

Kandiyohi County Board

June 6, 2006

Willmar, Minnesota



Wastewater Program

- The Process
- The Plan
- Hawk Creek Issues

The Program - “Wastewater Treatment Plant Relocation Master Plan”

- **The Original Concept for This Project**

- Construct WWTF at Biosolids Storage Site
 - > Wastewater Treatment Facilities Plan, November 2000

“...Program Management to oversee the relocation plan for the City of Willmar’s Wastewater Treatment Plant. The Facility Plan recently adopted by the Willmar City Council recommends a new treatment facility and related interceptor sewers be in operation on or before 2010.”

- November 3, 2004 Request for SOQ

The Reasons

- **Odor**
- **Capacity / Growth**
- **Regulations**
- **Performance**
- **Age**

The Process

▪ Planning

- Data Gathering and Analysis
- Service Area
- Flows and Loadings
- Regulatory Landscape
- Alternatives Evaluation

▪ Design



- Preliminary
- Final

▪ Construction

Service Area

- **Accommodate Service Area Growth**
 - Year 2030
- **See Enclosed Figure**

The Plan

- **Treatment**
- **Conveyance**
 - Pumping
 - Piping

Treatment

- **New WWTF**

WWTF Location



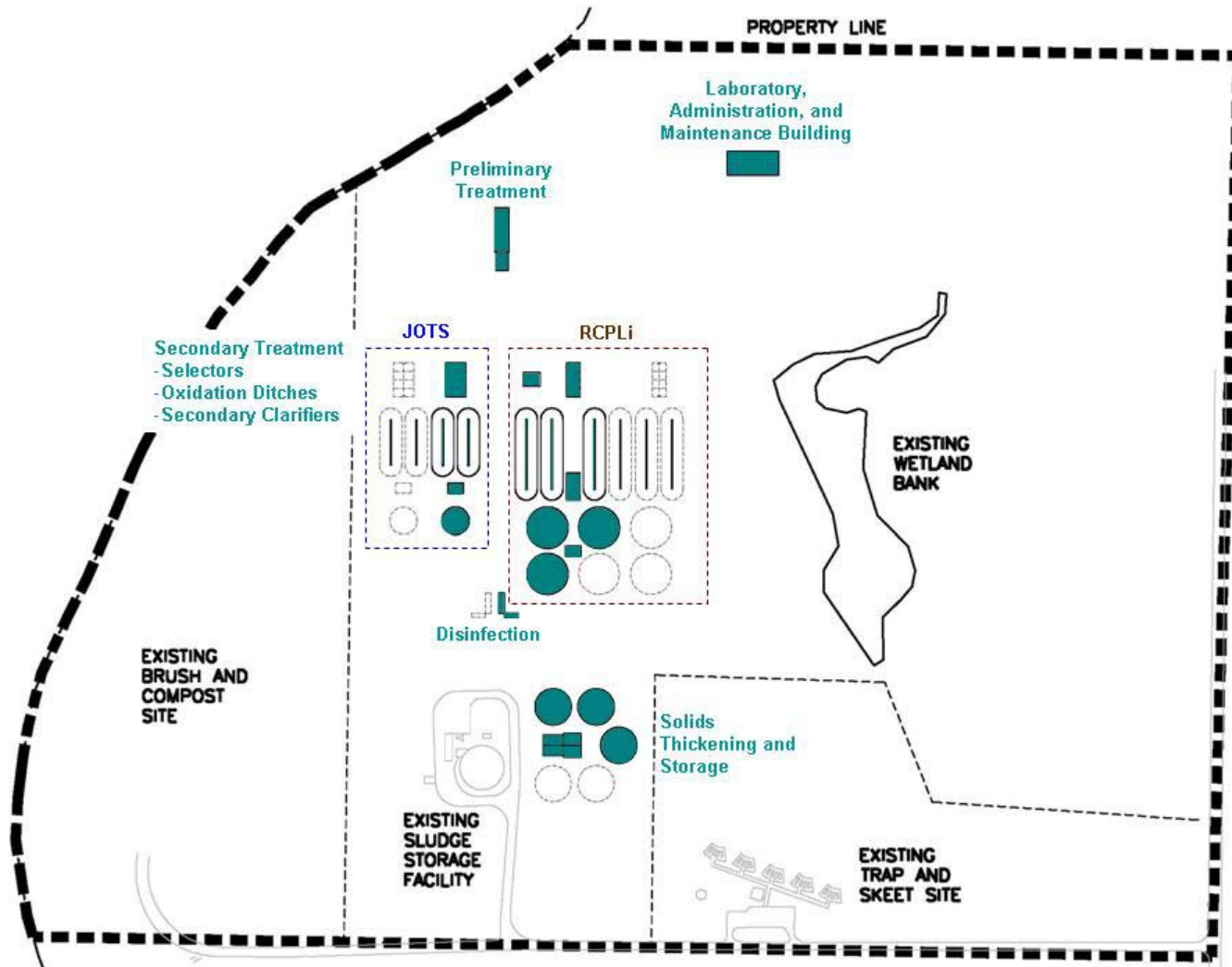
WWTF Location



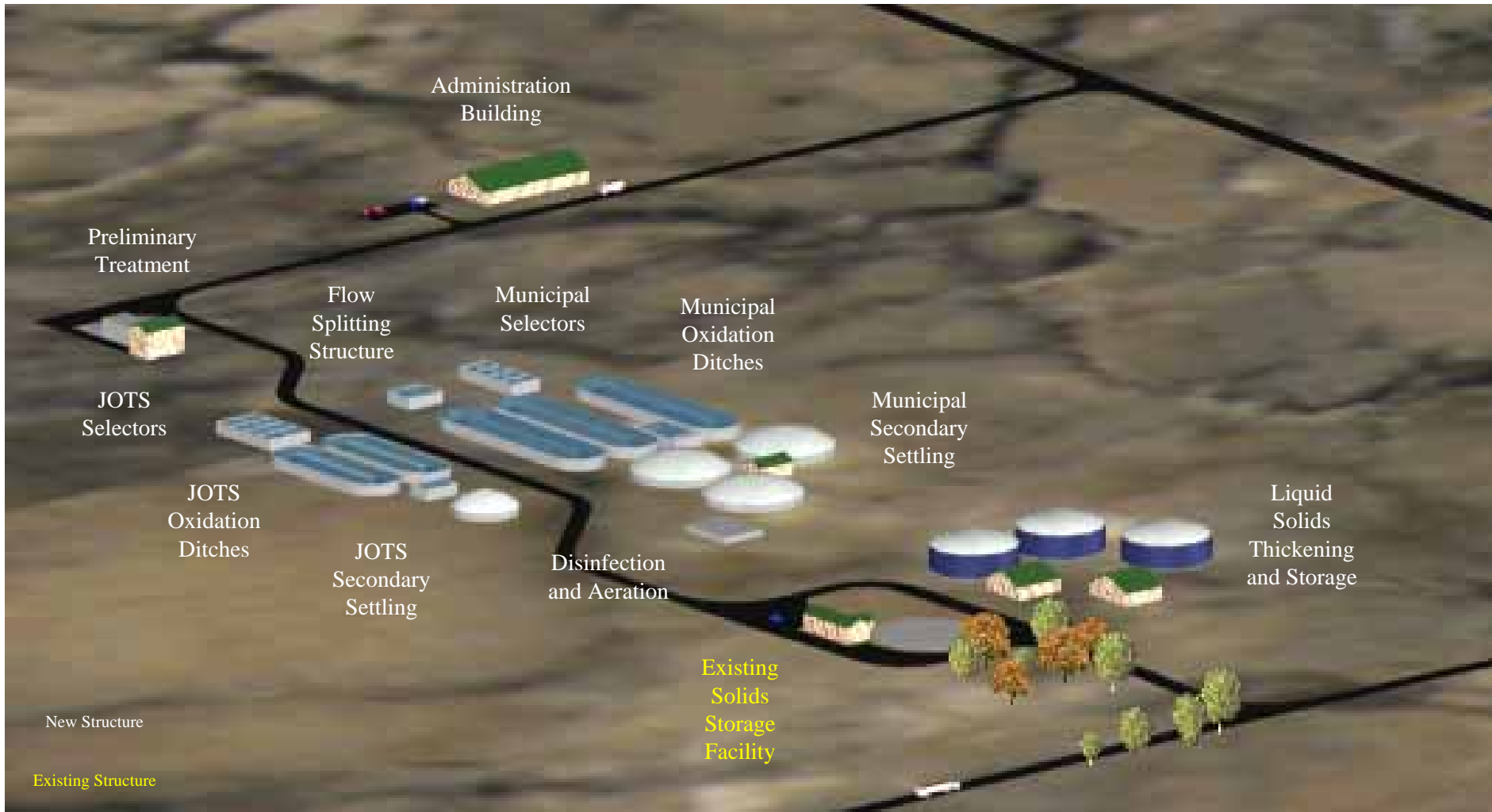
Treatment

- **Separate Treatment “Trains”**
 - City and JOTS
- **Water**
 - Pump
 - Screen
 - React
 - Clarify
 - Disinfect + Aerate
- **Solids**
 - Thicken + Store

Treatment



Treatment



Conveyance

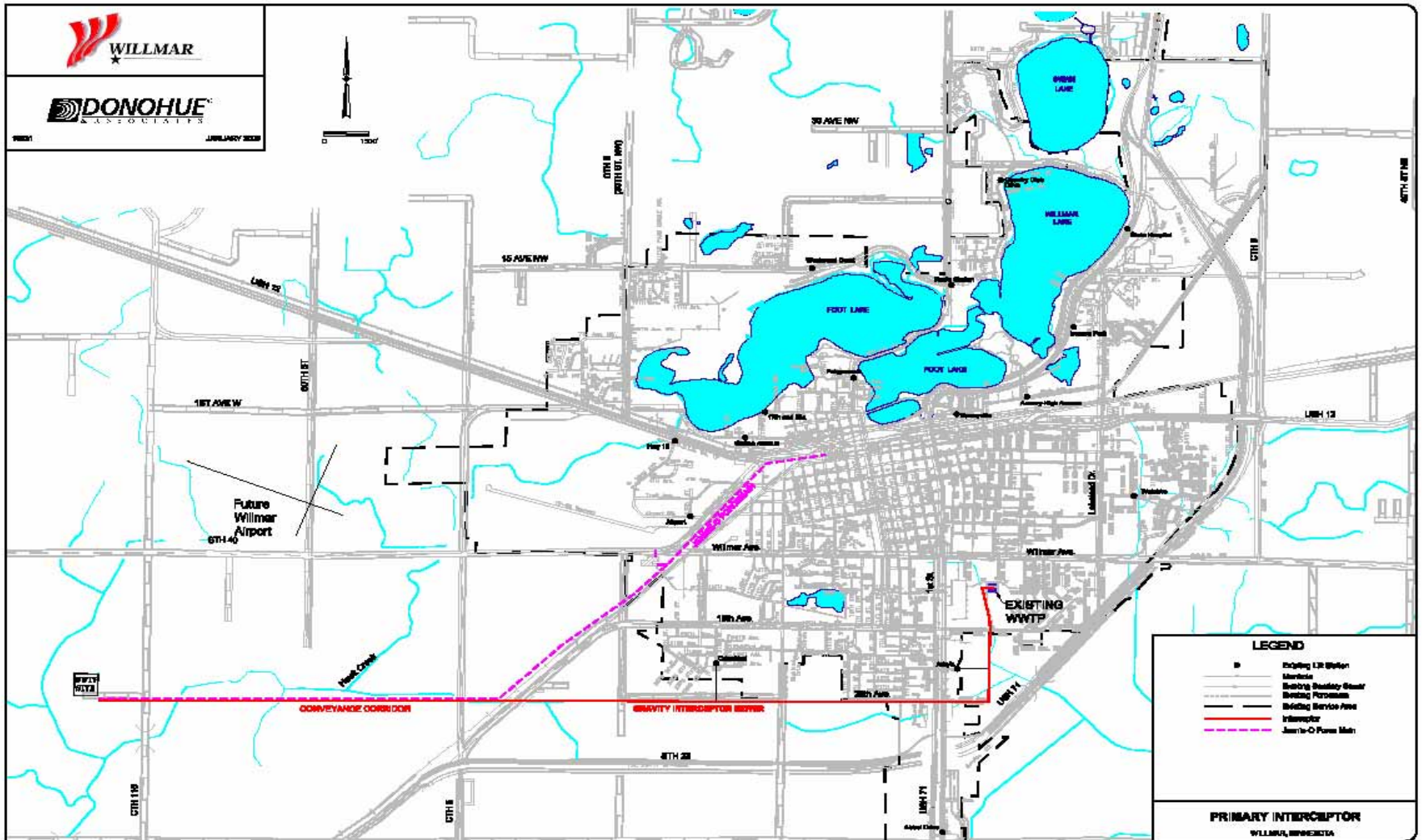
- **Municipal**

- Pump Station at Existing WWTF
- Large-Diameter Interceptor

- **JOTS**

- Pump Stations at JOTS Production Facilities
- Forcemain

Conveyance



Total Program Costs

Existing WWTF **3.1M**

- Interim
- Future Pump Station

Collection System **18.2M**

- City
- JOTS

New WWTF (Demo Existing) **49.1M**

Total Construction **70.4M**

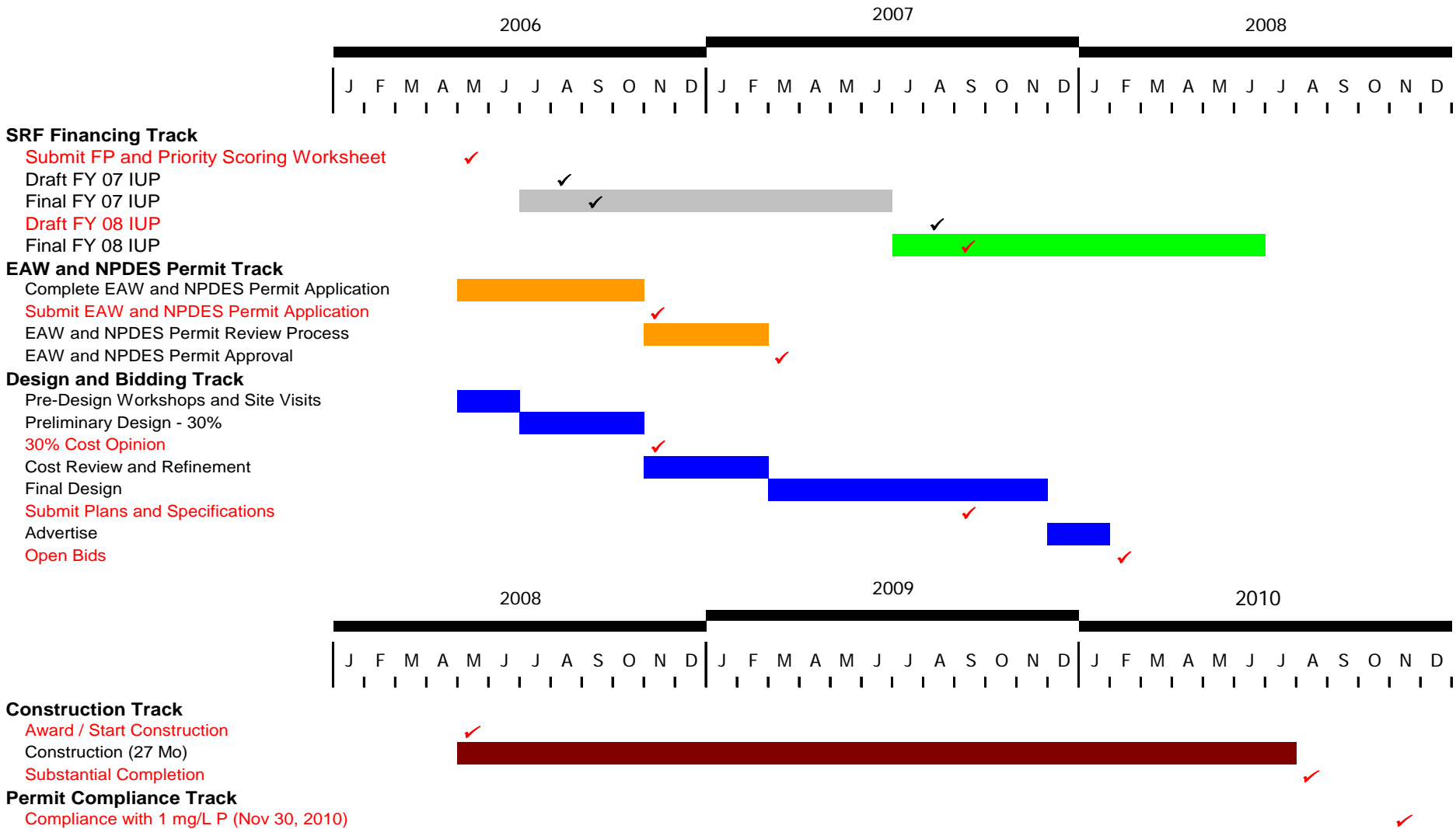
Total Program Cost **80.5M**

Schedule

- **Step 1 – Planning**
- **Step 2 – Design and Bidding**
- **Step 3 – Construction**

Proposed Critical Path Program Schedule

Wastewater Program Willmar, Minnesota



Hawk Creek Issues

- **Discharge Location**
- **Flow Rate**
- **Clean Water**

Discharge Location



Clean Water Flow Rate

▪ Existing Permit

- Average = 5.0 million gallons per day (mgd)
- Peak = 10,000 gpm

▪ New WWTF

- Average = 5.24 million gallons per day (mgd)
- Peak = 19,000 gpm
 - > Peak Hour

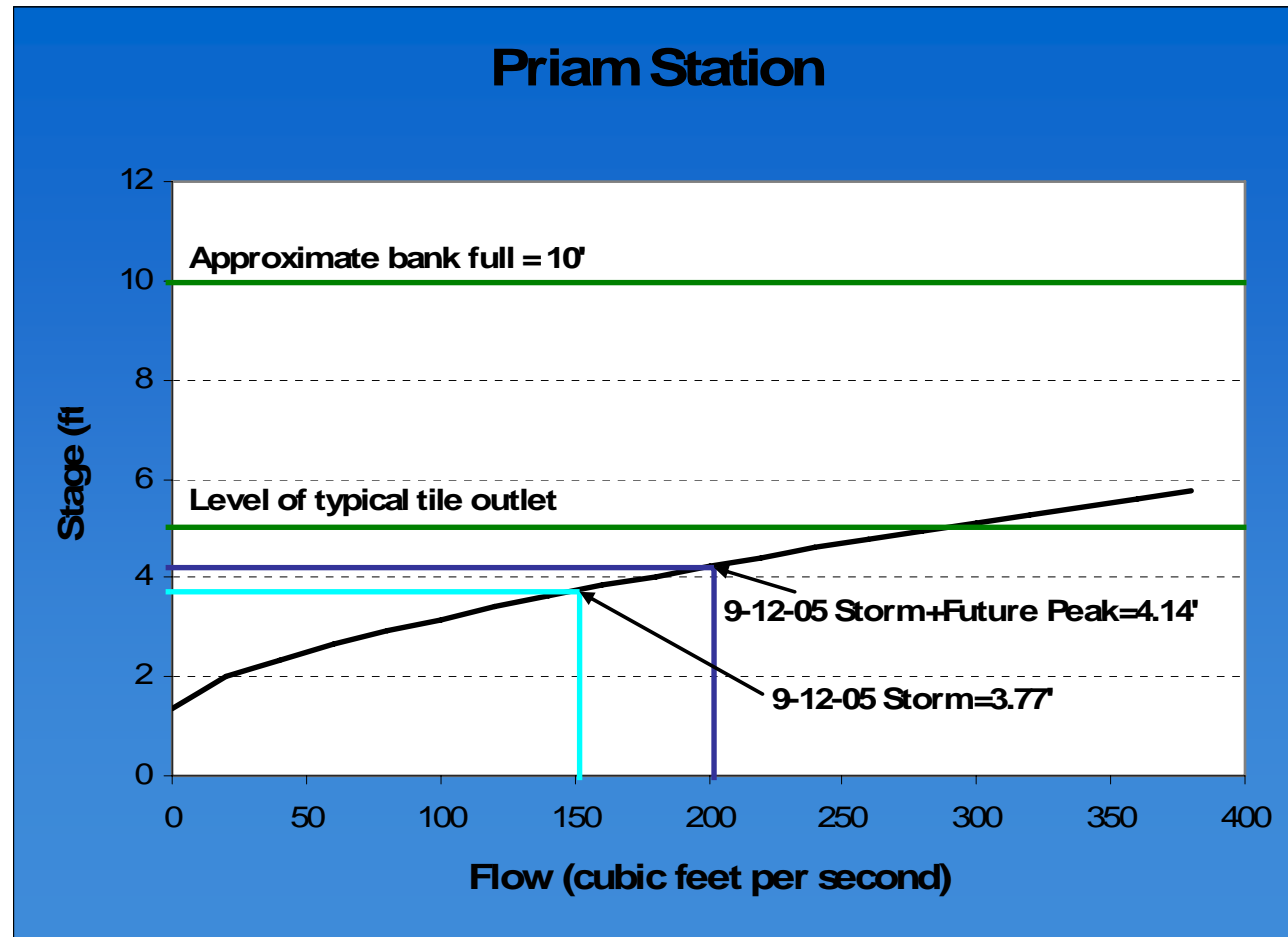
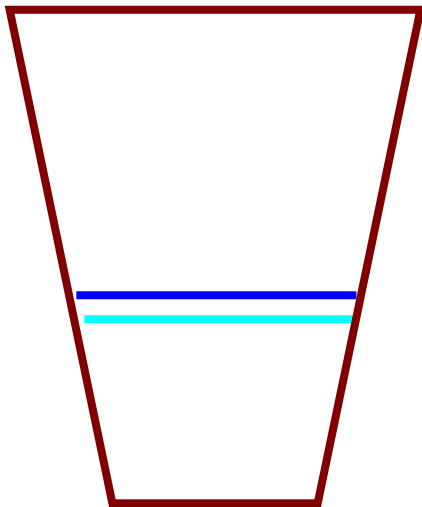
Historical average flows less than permitted amount (roughly 4 mgd).

What Do These Increased Flows Mean?

- **Hydraulic Analysis**
- **Storm Events**
- **Spring Runoff Events**

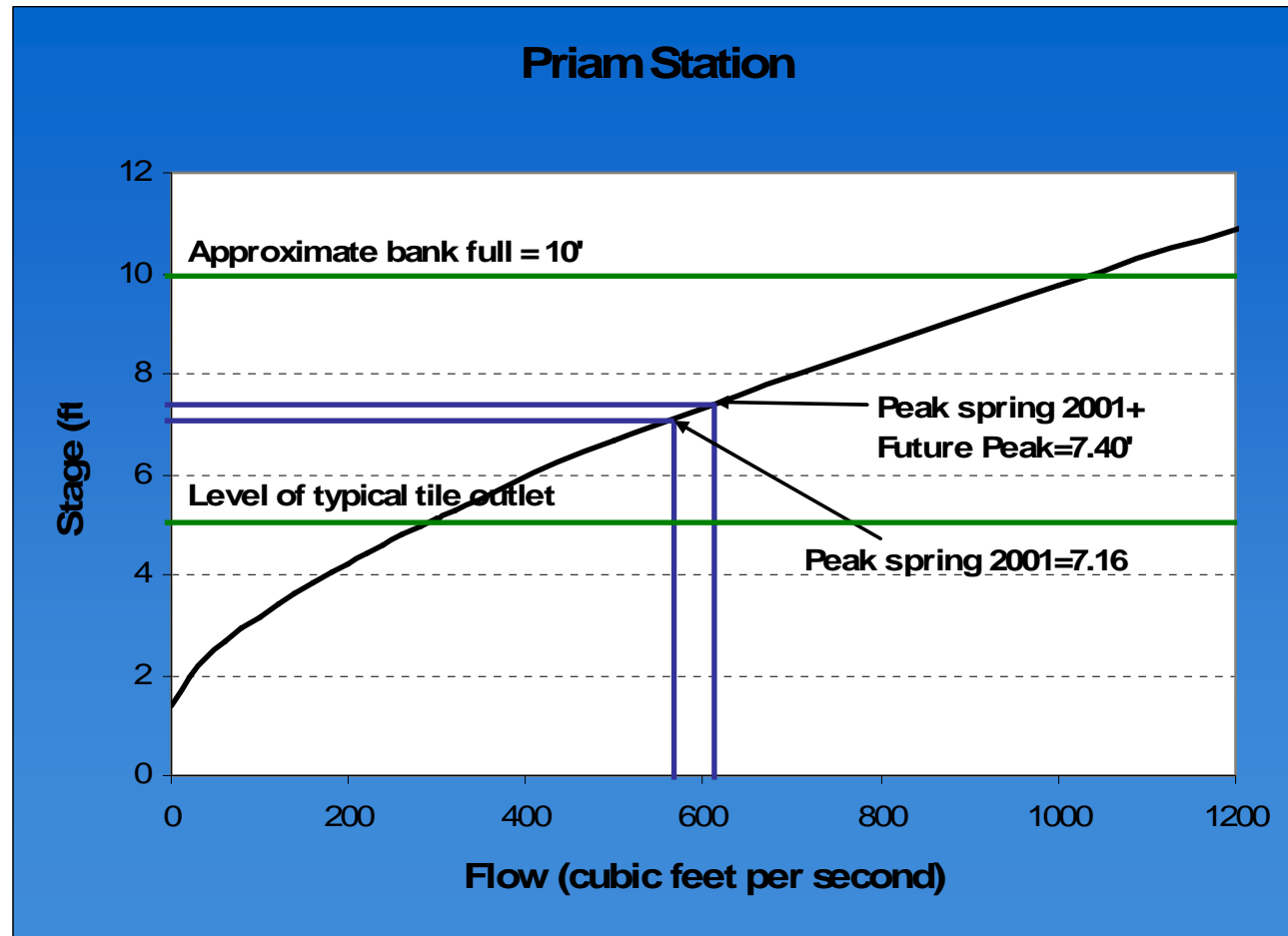
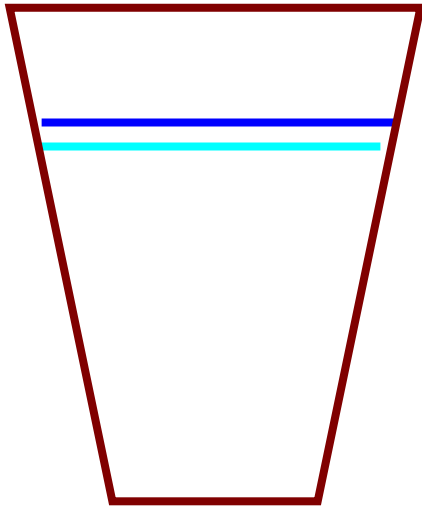
Priam - Storm

- Peak Hour
 - 4" Increase



Priam - Runoff

- Peak Hour
 - 3" Increase



What Do These Increased Flows Mean?

- **Hydraulic Analysis**
- **Storm Events**
 - 4" at Priam
 - Less Downstream
- **Spring Runoff Events**
 - 3" at Priam
 - Less Downstream

What are the Water Quality Benefits

- **Nutrients**
 - Phosphorus
 - Nitrogen
- **Toxicity**
 - Ammonia
- **“Cleaner”**

Questions

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