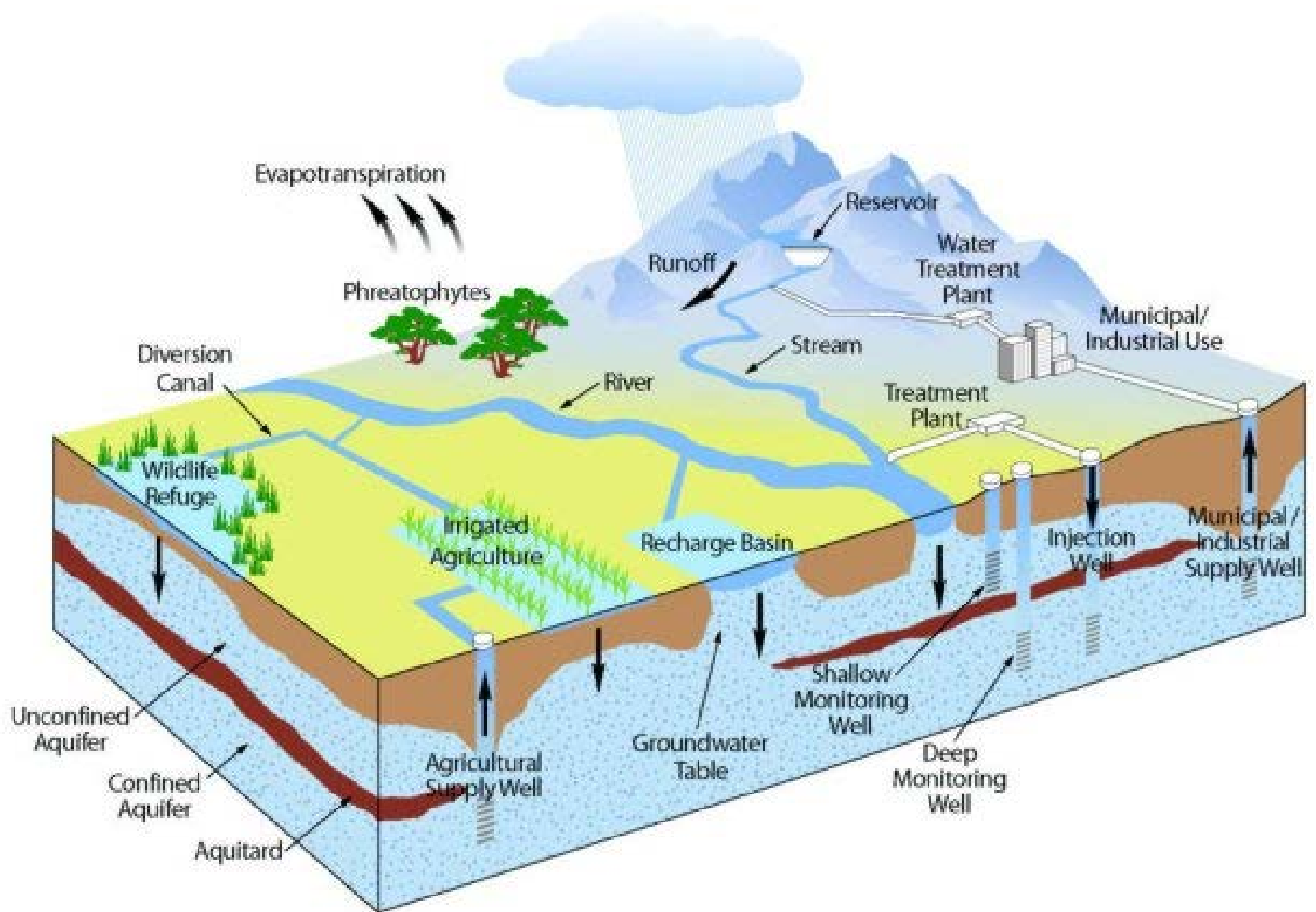


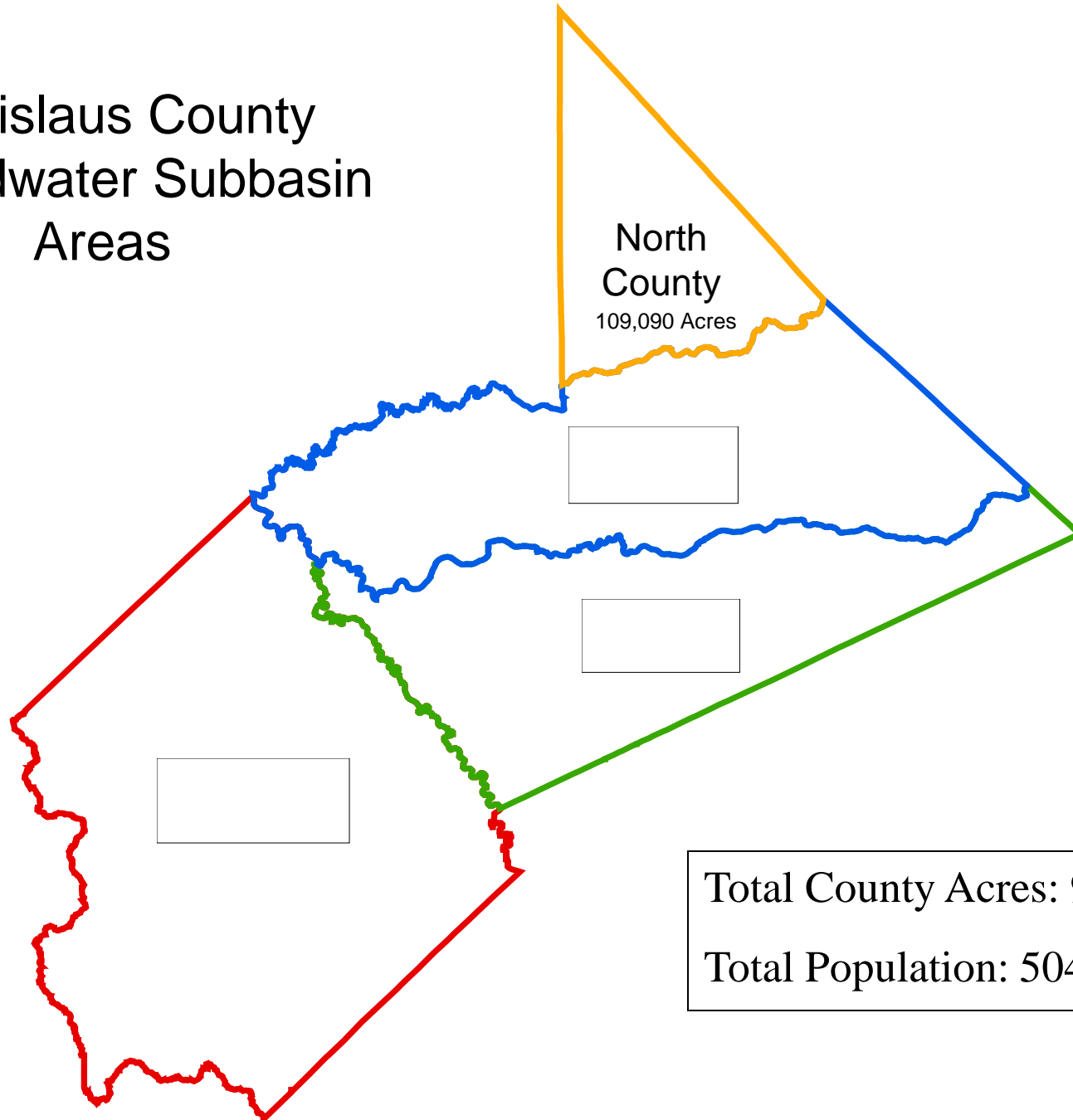
# Stanislaus County Water Advisory Committee

## 100 Day Action Plan Thresholds & Monitoring Elements

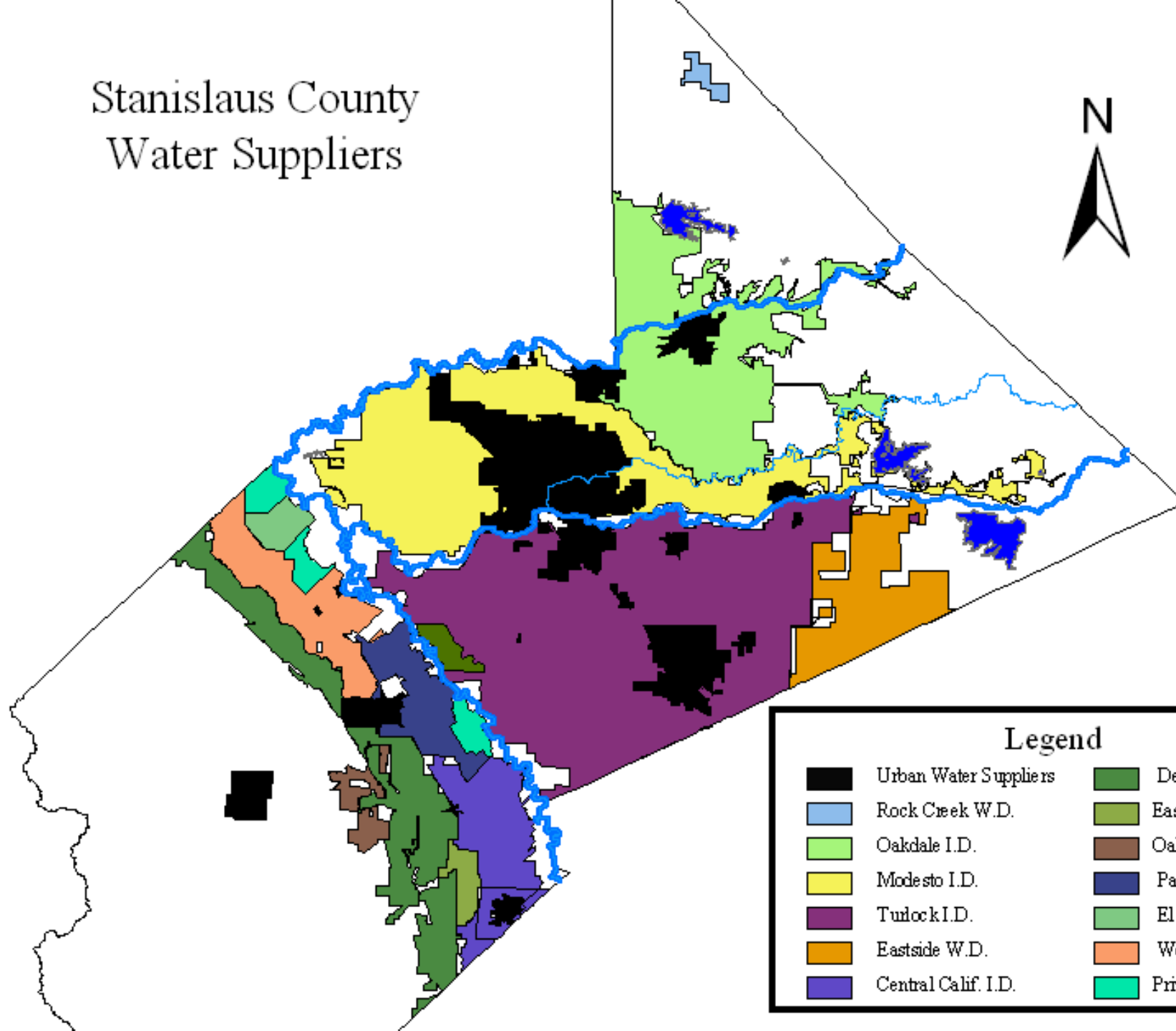
April 10, 2014



# Stanislaus County Groundwater Subbasin Areas



# Stanislaus County Water Suppliers

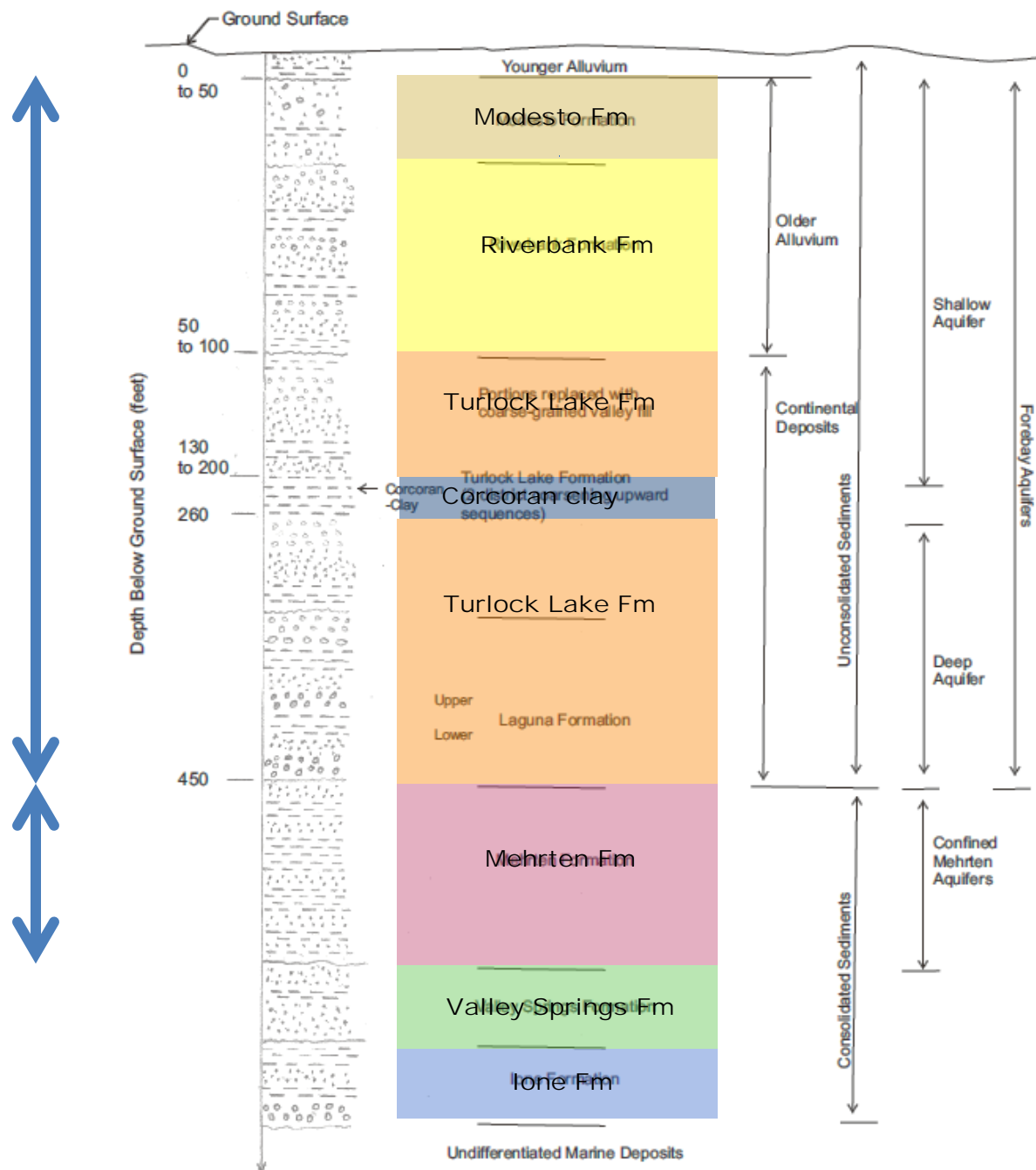


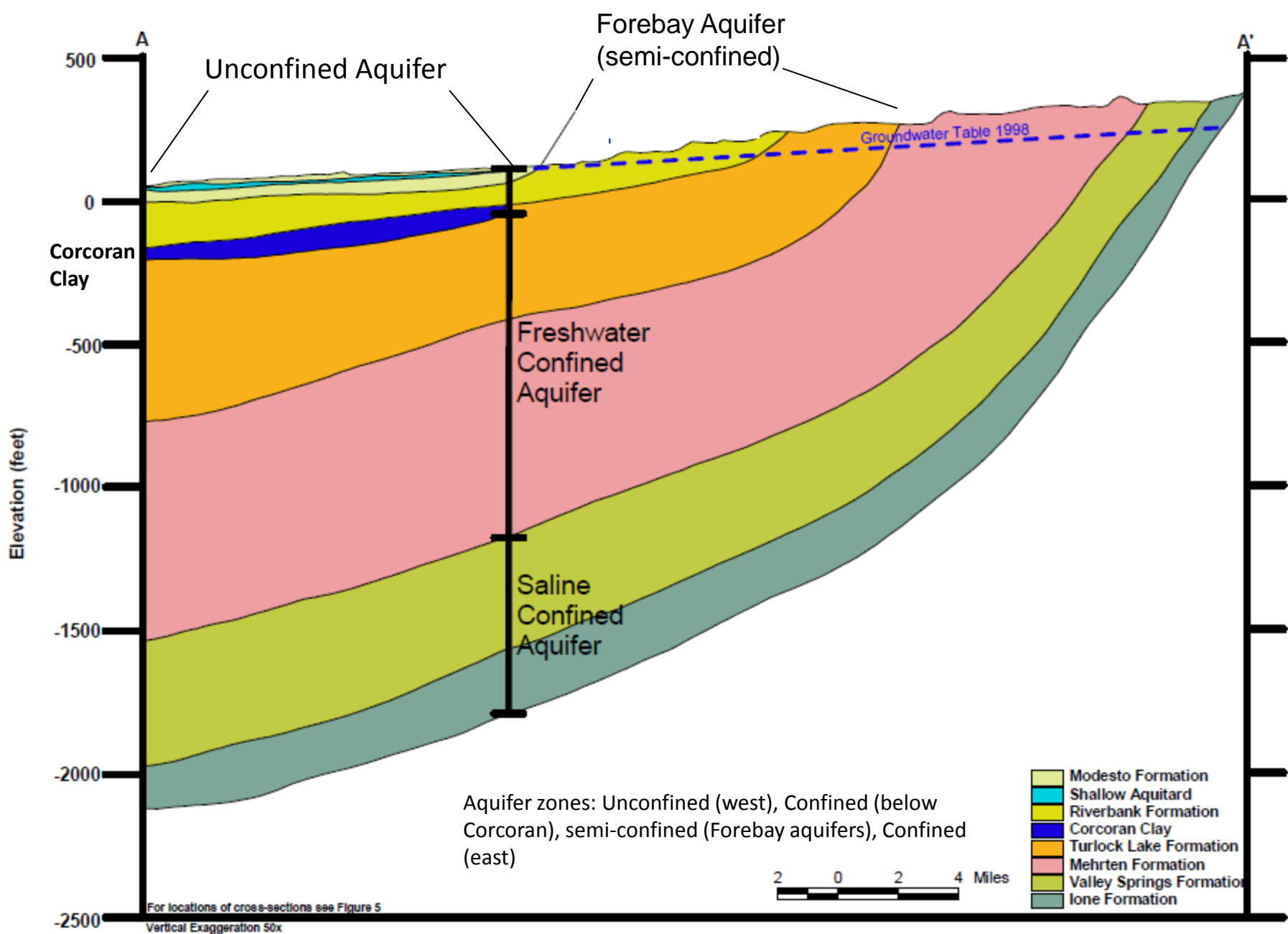
## Legend

Urban Water Suppliers	Del Puerto W.D.
Rock Creek W.D.	Eastin W.D.
Oakdale I.D.	Oak Flat W.D.
Modesto I.D.	Patterson I.D.
Turlock I.D.	El Solyo W.D.
Eastside W.D.	West Stanislaus I.D.
Central Calif. I.D.	Private W.D.4

450 to 750 ft of  
saturated  
section

750 ft of  
saturated  
section





**Figure 6 - East-West Cross-Section Showing Hydrogeologic Units within the Groundwater Basin**

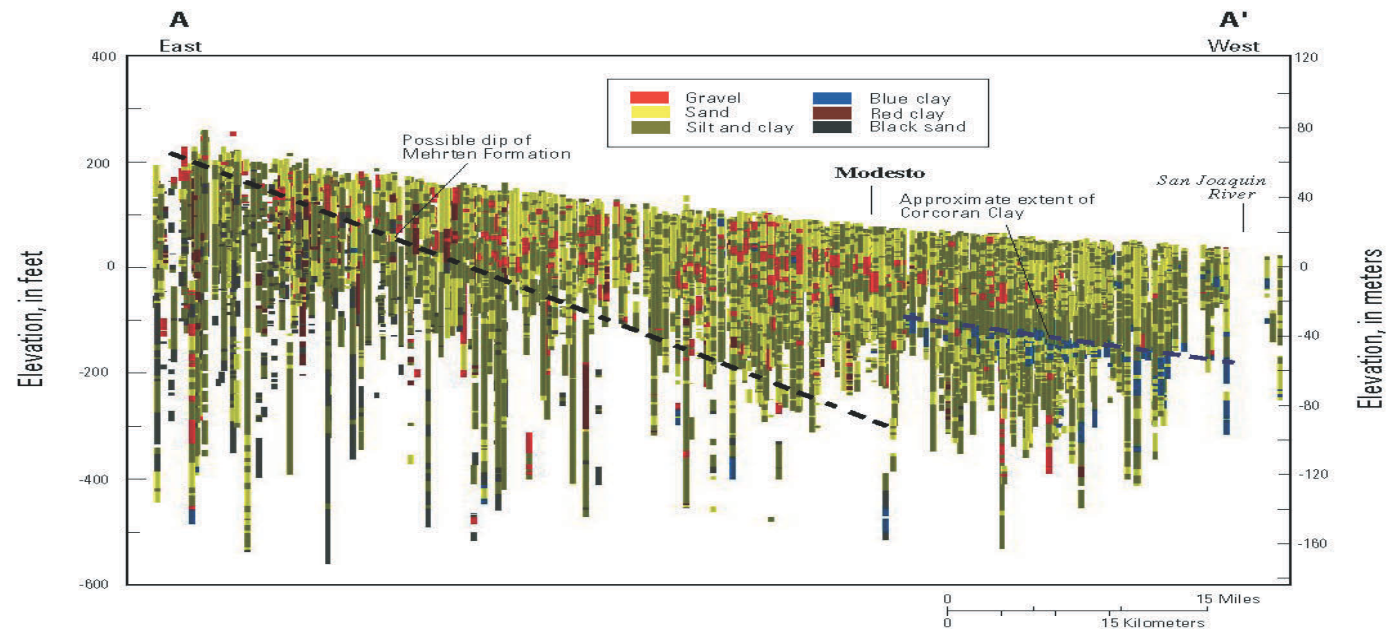


Fig 10\_3169..Burow/Uyematsu/Gibson..4/23/04, 5/3

# Thresholds

- Geographic Location
  - May be different for the Groundwater Management Planning (GMP) Areas
  - May be different for each of the four different aquifer systems
- Management Objectives
  - Compile from existing GMP's
  - Develop new objectives consistent with WAC recommendations – mining prevention level



# Thresholds

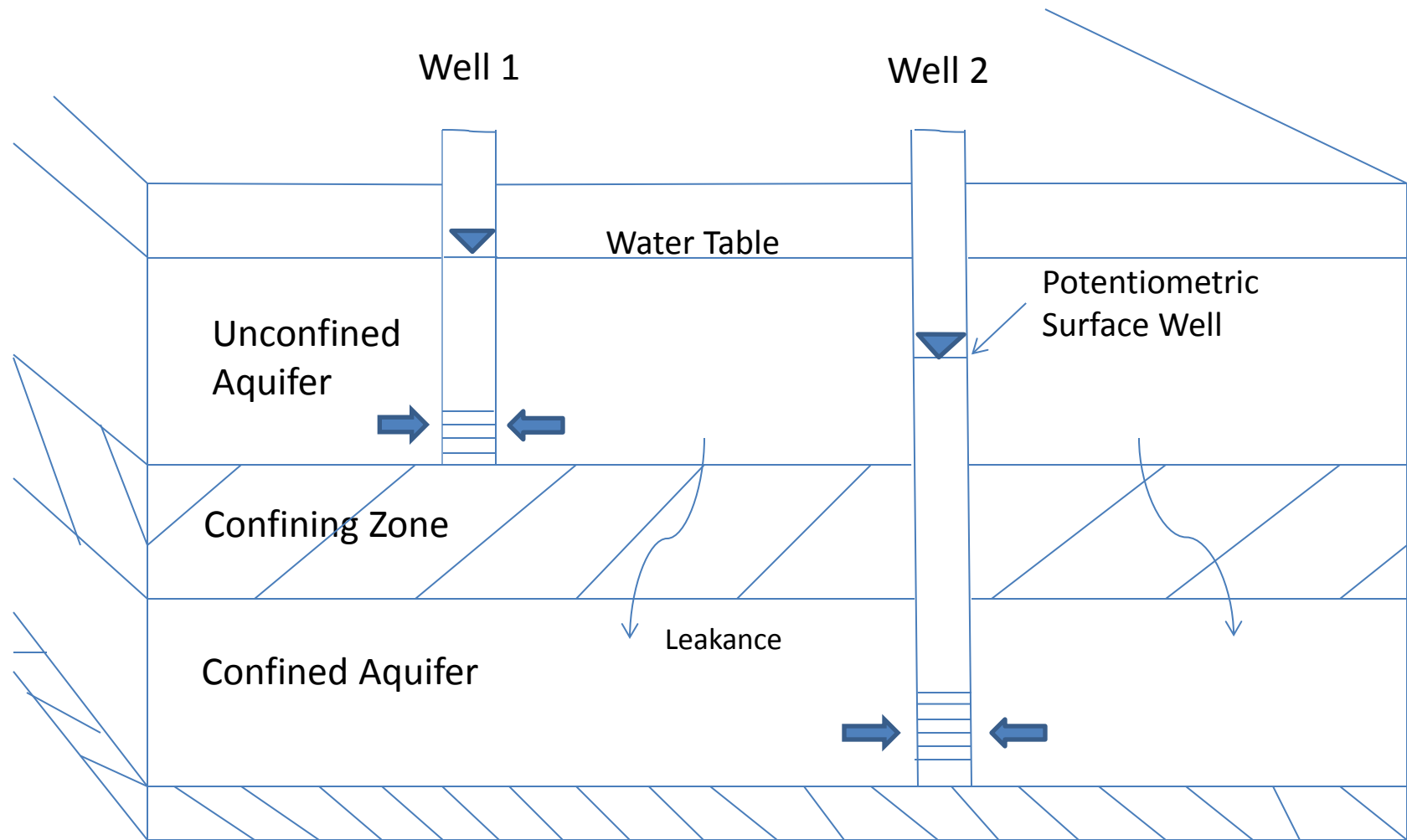
- Examples of existing Management Objectives:
  - Review of existing Groundwater Management Plans and Objectives
    - Update existing plans to bring into compliance with existing statutes and directives
    - Update Groundwater Management Plans **and adopt for areas within the County that are not covered by another agency or plan.**
  - Maintain groundwater levels
    - Recognize that groundwater levels fluctuate over wet/dry cycles
    - Review long-term trends and use statistical analysis methods as an evaluation and management tool
  - Control degradation of groundwater quality and movement of contaminants
  - Protect against potential inelastic land surface subsidence, where of concern
  - Groundwater monitoring and assessment
    - Water Quality and Quantity (water level & extraction)

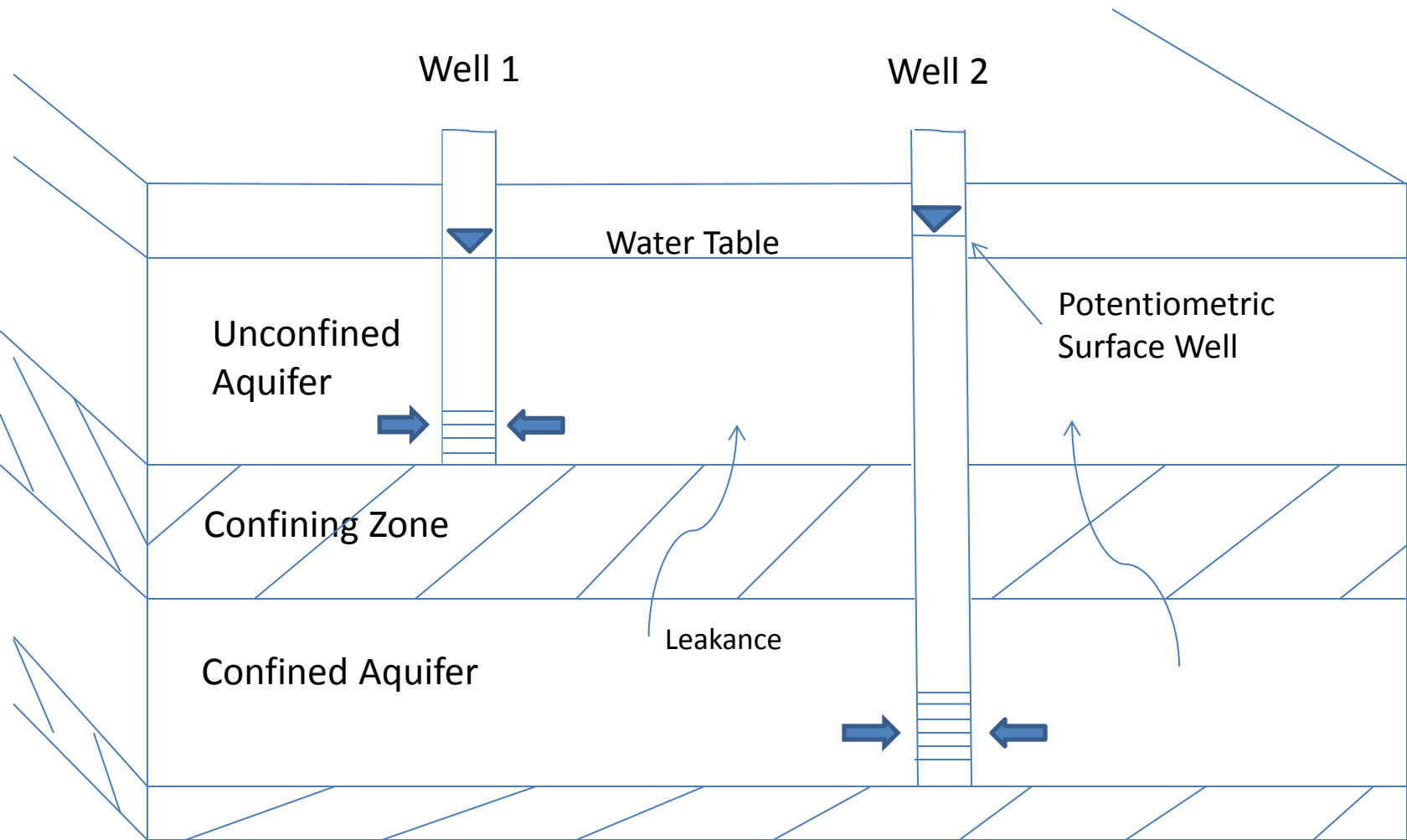
# Thresholds

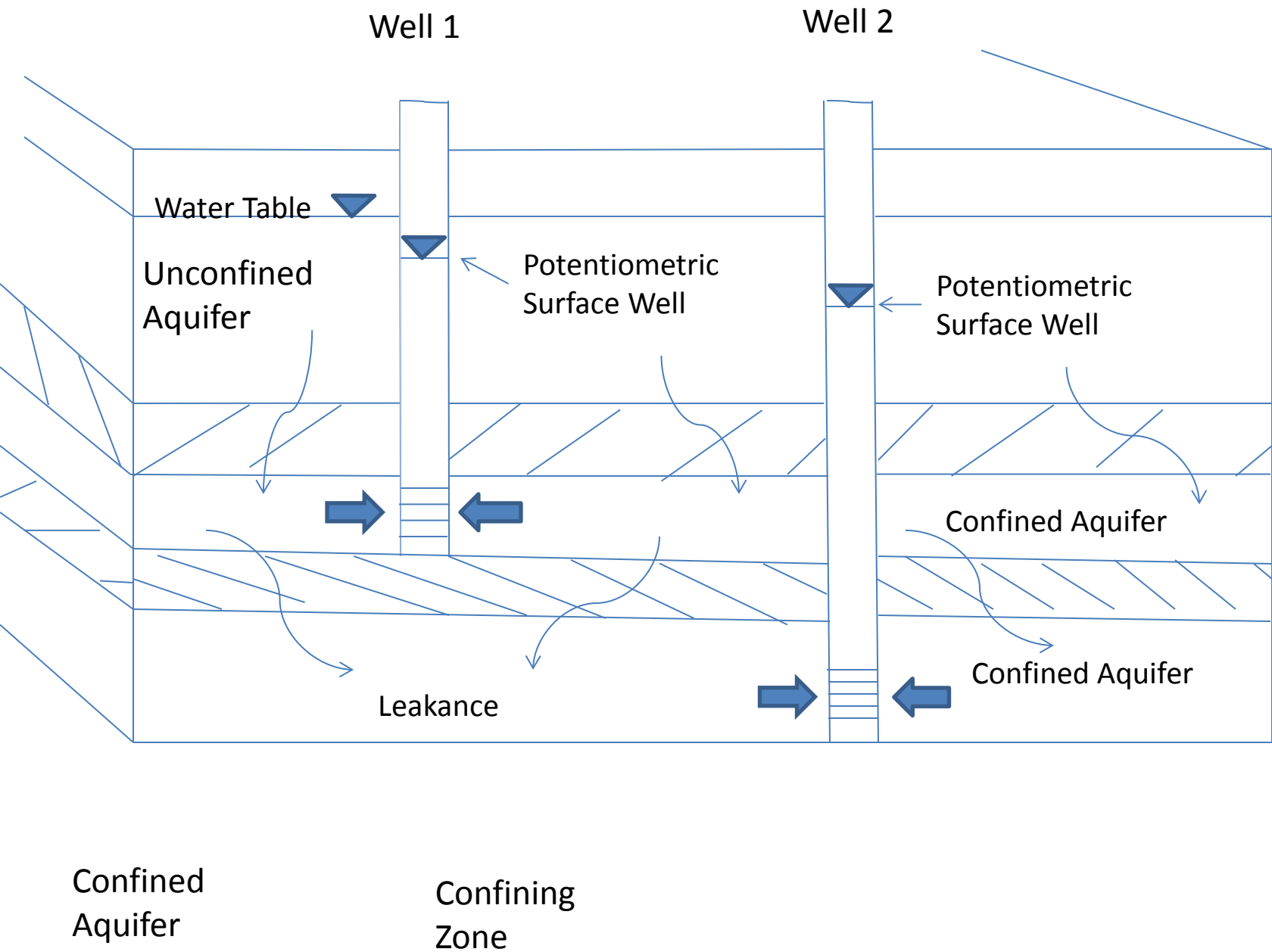
- Examples of existing Management Objectives:
  - Evaluate feasible water conservation measures
  - Evaluate ways to maximize existing supplies
    - Feasibility of conservation measures & water supply impacts
    - Facilitate infrastructure to enhance conjunctive use operations
    - Evaluate stormwater capture and potential for groundwater recharge
    - Wastewater reuse potential as secondary supply source
  - Foster coordination and cooperation across institutions
  - Education and Outreach
  - Refinement of existing groundwater mining and export ordinance as determined practical and necessary in areas of concern
  - Public Education and Outreach

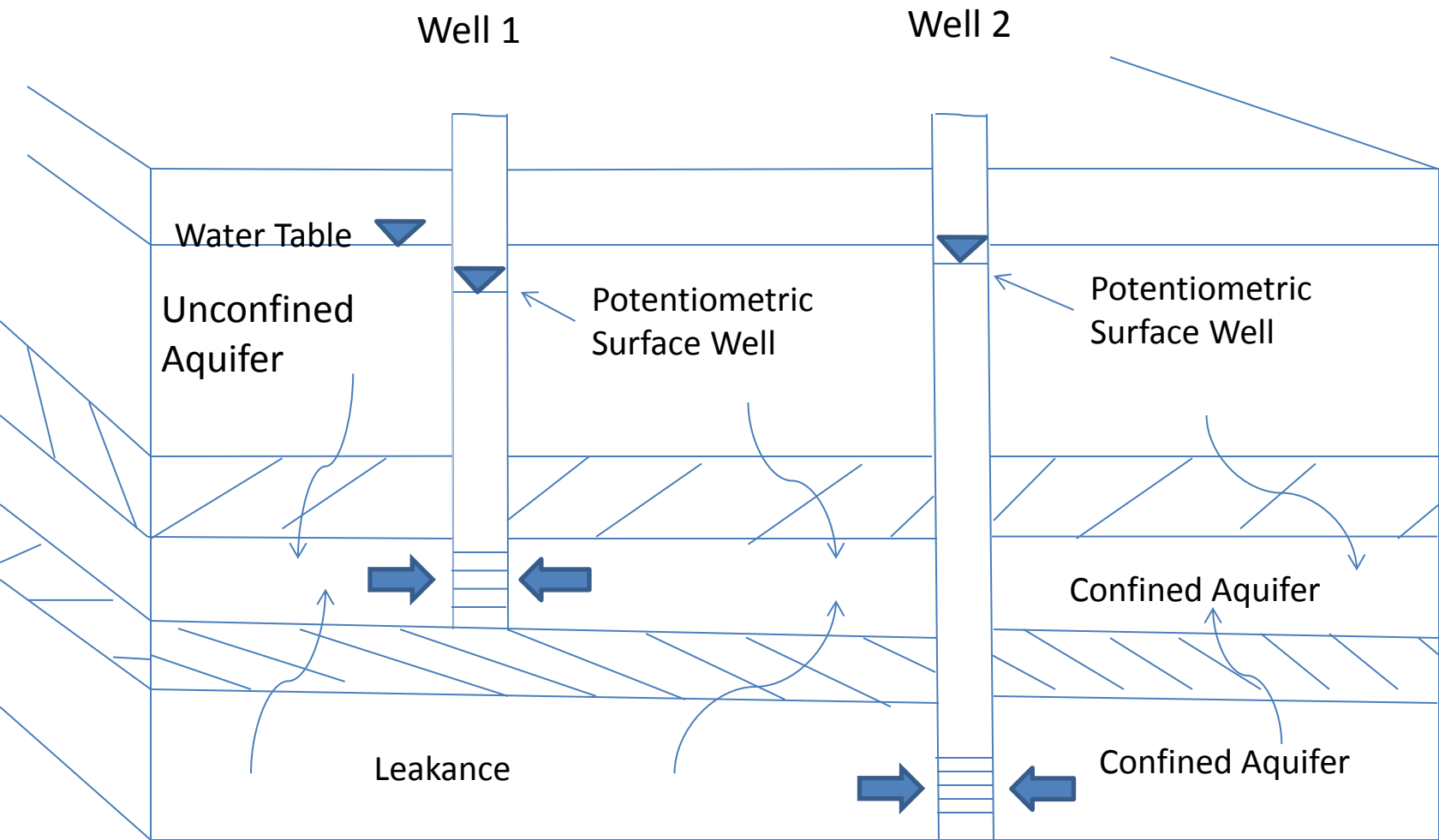
# Groundwater Monitoring

- Water Level Measurement and Reporting
  - Use existing CASGEM entities (expand coverage)
- Benefits of monitoring groundwater levels:
- Determine annual and long-term changes of groundwater in storage
  - Determine recharge rates
  - Determine direction and gradient of groundwater flow and circulation
  - Understand the response of the aquifer system(s) to stresses such as groundwater withdrawals
  - Gain insight for improved well construction (screening interval) and where to set pump intake bowls for efficient extraction









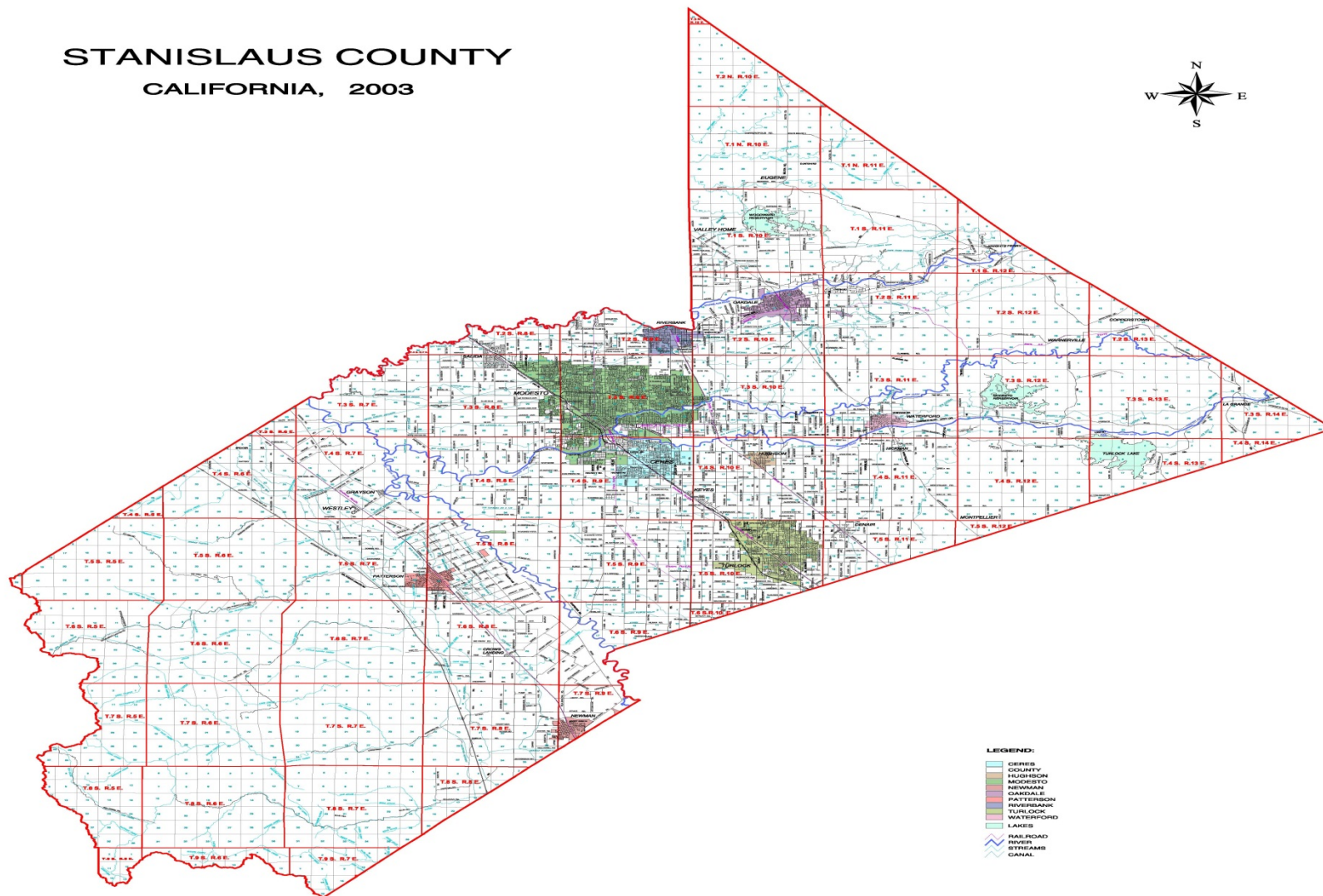
# Groundwater Monitoring

- Withdrawal Data (Extraction)
  - Benefits of monitoring and collecting groundwater pumping information:
    - Determine annual and long-term changes of groundwater in storage
    - Understand the hydrodynamic response of the aquifer system(s) to inputs and outputs
    - Improve groundwater modeling forecasting ability and reliability
    - Aggregate monthly data to no smaller than 40 acre blocks (uniformity with groundwater modeling)
      - Exemption for smaller users such as domestic and small agricultural similar to Groundwater Ordinance



# STANISLAUS COUNTY

## CALIFORNIA, 2003



Range 10 East

Township 3 South

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Well No. 3S10E36ab

$\frac{1}{4}$  Section

b	a
c	d

b	a
c	d

Section 36

# NEXT STEPS

- April 30<sup>th</sup> @ 9:00 AM Alliance Center
  - Complete Thresholds & Monitoring; including recommendations for consideration of submittal to BOS
  - Review Governance, Funding & Enforcement elements
  - Review Groundwater Ordinance provisions and process for implementation

# Eastside Water District Established 1983

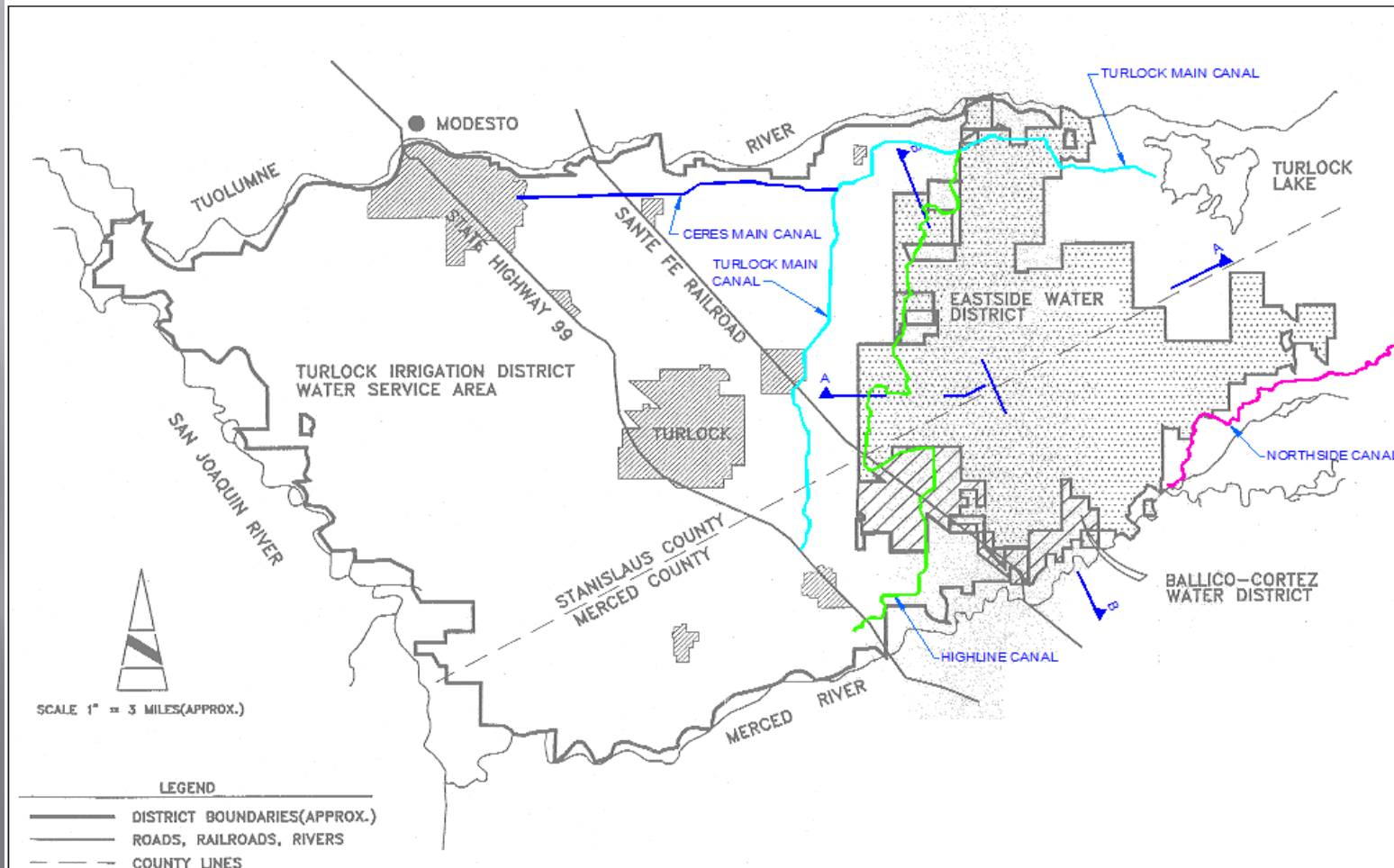
A Presentation to the Stanislaus County Water  
Advisory Committee on Thursday, April 10, 2014  
at 6:00 pm

By: Kevin Kauffman, PE

# Briefing Objectives

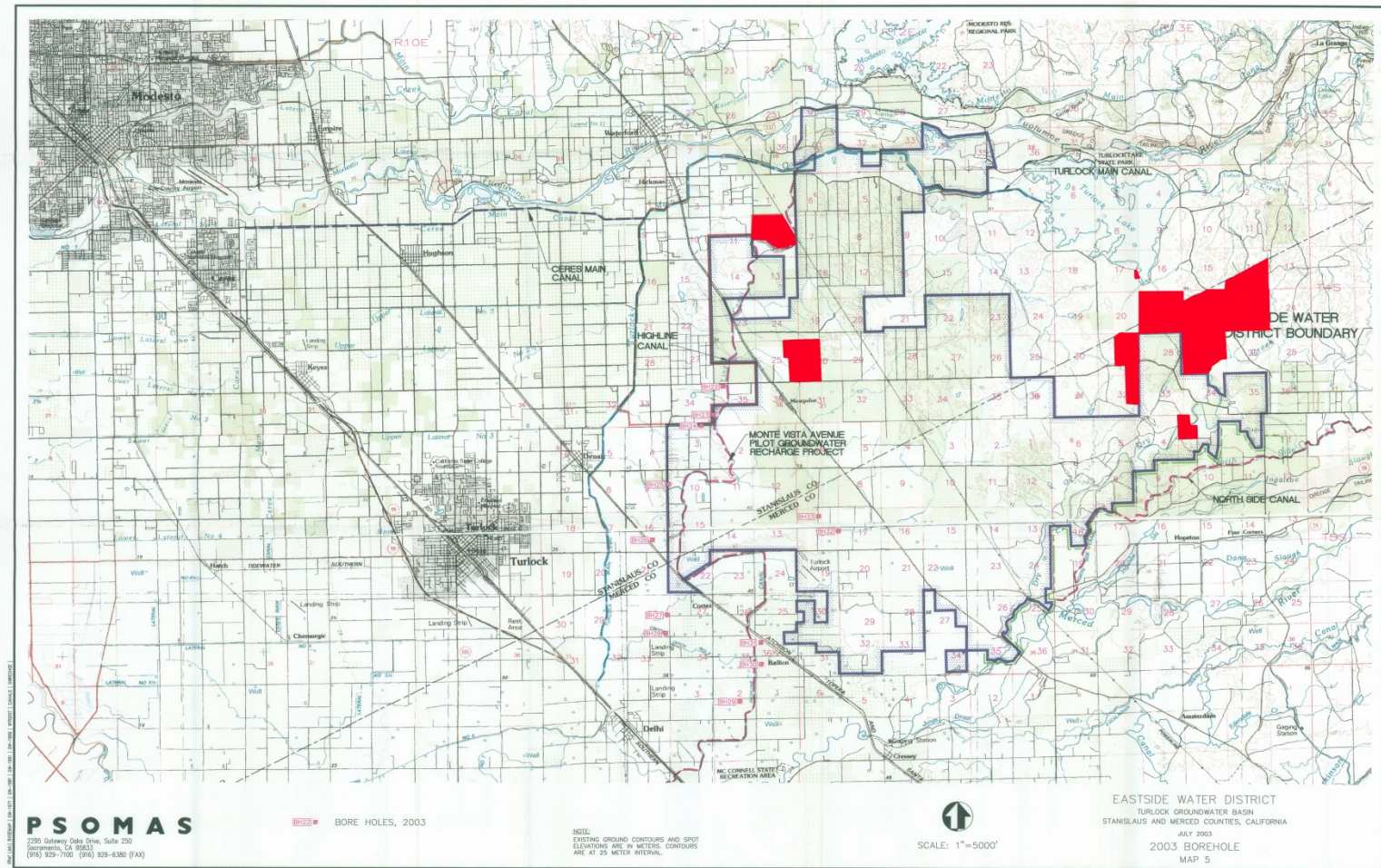
1. Generally explain EWD's efforts to address groundwater overdraft over its 30-years
2. Describe progress that has made to date
3. Summarize how EWD intends to continue to address groundwater overdraft
4. Respond to any questions of the WAC on behalf of EWD

# 2003 EWD Boundary Map





# Areas Recently Annexed to EWD



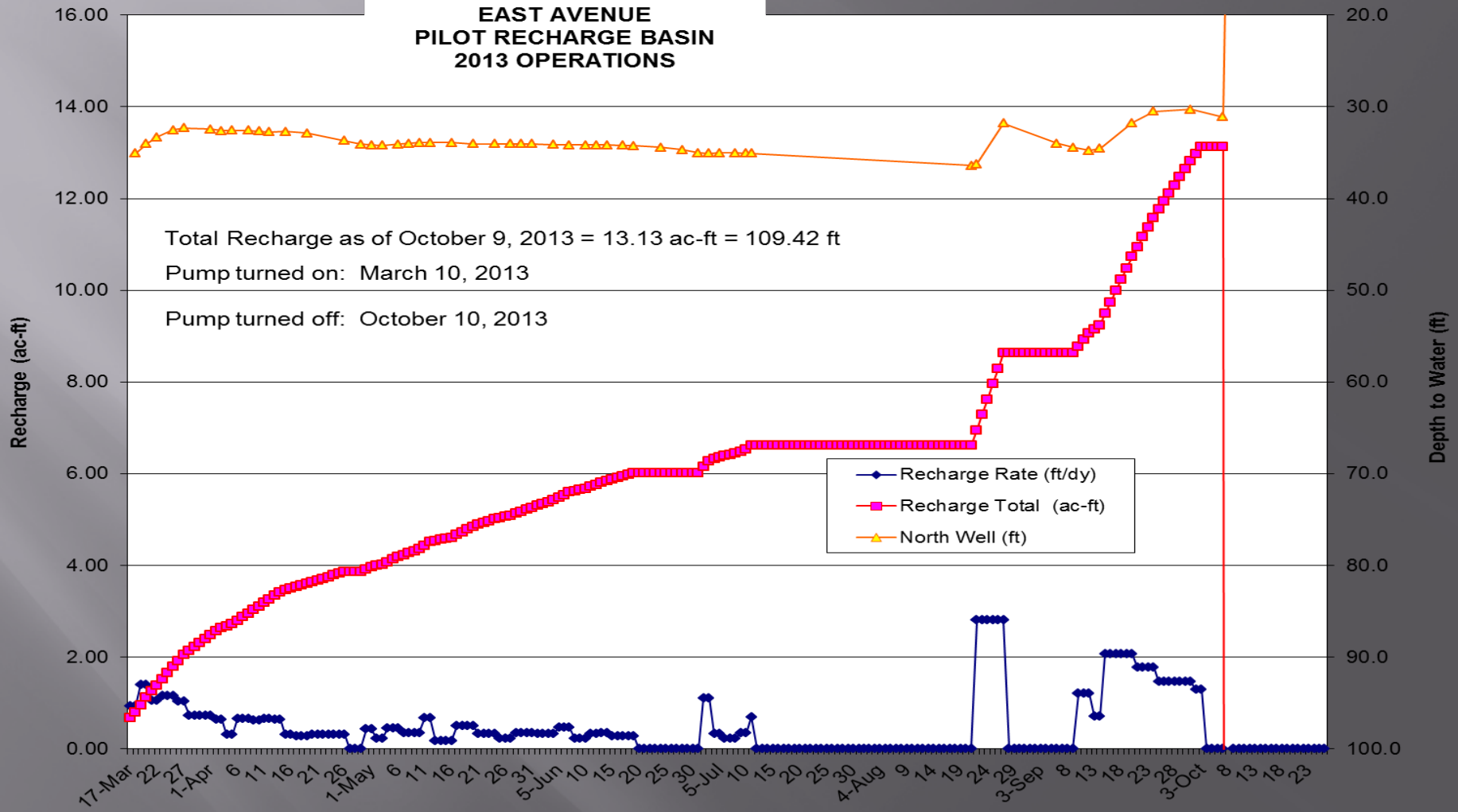
# EWD's Past Investigations & Efforts

- ▣ Water Conservation – water demands reduced by half but GW recharge benefit from surface water irrigation also reduced
- ▣ GW Recharge methods studied = natural, direct, & in-lieu
- ▣ Pilot Testing of Direct Method (2-sites)
- ▣ Sphere of Influence water purchases for EWD customer irrigation (in-lieu)
- ▣ Surface Water for In-Lieu or Direct GW recharge scarce resulting in minimal progress



# 2013 Data – Two Methods Used

EASTSIDE WATER DISTRICT  
TURLOCK IRRIGATION DISTRICT  
EAST AVENUE  
PILOT RECHARGE BASIN  
2013 OPERATIONS



# East Avenue Pilot Project – Redesigned With Ridges – Taken on 8/29/13

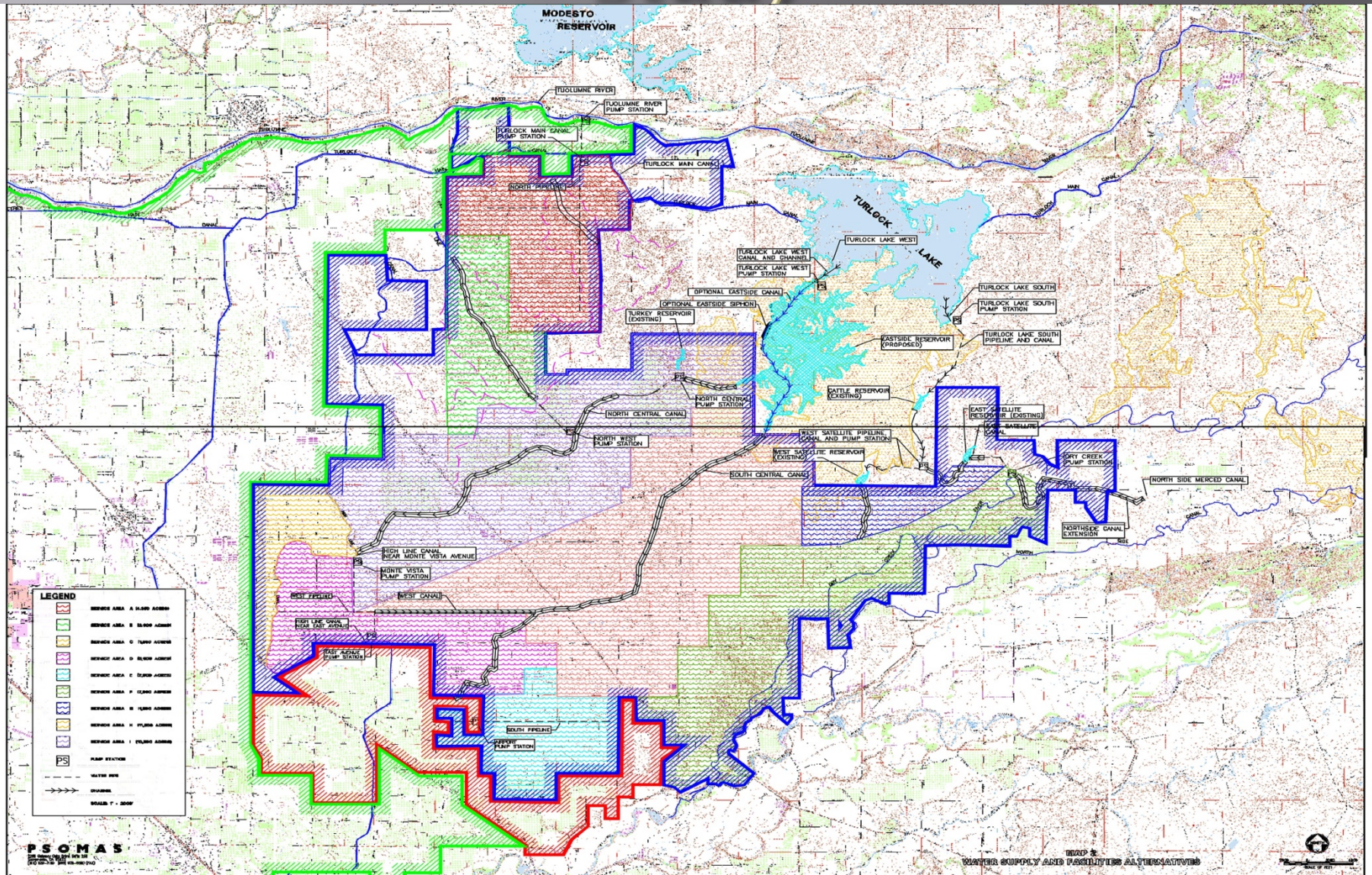


# Pilot Study's Potential Next Steps

- ❑ Winter of 2013-14 not productive due to no local storm water runoff flow
- ❑ Planned diversion of 2014-2015 storm water runoff flow to existing pilot project
- ❑ Deep Basins (similar to pilot) adjacent to TID canal inlets; or
- ❑ Multiple 'dry-wells' as alternative to Basins
- ❑ Secure surface water for EWD customers (in-lieu use)
- ❑ Local storm water runoff (diffused surface water) is not subject to appropriation, and is not part of any riparian right; and can be used for GW recharge



# 2003 GW Recharge Planning Study





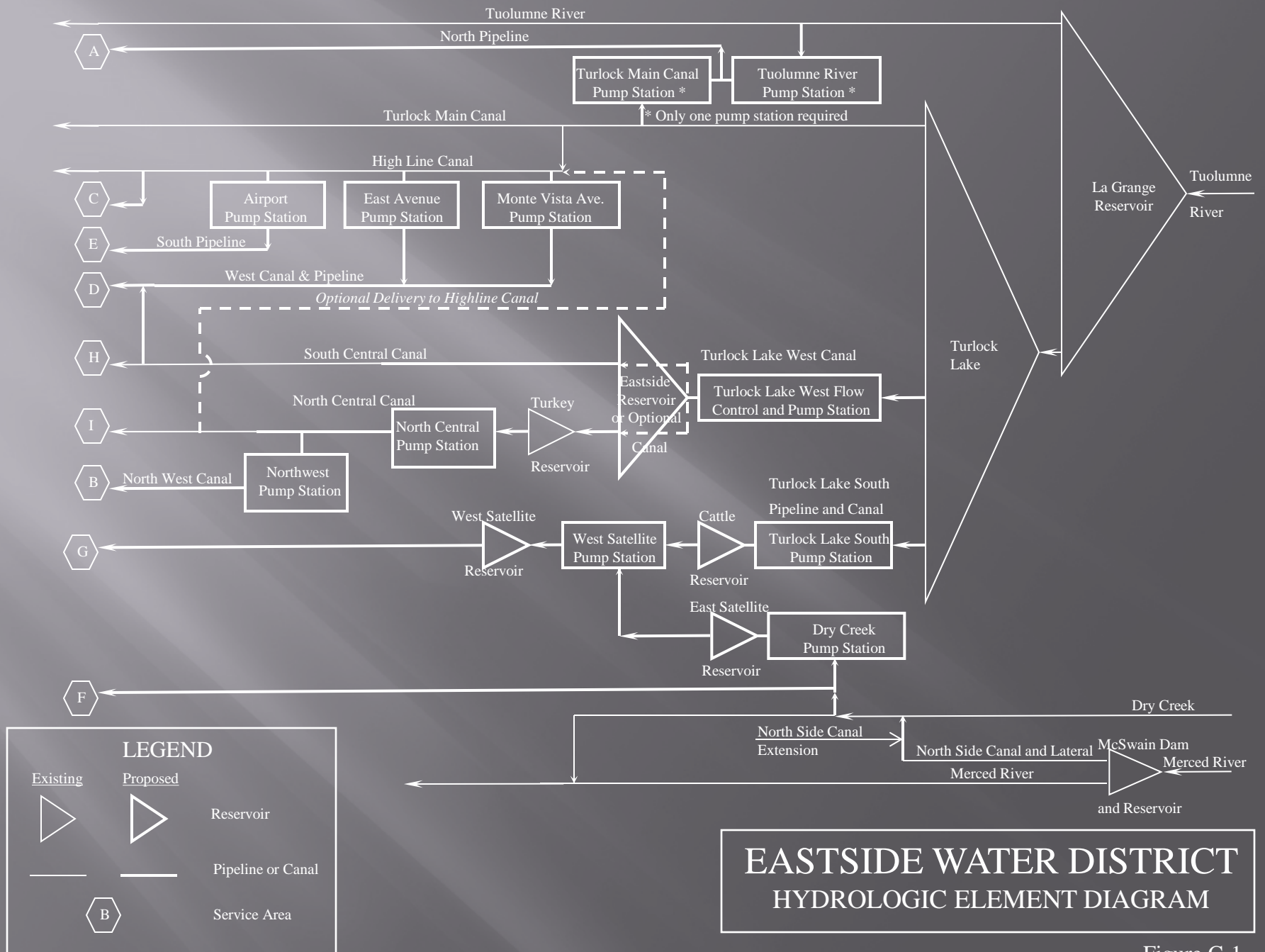
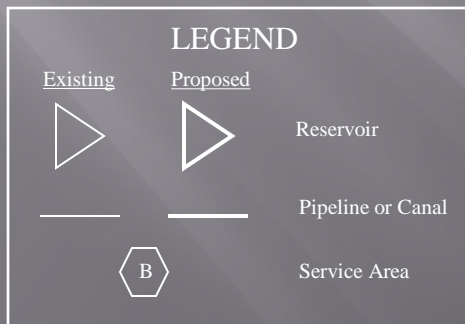
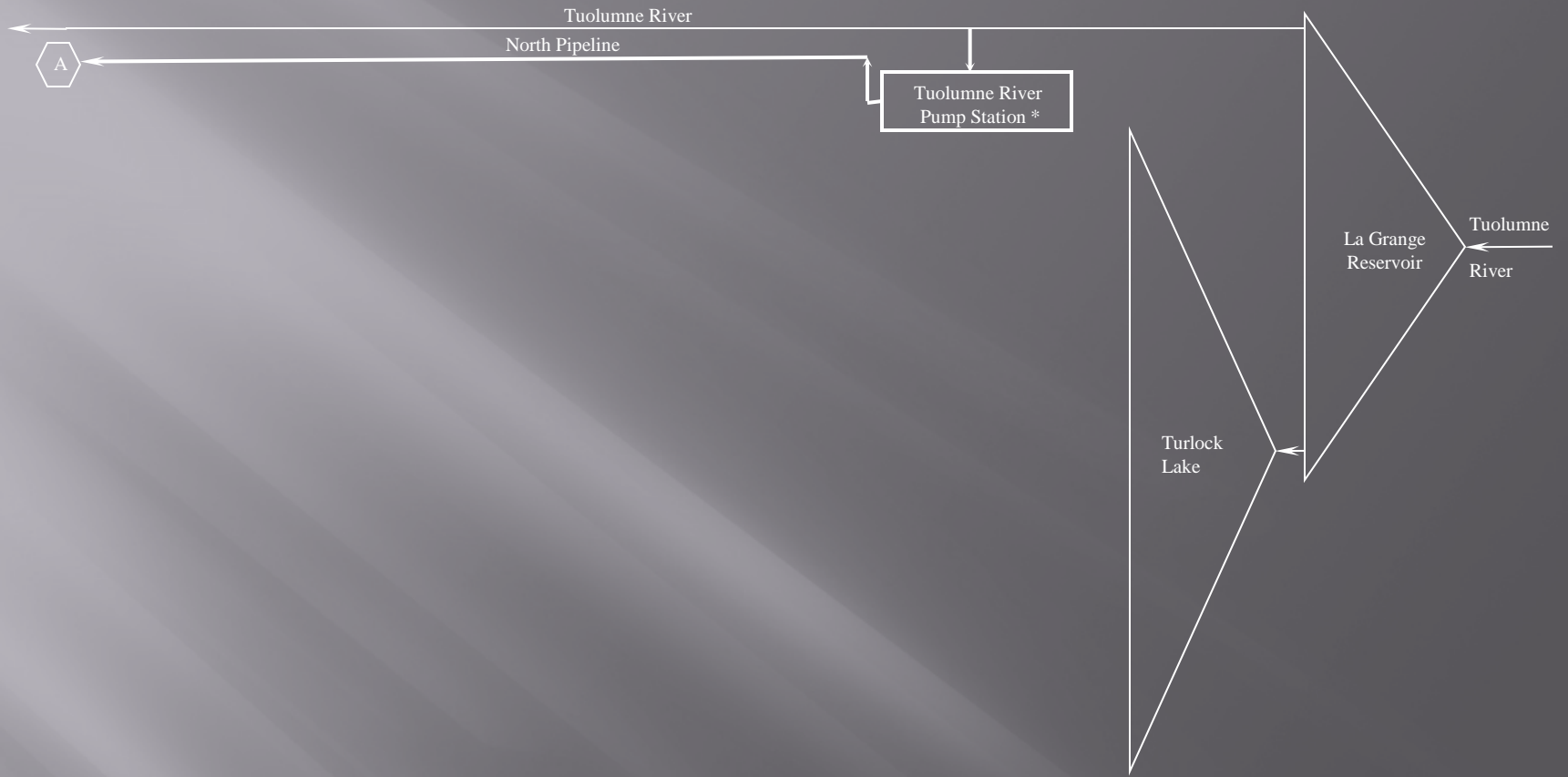
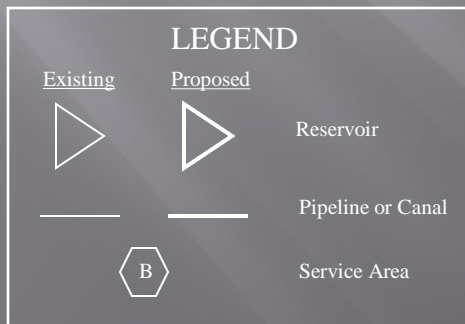
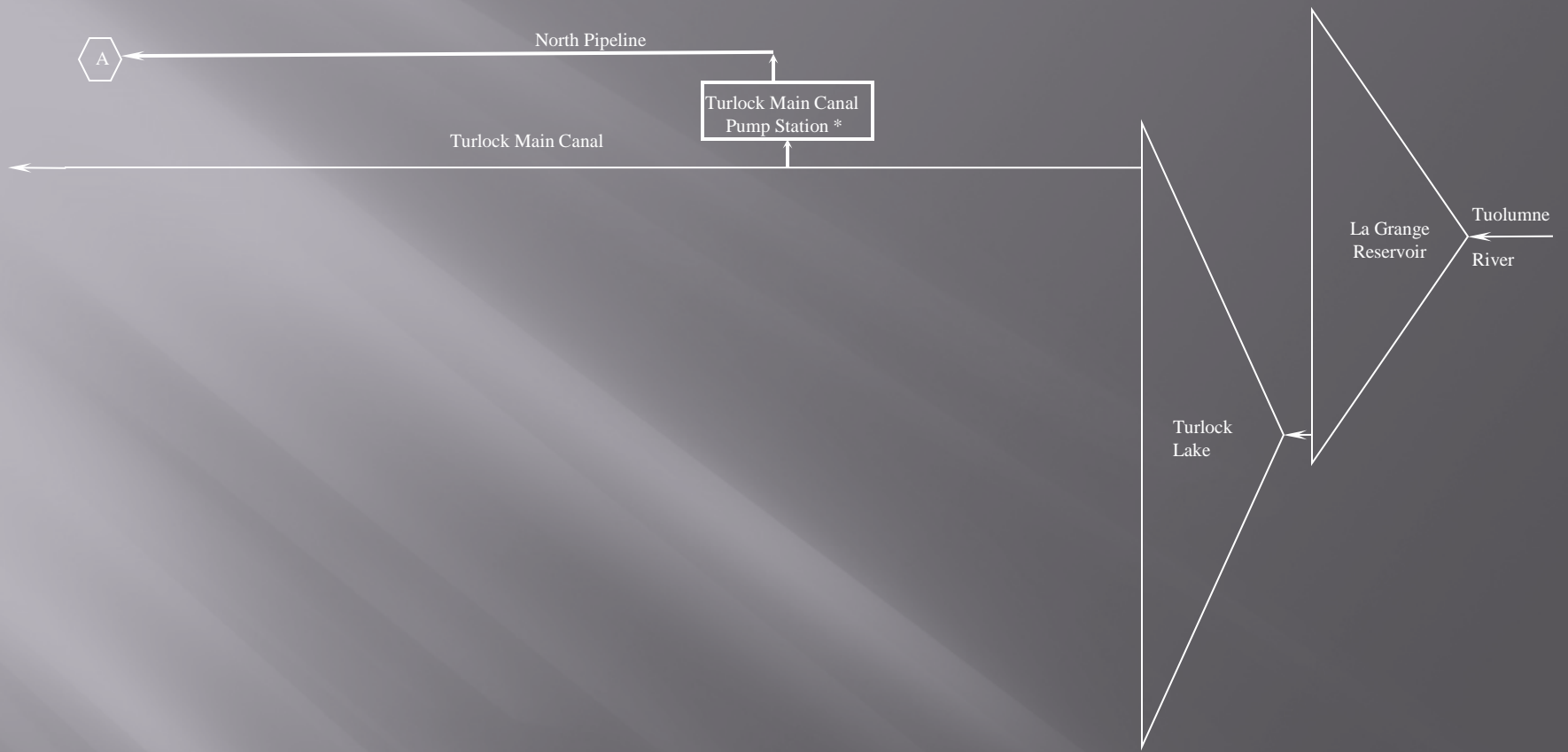


Figure C-1



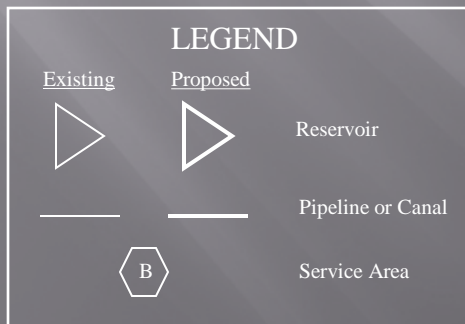
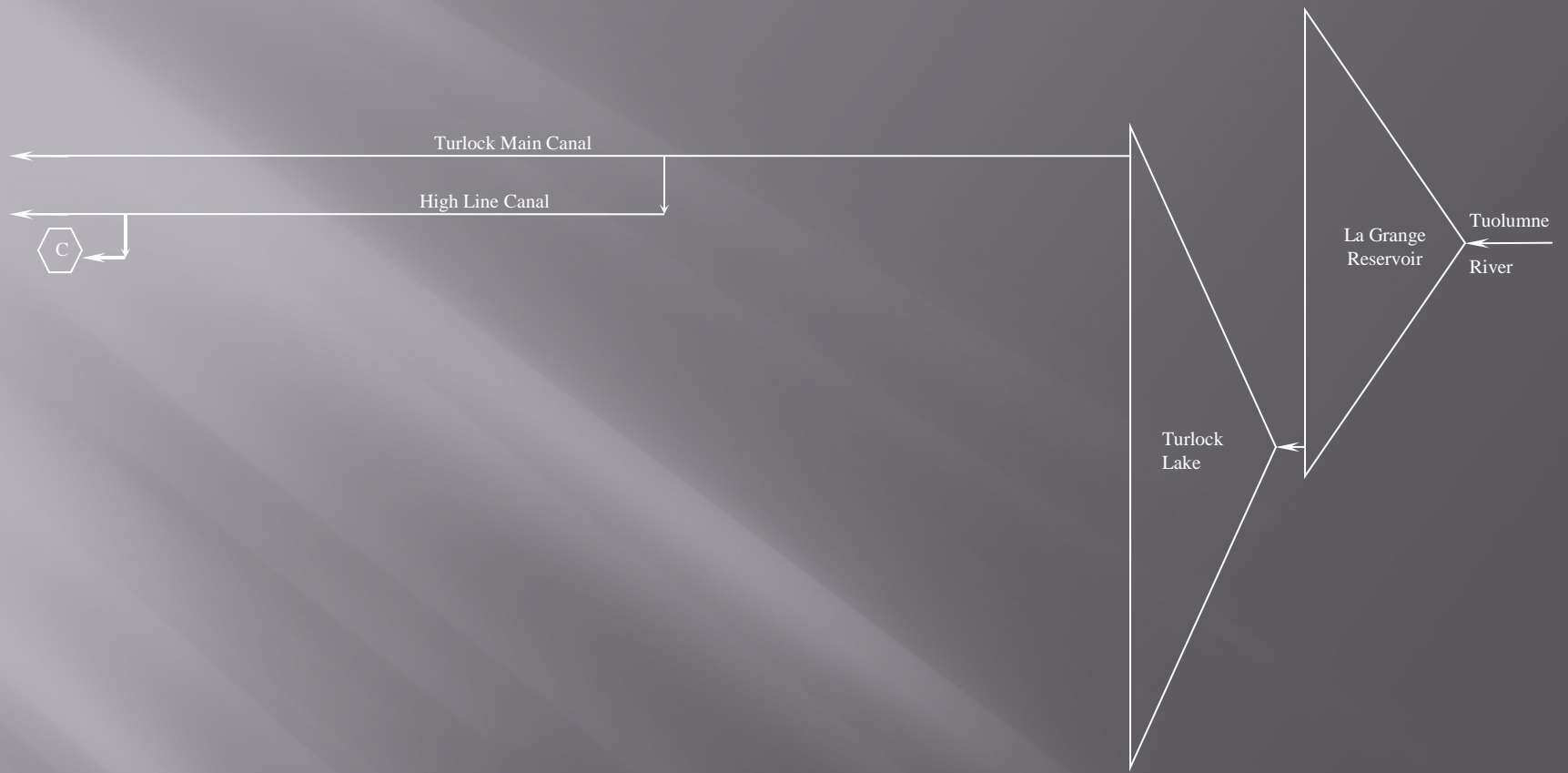
**PA-1 serves area A**  
**HYDROLOGIC ELEMENT DIAGRAM**

Figure C-2



**PA-2 serves area A**  
**HYDROLOGIC ELEMENT DIAGRAM**

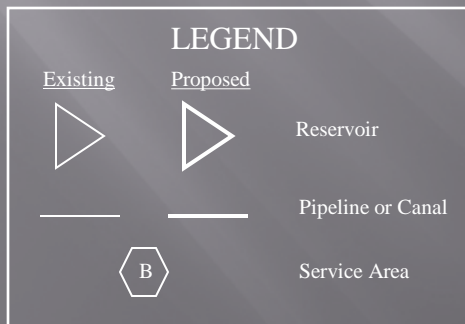
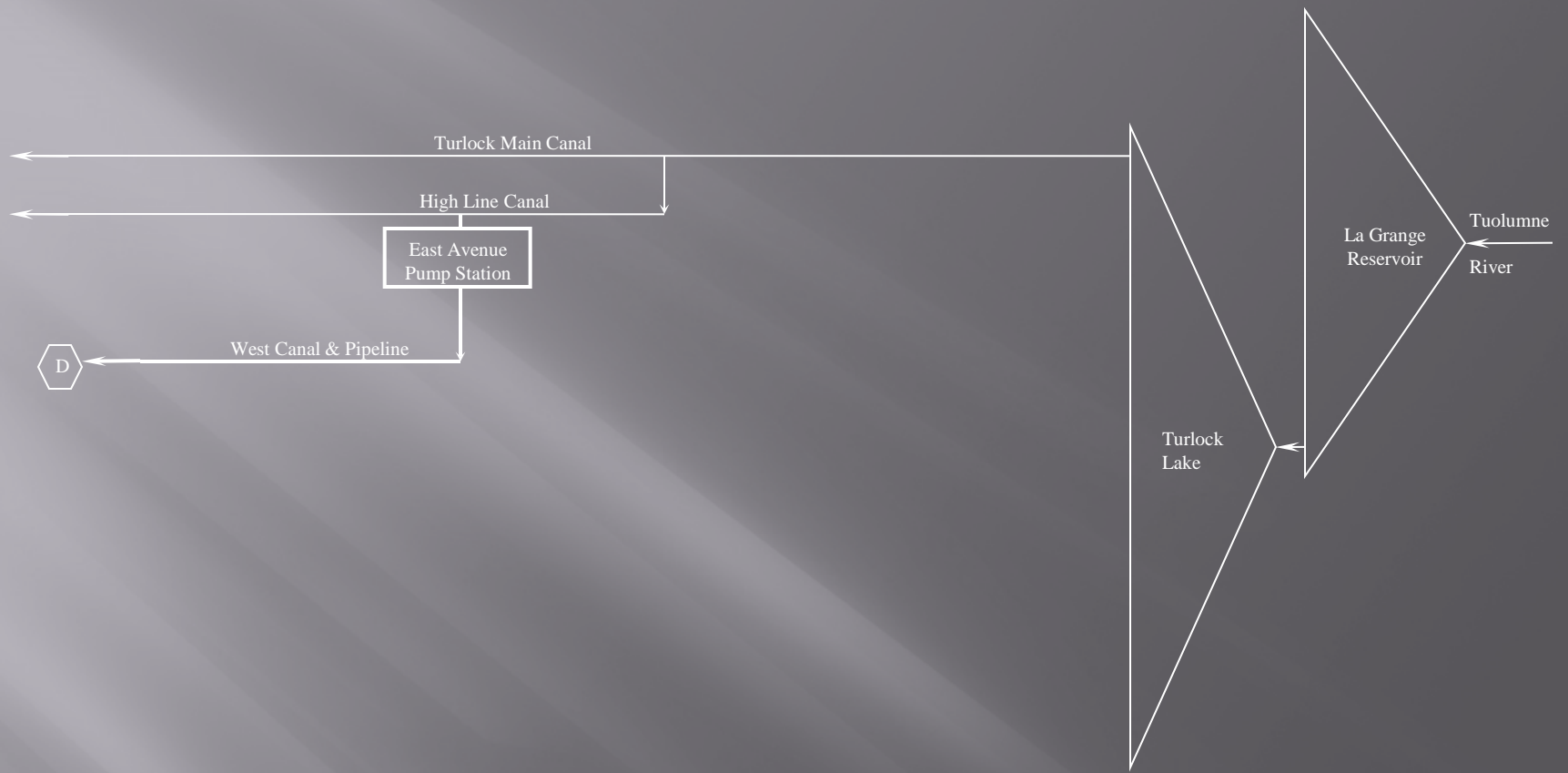
Figure C-3



PA-3 serves area C  
HYDROLOGIC ELEMENT DIAGRAM

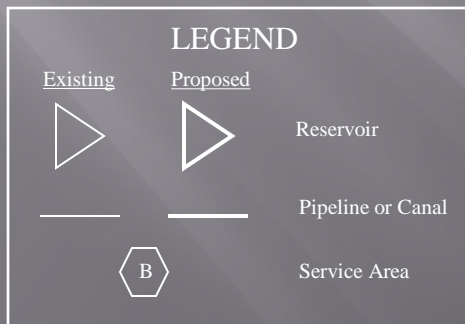
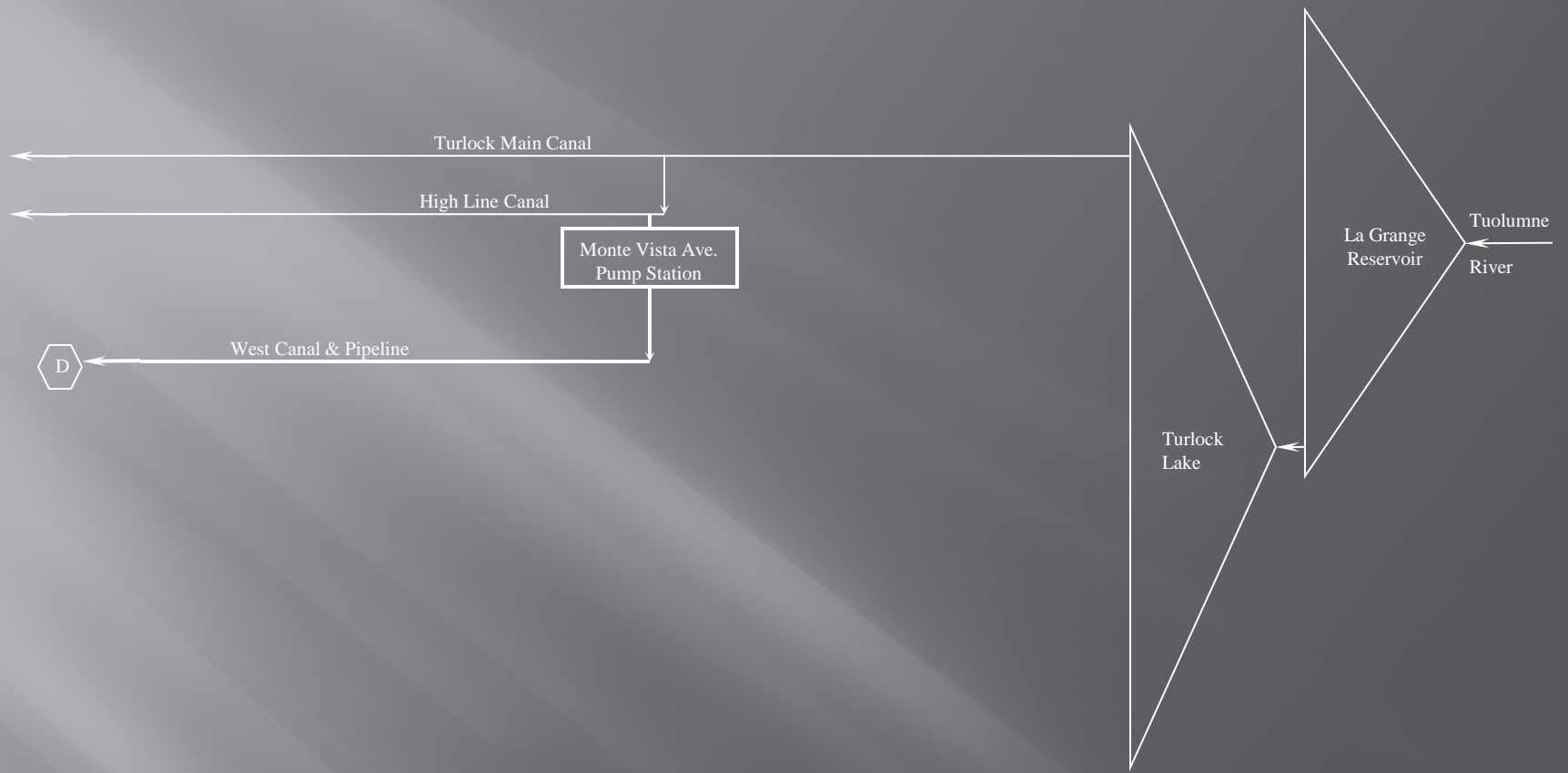
Figure C-4





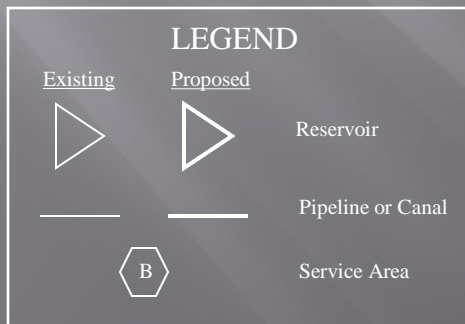
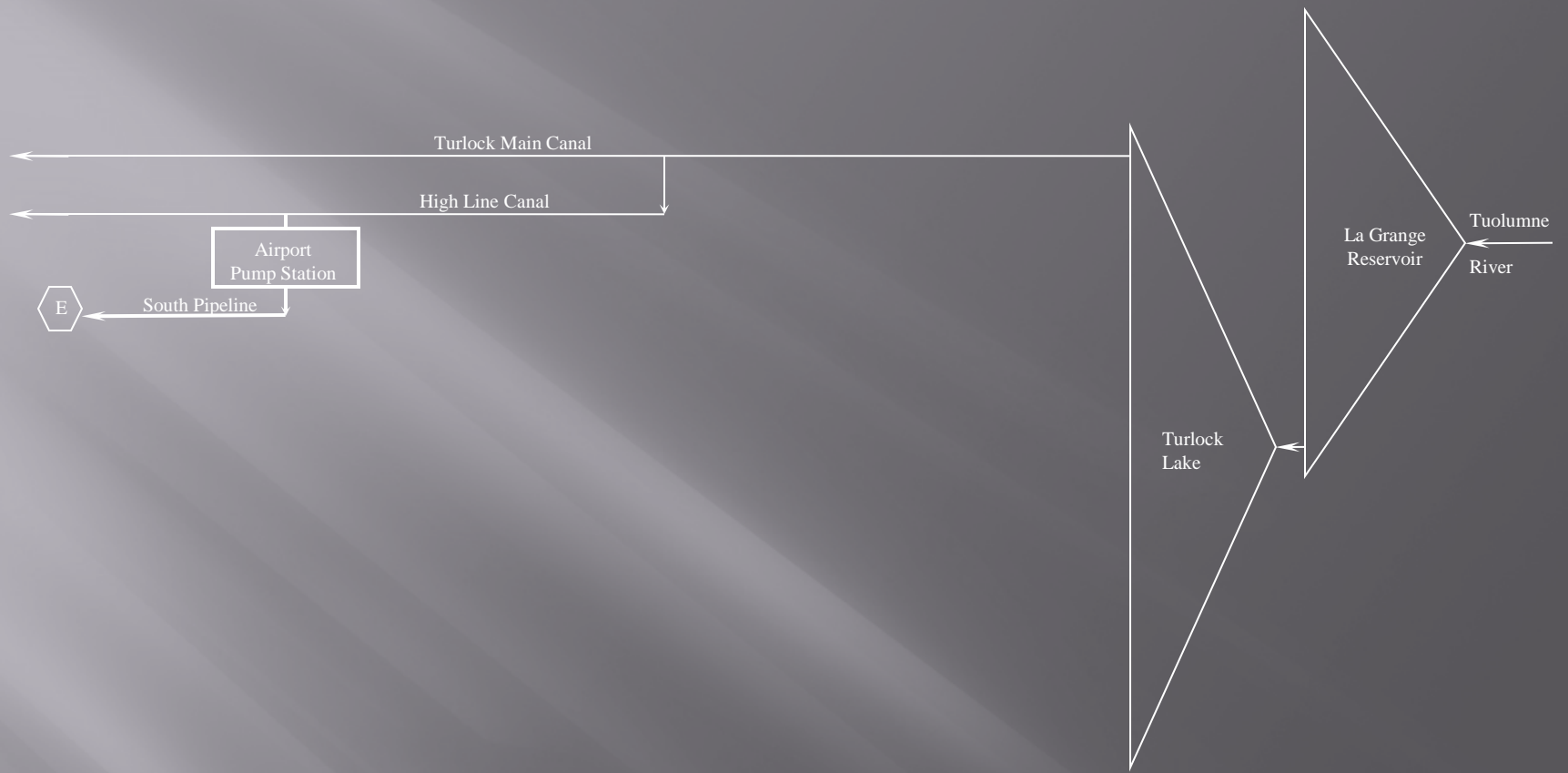
PA-4 serves area D  
HYDROLOGIC ELEMENT DIAGRAM

Figure C-5



**PA-5 serves area D**  
**HYDROLOGIC ELEMENT DIAGRAM**

Figure C-6



**PA-6 serves area E**  
**HYDROLOGIC ELEMENT DIAGRAM**

Figure C-7



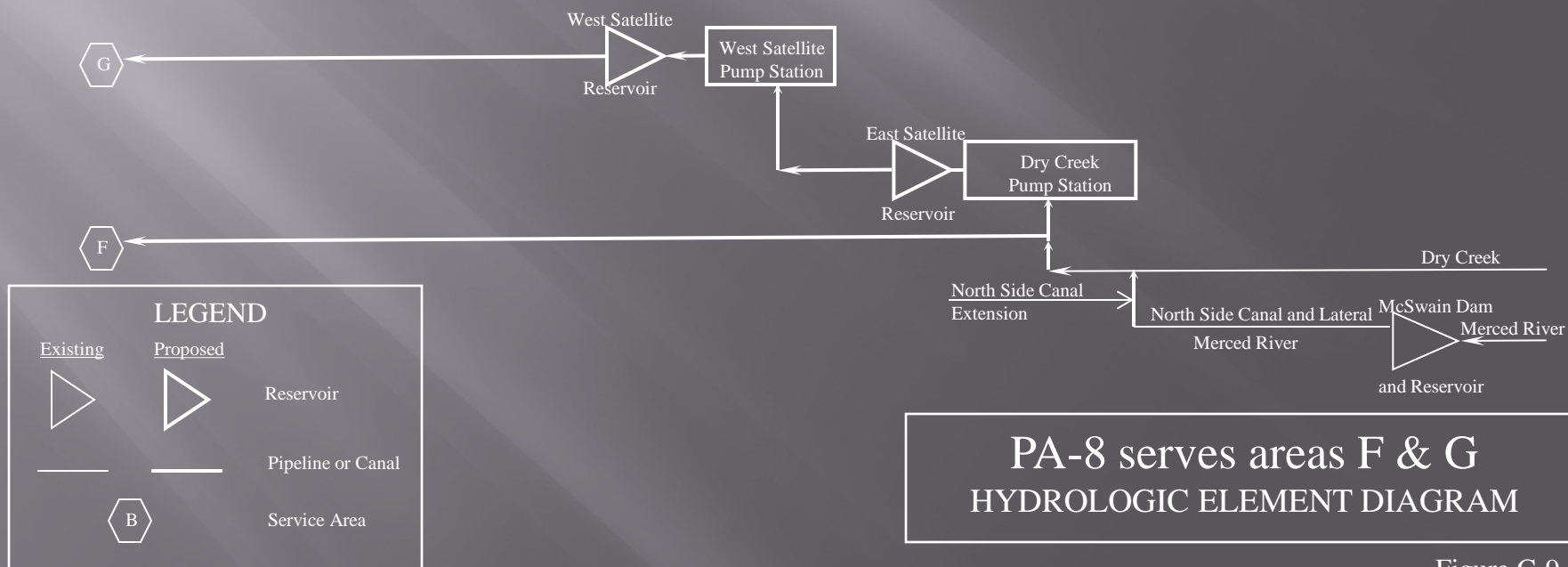
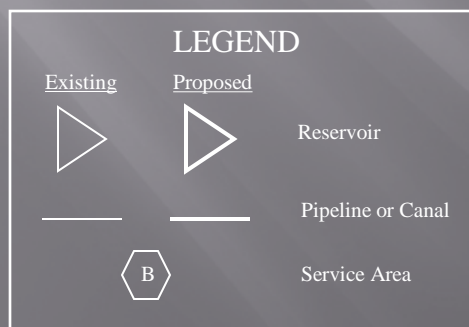
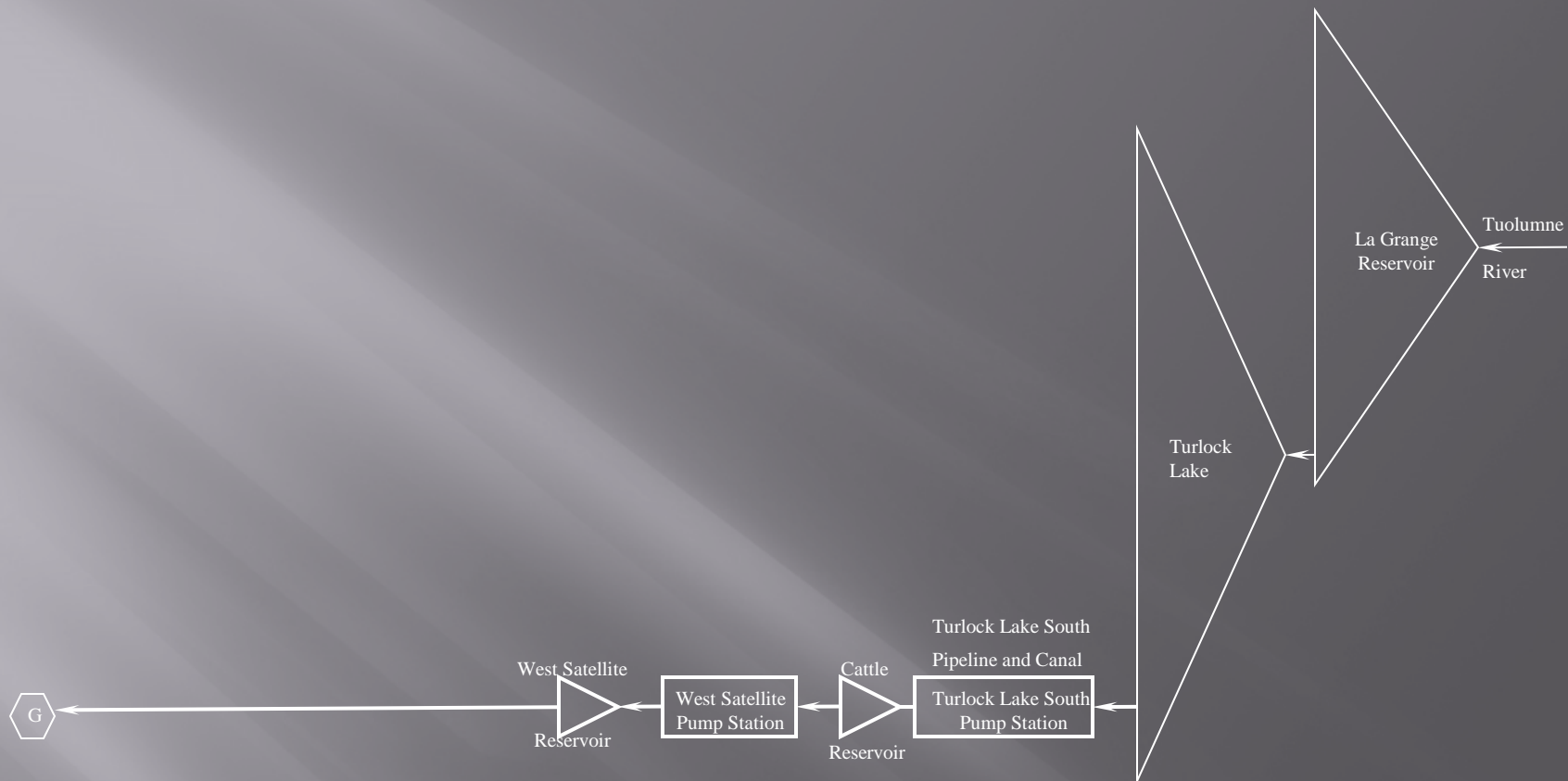
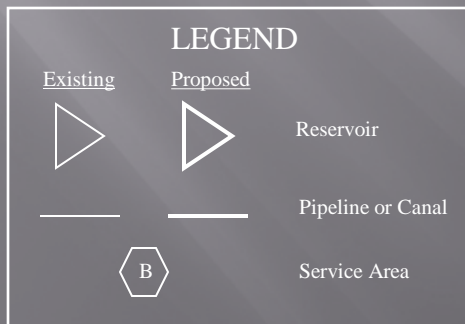
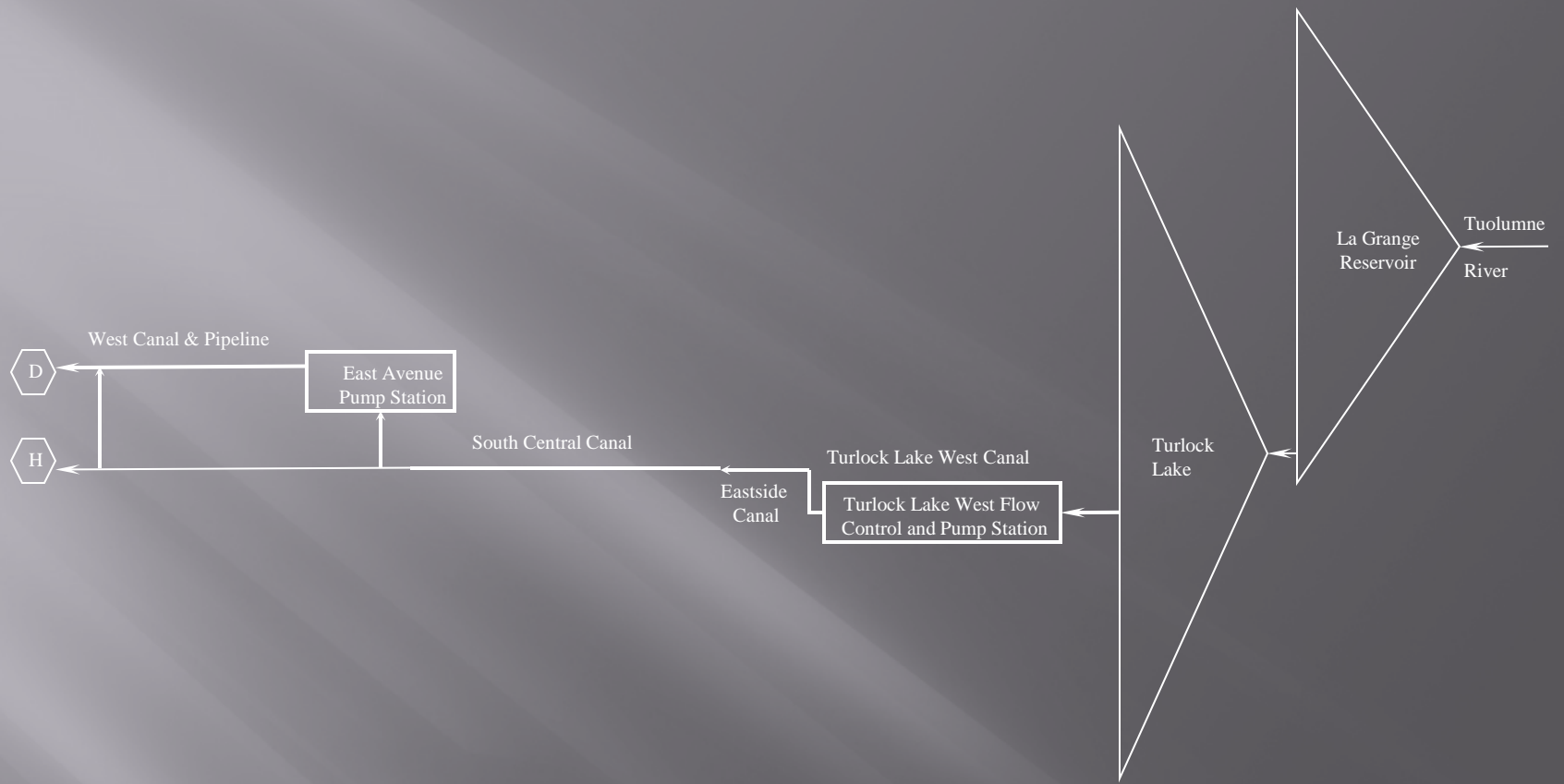


Figure C-9



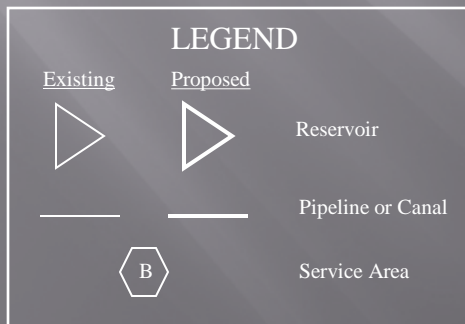
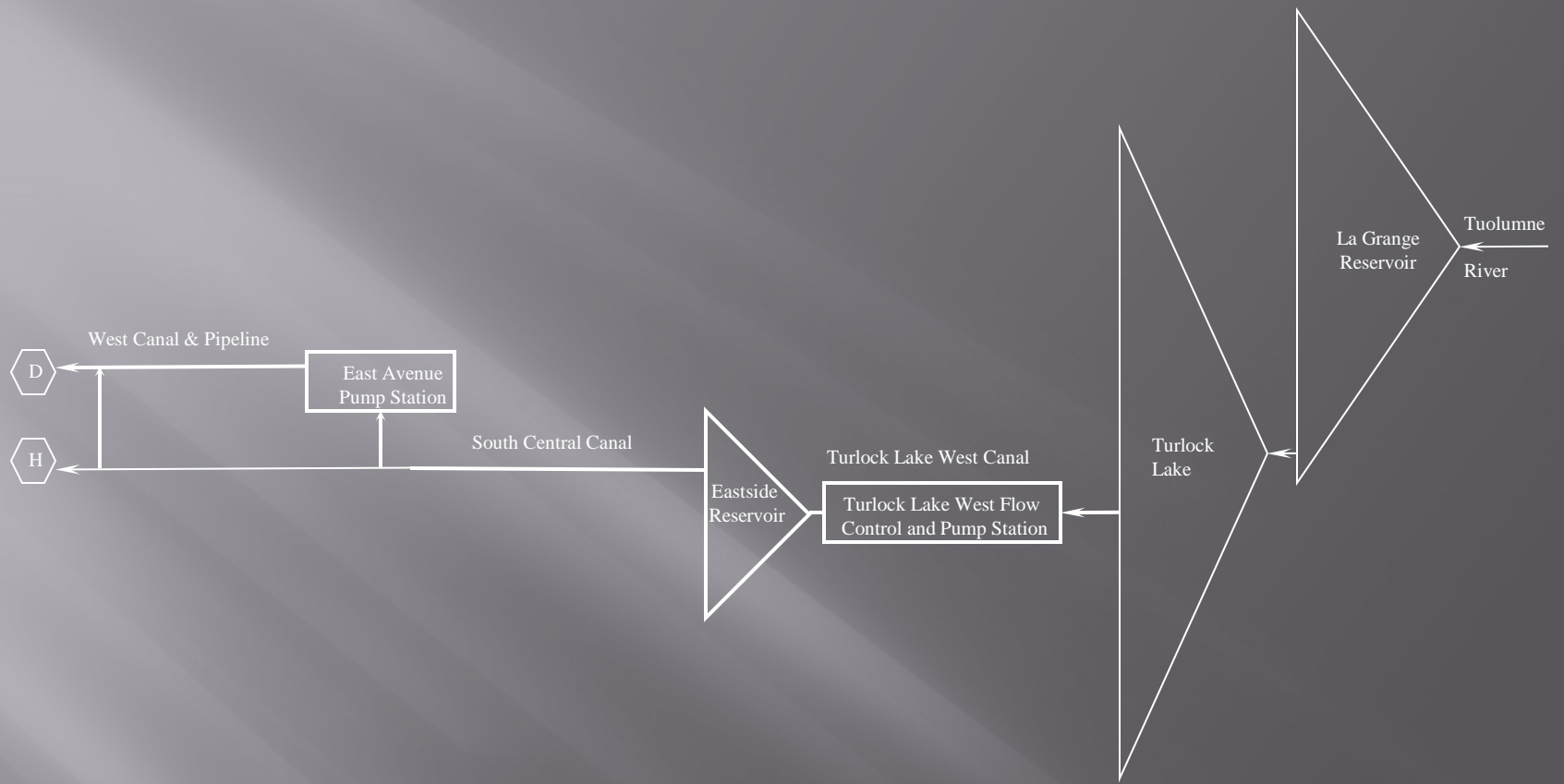
**PA-9 serves area G**  
**HYDROLOGIC ELEMENT DIAGRAM**

Figure C-10



**PA-10 serves areas H & D**  
**HYDROLOGIC ELEMENT DIAGRAM**

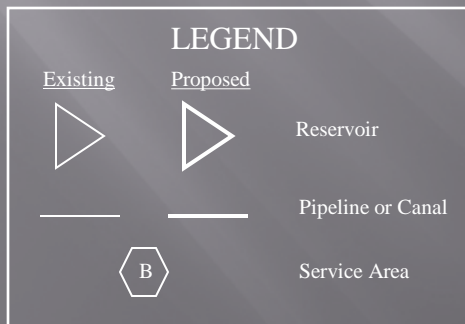
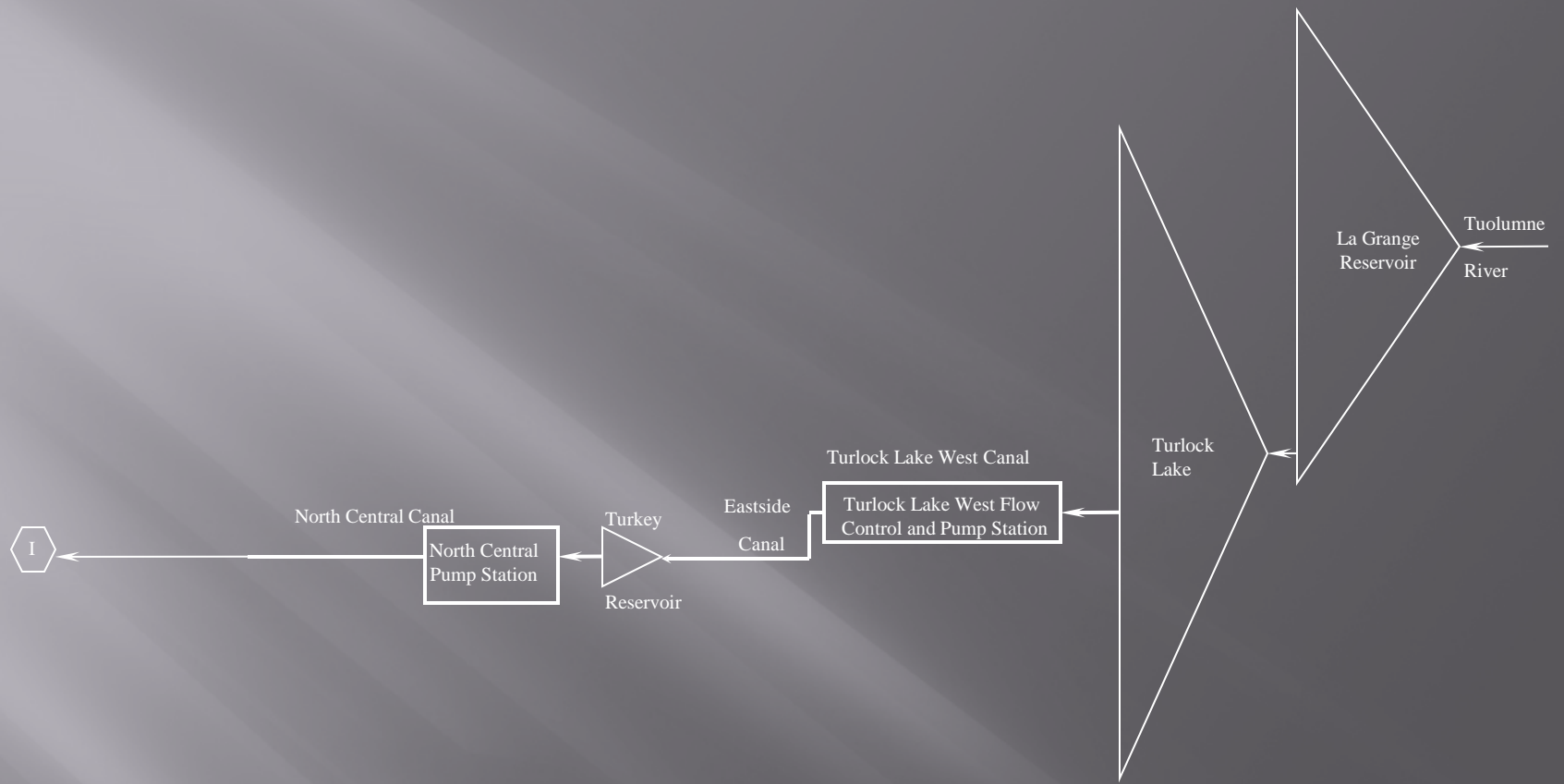
Figure C-11



**PA-11 serves area H & D**  
**HYDROLOGIC ELEMENT DIAGRAM**

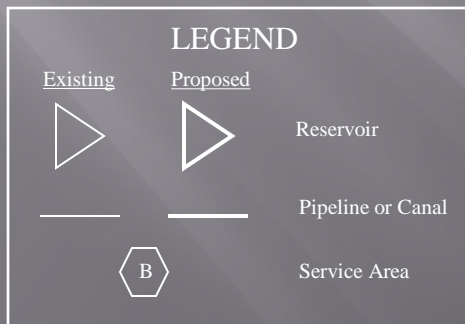
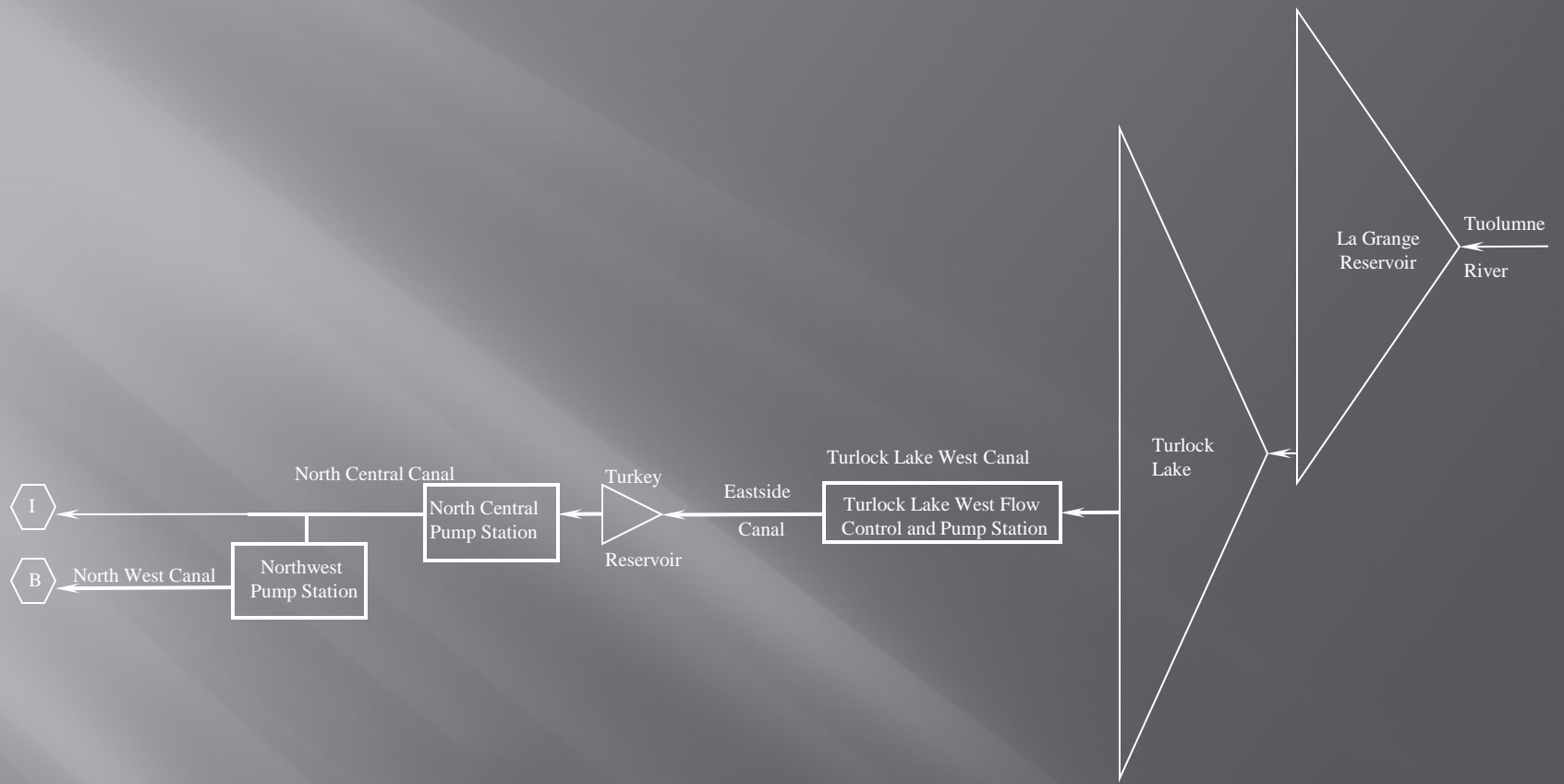
Figure C-12





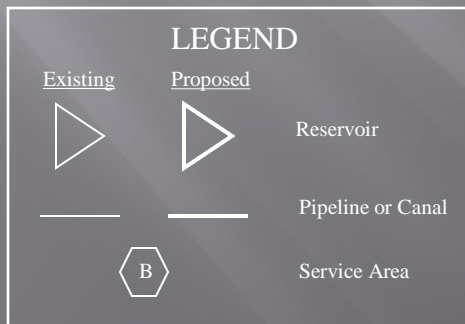
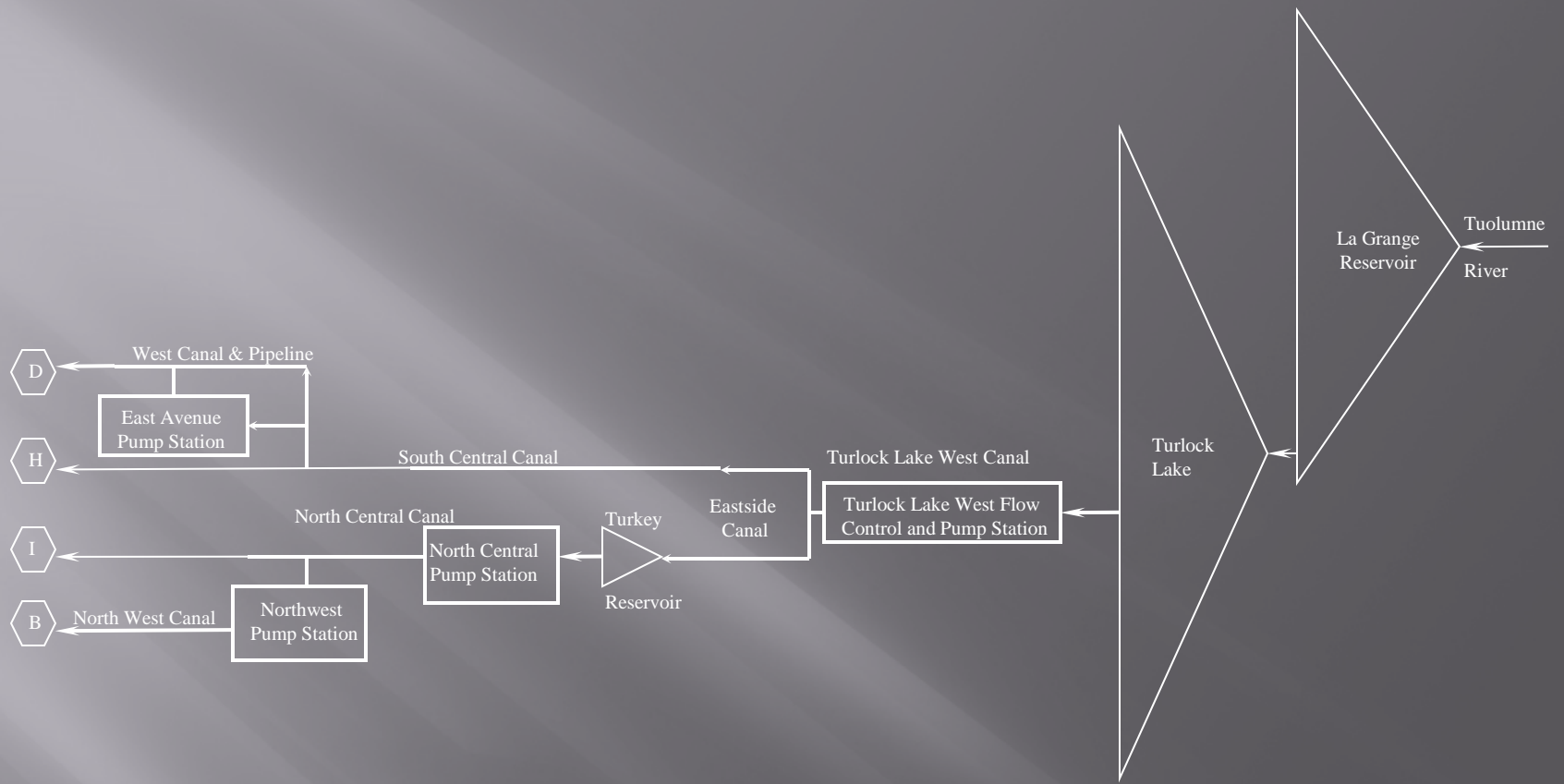
**PA-12 serves area I**  
**HYDROLOGIC ELEMENT DIAGRAM**

Figure C-13



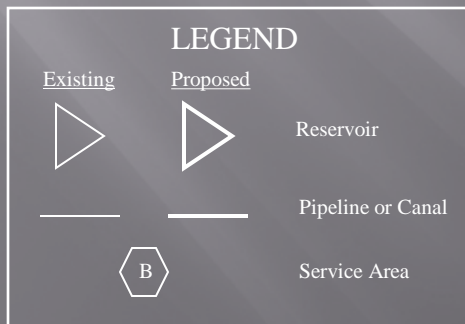
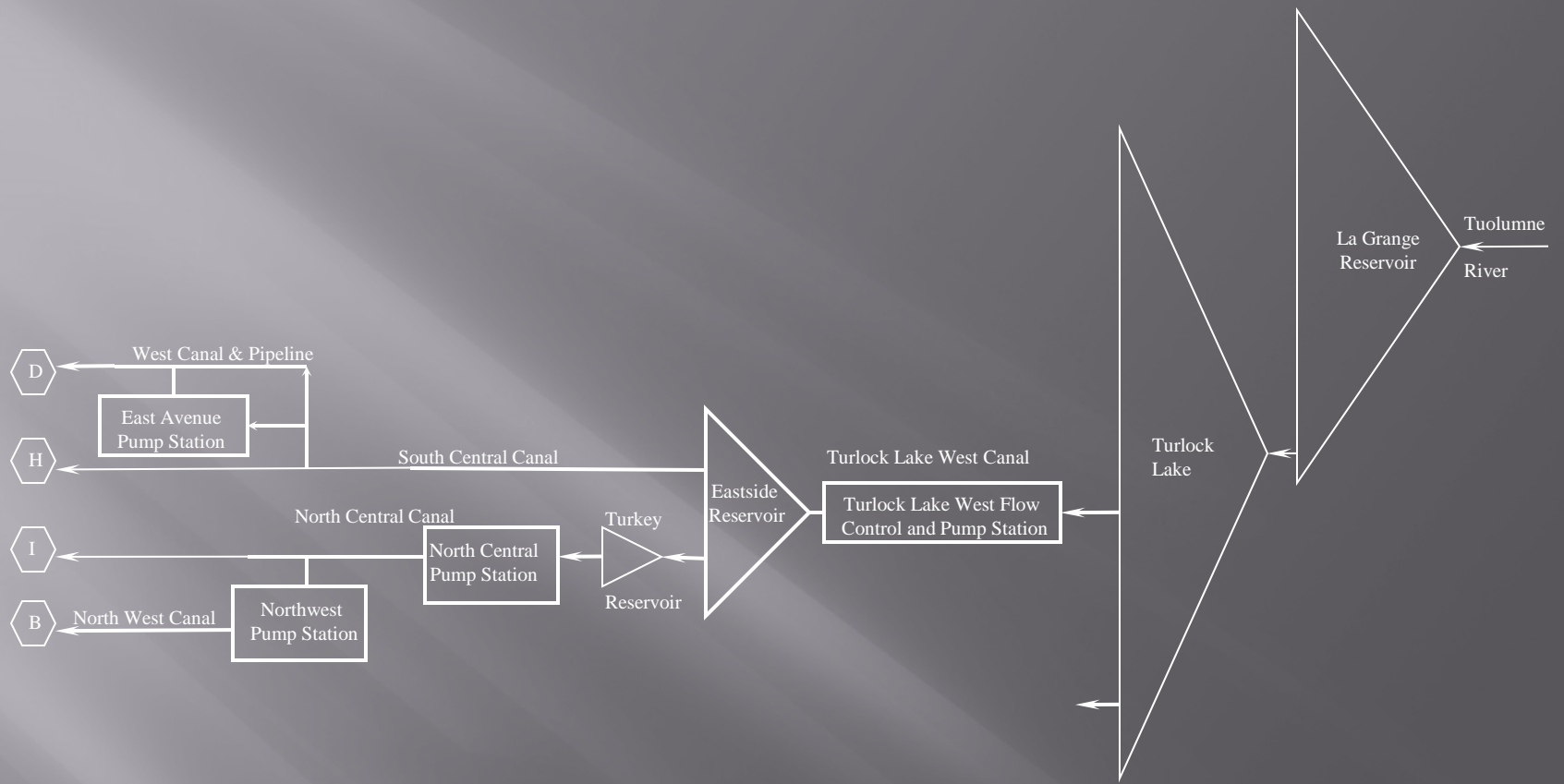
**PA-13 serves areas I & B**  
**HYDROLOGIC ELEMENT DIAGRAM**

Figure C-14



**PA-14 serves areas H, D, I, & B**  
**HYDROLOGIC ELEMENT DIAGRAM**

Figure C-15



**PA-15 serves areas H, D, I & B**  
**HYDROLOGIC ELEMENT DIAGRAM**

Figure C-16

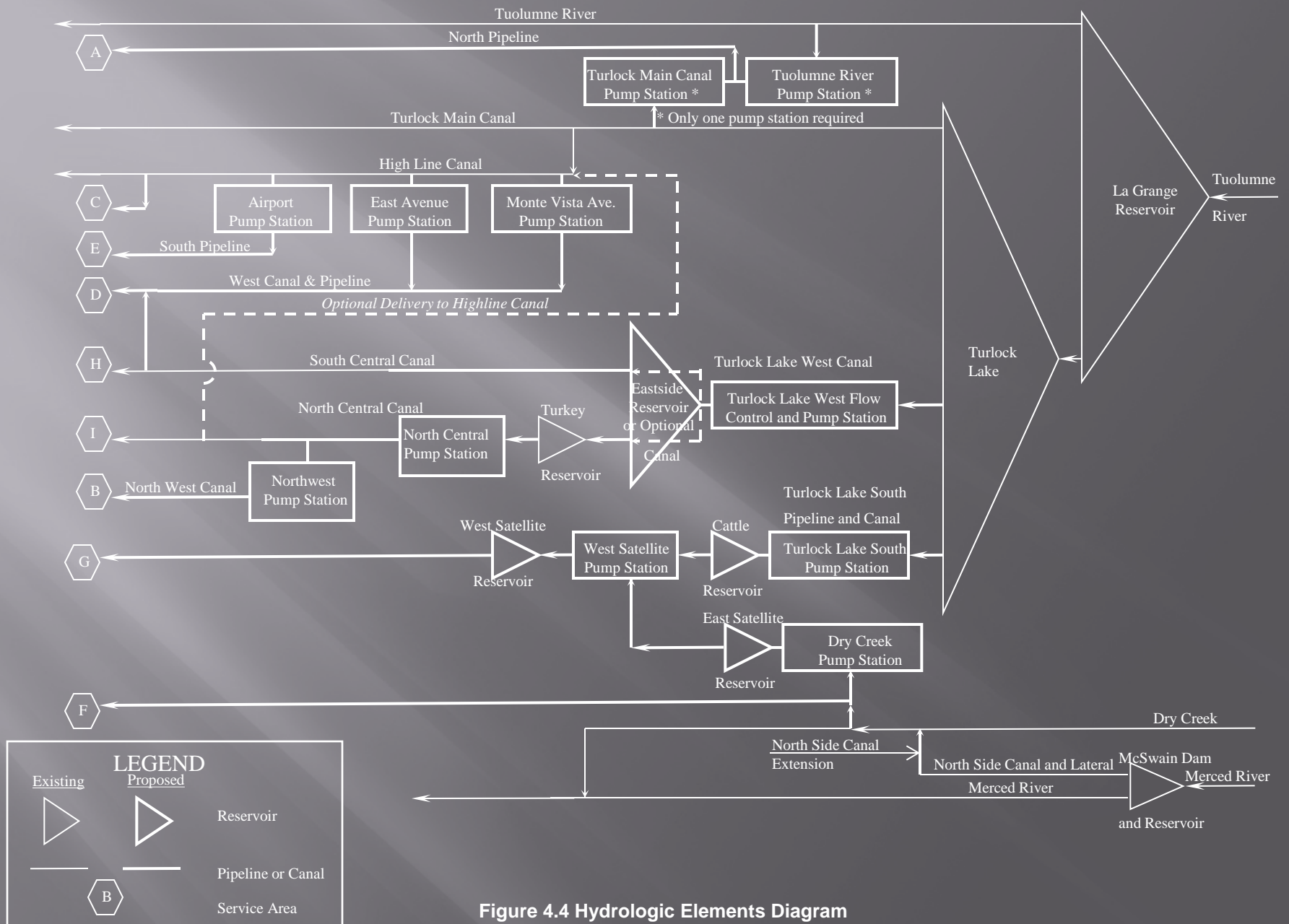


Figure 4.4 Hydrologic Elements Diagram



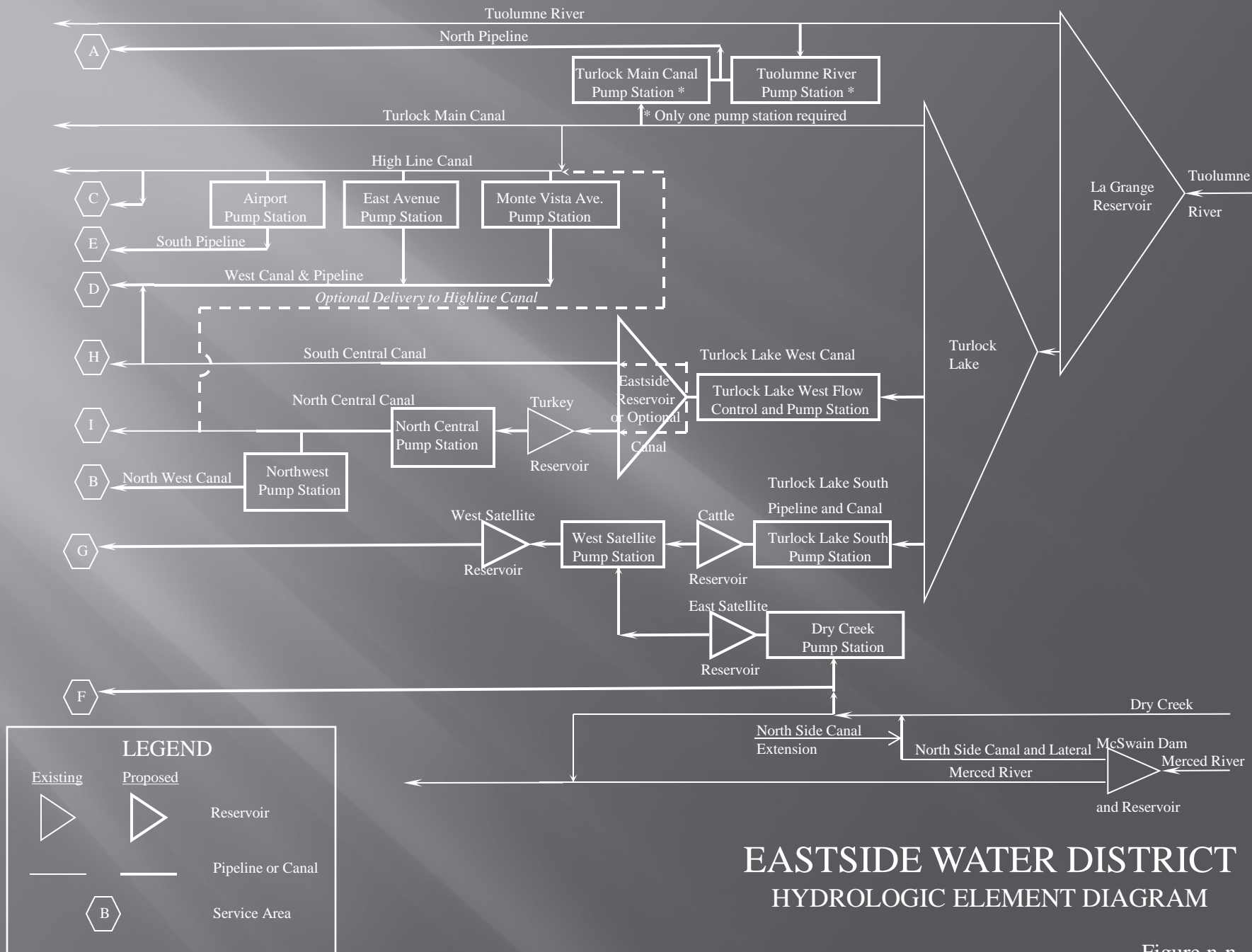


Figure n-n

# Conclusions

- ▣ EWD will continue to manage its portion of the Turlock Basin, but without a surface water supply, expectations are limited
- ▣ TID and Merced ID have recognized value of cooperating with EWD on GW recharge projects, so hope 'springs'
- ▣ The Future Looks Bright! This cooperation is expected to lead to a long-term sustainable water supply for all residents depending on the Turlock GW Basin