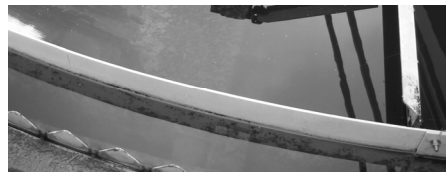


# Asset Management for Wastewater Utilities

## Module 3 Conducting Criticality Assessments



**Slide 3-1 Module 3: Conducting Criticality Assessments**

Lecture : Introduction to Criticality Assessments.

**Slide 3-2 At the conclusion of this module . . .**

Lecture: General objectives overview for Criticality Assessments.

**Slide 3-3 Criticality Assessments**

Lecture: Define criticality.

Use as a lead-in to next slide.

# Asset Management for Wastewater Utilities

Module 3  
Conducting  
Criticality  
Assessments



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## At the conclusion of this module, the participant will be able to:

- List the elements of a criticality assessment
- Use a worksheet to prioritize assets
- Discuss the impact of criticality on replacement priority

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## Criticality Assessment

- Determine the impact that the loss of a particular asset will have on the performance of the Utility's primary functions

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### **Slide 3-4 Sewer Pumping Station (SPS) Criticality**

Guided discussion: Describe the system.

Get input from the class to establish a criticality ranking of this list.

Do this exercise without discussing the criticality elements in the next slide.

There is no correct ranking – the object of this exercise is to get the class thinking about the factors that go into criticality decision making.

Spend no more than 10 minutes on this exercise.

This is a criticality list for a Sewer Pumping Station that is 20 years old. It is located in a residential community and there have been numerous odor complaints over the years – therefore a chlorinator system has been installed. The station overflows directly to a very popular waterway that is used for fishing and boating. Minimum scheduled maintenance is being performed at this station; if failures occur they are handled on a reactive basis.

### **Slide 3-5 Criticality Elements**

Introduction to the elements of criticality.

Guided discussion:

- Customer Service is related to the amount of people the asset failure would impact and how critical the customers require the service. An example would be the failure of a pumping station that results in building flooding. There is a difference in the customer service effect when a hospital gets flooded vs. a residence. The analysis of criticality has to take this into consideration.
- Functional redundancy defines the ability of the utility to still perform its function with the loss of the asset. For example, if you have 2 pumps and one pump fails, the wastewater could be pumped, provided one pump can handle the quantity needed.
- How the failure would impact the ability of the utility to perform its prime function is the another consideration in criticality. In the above pumping station example, if one pump could handle all the flow for a reasonable amount of time, then the impact of failure of the other pump would not be as high. But if it couldn't, then impact of failure would have to be high as well as redundancy – which would lead to higher overall criticality.

### **Slide 3-6 Criticality Exercise**

Group Exercise: Develop a criticality listing.

Break the class into teams of no more than 4 people each.

Give them 10 minutes to fill in the worksheet using a 1 to 10 scoring method for each of the elements.

Have them compute their totals and rank the components from most critical to least critical.

Keep them in groups while you compare the rankings.

## Sewer Pumping Station Criticality List

- Air Compressor
- Vent Blower
- Chlorinator
- Control System
- Generator
- Dehumidifier
- Electric Motor
- Flow Meters
- Centrifugal Pump
- Sump Pump
- Wet Well
- Air Relief Valve

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## Criticality Elements

- Customer Service
- Functional Redundancy
- Impact of Failure

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## Criticality Exercise

- Small Groups
- Fill in the Criticality Worksheet
  - Use 1 to 10 scoring, 1 being low and 10 being high.
  - Add up the totals
  - Rank the components

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### **Slide 3-7 Criticality Worksheet**

Class Input Activity

Ideally, project this worksheet onto a whiteboard and input team's rankings

CS = Customer Service

FR = Functional redundancy

IF = Impact of Failure

For this part of the exercise, assume all components are in equally good condition

Chances are each team will have different results. These differences will most likely be because of different perceptions of what is critical by each of the team members.

- If each team knew the initial condition and limitations of the SPS, then the ratings would be much closer.
- That's why an exercise like this is so effective when performed by people who know the wastewater system they are evaluating.

### **Slide 3-8 Summary**

Group discussion: Summary of Exercise.

Condition and valuation were not discussed in this exercise. These must be considered to allow for good decisions and will be discussed in the next module.

### **Slide 3-9 Module Summary**

Lecture, question and answer.

Provide a quick review of each of the major points from this module.

<b>Criticality Worksheet</b> (1 to 10 rating)				
<b>Component</b>	<b>CS</b>	<b>FR</b>	<b>IF</b>	<b>Total</b>
AIR COMPRESSOR				
VENTILATION BLOWER				
CHLORINATOR				
CONTROL SYSTEM				
GENERATOR				
DEHUMIDIFIER				
ELECTRIC MOTOR				
FLOW METER				
CENTRIFUGAL PUMP				
SUMP PUMP				
WET WELL				
AIR RELIEF VALVES				

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## Summary

- To begin to establish a priority list for asset repair, rehabilitation, or replacement, you need to know:
  - Effect on customer service
  - Level of redundancy
  - Impact of failure

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## Module Summary

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**Slide 3-10 Questions**

Ask for any questions on the section.

# Questions

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