hydrants

9A.8 The agency has operational procedures in place outlining the available water supply and reviews those procedures as part of their documented review policy.

Description

The vast majority of the department's response area is hydranted, with a few areas of the rural district without hydrants. The department's job performance requirements (JPRs) for driver operators consist of 15 separate skill sheets that drivers must show adequacy in annually. 10 of those JPRs include connecting to a water supply, either static or hydrant. The department also has published crew performance standards (CPS) for water supply. All crews complete quarterly multi-company block training and water supply is addressed at least annually.

Appraisal

The department's JPRs, and CPSs have served as valuable training tools and operational guidelines for water supply. All driver operators have completed annual reviews of their JPRs including water supply and all crews have trained on water supply CPSs at least annually during multi company block training. The training division reviews the JPRs and CPSs annually and updates them as needed.

Plan

The training division will continue to follow its training plan including annual sign-offs on JPRs for driver operators and water supply as an annual training. The department will create a rural water supply CPS to address crew performance for drafting, relay operations, and operating at scenes without a continuous water supply.

References

- CPS – Water Supply Forward Lay
- CPS – Water Supply Nurse
- CPS – Water Supply Reverse Lay
- D-O JPR 10 – Water Supply – Drafting
- D-O JPR 12 – Relay Pumping

- D-O JPR 17 – Water Tender
- Block training calendar - <https://meridianfireoperations.com/index.php/block-1-handline-and-water-supply/>