



UTAH DEPARTMENT *of*
ENVIRONMENTAL QUALITY

**WATER
QUALITY**

DWQ Statewide Nutrient Removal Cost Impact Study

Nutrient Removal Cost Impact Study

Conducted by consultant engineer CH2MHill/Jacobs

Completed October 2010

Limitations:

Did not consider capacity expansion beyond current rating

Assumed facilities were in good long term condition

Did not evaluate upgrade for other water quality standards

Did not evaluate TIN-N of less than 10 mg/L-N

<https://deq.utah.gov/water-quality/publicly-owned-treatment-works-nutrient-removal-cost-impact-study-nutrients-in-utahs-waters>

Cost Study Nutrient Removal Options

Examined 4 potential scenarios

	Total Phosphorus (TP) (mg/L)	Total Inorganic Nitrogen as Nitrogen (TIN-N) (mg/L)
Option A	1.0	No limit
Option B	1.0	20
Option C	0.1	No limit
Option D	0.1	10

<https://deq.utah.gov/water-quality/publicly-owned-treatment-works-nutrient-removal-cost-impact-study-nutrients-in-utahs-waters>



Capital Project Costs (\$ millions)

	D.C.	Option A	Option C	Option D
	mgd	1.0/NA	0.1/NA	0.1/10
Salem	0.98	\$4	\$17	\$35
Timpanogos	30	\$0.7	\$60	\$60
Orem	13.6	\$0.5	\$38	\$38
Payson	4.5	\$0.8	\$16	\$23
Provo	16	\$2	\$38	\$39
Spanish Fork	6	\$1	\$23	\$28
Springville	6.8	\$1	\$1	\$4
Utah County		\$9	\$193	\$227

All values converted from 2009 dollars to 2019 dollars (1.19 factor)

D.C. – Design Capacity as stated in report



Annual Operation and Maintenance Costs

	Option A	Option C	Option D
	1.0/NA	0.1/NA	0.1/10
Salem	Not Available		
Timpanogos	\$21,000	\$862,000	\$862,000
Orem	\$44,000	\$416,000	\$416,000
Payson	\$77,000	\$131,000	\$131,000
Provo	\$361,000	\$1,358,000	\$1,505,000
Spanish Fork	\$288,000	\$389,000	\$382,000
Springville	\$242,000	\$415,000	\$347,000

All values converted from 2009 dollars to 2019 dollars (1.19 factor)

Monthly Cost Increase per ERU

	ERUs	Option A	Option C	Option D
		1.0/NA	0.1/NA	0.1/10
Salem	Not Available			
Timpanogos	40,000	\$0.2	\$12	\$12
Orem	21,000	\$0.2	\$14	\$14
Payson	5,180	\$2	\$23	\$32
Provo	22,310	\$2	\$17	\$17
Spanish Fork	6,720	\$5	\$27	\$32
Springville	11,500	\$2	\$4	\$5
Utah County	106,710	\$1	\$14	\$15

All values converted from 2009 dollars to 2019 dollars (1.19 factor)
 ERUs from 2009 report and not adjusted



Current Capital Upgrades (\$ millions)

	D.C.	Opt BB	Opt D
	mgd	1.0/10	0.1/10
Salem	1.5	\$21	\$23
Timpanogos	30	\$15.5	\$60*
Orem	7.5	\$4.7	\$38*
Payson	4.5	\$12.5	\$23*
Provo	16-21		\$150-\$240
Spanish Fork	4-6		\$55-75
Springville			\$4*
Utah County			\$353-\$463

Facilities in anticipation of future regulation are designing for “Option BB” – 1.0 mg/L TP and 10 mg/L-N TIN

* Converted from 2009 dollars to 2019 dollars (1.19 factor)

Yellow highlights are projects currently being undertaken

Green highlights are projects estimated by the facility





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