KING TIDE DISRUPTION

Muggytown has just experienced the highest ever recorded **king tide** in its history. This caused major flooding up through the 24" water level rise zone, impacting people and infrastructure. Scientists are saying this king tide is a glimpse into the future of Muggytown's coastline, which will become permanently inundated as water levels continue to rise. It took nearly two days for the waters to recede due to the very high water table along the coast (also related to water level rise). Homes and assets in this zone experienced damages from the standing, saline water, including mold. In addition, because sections of the roadway became impassable, several people were stranded, and emergency rescues were delayed.

King Tide: Wastewater Treatment Plant (WWTP)

Did you protect the WWTP?	Did you not protect the WWTP?
You are able to keep operations running despite the king tide inundation. You receive an additional $100,000 from FEMA for your hard efforts.	The WWTP was flooded, which sent untreated sewage into nearby rivers and streams. There is an estimated $1 million impact to the local waterways and human health. You lose $80,000 from your budget to help support environmental cleanup efforts.

King Tide: Roadways

Did you protect the Roadways?	Did you not protect the Roadways?
The State Department of Transportation awards your city $50,000 for proactively protecting the roadways and maintaining connectivity throughout the region.	The roadways in the 24" zone were flooded, making them unusable by residents and emergency service personnel. The City Council removes $10,000 from your budget to pay for the overtime of emergency personnel.

King Tide: Water Treatment Plant (WTP)

Did you protect the WTP?	Did you not protect The WTP?
The state health agency gives you an additional $10,000 for protecting the WTP and being able to provide clean water throughout the flooding event.	Due to the flooding, the water distribution system loses pressure. City Council requires you to flush the entire distribution system to remove potential contaminants. This will cost you $20,000 in labor and bottled water provision to the community.

King Tide: WWTP (cont.)

Impact Category	Example Impacts of King Tide on WWTP and Cascading Impacts on City
Infrastructure	• Reduction in lifespan of components frequently exposed to saltwater.
Social Systems & Public Health	• Impacts of WWTP failure to the city population, particularly those located near waterways where raw sewage may enter resulting in major health concerns.
Economic	• Cost to repair or modify the system to prevent overflows during future king tide events.
Environmental	• In the event of failure, raw sewage may enter local waterways leading to increased unhealthy nutrient levels. High nutrient content can impact local ecosystems, organisms, and water quality.

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King Tide Flooding: WTP (cont.)

Impact Category	Example Impacts of King Tide on WTP and Cascading Impacts on City
Infrastructure	• WTP equipment and components, including distribution system, could experience corrosion and mold from saltwater.
Social Systems & Public Health	• Impacts of water outages to the city population and subsequent cases of dehydration or diarrheal disease due to drinking contaminated water. Additional concerns for potential contaminant exposure in water system of those with compromised immune systems.
Economic	• Cost of repair or replacement, including labor, of WTP components damaged by the flood waters.
Environmental	• Flushing of system and use of bottled water leads to wasted water and additional waste.

King Tide Flooding: Roadways (cont.)

Impact Category	Example Impacts of King Tide on Roadways and Cascading Impacts on City
Infrastructure	• Inundation with saltwater would cause damage, e.g., potholes and cracking, leading to increased repair and maintenance costs.
Social Systems & Public Health	• Inundation could cause inaccessibility for emergency services, increasing potential for injuries and fatalities.
Economic	• Roadway repair and rebuilding costs, including labor, impact city budget.
Environmental	• Increased ocean pollution due to contaminants entering the sea as the water recedes, e.g., oil, trash, etc.

King Tide: Burns Estates

Did you protect the Burns Estates?	Did you not protect the Burns Estates?
The Burns Estates Neighborhood Association gives you $15,000 for prioritizing their safety and homes during the king tide.	The Burns Estates are inundated, leading several residents to move away from Muggytown. The City Council takes $10,000 away due to the loss in the city's property tax base.

King Tide: Public School

Did you protect the Public School?	Did you not protect the Public School?
The State Department of Education provides you with $20,000 for your work protecting the school, staff, and children during the king tide.	The school closed for a month for flooding repairs, causing the school to relocate classes to the university on the outskirts of town. The City Council requires you to pay $30,000 for the classroom rental fees and additional bus transport of children across town.

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King Tide Flooding: Public School (cont.)

Impact Category	Example Impacts of King Tide on Public School and Cascading Impacts on City
Infrastructure	• Inundation would cause damage or destruction, including mold, to the school.
Social Systems & Public Health	• Children's education may be disrupted if they miss school too regularly as a result of flooding. • Exposure to flood water (and resulting mold) can lead to illness and injury.
Economic	• School children would have to stay home from school, meaning parents would have to miss work or make unexpected payments for childcare.
Environmental	• Busing children to the university outside town results in additional greenhouse gas emissions.

King Tide Flooding: Burns Estates (cont.)

Impact Category	Example Impacts of King Tide on Burns Estates and Cascading Impacts on City
Infrastructure	• Inundation would cause damage (mold, damaged electrical components) to Burns Estate residences and would make soils saline, making it harder to landscape.
Social Systems & Public Health	• Floodwater exposure can result in diarrheal illness and increased potential for injuries; increased exposure to mold can result in lung problems.
Economic	• Loss of higher-income bracket in the city if residents decide to leave town due to flooding issues. High development value coastal area becomes less attractive, with subsequent impacts to local economy.
Environmental	• Septic tanks and sewer lines to the Burns Estates may leak during flooding, resulting in waterway pollution.

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